

RIGHTWARD “MOVEMENTS” FROM A TOP-DOWN PERSPECTIVE: EXTRAPOSITION AND HEAVY NP-SHIFT

1. Some cases of “rightward movement”

- (1) **“Rightward-moved” objects:** constituents (**extraposed elements**) which are on the right of the **host** they modify, and which are separated from it by an **intervening (overt) element**
- (2) a. [That John is a fool] is obvious
b. It is obvious *that John is a fool* (Extraposition, Rosenbaum 1967)
- (3) a. [A book *which was written by Chomsky*] appeared
b. [A book _] appeared *which was written by Chomsky* (Relative extraposition)
- (4) a. [A review *of Chomsky's book*] appeared
b. [A review _] appeared *of Chomsky's book* (PP extraposition)
- (5) a. I [gave *everything I had*] to John
b. I [gave _] to John *everything I had* (Heavy NP-shift)

2. What

- (6) **Which PPs can be extraposed:** Vs. *moved:* (Fox & Nissenbaum 1999)
- a. We saw [a painting _] yesterday *of John* (arguments) *Of whom* did you see [a painting _]?
b. We saw [a painting _] yesterday *from the museum* (adjuncts) *From where* did you see [a painting _]?
c. We saw [a painting _] yesterday *by John* *By whom* did you see [a painting _]?

d. How [fond *of Sally*] are you? (PP complements of adjectives, Baltin 2006)
d'. How [fond _] are you *of Sally*?

e. How [certain that the Mets will win] are you? (clausal complements of adjectives)
e'. How [certain _] are you *that the Mets will win*?

f. [Talk to Sally *about Martha*] though I may, it won't matter. (PP complements of verbs)
f'. [Talk to Sally _] though I may *about Martha*, it won't matter.

g. [Believe *that Fred is crazy*] though I may, it doesn't matter. (clausal complements of adjectives)
g'. [Believe _] though I may *that Fred is crazy*, it doesn't matter.
- (7) **Which RCs can be extraposed:** (De Vries 2006)
a. [Some men _] appeared at the door *that Mary had been insulting.* (restrictive)
- “Appositive relatives, unlike restrictive relatives, do not undergo what is generally thought of as ‘Extraposition from NP’”
(Emonds 1979:234, Vergnaud 1974:181)
- b. *These men appeared at the door, who Mary had been insulting. (appositive)
b'. These men, who Mary had been insulting, appeared at the door.
c. I have seen [Ann _] yesterday, *who is our director.* (appositive, Citko 2006)
d. I met [John _] yesterday, *who I like a lot.*

e. Marie est là, qui pleure comme une Madeleine.
Marie is there, who cries like a fountain
'Marie is there, and she is crying her heart out.'
(French, appositive, pseudo-relatives
De Vries 2003:65, Smits 1989)

f. Ik heb [Joop _] gezien, *die twee zusters heeft.* (Dutch, appositive, De Vries 2006)
I have Joop seen who two sisters has
'I saw Joop, who has two sisters.'

- g. Gisteren heb ik [mijn zuster _] bezocht, *die blond haar heeft (zoals je weet)*.
yesterday have I my sister visited who blond hair has (as you know)
'Yesterday I visited my sister, who has blond hair (as you know).'
- h. [Ritzen _] kwam op bezoek, *van wie laatst een schaamteloos boek over ministerschap is verschenen*.
Ritzen came on visit by whom lately a shameless book on ministership has appeared
'Ritzen came to visit, by whom a shameless book on ministership was published recently.'

(7') **Which structure** for RCs?

- a. [[the book] [book_i that John read *t_i*]] (matching structure)
b. [D the [_{CP} book_i [that John read *t_i*]]] (raising structure, Kayne 1994, Bianchi 2000)

(8) **What** can be shifted:

- a. I gave [the books which my uncle left to me as part of his inheritance] to Bill
b. I gave _ to Bill [the books which my uncle left to me as part of his inheritance] (arguments, complex NP-shift)
c. I talk _ all the time [to my uncle who left me an enormous inheritance] (prep. objects)

(9) There are **119 possible variation** of the following example... (Pinker 1994:131):

- a. In my laboratory we use it as an easily studied instance of mental grammar, allowing us to document
in great detail
the psychology of linguistic rules
from infancy to old age
in both normal and neurologically impaired people,
in much the same way that biologists focus on the fruit fly *Drosophila* to study the machinery of the genes.
- b. In my laboratory we use it as an easily studied instance of mental grammar, allowing us to document
the psychology of linguistic rules
in great detail
in both normal and neurologically impaired people,
from infancy to old age
in much the same way that biologists focus on the fruit fly *Drosophila* to study the machinery of the genes.

3. (From) where

(10) Structural position of the host:

- a. See (3) (subjects)
b. I called [somebody _] yesterday *who I couldn't stand* (objects)
c. I talked [to somebody _] about that *who was quite knowledgeable* (prepositional objects)
d. I saw it [in a magazine _] yesterday *which was lying on the table* (adjuncts)
d'. *[In which magazine _] did you see it *t_i which was lying on the table?* (*fronted PP)
d''. ??[Which magazine _] did you see it in *t_i which was lying on the table?* (??NP fronting with preposition stranding)
e. [Who _] did you visit *who was unhappy about the visit?* (moved wh-phrases, Culicover & Rochemont 1990)
f. *A review of [a book _] appeared *by three authors* (*embedded DPs, English)
g. Ik heb [de papieren [van de man _]] gecontroleerd *die een rode koffer droeg*. (embedded DPs, Dutch, De Vries 1999)
I have [the papers [of the man _]] checked who a red suitcase carried

(11) **Symmetries** between *extraposition* and *movements* in **double objects constructions** (Culicover & Rochemont 1997:15):

- a. Bill [gave [John _] yesterday *the book that he was looking for*
b. What_i did Bill [gave [John] *t_i*] yesterday
c. *Bill [gave _] the book yesterday *anyone who wanted it*
d. *Who did Bill [give *t_i*] the book yesterday

(12) **Split antecedence** (Perlmutter & Ross 1970):

- a. A man entered the room and a woman left who were similar.
b. *A man visited a woman (yesterday) who were similar. (only across conjuncts...)
c. *A man entered the room and I saw a woman who were similar (... in the same structural position)

(13) **A'-chain heads** are related to the extraposed element:

- a. *He_i [[invited [several girls _] to the party] *that John_i dated in high school*. (Culicover & Rochemont 1997)
b. [How many girls _] did [he_i invite *t_j* to the party] *that John_i dated in high school?*

- (14) Scope diagnostics: **principle C effects**: an extraposed element is not c-commanded by its host (Culicover and Rochement 1997; the pronominal object C-commands the second object, Larson 1988):
- I sent her_i [many gifts _] last year *that Mary_i didn't like*.
 - *I sent her_i [many gifts *that Mary_i didn't like*] last year.
- (15) Scope diagnostics: **condition C bleeding** (van Riemsdijk & Williams 1981, Lebeaux 1988, Chomsky 1995 **Projection Principle**):
- ??^{*} [Which book *about John_i's library*] did he_i read _? (NP complement)
 - a'. [Which book *from John_i's library*] did he_i read _? (NP adjunct)
 - I gave him_i [a picture _] yesterday *from John_i's collection*. (Taraldsen 1981)
 - b'. ??^{*} I gave him_i [a picture *from John_i's collection*] yesterday.
 - I gave him_i [an argument _] yesterday *that supports John_i's theory*.
 - c'. ??^{*} I gave him_i [an argument *that supports John_i's theory*] yesterday.
 - ??^{*} I gave him_i [a picture _] yesterday *of John_i's mother*. (Fox & Nissenbaum 1999)
 - e. ??^{*} I gave him_i [an argument _] yesterday *that this sentence supports John_i's theory*.
- (16) Scope diagnostics: '**Free choice**' **any** is licensed in the scope of the verb **look for**. (Fox & Nissenbaum 1999)
- I looked very intensely for [anything *that would help me with my thesis*].
 - *I looked for [anything _] very intensely *that will/would help me with my thesis*.
 - I looked for [something _] very intensely *that will (likely) help me with my thesis*. (wide scope forced)
 - I would buy [anything _] without making a fuss *that will/would help me with my thesis*. (under the scope of would)
- (17) Constituents extraposed from **subjects** attach to **IP**, while constituents extraposed from **objects** attach to **VP**:

An extraposed phrase is adjoined to the first maximal projection that dominates the phrase in which it originates (Baltin 1981, 2006)

- Although [IP not [many people _] would [VP ride with Fred] *who knew just him*], some [IP would [VP _] *who knew his brother*].
- Although [IP [no reviews _] [VP appeared] *of Chomsky's book*], one [IP did [VP _] *of Jakobson's book*].
- *Although he didn't [VP call [people _] up *who are from Boston*], he [VP _ *who are from New York*].
- *Although he didn't [VP call [people _] up *from Boston*], he [VP _ *from New York*].
- John said that he would [VP call [people _] up *who are from Boston*], and [VP call [people _] up *who are from Boston*] he did [VP _].
- *John said that he would [VP call [people _] up *who are from Boston*], and [VP call [people _] up] he did [VP _] *who are from Boston*.
- John said that he would [VP call [people _] up *from Boston*], and [VP call [people _] up *from Boston*] he did [VP _].
- *John said that he would [VP call [people _] up *from Boston*], and [VP call [people _] up] he did [VP _] *from Boston*.
- [IP [Someone _] [VP picked [some books _] up [which were lying on the table] VP] [who really didn't want to] IP]
- *[IP [Someone _] [VP picked [some books _] up [who really didn't want to] VP] [which were lying on the table] IP]

- (18) **Williams' generalization** (Williams 1974):

When an adjunct β is extraposed from a "source NP" α , the scope of α is at least as high as the attachment site of β (the extraposition site)

4. Optionality and heaviness

- (19) Extraposition is **optional**:
- I saw it [in a magazine *which was lying on the table*] yesterday
 - a'. I saw it [in a magazine _] yesterday *which was lying on the table*
 - We saw [a painting *of John*] yesterday
 - b'. We saw [a painting _] yesterday *of John*
- (20) Heavy NP-shift is **optional** but sometimes **impossible** (a) sometimes **highly recommended** (b):
- I gave the books to Bill
 - a'. *I gave to Bill the books (***"light" NP-shift)
 - ?I gave [the books that John bought yesterday at the second-hand market after he came back from school] to Mary
 - b. I gave to Mary [the books that John bought yesterday at the second-hand market after he came back from school]

(21) In Dutch, **complement clauses** (a) and **finite clausal complements** (b) undergo extraposition obligatorily (De Vries 1999):

- a. *Kees heeft [*de prijs aan te nemen* geweigerd]
Kees has the prize prt to accept refused
- a'. Kees heeft [geweigerd] *de prijs aan te nemen*
Kees has refused the prize prt to accept
'Kees has refused to accept the prize'
- b. Kees heeft [*dat hij de prijs zal weigeren* besloten]
Kees has that he the prize will refuse decided
- b'. Kees heeft [_ besloten] *dat hij de prijs zal weigeren*
'Kees has decided that he the prize will refuse'

(9) ... however not all of them are good (Pinker 1994:131):

- c. ??In my laboratory we use it as an easily studied instance of mental grammar, allowing us to document in much the same way that biologists focus on the fruit fly *Drosophila* to study the machinery of the genes in both normal and neurologically impaired people, in great detail the psychology of linguistic rules from infancy to old age

5. Boundaries

(22) **Right Roof Constraint (RRC)**: an element cannot move rightward out of the clause in which it originates (Ross 1967)

- a. *[John was believed [to be certain _] by everybody] *that the Mets would lose.* (Baltin 2006)
- b. *A review of [a book _] appeared *by three authors* (10.f)
- b'. [A review [of a book] _] appeared *by three authors* (Akmajian 1975)
- c. The fact that John [gave to Bill *the books which my uncle left to me*] is of no consequence (Ross 1967)
- c'. *The fact that John [gave to Bill _] is of no consequence *the books which my uncle left to me*

(23) **Subjacency condition** (Chomsky 1973):

In the configuration $X \dots [\alpha \dots [\beta \dots Y \dots] \dots] \dots X'$, no element Y can be moved to position X or X' , if α and β are both cyclic nodes.

- a. as for (10.d-d') PP should be a "cyclic node" (Baltin 1978)
- b. but this sentence would be ruled out (Chomsky 1986):
Who_i did you announce [_{DP} . . . [_{NP} plans [_{CP} to visit t_i]]]?

(24) **Barriers** (Chomsky 1986):

Maximal projection non L-marked (i.e. L-marking means being a complement to a lexical category and being theta-marked by that lexical category)

(25) A "problem" with **directionality**: extraposition is possible rightward but **not (always) leftward**:

- a. **That John read* I bought [the book _] last week (neither **topicalization** nor **focalization**)
- b. for PPs see paradigm in (6).

(26) **Generalized Subjacency** (Baltin 1981):

In the configuration $A \dots [\alpha \dots [\beta \dots B \dots] \dots] \dots A'$,

- i. A' cannot be related to B where α and β are maximal projections of any major categories;
- ii. A cannot be related to B where α and β are drawn from the following list of phrasal categories; (a) PP; (b) NP; (c) S or S' or both, depending on the specific language.
- a. Become [fond of *Sally*] though he may, it won't matter.
- b. *Become [fond _] though he may *of Sally*, it won't matter. (crossing AP, VP)
- c. *Sally_i*, of whom I became quite [fond t_i], is an exceptional linguist. (leftward movement)

(27) Why successive cyclic movement to escape "subjacency" doesn't work (Akmajian 1975)?

- (28) **Derivation by phase** (Chomsky 2001):
extraposition is not a feature driven movement (feature checking, last-resort): afterthought.
- (29) Constraints on the “hosting” determiners: **definite DP islandhood** (Fiengo and Higginbotham 1980, Diesing 1992)
- Who did Mary see [a (good) picture of *t*]?
 - ??Who did Mary see [the (best) picture of *t*]?
- (30) Extraposition is subject to the **Definiteness Constraint** (Diesing 1992):
- *The man showed up *that hated Chomsky* (Guéron and May 1984)
 - *I read **that** book during the vacation *that was written by Chomsky*.
 - Those** students will pass this course *who complete all of their assignments on time* (Baltin 2006)
- (31) **Adjunct/Argument asymmetry** (Fox & Nissenbaum 1999):
- I saw the (best) picture yesterday from the museum.
 - a'. ??I saw the (best) picture yesterday of the museum.
 - a". I saw a (very good) picture yesterday of the museum.
- I heard the same rumor yesterday that you were spreading.
 - b'. ??I heard the same rumor yesterday that you were quitting.
 - b". I heard a similar rumor yesterday that you were quitting.

6. Constraints on moved constituents

- (32) Extraposed constituents are **islands for extraction** (Lasnik & Saito 1992):
- [a man _i] walked in *who was from California*
 - *[what state]_i did [a man _i] walk in [*who was from t_i*]
 - *Who_i did you hear [the rumour [that Mary kissed *t_i*]]
- (33) **Frozen Structure Constraint** (Ross 1967:295): If a clause [or a prepositional phrase] has been extraposed from a noun phrase whose head noun is lexical, this noun phrase may not be moved, nor may any element of the clause be moved out of that clause.
- (34) **Complex NP-Constraint** (Ross 1967:70):
No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of the noun phrase by a transformation;
- (35) a. *Who_i did you [give _i] to Mary [a picture of *t_i*]? (extraposed object)
b. *Who_i did you give [a friend of *t_i*] my picture? (double object construction)
- ??Who_i did you give [a picture of *t_i*] to Mary? (adapted from Lasnik & Saito 1992:102) (✓ for White 1998:10)
 - Who_i did you give Mary [a picture of *t_i*]? (Preminger 2005, Runner 2001) (* for White 1998:10)
 - Who_i did you give a picture [to the parents of *t_i*]? (Preminger 2005, adapted from Landau 2004)
 - Who_i did you give [a picture of *t_i*] to Mary? (White 1998)
- Who_i did you say Cindy sent Bobby a picture of *t_i*? (Runner 2001:40)
 - * Who_i did you say Cindy sent a friend of *t_i* a picture?
 - What_i did Mary tell you John bought Shirley a box of *t_i*?
 - *What_i did Mary tell you John bought friends of *t_i* a book?
 - Who_i did Ron say Kim sent me a story about *t_i*?
 - * Who_i did Ron say Kim sent an acquaintance of *t_i* a threatening letter?
- (36) **Ditransitive verbs**: a shifted direct object prevents extraction of the indirect object via wh-movement
- Who_i did you give [the books written by the venerable Prof. Plum] [to *t_i*]?
 - *Who_i did you give [to *t_i*] [the books written by the venerable Prof. Plum]?
- (37) **Condition on Extraction Domains** (Huang 1982): extraction is only possible out of phrases which are 'properly governed', where a node A is taken to properly govern a node B iff
- A c-commands B and no major category boundary intervenes between A and B,
 - B is contained within a maximal projection of A, and
 - B is assigned its thematic role by A

7.1 Analysis 1: rightward movement

(38) Extraposition transformation (Rosenbaum 1967:11):

X	N	S	Y	→
	$\left[\begin{array}{c} + \text{PRO} \\ \text{NOT} \left[\begin{array}{c} + D \\ + E \end{array} \right] \end{array} \right]$			
1	2	3	4	1, 2, Ø, 4+3

(39) Two other fundamental rules:

PS Rule 1: $VP \rightarrow V (NP) (PP) (S/PP)$

PS Rule 2: $NP \rightarrow \text{DET } N (S)$

(40) Underlying structure of (2): $[_{NP} [_{DET}] [_{N} \text{it}] [_{S} \text{that John is a fool}]] [_{VP} \text{is obvious}]$

(2.a) "[That John is a fool] is obvious" is derived by *Pronoun Deletion transformation* (Rosenbaum 1967:22 fn.4)

(2.b) "It is obvious *that John is a fool*" is derived by *Extraposition transformation* (38).

(41) Extraposition from NP (Ross 1967:4):

X	[NP - S]	Y	→
[NP]		
1	2	3	1, Ø, 3+2

(42) Underlying structure of (3) is (3.a): $[A \text{ book } \textit{which was written by Chomsky}] \text{ appeared}$

(3.b) "[A book _] appeared *which was written by Chomsky*" is derived by Extraposition from NP (41)

(43) a. $[_{S} [_{NP} [_{S} \text{That } [_{NP} \text{a gun } [_{S} \text{which I had cleaned}]]] [_{VP} \text{went off}]]] [_{VP} \text{surprised no one}]]$

b. $*[_{S} [_{NP} [_{S} \text{That } [_{NP} \text{a gun } _] [_{VP} \text{went off}]]] [_{VP} \text{surprised no one}]] [_{S} \text{which I had cleaned}]]$
(by (41) it should be ✓, so we need something like (22))

(44) **Problems:**

- why movement is much more constrained on the **right** than on the **left**?
- what **triggers** extraposition?
- is there any way to account for the **last-cyclic** nature of the rule?
- how do account for split antecedence (ex. (12)).

7.2 Analysis 2: base generation (Culicover Rochemont 1990, 97)

(45) An extraposed constituent seems to be subject (**at LF, after QR**) to the **Complement Principle** (Guéron & May 1984):

In a sequence of categories $\alpha_i, \beta_i^1 \dots \beta_i^n$ in a structure Σ , $\beta_i^1 \dots \beta_i^n$ are complements to α_i only if α_i governs β_i^n

(α **governs** β iff α and β are dominated by all the same maximal projections, and there are no maximal projection boundaries between α and β)

(46) **Full Interpretation** Vs. (Generalized) Subjacency violation

(47) No distinction between **complements** and **adjuncts**

a. [A review _] appeared *of Chomsky's book*. (4.b)

b. [A man _] showed up *who was quite convincing*.

(48) **Problems:**

a. **Generalized Subjacency** \equiv **Complement Principle**: without reanalysis (13.a), repeated below, would violate (45):

I saw it [in a magazine _] yesterday *which was lying on the table*

b. it obscures the productive distinction between **arguments** and **adjuncts**

- c. does Complement Principle apply at LF (***definite articles** Vs. **✓quantifiers**)? But what about **✓demonstratives**)
- i. ***[The man _]** showed up *that hated Chomsky.* (ex. (30))
 - ii. **[Those students _]** will pass this course *who complete all of their assignments on time.*

7.3 Analysis 3: modification based account (Kayne 1994)

- (49) LCA maps linear precedence onto asymmetric C-command
- (50) Under (49) rightward adjunction is not possible (if A asymmetric C-commands B, then terminals dominated by B could not precede terminals dominated by A: rightward adjunction could not be linearized)
- (51) Stranding analysis:
- i. arguments are generated in the domain of their heads;
 - ii. movement to non-c-commanding positions is impossible.
- (52) Natural account for the **Definiteness Constraint** in (30): non-constituents cannot be moved
- a. $[DP[D \text{ the}]]_{CP} [NP \text{ book}_i]_{C[C \text{ that}][TP I [VP[V \text{ read}][NP t_i]]}$
 - b. $[DP[D \emptyset]_{CP} [NP \text{ two/a/those book(s)}_i]_{C[C \text{ that}][TP I [VP[V \text{ read}][NP t_i]]}$
- (53) DPs allowing **post-nominal genitives** allow **extraposition**:
- a. ***the** book of John's ...
 - b. the books of John's that we like
 - c. { **two / those / a** } book(s) of John's ... (e.g. **the** and **those** are equally definite)
- c'. $[DP [D \text{ of}][NP \text{ John's } [NP \text{ two pictures}]]$
 c''. $[DP [NP \text{ two pictures}]_i [D \text{ of}][NP \text{ John's } t_i]$
- a'. the head $[D \text{ the}]$ cannot take a **DP** as a complement
- (54) Guéron and May (1984): extraposed constituents have to be quantified (in (52.a) the head of the relative is not quantified)... but this quantification-based account does not tease apart **the** from **those**.
- (13) b. $*[PP \text{ In } [CP [NP \text{ which magazine } _]]]_i$ did you see it $[CP t_i \text{ which was lying on the table}]$? ([P NP] is not a constituent)
- (55) The **Right-Roof Constraint**, (22), is replaced by **theta-role requirements** and/or by (51.ii):
 *The fact that $[somebody]_i$ walked into the room is irrelevant $[t_i \text{ who I knew}]$. (Kayne 1994:118)
- (56) Reminiscent of Sportiche 1988 account for floating quantifiers (Kayne 1994:118 fn) they differ in terms of intermediate positions:
- a. The men **were** *all* **injured** in the accident
 - b. *A man **was** *who has no relatives* **injured** in the accident
- (57) "A relative clause can be stranded by A-movement only in a non-Case position" (Kayne 1994:121)
- i. *Someone_i just walked $[t_i \text{ who we don't know}]$ into the room. (constraint on complex-specifiers? Kayne (35)-(55) ch.8)
 - ii. John ushered $[someone \text{ who we don't know}]$ into the room.
- (58) **Problems:**
- a. extraposed constituents seem not to be c-commanded by their host:
 - i. *I sent her_i $[many \text{ gifts } \textit{that Mary}_i \textit{ didn't like}]$ last year.
 - ii. I sent her_i $[many \text{ gifts } _]$ last year *that Mary_i didn't like.*
 - b. (51.i) is unable to account for this contrast (Baltin 2006):
 - i. **It** was $[\text{believed } _] [\text{to be certain }]$ by everybody *that Fred would win.* (expletive A-movement)
 - ii. ***John** was $[\text{believed } _] [\text{to be certain }]$ by everybody *that the Mets would lose.*
 - c. problems with stranding elements in a non Case-marked position:
 *Someone_i was given $[t_i \text{ who liked Steinbeck}]$ an interesting book
 - d. (10.c) is unexplained:
 "I talked $[to \text{ somebody } _]$ about that *who was quite knowledgeable*" ([P NP] was not considered a constituent):

7.4 Analysis 4: mixed account (Fox & Nissenbaum 1999)

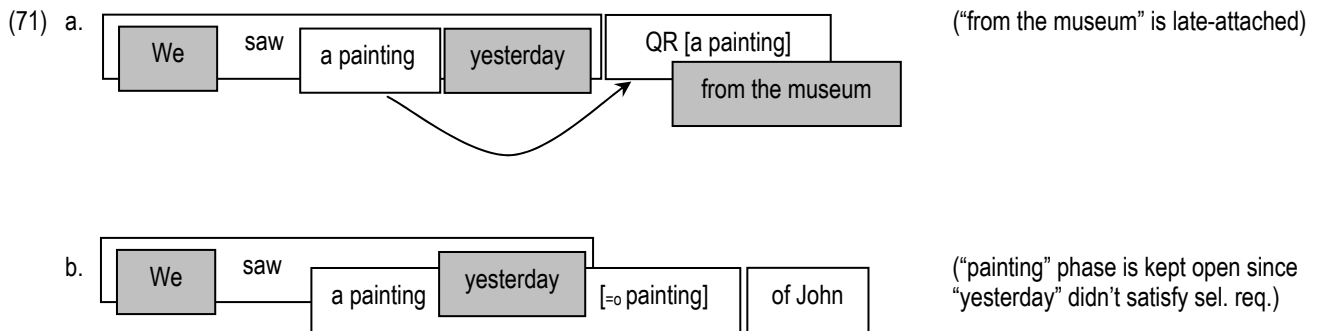
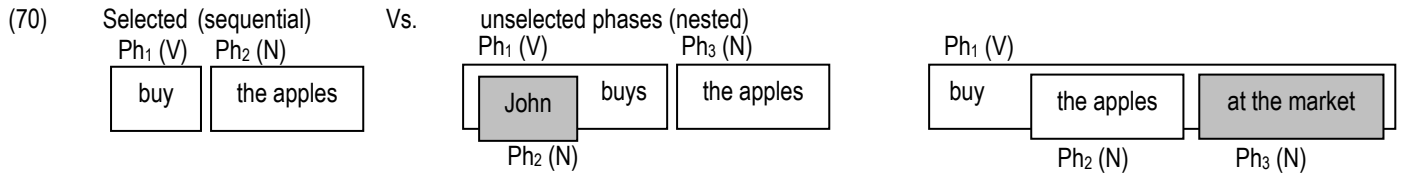
- (59) “Overt” movement Vs. “Covert” Movement
pronunciation of the **head** of the chain pronunciation of the **tail** of the chain
- (60) Covert operations can precede overt ones: evidence from extraposition → no movement, but QR, then merge of the adjunct
- (61) **(PP, clausal) complements** → rightward movement
- (62) **adjuncts, RC** → late merged after QR:
- [_{CP} John [_{VP} picked a book up]] [_{CP} which he really enjoyed].
- [_{CP} John [_{VP} [_{VP} picked [_{DP} a book] up]
 - QR** (as in Guéron & May extraposition of relatives is tied to QR!)
- [_{CP} John [_{VP} [_{VP} picked [_{DP} **a book**] up] [_{DP} **a book**]]]
- Late merge** of the relative clause:
[_{CP} John [_{VP} [_{VP} picked [_{DP} a book] up] [_{DP} [_{DP} a book] [_{CP} which he really enjoyed]]]]
 - PF deletion** of the head of the QRed nominal chain:
[_{CP} John [_{VP} [_{VP} picked [_{DP} a book] up] [_{DP} ~~[_{DP} a book]~~ [_{CP} which he really enjoyed]]]]
- (63) Extraposed RCs do **not reconstruct** (Wilder 1995):
- *We talked [_i about her_i claim _] yesterday *that Mary_i will hire Peter.*
 - I gave him_i [an argument _] yesterday *that supports John_i's theory*
- (64) QR across the board to deal with (12):
- [[a man entered the room] and [a woman left]]
 - QR** from both conjuncts:
[[[a man] entered the room] and [[a woman] left]] [_{DP} [a man] and [a woman]]
 - merger** of the relative clause to the conjoined DP:
[[[_{DP} a man] entered the room] and [_{DP} a woman] left]] [_{DP} [_{DP} [a man] and [_{DP} a woman]] _{CP} who were similar]]
- (65) **Problems:**
- why QR is on the right?
 - what about A'-head relatedness expressed in (13) ? (QR to the right before Wh- movement to the left?)
 - why only CP/PPs are late-merged?

7.5 Analysis 5: a top-down perspective (Chesi 2004, Bianchi & Chesi 2006, Bianchi 2007)

- (66) **Linearization axiom:**
- <A, B> if A (is a lexical head and) **selects** B as an argument
 - <B, A> is B is a **functional specification** of A.
- (67) **Nested phases** (Chesi 2004, Bianchi & Chesi 2006)
- unselected phases (true adjuncts, preverbal arguments, relatives) are islands for “extraction”, that is, unselected constituents cannot be discharged within an unselected phase.
 - phases are DPs and CPs; the head of the DP phase is N, the head of the VP phase is V
 - linear order is determined by a linearization principle: functional elements are on the left of the phase head, selected complements are on the right.
 - “heavy” licensors project on the right (nested phases).
- (68) **QR is always on the right** (Bianchi & Chesi, in progress):
- storage of a QP in a dedicated memory buffer of the current phase (Schlenker 2005);
 - integration of a coindexed variable in the corresponding argument position;
 - when the top-down computation of the current phase is concluded, the QP function is retrieved from the Q-buffer and takes scope over the structure (elements retrieved from memory buffers are (typically) not spelled out)

(69) **Phase projection** (Top-down expectation):

- i. the phase-head projects the minimal set of dominance relations so as to satisfy its selectional requirements
- ii. selectional requirements have to be satisfied within the superordinate phase



(72) Asymmetries in **bleeding condition C** ((30) and (31)) is captured adapting Bianchi 2007 account:

selected complements receive the evaluation sequence from the superordinate phase, adjuncts late-attached to QR-ed does not.

(73) Asymmetries between **IP** and **VP** (and **Wh-moved P**) attachment are related to the **hosting-phase surface position**. Scope properties (14) (17) (18) should be captured combining this assumption with (72).

(74) The **Right Roof Constraint** (22) (and Akmajian's restriction) is captured by means of (69.ii).

(75) **Split antecedence** (es. (12)) could be captured if we assume that identical phase projections do overlap (then expecting an unique argument, instead of projecting distinct ones)

(76) **Problems:**

- a. it doesn't capture the **Definiteness Constraint asymmetry** between adjuncts and arguments reported in (31) (but F&N do not explain how an extraposed adjunct can be related to a non-QR-ed DP!!!).
- b. no **those/the** difference.

(77) **Thing to do:**

- a. better specify the notion of **heaviness**.
- b. try to relate extraposition productivity to **OV**, **V2** parameters.

Selected references

- Akmajian, A. 1975. More evidence for an NP-cycle. *Linguistic Inquiry* 6:114-130.
- Baltin, M. R. 1981. *Strict Bounding*. MIT Press.
- Baltin, M. 2006. Extraposition. In *The Blackwell Companion to Syntax*, ed. Blackwell.
- Bianchi, V. 2000. The Raising Analysis of Relative Clauses: A Reply to Borsley. *Linguistic Inquiry* 31:123-140.
- Bianchi, v. 2007. *Non-redundancy and backward anaphora*. Ms., University of Siena [presented at GLOW 30, 2007, Tromsø]
- Bianchi, V., and Chesi, C. 2005. *Phases, strong islands, and computational nesting*. Ms., University of Siena [presented at GLOW 28, 2005, Geneva].
- Chesi, C. 2004. Phases and Cartography in Linguistic Computation: toward a Cognitively Motivated Computational Model of Linguistic Competence. *Unpublished PhD Thesis*.
- Chomsky, N. 1995. *The Minimalist Program*. MIT Press.
- Chomsky N. 2001. Beyond explanatory adequacy.
- Culicover, P., and Rochement, M. 1990. Extraposition and the Complement Principle. *Linguistic Inquiry* 21:23-47.
- Rochement, M. S., and Culicover, P. W. 1997. Deriving dependent right adjuncts in English. *Rightward movement*:279-300.
- Culicover, P. & R. Jackendoff 2005. *Simpler Syntax*. MIT Press.
- Fiengo, R. W., and Higginbotham, J. T. 1979. *Opacity in NP*.
- Fox, D., and Nissenbaum, J. 1999. Extraposition and scope: A case for overt QR. *Proceedings of the 18th West Coast Conference on Formal Linguistics* 18:132-144.
- Guéron, J., and May, R. 1984. Extraposition and Logical Form. *Linguistic Inquiry* 15:1-31.
- Huck, Na 1990. *Extraposition and Focus*. Language
- Husley S. and U. Sauerland 2006. *Sorting out relative clauses*. NLP 14:111-137
- Jackendoff, R. 1990. "On Larson's treatment of the double object construction". *Linguistic Inquiry* (21): 427-456.
- Kayne, R. S. 1994. *The Antisymmetry of Syntax*. MIT Press.
- Larson, R. K. 1988. *On the double object construction*. *Linguistic Inquiry* (19): 335-392.
- Lasnik, H., and Saito, M. 1992. *Move Alpha: Conditions on Its Application and Output*. MIT Press.
- Lebeaux, D. 1988. Language acquisition and the form of the grammar, Doctoral dissertation, University of Massachusetts, Amherst.
- Pinker, S. 1994. *The Language Instinct*. HarperPerennial.
- Riemsdijk, H., and Williams, E. 1981. NP-Structure. *The Linguistic Review* 1:171-217.
- Rosenbaum, P. S. 1967. *The Grammar of English Complement Constructions*, MIT.
- Ross, J. R. 1967. Constraints on Variables in Syntax. MIT PhD Dissertation.
- Smits, R. 1989. *Eurogrammar: The Relative and Cleft Constructions of the Germanic and Romance Languages*. Foris.
- Taraldsen, K. T. 1981. The theoretical interpretation of a class of marked extractions. *Theory of markedness in generative grammar*:475-516.
- de Vries, M. 1999. Extraposition of Relative Clauses as Specifying Coordination. Ms. University of Amsterdam (to appear in proceedings of Console 7 (1998)).
- de Vries, M. 2006. The Syntax of Appositive Relativization: On Specifying Coordination, False Free Relatives, and Promotion. *Linguistic Inquiry* 37:229-270.
- White, J. R. 1998. Syntax-LF mapping and the internal structure of comparatives. UCL Working Papers in Linguistics 10
- Williams, E. S. 1974. Rule Ordering in Syntax: MIT.