CAS LX 522
Syntax I

Week 11a. *Wh*-movement

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Reminder: Yes-no questions

- Recall that we motivated head-movement a couple of weeks ago in part by looking at the relation between:
  - Pat will eat a sandwich.
  - Will Pat eat a sandwich?
- The idea was that *Pat* in both sentences is in SpecIP where it belongs, but in yes-no questions the I moves higher, to C.
  - Will$_i$ [$_{IP}$ Pat t_i [eat a sandwich]]?

Wh-questions

- *Wh*-questions are "information-seeking" questions, involving a *wh*-word.
  - Who, what, when, where, why, HoW, which

- *What will they bake?*

- Observe that *what* is basically the object of *bake*. And look how far away it is from *bake*, the thing that assigns it a θ-role.
  - Cf also. "echo questions": *I drank WHAT?*
- Also, notice that I has moved to C here too (like it does in yes-no questions).
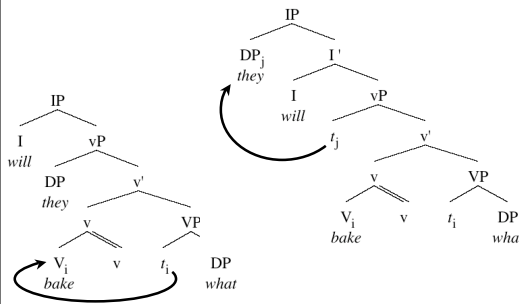

What will they bake?

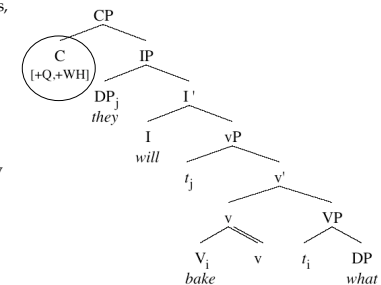- So, we start out with essentially the structure of *They will bake what* as shown here.
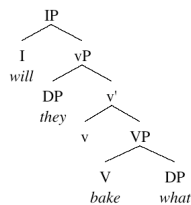
- *What* is a DP, but it's a *wh*-DP, a [+WH] DP.

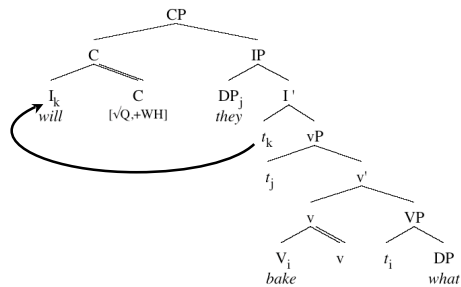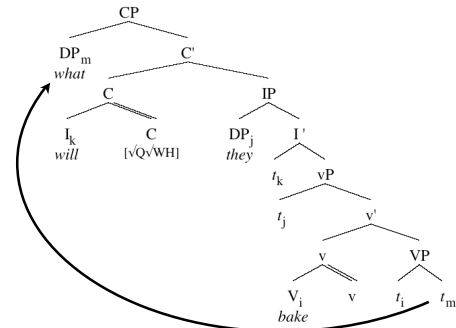## What will they bake?

What will they bake?

- For *wh*-questions, we have an additional item on our workbench, a [+Q,+WH] C.

- Two features it needs to check: [+Q], checked by moving I to C; [+WH] checked by moving a [+WH] DP to SpecCP.

What will they bake?

CP
C IP
I_k *will* C [√Q,+WH] DP_j *they* I'
t_k vP
t_j v'
v VP
V_i *bake* v t_i DP *what*

What will they bake?

CP
DP_m *what* C'
C IP
I_k *will* C [√Q√WH] DP_j *they* I'
t_k vP
t_j v'
v VP
V_i *bake* v t_i t_m

A-movement vs. Operator movement

- *Wh*-movement of a DP into SpecCP is sometimes called (a kind of) *Operator movement*.
- Although it is movement of a DP, this isn't the same kind of movement as the other DP-movement ("A-movement") we've seen.

- *A-movement*: Movement to SpecIP (subjects, passive objects, subject raising).
- Operator Movement: Movement to SpecCP and other things we'll talk about later. A.k.a. "*A'-movement*"
  - "A" is for "Argument"—that's good enough for me.
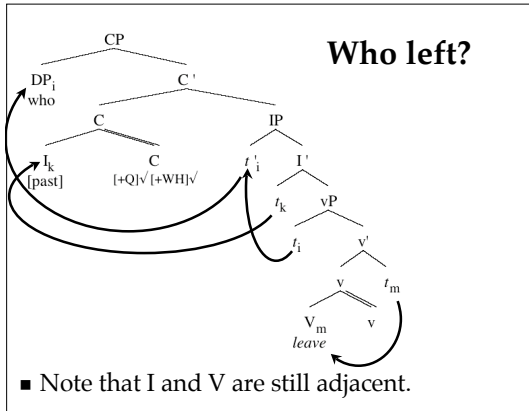
A-movement vs. Operator movement

- Case: *Whom* is the accusative case version of *who*, although it's not in common use colloquially.
  - Whom did you meet?

- So: *Who / whom / what*, etc. are DPs, they're just special DPs, [+wh] DPs. And DPs need (and, in the case of *who / whom*, show) case.
- Objects generally get case from V. So, we move object *wh*-words *away* from their Case location.

- A-movement *ends* in a Case location.
- Operator movement *starts* in a Case location.

Subject *wh*-questions

- Object *wh*-questions are pretty clear—we see I move to C and the *wh*-word move to SpecCP:
  - What did John buy?
  - What will Mary eat?
- But subject *wh*-questions don't show inversion:
  - Who left?
  - Who will eat the sandwich?
- Compare:
  - John left.
  - John will eat the sandwich.
- So does I not move to C? Does *who* not move to SpecCP?

Subject *wh*-questions

- Simpler: everything works the same way in <u>all</u> *wh*-questions.
  - [+Q] C needs I to move up to it.
  - [+WH] C needs a *wh*-element in its specifier.
- Turns out that this predicts the subject *wh*-question pattern just as well…
  - **Alert!** Radford (section 7.7) follows the opposite path, supposing that subject *wh*-questions are different from object *wh*-questions. His is not a standard assumption (though it has been entertained periodically), and his justification doesn't apply to the way we're viewing *do*-support.

Who left?

CP
DP$_i$ / who
C'
C
I$_k$ [past]
C [+Q]√ [+WH]√
IP
t'_i
I'
t_k
vP
t_i
v'
v
V$_m$ *leave*
v
t_m

- Note that I and V are still adjacent.

Who left?

- So, the difference between subject and object *wh*-questions is that nothing gets in the way between I and the verb in a subject *wh*-question:

- Who$_i$ C+I$_j$ [$_{IP}$ t'_i t_j [$_{vP}$ t_i leave]]?

- Who$_i$ C+I$_j$ [$_{IP}$ **John** t_j [$_{vP}$ meet t_i]]?

Embedded questions

- Just like with statement CPs, question CPs can be embedded (under certain verbs).
  - I wonder who left.
    - Cf. I heard that John left. Bill said John left.
  - I asked who left.
  - I know who left.
  - I know what John will buy.
  - I wonder if John will leave.
- Notice, though: It's not:
  - *I know what will John buy.
- For some reason: No I→C movement in embedded clauses (English-specific)… only in matrix clauses do you get I→C for [+Q] C.

Long-distance *wh*-movement

- You can ask a question about something in an embedded clause too…

- I said [that John ate a sandwich].
- What$_i$ did I say [that John ate t_i]?
- Mary wondered [what$_i$ I said [that John ate t_i]].
  - Note that *what* gets its θ-role from *ate*.
  - Note that the *main clause* C is the question ([+Q, +WH])—the *embedded clause* C here is a [-Q] CP.
  - *Wh*-movement the escapes its clause like this is sometimes called "long-distance *wh*-movement".

Islands

- There are certain things that seem to "trap" *wh*-elements, though.
- What$_i$ did John claim [that Mary bought t_i]?

- John believes [$_{DP}$ the claim [that Mary bought cheese]].
- *What$_i$ does John believe [$_{DP}$ the claim [that Mary bought t_i]]?
  - *The claim that…* is a DP. *What* starts *inside*.

CNP Islands

- In general, it is not possible to extract a *wh*-phrase out of a DP, though you can extract out of an embedded clause that isn't inside a DP.

- These are called **Complex NP islands**.

3

You know what I blame this on the breakdown of?

- I blame this on
  [$_{DP}$ the breakdown of *society*].

- Questioning *society* requires extraction of a *wh*-phrase from inside a DP (*the breakdown of society*).

  - *What he was stirring was up trouble* has a different problem; *what* is being identified with *up trouble*, which isn't a constituent. We'll come back to verbs with particles like *stir up* next week.

Bounding nodes

- What makes islands different? What makes them "opaque" like this?

- The idea is essentially that (despite appearances) *wh*-movement has to be over relatively short distances.
- Islands block *wh*-movement because they force *wh*-movement to have to go "too far."

Islands

- Another thing that seems to "trap" a *wh*-phrase is another *wh*-question. (Called **wh-islands**)

- Who bought a cheeseburger at Burger King?

- John wondered [who bought *a cheeseburger* at BK].

- *What$_i$ did John wonder [who bought t_i at BK]?

- *Who$_i$ did John wonder [what$_j$ t_i bought t_j at BK]?

Wh-islands

- So a *wh*-question is an island:
  - *What did John wonder [who bought at BK]?

- But nevertheless, long-distance *wh*-movement *is* possible.
  - What$_i$ did John say [that Mary bought t_i at BK]?

  - What$_i$ did John say [that Mary heard [that Sue said [that Bill bought t_i at BK]]]?

- How can we resolve the idea that *wh*-movement must be relatively short with the observation that *wh*-movement can escape any number of clauses?

Successive cyclic *wh*-movement

- Suppose that when a *wh*-word moves, it has to move to the **closest** SpecCP. It can't *skip* a SpecCP.
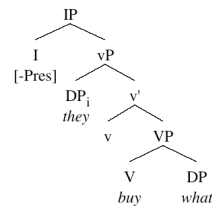
What did you hear that they bought?

Successive cyclic *wh*-movement
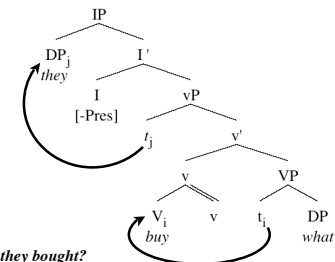
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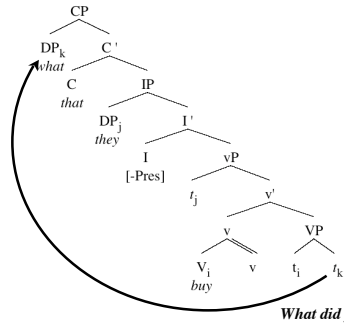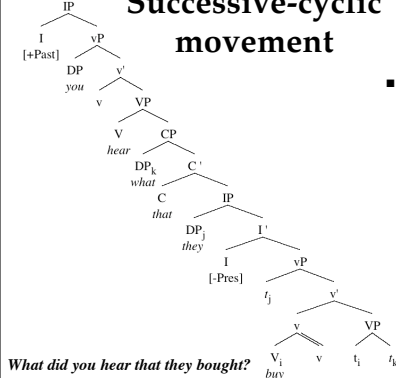
Slide 1: Successive cyclic *wh*-movement

- The *wh*-phrase moves first to the intermediate SpecCP.

CP, DP$_k$ *what*, C', C *that*, IP, DP$_j$ *they*, I', I [-Pres], vP, t_j, v', v, VP, V$_i$ *buy*, v, t_i, t_k

What did you hear that they bought?

Slide 2: Successive-cyclic movement

- Then, the *wh*-phrase moves from the intermediate SpecCP to the main clause SpecCP.

IP, I [+Past], vP, DP *you*, v', v, VP, V *hear*, CP, DP$_k$ *what*, C', C *that*, IP, DP$_j$ *they*, I', I [-Pres], vP, t_j, v', v, VP, V$_i$ *buy*, v, t_i, t_k

What did you hear that they bought?

Slide 3: Successive-cyclic movement

- Then, the *wh*-phrase moves from the intermediate SpecCP to the main clause SpecCP.

CP, C [+Q,+WH], IP, DP$_n$ *you*, I', I [+Past], vP, t_n, v', v, VP, V$_m$ *hear*, v, t_m, CP, DP$_k$ *what*, C', C *that*, IP, DP$_j$ *they*, I', I [-Pres], vP, t_j, v', v, VP, V$_i$ *buy*, v, t_i, t_k
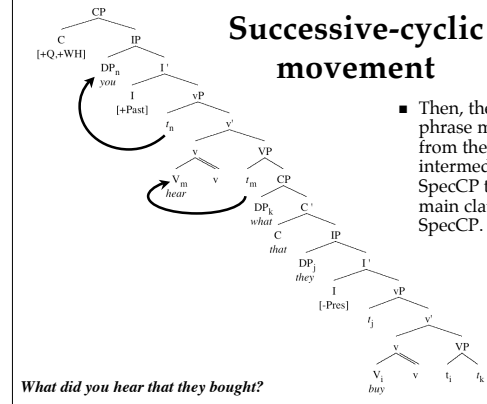
What did you hear that they bought?

Slide 4: Successive-cyclic movement

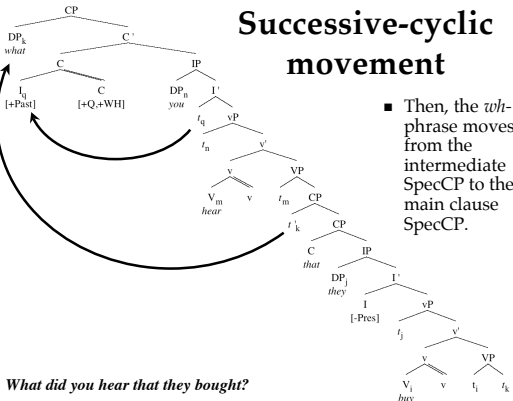- Then, the *wh*-phrase moves from the intermediate SpecCP to the main clause SpecCP.

CP, DP$_k$ *what*, C', C, C I$_q$ [+Past], C [+Q,+WH], IP, DP$_n$ *you*, I', t_q, vP, t_n, v', v, VP, V$_m$ *hear*, v, t_m, CP, t'_k, CP, C *that*, IP, DP$_j$ *they*, I', I [-Pres], vP, t_j, v', v, VP, V$_i$ *buy*, v, t_i, t_k

What did you hear that they bought?

Slide 5: To recap

- What did you hear that they bought?

- C$_{[+Q]}$ you I hear [that they bought what]

- C$_{[+Q]}$ you I hear [what$_i$ that they bought t_i]

- what$_i$ C$_{[+Q]}$+I$_j$ you t_j hear [t_i' that they bought t_i]

Slide 6: Successive cyclic?

- McCloskey (2000). Quantifier float and *wh*-movement in an Irish English. *Linguistic Inquiry* 31(1):57-84. Cf. *exactly*.
- What all did you get for Christmas?
- What did you get all for Christmas?
- All the students have left.
- The students have all left.
- I don't remember [$_{CP}$ what I said all].
- What all did he say (that) he wanted?
- What did he say (that) he wanted all?
- What did he say all (that) he wanted?

Panel 1 (top-left):

Wh-
islands

- Now, suppose we have an embedded *wh*-question.
  - You wonder what they bought.
- And try to question the subject.

Panel 2 (top-middle):

Wh-
islands

- Now, suppose we have an embedded *wh*-question.
  - You wonder what they bought.
- And try to question the subject.

Panel 3 (top-right):

Wh-
islands

- Too far—
- *Wh*-movement can't go past the middle CP without "stopping off"

Panel 4 (bottom-left):

Wh-
islands

- **Subjacency** Operator movement cannot cross more than one **bounding node**.
- **IP** is a bounding node (in English).

Panel 5 (bottom-middle):

CNP-islands

- We can treat complex NP islands in pretty much the same way—what makes them ungrammatical is trying to move past more than one bounding node.

- *What_i did Mary believe [_DP the claim that John bought t_i]?

Panel 6 (bottom-right):

CNP?

CP — DP$_m$ *what* — C' — C [+Q] [+WH] — IP — DP$_j$ *he* — I' — I [+Past] — vP — t_j — v' — v+V$_m$ *believe* — VP — t_m — DP — D *the* — NP — N *claim* — CP — t'_n — C' — C *that* — IP — DP$_i$ *you* — I' — I [+Past] — vP — t_i — v' — v+V$_k$ *buy* — VP — t_k — t_n

DP is also a bounding node.