Wh-movement and Locality Constraints

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After this lecture, you have mastered the following ideas and skills:

- Explain the motivation for wh-movement
- Draw the tree indicating wh-movement
- Identify various complementizer types
- Draw a tree for a relative clause
- Identify island types

Movement Rules

- We've seen that DPs move from the position where they got their theta role to a position where they could get Case.
- We saw that the trigger for this movement was the requirement that DPs check their Case feature.

Movement Rules

- Case, as we saw, can only be assigned in specific structural positions.
- In this lecture, we're going to discuss another kind of phrasal movement, one where DPs already have Case.
- We will see that DPs can move for a different reason: to form what are called **Wh-questions.**

Types of Questions

- There are several different types of questions, but we'll be concerned with only two of them:

  Yes/no questions and

  ***wh-questions*.**

Yes/no Questions

- Yes/no questions include the following:

1) a) Are you going to eat the bagel?

   b) Do you drink whisky?

   c) Have you seen the spectrograph for the phoneme?

Yes/no Questions

- We saw that yes/no questions in English are formed by moving T to an empty [+Q] as shown in the tree below:

Yes/no questions

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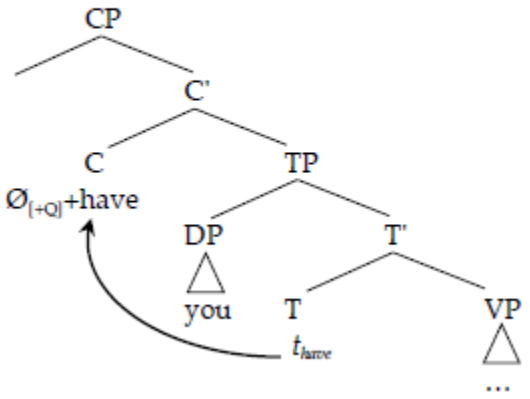
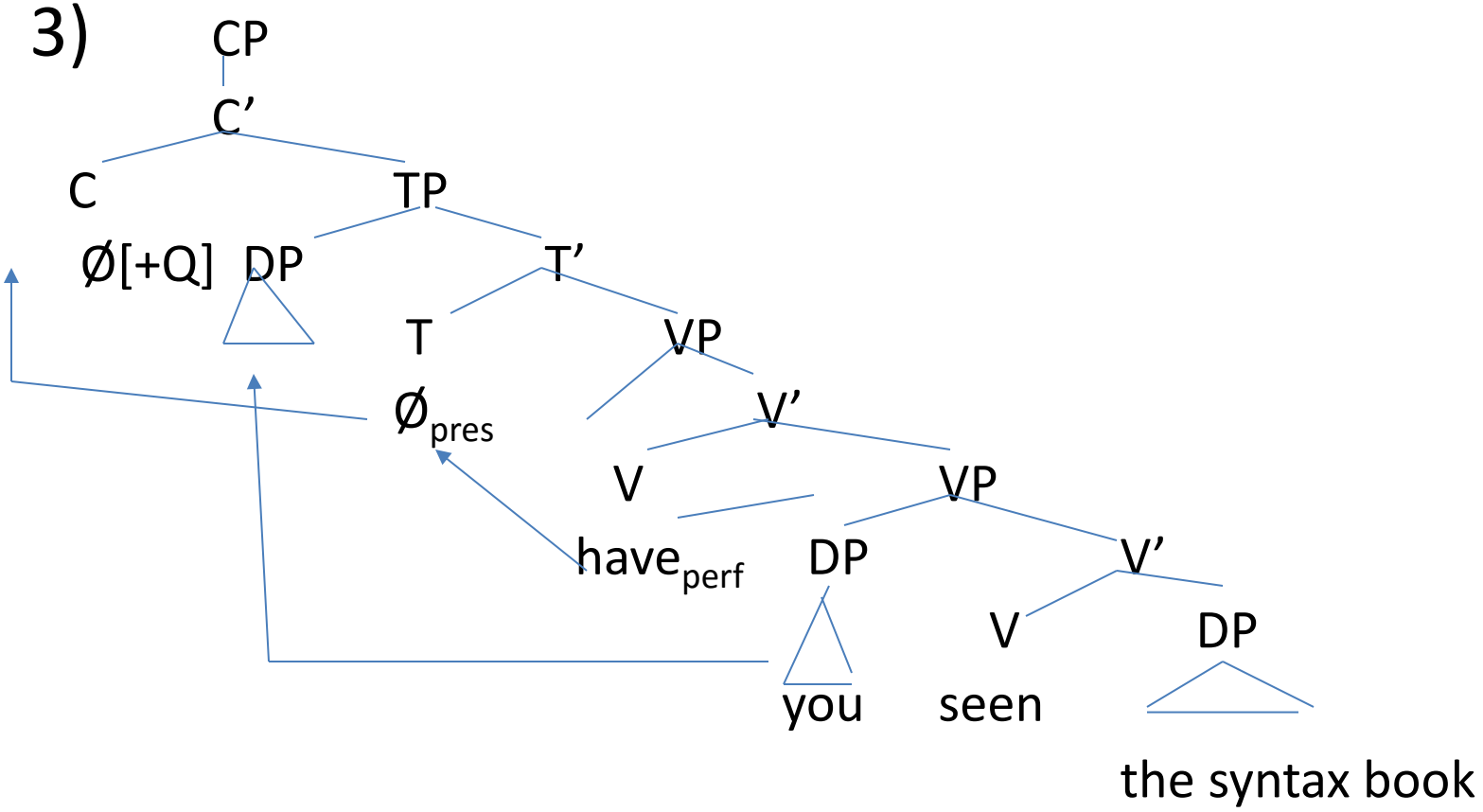


Yes/no questions

- The derivation of (1a) will be as follows.
- We will start with the D-structure in (2c):

3)


CP
C’
C
TP
Ø[+Q]
DP
T’
T
VP
Ø pres
V’
V
VP
have perf
DP
V’
V
DP
you
seen
the syntax book

Wh-questions

- Now, we will turn our attention to how wh-questions are formed.
- Consider the following statement and question pair:

3) a. Becky bought the syntax book.

   b. What did Becky buy?

- The verb *buy* takes two theta roles, an external agent and an internal theme.

- In (3a) *Becky* is the agent and *the syntax book* is the theme.
- In (3b) *Becky* is the agent and *what* is the theme.
- In the first sentence, the theme is the object of the verb, in the second sentence the theme is at the beginning of the clause.

- The situation becomes more complex when we look at sentences like (4):
- What did Stacy say Becky bought?
- In this sentence, *what* is still the theme of *bought*, yet it appears way up at the beginning of the main clause.
- This would appear to be a violation of the locality constraint on theta role assignment.

- The situation becomes murkier still when consider Case.
- Remember that accusative Case is assigned when the DP is the sister to V:
- 5) Matt [$_{VP}$ kissed her$_{ACC}$]

- But in wh-questions the accusative form *whom* is not a sister to V:
- 6) Whom_{ACC} did Matt kiss?
- So it appears as if not only are these wh-questions not in their theta positions, but they aren't in their Case positions either.
- This looks like another case of movement, but this time with different triggers.

- First, let’s consider the issue of where wh-phrases move to.
- One position we have had for a while but have not yet used is the specifier of CP.
- This is where wh-phrases move to:

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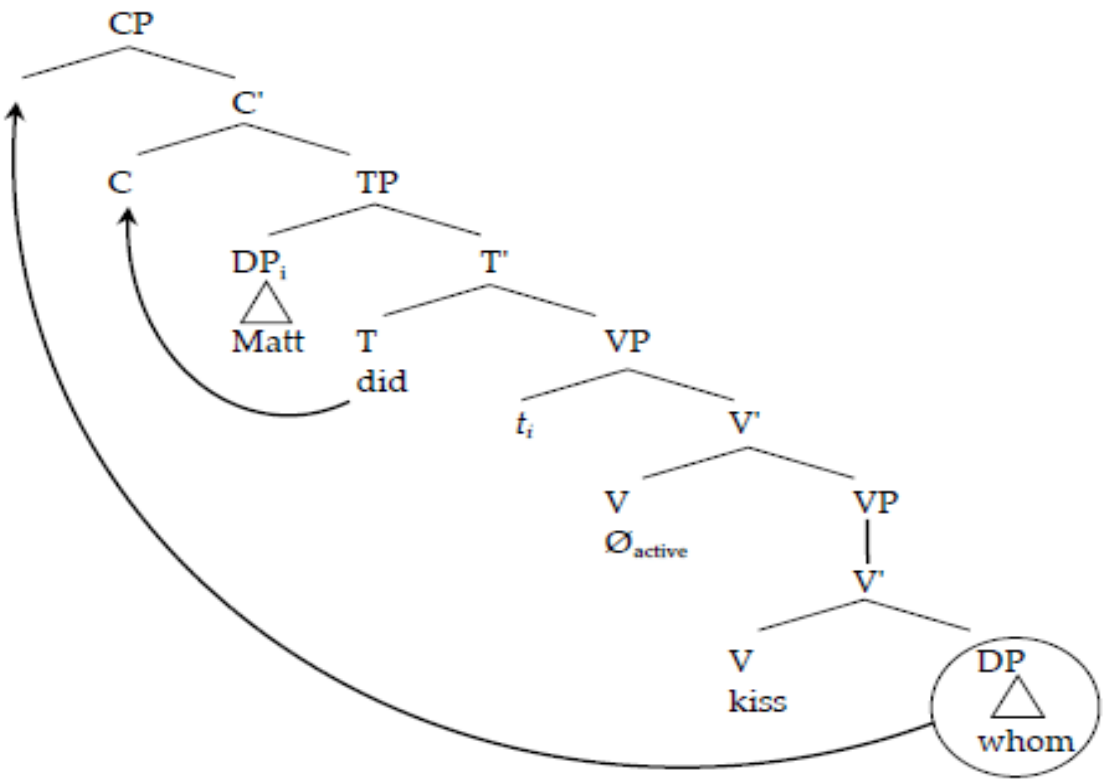

- Notice that what moves here is the entire phrase. This can be seen in complex wh-questions like the following:
- a. [To whom] did Michael give the book?
- b. [Which book] did Michael give to Millie?

- When you move an entire phrase, it cannot be an instance of head-to-head movement, so this is movement to a position other than a head, in this case the empty specifier of CP.
- The element that is moved can be a DP, a PP, an AdjP or and AdvP.

- The movement to specifier of CP accounts for another fact about word order of wh-questions: they also involve T→C movement in main clauses:
- 9) a. Who(m) are you meeting?
- b. *Who(m) you are meeting?

- The wh-phrase appears to the left of the auxiliary in C. This means that the wh-phrase must raise to a position higher than C.
- The only position available to us is the specifier of CP:

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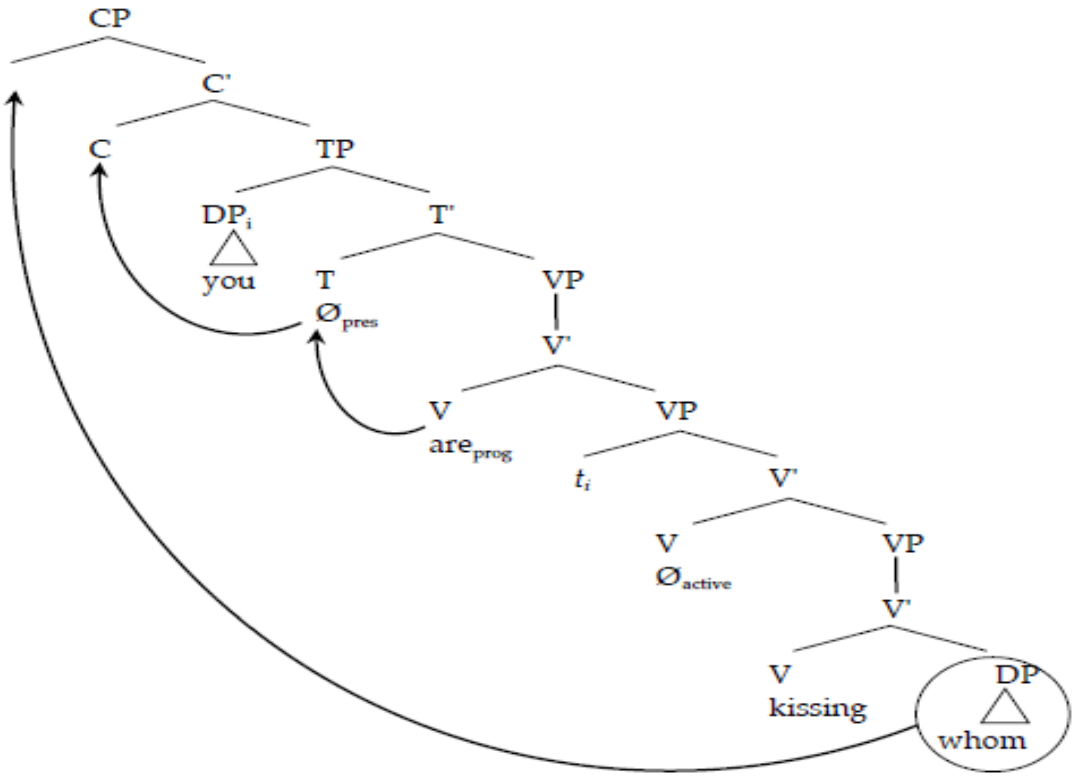

- The fact that wh-movement is to the specifier of CP position can also be seen in languages that allow both wh-phrase and an overt complementizer, such as Irish:

- 1 1) Cad a^{L} ta sa seomra

  What C-*wh* is in.the room

  “What is in the room?”

- In Irish, the wh-phrase *cad* “what” appears to the left of the complementizer *a*^{L}, supporting the idea that the wh-phrase is in specifier of CP, the only position available to it.

- In English the only thing allowed to appear in C is an inverted auxiliary; complementizers are not allowed:
- a. *I asked what that she kissed?
- b. *I asked what whether she kissed?

- This follows from the assumption that the only complementizer that is compatible with wh-movement in English is null.
- In other languages, the complementizer has phonological content (e.g. Irish *a*^{L} or Bavarian German *dass*).

- What then, is the possible triggers/motivations for wh-movement?
- **a) We have seen that T→C is triggered by the [+Q] feature that is part of the complementizer.**
- **b) DP movement was triggered by a Case feature.**
- We can do the same for wh-questions, by proposing a feature that triggers wh-movement.

- We shall call this feature **[+WH].** It resides in the C of a wh-sentence.
- In some languages like Irish, there are special forms of complementizers that represent these features:
- [-Q, -WH] *go*
- [+Q, -WH] *an*
- [+Q, +WH] *a*^{L}

- The *go* complementizer is used when the sentence is not a *yes/no* or *wh*-question.
- The *an* complementizer is found in *yes/no questions* and *a*^{L} in *Wh*-questions.
- The form of the complementizer is dependent upon the features it contains (McCloskey 1979).

- We will assume that **a wh-phrase moves to specifier of CP to be near the [+WH] feature.**
- Another way to put it is **that Wh-phrases move into the specifier of CP to check the wh-feature,** just like we moved DPs to the specifier of TP to check a [NOM] Case feature.

- 15) ***Wh-movement***
- **Move a wh-phrase to the specifier of CP to check a [+WH] feature in C.**

- Here is the derivation of a sentence like:
- 16) Who(m) did Matt kiss?

- The D-structure of this sentence will look like (17). *Matt* and *whom* both get their theta roles in these D-structure positions.
- *Who(m)* also gets its Case in this base position.

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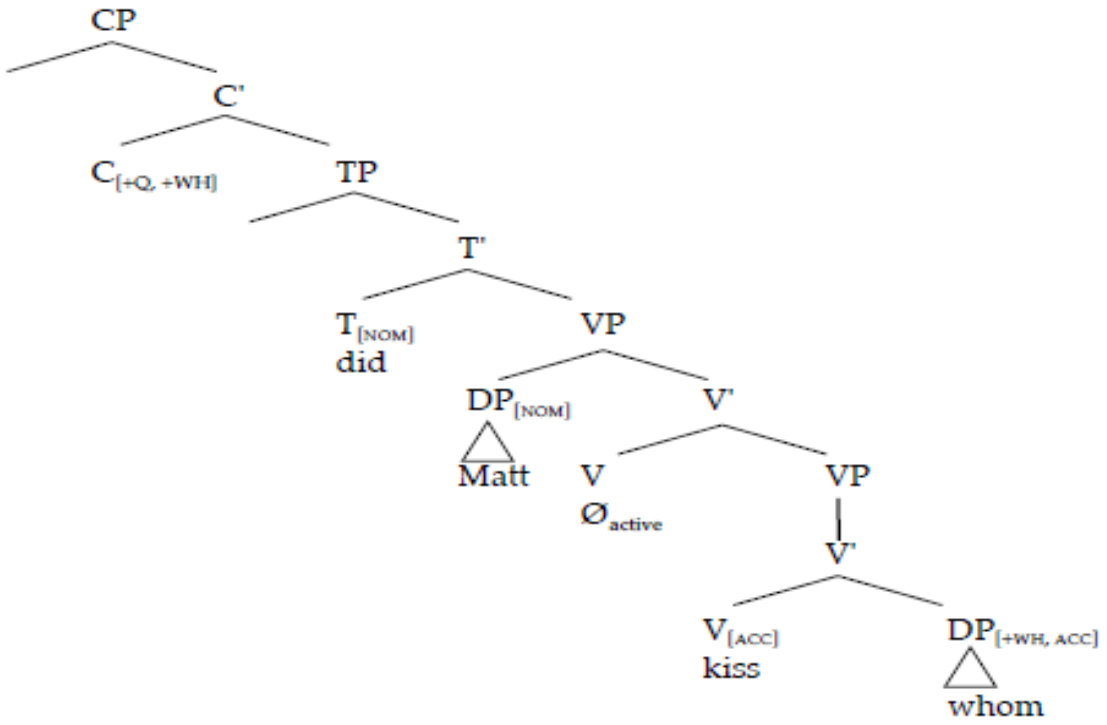

- Three other operations apply to derive the sentence:
- DP movement of *Matt* to the specifier of TP to check the [NOM] feature.
- Insertion of *do* to support the past tense, and
- T→C movement to fill the null [+Q] complementizer.

- Finally, Wh-movement applies to check the [+WH] feature as shown in (18):

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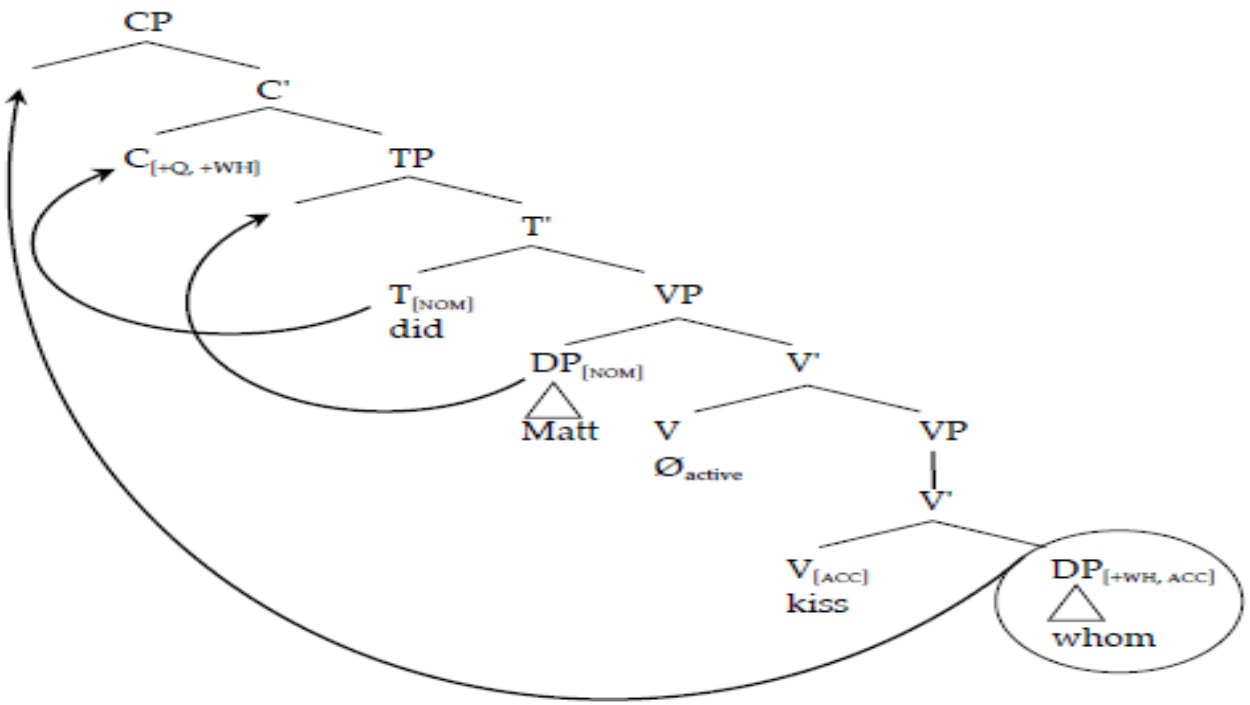

- Let’s consider a more complicated example:
- 19) Who was kissed?
- *Who* is the only argument in the sentence (a theme) and it starts out as a complement of the verb. But because this is a passive construction, the participle *kissed* cannot check accusative Case.
- So the DP has to move to the specifier of TP to check nominative Case as in (20):

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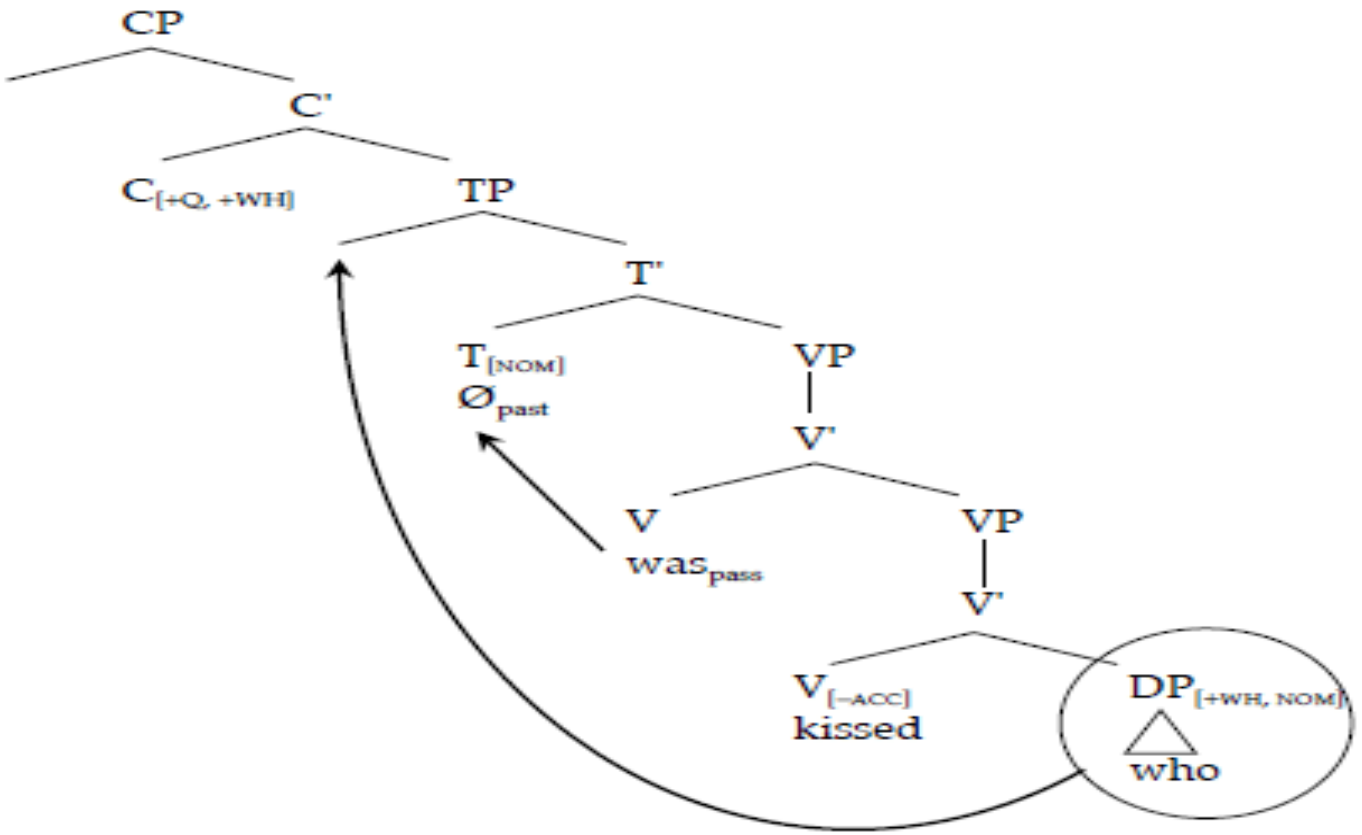

- Once the DP has checked its Case features, it can move on to the specifier of CP for the wh-feature checking as in ([A]) in (21).
- The auxiliary undergoes T→C movement ([B]) for the [+Q] feature:

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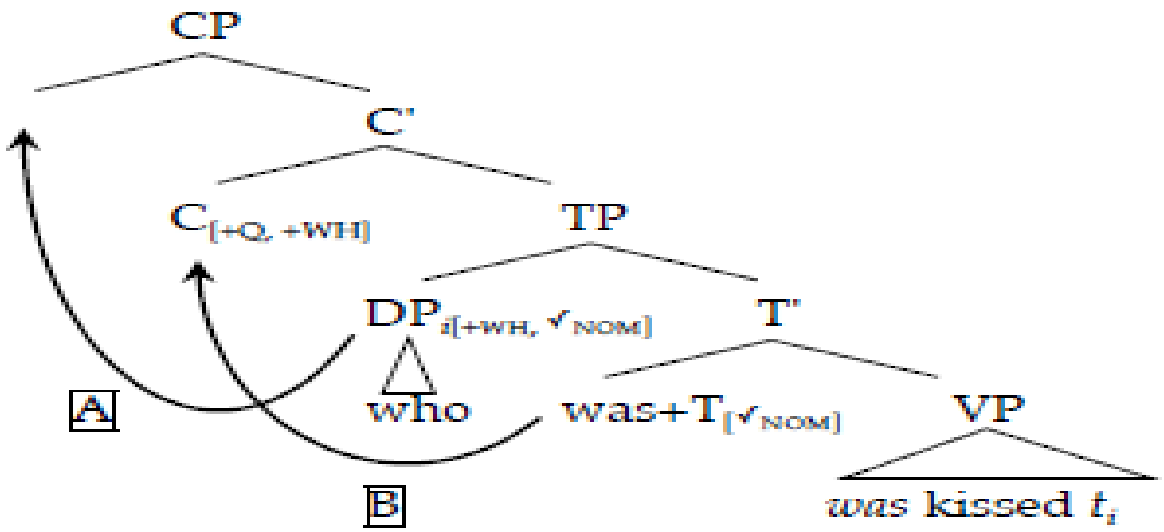

- These two movements are “vacuous” in that *who a*nd *was* are in the order *who was* … both before movements [A] and [B] and after them.
- However, the feature-checking requirements force us to claim that both movements occur anyway.

- Wh-movement can apply across clauses.
- Consider the following sentence:
- 22) Who(m) do you think Jim kissed?
- *Whom* is theta marked by the verb *kiss,* and gets its internal theme theta role in the object position of that verb.
- The present tense feature on the higher T requires *do*-support.

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- The [+Q] feature on the C triggers T→C movement.
- The DP *Jim* moves from specifier of the embedded VP to the specifier of the embedded TP for EPP and Case reasons.
- The DP *you* does the same in the higher clause.

- Finally, wh-movement takes place. The movement is done in two hops for reasons we shall discuss later.

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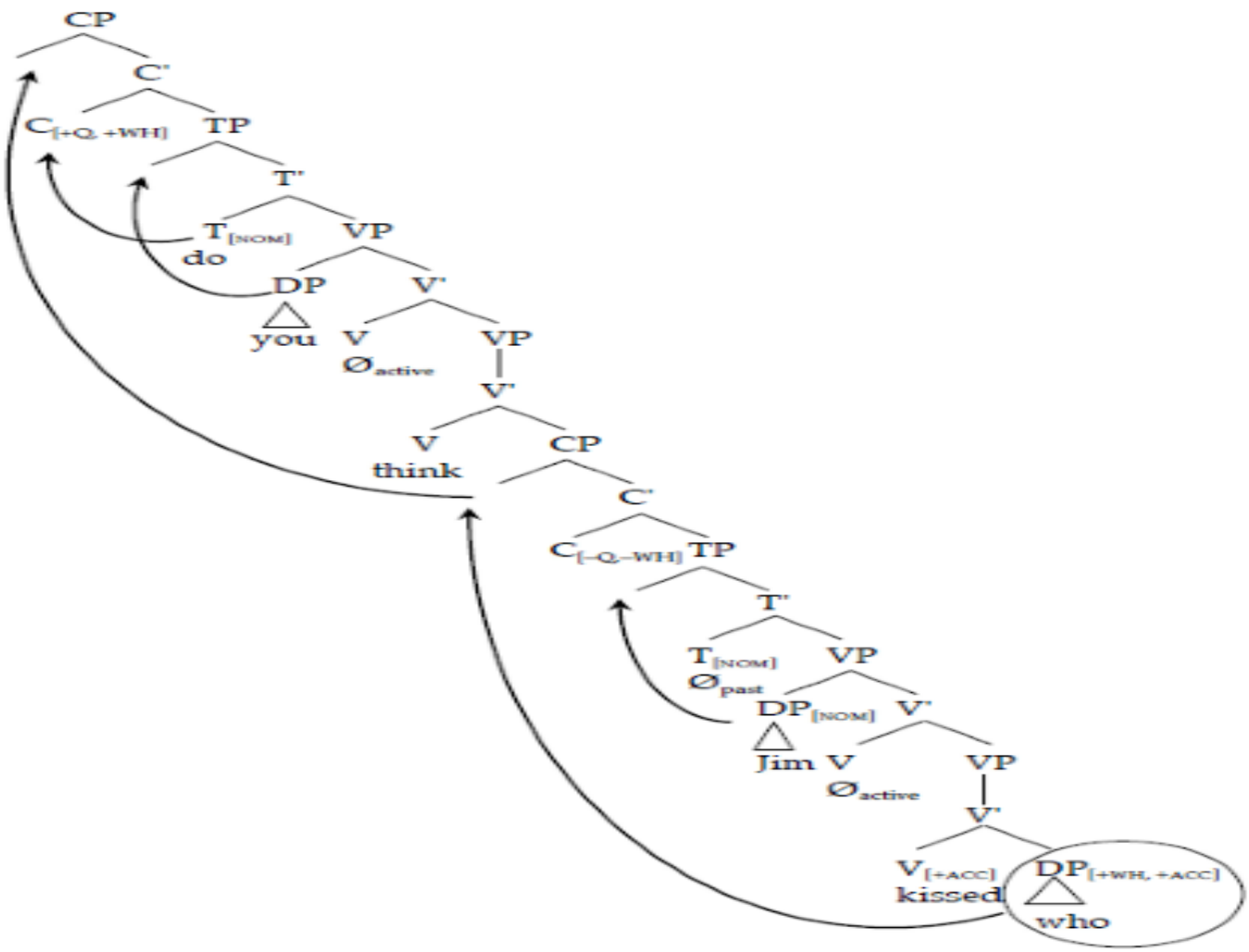

- Let us do a derivation in which the wh-phrase stops in the specifier position of the embedded CP rather than moving all the way up:
- 24) I wonder who Jim kissed.

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- The main difference between this sentence and (23) lies in the nature of the main verb. In (23) the verb was *think,* that subcategorizes for a CP headed by $C_{[-Q, -WH]}$ as in (25a).
- The verb *wonder* is different in that it subcategorizes for a C[-Q, +WH], that is, the embedded clause has wh-movement in it as in (25b):

25) a) *think*

Agent DP	Proposition CP [-Q, -WH]

b) *wonder*

Agent DP	Proposition CP [-Q, +WH]

- The tree for (24) is given in (26). It differs minimally from (24) only in the main verb and the feature structures of the two complementizers.
- The DPs all get their theta roles in these D-structure positions.
- *Who* gets its Case in its base position; the two agent DPs move to their respective specifiers of TP to get Case.

- Finally, there is movement of the wh-phrase.
- It only goes to the specifier of the embedded CP.
- This is because of the featural content of the Cs.
- The embedded CP is [+WH], the main clause CP is [-WH].

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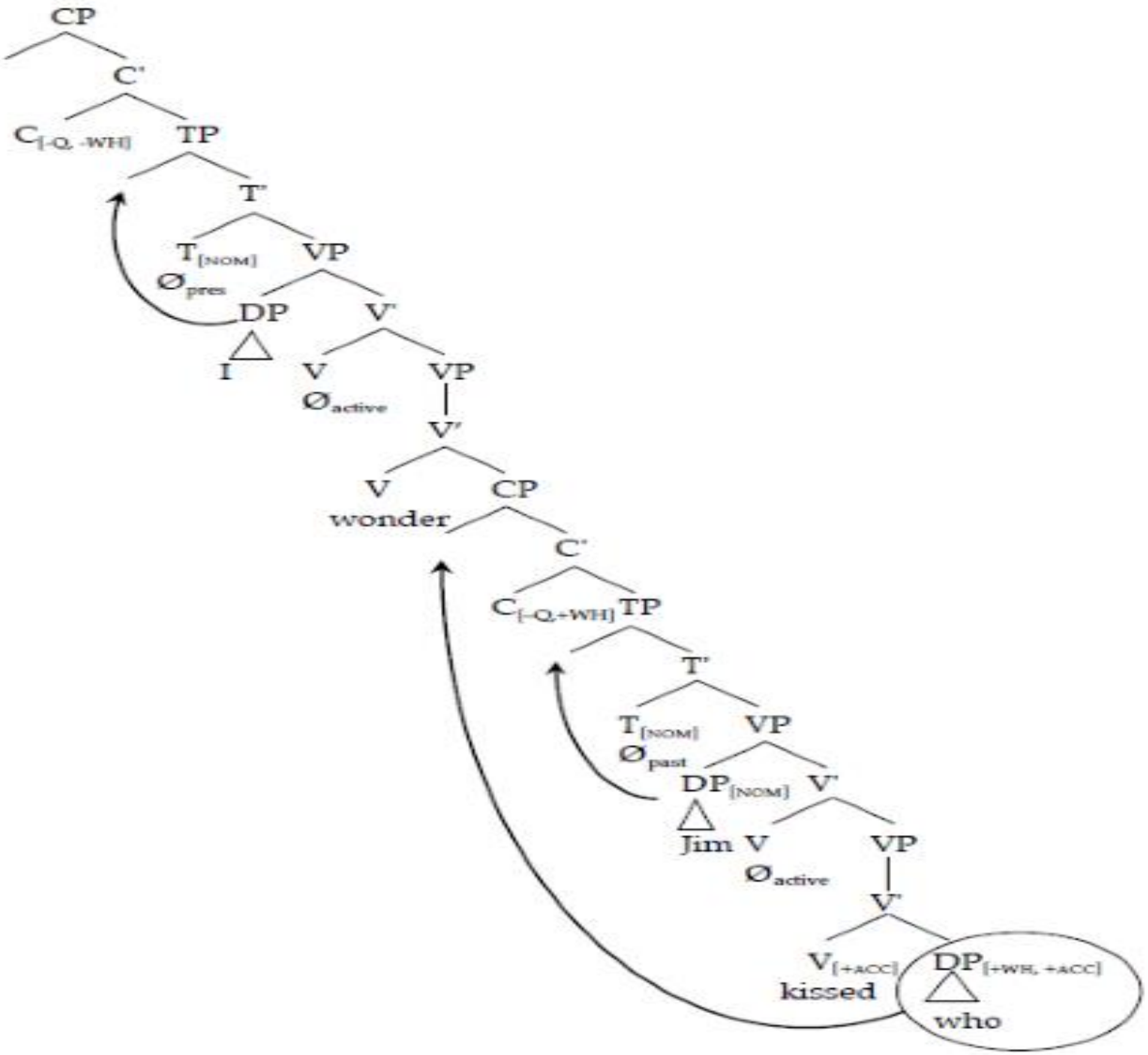

Relative Clauses

- Relative clauses are closely related to wh-questions because they involve a kind of wh-movement.
- In such constructions, a CP with a wh-element in it modifies a noun/DP.

- The tree for the DP like *several people who she kissed is* given (30):

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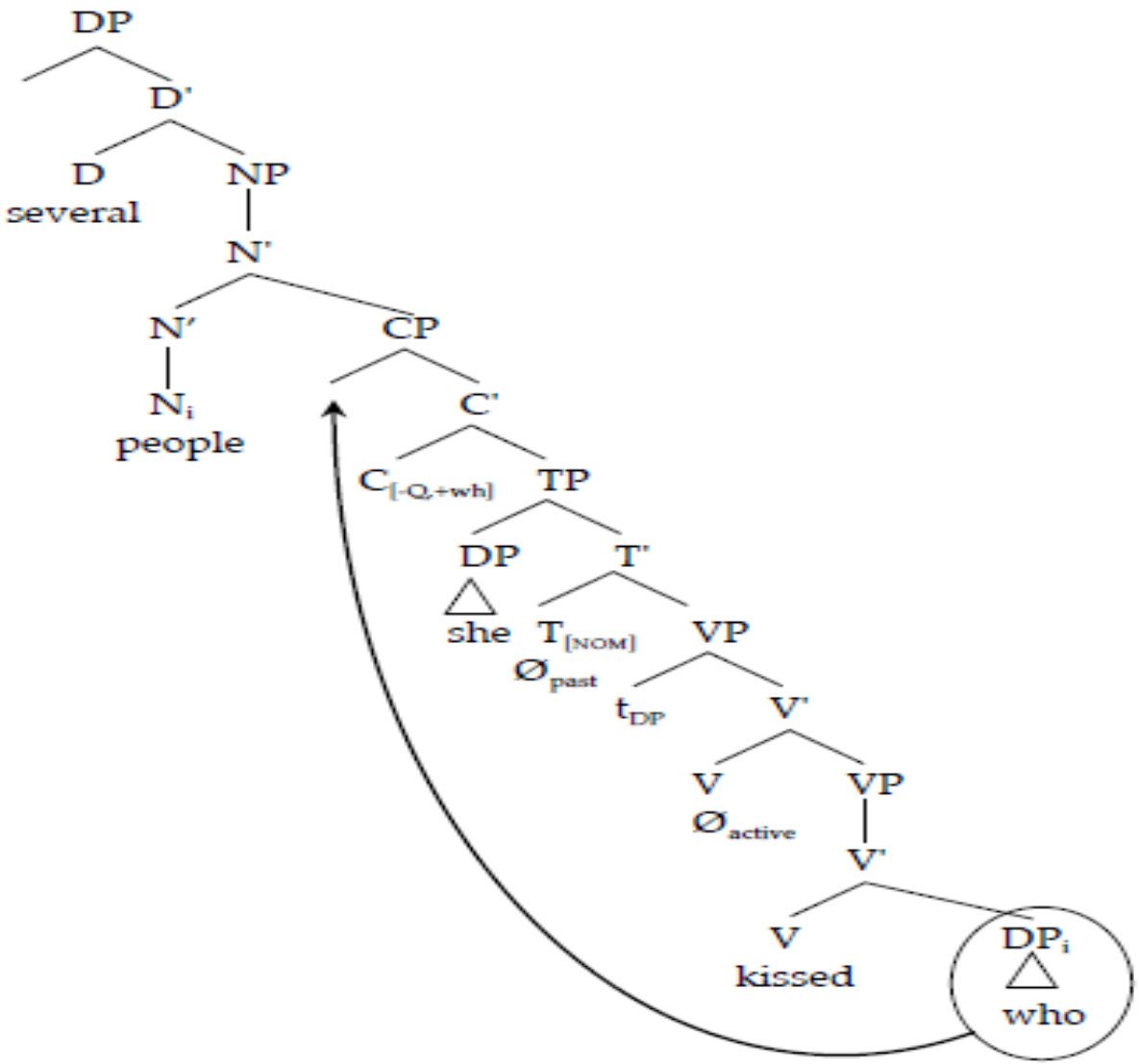
DP
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- The *wh*-phrase here doesn't serve to mark a question, but instead it links the head noun to the gap.

Islands

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- Wh-movement is not entirely free. There are constraints on what categories you can move out of (the categories that contain the wh-phrase).
- Compare the two sentences in (37)?

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37) a) What$_i$ did Bill claim [$_{CP}$ that he read t_i in the syntax book]?

b) *What$_i$ did Bill make [$_{DP}$ the claim [$_{CP}$ that he read t_i in the syntax book]]?

- In (37a), we see that wh-movement out of a complement clause is grammatical, but the movement out of a CP dominated by a DP is ungrammatical as in (37b).
- This phenomenon, first observed by Ross (1967), has come to be known as the ***complex DP island*** phenomenon.

- The word ***island*** here is meant to be iconic.
- Island are places you can't get out of (without special means like a boat or a plane).
- Islands in syntax are the same. You cannot move out of an island, but you can move around within it.
- DPs are islands.

38) *What$_i$ did Bill make

[$_{DP}$ the claim [$_{CP}$ that he read t$_i$ in the syntax book]]]?

Complex DP Island

- If we try to move a wh-element from a relative clause as in (39), we get the following result:
- 39) :

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39) *[Which cake]$_i$ did you see [$_{DP}$ the man [$_{CP}$ who baked t_i]] ?

- We can characterize the phenomenon with the following descriptive statement:

40) ***The Complex DP Constraint:***

*wh_i [… [DP … t_i …] …]

- Another important island is the ***wh-island***.
- It is possible to move a wh-phrase to the specifier of an embedded CP, if the C is [+WH] as in (41):

41) I wonder [$_{CP}$ what$_i$ C$_{[-Q, +WH]}$ [$_{TP}$ John bought t$_i$ with the $20 bill]].

- It is also possible to move a wh-phrase to the specifier of a main CP as in (42):
- 42) $[_{CP}$ How$_k$ do $[_{TP}$ you wonder $[_{CP}$ what$_i$ $[_{TP}$ John bought t_i t_k]]]]?

- However, when we move one wh-phrase to the embedded specifier and the other to the main CP specifier, we get an ungrammatical result:
- 43) *[$_{CP}$ How$_k$ do [$_{TP}$ you wonder [$_{CP}$ what$_i$ [$_{TP}$ John bought t_i t_k]]]]?

- This is not a constraint on having two wh-phrases in a sentence. Two wh-phrases are perfectly acceptable in other contexts as in (44):
- a. How do you think John bought what?
- b. I wonder what John bought how?

- It seems that the constraint is on moving both of them.
- Movement of either the subject (45b) or the object (45a) to the specifiers of the CPs is acceptable:

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45) a) I wonder [$_{CP}$ what$_i$ [$_{TP}$ John kissed t_i]].

b) [$_{CP}$ Who$_k$ did [$_{TP}$ you think [$_{TP}$ t_k kissed the gorilla]]]?

- But movement of both results a terrible ungrammaticality:

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46) $^{*}[_{CP1}$ Who$_k$ did $[_{TP}$ you wonder $[_{CP2}$ what$_i$ $[_{TP}$ t_k kissed t_i]]]]?

- The intuition underlying this account is that once you move a wh-phrase to the specifier of a CP, then that CP becomes an island for further extraction:

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47) I asked [$_{CP}$ what$_i$ John kissed t_i]. *wh*-island

- Movement out of this island result in ungrammaticality.
- We can express this with the following descriptive statement:
- 48) ***Wh-island Constraint***
- *wh_i [CP wh_k [… t_i …] …] …]

- This constraint simply says that you cannot do wh-movement (in the schematic in (48) this is represented by the wh_i and the coindexed t_i) and skip around a CP that has another wh-phrase (wh_k) in its specifier.

- Subjects are another kind of island. We cannot move a wh-phrase from CP that is in subject position as shown in (49b):

49)a. [TP [CP that the police would arrest <u>several rioters</u>] was a certainty].

b. *who$_i$ was [$_{TP}$ [$_{CP}$ that the police would arrest t_i] t_{was} a certainty]?

- This called the ***subject condition.***

50) ***The Subject Condition***

*whi … [TP [CP … ti …] T …]

- Another island constraint is the one that prohibits the movement of a wh-phrase from a conjoined structure.
- Consider the examples in (51):

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51) a) I liked Mary and John.

b) *Who$_i$ did you like Mary and t_i ?

c) *Who$_i$ did you like t_i and John?

- (51b,c) show that if we try to wh-move either of the conjoined DPs, the result is ungrammatical.
- Again if we try to do wh-movement from within another structure that is conjoined, such as a conjoined VP, the result will be ungrammatical as in *52b,c):

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52) a) I [$_{VP}$ ate some popcorn] and [$_{VP}$ drank some soda].

b) *What$_i$ did you eat t_i and drink some soda?

c) *What$_i$ did you eat some popcorn and drink t_i ?

- The island constraint that governs these situations is called the ***Coordinate Structure Constraint.***

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Coordinate Structure Constraint:

53) *Coordinate Structure Constraint* :

*$\mathrm{wh_i}$ … [XP [XP … t_i …] conj [XP …]] …

or *$\mathrm{wh_i}$ … [XP [XP …] conj [XP … t_i …]] …

or *$\mathrm{wh_i}$ … [XP [XP …] conj t_i] …

or *$\mathrm{wh_i}$ … [XP t_i conj [XP …]] …

- We have considered four environments out of which wh-movement cannot occur:
- a) Complex DPs
- b) Subjects
- c) CPs with wh-words in their specifier
- d) Conjuncts in coordinated structures.

Conclusion

In this lecture, we have looked at wh-movement.

It is a process that targets wh-phrases and moves them to the specifier of CPs.

This movement is triggered by the presence of a [+WH] feature in C.

Wh-movement of a DP is always from a Case position to the specifier of CP.

Acknowledgement:

These slides have been prepared from:

Carnie, Andrew. 2013. *Syntax: A Generative Introduction*. 3rd edition. Oxford, UK & Cambridge, USA: Wiley-Blackwell Publishing. Chapter 12.