Intervention in focus pied-piping

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1. Introduction

In this paper we propose a new argument in support of the view that focus association involves covert focus movement with pied-piping, as proposed by Drubig (1994) and more recently supported by Krifka (2006) and Wagner (2006), and against the more prominent approach which does not involve movement (Rooth 1985, 1992). The evidence will come from an interaction between the interpretation of pied-piped constituents with focus intervention effects (Beck 2006).

The two approaches to the syntax/semantics of focus make different predictions regarding where Roothian focus alternative computation will be used in the interpretation of the structure. In the in-situ interpretation approach (1a), focus alternative computation (indicated by a squiggly arrow) will be used over the full extent between the focused constituent and the focus operator only. In the covert movement approach (1b), focus alternative computation will only be used in a region near and above the focused constituent.

(1) Two approaches to interpreting focus:

a. I only read a book from THIS\textsubscript{F} library.

\begin{center}
\text{\textbackslash movement} \text{\textbackslash focus alternative computation}
\end{center}

b. I ... only read [\textit{covert pied-piping} a book from THIS\textsubscript{F} library].

\begin{center}
\text{\textbackslash movement} \text{\textbackslash focus alternative computation}
\end{center}

The theory of focus intervention effects (Beck 2006) predicts that if a focus operator occurs above an alternative-generating element, it will block its interpretation by higher operators. In this paper we will show that this logic applies to focus constructions, substantiating a prediction of Beck’s (2006) theory, and then apply focus intervention as a diagnostic to the question of how focus association is interpreted (1).

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This paper is structured as follows. First, we give a brief background on the two theories of focus association and Beck’s (2006) theory of focus intervention effects. In Section 3 we show that focus intervention occurs inside overt pied-piping constituents in English it-clefts. In Section 4 we examine the pattern of intervention in sentences with VP-level focus operators and show that intervention occurs only above and near the F-marked constituent, corresponding to the size of the covertly pied-piped constituent. This pattern supports the view that focus association involves covert focus movement with pied-piping and is unpredicted by the in-situ interpretation approach.

2. Background: Focus association and focus intervention effects

It is well known that focus-sensitive operators such as only, even, etc., are interpreted relative to a particular constituent that is focused. Two different approaches have been proposed for how the operator combines compositionally with the focused constituent and its alternatives: (a) in-situ interpretation via focus alternative computation and (b) covert focus movement with pied-piping. We will briefly describe these two approaches in turn.

2.1 In-situ interpretation with focus alternative computation

Rooth (1985, 1992) proposed that focused constituents are interpreted in-situ and their alternatives are interpreted through an alternative mode of semantic composition. This computation of focus semantic values allows for the interpretation of focus without a syntactically local relationship between the focus operator and its focused constituent.1

In this paper we will use a squiggly arrow to denote focus alternative computation between a focused constituent (with F) and its interpreting focus operator (in italics). In a simple example as in (2), where coffee is focused, this approach predicts focus alternative computation to occur between this focused constituent and the only that it associates with:

(2) John only drinks COFFEE_F.

Following Jackendoff (1972), Rooth (1992), and Selkirk (1996), we adopt the view that focused constituents bear an abstract F feature in the narrow syntax, which affects the semantic interpretation at LF and the phonetic realization at PF.2

This in-situ interpretation approach using focus alternative computation has the advantage of being in principle unbounded. Example (3) below shows that focus association between a focus operator and its associated focused constituent can be long-distance, and in particular is not restricted by syntactic notions of locality such as islandhood. Evidence such as this has made this approach the most widely adopted approach to focus association in recent work by both semanticists and syntacticians.

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1 Following Rooth (1992), we use [\alpha] to indicate the focus semantic value of a node \alpha, and [\alpha]^o for its ordinary semantic value. See Beaver and Clark (2008, pp. 81–84) for a modern description of how focus semantic values are computed. See also Hamblin (1973) where essentially this same parallel mode of semantic computation is proposed for the interpretation of wh-words.

2 The phonetic realization of F-marking is orthogonal to the topic at hand. For our purposes it suffices to say that part of the F-marked constituent will be realized with additional intonational prominence.
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(3) **Long-distance focus association through a syntactic island (Rooth 1985):**

They *only* investigated [the question of whether you know [the woman who chaired [the ZONING BOARD]F]].

⇒ They did not investigate the question of whether you know the woman who chaired *any other chairable entity*.

2.2 **Focus movement with pied-piping**

An alternative approach to establishing a relationship between a focus operator and its associate is to move the focused constituent to the operator, thereby producing a local relationship. In the case of focus association with F-marked constituents in their regular positions in the clause, this movement step would be covert. The challenge for the focus movement approach comes from focus association’s disregard for syntactic locality and islandhood, as we saw in (3). Here we consider a simpler example (4), from Drubig (1994):

(4) He *only* invited ex-convicts with RED\(_F\) shirts.

If the interpretation of *only* in (4) involves covert focus movement of the F-marked constituent, this movement would violate the Left Branch Constraint. Indeed, the corresponding *wh*-question in (5) is ungrammatical:

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

Drubig (1994) proposes that in such cases, the covert focus movement *pied-pipes* material with the F-marked constituent, so that the movement does not violate syntactic constraints on movement. If \(\overline{A}\)-movement of the F-marked constituent by itself is not allowed (e.g. because it is in an island), a constituent properly containing the F-marked constituent which can be moved is moved instead. (6) below illustrates how example (4) would be interpreted under this approach.\(^3\) Focus alternative computation takes place inside the pied-piped constituent, between the F-marking and the edge of the pied-piping (Horvath 2000, Krifka 2006, Wagner 2006).

(6) He ... *only* invited [covert pied-piping ex-convicts with RED\(_F\) shirts].

More recently, Krifka (2006) and Wagner (2006) have offered independent evidence in support of this view that focus association involves covert movement with pied-piping.

Below we will argue that *covert focus movement with pied-piping* is the correct approach to focus association, by examining the behavior of *focus intervention effects* in focus constructions. To do so, we next introduce focus intervention effects.

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\(^3\) Drubig (1994, p. 6) shows that in Hungarian, an obligatory focus movement language, in sentences parallel to (4), the entire constituent corresponding to “ex-convicts with RED\(_F\) shirts” is overtly moved to a pre-verbal focus position.
2.3 Focus intervention effects

One feature of Roothian focus alternative computation is that it is unselective; that is, the semantic contribution of a focused constituent is not indexed to be only visible to one particular focus-sensitive operator. Therefore if another focus-sensitive operator intervenes, it can interrupt the association of the higher operator with the focused constituent below. Such effects are called focus intervention effects, schematized in (7):\(^4\)

(7) The focus intervention schema (Beck 2006):

\[ * \text{Op}_1 \ldots \text{Op}_2 \ldots \text{XP}_F \]

Beck (2006) first discussed focus intervention effects as a solution to so-called LF intervention effects in wh-questions. An example of this phenomenon is observed in Korean below. Example (8a) is a baseline showing a grammatical in-situ object wh-question. Example (8b) shows that if the subject “Minsu” is changed to “only Minsu,” the question becomes ungrammatical. Example (8c) shows that the question intended in (8b) can be asked, provided that the object wh-word be overtly scrambled to a syntactically higher position than the subject only-phrase.

(8) Intervention effect in Korean wh-questions (Beck 2006):

a. Minsu-nun nuku-lúl po-ss-ni?
Minsu-TOP who-ACC see-PAST-Q
‘Who did Minsu see?’

b. * Minsu-man nuku-lúl po-ss-ni?
Minsu-only who-ACC see-PAST-Q
Intended: ‘Who did only [MINSU] \text{F} see?’

c. Nuku-lúl Minsu-man po-ss-ni?
who-ACC Minsu-only see-PAST-Q
‘Who did only [MINSU] \text{F} see?’

Following a view from Hamblin (1973) a.o. that in-situ wh-phrases can be interpreted in-situ at LF through the projection of alternatives, Beck (2006) proposes that in-situ wh-phrases are interpreted precisely using the focus alternative computation mechanism used for the interpretation of focus (Rooth 1985, 1992). Example (9a) below shows this mechanism for an example such as (8a), for illustration purposes using English words and word order. Under this view wh-phrases are inherently alternative-generating, with its focus semantic value being the individuals in its domain, corresponding to possible short answers to the wh-question (9b). The projection of these alternatives generates alternative propositions in the scope of the complementizer (9c). The entire question at CP, then, is the question whose possible answers correspond to the focus semantic value of TP (9c).

\(^4\)This schema is called the General Minimality Effect in Beck (2006, p. 17).
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(9) **Interpreting (8a), presented as wh-in-situ English:**

a. \([ CP \ C_Q [ TP \ Minsu \ saw \ who ] ]\)

b. \([whow]_f^r = \{John, Mary, Bill,...\}\)

c. \([TP]_f^r = \{Minsu \ saw \ John, Minsu \ saw \ Mary, Minsu \ saw \ Bill,...\}\)

The ungrammaticality of (8b) is due to a focus intervention effect: the alternatives generated by the *wh*-word must be interpreted by the question complementizer in order for the clause to be interpreted properly as a question. However, the intervening focus-sensitive *only* blocks the complementizer from interpreting the *wh*-word’s alternatives, schematized in (10) below, exemplifying the focus intervention configuration in (7). When the *wh*-word is scrambled above the intervener (8c), however, the *wh*-word’s alternatives will be introduced into the focus semantic value above the intervener, allowing it to be interpreted properly by the complementizer, as schematized in (11). Potential interveners will be in bold in this paper.

(10) **Intervention configuration in (8b):**

* \([ CP \ C_Q [ TP only [MINSU]_F saw who ] ]\)

(11) **Intervention bled by scrambling in (8c):**

\([ CP \ C_Q [ TP who [ only [MINSU]_F saw ] ]\)

Beck’s (2006) focus intervention schema also predicts that in sentences with multiple focus association relations between a focus operator and an F-marked constituent, these dependencies cannot be crossing. However, such examples can be constructed. Example (12) is from Beck (2006), attributed to Rooth (1996). Given the context in (12a), example (12b) instantiates the configuration of crossing focus associations predicted to be ungrammatical by the Beck theory, assuming that the focused constituents are interpreted in-situ via focus alternative computation. In particular, the *only* in (12b) is predicted to block the proper interpretation of the F-marked *Bob* below by the focus operator *also* above. However, example (12b) is judged to be grammatical with its intended interpretation.5

(12) **Crossing focus dependencies (Rooth 1996, as cited in Beck 2006):**

a. I *only* introduced [MARILYN]_F to John Kennedy.

b. I *also* *only* introduced [Marilyn]_F to [BOB]_F Kennedy.

5The F-marked *Marilyn* in (12b) is clearly interpreted as the semantic focus associate of *only*, but it seems to lack a pitch accent. This is referred to as Second Occurrence Focus (SOF) and is licensed by the preceding context (12a), where it is introduced with a pitch accent. It is possible that *Marilyn* here being SOF is precisely what makes (12b) grammatical. See in particular Tomioka (2012) who proposes that SOF is selective, unlike novel focus associations, which are unselective.
The fact that this prediction of Beck’s (2006) theory of focus intervention is not borne out must mean that (a) Beck’s (2006) logic of focus intervention is not correct and/or (b) the assumption that focused constituents as in (12) are interpreted in-situ is not correct.

We will show in the remainder of this paper that Beck’s (2006) logic of focus intervention is indeed correct, and focus intervention effects do affect focus constructions, but instead the assumption that focused constituents are interpreted in-situ is the faulty assumption above. In the following section, we will demonstrate focus intervention effects in English it-cleft constructions, establishing a baseline for intervention in focus constructions. We will then use focus intervention effects as a diagnostic for regions of focus alternative computation in focus association with VP-level focus operators. We will argue that covert focus movement with pied-piping is the correct approach to focus association, and correctly predicts the pattern of intervention that we find.

3. Focus intervention effects in it-clefts

It-cLEFTs are an overt focus movement construction in English. The material that occurs in the pivot is moved there from its based-generated position inside TP (Chomsky 1977). Example (13) shows that it is possible to pied-pipe different sized material around the F-marked constituent and that these different choices of pivot size do not affect the resulting meaning of the sentence.

(13) Pied-piping in it-cLEFTs:

John read a book from \textit{THIS} \textit{F} library.

\begin{itemize}
  \item a. It’s [a book from \textit{THIS} \textit{F} library] that John read __.
  \item b. It’s [from \textit{THIS} \textit{F} library] that John read a book __.
  \item c. It’s [\textit{THIS} \textit{F} library] that John read a book from __.
\end{itemize}

Independent syntactic considerations can constrain the possible size of the moving constituent. For example, if the F-marked element occurs inside an island, the entire island must be pied-piped to the cleft pivot.

(14) \textit{IT-cleft with island: entire island must be pied-piped} (Krifka 2006):

\begin{itemize}
  \item a. * It was [a BEER] \textit{F} that I met [\textit{island} the man that offered ___ to Sue].
  \item b. It was [\textit{island} the man who offered [a BEER] \textit{F} to Sue] that I met ___.
\end{itemize}

As first noted by Jackendoff (1972), the cleft semantics introduced by the it-cleft operates only on the F-marked constituent inside the pivot, rather than on the entire pivot.\textsuperscript{6} In (15) we see that different choices for the F-marking inside the pivot result in different meanings of what is otherwise the same sentence.

\textsuperscript{6}We refer here to “cleft semantics” rather than “exhaustivity” as it is often described in the literature. See Horn (1981, to appear), Velleman et al. (2012) on the status of the exhaustivity inference of clefts.
(15) **F-marking in pivot affects meaning of it-cleft (Velleman et al. 2012):**

a. It was [John’s eldest daughter]$_F$ who liked the movie.
   ⇒ No other people liked the movie.

b. It was [John’s [ELDEST]$_F$ daughter] who liked the movie.
   ⇒ None of John’s other daughters liked the movie.

c. It was [[JOHN’S]$_F$ eldest daughter] who liked the movie.
   ⇒ Nobody else’s eldest daughter liked the movie.

The F-marked constituent is thus interpreted using focus association inside the pivot, between the F-marked constituent and the edge of the pivot. Consequently, *it*-clefts use both movement and focus alternative computation in their interpretation:

(16) *It’s* [pied-piping a book from THIS$_F$ library] John read __.

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(17) **Intervention in it-cleft pivots:**

a. * It’s [no book from THIS$_F$ library] that John read __.

b. It’s [from THIS$_F$ library] that John read no book __.

c. It’s [THIS$_F$ library] that John read no book from __.

Note that the semantics expected for (17a) is the same as the semantics of the grammatical (17b, c). Therefore the ungrammaticality is not caused by an illicit interaction between the negation and the semantics of the cleft itself. Instead, it is the result of pied-piping a constituent that contains the negation: the alternatives projected by the F-marked constituent must reach the edge of the pivot to be interpreted by the cleft semantics. In the case of (17a), but not (17b,c), an intervening focus operator inside the pivot (in this case, the negation) blocks the alternatives from reaching the edge of the pied-piping, resulting in a focus intervention effect as predicted by the schema in (7).

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7Note that the *it*-cleft’s existential presupposition is *not* over the open proposition left after movement of the pivot, as commonly assumed. Instead, its existential presupposition is over the alternatives for the focus within the pivot. This is best demonstrated by a negative cleft, such as *It’s not* [[JOHN’S]$_F$ brother] that came to the party. The presupposition of this sentence is that “someone’s brother came to the party,” not that “someone came to the party.” See Jackendoff (1972) and Velleman et al. (2012) for more on the effects of focus association inside cleft pivots.
Other interveners also yield the same effect as the negation in (17), showing that this contrast is not specifically the effect of negation. Below we observe focus intervention effects in cleft pivots with the interveners few, only, and the most.  

(18)  
\[
\begin{align*}
  &\text{a. } \ast \text{ It’s [few books from } \text{THIS}_F \text{ library} \text{ that John read } \text{____}.} \\
  &\text{b. It’s [from } \text{THIS}_F \text{ library} \text{ that John read [few books } \text{____}.} \\
  &\text{c. It’s [THIS}_F \text{ library} \text{ that John read [few books from } \text{____}.} \\
\end{align*}
\]

(19)  
\[
\begin{align*}
  &\text{a. } \ast \text{ It’s [only, BOOKS}_F \text{ from } \text{THIS}_F \text{ library} \text{ that John read } \text{____}.} \\
  &\text{b. It’s [from } \text{THIS}_F \text{ library} \text{ that John read [only BOOKS}_F \text{ from } \text{____}.} \\
  &\text{c. It’s [THIS}_F \text{ library} \text{ that John read [only BOOKS}_F \text{ from } \text{____}.} \\
\end{align*}
\]

(20)  
\[
\begin{align*}
  &\text{a. } \ast \text{ It’s [the most books from } \text{THIS}_F \text{ library} \text{ that John read } \text{____}.} \\
  &\text{b. It’s [from } \text{THIS}_F \text{ library} \text{ that John read [the most books } \text{____}.} \\
  &\text{c. It’s [THIS}_F \text{ library} \text{ that John read [the most books from } \text{____}.} \\
\end{align*}
\]

In the next section we turn our attention to focus association with VP-level operators and show that focus intervention effects occur in a small region near and above the F-marked constituent, which we argue is covertly pied-piped. The same set of interveners as above is shown to cause this effect. We argue that this finding lends support to the view that focus association is interpreted using covert movement with pied-piping and is unpredicted by the view that focus association is interpreted completely in-situ.

4. Diagnosing covert pied-piping in focus association

In the past section we demonstrated that focus intervention effects, schematized in (7) above, do affect the interpretation of focus alternative computation in focus constructions, as predicted by Beck (2006). In particular, in English it-clefts, focus alternative computation is used inside the pied-piping around the F-marked constituent. When a focus-sensitive

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8Focus intervention effects inside pied-piping constituents have been independently observed in overt pied-piping in wh-questions in German and in English (Sauerland and Heck 2003, Cable 2007). More recently, Kotek and Erlewine (to appear) have argued that focus intervention effects also occur in covert pied-piping in English multiple wh-questions. Negation, few, and only are shown by these authors to cause intervention in wh-pied-piping. See the conclusion for further discussion related to the findings in Kotek and Erlewine (to appear). For the focus-sensitivity of the most, see Partee (1991).

9Note that there are grammatical clefts beginning with It’s only... such as It’s only [books from THISF library] that John’s read. However, in such cases the only is part of the cleft structure itself, rather than an only inside the pied-piped constituent. We believe that the example in (19a), with the intended association of only with books and the cleft semantics with this, is ungrammatical. Similarly, Taglicht (1984) discusses other cases where a focus operator grammatically occurs immediately prior to the cleft pivot, such as in It was also John who protested (Taglicht 1984, p. 173). Here, Taglicht himself offers an explanation which helps clarify the issue: this example is grammatical on a reading where also operates above the cleft, associating with the predicate protested, rather than being part of the pivot. Furthermore, this sentence could not be generated through the movement of also John as a constituent from subject position, as *Also John protested is ungrammatical.
operator such as negation, *only*, *few*, and *the most* occurs in this region, the result is ungrammatical.

In this section we turn our attention to focus association constructions where the focused constituent has not been displaced. Recall that there are two approaches to such constructions, illustrated in (1) above. The first is to interpret the F-marked constituent *in-situ* at LF, using focus alternative computation all the way up to the focus operator (1a) (Rooth 1985, 1992). The second is to covertly move the F-marked constituent, possibly with some pied-piped material around it, to the focus operator (1b) (Drubig 1994, Krifka 2006, Wagner 2006).

These two approaches make very different predictions regarding where focus intervention may occur. Under the *in-situ* interpretation view (1a), focus alternative computation is used everywhere between the F-marked constituent and the focus operator, predicting that this entire region is susceptible to focus intervention effects. In contrast, under the covert movement view (1b), focus alternative computation is only used inside the pied-piping that may exist around the F-marked constituent. This approach predicts that focus intervention effects should occur only *inside* the covertly pied-piped constituent. **We thus are able to use the (in)sensitivity to focus intervention effects as a diagnostic for the existence and size of covert focus movement and pied-piping in focus association constructions.**

We begin with example (21), where sentential negation is placed between the F-marked constituent and its associated focus operator *only*.\(^{10}\) The grammaticality of (21) is unexpected by the *in-situ* interpretation approach, as the negation would be predicted to interfere with the focus alternative computation for *only* (7). Such examples were discussed as a potential problem for the theory of focus intervention itself in Beck (2006). We argue that the grammaticality of (21) shows that F-marked constituents are not interpreted *in-situ* using only focus alternative computation and instead involve covert focus movement.

(21) **Lack of intervention by sentential negation:**
I *only didn’t* read a book from THIS\(^F\) library.

Having motivated the covert movement view, our next task is to determine the size of the region that is pied-piped along with the F-marked constituent. For a sentence as in (22), we can imagine at least the following three options. Note that all three covert pied-piping options in (22a–c) will result in the same pronunciation and the same semantics for (22).\(^{11}\)

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\(^{10}\)Sentential negation generally acts as an intervener in *wh*-questions, where focus intervention effects with the same logic are argued to occur (Beck 2006). In English, we see this behavior in superiority-violating multiple *wh*-questions. In such questions, the *wh*-phrase pronounced *in-situ* must be interpreted using focus alternative computation. The region above the *in-situ* *wh* in superiority-violating questions is thus sensitive to intervention effects. Example (i) below from Pesetsky (2000) shows that sentential negation is an intervener in this configuration. See Pesetsky (2000) for more data and Beck (2006) for an analysis.

\(^{11}\)(ii) shows a semantics for *only* under the focus movement approach that correctly predicts no sensitivity to the size of pied-piping in the pivot. This semantics uses focus alternative computation *inside* the pied-piped constituent to identify the F-marked element, predicting sensitivity to intervention in this region.

(i) * Which book *didn’t* *which* boy read __ ?

(ii) \(\llbracket \text{only}(\alpha)(\beta) \rrbracket\) evaluated in world \(w\): (see Horn 1969)
Possible pied-piping in covert focus movement:

I only read a book from $\text{THIS}_F$ library.

a. only(a book from $\text{THIS}_F$ library)$(\lambda x. \text{I read } x)$

b. only(from $\text{THIS}_F$ library)$(\lambda x. \text{I read a book } x)$

c. only($\text{THIS}_F$ library)$(\lambda x. \text{I read a book from } x)$

Here too we can use focus intervention as a diagnostic, this time for the size of covert focus pied-piping. That is, if any material is pied-piped, we predict a region right above the F-marked constituent—between the F-marked constituent and the edge of the covert pied-piping—to be sensitive to intervention effects. Example (23) shows this effect:

Intervention by DP-internal no:

* I only read no book from $\text{THIS}_F$ library.

The contrast between the sentential negation in (21) and the DP-internal negation in (23) shows that the problem with (23) is not simply caused by the presence of negation, but rather by negation inside the covertly pied-piped constituent. Furthermore, example (24) below shows that this effect is not caused simply by having no in the sentence: if the negation occurs below the F-marked constituent, no intervention is caused.

I only read $\text{THIS}_F$ book containing no monsters.

In addition to negation, we also see similar intervention effects in covert pied-piping constituents with other interveners such as few and the most as shown in (25) below.

Other DP-internal interveners:

a. * I only read few books from $\text{THIS}_F$ library.

b. * I only read the most books from $\text{THIS}_F$ library.

The ungrammaticality of (23, 25) shows that only the largest pied-piping option in (26) was available for covert focus movement. This finding is particularly surprising since we have already seen that no such restriction on the size of pied-piping applies to overt focus movement. The pied-piping in (26b, c) are grammatical choices for it-cleft pivots, (17b, c).

I only read \{covert pied-piping no book from $\text{THIS}_F$ library\}.

⇒ predicts intervention!

a. asserts for all $x$ in $\llbracket \alpha \rrbracket^I$ where $x \neq \llbracket \alpha \rrbracket^\nu$, $\llbracket \beta \rrbracket^\nu(x)$ is false in $w$, and

b. presupposes $\llbracket \beta \rrbracket^\nu(\llbracket \alpha \rrbracket^\nu)$ is true in $w$.

12The baseline use of no in object position can be slightly degraded for some speakers. For some speakers it can improve in the perfect, as in I’ve read no book from this library. For such speakers, we note that example (23) is still ungrammatical in the perfect: *I’ve only read no book from $\text{THIS}_F$ library.

13Recall that we did not observe intervention effects in example (21). Combined with our conclusion here that covert pied-piping prefers to be as large as possible, example (21) teaches us that a constituent large enough to contain the sentential negation (the entire sister of only) is not a candidate for pied-piping.
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b. I only read no book \([\text{covert pied-piping from } \text{THIS}_F \text{ library}]\).
   \[\Rightarrow\] predicts no intervention

c. I only read no book from \([\text{covert pied-piping } \text{THIS}_F \text{ library}]\).
   \[\Rightarrow\] predicts no intervention

Formally, the preference for larger covert pied-piping could be thought of as a trans-derivational application of the constraint Attract Closest (Relativized Minimality: Rizzi 1990; Minimal Link Condition: Chomsky 1995, 2000; also Shortest Move: Chomsky 1993). That is, we could imagine the grammar considering the three derivations in (26) in parallel, differing only in the extent of pied-piping. The derivation with the largest pied-piping (26a) will result in the optimal satisfaction of Attract Closest-type constraints for the probing of the focus-pied-piped constituent by only.\(^{14}\)

Recall that if the F-marked constituent is inside an island, the focus movement approach predicts that the entire island is moved. This might predict that intervention occurs inside the entire island, if the F-marked constituent is interpreted \textit{in-situ} inside the island and utilizes focus alternatives computation to reach the edge of the pied-piping, as in (27).

\begin{equation}
(27) \quad \text{I ... only read } [\text{island the books } [\text{that Mary read ... at SCHOOL}_F]].
\end{equation}

However, as we can observe in (28), this does not seem to be the case:

\begin{equation}
(28) \quad \text{I only read } [\text{the books } [\text{that Mary didn’t read ... at SCHOOL}_F]].
\end{equation}

Following Drubig (1994) (in turn based on a proposal for \textit{wh}-pied-piping by Nishigauchi (1990)), we propose that in clause-sized islands, the F-marked constituent can move \textit{inside} the island, thus predicting a smaller region that would be sensitive to intervention effects:\(^ {15}\)

\begin{equation}
(29) \quad \text{I ... only read } [\text{island the books } [\text{... that Mary didn’t read ... at SCHOOL}_F]].
\end{equation}

Indeed, if an intervener is placed inside the DP but outside of the relative clause, an intervention effect is observed.

\begin{equation}
(30) \quad \begin{array}{l}
a. \quad \ast \text{ I only read } [\text{no book that } [\text{Mary read ... at SCHOOL}_F]]. \\
b. \quad \ast \text{ I only read } [\text{few books that } [\text{Mary read ... at SCHOOL}_F]]. \\
c. \quad \ast \text{ I only read } [\text{the most books that } [\text{Mary read ... at SCHOOL}_F]]. \\
\end{array}
\end{equation}

\(^{14}\)One could also imagine another proposal similar in spirit, in which the determination of pied-piping size happens countercyclically. In this variant, \textit{only} probes from above and countercyclically produces a focus phrase to Attract. Due to the top-down nature of probing (Chomsky 2000), this would also yield a preference for larger focus pied-piping. In this paper we will leave open such questions about the deeper motivations for the preference for larger pied-piping.

\(^{15}\)Note that Drubig (1994) proposes that the F-marked constituent moves to the edge of the \textit{entire} island, regardless of the island’s category. Instead, the contrast here motivates movement of the F-marked constituent only to the edge of clauses. Focus intervention is therefore predicted within DPs without clause-level projections, (23, 25), and outside of clauses within DPs, (30).
Finally, we would like to acknowledge that the contrasts we describe here as focus intervention effects seem to be less clear when the higher focus operator is not *only*. Although the contrasts are replicated with focus-sensitive negation (31), examples parallel to (23) and (25) but with a VP-level *even* or *also*, instead of *only*, are judged as natural or only slightly degraded.\(^\text{16}\)

(31) a. *I didn’t read few books from THIS\(_F\) library.*  
    b. *I didn’t read the most books from THIS\(_F\) library.*  

(32) a. *I even read no book from THIS\(_F\) library.*  
    b. *I even read few books from THIS\(_F\) library.*  

(33) a. *I also read no book from THIS\(_F\) library.*  
    b. *I also read few books from THIS\(_F\) library.*  

The contrast between our core data involving VP-*only* and negation and the behavior of *even* and *also* is a puzzle. Assuming that the options for focus association are either covert focus movement with pied-piping or completely *in-situ* interpretation through focus alternative computation, we would expect intervention to occur in at least the configurations above. We will leave this puzzle open for future work.

5. Conclusion

In this paper we motivated the use of *focus intervention effects* as a diagnostic for regions of focus alternative computation, resulting in a new argument for the covert movement approach to focus association. We demonstrated that the pivot of English *it*-clefts is sensitive to focus intervention effects, substantiating Beck’s (2006) conjecture that focus intervention effects occur not only in *wh*-questions, but also in focus constructions. We then used this diagnostic to argue for the presence of *covert pied-piping* in focus association constructions with VP-level focus operators. We showed that intervention effects occur in a small region *near* and *above* the F-marked element in these constructions. Our findings are consistent with the approach to focus association which involves covert movement with pied-piping, and are not predicted under the view that the F-marked constituent remains *in-situ* and is interpreted solely using focus alternative computation. This is a new argument in favor of the covert focus movement with pied-piping approach to focus association, previously proposed by Drubig (1994) and supported by Krifka (2006) and Wagner (2006).

Using focus intervention effects as a diagnostic for the size of covert pied-piping, we showed that only the *largest* pied-piping option is available for covert focus movement. This contrasts sharply with options for overt focus pied-piping demonstrated in the *it*-cleft, where multiple choices for the size of the pied-piping were available. This evidence is parallel to the findings of our previous work in Kotek and Erlewine (to appear), where we

\(^{16}\)The combination of the focus-sensitive sentential negation and intervener *no* is not tested, as it may be degraded for other reasons. Similarly, the combination of *even/also* with the *most* is not tested due to an inherent incompatibility between their meanings.
Intervention in focus pied-piping

showed that covert pied-piping of *wh*-phrases must also choose the largest available option. The core data is given below, where we see that although there are several options for overt *wh*-pied-piping in (34), only the largest option can predict the pattern of intervention effects with covert pied-piping shown in (35). We refer the reader to Kotek and Erlewine (to appear) for more discussion of the data and its analysis.

(34) Intervention in overt *wh*-pied-piping (Cable 2007):
   a. * [# pied-piping No pictures of which president] does Jim own ___?
   b. [# pied-piping Of which president] does Jim own no pictures ___?
   c. [# pied-piping Which president] does Jim own no pictures of ___?

(35) Intervention in covert *wh*-pied-piping (Kotek and Erlewine to appear):
   * Which student read no book from which library?

(36) Possible choices of covert pied-piping in (35):
   a. Which student read [# covert pied-piping no book from which library].
      ⇒ predicts intervention!
   b. Which student read no book [# covert pied-piping from which library].
      ⇒ predicts no intervention
   c. Which student read no book from [# covert pied-piping which library].
      ⇒ predicts no intervention

Much previous work on the syntax/semantics of *wh*-questions and focus constructions has considered just one or the other phenomenon in isolation. The sensitivity of both *wh-* and focus-pied-piping to focus intervention effects motivates a view under which the two phenomena are closely related. We believe that further research at this intersection and the cross-fertilization of theories in these areas are warranted.

References

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