From Order to Scope

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Roadmap

- Extend Fox & Pesetsky's 2005 Interface Constraint on the Spell-out/PF mapping —*Order Preservation*— to an Interface Constraint on the Spell-out/LF mapping: *Scope Preservation*
- Trapped at the Edge:

  Scope contrasts (overt/covert) partially fronted vs. LDs in-situ *wh*s
- Discuss empirical & theoretical challenges

Spell-out/PF interface constraint

Successive cyclic movement driven by PF requirements such as linearization.

(1) *Order Preservation* (Fox & Pesetsky 2005)

Information about linearization, once established at the end of a given Spell-out domain, is never deleted in the course of a derivation.

Overt Movement < Linearization → Cyclicity effects

Linearization < Covert Movement (CM) → No cyclicity effects

Spell-out/LF interface constraints

While what matters for the mapping to PF is linearization, what matters for the mapping to LF is (relative) c-command/scope.

(2) *Scope Preservation* (Cheng and Demirdache 2017)

> At the LF interface, the derivation crashes if the scopal statements, established at the various moments in the derivation where propositional scope is computed, are contradictory.

– The claim is **not** that there are no island effects at LF, only that the explanation for island effects with CM cannot be imputed to cyclicity/locality constraints (e.g. semantic approaches to weak/negative islands)

Trapped at the Edge

(3) *The Trapped at the Edge Generalisation*

While an embedded *wh*-in-situ can interact with a matrix operator, a partially fronted (overt or covert) *wh* cannot.

Concerned here with *list* readings, *not single* pair/triple readings (derived in-situ a la Reinhart via choice function)

English: Baker (1970) ambiguities

(4) a. Who asked/knows where Zara bought what?

b. Sybren asked/knows where Zara bought what.

c. Sybren asked/knows where Zara bought a scooter, and Amina asked/knows where Zara bought a train.

- *what* can be paired with either the medial or the matrix *wh*

Overt (multiple) partial movement

(5) Russian (Sergey Avrutin, Arthur Stepanov, p.c.)

a. Kto znaet gde chto kupila Marija?
   who knows where what bought Maria

- Only matrix WH answered:

  e.g., 'John knows where Marija bought what.'

b. Kto znaet chto kto kupil?
   who knows what who bought

- Only matrix WH answered: e.g., 'Bill knows who bought what.'

Russian PM in a *wh*-island

(5) a. Kto znaet gde chto kupila Marija?
who knows where what bought Maria

- Partial Movement of both *wh*s to the edge of CP2:

  where, what have same relative scope (IP2)

- Movement of *what* from the edge of CP2 to the edge of CP1

  Scope statement: **what* > *where*

English *wh*-in-situ in a *wh*-island

(4) a. Who asked/knows where Zara bought what?

(6) a. Spell-out: $[_{CP1}$ Wh1 $[_{IP1}$ … $[_{CP2}$ Wh2 $[_{IP2}$ … t2 … Wh3 …]]]]

No scopal statement for *wh2-wh3*

b. *Covert non-successive cyclic/one swoop movement:*

√ $[_{CP1}$ Wh1 [Wh3 $[_{IP1}$ … $[_{CP2}$ Wh2 $[_{IP2}$ t2 … t3 …]]]]]

✓ Scope statement: *what* > *where*

➢ No conflicting scopal statememts because (relative) scope computed after *Wh*2/*Wh*3 both move to establish scope

Wh-triangle (Dayal 2002)

(7) a. *LD pair-list reading licit across a **wh**-island*:

Which student knows where Mary bought which book?

✓Single pair, ✓ List of pairs

b. *Not across other islands*:

Which philosopher will be offended if we invite which linguist?

✓Single pair. * List of pairs

- LD list in (7a) derived via pied-piping of the embedded *wh* question

Cheng and Demirdache (2010)

(8) Context provided by Chris Tancredi (p.c.)

a. Each of two philosophers will be offended if we invite one of two linguists.

   What I want to know is:

   Which philosopher will be offended if we invite which linguist?

b. ✓ Pair-list: Quine will be offended if we invite Chomsky, and Lewis will be offended if we invite Pesetsky.

c. * Single pair: infelicitous due to context

Trapped Pair-List Readings

(9) a. Which parent thanked Mary for giving which child which toy?

b. ✓ *List of triples*: Zoey thanked Sam for giving Sybren a car, and Noël thanked Amina for giving Zara a ball.

c. ✓ *Trapped pair-list*: *Pairing only the 2* WHs *within the island*:

Zoey thanked Sam for giving Sybren a car, Amina a plane, and Zara a train.

d. ✓ *Lists of trapped pair-lists*:

Zoey thanked Sam for giving Sybren a car and Amina a plane,

Noël thanked Zara for giving Rosa a bicycle and Leo a scooter.

Trapped Pair-List Readings

- All 3 *wh*s are answered.
- Only the 2 *wh*'s in the embedded clause are paired together (independently of the matrix *wh)*.
- The *wh*'s in the embedded clause cannot be paired independently of e.o with the matrix *wh*.

➢ Syntax of trapped pair-lists ≠ Syntax of List of triples

Romanian (Ratiu 2005, 2007)

(10) a. ✓ LD Multiple *wh*-movement: no island

cine ce$_i$ crede [că am publicat t_i anul trecut]?
who what believe that AUX1.SG publish year last
'Who believes that I have published what last year?'
➞ **List of triples** answer enforced.

b. No LD Multiple *wh*-movement across an island

*[$_{CP1}$ Cine$_i$ ce$_k$ [$_{IP1}$ t_i o cunoaşte pe studenta
who what CL.3.FS know PREP student
[$_{CP2}$ căreia i s-a dedicat t_k ieri
which.DAT CL.DAT.3SG EXPL.AUX dedicated yesterday
'Who knows the student to whom was dedicated what where yesterday?'

Romanian Partial Movement

(10) c. [$_{CP1}$ Cine$_i$ [$_{IP1}$ t_i o cunoaşte pe studenta [$_{CP2}$ căreia unde$_j$ ce$_k$

Who CL.3.FS know PREP student REL.DAT where what

i s-a dedicat t_k t_j ieri]

CL.DAT.3SG EXPL.AUX dedicated yesterday

Lit: 'Who knows the student to whom was dedicated what where yesterday?

i. **List of triples*: Vlad knows the student to whom a poem was dedicated yesterday at the radio station, Filip knows the student to whom a song was dedicated yesterday at a concert.

ii. √*Trapped pair-lists:* Vlad knows the student to whom *a poem* was dedicated yesterday at the *radio station*, and the student to whom a *song* was dedicated yesterday at a *concert*.

Overt Full vs. Partial Movement

(11) a. *(Overt) multiple partial movement*

Wh1 t_1 [ISLAND Wh2 Wh3 t_2 t_3

√Trapped pair-list *List of triples

b. *(Overt) multiple full movement*

Wh1 Wh2 Wh3 t_1 [COMPLEMENT t_2 t_3

*Trapped pair-list √List of triples

Covert (Multiple) PM in English

(12) a. English *covert multiple* PM to the edge of the island:

Which parent$_i$ t$_i$ thanked Mary [[which child]$_j$ [which toy]$_k$ for giving t$_j$ t$_k$]]

→ trapped pair-list reading

b. English *covert one-swoop movement* across the island to the edge of the matrix:

[$_{CP}$ [Which parent]$_i$ [which child]$_j$ [which toy]$_k$ [$_{IP}$ t$_i$ thanked Mary for giving t$_j$ t$_k$]]

→ list of triples reading (9d)

- In-situ *wh's* can move either partially to the edge of the embedded CP or all the way up (in one-swoop) to the edge of the matrix

Trapped pair lists: consequences

- English has covert (multiple) Partial Movement.
- Partial movement is Universal. (See also Kotek's work)
- Instantiate a familiar pattern:

  Partially fronted *wh*-in-situ cannot be assigned matrix scope, *wh*-in-situ can.

Scope Preservation in action - Romanian

(13) a. ***Overt*** *partial movement to the periphery of the relative clause island:*

$[_{CP1}$ who$_{\mathbf{1}}$ ... $[_{IP1}$ ... $[_{CP2}$ ISLAND **which$_{\mathbf{2}}$** $[_{IP2}$ where$_3$ $[_{IP2}$ what$_4$ $[_{IP2}$ ... $t_{\mathbf{2}}$ ... t_4 ... t_3 ..]]]]]

- **which**$_{Rel}$ > *where, what*

b. *Covert spec-to spec movement to the matrix periphery:*

*$[_{CP1}$ who$_{\mathbf{1}}$ $[_{IP1}$ where$_3$ $[_{IP1}$ what$_4$ $[_{IP2}$ ... $[_{ISLAND}$ **which$_{\mathbf{2}}$** $[_{IP2}$ t'$_3$ $[_{IP2}$ t'$_4$ $[_{IP2}$ ... $t_{\mathbf{2}}$ ... t_4 ...t_3]]

- *Where, what* > **which**$_{Rel}$
- (13b) thus violates Scope Preservation.

PM in complement clauses

(14) PM to the edge of a complement clause

a. [$_{CP1}$ cine a spus [că ce when va offeri satului
who said that what when will offer the.village
'Who said that he will offer the village what, when?'

b. √*List of triples*: Vlad said he will offer the village a theater for Christmas and Filip said he will offer the village a library for the New year

c. √*Trapped pair:* Vlad said he will offer the village a theater for Christmas and a library for New year.

CM from the edge of a complement clause

(15) a. ***Overt*** *partial movement to the periphery of the complement clause:*

$[_{CP1}$ who$_{\mathbf{1}}$ ... $[_{IP1}$ ... $[_{CP2}$ that $[_{IP2}$ **what**$_2$ $[_{IP2}$ **when**$_3$ $[_{IP2}$ ... $t_{\mathbf{2}}$ ... t_3 ...]]]]]

- Scope statement: *what*, when (same scope)

b. *Covert spec-to spec movement to the matrix periphery:*

√ $[_{CP1}$ who$_{\mathbf{1}}$ $[_{IP1}$ **what**$_2$ $[_{IP1}$ **when**$_3$ $[_{IP1}$ ... $[_{CP2}$ that $[_{IP2}$ t'$_2$ $[_{IP2}$ t'$_3$ $[_{IP2}$ ... $t_{\mathbf{2}}$ ... t_3...]]

- Scope statement: *who, what, when* (same scope)
- Multiple **covert** fronting from the edge of IP2 to the matrix allowed as long as it satisfies *Scope Preservation*

Hungarian – in-situ vs. PM *wh*

(16) a. Melyik versenyző dicsekedett, hogy hol végzett **melyik versenyen**?
which sportsman boasted that where finished **which competition-on**
'Which sportsman boasted about where he finished in which competition?'

i. √Pair-list of *which sportman* and *which competition*

ii. *Pair-list of *which sportman* and *where*

iii. √Single triple

- In-situ can pair up with matrix *wh*

Hungarian –Partially Moved wh

(16) b. melyik versenyző dicsekedett, hogy **hol melyik versenyen** végzett?
which sportsman boasted that **where which competition-on** finished
i. *Pair-list of *which sportman* and *which competition*
ii.*Pair-list of *which sportman* and *where*
iii. √Single triple

- Partially moved *wh* cannot be paired with the matrix *wh*
- Again, while *wh*-in-situ can be assigned matrix scope & pair with the matrix *wh,* a partially fronted *wh* cannot.

Wh-in-situ languages

- Assuming cyclicity/locality constraints on movement are not enforced at LF:
  - Mandarin behaves as expected
  - Japanese does not

Mandarin: in-situ within a *wh*-island

(17) nǐ xiǎng-zhīdào nǎ-ge xuéshēng mǎi-le nǎ-běn shū
you want-know which-CL student buy-PERF which-CL book
Lit: 'You wonder which student bought which book.'

a. 'Which student do you wonder which book he bought?'

b. 'Which book do you wonder which student bought (it)?'

- Matrix subject not *wh*
- Either embedded *wh* can satisfy [+wh] verb requirement.

Mandarin: in-situ within a *wh*-island

(18) Matrix subject *wh*

nǎ-ge lǎoshī xiǎng-zhīdào nǎ-ge xuéshēng mǎi-le nǎ-běn shū

which-CL teacher wonder which-CL student buy-PERF which-CL book

Lit: 'Which teacher wonders which student bought which book?'

- ✓ Pairing *which teacher* and *which student*
- ✓ Pairing *which teacher* and *which book*

- Same patterns with *zhīdào* 'know' – with one extra reading: list of triples

Japanese: in-situ within a *wh*-island

(24) Both matrix and embedded have *ka* 'Q' (Dayal 1996, Hagstrom 1998)

[Tanaka-kun-wa [Mary-ga doko-de nani-o katta **ka**] sitte-imasu **ka**]

Tanaka-TOP Mary-NOM where-LOC what-ACC bought **Q** know **Q**

a. 'Does Tanaka know where Mary bought what?'

b. *'What does Tanaka know where Mary bought t?'

- Lower *wh's*-in-situ **cannot** take scope outside the embedded interrogative

Japanese: Additional matrix *wh* effect

(25) Dare-ga [John-ga doko-de nani-o katta ka] sitteriru **ka**?

who-NOM John-NOM where-DE what-ACC boughtQ know Q

a.'Who knows where John bought what?' (Dayal & Hagstrom)

b. 'Who knows whether John bought what where?' (Ishihara, Uegaki, p.c.)

- Nishigauchi (1998): some speakers need to stress both *dare* & *nani* in (25) to get the list reading.

Mandarin vs. Japanese

- Difference between Mandarin vs. Japanese?

  → Japanese has an obligatory overt Q morpheme.

- Japanese behaves exactly as expected once we assume,

  going back to Watanabe 1992, that:

  –There is overt movement in Japanese (for Watanabe of a silent OP)

  – Japanese (like English) shows subjacency effects .

Hagstrom 1998: Q movement

- Q (**ka**) base-generated as a sister to a lower/lowest *wh*-phrase

  (captures Watanabe's *Anti-superiority generalisation*)

- One Q per clause.

- $C_{+\ \mathbf{wh}}$ with an unchecked F(ocus) feature attracts closest Q in the **overt** syntax

Japanese: in-situ within a *wh*-island

(24) Both matrix and embedded have *ka* 'Q'

[Tanaka-kun-wa	[Mary-ga	doko-de	nani-o	katta	**ka**]	sitte-imasu	**ka**]
Tanaka-TOP	Mary-NOM	where-LOC	what-ACC	bought	Q	know	Q

- Lower C_{+wh} overtly attracts Q & checks *wh*-features of both lower *wh*s (via CM)
- Matrix C_{+wh} → No Q available to check its F feature, derivation crashes
- Matrix $C_{yes/no}$ ✓ → 'Does Tanaka know where Mary bought what?'

The additional *wh*-effect

(25) Dare-ga [John-ga doko-de nani-o katta ka] sitteriru **ka**?
who-NOM John-NOM where-DE what-ACC bought Q know Q

a. 'Who does Tanaka know where Mary bought what?'

- Lower C_{+wh} attracts Q
- Additional *wh* in the matrix: Q available to check [F] on matrix C_{+wh}
- → wide/narrow scope of the 2nd embedded *wh* via CM to matrix/lower Spec C_{+wh}

b. 'Who does Tanaka know whether where Mary bought what?'

- Lower C° [yes/no]
- Q available to check F on Matrix C° [+ wh] →wide scope of both embedded *Wh*s via CM to matrix Spec CP.

Kotek (2014)
Intervention effects across islands

(26) Covert PM to the edge of CP2 removes the *wh* from the scope of the intervener.

a. [$_{CP1}$ wh1 C+wh [TP … [$_{CP2}$ **wh2** C-wh [$_{TP2}$ intervener … t2 …]]]]

→ *Wh* is stranded at the edge of CP2

b. [$_{CP1}$ wh1 C+wh [TP … intervener … [$_{CP2}$ **wh2** C-wh [$_{TP2}$ … t2 …]]]]

- Unavailability of further movement due to islandhood of CP2, on the assumption that covert movement shows locality effects.

Overt PM & Intervention effects across complement clauses

(27) a. [CP_1 $cine_i$ ce_j t_i nu crede [$_{complement}$ CP_2 că t_j' am descoperit t_j

who what NEG believe that aux.1.sg discover

- Overt PM to the edge of CP1 removes *Wh*s from the scope of the intervener

b. *[CP_1 $cine_i$ t_i nu crede [$_{complement}$ CP_2 că ce_j am descoperit t_j

who NEG believe that what aux.1.sg discovered

- If the *Wh* at the edge of *CP2* were to undergo further CM to the edge of CP1, then (27b) should be as good as (27a), contrary to fact.

PM & IE in French

(28) a. Partially fronted *Wh* outscopes embedded negation → no IE

Tu crois que c'est qui que Marie n'a pas invité ?

You believe that it.is **who** that Marie ne.has **not** invited

'Who do you think Marie didn't invite?'

b. Partially fronted *Wh* under the scope of matrix negation → IE

*Tu ne crois pas que c'est qui que Marie a invité ?

You ne believe **not** that it.is **who** that Marie has invited

'Who don't you think that Marie invited?'

Wh-in-situ & IEs in French

(29) a. Max/Qui croit que Marie ne veut pas inviter qui, alors?

Max/Who believe that Mary NE veut **not** to.invite **who** so

'So, Max/Who thinks that Marie wants not to invite who?'

b. Max/Qui ne croit pas que Marie veut inviter qui, alors?

Max/Who NE believe not que Marie wants to.invite **who** so

'So, Max/Who doesn't think that Marie wants to invite who?'

Overtly partially fronted vs. in-situ *wh*s

- Should be made to fall out from Scope Preservation since we find the familiar pattern of distribution:

  - Once *wh* scope relative to NEG has been established overtly via PM, we cannot reverse this scopal relation via covert movement.

  - In contrast, covert long movement of *wh*-in-situ will not be constrained by Scope Preservation if long movement over the matrix negation is an option at LF.