Ling 165B: Syntax II

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Today, we are going to use the Binding Theory to support the claim that the anaphorical element PRO is needed in:

(i) subject infinitives and

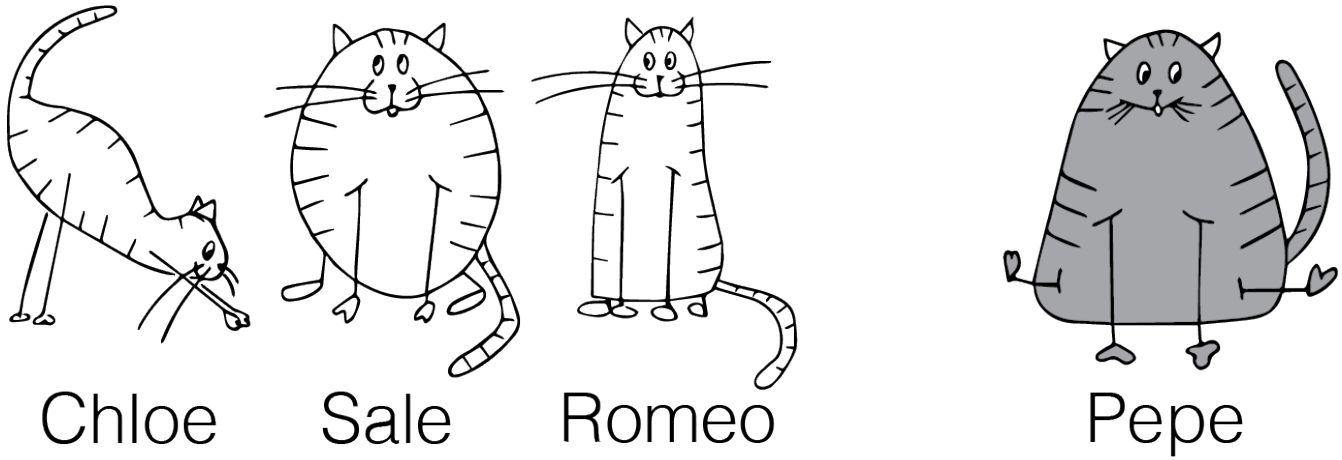
(ii) control structures.

Binding Theory I

Binding theory is a theory of what controls possible coreference between different types of DPs in particular syntactic configurations.

→ Reference: The relation between a DP and the thing in the world that the meaning of that DP picks out.

→ Two DPs corefer if they refer to the same entity.



[$_{DP}$ Pepe] and [$_{DP}$ the gray cat] refer to the same individual in this context.

[$_{DP}$ Chloe] and [$_{DP}$ the skinniest cat] refer to the same cat in this context.

Binding Theory II

(1) a. Sue thinks that she is the prettiest girl on earth.
b. Sue loves her.
c. Sue loves herself.
d. She doesn't like Sue.
e. The TA who graded her does not like Sue.

Here, I used colors, in linguistics we use indices!

Indexation: Notational tool for keeping track of what DPs refer to.

Indices: $_i$, $_j$, $_k$ ...

(i) Two DPs with the same index (co-indexed) refer to the same thing (co-refer);

(ii) Two DPs with different indices refer to different things.

Based on their syntactic behavior, we need to distinguish 3 kinds of DPs:

(A) Anaphors: itself, herself, yourselves

(B) Pronouns: you, me, us, him

(C) R-expressions: John, the professor...

Principle A: Anaphors I

(2) *Herself is coming (cf. *She/Susan is coming*).

(3) a.*Fred$_i$ said that [the child of [the neighbor]$_k$]$_j$ enjoys himself$_i$
b.*Fred$_i$ said that [the child of [the neighbor]$_k$]$_j$ enjoys himself$_k$
c. Fred$_i$ said that [the child of [the neighbor]$_k$]$_j$ enjoys himself$_j$

Principle A (final version from Chapter 7):

An anaphor must be **bound** in its binding domain.

→ *Binds*: A binds B if and only if A c-commands B and A and B are coindexed.

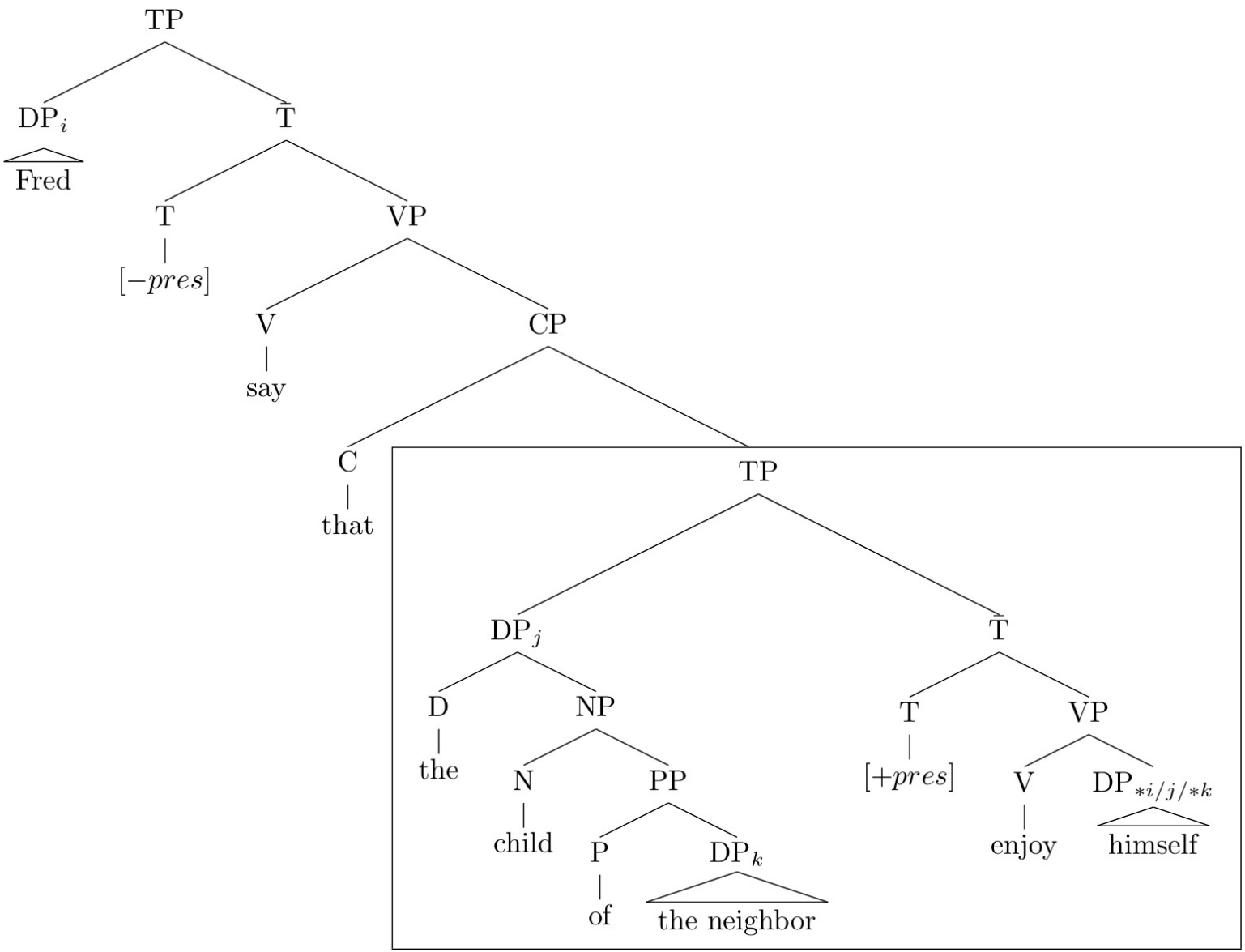
C-Command: The relationship between a node, its sister, and the stuff dominated by its sister.

→ *Binding domain*: The smallest XP that has a subject **and that has a DP c-commanding the anaphor**

NB: According to this definition the anaphor cannot be the subject of the XP

Principle A: Anaphors II

(4) Fred$_i$ said that [the child of [the neighbor]$_k$]$_j$ enjoys himself$_{*i/j/*k}$



Principle B: Pronouns I

(5) She is coming

(6) a. Sue$_i$ found that [the sister of [the mother]$_k$]$_j$ liked her$_i$
b. Sue$_i$ found that [the sister of [the mother]$_k$]$_j$ liked her$_k$
c.*Sue$_i$ found that [the sister of [the mother]$_k$]$_j$ liked her$_j$

Principle B :

A pronoun must be **free** in its binding domain.

→ *Binds*: A binds B if and only if A c-commands B and A and B are coindexed.

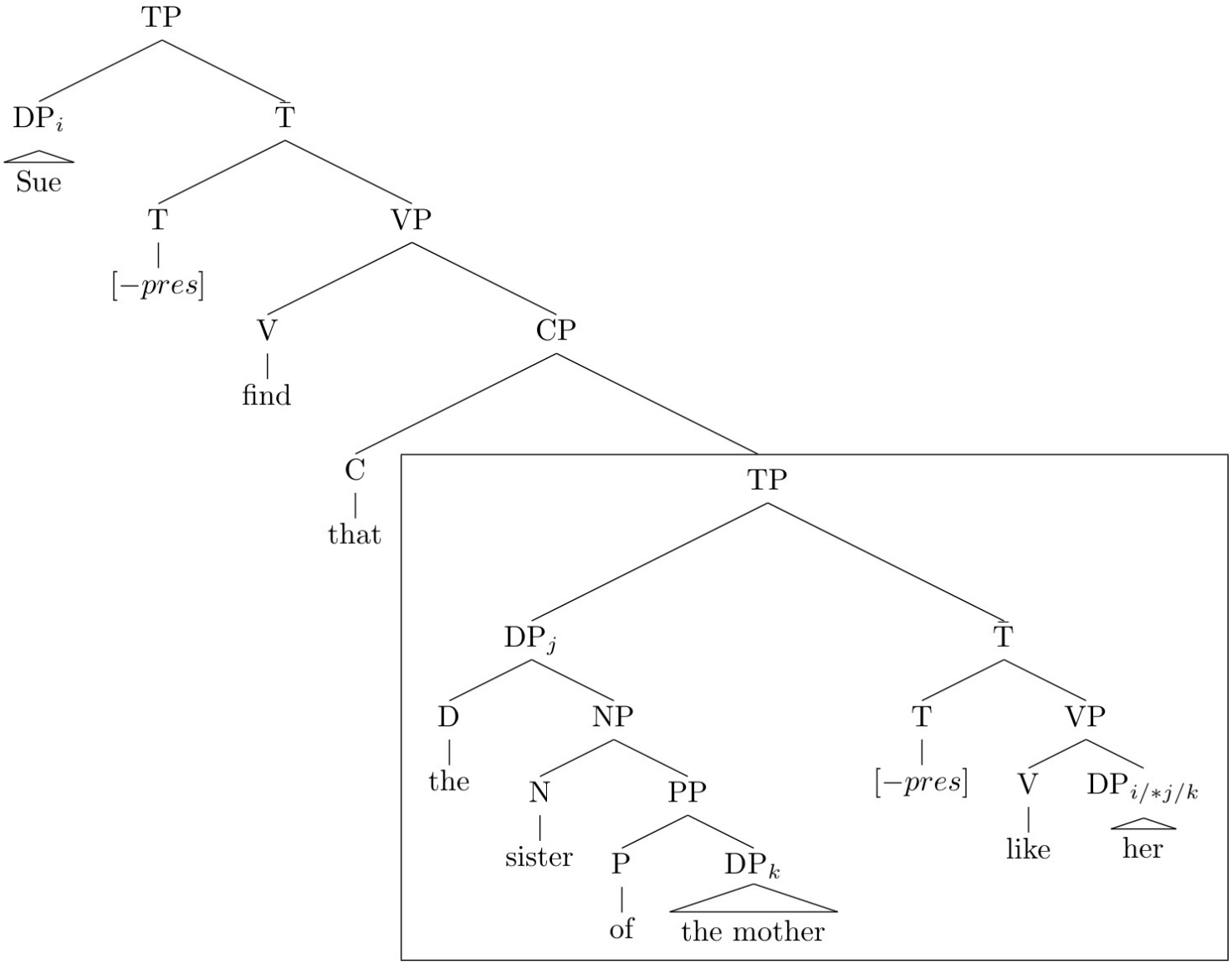
C-Command: The relationship between a node, its sister, and the stuff dominated by its sister.

→ *Binding domain* (BD): The smallest XP containing the pronoun that has a subject.

NB: According to this definition the pronoun can be the subject of the XP

Principle B: Pronouns II

(7) Sue$_i$ found that [the sister of [the mother]$_k$]$_j$ liked her$_{i/*j/k}$



The BD of anaphors and pronouns

Why are the definitions of BDs slightly different?

Binding domain of anaphors:

The smallest XP that has a subject **and that has a DP c-commanding the anaphor**
NB: According to this definition the anaphor cannot be the subject of the XP

Binding domain of pronouns:

The smallest XP containing the pronoun that has a subject.
NB: According to this definition the pronoun can be the subject of the XP

If the definition of BD is the same, we should expect anaphors and pronouns to be in *complementary distribution*.

→ In most cases, this prediction is borne out, as we saw.

→ But in same cases it is not!

(8) a. They$_i$ like [[**their**$_i$] books]
b. They$_i$ like [[**each other**$_i$]'s books]

→ In order to account for the facts in (8), we need to allow the anaphor to have a larger BD.

Principle C: R-expressions

R(eferential)-expressions = non-pronominal expressions

→ Proper names: John, Sue, Peter...

→ Descriptions: the president of the US, the Italian textbook, my sister...

(9) a.*He$_i$ saw Jonh$_i$
b.*He$_i$ said that Mary saw John$_i$
c. The builder of his$_i$ house visited Peter$_i$

Principle C :

R-expressions cannot be bound.

Practice

Consider the following sentences:

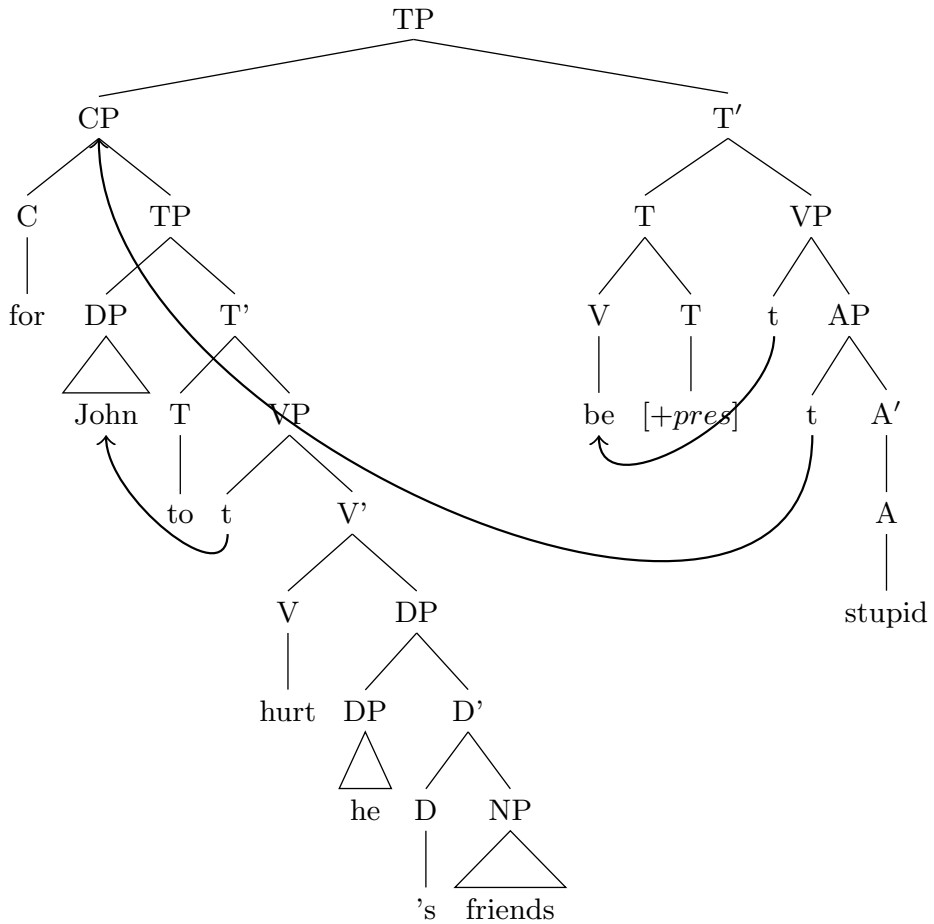
(10) John$_i$'s young brother thinks he$_i$ should leave

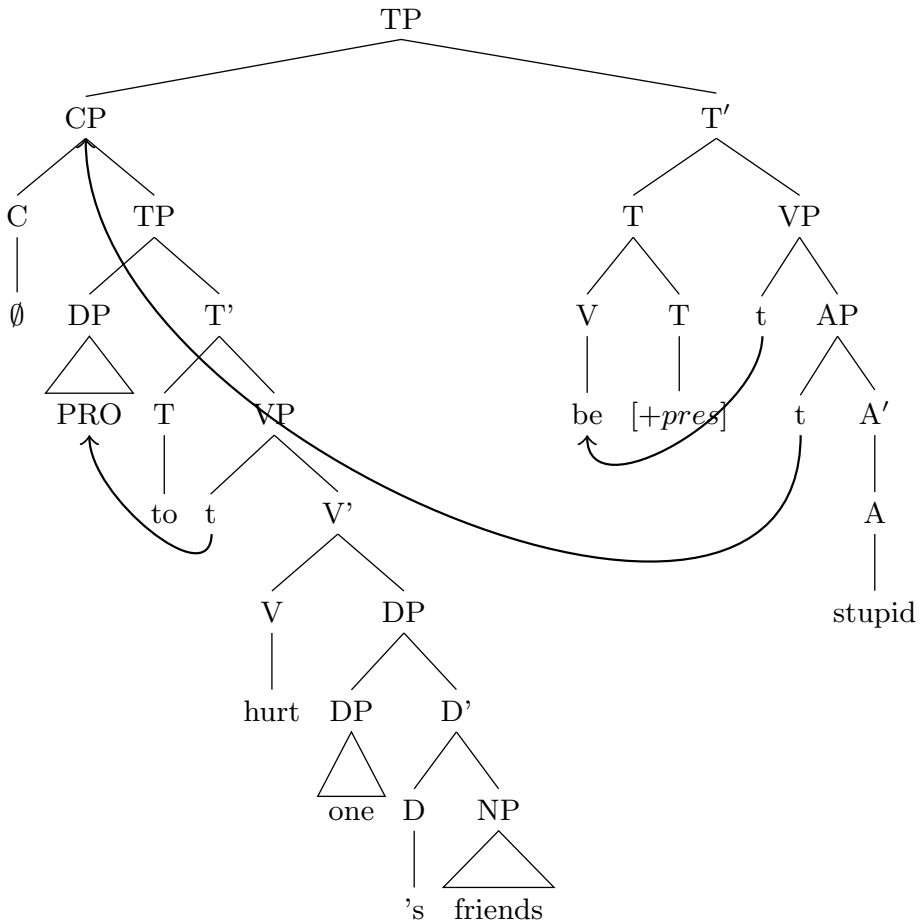
(11)*They$_i$ saw Mary look at each other$_i$

Can BT explain their grammaticality status? Explain.

Subject Infinitives and Binding I

(12) a. [For John to hurt his friends] is stupid
b. [To hurt one's friends] is stupid §ISAT 9.2.1



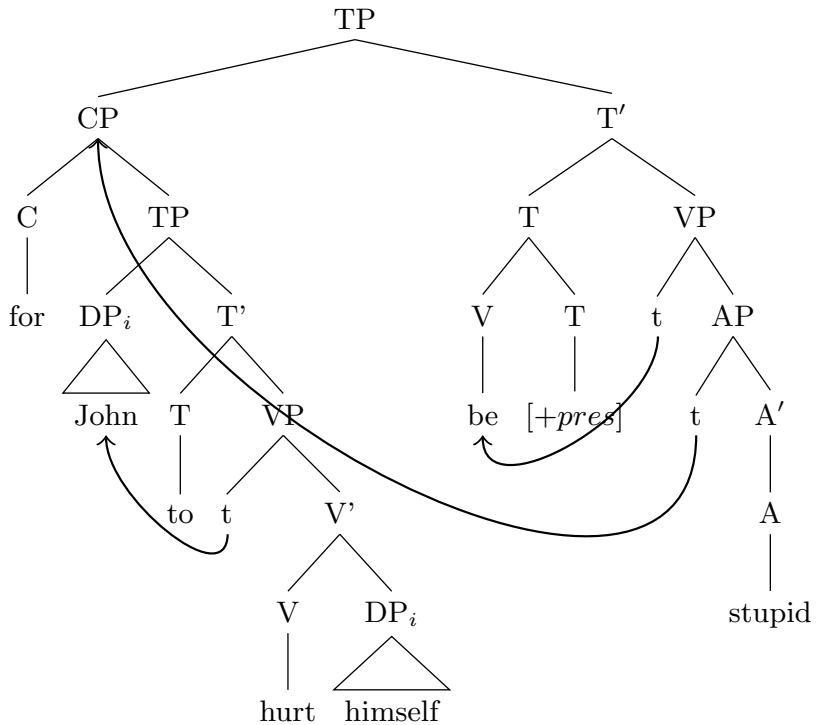


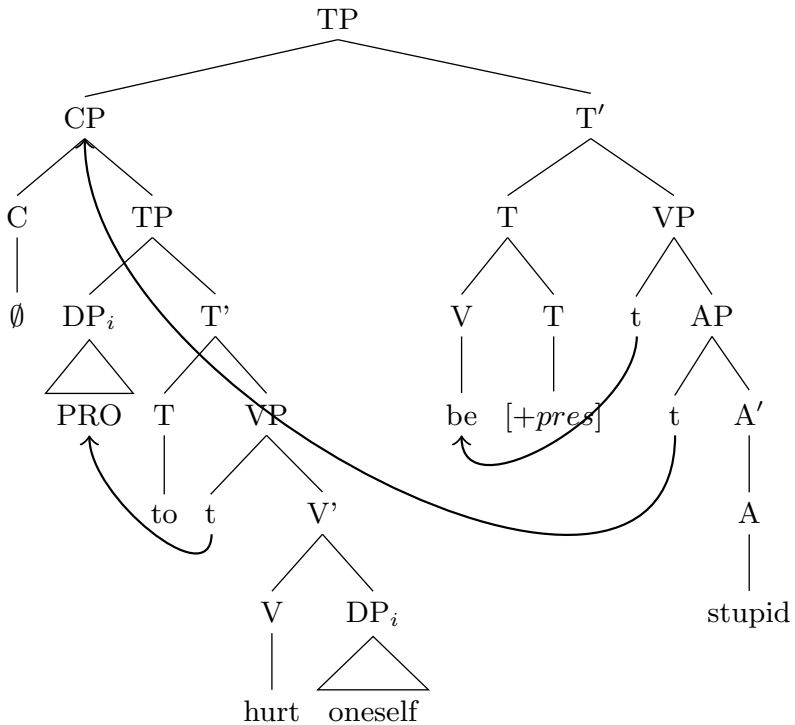
Subject Infinitives and Binding II

Now, let's turn to examples with anaphors.

→ PRO is needed in order to satisfy principle A!

(13) a. [For John to hurt himself] is stupid
b. [To hurt oneself] is stupid





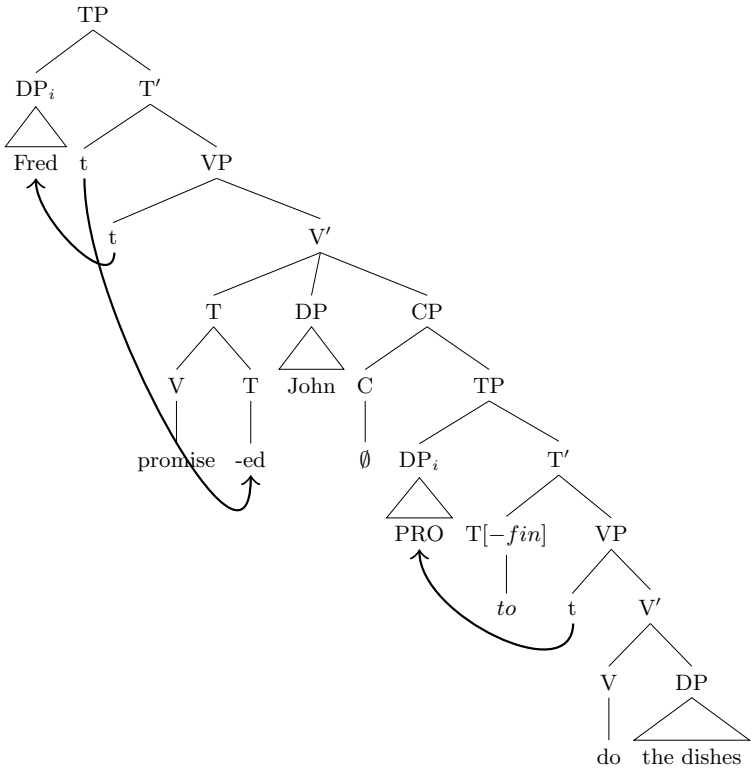
Subject Infinitives and Binding III

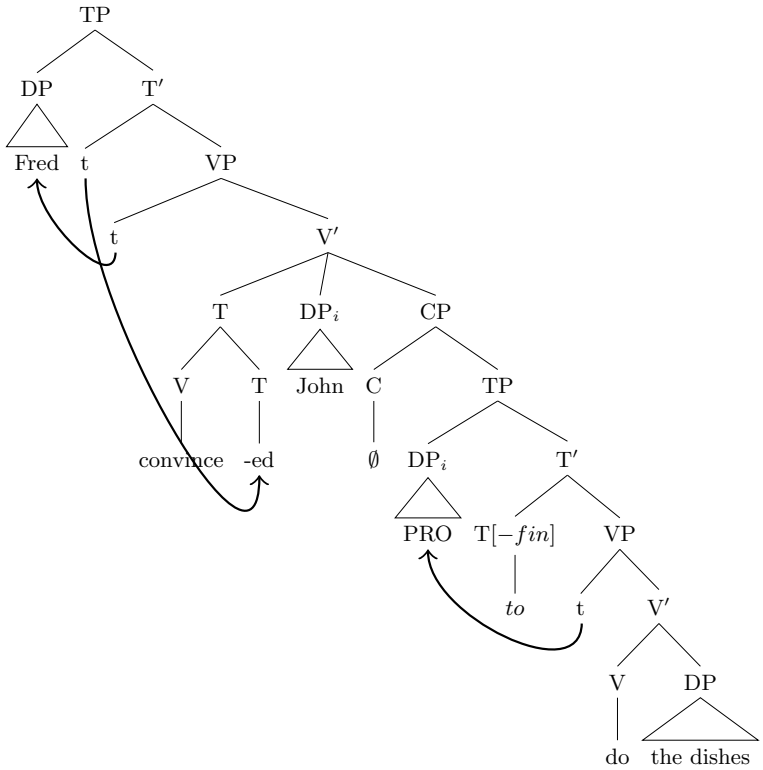
Practice Explain why coreference between *him* and PRO is impossible in (14).

(14) To hurt him is stupid.

Control Structure and Binding I

(15) a. Fred promised (John) to do the dishes.(1)
b. Fred convinced John to do the dishes.



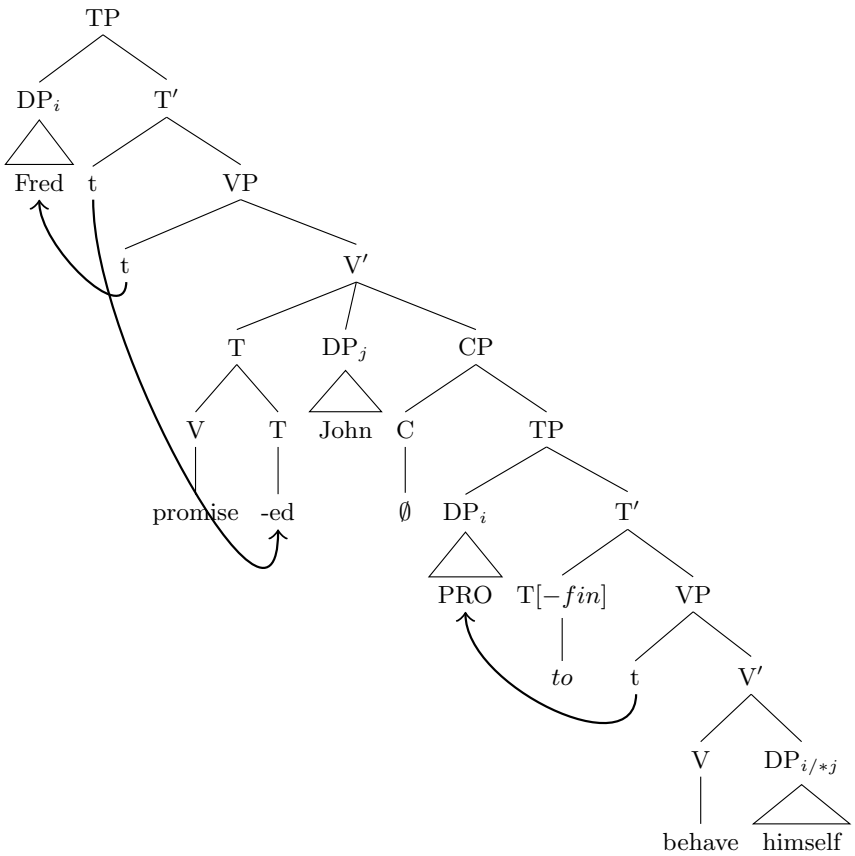


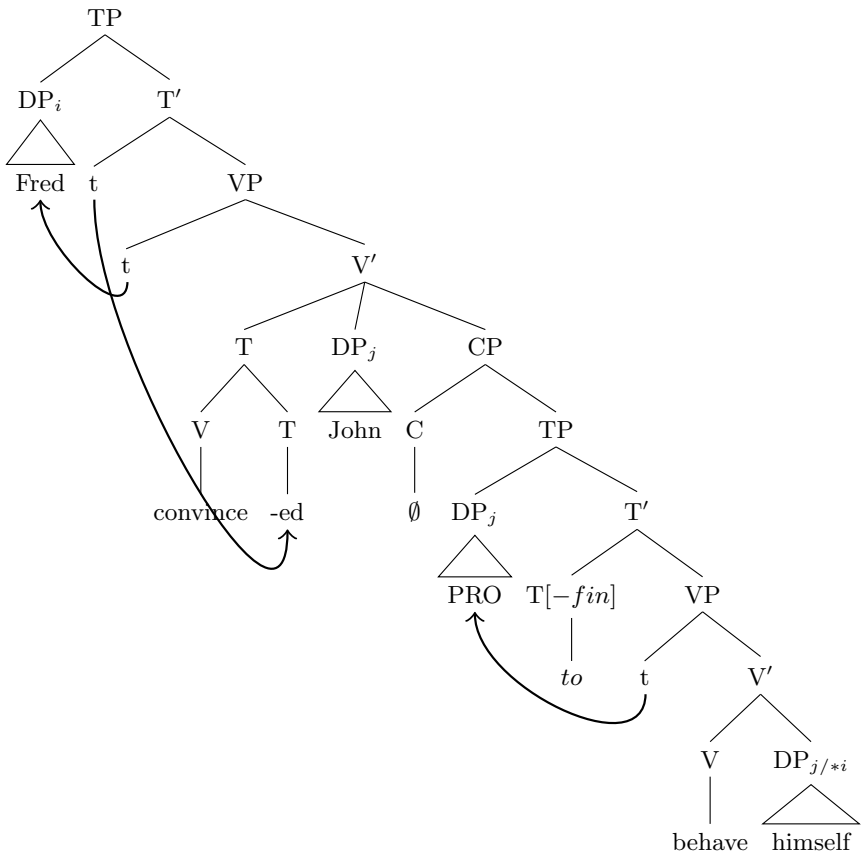
(1) the argument stands even if you don't like having an over goal with subject control

Control Structure and Binding II

Again, the presence of PRO is needed to account for data involving anaphors!

(16) a. Fred$_i$ promised (John$_j$) to behave himself$_{i/*j}$
b. Fred$_i$ persuaded John$_j$ to behave himself$_{j/*i}$



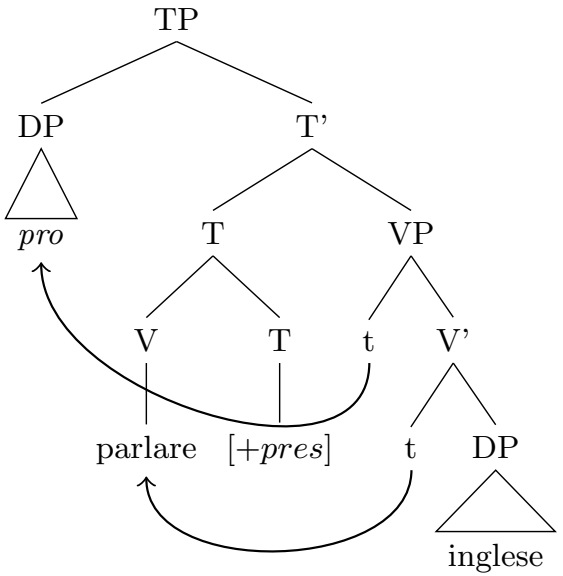


"Big" PRO *vs.* "small" pro

PRO is always written with capital letters and read as "big PRO".

→ It is distinguished from *pro* written in normal font, which is referred to as "small pro". Small *pro* is the silent counterpart of regular pronouns, found for example as the null subject of tensed sentences in languages like Italian, Spanish, or Mandarin, but not English, where an overt subject pronoun is required.

(17) parliamo inglese
speak.1PL English
"We speak English"



Wh-movement

Phrasal Movement

Phrasal Movement: move a phrase to a empty specifier position.

It's a feature driven movement.

→ Subject raising: finite T has a EPP feature which is satisfied when the syntax provides a subject for T.

will T[+tense] epp: DP_{nom}/CP c-selects VP

→ Wh-movement is another type of phrasal movement.

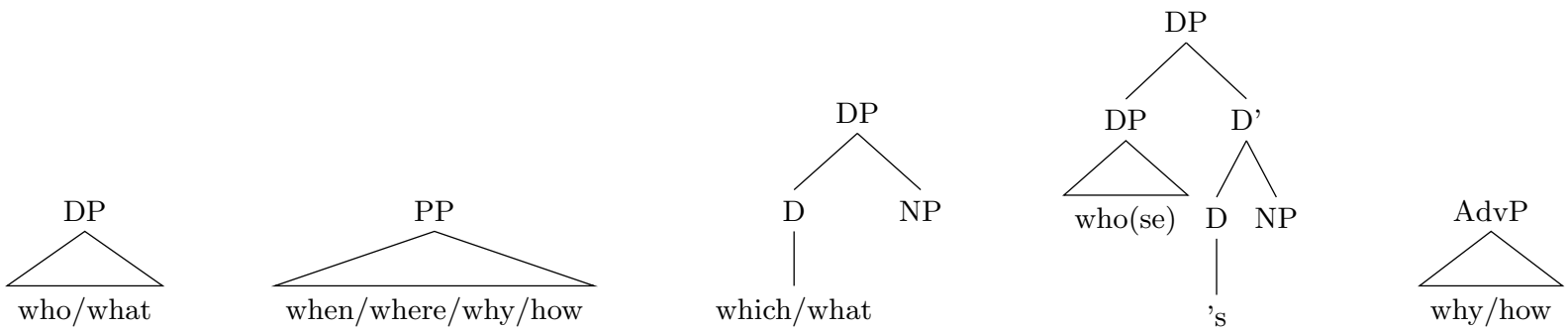
C also has a sort of EPP feature. It requires a [+wh] phrase in its specifier. We will call this feature [+wh].

Wh-movement I

(18) a. John ate a cookie
b. what did John eat ?

→ What kind of phrases does wh-movement move in English? Phrases that contain *wh*-words. They can be arguments or adjuncts.

who, what, which, whose, where, when. why, how...



→ How do we know that there is movement?

- Empirical facts: relation between base position and wh-word

Wh-movement II

- Wh-words sometimes stays in their base position

(19) a. Peter bought the car in Chicago.
b. Where did Peter buy the car _?
c. What did Peter buy _ in Chicago?
d. Where did Peter buy what _?

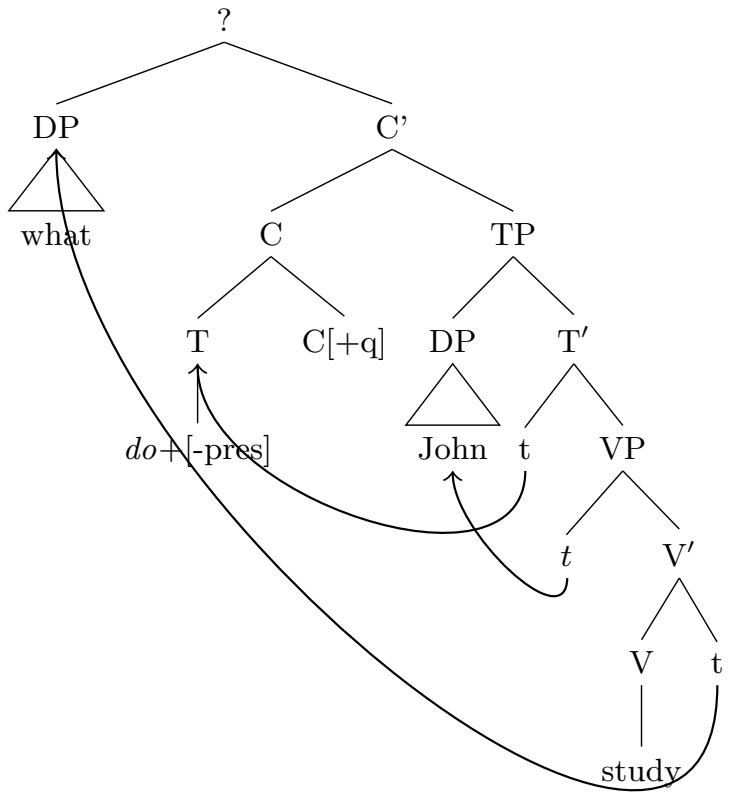
- Wh-movement is not a universal property: in many languages wh-words do not have to move to the beginning of the sentence and appear in their base position.

(20) Pita-ga nani-o tabeta-ka.
Peter-NOM what-ACC ate-C[+q]
'What did Peter eat?' Japanese

Wh-movement III

→ Where do wh-phrases move to in wh-questions?

- We know that they raise past C since they are found to the left of a T that has raised to C:



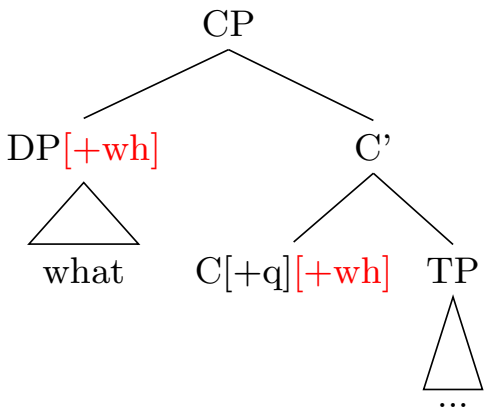
Wh-movement IV

- A natural conclusion is to assume that they raise to the specifier of CP. Why can't they be CP adjuncts?

  (i) It seems that only one wh-phrase can move to that position (at least in English):

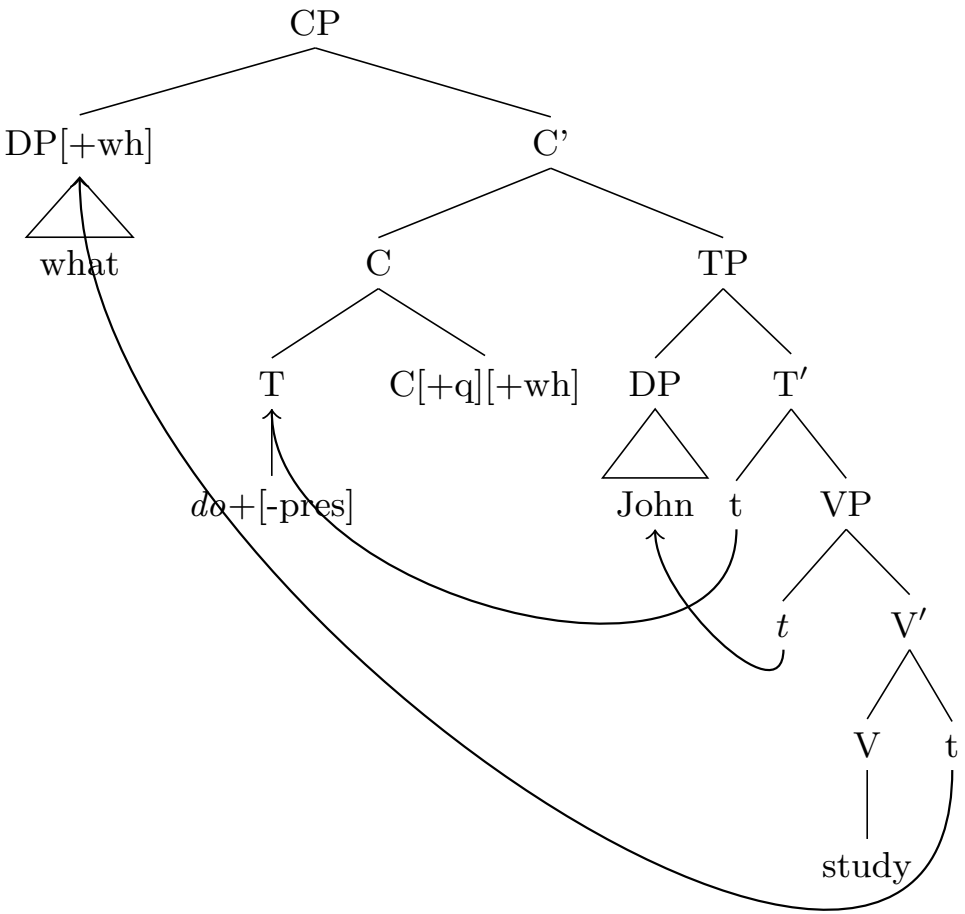
  (21) a. Who bought what?
  b.*Who what bought?

  (ii) Analogy with other feature driven movements: agreement (or feature checking) between the head and its subject (or specifier). **The feature that triggers wh-movement is [+wh].** [**NB**: This is different from what ISAT does: it only uses [+q]]



Wh-movement V

This would be the final tree for *What did John study?*:



Wh-movement VI

Two features, four possibilities:

[-Q -wh]	ex. John thinks that the moon is made of cheese
[+Q -wh]	ex. Did+∅ John read the report?
[+Q +wh]	ex. What Did+∅ John read?
[-Q +wh]	ex. I wonder what ∅ John read.

Wh-movement VII

Crosslinguistic Evidence

In some languages, there are special forms of complementizers that represents these features. Irish is such a language, in Irish you get

→ the *go* complementizer in declarative sentences;
→ the *an* complementizer in yes/no questions;
→ the a^L complementizer in wh-questions

(22) Measann sibh **go** bhfuil an oechair insa doras
think you.PL that is the key in.the door
"You think that the key is in the door' (McCloskey 1979)

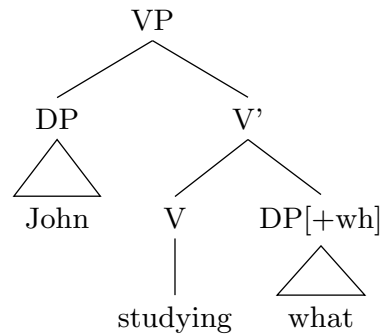
(23) **An** bhfaca tú an madra?
Q See.PAST you the dog
"Did you see the dog?" (Carnie 2006)

(24) Cad **a**^{L} tá sa seomra?
What C-*wh* is in the room
"What is the room?" (Carnie 2006)

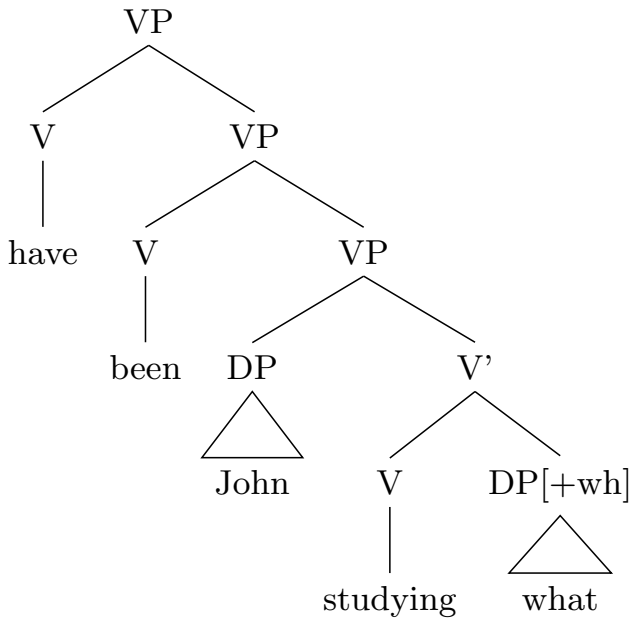
Wh-movement VIII

Here is a bottom-up step-by-step derivation of the sentence *What has John been studying?*

Step 1 The VP headed by the lexical verb:

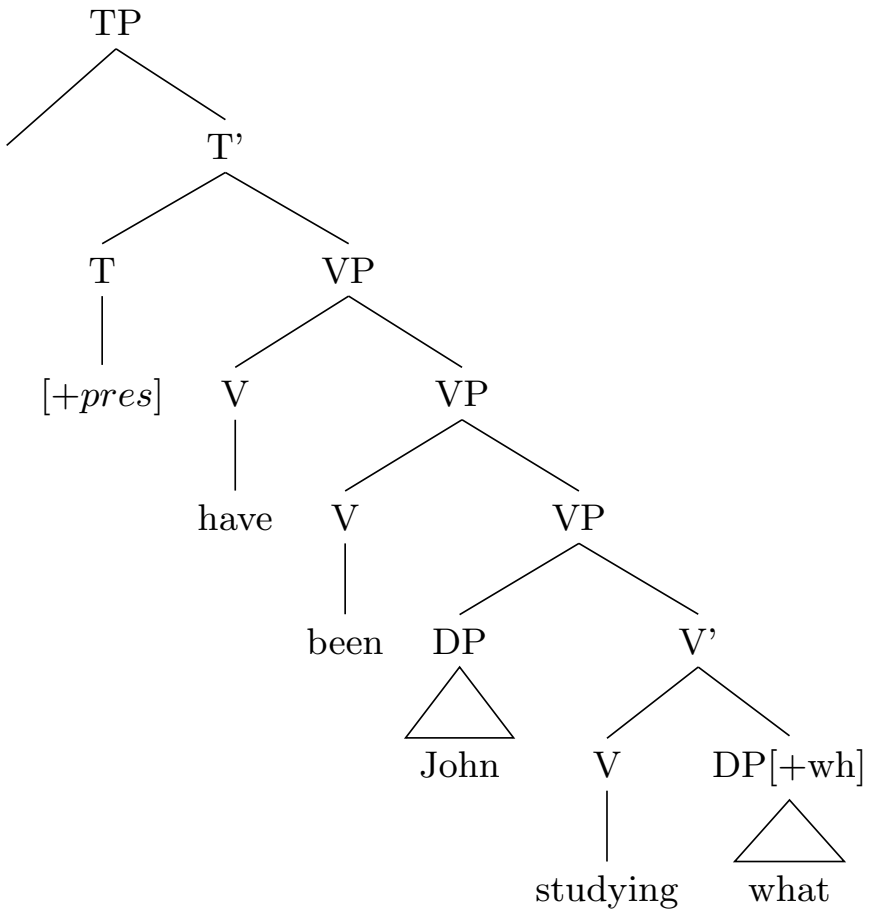


Step 2 Higher VPs headed by auxiliary verbs (No external arguments!)

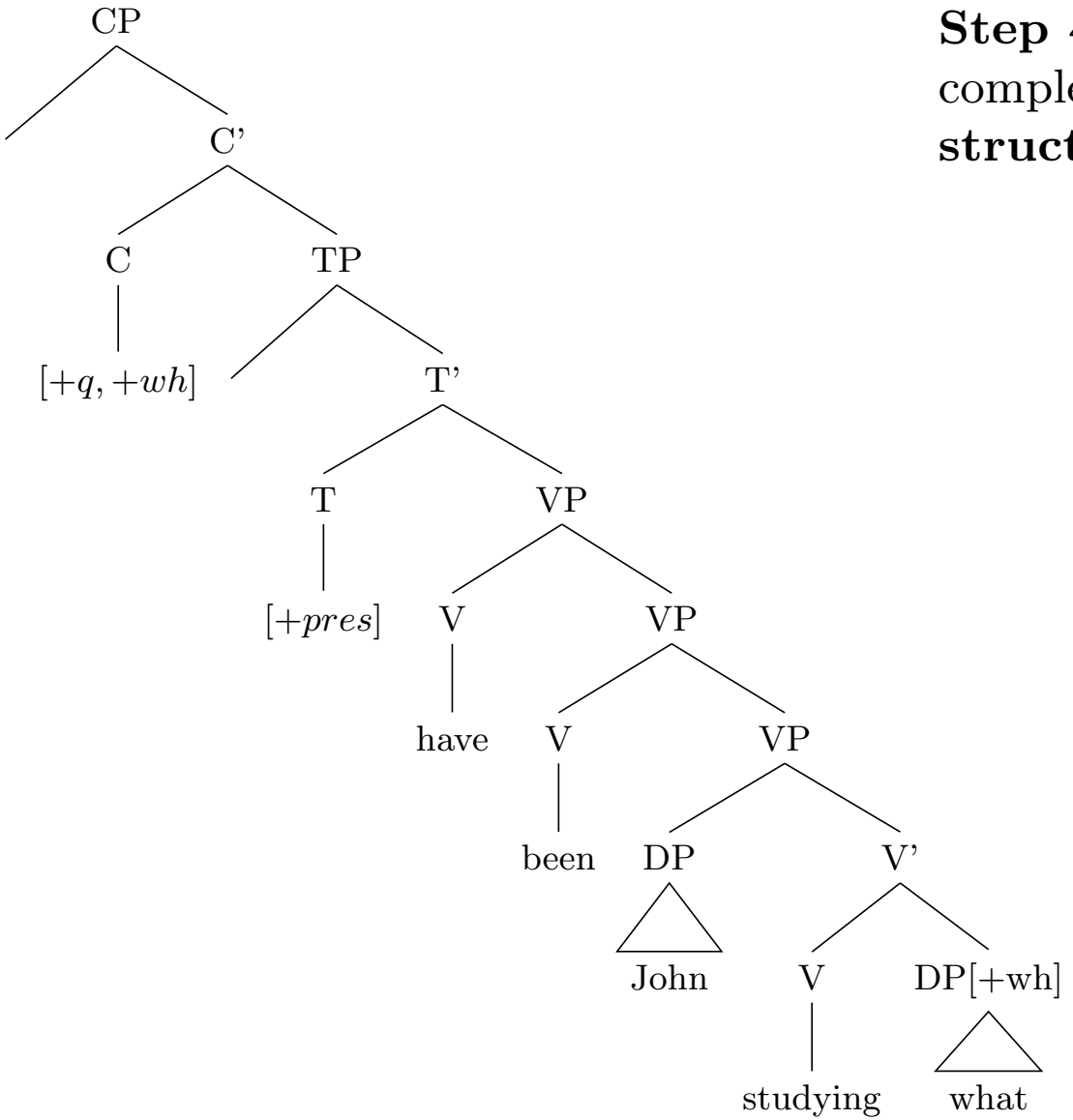


Wh-movement IX

Step 3 The TP:

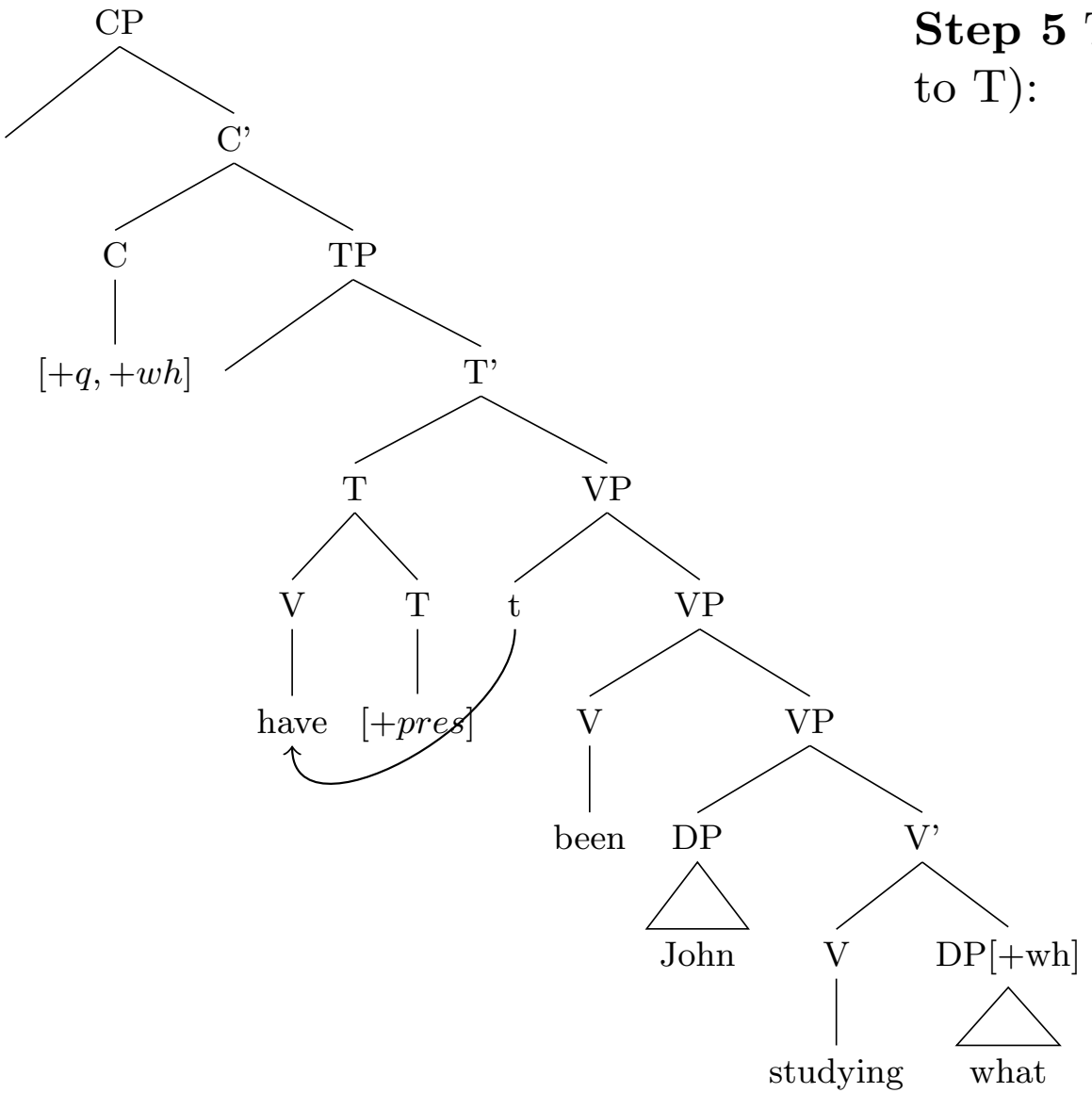


Wh-movement X



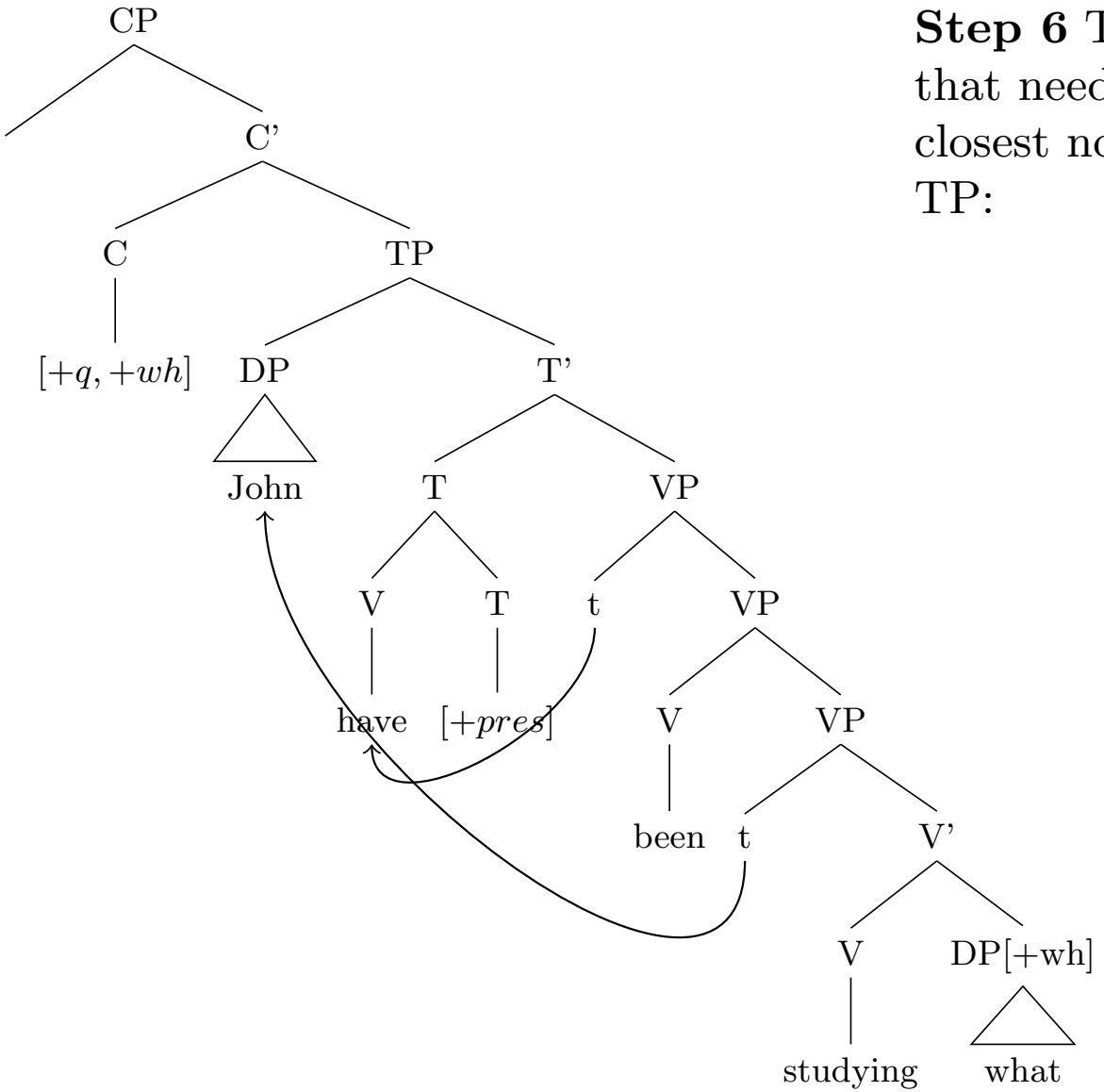
Step 4 Now we can merge the [+q,+wh] complementizer and get our **deep structure tree**:

Wh-movement XI



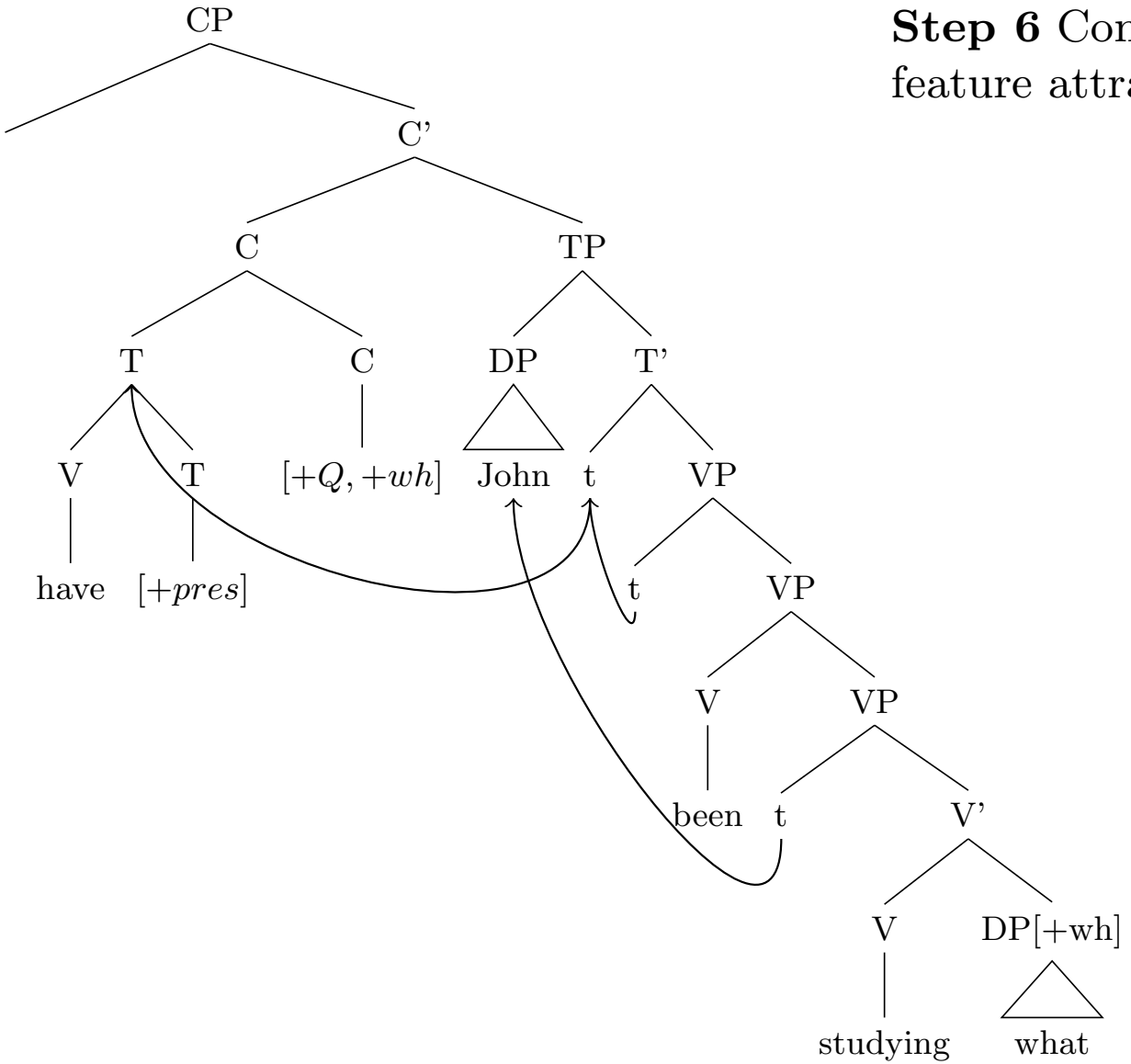
Step 5 The auxiliary can move to T (V to T):

Wh-movement XII



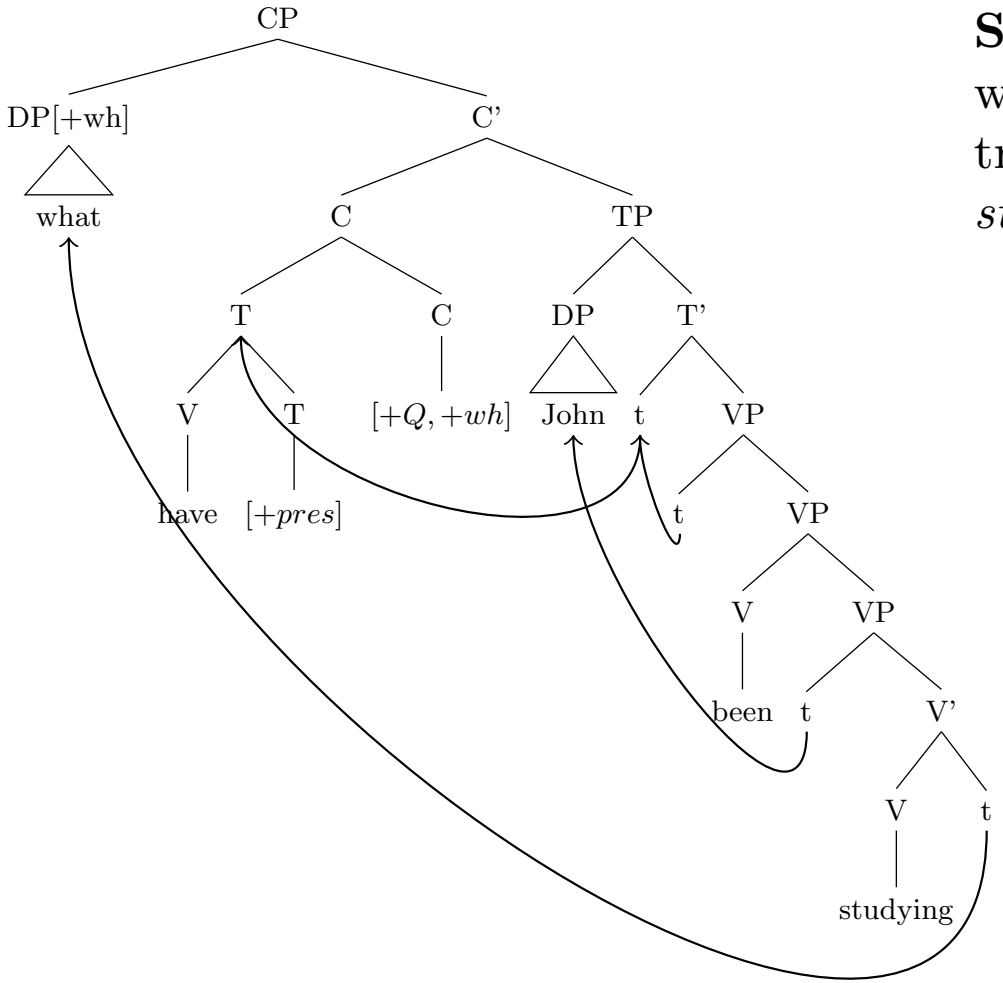
Step 6 The finite T has an EPP feature that needs to be satisfied. We move the closest nominative DP to Spec, TP:

Wh-movement XIII



Step 6 Complementizers with the [+q] feature attract what is in T:

Wh-movement XIV



Step 7 The feature [+wh] triggers wh-movement. This gives us the surface tree for *what has John been studying?*

Practice: Tree drawing

(25) Which book have you been talking about?

(26) How did John try to address this issue?

(27) Which book did you expect Matt to give to Mary?

(28) Who did Martha force to read Ronny's book?

Practice

Let's work on this example:

(29) Marc$_i$ begged [his$_i$ sister]$_j$ to let him$_i$ help her$_j$

What is a question?

→ The meaning of questions;

→ Interrogatives cross-linguistically;

→ Embedded questions;

→ Scope;

→ Wh-movement and *wh-in situ* languages

Meaning of a question

We could characterize the meaning of a question by the set of its possible (or true) answers.

→ Polar (or yes/no) questions have two (or possibly three) answers.

(30) Is it raining? ⇝ { it is raining, it is not raining }

(31) Does Peter own a dog? ⇝ { Peter owns a dog, Peter doesn't own a dog }

→ Constituent questions have a large number of answers.

(32) What did Thomas buy? ⇝ { Thomas bought wine, Thomas bought a book, Thomas bought a bike ... }

These are matrix interrogatives.

Matrix and Embedded interrogatives

In matrix interrogatives, the speaker has a question which requires a response from the hearer.

→ For (30). Tell me which one is true: *it is raining* or *it is not raining*.

→ For (32). Tell *for which x: Thomas bought x*.

Embedded interrogative are different. The speaker does not a question which requires a response from the hearer. They report that someone else has an attitude towards a question - or answers to a question.

(33) John wonders if it is raining.
⇝ John does not know which of the answers to "is it raining?" is true

(34) John knows if it is raining.
⇝ John knows which of the answers to "is it raining?" is true

(35) John wonders who will be coming to the party.
⇝ John does not know which of the answers to "who is coming to the party?" is true

Verbs such as *know*, *wonder*, *forget* can take interrogative complements.

Matrix and embedded questions have different scope.

Scope I

Scope of questions $\rightsquigarrow$ which part of the sentence is interrogative

→ In English, the scope of a wh-question *is normally marked by the position of the wh-word.*

(36) John told Bill **who** ___ would be coming
   a. SCOPE of question [$_{TP}$ ___ would be coming]
   b. John told Bill for which x: *it is the case that x would be coming*
   c. Embedded question - It does not require response form the hearer.

(37) **Who** did John tell Bill ___ would be coming
   a. SCOPE of question [$_{TP}$ John told Bill ___ would be coming]
   b. for which x: *John told Bill that x would be coming*
   c. Matrix question - It does require response form the hearer.

It is useful to think of the wh-phrases in these cases as marking their scope ($\approx$ they move from inside their scope to the edge of it).

- In structural terms, a wh-phrase moves to the specifier of the lowest projection that dominates its scope.
- We will refer to this position as the wh-phrase's scope position.

Scope II

→ Not all languages mark the scope of questions in this way.

→ In Japanese, we find the wh-word in the same position as its non-questioned correlate. *ka* or *no* occurs as a scope marker.

(38) [kodomo-tachi-wa dono eiga-o mi-mashita-] ka?
child-pl-TOP which movie-ACC see-past KA
'Which movie did the children watch?'

(39) ryoushin-wa [kodomo-tachi-ga dono eiga-o mi-ta-] ka kii-ta
parents-TOP child-pl-NOM which movie-ACC see-past KA ask-past
'The parents asked which movie the children watched'

→ Some languages do not seem to mark the scope in questions at all.

(40) Botong zhidao Huangrong xihuan shei
Botong know Huangrong like who
'Botong knows who Huangrong likes' or
'Who does Botong know (that) Huangrong likes?' (Mandarin, Cheng 2003)

Scope III

We can distinguish scope in the case of polar questions as well.

(41) Do you wonder if Mary will call?
   a. SCOPE of question [[$_{TP}$ You wonder if Mary will call]
   b. {NOT (you wonder if Mary will call), you wonder if Mary will call}
   c. Matrix question - It does require response form the hearer.

(42) John wonders if Mary will call
   a. SCOPE of question [$_{TP}$ Mary will call]
   b. John wonders which one is true {NOT (Mary will call), Mary will call }
   c. Embedded question - It does not require response form the hearer.

The fact that some lexical items appear displaced from the position where they are interpreted is "an irreducible fact [...] expressed somehow in every contemporary theory of language" (Chomsky 1995, 222).