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Tanglewood untangled*

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Abstract We argue for the existence of covert focus movement in English focus association. Our evidence comes from *Tanglewood* configurations of the form in Kratzer 1991. We show that Tanglewood configurations are sensitive to syntactic islands, contrary to Kratzer's claims and predictions. We propose that Tanglewood configurations always involve covert movement of the focused constituent—possibly with covert pied-piping (Drubig 1994; Krifka 1996, 2006; Tancredi 1997, 2004; Wagner 2006; Erlewine & Kotek 2014)—to bind a bound variable in the ellipsis site. This availability of covert pied-piping explains examples such as Kratzer's which are apparently not island-sensitive. We show that covert focus movement is long-distance and not simply QR. Kratzer's proposal that ellipsis enforces the identity of focus indices is shown to overgenerate Tanglewood readings.

Keywords: association with focus, covert focus movement, covert pied-piping, island-sensitivity, variable binding, *only*

This paper studies the mechanism of *association with focus* in English: in particular, the relationship between focus-sensitive adverbs such as *only* and the associating focused constituent in their scope. We begin the paper by briefly introducing the influential analysis of association with focus in Rooth 1985, 1992 and discussing the problem posed by Kratzer's (1991) famous *Tanglewood constructions*. We then present our proposal for their explanation via covert focus movement together with evidence supporting our proposal from island sensitivity and Tanglewood readings with overt bound variables. Finally, we show that covert focus movement can be long-distance, arguing that its effects cannot be reduced to QR.

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1 The problem of *Tanglewood*

Focused constituents, indicated by F-marking, are pronounced with prosodic prominence. Semantically, they introduce a set of *alternatives* into the computation. Focus-sensitive operators such as *only* then quantify over those alternatives.

(1) I only wear $[\text{red}]_{\text{F}}$ shirts.
Alternatives to "red": green, blue, ...
Presupposition: I wear red shirts.
Assertion: I do not wear green shirts, I do not wear blue shirts, ...

Under the Alternative Semantics theory of focus in Rooth 1985, 1992—which continues to be the most widely adopted theory of association with focus—each syntactic node α has two "dimensions" of meaning: an ordinary semantic value $[\![\alpha]\!]^o$ as well as a *focus semantic value* $[\![\alpha]\!]^f$, which can be thought of as a set of alternative denotations and which includes $[\![\alpha]\!]^o$ as a member. Focus semantic values for complex phrases are computed compositionally using the meanings of their parts, just as ordinary semantic values are.

(2) **Recursive definition for focus semantic values (Rooth 1985: 14):**[1]
The focus semantic value of node α, $[\![\alpha]\!]^f$, is:

a. the set of objects in the model matching $[\![\alpha]\!]^o$ in type, if α bears the feat. F;

b. the unit set $\{[\![\alpha]\!]^o\}$, if α is a non-focused non-complex phrase;

c. the set of objects which can be obtained by picking one element from each of the focus semantic values corresponding to the component phrases of α, and applying the semantic rule for α to this sequence of elements, if α is a non-focused complex phrase.

Rooth proposes that focused constituents such as *red* in (1) are interpreted in their pronounced position at LF. Following the procedure in (2), the alternatives introduced locally (3a) will be reflected in the focus semantic values of all dominating phrases, resulting in a corresponding set of propositional alternatives (3b) in the complement of focus-sensitive operators.[2] *Only* α then asserts the negation of all alternatives in $[\![\alpha]\!]^f$ which do not entail the prejacent proposition $[\![\alpha]\!]^o$ (Horn 1969; a.o.); this results in the correct assertive content as in (1).

[1] In Rooth 1985, focus semantic values were called *p-sets*, short for *presuppositional set* from Jackendoff 1972. The definition here in (2) is a quote from Rooth 1985: 14 but modified to use the now standard terminology and notation of Rooth 1992. As noted in Rooth 1992: fn 7, the recursion step in (2c) is equivalent to that for the compositional interpretation of *wh*-questions proposed in Hamblin 1973; see Hamblin's page 49 and in particular footnote 8.

(3) LF: only [$_{VP}$ I wear [red]$_F$ shirts]

a. $[\![\text{red}]\!]^f$ = {red, green, blue, ...}

b. $[\![\text{VP}]\!]^f$ = {I wear red shirts, I wear green shirts, I wear blue shirts, ...}

Empirically, this paper centers around the *Tanglewood* phenomenon first discussed in Kratzer 1991. Tanglewood examples were introduced as a challenge to the basic Roothian theory sketched above, motivating a minor but powerful refinement to the theory. Kratzer's original example is in (4).

(4) **Tanglewood (Kratzer 1991: 830):**
Context: Imagine now you are angry at me and start voicing the following accusations. "What a copy cat you are! 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 feel you exaggerate and reply:
I only went to [Tanglewood]$_F$ because you did △.

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

Her observation is as follows: considering the interpretation of the ellipsis site in (4), indicated by △, let us assume the LF for (4) to be as in (6) below. Now notice that (6) includes two instances of the F-marked constituent *Tanglewood*. According to Rooth's definition for focus semantic values in (2) above, the result will include all combinations of different values for the two positions of focus, as in (7a). The assertion of *only* in (4) is then predicted to be as in (7b) below.

(6) **Assumed LF for (4):**
only [$_{VP}$ I [$_{\text{antecedent}}$ go to [TW]$_F$] [because you [$_{\text{ellipsis site}}$ go to [TW]$_F$]]]

(7) **Predicted interpretation of *Tanglewood* (4) using Rooth's (2):**

a. $[\![\text{VP}]\!]^f$ = {
I go to Tanglewood because you go to Tanglewood,
I go to Tanglewood because you go to Block Island,
I go to Tanglewood because you go to Elk Lake Lodge,
I go to Block Island because you go to Tanglewood,
I go to Block Island because you go to Block Island,
I go to Block Island because you go to Elk Lake Lodge,
I go to Elk Lake Lodge because you go to Tanglewood,
I go to Elk Lake Lodge because you go to Block Island,
I go to Elk Lake Lodge because you go to Elk Lake Lodge
}

[2]For convenience, here and elsewhere, we will ignore the contribution of tense and illustrate subjects in their VP-internal base positions. The categories we label "VP" could also, more precisely, be called "*v*P"s. The denotations of propositional alternatives as in (3b) and (7a) below should also be thought of as standing in for their intensions.

b. $[\![\text{VP}]\!]^o$ = I go to Tanglewood because you go to Tanglewood

c. Assertion of (4):

it's not the case that [I went to Tanglewood because you went to Block Island],
it's not the case that [I went to Tanglewood because you went to Elk Lake Lodge],
it's not the case that [I went to Block Island because you went to Tanglewood],
it's not the case that [I went to Block Island because you went to Block Island],
it's not the case that [I went to Block Island because you went to Elk Lake Lodge],
it's not the case that [I went to Elk Lake Lodge because you went to Tanglewood],
it's not the case that [I went to Elk Lake Lodge because you went to Block Island],
it's not the case that [I went to Elk Lake Lodge because you went to Elk Lake L.]

Kratzer argues that this predicted assertion in (7c) does not reflect the actual interpretation of example (4). As the paraphrase in (4) above indicates, the correct interpretation asserts only that *it is not the case that I went to Block Island because you went to Block Island* and *it is not the case that I went to Elk Lake Lodge because you went to Elk Lake Lodge*. In other words, the set of alternatives must be computed so that the alternatives in the two positions of focus *covary* across the alternatives, as in (8). We will refer to such interpretations which require such covarying alternatives under an in-situ approach to focus as *Tanglewood constructions* or *Tanglewood readings*.

(8) **Covarying alternatives, to yield the correct interpretation of (4):**

$$[\![\text{VP}]\!]^f = \left\{ \begin{array}{l} \text{I go to Tanglewood because you go to Tanglewood,} \\ \text{I go to Block Island because you go to Block Island,} \\ \text{I go to Elk Lake Lodge because you go to Elk Lake Lodge} \end{array} \right\}$$

Kratzer proposes an amendment to Rooth's theory which allows for the natural derivation of covarying alternatives as in (8). In brief, Kratzer proposes that focused constituents bear distinguished *focus indices* and ellipsis ensures their identity, resulting in the LF in (9a). Focused constituents are then interpreted as *distinguished variables* in the focus semantic value, ranging over different assignment functions h (9b). This yields the desired covarying alternatives in (9c).

(9) ***Tanglewood* (4) with covarying alternatives following Kratzer 1991:**

a. LF: only $[_{\text{VP}}$ I $[_{\text{antecedent}}$ go to $[\text{TW}]_{\text{F7}}]$ [because you $[_{\text{ellipsis}}$ go to $[\text{TW}]_{\text{F7}}]]]$

b. $H = \{h_0, h_1, h_2\}$; $h_0(7) =$ Tanglewood, $h_1(7) =$ Block Island, $h_2(7) =$ ELL

c. $[\![\text{VP}]\!]^f = \{\text{I go to } h(7) \text{ because you go to } h(7) \mid h \in H\}$

$$= \left\{ \begin{array}{l} \text{I go to Tanglewood because you go to Tanglewood,} \\ \text{I go to Block Island because you go to Block Island,} \\ \text{I go to Elk Lake Lodge because you go to Elk Lake Lodge} \end{array} \right\}$$

d. Assertion:
it's not the case that [I went to Block Island because you went to Block Island],
it's not the case that [I went to ELL because you went to ELL]

We make two notes here regarding Kratzer's theory. First, Kratzer 1991 retains from Rooth's work (a) the idea of a multidimensional semantics, with ordinary and focus semantic values, and (b) the claim that foci are interpreted in-situ at LF. Her Tanglewood argument challenges *how* focus semantic values are computed, motivating her focus index approach over Rooth's recursive procedure in (2). She also briefly considers and argues against an alternative account where the focused constituent covertly moves; we will detail this approach and her argument against it in the next section.

Second, we note that Kratzer's proposal that ellipsis can enforce the identity of focus indices is quite powerful. In particular, it predicts no locality restrictions between the focus-sensitive operator (*only*), the pronounced focus, and the ellipsis site. As long as the pronounced focus and its interpreted copy in the ellipsis site are both in the scope of the focus-sensitive operator, the Tanglewood effect is predicted: the operator will quantify over alternatives where the two focused positions covary.

In this paper, we present previously unobserved restrictions on the distribution of Tanglewood readings which are unpredicted by Kratzer's account. Of particular importance are two findings: (a) that Tanglewood readings exhibit sensitivity to syntactic islands, and (b) that Tanglewood readings are possible in the absence of ellipsis. In the following section, we present our own proposal for Tanglewood constructions. We maintain the Roothian multidimensional semantics for the computation of alternatives, but diverge from Rooth and Kratzer in arguing that foci are not interpreted in-situ when associating with a focus-sensitive operator: they move covertly to the higher operator, and it is this movement that makes Tanglewood readings possible. In subsequent sections, we present our new evidence which motivates this approach, and discuss the nature of the movement.

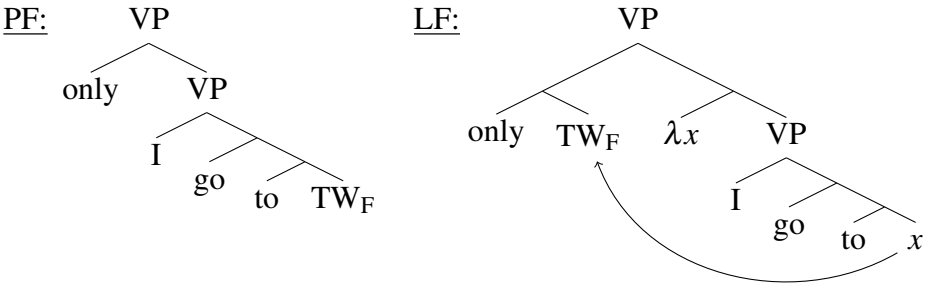
Other solutions to the Tanglewood problem have also been proposed, including accounts by Krifka 1991, 2006; Jäger 1999; Sauerland 2007a,b; Merchant 2008; Beaver & Clark 2008; Charlow 2008. In this paper we concentrate on Kratzer's proposal, as the most widely known account of Tanglewood readings. Ultimately, we believe that each of the above cited accounts will face difficultly with one of the two main empirical findings in this paper (or both): that Tanglewood readings are island-sensitive, and that they are possible in the absence of ellipsis with overt bound variables.

2 Proposal

We propose that Tanglewood constructions such as (4) always involve covert movement of the focused constituent to a position from which it binds a bound variable in the ellipsis site.

We first illustrate a basic example of association with English adverb *only* using covert focus movement in (10).[3] For concreteness, we adopt the form of covert focus movement discussed briefly in Rooth 1985: 31–32 and used in Wagner 2006. This involves covert movement of a constituent containing the focus to a *complement* position of the the attracting operator—also called *Undermerge* by Pesetsky (2007, 2013)—together with adjunction of the associated λ-binder to the complement from which the focused constituent is moved out.

(10) **Covert focus movement:**
"I only went to [Tanglewood]$_F$."



Let (11) be the semantics of this two-place *only*, based on the proposal in Wagner 2006: 298. *Only* asserts that, for all alternatives to the first argument in set C, if its combination with the second argument is true, that combination must be entailed by the prejacent proposition, the combination of the stated value of the first argument with the second argument. In other words, all alternative propositions that are not entailed by the prejacent proposition are negated; see discussion in e.g. von Fintel 1997: 13. In addition, *only* introduces a presupposition that the prejacent is true.[4]

(11) **Semantics for two-place *only* (Wagner 2006: 298):**

$$[\![\text{only}]\!] = \lambda\alpha_{\sigma} \,.\, \lambda\beta_{\langle\sigma,t\rangle} : \underbrace{\beta(\alpha)}_{\text{presupposition}} \,.\, \underbrace{\forall\gamma \in C\left[\beta(\gamma) \rightarrow \left(^{\wedge}\beta(\alpha) \Rightarrow {}^{\wedge}\beta(\gamma)\right)\right]}_{\text{assertion}}$$

The variable C must be fixed contextually to be equal to (or a subset of) the focus semantic value of the first argument of *only* at LF; see e.g. discussion in Rooth 1992; Tancredi 2004; Wagner 2006. Here we let $C = [\![[\text{Tanglewood}]_F]\!]^f =$

[3] Again, we do not illustrate tense or movement of the subject out of its predicate-internal position.

[4] There are debates in the literature regarding the status of the prejacent inference, which we call a presupposition here. This question is orthogonal to the discussion here.

{Tanglewood, Block Island, Elk Lake Lodge}. The resulting interpretation of (10) is given in (12).

(12) **Interpretation of *I only went to [Tanglewood]$_F$* (10) using (11):**

a. LF: only([Tanglewood]$_F$)$_{=\alpha}$(λx . I go to x)$_{=\beta}$

b. Presupposition: $\beta(\alpha)$ = I go to Tanglewood

c. Assertion: Note that $^\wedge\beta(\alpha) \Rightarrow {}^\wedge\beta(\gamma)$ is false for $\gamma =$ Block Island and $\gamma =$ Elk Lake Lodge. Therefore:
$\forall\gamma \in C\,[\beta(\gamma) \rightarrow (^\wedge\beta(\alpha) \Rightarrow {}^\wedge\beta(\gamma))]$
$\iff$ $\neg\beta$(Block Island) $\wedge$ $\neg\beta$(Elk Lake Lodge)
$\iff$ it is not the case that [I go to Block Island],
it is not the case that [I go to Elk Lake Lodge]

We now demonstrate how this covert focus movement helps derive the Tanglewood reading in Kratzer's original example, (4). We propose that the overt focus *Tanglewood* moves covertly to become the first argument of *only*, leaving the variable x in its trace position with a corresponding λ-binder. In the ellipsis site, we have a matching bound variable x, which will also be bound by the same λ-binder.[5] This yields the correct interpretation for the *Tanglewood* example (4).

(13) **Interpretation of *Tanglewood* (4) using covert focus movement:**

a. LF: only([TW]$_F$)$_{=\alpha}$(λx . I [$_{\text{ant.}}$ go to x] because you [$_{\text{ellipsis}}$ go to x])$_{=\beta}$

b. Presupposition: $\beta(\alpha)$ = I go to TW because you go to TW

c. Assertion: Note that $^\wedge\beta(\alpha) \Rightarrow {}^\wedge\beta(\gamma)$ is false for $\gamma =$ Block Island and $\gamma =$ Elk Lake Lodge. Therefore:
$\forall\gamma \in C\,[\beta(\gamma) \rightarrow (^\wedge\beta(\alpha) \Rightarrow {}^\wedge\beta(\gamma))]$
$\iff$ $\neg\beta$(Block Island) $\wedge$ $\neg\beta$(Elk Lake Lodge)
$\iff$ it is not the case that [I go to BI because you go to BI],
it is not the case that [I go to ELL because you go to ELL]

This approach ensures quantification over propositions with the same values in the position of pronounced focus and within the ellipsis site through general mechanisms of movement, abstraction, and variable binding. This takes away the need to generate alternatives which covary in two positions of focus, discussed in the previous section.

[5] This variable in the ellipsis site can, in fact, be a coindexed free pronoun which is not bound by the λ-binder of covert movement. Charlow 2008 presents a number of examples demonstrating this possibility. Here we will concentrate on the derivation of Tanglewood readings, narrowly defined, where this variable will be bound.

Note that, under this approach, ellipsis is not a crucial ingredient of Tanglewood readings; we discuss this point in Section 4.

Note that there is an asymmetry between the two positions of x in this LF structure in (13a). The first variable x is a trace position of movement, and therefore the relationship between the LF position of *Tanglewood* and the λ-binder and the position of the variable x in the trace position should be subject to constraints on syntactic movement. The second variable x, however, is simply base-generated as a variable; it is not the product of movement and therefore should have no constraints beyond being in the scope of the matching λ-binder derived by movement. This asymmetry underlies the novel evidence we present in the following Section 3: in brief, we will show that the position of overt focus (corresponding to the first variable x in (13a)) is sensitive to syntactic islands, whereas the hypothesized bound variable position, within the ellipsis site, is not sensitive to islands.

Kratzer (1991: 831) briefly considers this type of movement approach to Tanglewood readings but dismisses it, based on the availability of examples such as (14). As the paraphrase below makes clear, this example has a Tanglewood reading where *only* quantifies over the possibilities that I contacted the person who chairs a certain group before you contacted the person who chairs that same group. It does not assert, for example, that *it's not the case that I contacted the person who chairs the Zoning Board before you contacted the person who chairs the Planning Board.*

(14) **A Tanglewood construction with focus in an island (Kratzer 1991: 831):**
Context: "You always contact every responsible person before me."
No, I only contacted [$_{\text{island}}$ the person who chairs [the Zoning Board]$_{\text{F}}$] before you did $\triangle$.

(15) Paraphrase: The Zoning Board is the only x such that I contacted the person who chairs x before you contacted the person who chairs x.

What is important about example (14) is that the focus *the Zoning Board* is contained within a relative clause island. If Tanglewood readings require movement of the focus to a position to bind a variable in the ellipsis site, we might expect (14) to have an LF as in (16). But this would be an island violation. To wit, corresponding overt movement of the focus as in (17) is ungrammatical.

(16) **LF for (14) using covert focus movement of *the Zoning Board*:**
only ([the ZB]$_{\text{F}}$) (λx . I [$_{\text{antecedent}}$ contact [$_{\text{island}}$ the person who chairs x]] before you [$_{\text{ellipsis}}$ contact [$_{\text{island}}$ the person who chairs x]])

(17) **Overt focus movement of *the Zoning Board* (Kratzer 1991: 831):**
* It was [the ZB]$_{\text{F}}$ that I contacted [$_{\text{island}}$ the person who chairs ___].

Therefore—Kratzer claims—the grammaticality of (14) with its intended Tanglewood interpretation shows that Tanglewood readings do not depend on covert movement of the focus. This then motivates Kratzer's proposal where ellipsis enforces identity of focus indices, briefly introduced in Section 1.

What Kratzer did not consider is the possibility of covert focus movement triggering *pied-piping* (Drubig 1994; Tancredi 1997, 2004; Krifka 2006; Wagner 2006; Erlewine & Kotek 2014).[6] Under our approach presented here—based on the work of the authors listed here—the first argument of *only* at LF, derived by covert movement, need only *contain* the focused constituent. In this case, we can covertly move the island containing the focus, *the person...*, leaving a variable and associated λ-binder which, roughly speaking, ranges over different persons chairing organizations. This binder will also bind the matching variable in the ellipsis site.

(18) **LF for (14) using covert focus movement with pied-piping:** (cf 16)
only $\big($[$_{\text{island}}$ the person who chairs [the Zoning Board]$_{\text{F}}$]$\big)$
$\big(\lambda x$. I [$_{\text{antecedent}}$ contact x] before you [$_{\text{ellipsis}}$ contact x]$\big)$

No islands are violated in this LF. We note that parallel pied-piping is possible in overt focus movement, as in (19). Such structures have previously been described simply as clefts where a subpart of the pivot is focused (Chomsky 1970: 91ff, summarized in Jackendoff 1972: 232–234; see also, more recently, Velleman, Beaver, Destruel, Bumford, Onea & Coppock 2012 and Erlewine & Kotek 2014).

(19) **Corresponding overt focus movement with pied-piping:** (cf 17)
✓ It was [$_{\text{island}}$ the person who chairs [the ZB]$_{\text{F}}$] that I contacted ___.

For completeness, we demonstrate the interpretation of Kratzer's *Zoning Board* example (14) under our approach to Tanglewood constructions, using the LF in (18) involving covert focus movement with pied-piping. Following the context discussed by Kratzer (1991: 829), we let $[\![$[the Zoning Board]$_{\text{F}}]\!]^f$ = {the Zoning Board, the Planning Board, the Rent Control Board, the Conservation Commission}. Using the simple Roothian procedure for the interpretation of focus semantic values (2), we yield the focus semantic values for the moved constituent—labeled *island* here—in (20b).

[6] None of these previous authors specifically discusses—let alone argues for—the application of covert pied-piping to the problem of Tanglewood and Kratzer's challenge to the movement account. To our knowledge, the closest that anyone has come to this in previous literature is the last sentence of footnote 14 in Beaver & Clark 2008: 110–111, which suggests pied-piping to avoid a *that*-trace effect violation triggered by covert movement of an embedded subject alone. Beaver & Clark ultimately do not, however, advocate for the covert movement approach over potential alternatives.

(20) **Interpretation of *Zoning Board* (14) under our approach:**

a. LF (=18): only $([_{\text{island}}$ the person who chairs [the Zoning Board]$_{\text{F}}])_{=\alpha}$ $\big(\lambda x$. I $[_{\text{ant.}}$ contact $x]$ before you $[_{\text{ellipsis}}$ contact $x]\big)_{=\beta}$

b. $C = [\![\text{island}]\!]^f = \left\{ \begin{array}{l} \text{the person who chairs the Zoning Board,} \\ \text{the person who chairs the Planning Board,} \\ \text{the person who chairs the Rent Control Board,} \\ \text{the person who chairs the Conservation Commission} \end{array} \right\}$

c. Presupposition: $\beta(\alpha)$ = I contact the person who chairs the Zoning Board before you contact the person who chairs the Zoning Board

d. Assertion: Note that $^\wedge\beta(\alpha) \Rightarrow {}^\wedge\beta(\gamma)$ is false for $\gamma =$ the person who chairs the Planning Board, $\gamma =$ the person who chairs the Rent Control Board, and $\gamma =$ the person who chairs the Conservation Commission. Therefore:
$\forall\gamma \in C\,[\beta(\gamma) \rightarrow (^\wedge\beta(\alpha) \Rightarrow {}^\wedge\beta(\gamma))]$
$\Longleftrightarrow$ $\neg\beta$(the person who chairs the Planning Board)$\wedge$
$\neg\beta$(the person who chairs the Rent Control Board)$\wedge$
$\neg\beta$(the person who chairs the Conservation Commission)
$\Longleftrightarrow$ it is not the case that [I contact the person who chairs the PB before you contact the person who chairs the PB],
it is not the case that [I contact the person who chairs the RCB before you contact the person who chairs the RCB],
it is not the case that [I contact the person who chairs the CC before you contact the person who chairs the CC]

The semantics for *only* here correctly reflects sensitivity to the placement of focus, even though the focus is a proper subpart of the constituent moved to be the first argument of *only*. This is because the set of alternatives C quantified over in (20d) is constrained by the focus semantic value of the first argument of *only*; here $C = [\![\text{island}]\!]^f$. The need for such sensitivity may be clearer in Merchant's (2008: 150) example below, which can be similarly analyzed.

(21) I only played $[_{\text{island}}$ a song that [Ringo]$_{\text{F}}$ wrote] because you did $\triangle$.

The demonstration in (20) shows that Kratzer's one argument against a covert movement account of Tanglewood readings is easily defeated by the possibility of pied-piping in covert focus movement, which has since been independently developed and argued for by work such as Drubig 1994; Krifka 1996, 2006; Tancredi 1997, 2004; Wagner 2006; Erlewine & Kotek 2014. At the same time, this discussion reflects the difficulty of testing for reflexes of movement such as island-sensitivity in Tanglewood constructions, because of the possibility of covert pied-piping. In the next section, we present new evidence that focus association in Tanglewood *is* island-sensitive in a manner predicted by our proposal but not by Kratzer's approach.

3 New evidence from island (in)sensitivity

Our proposal for Tanglewood constructions, presented above, involves covert movement of the overt focus—or a constituent properly containing it—which then binds a corresponding bound variable in the ellipsis site. This predicts an asymmetric pattern of island-sensitivity: covert movement of the focus (possibly with pied-piping) is subject to island constraints, but variable binding is not. In this section we will show that Tanglewood constructions exhibit precisely this pattern of island-sensitivity, predicted by our covert focus movement account but unpredicted by alternative proposals, including Kratzer's account.

We begin with example (22). The context is designed to make the intended Tanglewood reading natural; nonetheless, the sentence does not have the intended Tanglewood reading, which we indicate with $*^{\text{TW}}$. We note that this sentence does have a number of other possible readings.[7]

(22) **Focus in a RC, without a matching island in the intended ellipsis site:**
Context: Our son speaks Spanish, French, and Mandarin. At one point we hired a nanny that happened to speak French, but that wasn't why we hired her. Another time we hired a nanny that spoke Mandarin, but that too was a coincidence...
$*^{\text{TW}}$ We only hired $[_{\text{island}}$ a nanny that speaks $[\text{Spanish}]_{\text{F}}]$ because our son does $\triangle$.
Intended Tanglewood reading: Spanish is the only language x such that we hired [a nanny that speaks x] because our son speaks x. ($\triangle$ = "speak...")

Why is this intended reading unavailable? Under our approach, the intended Tanglewood reading requires covert movement of *Spanish* or a phrase properly containing *Spanish* to *only*, binding a corresponding bound variable within the ellipsis site. Consider first the LF in (23a): although movement of the focus *Spanish* would arrive at the intended Tanglewood reading, movement of *Spanish* alone is a violation of the relative clause island. We also consider movement of the entire island containing the focus in (23b). The problem here is that the bound variable in the ellipsis site is the object of *speak* and therefore should correspond to a language, but in order to yield the Tanglewood reading, this variable will be bound by the λ-binder introduced by covert focus movement, and this λ-binder ranges over different nannies, not languages.

[7] In particular, there is another reading which we would call a Tanglewood reading: this is a reading where the ellipsis is resolved to a higher VP, $\triangle$ = "hire a nanny that speaks...", paraphrasable as *Spanish is the only language x such that we hired [a nanny that speaks x] because our son hires [a nanny that speaks x]*. The availability of this reading is predicted under our account, following a derivation parallel to (20) for Kratzer's *Zoning Board* example. This reading differs from our intended reading here, and is not supported by the context in (22).

(23) **Problematic LFs for the unavailable Tanglewood reading of (22):**

a. only $([\text{Spanish}]_F)$ $(\lambda x$. we hire $[_{\text{island}}$ a nanny that $[_{\text{antecedent}}$ speaks $x]]$ because our son $[_{\text{ellipsis}}$ speaks $x])$

b. only $([_{\text{island}}$ a nanny that $[_{\text{antecedent}}$ speaks $[\text{Spanish}]_F]])$ $(\lambda x$. we hire x because our son $[_{\text{ellipsis}}$ speaks $x])$

The unavailability of the Tanglewood reading in (22) is unpredicted by Kratzer's account. Recall that under her proposal, foci are interpreted in-situ at LF (following Rooth 1985) with distinguished focus indices and ellipsis enforces their identity. Focus association through focus indices and ellipsis are both insensitive to syntactic islands, as explicitly claimed by Kratzer, predicting the availability of a Tanglewood reading here:

(24) **The Tanglewood reading of (22) under Kratzer 1991's approach:**

a. LF: only $[_{\text{VP}}$ we hire a nanny that $[_{\text{antecedent}}$ speaks $[\text{Spanish}]_{F5}]$ [because our son $[_{\text{ellipsis}}$ speaks $[\text{Spanish}]_{F5}]]]$

b. $H = \{h_0, h_1, h_2\}$; $h_0(5) =$ Spanish, $h_1(5) =$ French, $h_2(5) =$ Mandarin

c. $[\![\text{VP}]\!]^f = \{$we hire a nanny that speaks $h(5)$ because our son speaks $h(5) \mid h \in H\}$

$$= \left\{ \begin{array}{l} \text{we hire a nanny that speaks S because our son speaks S,} \\ \text{we hire a nanny that speaks F because our son speaks F,} \\ \text{we hire a nanny that speaks M because our son speaks M} \end{array} \right\}$$

d. Assertion of *only*:

it is not the case that [we hire a nanny that speaks F because our son speaks F],
it is not the case that [we hire a nanny that speaks M because our son speaks M]

In (22), we placed the overt focus inside an island, without a corresponding island in the intended ellipsis site, and as a result the Tanglewood reading became unavailable. However, as we have shown, Kratzer 1991's proposal of enforcing the identity of focus indices under ellipsis predicts this reading to be available. This is not a coincidence—this mechanism was explicitly designed to generate Tanglewood readings without locality restrictions or island sensitivity. As a result, this mechanism will massively overgenerate such Tanglewood readings, and will not predict any island sensitivity.

Next, we change the position of the island in the sentence: we place the ellipsis site inside a syntactic island, without a corresponding island around the antecedent. The intended Tanglewood reading in this configuration, in (25), is grammatical.

(25) **Ellipsis site in a relative clause island:**

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 them.

✓TW I only speak $[\text{Spanish}]_F$ because I have $[_{\text{island}}$ a friend who does $\triangle]$.

Intended Tanglewood reading: Spanish is the only language x such that I speak x because I have a friend who speaks x. ($\triangle$ = "speak...")

The grammaticality of this Tanglewood construction in (25) is predicted by our account. Covert movement of the focus *Spanish* in (25) is not constrained by any syntactic island. This movement introduces a variable and its λ-binder, which in turn binds the matching bound variable in the ellipsis site. This ellipsis site is inside an island, but this is not a problem: variable binding is not sensitive to syntactic islands. This LF for (25) is illustrated in (26).

(26) **LF for (25), involving variable binding into an island:**

$\text{only}\,([\text{Spanish}]_F)\,(\lambda x\,.\,\text{I}\,[_{\text{antecedent}}\,\text{speak}\,x]$

$\text{because I have}\,[_{\text{island}}\,\text{a friend that}\,[_{\text{ellipsis}}\,\text{speak}\,x]])$

The asymmetry in the availability of Tanglewood readings between (22) and (25) is exactly what we predict under our account. The overt focus must covertly move—possibly with pied-piping—and is thus sensitive to islands, but the position of the ellipsis site, under our account, simply hosts a bound variable and is thus insensitive to islands. In contrast, Kratzer's account would predict no contrast between these examples, predicting the availability of a Tanglewood reading in (22), as demonstrated above in (24) above. The ungrammaticality of the Tanglewood construction in (22) also serves as an argument for the sensitivity of covert (focus) movement to syntactic islands.

We conclude that Tanglewood constructions *are* island-sensitive, contrary to Kratzer's claim and prediction. The asymmetry in the availability of Tanglewood readings between (22) and (25) is exactly what we predict under our account. The overt focus must covertly move—possibly with pied-piping—and is thus sensitive to islands, but the position of the ellipsis site, under our account, simply hosts a bound variable and is thus insensitive to islands. In contrast, Kratzer's account would predict no contrast between these examples, predicting the availability of a Tanglewood reading in (22), as demonstrated above in (24) above. Kratzer's mechanism of enforcing identity of focus indices under ellipsis thus systematically overgenerates Tanglewood readings, and therefore cannot be available to the grammar.[8]

[8] A possible stronger conclusion that we might entertain is that Kratzer's mechanism of computing focus alternatives using focus indices as a whole must not be available to the grammar. Aside from Kratzer's argument for this mechanism from Tanglewood readings, two additional arguments can be

4 Tanglewood readings with overt bound variables

All of the Tanglewood examples we have discussed thus far have involved ellipsis. For Kratzer's (1991) proposal, the ellipsis is a crucial component of Tanglewood readings: the ellipsis site is interpreted under identity with the antecedent focus, yielding an LF with two foci (27). Matching focus indices between the two positions of focus yield covarying alternatives, as demonstrated above in (9).

(27) **Kratzer's approach requires ellipsis to generate Tanglewood readings:**
I only went to $[\text{Tanglewood}]_{\text{F}}$ because you did $\triangle$.
LF: only [I $[_{\text{antecedent}}$ go to $[\text{TW}]_{\text{F7}}$] [because you $[_{\text{ellipsis site}}$ go to $[\text{TW}]_{\text{F7}}$]]]

In contrast, the proposal here derives Tanglewood readings through general mechanisms of (covert) movement and variable binding, and does not depend on ellipsis. This predicts that Tanglewood readings could also involve *overt* bound variables. Beaver & Clark (2008) has observed that this is indeed the case:

(28) **Tanglewood with an overt bound variable and no ellipsis (B&C: 112):**
$\checkmark^{\text{TW}}$ I only went to $[\text{Tanglewood}]_{\text{F}}$ because you went there.
Intended Tanglewood reading: Tanglewood is the only place x such that I went to x because you went to x. (=5)

In the intended reading of (28), *there* is an overt bound variable. The availability of this reading follows immediately from our account. This LF is equivalent to the LF proposed above in (13a) for the original Tanglewood example, modulo the locative bound variable *there* in place of the prepositional phrase bound variable *to x*.

(29) **Covert focus movement LF for (28):**
$\text{only}([\text{Tanglewood}]_{\text{F}})(\lambda x\,.$ I go to x because you go $\textit{there}_x)$ ($\approx$13a)

Such Tanglewood examples with overt bound variables allow us to explicitly observe the effects of the covert pied-piping proposed here. Recall Kratzer's original *Zoning Board* example, repeated below in (30), which is a grammatical Tanglewood construction despite its focus being within an island. We proposed above that this example is grammatical due to covert movement of the island *the person...*, binding a variable over different persons; see (18) above. This is reflected explicitly by the bound variable in the grammatical ellipsis-less variant (31), which has the truth-conditionally equivalent Tanglewood reading from (30).

found in the literature. The first comes from Wold's (1996) discussion of crossing focus dependencies, but see Krifka 1996, 2006; Tancredi 1997, 2004 for arguments that such data is better captured by assuming covert focus movement that is sensitive to syntactic islands. A second argument comes from the interaction of focus with the Copy Theory of movement (Erlewine 2014), in particular in so-called "backwards association" configurations. Absent an alternative account for this data, the interaction of focus with copies discussed there would necessitate the use of Kratzerian focus indices.

(30) **Kratzer's *Zoning Board* example, repeated from (14):**
Context: "You always contact every responsible person before me."
✓TW I only contacted [$_{\text{island}}$ the person who chairs [the Zoning Board]$_{\text{F}}$] before you did △.
Intended Tanglewood reading: The ZB is the only *x* such that I contacted the person who chairs *x* before you contacted the person who chairs *x*.

(31) **Overt bound variable paraphrase of Kratzer's *Zoning Board* example:**
✓TW I only contacted [$_{\text{island}}$ the person who chairs [the Zoning Board]$_{\text{F}}$] before you contacted her/him/them.[9]

The example in (31) corresponds to a parse of (30) where the ellipsis site is resolved as △ = "contact her/him/them." In contrast, there is no grammatical equivalent of (30) which explicitly spells out the ellipsis site as △ = "contact the person who chairs..." This again reflects the fact that the focused constituent *the Zoning Board* cannot covertly move out of the island to a position to bind the bound variable *it*. Instead, the entire island must move.

(32) **Bound variable corresponding to the focus, not the island, is impossible:**
∗TW I only contacted [$_{\text{island}}$ the person who chairs [the Zoning Board]$_{\text{F}}$] before you contacted [$_{\text{island}}$ the person who chairs it].

To conclude, Tanglewood constructions can involve overt bound variables and do not depend on ellipsis, as predicted by our account. This was previously observed by Beaver & Clark (2008), but without an explicit account which predicts the island sensitivity observed in the previous section. Such data is problematic for Kratzer's account, which specifically relied on ellipsis for the generation of Tanglewood constructions. Kratzer's proposal undergenerates the examples with overt bound variables in this section, while simultaneously overgenerating the island examples in the previous section.

5 Covert focus movement is long-distance, not QR

In this section we consider and argue against one possible alternative analysis for the data we have presented here. This is the possibility that Tanglewood readings indeed involve covert movement and variable binding, but that this movement is not covert focus movement but rather reflects a general purpose operation such as QR. We will show that the covert movement involved in Tanglewood constructions can be

[9] In the authors' English, this sounds best with the gender-neutral singular *them*, but we want to make it clear that this pronoun here is animate. Given sufficient contextual expectations of all persons chairing relevant organizations to be female or male, the singular *her* or *him* becomes grammatical.

long-distance, across finite clause boundaries, and in particular that this movement can be longer than that of quantifiers undergoing QR.

We first consider example (33), which is a grammatical Tanglewood construction. In the intended reading here, the *because*-clause adjoins to and modifies *think*. Therefore, for the binder of the moved focus *anaphora* to bind the bound variable in the ellipsis site, *anaphora* must necessarily move outside of the embedded finite clause. (34) below gives the LF that we would propose for this sentence.

(33) **Tanglewood construction requiring long-distance covert movement:**

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 anaphora. Some people think he is just extrapolating from what his advisor works on. But actually...

$\checkmark^{TW}$ He only thinks $[_{CP}$ that everyone works on $[\text{anaphora}]_F]$ because his advisor does $\triangle$.

Intended TW reading: Anaphora is the only topic x such that John [thinks that everyone works on x [because his advisor works on x]]. ($\triangle$ = "work on...")

(34) LF: only$([\text{anaphora}]_F)(\lambda x$. he think $[_{CP}$ that everyone $[_{\text{antecedent}}$ work on $x]]$ because his advisor $[_{\text{ellipsis}}$ work on $x])$

Next let us compare this with the behavior of variable binding by a QR-ed quantifier. Example (35) is a version of (33) with the focus replaced by the quantifier *at least one topic* and without the associating *only*. This sentence does not have the intended Tanglewood-esque reading, which would involve binding into the ellipsis site by a long-distance QRing *at least one topic*. The baseline in (36) shows that variable binding into a *because*-clause by an object quantifier *at least one topic* is possible, if the *because*-clause is attached to the local clause.

(35) **QR does not move as high as the focus in (33):**

$*^{TW}$ He thinks [that everyone works on at least one topic] because his advisor does $\triangle$.

Intended TW-like reading: There is at least one topic x such that he [thinks everyone works on x [because his advisor works on x]]. ($\triangle$ = "work on...")

(36) **Baseline variable binding by *at least one topic*:**

$\checkmark^{TW}$ He works on at least one topic because his advisor does $\triangle$.

Intended TW-like reading: There is at least one topic x such that he [works on x [because his advisor works on x]]. ($\triangle$ = "work on...")

The contrast between example (35), containing a quantifier, and example (33), with focus associating with *only*, shows that the covert movement in Tanglewood

constructions cannot simply be reduced to QR's independent ability to covertly move arguments.[10] Covert focus movement is long-distance, crossing finite clause boundaries, in environments where quantifiers cannot. Hence, we argue here for the existence of covert focus movement, which is distinct from QR and must be available to the grammar alongside QR. This focus movement is necessitated in our analysis for simple reasons of semantic composition: the two-place formulation of *only* in (11) requires a first argument. This argument is supplied to the operator through covert movement of the overt focus—or a constituent properly containing it—as detailed in our proposal above.

6 Conclusion

In this paper we argued for covert focus movement in English focus association. Our evidence comes from *Tanglewood* configurations of the form in Kratzer 1991. We showed that Tanglewood configurations are sensitive to syntactic islands, contrary to Kratzer's claims and predictions. In particular, we showed an asymmetric pattern of island sensitivity: the position of overt focus is island-sensitive but the position of the ellipsis site is not.

We propose that Tanglewood constructions are derived through covert movement of the focused constituent to the focus-sensitive operator, with binding of a bound variable in the ellipsis site. This movement may involve covert pied-piping of a larger constituent properly containing the focus (Drubig 1994; Krifka 1996, 2006; Tancredi 1997, 2004; Wagner 2006; Erlewine & Kotek 2014). This availability of covert pied-piping explains examples such as Kratzer's which are apparently island-insensitive: in such examples, the entire island undergoes covert movement to the operator, and hence there is no island violation. It also explains the asymmetric pattern of island sensitivity we describe above, since the ellipsis site contains a base-generated bound variable that does not undergo any movement and hence is not island-sensitive.

This proposal also severs the link between Tanglewood readings and ellipsis. Indeed, we show that parallel Tanglewood readings are available in sentences with overt bound variables, which do not involve ellipsis. We additionally show that covert focus movement is long-distance and may cross finite clause boundaries, unlike QR in the same environment. The influential Kratzer 1991 proposal—that ellipsis enforces identity of focus indices—will greatly overgenerate Tanglewood constructions and hence cannot be correct.

[10] We recognize that there is some inter-speaker variability in the locality of QR (see e.g. Wurmbrand 2015). What is important here is that there is a contrast here between these two examples in the availability of the intended reading.

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