Focus association through covert movement

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0 Introduction

Operators such as *only*, *even*, and *also* **"associate with focus"** as their interpretation depends on the placement of focus elsewhere in the utterance.

(1) a. David **only** wears a bow tie when TEACHING. (exx Beaver and Clark, 2008)
b. David **only** wears a BOW TIE when teaching.

Focus triggers the computation of **alternatives** which vary in the focused position and focus-sensitive operators quantify over these alternatives (Rooth, 1985, 1992, a.o.).

Q: What is the nature of this "association" between a focus-sensitive operator and the focused constituent?

A1: The focus is interpreted in-situ through a process of *altérnative computation* (Rooth, 1985, 1992).[2]

A2: The focus moves (covertly) to the operator.

(These reflect two general technologies for scope-taking —
This question parallels a long debate on the interpretation of *wh*-in-situ.)

A2': The focus moves (covertly) to the operator *with pied-piping* (Drubig, 1994; Horvath, 2000; Krifka, 2006; Wagner, 2006; Erlewine and Kotek, 2014)

☞ Two arguments for focus association through **covert movement with pied-piping (A2')**.

1 Background

The focused constituent in the sentence is formally **F-marked** (Jackendoff, 1972).

(2) $[\text{Mary}]_F$ came ⇒ "MARY came."

Alternatives to Mary (John, Sue, Bill) correspond to alternatives at the proposition level (John came, Sue came, Bill came).

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[2]This approach is called *Altérnative Semantics*. The technology of alternative computation was introduced earlier for *wh*-in-situ by Hamblin (1973). See Rooth (1992) footnotes 1 and 7.

Focus-sensitive operators quantify over these alternatives:

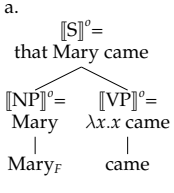
(3) a. **Only** $[\text{Mary}]_F$ came.
b. ⇝ Mary came
⇒ John, Sue, and Bill did not come.

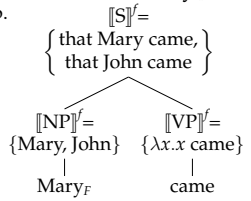
Sentences are interpreted in a multi-dimentional system: Each node has an *ordinary value* $[\![\cdot]\!]^o$ and a *focus-semantic value* $[\![\cdot]\!]^f$ (Rooth, 1985, a.o.).

The focus-semantic value is the set of *alternatives* for a node.

Nodes compose through **pointwise Function Application**.

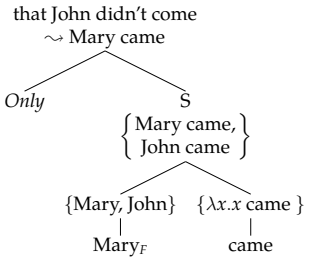
(4) **Ordinary and alternative values for "$[\text{Mary}]_F$ came":**

a.


b.


Operators such as **only** operate on alternative values:

(5) **Only** $[\text{Mary}]_F$ came.



☞ This is the popular and influential **in-situ theory of focus association** (Rooth, 1985, 1992, a.o.).

Throughout, we will use a squiggly arrow to represent the region of a sentence in which alternatives are being computed for interpretation by an operator:

(5) **Only** MARY_F came.

(1a) David **only** wears a bow tie when TEACHING_F.

Alternatively, bring the focus into a local relation with the operator. Some focus constructions indeed involve overt movement of the focus:

(6) **English *it*-clefts:**
   a. John introduced Peter to Mary.
   b. It was PETER$_F$ that John introduced ___ to Mary.
   c. It was MARY$_F$ that John introduced Peter to ___.

We find a similar movement operation in Hungarian, now applying to *only*:

(7) **Hungarian:**[3] (exx É Kiss, 2002, p. 90)
   a. János be-mutatott Pétert Marinak.
      John VM-introduced Peter.ACC Mary.DAT
      'John introduced Peter to Mary.'
   b. János csak PÉTERT mutatott be ___ Marinak.
      John only Peter.ACC introduced VM Mary.DAT
      'John only introduced [Peter]$_F$ to Mary.'

If focus association involves movement, we expect **island sensitivity**.

☞ But focus association seems to be insensitive to syntactic islands (Rooth, 1985, a.o.).

(8) He *only* invited ex-convicts with RED$_F$ shirts.

Compare with overt *wh*-movement:

(9) * [What color] did he invite ex-convicts with [___ shirts]?

Drubig (1994): Focus movement could pied-pipe the entire island and associate with focus inside the island:

(10) He *only* invited [$_{\textit{covert pied-piping}}$ ex-convicts with RED$_F$ shirts].
   movement *alternative computation*

   only(ex-convicts with RED$_F$ shirts)(λx . he invited x)

Overt focus movement certainly can involve pied-piping, with focus sensitivity within the pied-piped constituent (see also Horvath, 2000):

(11) **English cleft sentences:**
   a. It's [THREE girls] that John introduced to Mary
      (not one girl, not two, etc.)
   b. It's [three GIRLS] that John introduced to Mary
      (not three men, not three children, etc.)

[3]The "verbal marker" (VM) is a particle which often encodes aspectual information. It is preverbal in clauses with no focus movement but postverbal if focus movement takes place.

(12) **Hungarian focus with pied-piping:** (exx É Kiss, 2002, p. 87–88)
   a. Péternek [HÁROM lányt] kellett elszállásolnia
      Peter-DAT three girl-ACC needed put.up
      'Peter had to put up THREE girls.' (...not one girl, not two, etc.)
   b. Péternek [három LÁNYT] kellett elszállásolnia
      'Peter had to put up three GIRLS.' (...not three men, not three children, etc.)

But in the case of *covert* movement, it is difficult to diagnose the size of pied-piping (Kotek and Erlewine, in press).

Two theories of focus association:

A1: In-situ association: Focus is interpreted in-situ through a process of *alternative computation* (Rooth, 1985, a.o.).

A2: Focus movement: The focus moves (covertly) to the operator.

- Different predictions with respect to island sensitivity.
- But: the possibility of pied-piping (**A2'**) makes it difficult to distinguish between these two approaches.

Today: Two arguments for (covert) focus movement with pied-piping.

2 Tanglewood

Our first argument comes from *Tanglewood* configurations (Kratzer, 1991).

(13) **Tanglewood (Kratzer, 1991, p. 830):**
   Context: You accuse me of being a copy cat. "You went to Block Island because I did. You went to Elk Lake Lodge because I did. And you went to Tanglewood because I did." I reply:
   $\checkmark_{TW}$ I **only** went to [Tanglewood]$_F$ because you did $\triangle$.

(14) Paraphrase: Tanglewood is the only place x such that I went to x because you went to x.

This meaning requires the alternatives considered to *covary* in the position of pronounced focus and the corresponding position in the ellipsis site.

Kratzer briefly considers a covert movement approach to Tanglewood:

(15) LF: only(TW) (λx . I PAST [$_{VP}$ go to x] because you did [$_{VP}$ go to x])

The ellipsis site would be $\triangle$ = "go (to) *there*" with a bound variable *there*.

Kratzer dismisses this approach because the focus can be inside an island:

(16) **Tanglewood with balanced islands (Kratzer, 1991, p. 831):**
   Context: "You always contact every responsible person before me."
   $\checkmark_{TW}$ I **only** contacted [the person who chairs [the Zoning Board]$_F$] before you did $\triangle$.

Therefore Kratzer proposes an extension to Rooth's alternative computation with *focus indices* to allow for the in-situ computation of covarying alternatives. See also Wold (1996); Erlewine (2014).

What Kratzer did not consider is the possibility of *covert focus movement with pied-piping* (Drubig, 1994, a.o.):

(17) LF for (16):
I PAST **only** [[the person who chairs [the Zoning Board]$_F$] λx
[[$_{VP}$ contact x] [because you PAST [$_{VP}$ contact x]]]]

☞ *Why is this possible?* Because the island is *balanced* between the antecedent clause and the ellipsis site: both positions can range over covarying alternative *people*.

(18) Context: Our son speaks Spanish, French, and Mandarin. At one point we hired a tutor that happened to speak French, but that wasn't why we hired her. Another time we hired a tutor that spoke Mandarin, but that too was a coincidence...

*^{TW} We **only** hired [a tutor that speaks [Spanish]$_F$] because our son does $\triangle$.

Intended Tanglewood reading: Spanish is the only language x such that we hired [a tutor that speaks x] because our son speaks x.

($\triangle$ = "speak [Spanish]$_F$")

☞ The antecedent focus is contained inside an island ⇒ the intended Tanglewood reading is unavailable.

(19) Context: I speak Spanish, French, and Mandarin. I also have many friends that speak these languages, but for the most part that's not why I studied these languages...
✓^{TW} I **only** speak [Spanish]$_F$ because I have [a friend who does $\triangle$].

☞ The elided focus is contained inside an island ⇒ the Tanglewood reading is possible.

(20) LF for (19):
I **only** [[Spanish]$_F$ λx [[$_{VP}$ speak x] [b/c I have [a friend that [$_{VP}$ speak x]]]]]

A crucial **asymmetry**:

- Tanglewood readings are unavailable when the intended ellipsis antecedent is contained inside an island.
- Tanglewood readings are available when the ellipsis site occurs inside an island.

This is predicted by the *focus movement approach* with pied-piping.

Moreover, **Kratzer's (1991) focus indices cannot be available in the grammar**, as it predicts no island sensitivity.

☞ **Focus association always triggers covert focus movement** and this covert movement can trigger pied-piping.

(21) LF for (13):
I PAST **only** [[TW]$_F$ λx [[$_F$ go to x] [because you PAST [$_F$ go to x]]]]

This movement binds a bound variable in both the antecedent and ellipsis site, yielding the Tanglewood interpretation.

This proposal predicts that Tanglewood constructions do not crucially depend on ellipsis, and this is indeed the case:

(22) Context: We're interviewing witnesses in our murder investigation. You're concerned that the interviews you're getting have been affected by the witnesses talking to me first.

My interviews:	Bill		John	Steve	Sam
Your interviews:	Steve	Sam		John	Dave

→ *time*

✓^{TW} I **only** talked to [John]$_{F,i}$ before you talked to him$_i$.
(TW reading: judged true in context)

Covert focus movement must be able to be long-distance:

(23) Context: John, the first year grad student, doesn't quite understand the field yet. He seems to think that everyone works on focus, on ellipsis, and on binding. Some people think he is just extrapolating from what his advisor works on. But actually...
✓^{TW} He **only** thinks [that everyone works on [focus]$_F$] because his advisor does $\triangle$.

(24) LF for (23):
He **only** [[focus]$_F$ λx [thinks [$_{CP}$ that everyone [$_{VP}$ works on x]]]
[because his advisor [$_{VP}$ works on x]]]

QR of a quantifier such as *exactly one topic* in the parallel configuration (25) does not yield the bound variable Tanglewood reading.

(25) *^{TW} He thinks [that everyone works on exactly one topic] because his advisor does $\triangle$.

☞ Covert focus movement is longer-distance and specifically due to association with the higher operator, not simply QR.

Summary

- **A crucial asymmetry:** Tanglewood readings are available when the *elided focus* occurs inside an island, but not when the intended *antecedent focus* is contained inside an island.

☞ **Focus association uses covert focus movement (with pied-piping).** This movement can be long-distance.

- Kratzer's (1991) focus indices cannot be available in the grammar, or we cannot predict this island sensitivity.

3 Intervention

We started with two technologies for scope-taking—alternative computation and (covert) movement. *Islands are a problem for movement but not for alternative computation* and is therefore a diagnostic.

☞ We now consider **intervention effects**, which have been hypothesized to interrupt regions of alternative computation
(Kim, 2002; Beck, 2006).

(26) **Intervention in Korean *wh*-questions (Beck, 2006):**
a. Minsu-nun *nuku-lûl* po-ss-ni?
Minsu-TOP who-ACC see-PAST-Q
'Who did Minsu see?'
b. * **Minsu-man** *nuku-lûl* po-ss-ni?
Minsu-only who-ACC see-PAST-Q
Intended: 'Who did only [Minsu]$_F$ see?'
c. ✓ *Nuku-lûl* **Minsu-man** po-ss-ni?
who-ACC Minsu-only see-PAST-Q
'Who did only [Minsu]$_F$ see?'

Kim (2002) and Beck (2006): Korean *wh*-in-situ is interpreted through alternative computation, not covert movement. Certain quantificational operators (like *only*) interrupt the computation of alternatives.

(27) **Intervention configuration in (26b):**
* [$_{CP}$ C$_Q$ [$_{TP}$ **only** [Minsu]$_F$ saw *who*

(28) **Intervention bled by scrambling in (26c):**
[$_{CP}$ C$_Q$ [$_{TP}$ *who* [**only** [Minsu]$_F$ saw ____

☞ *Intervention effects are a problem for alternative computation but not movement* and can therefore be used as a diagnostic.

3.1 Pied-piping in overt focus movement

The size of the pivot in English *it*-clefts can vary, which can be thought of as different amounts of pied-piping:

(29) **Pied-piping in *it*-clefts:**
John read a book from THIS$_F$ library.
a. It's [THIS$_F$ library] that John read a book from ____.
b. It's [from THIS$_F$ library] that John read a book ____.
c. It's [a book from THIS$_F$ library] that John read ____.

The *it*-cleft associates with focus inside the pivot (Jackendoff, 1972; Krifka, 2006; Velleman et al., 2012). Therefore *it*-clefts are interpreted using both movement and alternative computation:

(30) It's [$_{pied\text{-}piping}$ a book from THIS$_F$ library] λx John read x.
alternative computation *movement*

Viewing cleft pivots in this light, Beck's (2006) theory predicts focus intervention *inside the pivot*. Such intervention does occur:

(31) **Intervention in *it*-cleft pivots:**
a. ✓ It's [THIS$_F$ library] that John's read **no** book from ____.
b. ✓ It's [from THIS$_F$ library] that John's read **no** book ____.
c. * It's [**no** book from THIS$_F$ library] that John's read ____.

Other interveners also yield this effect, so we know that this is not a problem due to the existential presuppositions of the cleft.

(32) a. ✓ It's [THIS$_F$ library] that John's read **few** books from.
b. * It's [**few** books from THIS$_F$ library] that John's read.

(33) a. ✓ It's [THIS$_F$ library] that John's read **only**$_i$ BOOKS$_i$ from.
b. * It's [**only**$_i$ BOOKS$_i$ from THIS$_F$ library] that John's read.

No, *few*, and *only* are all DP-internal interveners which trigger intervention in *wh*-pied-piping (Kotek and Erlewine, in press).

What do we predict for association with in-situ foci?

If foci are interpreted strictly in-situ at LF (A1; Rooth, 1985, 1992), we predict intervention everywhere between the operator and focus:

(34) I *only* read a book from THIS$_F$ library.
alternative computation

Beck (2006) in fact discusses this prediction but fails to find intervention:

(35) **Lack of intervention by sentential negation:**
I *only* **didn't** read a book from THIS$_F$ library.

(36) **Crossing focus dependencies (Rooth, 1996):**
a. I *only* introduced [MARILYN]$_F$ to John Kennedy.
b. ✓ I *also* **only** introduced [Marilyn]$_F$ to [BOB]$_F$ Kennedy.

This leads Beck to adopt a version of Rooth's in-situ theory that relies on focus-indices (Kratzer, 1991; Wold, 1996).

If covert focus movement is involved, intervention would occur *inside the covert pied-piping constituent*:

(37) **Possible pied-piping in covert focus movement:**
I *only* read a book from THIS$_F$ library.

a. only(THIS$_F$ library)(λx. I read a book from x)
b. only(from THIS$_F$ library)(λx. I read a book x)
c. only(a book from THIS$_F$ library)(λx. I read x)

All three of these LFs yield the same truth conditions, but predict *different extents of alternative computation*.

(38) **Intervention in in-situ association:**

a. * I *only* read **no** book from THIS$_F$ library.
b. * I *only* read **few** books from THIS$_F$ library.
c. * I *only*$_i$ read **only**$_j$ [books]$_{F,j}$ from THIS$_{F,i}$ library.

Recall that intervention does not affect the entire stretch between the focus and the operator:

(35) **Lack of intervention by sentential negation:**
✓ I *only* **didn't** read a book from THIS$_F$ library.

☞ Intervention affects a region *just above and near the in-situ focus*, as predicted by covert focus movement with pied-piping.

In particular, of the options in (37), *only the largest pied-piping was available*. See Erlewine and Kotek (2014); Kotek and Erlewine (in press).
We can additionally insert islands to force larger covert pied-piping. This might predict a larger extent of intervention-sensitivity.

(39) I ... *only* read [$_{island}$ the books [that Mary read ____ at HOME$_F$]].

However, this doesn't straightforwardly trigger more intervention:

(40) ✓ I *only* read [the books [that Mary **didn't** read ____ at HOME$_F$]].

☞ This is explained if covert movement rolls up where possible, if there is an appropriate landing site. Such a derivation is suggested in Drubig (1994), in turn based on Nishigauchi (1990) on *wh*-movement.

(41) I ... *only* read [$_{island}$ the books [... that Mary **didn't** read __ at HOME$_F$]].

Summary

- **Intervention effects** diagnose regions of alternative computation.
- We find intervention effects in English clefts, between the F-marked material and the edge of the pivot.
- We similarly find intervention effects *near and above* F-marked material in association with in-situ foci.
- The data pattern is inconsistent with always-in-situ focus association, but consistent with **covert focus movement with pied-piping**.

☞ Intervention occurs between the F-marked material and the edge of the pied-piping, where alternative computation is used.

4 Conclusion

(1) Association with in-situ foci involves **(covert) movement with pied-piping** (Drubig, 1994; Horvath, 2000; Krifka, 2006; Wagner, 2006; Erlewine and Kotek, 2014)

(2) **Two new arguments**:

- Tanglewood sentences show *selective island sensitivity*.
- In-situ focus is subject to intervention effects *only inside (covertly) pied-piped constituents*.
- Predicted by the movement approach but not by the in-situ approach.

(3) Focus indices (Kratzer, 1991; Wold, 1996; Erlewine, 2014) must **not** be available in the grammar.

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