Rightward Movement, Covert Movement, and Cyclic Linearization

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Claims:

1. All movement to the right is covert, due to a principle of chain pronunciation (pronounce rightward member of a chain).
2. SVO languages (at least those that have covert movement) linearize everything but the highest specifier to the right of the head.
3. SOV language linearized everything to the left of the head.

   2 and 3 (in other words): As far as linearization is concerned internal specifiers are grouped together with complements.

4. The principles in 1-3 apply to spell-out domains yielding effects of order conservation (Fox and Pesetsky 2005)

Among the consequences:

1. Movement to an internal specifier position in an SVO language (of the relevant sort) will be covert.
2. But (Lebeaux-)Late-Merged material will appear on the right.
3. All movement in an SOV language will be overt. Hence such languages will have scrambling and rigid scope.

Questions:

1. Why is rightward movement so rare (if it at all exists)?
2. What is the analysis of apparent rightward movement?
3. Why does extraposition of NP modifiers take place to the right (and why can only post-nominal modifiers extrapose)?
4. Is there anything that predicts when movement is overt and when it is covert?
5. Why do SOV language always have scrambling, and why do they have rigid scope?
6. Why is similar scrambling blocked in many SVO languages?
7. Why can't covert movement license parasitic gaps, unless another parsitic gap is licensed by an overtly moved constituent?
8. What accounts for the constraints on Object Shift in Scandinavian languages (Holmberg's Generalization).

Our Hope: Our four claims provide good answers for these questions. More specifically, answers to the questions are based on an interaction between a universal principle for chain pronunciation, and principles of linearization, which apply cyclically and can vary slightly across languages.

On Chain Pronunciation:

When an element moves, it occupies two syntactic positions. There are thus two potential positions it could occupy in the linearization of the structure.

Principle of Chain Pronunciation (PCP): When α occupies two positions, the linearization of α will be determined by the position that would put α further to the left.

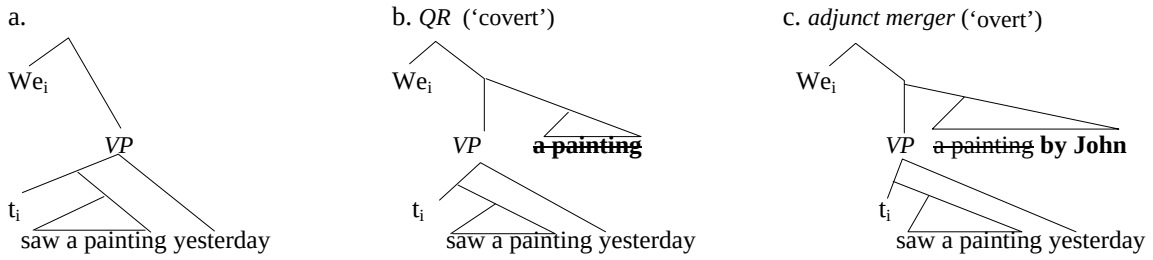
Consequence: When the base position follows the derived position by normal principles of linearization, we will have overt movement. When the derived position follows the base position, we will have covert movement.

There will thus be no movement to the right, which is our response to question 1 above. This does not seem to us to be an outlandish response. See in particular, Abels and Neeleman (2006).

1. **Extraposition and Covert Movement**

1.1. Fox and Nissenbaum (1999)

(1) We saw a painting yesterday by John.



[A painting by John] λx we saw [the painting x]

F&N, present various pieces of evidence in favor of this analysis (CSC, parasitic gap licensing). We will only present the evidence that comes from scope.

(2) **Williams' generalization:** When an adjunct β of an NP α is extraposed he scope of α is at least as high as the attachment site of β (the extraposition site).[1]

Scope diagnosed by ellipsis:

(3) a. I read a book before you did.
Scope above ellipsis: There is a book that I read before you read it.
Scope below ellipsis: I read a book before you read a book

b. I read a book that John had recommended before you did.
Scope above ellipsis: There is a book RC that I read before you read it.
Scope below ellipsis: I read a book RC before you read a book RC.

[1] This generalization is a restatement of what is found in Williams 1974, chapter 4. Williams focused on comperative- and result-extraposition, and did not limit the generalization to adjunct extraposition (as apposed to Fox and Nissenbaum).

c. I read a book before you did that John had recommended.
Scope above ellipsis: There is a book RC that I read before you read it.
*Scope below ellipsis: I read a book RC before you read a book RC.

(4) a. John must miss no assignment that is required by his math teacher in order to stay in school.

b. #John must miss no assignment in order to stay in school that is required by his math teacher.
(good only under a wide scope interpretation for the NP, which is non-informative – given what we know about ordinary school –, hence odd)

c. John must hand in no assignment in order to stay in school that is required by his math teacher.
(good only under an wide scope interpretation, which is informative, hence natural)

1.2. Why on the right?

Why does the extraposed adjunct appear on the right? QR is a covert operation. So in what sense could it be said to be to the right or to the left? (See, Chomsky, Beyond Explanatory Adequacy.)

Our Answer: The PCP determines that the left-most member of a chain is pronounced. Movement – as we will see – is in some cases to the left and in other cases to the right. From these two points, it follows that there will be cases where movement applies to the right and in those cases there will be no phonological consequences (i.e. effectively covert).

Exception: if there is late merger, then the late merged element(s) will appear where they were added, just as in (1) above.

Hope: Independently justifiable principles of linearization will tell us when movement is to left and when it is to the right, and will, thus, predict when it is overt and when it is covert.

1.3. Why only rightmost modifiers?

(5) a. John saw a woman yesterday taller than Jane.
b. *John saw a woman yesterday (very) (very) tall.

(5)b is not that bad in Hebrew, where adjectives are post-nominal.

(6) ? Yosef ra?a iSa etmol gvohaa beyoter.
Yosef saw woman yesterday tall in-more
"Yosef saw a very tall woman yesterday".

(7) a. ? Yosef ra?a anaSim etmol rabim me?od.
Yosef saw people yesterday many-pl a-lot
Yosef saw very many people yesterday.

b. *Yosef ra?a anaSim etmol harbe me?od.
Yosef saw people yesterday many a-lot

The distinguishing property: *rabim me?od* is a post-nominal modifier.

Proposal:

Rightmost modifiers yield an ordering contradiction after extraposition, as in our account of Holmberg's Generalizaiton (F&P 2005).

Details:

DP is a spell-out domain that determines the ordering of the NP and the modifier. Movement to the right (which is covert) and late merger are followed by spell-out of the newly formed DP.

Spell-out: If x heads a spell-out domain, a projection of x, Y, must be spelled out before merger of Y with z in which z projects.

If the modifier is on the right, the final spell-out is contradictory (as in our account of Holmberg's generalization).

Further Prediction (pointed to us by Alex Grosu)

(8) a. *John saw a woman yesterday really quite tall.
a. ?John saw someone yesterday really quite tall.

2. The ordering of inner specifiers

Hypothesis: In English (and other SVO languages that have covert movement), inner specifiers are grouped with complements and ordered on the right.

Notation: $\text{Merge}_\beta(\alpha, \beta)$ is the result of merging α and β where β projects.

(9) **Linearization of $\text{Merge}_\beta(\alpha, \beta)$ in an SVO language with QR**:
If $\text{Merge}_\beta(\alpha, \beta)$ is a maximal projection, α precedes β. Otherwise, β precedes α.

Possible alternative:
If $\text{Merge}_\beta(\alpha, \beta)$ has an unchecked feature, β precedes α. Otherwise, α precedes β.

Consequence: Inner specifiers will appear on the right (after complements) if created by external merge, and will be covert if created by internal merge.

What sources of evidence could we expect to find for this ordering of inner specifiers?

Two Scenario's:

A. Inner specifier formed by internal merge (movement) will appear in situ (unless late merger takes place).

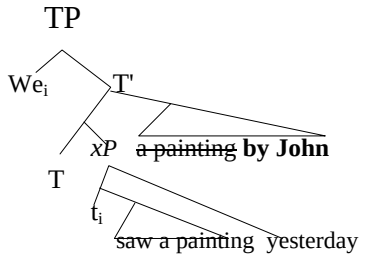
Evidence: Properties of covert movement and extraposition

B. Inner specifiers formed by external merge (base generation) will be visibly on the right.

Evidence: Locative Inversion, Passive, possibly stylistic inversion

3. Inner Specifiers Formed by Movement

(10)**QR will target an inner specifier position (spec TP or another position that the subject moves through)**



Prediction: Covert QR never crosses a matrix subject

3.1. Inverse Scope requires reconstruction of the matrix subject.

Much evidence has been presented in Hornstein 1994, and Johnson and Tomioka 1997.

3.1.1. Johnson and Tomioka

The PPI *Some NP* cannot reconstruct below negation, hence cannot receive Inverse Scope.

(11) a. A soldier didn't stand on many of these buildings.
b. #Some soldier didn't stand on many of these building.

3.1.2. Hornstein

In Inverse Scope, the subject cannot bind into a temporal adverbial.

(12)What happened last night at the party?
a A different man danced with every woman.
b. A different man danced with every woman before she got drunk.
c. A different man danced with every woman before he got drunk.

(13)What happened last night?
a. A guard was standing on every building when the president's motorcade passed by.
b. #A guard was standing on every building when he saw the president's motorcade passing by.
(Out of 8 speaker, 6 got the judgments)

3.1.3. Further Predictions

Adding another specifier will eliminate the effect (modulo locality of QR)

(14) a. I wanted some soldier not to stand on many of these buildings.
b. I wanted some soldier not to stand on many of the buildings that the enemy forces thought I would.

c. I demanded that some soldier not stand on many of these buildings.
d. I demanded that some soldier not stand on many of buildings that you predicted I would.

3.2. Extraposition will not cross a matrix subject

Baltin (1987) and Culicover and Rocemont (1990) present evidence that material extraposed from an object can't appear higher than the subject.

(15)a. Mary introduced him_1 to a boy yesterday that $John_1$ really wanted to meet.
b. *He_1 introduced Mary to a boy yesterday that $John_1$ really wanted her to meet.

This is predicted, since extraposition is post QR late-merger, and QR can't cross the subject.

But we make additional predictions:

(16)a. I thought that he introduced Mary to a boy yesterday that John predicted I would
b. I decided that he is in love with a woman, when I met him, that John introduced me to many years ago.[2]

And More dramatically:

(17)a. why did he_1 read every book, carefully, that $John_1$ wanted to understand?
b. *He_1 read every book, carefully, that $John_1$ wanted to understand.

4. Base Generated Inner Specifiers

We've argued that an inner specifier formed by movement is covert. E.g.:

(18) Movement below the subject position (QR)
$[_{TP}$ S $[_{T'}$ XP$[_{T'}$ …$[_{VP}$ S (XP) V XP PP]]]
Linearization: $[_{TP}$ S $[_{T'}$ …$[_{VP}$ S V XP PP(XP)]]XP]
PCP: $[_{TP}$ S […$[_{VP}$ S V XP PP~~(XP)~~]]~~XP~~]

What if an inner specifier is base generated? Under such a scenario, the inner specifier will be on the right.

[2] Note that this example suggests that extraposition is not subject to the RRC, or at least that the RRC is not strong enough to make it impossible for us to see consequences of extraposition for Condition C.

Assuming that multiple specifiers are not formed by base generation, the scenario we characterized can only occur if the outer specifier is formed by movement.

Our claim: this is what happens in Locative Inversion and Passive (and maybe in stylistic inversion):

(19) Movement above the subject position (LI/Passive)
$[_{TP}$ XP […$[_{VP}$ XP S V XP α]]]
Linearization: $[_{TP}$ XP […$[_{VP}$ XP V XP α S]]]
PCP: $[_{TP}$ XP […$[_{VP}$ ~~XP~~ V ~~XP~~ α S]]]

Locative Inversion:

(20) In to the room walked John.

Argument that the subject has to be vP final (from Pesetsky 1992):

(21) a. To the stockholders were sent out several brochures.
b. *To the stockholders were sent several brochures out.

(22) a. ??In this room were assigned several important cases to him.
b. In this room were assigned to him several important cases.
c. In this room were assigned several important cases to a number of incompetent investigators.

(23) a. In the room seemed to be sitting several people.
b. *In the room seemed several people to be sitting.

Passive:

(24) John was killed by Mary.
Syntax:
John was $[_{vP}$ John $[_{vP}$ by Mary killed John]]
Linearization:
John was $[_{vP}$ John $[_{vP}$ killed John by Mary]]
PCP:
John was $[_{vP}$ ~~John~~ $[_{vP}$ killed ~~John~~ by Mary]]

Argument that the subject has to be VP final:

(25) a. Several brochures were sent out by Fred.
b. *Several brochures were sent by Fred out.

4. SOV languages

In an SOV language, if α merges with β and β projects, α precedes β.

(26) **Linearization of Merge$_\beta$(α, β) in an SOV language**: α precedes β.

4.1. Consequences for Overt Movement

It follows (among other things) that all specifiers will be on the left, and consequently, that there will be no covert movement. More specifically, that QR in an SOV language will be overt.

Hypothesis: Scrambling is the overt realization of QR. (Miyagawa 2008, others?)

Prediction:
1. SOV languages should have scrambling (van Riemsdijk and Corver 1997, cited in Abels and Neeleman 2006).
2. SOV languages should have no covert QR, hence one might expect (a) scope rigidity, and (b) obviation of scope rigidity by scrambling (Kuroda 1970, and much subsequent work).

Example (from Japanese):

(27) a. Dareka-ga daremo-o aisteiru.
someone-NOM everyone-ACC loves
'Someone loves everyone.'
someone > everyone, *everyone > someone
b. Daremo-oi dareka-ga ti aisteiru.
everyone-ACC someone-NOM loves
'Someone loves everyone.'
someone > everyone, everyone > someone
(taken from Miyagawa 2008)

This observation has been problematic on two grounds:
a. Why is there no QR in scrambling languages?
b. Why is there no reconstruction in scrambling languages (in the *S O* t_S *V* structure)?

We already have an answer to (a).

To answer (b), we would like to rely again on CyclicLlinearization, and in particular, on Ko's (2006) account of constraints on the stranding of numeral quantifiers.

4.2. Ko's (2004, 2006) Proposal

Subject scrambling is possible stranding a FQ

(28) [**Haksayng-tul-i**$_1$ *way* t$_1$ **sey-myeng** hakkyo-lul ttenassnun-ci] (anta)
Student-Pl-Nom why 3-Cl school-Acc left-Q (know)
'(I know) why three students left the school.'

Object Scrambling is possible stranding a FQ

(29) O S t_{obj} NQ_{obj} V.
Maykcwu-lul$_1$ John-i t_1 **sey-pyeng** masiessta
Beer-Acc J-Nom 3-Cl_{bottle} drank
John drank three bottles of beer.'

Yet subject can't strand a FQ below scrambled object

(30) *[S O t_{subj} NQ_{subj} t_{obj} V]
Haksayng-tul-i$_2$ maykcwu-lul$_1$ t_2 **sey-myeng** t_1 masiessta
Student-Pl-Nom beer-Acc 3-Cl_{person} drank
'Three students drank beer.'

The account: vP is a spell-out domain but (following Chomsky 2000, 2001) there is no movement from specifier to specifier position. Hence, any linearization of vP will be contradicted by the order in (29).

4.3. An extension to account for the ban on subject reconstruction

Movement of DP never reconstructs. Reconstruction effects result from movement other than the quantificational DP, in particular the stranding of a null quantifier (cf. Johnson 2008). Hence, there can be no reconstruction below a scrambled object.

4.4. Problematic Predictions:

1. No extraposition of the F&N-type in SOV languages. This seems to be false for German and Dutch (Gross and van Riemsdijk 1981), though we should look at the properties of extraposition more carefully.

(54) Der Hans hat [das Geld] zurueckgegeben [das er gestohlen hat].
The Hans has the gold returned that he stolen has

Clearly, there is something to understand here. One path to pursue, this form of extraposition involves the stranding of the RC (as in Johnson 1994, Kayne 1994).

2. No covert *wh*-movement in SOV language. For evidence that this might not be problematic after all, see Beck (2007).

5. Parasitic Gaps

Why does covert movement normally not license PGs?

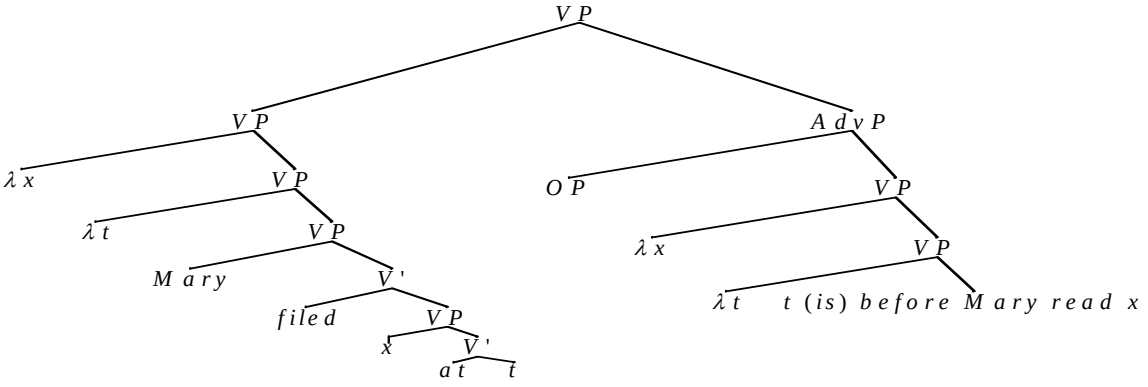
(31) a. Which paper did John write t without talking to his professors about t?
b. *Who wrote which paper without talking to his professors about t?

Nissenbaum's answer: In order for movement to license parasitic gaps, the moved constituent must be re-merged as a sister of a constituent formed by adjunction:

(32) XP (λx[$_{YP}$…x…]] [OPλy[$_{AP}$…y…])

(33) (Guess) Which book Mary filed t before reading t .

LF: Which book…XP [λx[Mary filed x]] [OPλy[$_{AP}$ before reading y]]



Nissenbaum has a very nice way of banning covert re-merge to the constituent required for pg licensing. However, this proposal relies crucially on the Y's model of covert movement, hence is inconsistent with Fox and Nissenbaum's account of extraposition.

We would like to suggest that the reason covert movement cannot license parasitic gaps is that the set required by Nissenbaum would make the moved constituent a higher specifier, hence necessarily overt.

We can also capture Nissenbaum's prediction that a covertly moved *wh*-phrase can license a parsitic gap if an overtly moved *wh*-phrase is a higher specifier.

(34) Which senator did John let t drive which car after asking opponents of t to a bomb in t?

Note: An independent story needs to be told about the impossibility of (partial) overt *wh*-movement. This seems to be needed independently of pg licensing and we hope that the correct account will be consistent with our story.

6. Object Shift, Quantifier Movement and Cyclic Linearization

Fox and Pesetsky (2005) provide an account of Holmberg's Generalization (HG) and related facts based on the assumption that OS does not have an intermediate landing site at the edge of the lowest spell-out domain. We would like to maintain the basics of the account but to eliminate the assumption in favor of more general assumptions about the nature of A and A-bar movement.

6.1. F&P's Proposal

(35)**HG**: Object Shift over X (which is internal to vP/VP) requires an "order preserving" movement of X.

(36) a. …V O AdvL [$_{VP}$ t_v t_o …]

b. *… O AdvL [$_{VP}$ V t_o …]

(37) a. Jag kysste hennev inte[$_{VP}$ t_v t_o].
I kissed her not
b. *I have her not [$_{VP}$ kissed t_o].
c. *…that I her not [$_{VP}$ kissed t_o].

(38)**F&P's account:** VP is a spell-out domain, and OS can not move overtly to the edge of VP. OS can move-out of VP without an intermediate landing site, but, given Cyclic Linearization, (CL), this requires order preserving operations.

6.2. Open Questions
:

1. Why can't OS stop at the edge of lower spell-out domain?
2. Why are other movement operations different?: e.g., passive, *wh*-movement.

Most disturbing is that the difference between OS and other movement operations does not correspond in any way to an independently needed typology of movement, e.g., A vs. A-bar.

Specifically, as noted in Bobaljik (2005), in a double-object construction in which the higher object is passivized, the lower object is subject to HG. Hence, we cannot claim that VP is not a spell-out domain in the passive.

6.3. HG with New rules of Linearization

New Assumptions:

1. The relevant spell-out domain is bigger than VP. Specifically, it is the maximal projection directly above (little) vP, so as to allow for verb raising over the subject and for *wh*-movement over the subject. Call this projection μP.

2. The only spec position within μP which is also an A position is [spec, vP].

> **A possible definition**: [spec, σP].is an A position only if after σ mergers with its complement the result still has a theta role or case to assign (i.e., if ∀xMerge(σ,x) has a theta role or case to assign).

Deriving HG: There are good reasons to believe that OS is an A-movement operation (BT, pg licensing). We also know that the final landing site of OS is outside of μP.

By assumption 1, OS would be subject to HG unless it had an intermediate position within μP . Given the constraint on improper movement, such a landing site must be in an A-position. So by assumption 2, has to be [spec, vP].

But then the subject will be linearized on the right, and will not be able to move to [spec, TP].

So, we understand why OS – in contrast to A-bar movement – cannot have an escape hatch inside μP.

We also understand why passive is different from OS. In passive, the subject does not move to [spec, TP]. Hence the subject can be linearized on the right (as discussed in section 4) and the object can move to become an outer specifier of vP.

6.4. A note on Quantifier Movement and the Inverse Holmberg Generalization

(39)**Inverse Holmberg Generalization**: Quantifier Movement over X does not allow an Order Preserving movement of X.

(1) **Quantifier Movement (Icelandic)**
Jón hefur ekkert [sagt Sveini __]
Jon has nothing said Svein-DAT
'Jon has told Svein nothing'

(2) **QM to left edge of VP incompatible with V-to-C movement**
*Jón sagði ekkert Sveini __.
Jon said nothing Svein-DAT
(Rögnvaldsson (1987), quoted by Svenonius (2000))

(40) **F&P's (2005) account:** VP is a spell-out domain, and QM can move overtly to the edge of VP. In (38), QM must moves through the edge of VP if the quantifier is to precede the dative argument *Sveini*. But then verb movement would be blocked by CL.

This needs to be restated. There are reasons to think that VP is a spell-out domain in addition to a higher domain (such as μP) – See Ko's work for evidence. But if so, why is OS sensitive to HG, and passive not.

(41) **Current statement:** VP is a spell-out domain in addition to μP (as argued by Ko), and QM can move overtly to the edge of VP (since QM is A-bar movement). In (38), QM must move through the edge of VP if the quantifier is to precede the dative argument *Sveini*. But then verb movement to C would be blocked by CL.

Consequence: OS is sensitive to HG for two reasons: V prcedes O in two different spell-out domains: μP and VP.

Problem: How is passive and LI possible. We saw why in these construction there can be an escape hatch in μP. But there can be no escape hatch in VP, since [spec, VP] is an A-bar position.

Tentative proposal: VP is a spell out domain only if its object receives accusative case. Bobaljik's problem does not arise. In passive of a double-object construction, the lower object will be subject to HG based on μP alone.

7. Conclusion:

1. Why is rightward movement so rare (if it at all exists)?

   Rightward movement does not exist. Whenever principles of linearization would linearize a moved element on the right, the PCP would yield covert movement.

2. What is the analysis of apparent rightward movement?

   Here we don't claim to have a complete story. There are various possibilities. Either (a) sequences of movement tot the left (Kayne, and subsequent work) or (b) late merger to a moved constituent which is linearized on the right (to an internal specifier), hence covertly moved, or (c) base generated specifier which is linearized on the right (when something moves over it).

3. Why does extraposition of NP modifiers take place to the right (and why can only post-nominal modifiers extrapose)?

   Extaposition is post QR late merger, and QR is movement to the right, hence extraposition appears to be to the right.

   Only post-nominal modifiers can extrapose because DP is a spell-out domain.

4. Is there anything that predicts when movement is overt and when it is covert?

   Indepndent statements about linearization for external merge (hope).

5. Why do SOV language always have scrambling, and why do they have rigid scope?

   SOV language linearize all non-projecting elements on the left. Hence these languages have overt QR (scrambling) and no covert movement.

6. Why is scrambling of an object over a subject not attested in many SVO languages?

   It is. When it is attested, the subject appears VP finally as in locative inversion and Passive.

7. Why can't covert movement license parasitic gaps, unless another parasitic gap is licensed by an overtly moved constituent?

A covertly moved *wh*-phrase cannot be an outer-specifier.

8. What accounts for the constraints on Object Shift in Scandinavian languages.

   Cyclic Linearization without stipulations about the non-existence of an escape hatch for OS. OS cannot have an escape hatch, because only one escape hatch is available for A-movemnt, and using this escape hatch entails (as in passive) that the subject is linearized on the right.