

LIN7209 – Syntax

Diagnosing Movement

Adèle Hénot-Mortier (based on David's original materials)

30/09/2025

Queen Mary University of London

Plan for today

- Overview of some movement dependencies.
- Diagnostics for phrasal movement, drawing on Pesetsky (2013).
- Restrictions on Movement

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.

- 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

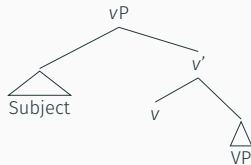
- Suggests the subject originates below T and subsequently moves to Spec-TP! **Where exactly is the subject then?** Spec-VP?

vP 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.



- 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.

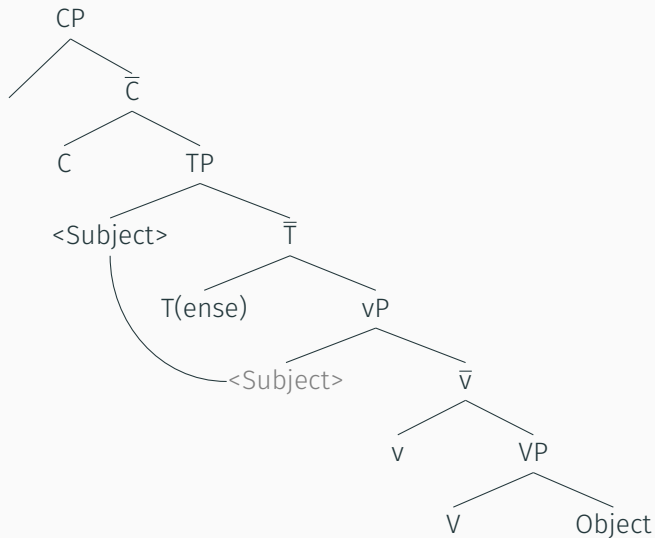
(13) The shit seems to have hit the fan.
Subject of idiom VP of idiom

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

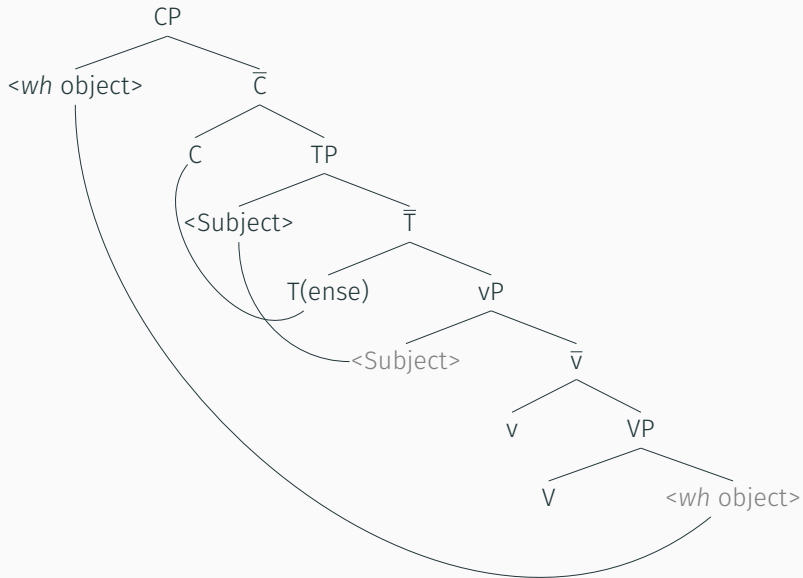
Minimalism reminder

- 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 $\{x, y\}$: $\text{MERGE}(x, y) = \{x, y\}$
- 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 constituents. **Only one copy of the targeted constituent gets pronounced.**

Typical “spine” with subject movement

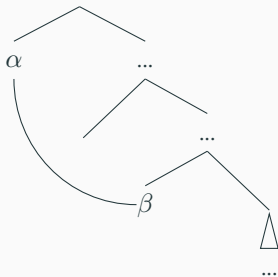


Object *wh*-movement



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 position.
 - 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

- 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 *(cookies).
 β

b. What did Sue depend on ?
 α β

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

(15) a. Jo wonders *(which student) will do the homework.
 β

b. Which student does Jo wonder will do the homework?
 α β

- 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 ?
How-many of books Jo has-she? β

'How many books does Jo have?'
- c. Combien Jo a-t-elle de livres?
How-many Jo has-she β
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 likes herself.
 R-expression anaphor
- b. * Herself likes the girl .
 anaphor 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 [three pictures of herself]_i].
 β

b. [Which pictures of herself]_i] did Jo_i see ?
 α β

- **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 [three pictures of herself]_i].
 β

b. * [Which pictures of herself]_i] did [Jo_i’s brother]_j see ?
 α β

- 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. * $\frac{[\text{Which side of Jo}_i]}{\alpha}$ does she _{i} like $\frac{__}{\beta}$ best?
- b. $\frac{[\text{Which side of Jo}_i]}{\alpha}$ does [her _{i} brother] _{j} like $\frac{__}{\beta}$ 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} $\frac{\text{what}}{\alpha}$ you depended on $\frac{_}{\beta}$].

- 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 which aspect of herself_i Ed thinks Al likes _{β} best.
- b. * Which aspect of herself _{α} does Ed think Al likes _{β} 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 which aspect of Jo_i Ed thinks Al likes
 α β
best.
- b. Which aspect of Jo_i does Ed think Al likes best?
 α β

- 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} what _{α} (*that) you depended on _{β}].

- 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) $\frac{\text{What}}{\alpha} \frac{\text{did}}{\alpha'} [\text{TP you } \frac{\text{T}}{\beta'} \text{ depend on } \frac{_}{\beta} ?]$

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

- 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.

$$(30) \quad * \dots \frac{\alpha}{\dots} \dots [\gamma \dots \frac{\beta}{\dots}]$$

- 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) * What_α did she challenge [_{γ=NP} the claim that he put _β under the bed?] **Complex NP Island**
- (32) * What_α did she yell at us [_{γ=Adjunct} because he had put _β under the bed?] **Adjunct Island**
- (33) * What_α did [_{γ=Subject} that he had put _β under the bed] seem likely? **Subject Island**
- (34) * What_α did she ask us [_{γ=CP} how come he had put _β under the bed?] **wh Island**

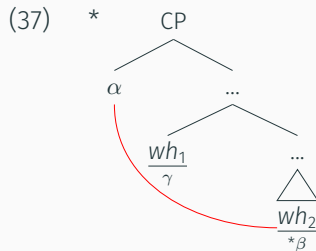
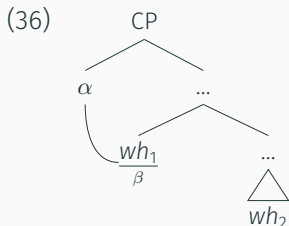
C-Command Intervention

- 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} who _{α} _{β} had read what.]
- b. * Jo wondered [_{CP} what _{α} who had read _{β} .]

Superiority as intervention

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



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} $\underset{\alpha}{\text{who}}$ Ed read the book.]

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

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

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

b. * $\underset{\alpha}{\text{Which monk's}}$ 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.

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

(41) * $\frac{\text{Cookies}}{\alpha}$ Jo devoured $\frac{_}{\beta}$.

- **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



Ross, J. R. (1967). Constraints on variables in syntax [Doctoral dissertation, Massachusetts Institute of Technology].



Grimshaw, J. (1979). Complement selection and the lexicon. Linguistic Inquiry, 10(2), 279–326.



Barss, A. (1986).

Chains and anaphoric dependence : On reconstruction and its implications [Doctoral dissertation, Massachusetts Institute of Technology].



Koopman, H., & Sportiche, D. (1991). The position of subjects. Lingua, 85(2–3), 211–258.
[https://doi.org/10.1016/0024-3841\(91\)90022-w](https://doi.org/10.1016/0024-3841(91)90022-w)



Kratzer, A. (1996). Severing the external argument from its verb. In Phrase structure and the lexicon (pp. 109–137). Springer Netherlands.
https://doi.org/10.1007/978-94-015-8617-7_5



Pesetsky, D. (2013, July). Phrasal movement and its discontents: Diseases and diagnoses. In Diagnosing syntax (pp. 122–157). Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780199602490.003.0007>