LIN7209 – Syntax

Diagnosing Movement

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Plan for today

- Overview of some movement dependencies.
- Diagnostics for phrasal movement, drawing on Pesetsky (2013).
- Restrictions on Movement
- Bonus: VP-Internal Subject Hypothesis

Movement dependencies

Wh-movement

- In English “genuine” questions, *wh*-phrases appear at the front of the sentence.

(1) a. Jo thought that Sachou had caught **those bugs**.

b. **Which bugs** did Jo think that Sachou had caught?

(2) a. Jo said **an hour ago** that Al left.

b. **When** did Jo say that Al left?

- NB: not a generality. Some languages like Mandarin have their *wh* “*in situ*”.
- To complicate things even more, some languages like French exhibit *optionality*, with slight interpretive differences between the fronted and *in situ* variants.
- Today we’ll focus on English-like languages with fronted *wh* phrases.

Topicalization

- A constituent gets emphasized by fronting.

(3) a. Jo has never read **these books**.

b. **These books**, Jo has never read.

(4) a. Taro-ga Jiro-**o** oikaketa.
Taro.Nom Jiro.Acc chase.
'Taro chased Jiro.'

b. Jiro-**wa** Taro-ga oikaketa.
Jiro.Top Taro.Nom chase.
'It's Jiro that Taro chased.'

The causative/inchoative alternation

- Certain verbs can be both transitive (with a "*cause-to*" reading), and intransitive (with a change-of-state reading).

(5) a. Sachou broke **the smartphone**.

b. **The smartphone** broke.

- Inchoative forms may look like unaccusative structures, but they're not exactly the same.

(6) a. Sachou **a** cassé le téléphone.
Sachou has broken the phone.

b. Le téléphone **a/s'est** cassé.
The phone has/SE-is broken.

- This kind of dependency is more local than *wh*-movement.

Heavy NP shift

- A “heavy” NP gets “shifted” to the end of the sentence, against canonical word order.

(7) a. I saw **that movie about the decline of the Roman empire** yesterday.

b. I saw yesterday **that movie about the decline of the Roman empire**.

(8) a. Jo gave to Al **a very interesting book about the syntax and semantics of tense and aspect**.

b. Jo gave **a very interesting book about the syntax and semantics of tense and aspect** to Al.

- Again, local kind of movement.

Subject movement; VP-internal subjects (Koopman & Sportiche, 1991)

- English sentences must have an overt subject; but sometimes it can be **expletive** (=contentless)...and the "real" subject is below T!

(9) a. **Some people** are sleeping in the garden.

b. **There** are some people sleeping in the garden.

- **Idiom chunks** (which should form constituents at some point of the derivation) can also appear to be "split" by T...

(10) The shit [$_T$ **must have**] hit the fan.
Subject of idiom — VP of idiom

- Suggests the subject originates below T and subsequently moves to Spec-TP! **Where exactly is the subject then?** Spec-VP?

*v*P internal subjects (Kratzer, 1996)

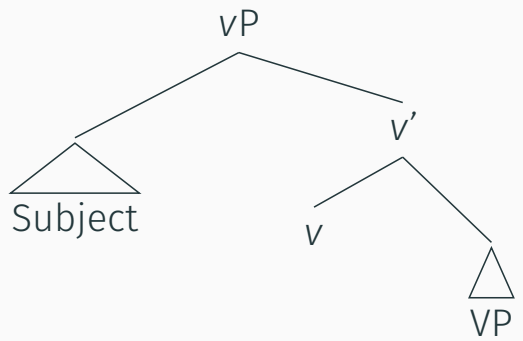
- If a given constituent is a true argument of a head, then the head may be sensitive to its semantic characteristics.
- The interpretation of V is often sensitive to the semantic characteristic of its object, but **never to those of its subject!**

(11) a. throw a baseball.

b. throw support behind a candidate.

c. throw a party.

- This implies subjects are not true arguments of the verb, and motivates a structure whereby subjects are not specifiers of V, but instead specifiers of a higher **functional head** *v*.



Raising

- Arguments similar to subject movement: expletives (*it*), and idiom chunks.

(12) a. **The world** seems to be round.

b. **It** seems that the world is round.

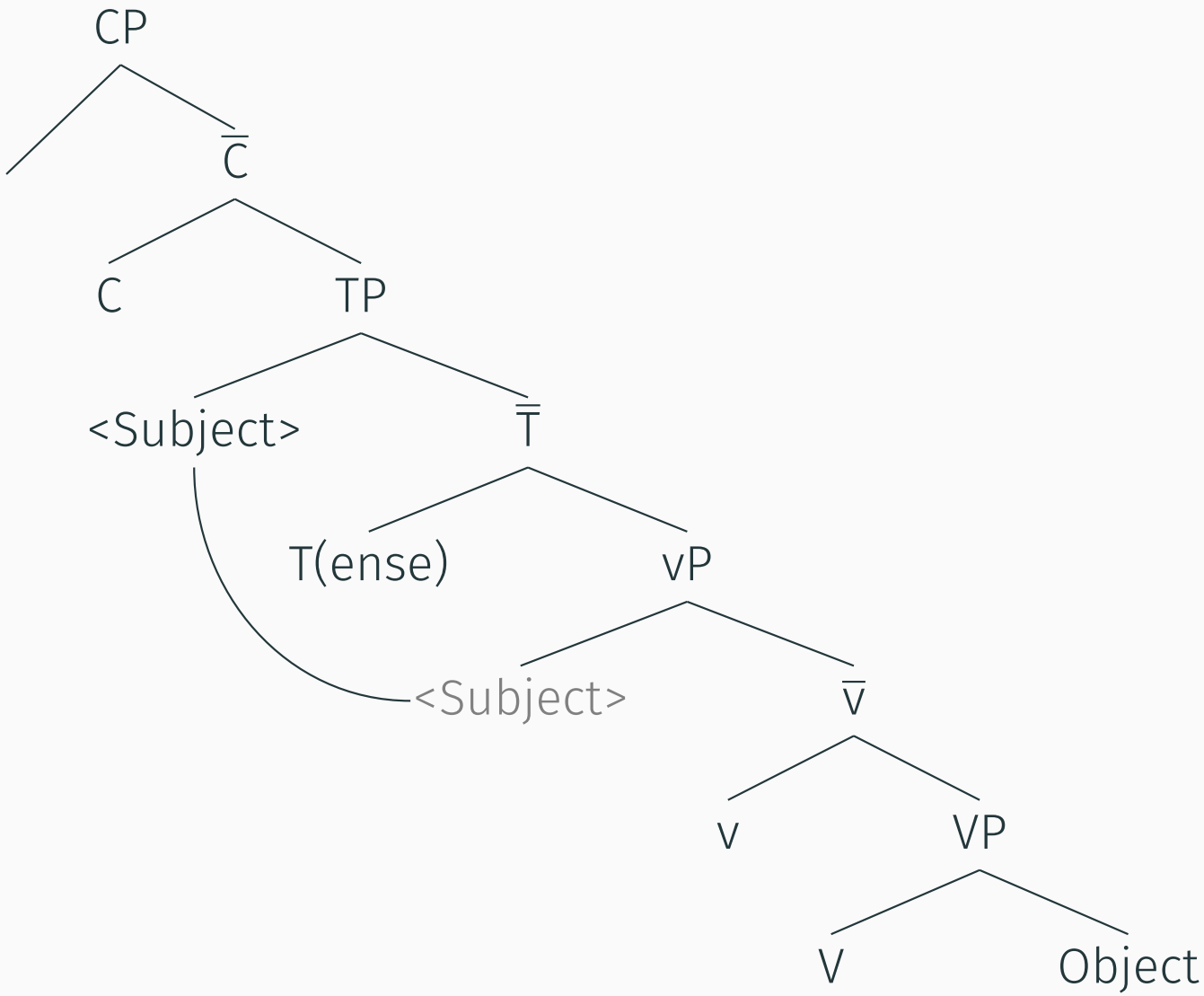
(13) The shit (Subject of idiom) seems to have hit the fan (VP of idiom).

- Suggests the subject of a raising construction originates in the embedded clause and subsequently moves to Spec-TP!

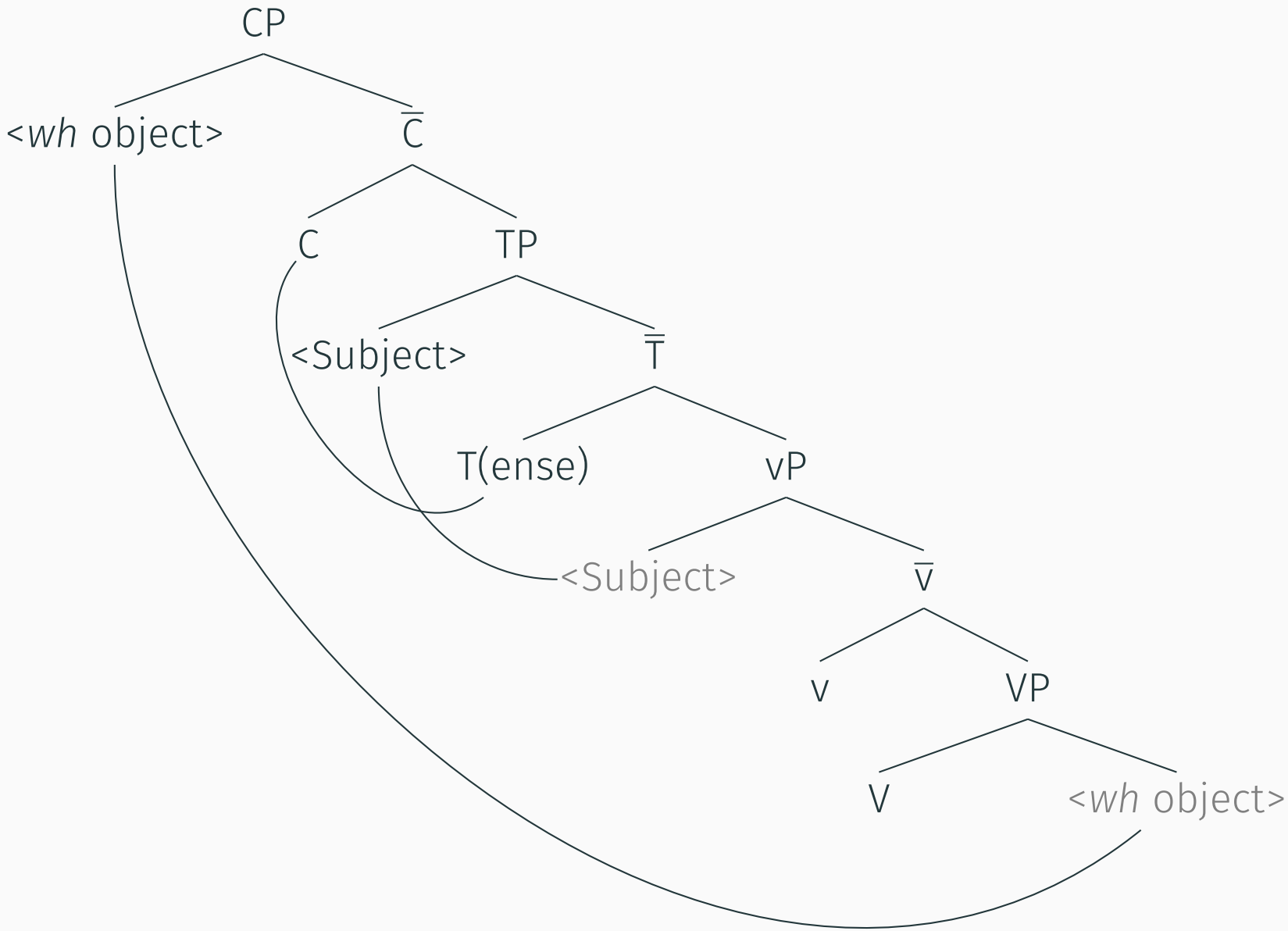
Minimalism reminder

- The Workspace starts out as a set of atomic syntactic elements.
- Structure is then built around a single core operation, Merge, which takes two syntactic elements x and y and creates a new element $\{x, y\}$: Merge(x,y) = $\{x, y\}$
- Merge can achieve **both pure structure building and movement dependencies**; the difference between the two hinges on where the inputs of Merge come from, and how Merge affects the Workspace:
  - External Merge: **consumes** two syntactic objects x and y from the Workspace, adds output $\{x, y\}$ to the Workspace.
  - Internal Merge: **modifies** a syntactic object of the Workspace, by merging it with a copy of one of its subconstituents. **Only one copy of the targeted subconstituent gets pronounced.**

Typical “spine” with subject movement

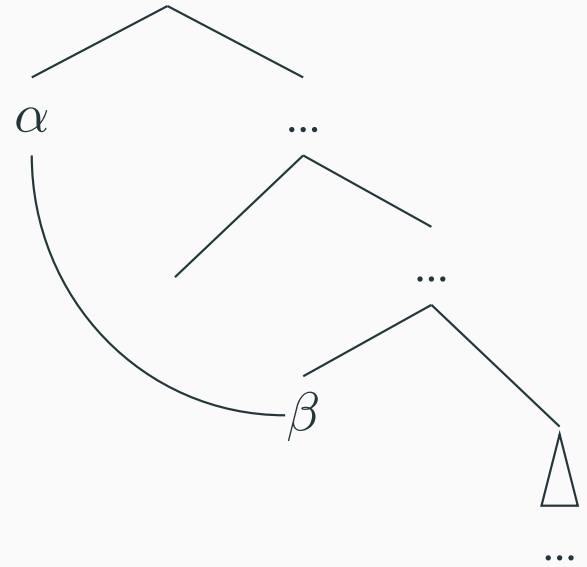


Object *wh*-movement



Movement as multidominance and C-Command

- Pesetsky (2013)'s formulation: a phrase X has undergone **movement** if X has...
  - the **multidominance** property: X occupies (at least) two syntactic positions α and β, and as such shows properties associated with each positions.
  - the **C-Command** property: α C-commands β, i.e. α's sister is either β or dominates β.



Checking for multidominance

- If X occupies both α and β, then:
  - X should display some properties exclusively related to the α **position**;
  - X should display some properties exclusively related to the β **position**;
  - X may display "$\alpha\beta$" properties resulting from the **interaction** between the α and β-positions, that would not arise if X had only occupied α, or only occupied β.

Diagnosing movement: β-properties of the source position

Selection/EPP

- Heads (e.g. verbs, prepositions) select for specific syntactic/semantic categories in a β-position, but those end up in the α-position (see Grimshaw, 1979 for discussion).

(14) a. Sue depended on $\underset{\beta}{\text{*(cookies)}}$.

b. $\underset{\alpha}{\text{What}}$ did Sue depend on $\underset{\beta}{\_\_}$?

- Also, English sentences (including embedded clauses) need a subject (**E**xtended **P**rojection **P**rinciple). But this subject may be displaced in an α-position.

(15) a. Jo wonders $\underset{\beta}{\text{*(which student)}}$ will do the homework.

b. $\underset{\alpha}{\text{Which student}}$ does Jo wonder $\underset{\beta}{\_\_}$ will do the homework?

Stranding

- Extra piece of evidence not in the Pesetsky Chapter: sometimes, moved phrases leave some stuff in their original β-position!

(16) a. Jo a *(beaucoup) de livres.
Jo has many of books.
'Jo has many books.'

b. Combien de livres Jo a-t-elle $\underset{\beta}{\_\_}$?
How-many of books Jo has-she?
'How many books does Jo have?'

c. Combien Jo a-t-elle $\underset{\beta}{\text{de livres}}$?
How-many Jo has-she of books?
'How many books does Jo have?'

Distribution of anaphors and referring expressions

- The distributions of referring (**R-**) **expressions** (typically proper names) and **anaphors** (typically reflexives) are systematically constrained.

(17) a. The girl (R-expression) likes herself. (anaphor)

b. * Herself (anaphor) likes the girl (R-expression) .

- Roughly, anaphors need to be C-Commanded, while R-expressions should not be.

(18) a. * [The girl$_i$'s father]$_j$ likes herself$_i$.

b. The boy$_j$ likes the girl$_i$.

- But C-Command is not exactly enough: the element C-Commanding anaphors must **corefer** with them.
- And no element C-Commanding a R-expression should corefer with it (non-coreferring elements are fine).

Binding Principles A and C

- **Binding = C-Command+coreference.**
- **Free = not bound = not C-Commanded by a coreferring expression** (may be C-Commanded by a non-coreferring expression!).
- **Principle C**: R-expressions **must be free**.
- **Principle A**: anaphors **must be bound** in the smallest clause containing them and a potential binder.

(19) a. The boy$_i$ said that [the girl$_j$ knew herself$_{*i/j}$ best].

b. * The girl$_j$ said that [the boy$_i$ knew herself$_{i/*j}$ best].

- Why all that fuss about Binding Theory? Sticking R-expressions or anaphors at strategic locations can help diagnose C-Command, and thus movement!

Principle A diagnoses a β-position for *wh*-movement

- An anaphor can appear in a free α position, as soon as it can be understood to originate from a bound β position!

(20) a. Jo$_i$ saw $\underbrace{\text{[three pictures of herself}_i\text{]}}_{\beta}$.

b. $\underbrace{\text{[Which pictures of herself}_i\text{]}}_{\alpha}$ did Jo$_i$ see $\underbrace{\_\_}_{\beta}$?

- **Principle A applies "existentially"**: finding one satisfying position is enough. Let's check the bound β-position above is really what made the question good...

(21) a. * [Jo$_i$'s brother]$_j$ saw $\underbrace{\text{[three pictures of herself}_i\text{]}}_{\beta}$.

b. * $\underbrace{\text{[Which pictures of herself}_i\text{]}}_{\alpha}$ did [Jo$_i$'s brother]$_j$ see $\underbrace{\_\_}_{\beta}$?

- NB: This diagnostic **extends** to subjects containing anaphors and moving to spec-TP, as in *This aspect of herself seems to Jo to be problematic*.

Principle C diagnoses a β-position for *wh*-movement

- A R-expression cannot appear in any bound position, even when this position is a β-position!

(22) (Barss, 1986)

a. * $\underset{\alpha}{\underline{\text{[Which side of Jo}_i\text{]}}}$ does she$_i$ like $\underset{\beta}{\underline{\quad}}$ best?

b. $\underset{\alpha}{\underline{\text{[Which side of Jo}_i\text{]}}}$ does [her$_i$ brother]$_j$ like $\underset{\beta}{\underline{\quad}}$ best?

- **Principle C applies "universally"**: there should be no bound position for the R-expression.
- NB: This diagnostic **does not extend** to subjects containing R-expressions and moving to spec-TP; the relevant β-position does not trigger a Principle C violation.

Diagnosing movement: α-properties of the target position

An “obvious” criterion

- An obvious α-property is **pronunciation**: a moved element will often be linearized in a position that is inconsistent with it staying in its “low” β-position, and consistent with it having moved to α.
- But one cannot fully rule out the possibility that linear order is an artefact of a complex phonological process, determined at PF and independent from syntax!
- We’ll go through a couple diagnostics that corroborate the pronunciation argument, and the existence of a higher α landing site in phrasal movement structures.

Selection, upstairs

- Unlike *believe*, *wonder* selects a question, which can be introduced by the complementizer *whether*.

(23) a. I {*wondered / believed} [$_{CP}$ [C_{decl} that] it's raining].

b. I {wondered / *believed} [$_{CP}$ [C_{interr} whether] it's raining].

- But questions can also be formed by extraction… In which case selection by *wonder* diagnoses the relevant α-position!

(24) a. I {wondered / *believed} [$_{CP}$ $\underset{\alpha}{\underline{\text{what}}}$ you depended on $\underset{\beta}{\_\_}$].

- This kind of dependency is often thought of as a **feature checking** requirement.

Principle A, upstairs

- Recall that anaphors must be bound in a local domain; and it's enough to check this at one position (α **or** β).
- We can check that the α position is "real" by making sure our anaphor is *only* bound in its final α-position!

(25) a. Jo$_i$ wonders $\underset{\alpha}{\underline{\text{which aspect of herself}_i}}$ Ed thinks Al likes $\underset{\beta}{\underline{\quad}}$ best.

b. * $\underset{\alpha}{\underline{\text{Which aspect of herself}}}$ does Ed think Al likes $\underset{\beta}{\underline{\quad}}$ best?

Principle C, upstairs

- Recall that R-expressions must be free; and that must hold at every position (α **and** β).
- We can check that the α position is "real" by making sure our R-expression is *only* bound in its final α-position! * should follow.

(26) a. * She$_i$ wonders $\underset{\alpha}{\underline{\text{which aspect of Jo}_i}}$ Ed thinks Al likes $\underset{\beta}{\underline{\quad}}$ best.

b. $\underset{\alpha}{\underline{\text{Which aspect of Jo}_i}}$ does Ed think Al likes $\underset{\beta}{\underline{\quad}}$ best?

- See the Pesetsky Chapter for further discussion about late MERGE in that context...

Messing up with the C-head: (c)overt complementizers

- Another sign that the α-site for *wh*-movement is within the C domain (specifically spec-CP), is that it triggers various constraints/mechanisms affecting the C-head.
- **Doubly-Filled-Comp Filter**: a *wh*-phrase and an overt complementizer cannot coocur at the edge of the same clause–would be surprising if the *wh* had nothing to do with the C-domain!

(27) I wondered [$_{CP}$ $\underset{\alpha}{\underline{\text{what}}}$ (*that) you depended on $\underset{\beta}{\_\_}$].

- Analysis: English has an embedded C for questions that can either be pronounced, or be empty and trigger a *wh*-expression to move to its specifier.

Messing up with the C-head: filling C!

- **T-to-C/*do*-support**: *wh*-fronting correlates with an auxiliary moving to/being inserted in C.

(28) $\underset{\alpha}{\text{What}}$ $\underset{\alpha'}{\textbf{did}}$ [$_{\text{TP}}$ you $\underset{\beta'}{\text{T}}$ depend on $\underset{\beta}{\_\_}$?]

(29) $\underset{\alpha}{\text{What}}$ $\underset{\alpha'}{\textbf{have}}$ [$_{\text{TP}}$ you $\underset{\beta'}{\text{T}}$ relied on $\underset{\beta}{\_\_}$?]

- Analysis: a matrix C that attracts a *wh*-phrase to its specifier also needs to be filled with some material (another head).

Diagnosing movement: $\alpha\beta$-properties

Intervention

- In addition to α and β-properties, there are also properties that emerge **only in the context of movement**, i.e. when both an α and a β position are involved.
- We'll see two general cases of "intervention": when something is "in the way" and ends up blocking movement.
  - When the intervener is an island boundary: intervention by **domination**.
  - When the intervener is a constituent like a *wh*-phrase or PP-experiencer: intervention by **C-Command**.

Islands

- **Islands** are a negative $\alpha\beta$-property of constructions with movement in them.
- Islands are constituents out of which movement cannot take place (Ross, 1967).
- In the current terminology: an island is a constituent γ that does not allow a β-position within it to be related to an α-position outside of it.

(30) $\quad * \ldots \underset{\alpha}{\_\_} \ldots [_{\gamma} \ldots \underset{\beta}{\_\_} \ldots]$

- We can think of an island as a syntactic object with specific properties, intervening between α and β by dominating β (but not α).

Different types of island

- A unified theory of islands has been a longstanding challenge for syntactic theory.

(31) * $\underset{\alpha}{\text{What}}$ did she challenge [$_{\gamma=\text{NP}}$ the claim that he put $\underset{\beta}{\_\_}$ under the bed?] **Complex NP Island**

(32) * $\underset{\alpha}{\text{What}}$ did she yell at us [$_{\gamma=\text{Adjunct}}$ because he had put $\underset{\beta}{\_\_}$ under the bed?] **Adjunct Island**

(33) * $\underset{\alpha}{\text{What}}$ did [$_{\gamma=\text{Subject}}$ that he had put $\underset{\beta}{\_\_}$ under the bed] seem likely? **Subject Island**

(34) * $\underset{\alpha}{\text{What}}$ did she ask us [$_{\gamma=\text{CP}}$ how come he had put $\underset{\beta}{\_\_}$ under the bed?] ***wh* Island**

C-Command Intervention

- There are also situations in which an element blocks movement if it **C-Commands** the β-position, but is C-Commanded by the α-position.
- See the Pesetsky Chapter for examples of **PP intervention**.
- **Superiority effects**: in a question with two *wh*-phrases, the highest one undergoes wh-movement.

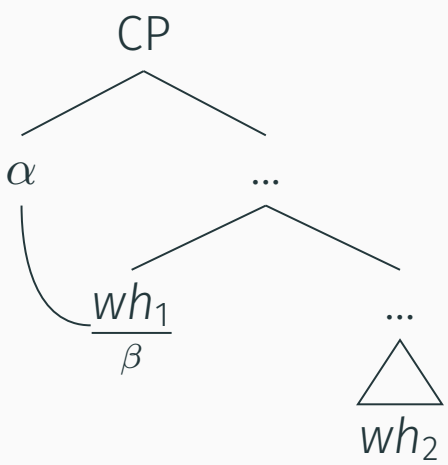
(35) a. Jo wondered [$_{CP}$ $\underset{\alpha}{\underline{\text{who}}}$ $\underset{\beta}{\underline{\quad}}$ had read what.]

b. * Jo wondered [$_{CP}$ $\underset{\alpha}{\underline{\text{what}}}$ who had read $\underset{\beta}{\underline{\quad}}$.]

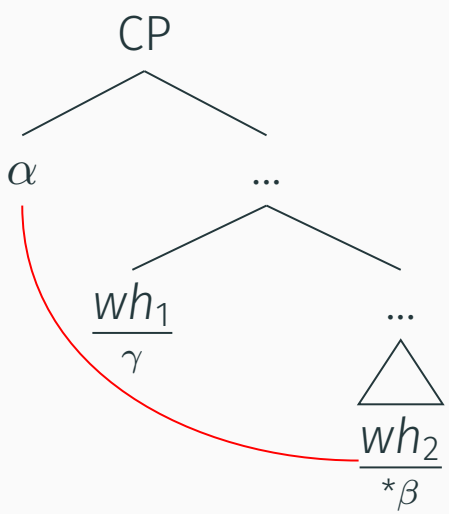
Superiority as intervention

- The higher *wh*-phrase intervenes between the lower *wh*-phrase and its potential landing site!

(36)



(37) *



Conditions on movement

Movement goes upward

- All instances of phrasal movement seem to be upward (related to the C-Command condition, according to which α must C-Command β).
- Movement cannot go downward...

(38) a. Jo asked **Al** [$_{CP}$ if Ed read the book.]

b. * Jo asked $\underset{\beta}{\_\_}$ [$_{CP}$ $\underset{\alpha}{\underline{\text{who}}}$ Ed read the book.]

- Or sidewards (although this taken as a general claim is controversial)

(39) The book shocked $\underset{\beta}{\_\_}$ $\underset{\alpha}{\underline{\text{who}}}$?

(40) a. Jo's book shocked **the monk**.

b. * $\underset{\alpha}{\underline{\text{Which monk}}}$'s book shocked $\underset{\beta}{\_\_}$?

Upward movement as an Extension Condition

- To ensure that movement always proceeds to a higher, C-Commanding position, one can posit a constraint on structure building, stating that MERGE should always "extend" the tree at the root.
- **The Extension Condition**: MERGE always targets the part of the structure that is not contained in anything else.

Shortest Move

- Why can't you move the object to the specifier of TP when there is a subject?

(41) * $\underset{\alpha}{\underline{\text{Cookies}}}$ Jo devoured $\underset{\beta}{\underline{\quad}}$.

- **Shortest Move**: if you have a choice of movements pick the shortest one (where shortest = crosses the fewest nodes).
- Also captures Superiority effects!

References i

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