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The scope of *even* and quantifier raising*

Abstract

This paper addresses the question of whether the preverbal *even* (VP-*even*) embedded in a nonfinite clause can take wide scope (e.g., *Bill refused to even drink WATER*). The paper presents novel evidence for wide scope VP-*even* that is independent of the presuppositions of *even*. The evidence is based on examples of antecedent-contained deletion (ACD), where embedded VP-*even* associates with a nominal constituent (or part of it) that raises out of the embedded clause via quantifier raising. Assuming that *even* must c-command the focus that it associates with, the case at issue forces VP-*even* to have wide scope, and further shows that VP-*even* in NPI-licensing contexts is not necessarily an NPI.

1. Introduction

The focus particle *even* in English is truth-conditionally vacuous, but it introduces an implication that is not available with the corresponding sentence without *even*. For instance, the preverbal *even* (henceforth, VP-*even*) in (1a), which associates with the focused constituent *Syntactic Structures* (marked with $[\ ]_F$), implicates that Syntactic Structures (or SS for short) is a hard book to read.[1] The opposite implication arises when *even* appears in contexts where negative polarity items (NPIs) are licensed. For instance, *even* in (1b) implicates that SS is an easy book to read.

(1) a. Bill even read [Syntactic Structures]$_F$.
b. Bill didn't even read [Syntactic Structures]$_F$.

Karttunen and Peters (1979) argue that the "easy" reading in (1b) comes about when *even* scopes over an NPI licensor (see also Wilkinson 1996, Guerzoni 2003, Lahiri 2006). Karttunen and Peters' scope theory has been challenged by Rooth (1985), where it is argued instead that the "easy" reading obtains with a second lexical entry for *even*, namely, a negative polarity *even* (see also Rullmann 1997, Herburger 2003, Giannakidou 2007). Although a number of arguments have

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[1] *Even* is also able to appear in prenominal position, as in (i). In this paper, I concentrate on the semantics of VP-*even* in (1a), and put aside prenominal *even*. A difference between the two is discussed in Sect. 2.2.
(i) Bill read even [Syntactic Structures]$_F$.

been presented to choose between the two theories, no agreement has been reached to date. This paper presents novel evidence for the scope theory of *even* that does not rely on differences observed at the level of presupposition. In the data to be presented, embedded VP-*even* associates with a nominal constituent (or part of it) that raises out of the embedded clause via quantifier raising. Assuming that *even* must c-command the focus (Jackendoff 1972, Rooth 1985), the case at issue requires us to consider that *even* scopes over the raised element. More specifically, by examining examples of so-called antecedent-contained deletion, I show that *even* in NPI-licensing contexts is not necessarily an NPI, at least not in an environment where the focus that *even* associates with can undergo quantifier raising above the NPI licensor.

The organization of the paper is as follows. Section 2 summarizes the scope theory and lexical theory of *even*. Section 3 provides novel evidence for the scope theory based on antecedent-contained deletion. Section 4 compares embedded VP-*even* with matrix VP-*even*. Section 5 presents conclusions and some open questions.

2. Background

The semantics of *even* is generally described using Rooth's focus semantics (1985, 1992). Focus makes available two semantic values, namely, the ordinary semantic value (written as $[\![\alpha]\!]^o$, where α is a syntactic phrase) and the focus semantic value (written as $[\![\alpha]\!]^f$). The focus semantic value is the set of all possible alternatives to the ordinary semantic value, which obtains by replacing the focused element with elements of the same type. For example, the ordinary semantic value of (1a) is the proposition 'that Bill read SS', as in (2a), and the focus semantic value of (1a) is the set of all propositions of the form 'that Bill read x', as in (2b).

(2) a. $[\![\text{Bill read [Syntactic Structures]}_F]\!]^o = \hat{}\text{read(bill,ss)}$
b. $[\![\text{Bill read [Syntactic Structures]}_F]\!]^f = \{p: \exists x\ [p=\hat{}\text{read(bill,x)}]\}$

Karttunen and Peters (1979) (henceforth, K&P) claim that *even* in (1a) triggers the existential presupposition (ExistP) that Bill read something other than SS, and the scalar presupposition (ScalarP) that SS is the least likely book for Bill to read. Rooth (1985) adopts K&P's presuppositions and provides a cross-categorial definition for *even*, where the presuppositions are stated using quantification over propositions, as in (3).

(3) a. ExistP: $\exists p\ [p \in C \wedge \check{}p \wedge p \neq [\![\alpha]\!]^o]$
b. ScalarP: $\forall p\ [[p \in C \wedge p \neq [\![\alpha]\!]^o] \rightarrow p >_{likely} [\![\alpha]\!]^o]$

Here α is the proposition without *even*, and $[\![\alpha]\!]^o$ is the assertion. The sub-formula $p >_{likely} [\![\alpha]\!]^o$ is read as 'p is more likely than $[\![\alpha]\!]^o$'. The set C is a contextual variable that serves as a domain of quantification for *even*. The role of focus is to identify C, which is a subset of $[\![\alpha]\!]^f$. The presuppositions of (1a) based on (3) are given in (4).

(4) a. ExistP: $\exists p\ [\exists x\ [p=\hat{}read(b,x) \wedge \check{}p \wedge p\neq\hat{}read(b,ss)]]$
b. ScalarP: $\forall p\ [\exists x\ [[p=\hat{}read(b,x) \wedge p\neq\hat{}read(b,ss)] \rightarrow p >_{likely} \hat{}read(b,ss)]]]$

The ExistP in (4a) says that there is a proposition of the form 'that Bill read x' that is true and that is not identical to 'that Bill read SS'. That is, there is something other than SS that Bill read. The ScalarP in (4b) says that 'that Bill read SS' is the least likely among the alternatives of the form 'that Bill read x'. In other words, SS is the least likely book for Bill to read.

Crucially, for *even* to yield an appropriate interpretation, there has to be at least one focused constituent within the expression that *even* combines with (Rullmann 2003; see also von Stechow 1991). For instance, in the focus-less sentence *Bill even read Syntactic Structures*, C is a subset of $[\![Bill\ read\ SS]\!]^f$, which is the singleton {that Bill read SS}. However, (3) requires there to be at least one proposition of the form 'that Bill read x' which differs from 'that Bill read SS'. Thus, *even* must associate with a focused constituent that appears in its scope. This point will become crucial in Sect. 3.

2.1. The scope theory and the lexical theory

As briefly discussed in Sect. 1, the "easy" reading obtains when *even* appears in the same clause as negation. For example, in *Bill didn't even read* $[SS]_F$, SS is taken to be an easy book for Bill to read. Two theories have been proposed to derive the appropriate presuppositions. The scope theory holds that *even* scopes over negation at LF, as in (5a) (K&P, among others). Wide scope *even* in (5a) combines with the negative proposition 'that Bill didn't read SS', and evokes the presuppositions in (5b,c). The ExistP says that there is something other than SS that Bill didn't read. The ScalarP says that 'that Bill didn't read SS' is the least likely, i.e., 'that Bill read SS' is the most likely among the alternatives of the form 'that Bill read x' (x≠SS). This makes sense if SS is taken to be an easy book to read.

(5) a. LF: $[_{IP}$ even C $[_{IP}$ not $[_{IP}$ Bill read $[SS]_F]]]$
b. ExistP: $\exists p\ [\exists x\ [p=\hat{}\neg read(b,x) \wedge \check{}p \wedge p\neq\hat{}\neg read(b,ss)]]$
c. ScalarP: $\forall p\ [\exists x\ [[p=\hat{}\neg read(b,x) \wedge p\neq\hat{}\neg read(b,ss)] \rightarrow p >_{likely} \hat{}\neg read(b,ss)]]]$

The lexical theory holds that there is a second lexical entry for *even*, namely, a negative polarity *even* (henceforth, NPI *even*) that is licensed only in the scope of an NPI licensor (Rooth 1985). The presuppositions of the NPI *even* are given in (6). Unlike a regular *even*, an NPI *even* guarantees the existence of a false alternative and gives rise to the "most-likely" presupposition. Applied to the sentence *Bill didn't even read* $[SS]_F$, we obtain the LF and presuppositions in (7).

(6) a. ExistP: $\exists p\,[p \in C \wedge \text{not}(\check{}p) \wedge p \neq [\![\alpha]\!]^o]$
b. ScalarP: $\forall p\,[[p \in C \wedge p \neq [\![\alpha]\!]^o] \rightarrow [\![\alpha]\!]^o >_{\text{likely}} p]$

(7) a. LF: $[_{IP}$ not $[_{IP}$ even$_{NPI}$ C $[_{IP}$ Bill read $[SS]_F]]]$
b. ExistP: $\exists p\,[\exists x\,[p = \hat{}\text{read}(b,x) \wedge \text{not}(\check{}p) \wedge p \neq \hat{}\text{read}(b,ss)]]$
c. ScalarP: $\forall p\,[\exists x\,[[p = \hat{}\text{read}(b,x) \wedge p \neq \hat{}\text{read}(b,ss)] \rightarrow \hat{}\text{read}(b,ss) >_{\text{likely}} p]]]$

An NPI *even*, being an NPI, must appear in the scope of *not*; it evokes the ExistP that there is something other than SS that Bill didn't read and the ScalarP that SS is the most likely thing for Bill to read. Since *not* is a presupposition hole (Karttunen 1973), these presuppositions are inherited by the entire sentence.

2.2. Scope fixing of VP-*even*

Rooth (1985) derives a piece of evidence for the lexical theory from the so-called scope fixing effect, first noted for *only*. Taglicht (1984) had observed that preverbal *only* (or VP-*only*) is scopally more restricted than prenominal *only* (or NP-*only*). Sentence (8a), illustrating NP-*only*, can mean that they were advised not to learn any language other than Spanish or that there was no language other than Spanish that they were advised to learn, but (8b), with VP-*only*, permits only the first reading. In the case of NP-*only*, the NP *only Spanish* can undergo quantifier raising (QR) to the matrix clause. Such an option is unavailable with VP-*only*, and thus the scope of VP-*only* is restricted to the embedded clause.

(8) a. They were advised to learn only $[\text{Spanish}]_F$.
b. They were advised to only learn $[\text{Spanish}]_F$.

Rooth claims that scope fixing of VP-*only* can be replicated with VP-*even*. Consider (9).

(9) Mary promised to clean the kitchen, and Bill promised to clean the living room.
a. Someone promised to clean even $[\text{the bathroom}]_F$.
b.# Someone promised to even clean $[\text{the bathroom}]_F$. (Rooth 1985: 146)

The NP *even the bathroom* in (9a) undergoes QR and adjoins to the embedded IP, as in (10a), or to the matrix IP, as in (10b).

(10) a. $[_{IP}$ someone$_i$ promised $[_{IP}$ $[_{NP}$ even C $[_{NP}$ the bathroom$]_F]_1$ $[_{IP}$ PRO$_i$ to clean e$_1]]]$
b. $[_{IP}$ $[_{NP}$ even C $[_{NP}$ the bathroom$]_F]_1$ $[_{IP}$ someone$_i$ promised $[_{IP}$ PRO$_i$ to clean e$_1]]]$

The narrow scope *even* in (10a) introduces the ExistP that there is some room other than the bathroom that x cleaned.[2] This ExistP is consistent with a situation where one person cleaned the bathroom as well as some other room. However, it is in conflict with the context above, where there is nobody who is cleaning more than one room. In contrast, the wide scope *even* in (10b) evokes the ExistP that there is some room other than the bathroom that someone promised to clean. This is consistent with the context in (9) where Mary and Bill both promised to clean a room different from the bathroom. It follows that the LF structure of NP-*even* in (9a) must be (10b), and cannot be (10a).

Rooth argues that VP-*even* in (9b) is infelicitous because the scope of VP-*even* is fixed, that is, its scope is restricted to the embedded clause, as in (11a). If the wide scope *even* in (11b) were available, (9b) would have been felicitous.

(11) a. $[_{IP}$ someone$_i$ promised $[_{IP}$ even C $[_{IP}$ PRO$_i$ to clean [the bathroom$]_F]]]$
b. $[_{IP}$ even C $[_{IP}$ someone$_i$ promised $[_{IP}$ PRO$_i$ to clean [the bathroom$]_F]]]$

In response to Rooth's observation, Wilkinson (1996) shows that scope fixing of VP-*even* is not fully general. In particular, she points out that Rooth would predict VP-*even* in (12) to be odd.

(12) Everyone was trying to nominate somebody. The rules of protocol only allow one nomination per person. Bill tried to nominate Hillary, Warren tried to nominate Jim, and someone tried to even nominate [himself]$_F$. (Wilkinson 1996: 208)

Under Rooth's theory, the scope of VP-*even* is confined to the embedded clause, as in (13a), which asserts that x nominated himself and presupposes that x nominated someone other than himself, as in (13b). This is inconsistent with a context where everyone can nominate only one

[2] Following Rooth (1985: 161-162), I gloss over the problem that the variable x introduced by PRO$_i$ is unbound in the ExistP. The variable needs to be bound by *someone* in the assertion. However, the presupposition and the assertion are independent from each other. This is a general problem of presupposition projection in quantificational contexts, and as such it is beyond the scope of this article (see K&P; see also Heim 1983, Beaver 2001, Geurts and van der Sandt 2004).

person. The problem can be resolved by adopting the scope theory, where the embedded VP-*even* takes wide scope, as in (14a), and triggers the ExistP in (14b) that there is a person who tried to nominate someone other than himself. This ExistP is met in the context in (12).[3]

(13) a. $[_{IP}$ someone$_i$ tried $[_{IP}$ even C $[_{IP}$ PRO$_i$ to nominate [himself$_i$]$_F$]]]
b. ExistP: ∃y [x nominate y ∧ y ≠ x] (Wilkinson 1996: 208)

(14) a. $[_{IP}$ even C $[_{IP}$ someone$_i$ tried $[_{IP}$ PRO$_i$ to nominate [himself$_i$]$_F$]]]
b. ExistP: ∃y∃z [z tried to nominate y ∧ y ≠ z]

It is not difficult to construct examples that are parallel to Wilkinson's except that VP-*even* is in the scope of an NPI-licensor, as in (15).

(15) People helped others, but they had some preferences. Al refused to help Ed, although he helped everyone else. Bill refused to help Ian, although he helped everyone else, and someone refused to even help [himself]$_F$, although he helped everyone else.

Under the scope theory, VP-*even* in (15) scopes over the matrix clause and introduces the ExistP that there is someone who refused to help someone other than himself. This is guaranteed by the given context, and thus the theory correctly predicts that (15) is felicitous. In contrast, under the lexical theory, VP-*even* in (15) is an NPI and evokes the ExistP that there is someone other than himself that x did not help, i.e., the same person refused to help himself and someone else. This is inconsistent with the context, hence the theory incorrectly predicts (15) to be infelicitous.

2.3. Controversies

We have seen that the scope fixing effect of VP-*even* does not serve as a strong argument for the lexical theory because, as Wilkinson correctly points out, the effect is not fully general. This leaves open the possibility that an embedded VP-*even* may take wide scope. Indeed, I will show in Sect. 3 that this is the case. Besides Wilkinson's criticism, there is another problem with Rooth's argument above. Recall that, under Rooth's analysis, the infelicity of (9b) is due to the ExistP of VP-*even*. However, it has been argued that the ExistP is not part of the lexical meaning

[3] Wilkinson (1996) claims that we need a presupposition such as (i), where someone nominated someone other than himself, and that according to Rooth (1985: 147), this obtains only when *even* scopes over *someone*.
(i) ExistP: ∃y∃z [z nominate y ∧ y ≠ z] (Wilkinson 1996: 208)
Even in (i) scopes over *someone*, but the ExistP is computed as if *even* combines with the embedded clause. For simplicity, I assume that the syntactic and semantic scope of *even* are identical, as in (14a) (cf. Rullmann 1997).

of *even* (Krifka 1991, von Stechow 1991, Rullmann 1997). For example, Rullmann shows that *even* can associate with an element on a scale consisting of mutually exclusive elements (in the sense of Horn 1972), as in (16).

(16) A: Is Claire an [assistant]$_F$ professor?
B: No, she's even an [associate]$_F$ professor.[4] (Rullmann 1997: 45)

Following K&P, *even* triggers the ExistP that there is some status Claire has besides being an associate professor, but this is in conflict with our world knowledge that Claire can hold only one professional status at a certain temporal point. Rullmann further points out that (16B) becomes infelicitous if *even* is replaced with *also*, and claims that the contrast between *even* and *also* casts doubt on the common assumption that the meaning of *even* is the same as that of *also* plus ScalarP (see König 1991, for instance). If the ExistP is not a part of the meaning of *even*, the arguments based on the ExistP such as the observation of scope fixing, do not help us choose between the two theories of *even*. Thus, we need to look for evidence that is independent of the ExistP.

Note that, besides the scope fixing effect discussed above, a number of arguments have been presented to support the lexical theory (Rullmann 1997, Herburger 2003, Giannakidou 2007, among others). I put aside those arguments until Sect. 6 and concentrate for now on the discussion of the scope of *even*. More specifically, the central question to be addressed is whether the scope of embedded VP-*even* is confined to the embedded clause. In the next section, I present novel data that necessitate the existence of a wide scope VP-*even*. Crucially, the data are independent of the ExistP, and thus they support the scope theory regardless of whether the ExistP is part of the lexical meaning of *even*.

3. Wide scope *even* and antecedent-contained deletion

My account relies on two key assumptions, to be laid out below: i) a focus particle must c-command the focus that it associates with, and ii) a focused constituent may undergo QR. With these two assumptions in place, the plot will go as follows: Suppose that embedded VP-*even* associates with an NP (or part of it) that is in the embedded clause, as in (17a). Suppose further that there are reasons to believe that the focused constituent (or a larger nominal constituent that includes the focus) raises out of the embedded clause and adjoins to the matrix IP. Given that

[4] The speakers that I consulted with found examples such as (16) quite odd. Guerzoni (2003) also reports that her informants found (16) completely unacceptable. Indeed, Rullmann (2007) acknowledges that (16) may be marginal, but he claims that the corresponding Dutch example is perfectly acceptable. Thus, there seems to be crosslinguistic variation as to whether items corresponding to *even* introduce the ExistP.

even must c-command the focus that it associates with, *even* must be interpreted at a position above the raised constituent, as in (17b).

(17) a. SS: $[_{\text{MatrixIP}} \ldots [_{\text{EmbeddedIP}}$ even $[_{\text{EmbeddedIP}} \ldots [\ldots]_{F} \ldots]]]$
b. LF: $[_{\text{MatrixIP}}$ even $[_{\text{MatrixIP}} [\ldots]_{F,1} [_{\text{MatrixIP}} \ldots [_{\text{EmbeddedIP}} \ldots e_{1} \ldots]]]]$

Where might we find a structure that fits in this scenario? In Sect. 3.2, I present examples of so-called antecedent-contained deletion (ACD), where an embedded focus (or part of it) undergoes QR to the matrix clause, which in turn forces VP-*even* to have wide scope.

3.1. Assumptions

Before examining examples of ACD, let me first introduce the two assumptions, mentioned above, that play a central role in the analysis to be presented: *even* has to c-command the focused constituent that it associates with (Jackendoff 1972, Rooth 1985), and a focused constituent can undergo ordinary syntactic movements such as QR (Rooth 1985).

3.1.1. The c-command requirement on association with focus

Jackendoff (1972) shows that while VP-*even* can associate with a variety of elements in the sentence, for NP-*even* association is much more limited. VP-*even* in (18) can associate with a focused phrase anywhere in the sentence, including the subject, as in (18a). In contrast, NP-*even* can associate only with the NP, as in (19), or with a subconstituent of it, as in (20).

(18) a. $[\text{John}]_{F}$ even gave his daughter a new bicycle.
b. John even gave his $[\text{daughter}]_{F}$ a new bicycle.
c. John even gave $[\text{his}]_{F}$ daughter a new bicycle.
d. John even gave his daughter a $[\text{new}]_{F}$ bicycle.
e. John even gave his daughter a new $[\text{bicycle}]_{F}$.
f. John even $[\text{gave}]_{F}$ his daughter a new bicycle. (Jackendoff 1972: 248)

(19) a. Even $[\text{John}]_{F}$ gave his daughter a new bicycle.
b. *Even John $[\text{gave}]_{F}$ his daughter a new bicycle.
c. *Even John gave $[\text{his}]_{F}$ daughter a new bicycle.
d. *Even John gave his $[\text{daughter}]_{F}$ a new bicycle.
e. *Even John gave his daughter a $[\text{new}]_{F}$ bicycle.
f. * Even John gave his daughter a new $[\text{bicycle}]_{F}$. (Jackendoff 1972: 248)

(20) a. *[John]$_F$ gave even his daughter a new bicycle.
b. *John [gave]$_F$ even his daughter a new bicycle.
c. John gave even [his]$_F$ daughter a new bicycle.
d. John gave even his [daughter]$_F$ a new bicycle.
e. *John gave even his daughter a [new]$_F$ bicycle.
f. * John gave even his daughter a new [bicycle]$_F$. (Jackendoff 1972: 248)

Based on this observation, Jackendoff proposes a structural requirement on association with focus: *even* can associate with a phrase P if and only if *even* c-commands P (cf. Rooth 1985). He claims that VP-*even* is dominated by S and that NP-*even* is dominated by NP. Under the more recent syntactic framework, we can assume correspondingly, as done here, that VP-*even* is adjoined to IP (or to I' as suggested by von Stechow 1991) and that NP-*even* is adjoined to NP.

Jackendoff's syntactic restriction is in agreement with Rooth's semantics of focus. Recall the point made in Sect. 2.1 that *even* must associate with a focused constituent that appears in its scope. In other words, *even* must associate with a focused constituent that it c-commands. To illustrate, let us examine (21), which is rejected both on syntactic and on semantic grounds.

(21) *[John]$_F$ said that Bill even read Syntactic Structures.

Syntactically, (21) is bad because the focus *John* is not c-commanded by *even*. Semantically, (21) is problematic because *even* cannot evoke proper presuppositions. C here is a subset of the focus semantic value of *Bill even read Syntactic Structures*, namely, a subset of the singleton {that Bill read SS}. It is impossible to evoke appropriate presuppositions on the basis of this C; C must have at least one proposition of the form 'that Bill read x', where x≠SS. In conclusion, *even* must c-command a focused constituent that it associates with both at SS and LF.

3.1.2. Quantifier raising of focus

So far, I have been assuming Rooth's theory of focus where a focused constituent is interpreted in situ. Alternatively, it has been argued that a focused constituent moves at LF from its base position to the complement of a focused particle, leaving a trace behind (Chomsky 1976, see also Krifka 2006, Wagner 2006). The choice between the two is not our concern, but one of the arguments for the latter theory, namely, the crossover argument, is relevant to the discussion here.

Chomsky (1976) observes that focused NPs behave like *wh*-phrases and quantifier phrases with respect to so-called weak crossover effects. I illustrate Chomsky's argument by using Rooth's examples. In (22) and (23), the sentences in (a), but not the ones in (b), have the bound variable reading in (c). Example (24) is parallel to (22) and (23) in this respect.

(22) a. Who was betrayed by the woman he loved?
b. Who did the woman he loved betray?
c. for which person x [the woman x loved betrayed x] (Rooth 1985: 67)

(23) a. Every man was betrayed by the woman he loved.
b. The woman he loved betrayed every man.
c. for all men x [the woman x loved betrayed x] (Rooth 1985: 67)

(24) a. We only expect $[him]_F$ to be betrayed by the woman he loves.
b. We only expect the woman he loves to betray $[him]_F$.
c. ∀x[we expect the woman x loves to betray x → x = John] (Rooth 1985: 70)

The difference between (a) and (b) in (22) and (23) is generally explained by the weak crossover condition that applies at LF. The LF structures of (22) and (23) are provided in (25) and (26), respectively. Leaving aside the exact characterization of the condition, it is possible to obtain the bound variable reading from the configuration in (a), but not from the one in (b).

(25) a. who_1 [e_1 was betrayed by the woman he_1 loved]
b. who_1 did [the woman he_1 loved betray e_1]

(26) a. $[_{IP}$ [every man]$_1$ $[_{IP}$ e_1 was betrayed by the woman he_1 loved]]
b. $[_{IP}$ [every man]$_1$ $[_{IP}$ the woman he_1 loved betrayed e_1]]

Chomsky claims that the contrast in (24) naturally follows from the assumption that the focused constituent obligatorily moves to the complement of *only*, as in (27). Since (27) parallels to (25) and (26), we correctly predict that (24) shows the same contrast as (22) and (23).

(27) a. we $[_{VP}$ only $[him]_{F,1}$ $[_{VP}$ expect e_1 to be betrayed by the woman he_1 loves]]
b. we $[_{VP}$ only $[him]_{F,1}$ $[_{VP}$ expect the woman he_1 loves to betray e_1]]

Rooth (1985) argues that the crossover argument presented to support focus movement is compatible with his theory where focus is interpreted in situ. He claims that a focused NP is not required to stay in situ and that it may undergo an ordinary syntactic movement which is independent of an obligatory focus movement. In (24), the focused NP *him* needs to scope out of its clause to produce the bound variable reading. Rooth assumes that the movement here is QR, which obeys the usual constraints of movement. In (24), *him* gets adjoined to the closest

dominating IP, as in (28). The configurations in (28) are parallel to those in (25) and (26); thus Rooth's analysis provides the same syntactic explanation as Chomsky's. In sum, on this view Rooth's in situ theory of focus is fully compatible with the possibility that a focused constituent undergoes an ordinary syntactic movement such as QR.

(28) a. we only expect $[_{IP}$ $[him]_{F,1}$ $[_{IP}$ e_1 to be betrayed by the woman he_1 loves]]
b. we only expect $[_{IP}$ $[him]_{F,1}$ $[_{IP}$ the woman he_1 loves to betray e_1]]

3.2. Embedded antecedent-contained deletion

We are now ready to examine examples of antecedent-contained deletion (ACD). ACD arises when an ellipsis site is properly contained within its antecedent (Bouton 1970). In (29a), for instance, an antecedent needs to be copied into the position of the elided VP. The only candidate is the matrix VP *visited every city that Bill did*, but copying it creates another position for the elided VP, as in (29b).

(29) a. Al $[_{VP}$ visited every city that Bill did $[_{VP}$ ...]].
b. Al $[_{VP}$ visited every city that Bill did $[_{VP}$ visited every city that Bill did $[_{VP}$ ...]]]

It has been generally assumed that the problem in (29) is solved by requiring the NP containing the ellipsis site to undergo QR (May 1985; see also Sag 1976, Larson and May 1990, Kennedy 1997).[5] In (29a), *every city that Bill did* raises out of the VP via QR, adjoining to IP, as in (30a).[6] At this LF structure, the elided VP is not contained within its antecedent. Thus the VP *visit* can be copied into the position of the elided VP, which yields the LF in (30b). This LF correctly represents the intended interpretation 'Al visited every city that Bill visited'.

(30) a. $[_{IP}$ $[_{NP}$ every city that Bill PAST $[_{VP}$ e]]$_1$ $[_{IP}$ Al PAST $[_{VP}$ visit e_1]]]
b. $[_{IP}$ $[_{NP}$ every city that Bill PAST $[_{VP}$ visit e_1]]$_1$ $[_{IP}$ Al PAST $[_{VP}$ visit e_1]]]

ACD may appear within an infinitival clause, as in (31a) and (32a).

(31) a. Al $[_{VP}$ tried to visit every city that Bill did $[_{VP}$ ...]].

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[5] Indeed, ACD has been used as a diagnostic for QR in a variety of linguistic phenomena (Merchant 2000, Büring 2007, Guerzoni 2006, just to list a few).

[6] Following the general assumption, I assume here that QR in ACD resolution targets IP (Fiengo and May 1994). Alternatively, we might assume that the target can be VP, as proposed by Merchant (2000). The core argument presented in this section will not be affected by the choice between the two.

b. $[_{IP}\ [_{NP}$ every city that Bill PAST $[_{VP}$ e$]]_1\ [_{IP}$ Al PAST $[_{VP}$ try to $[_{VP}$ visit $e_1]]]]$

(32) a. Al $[_{VP}$ is required to visit every city that Bill is $[_{VP}$ ...]].
b. $[_{IP}\ [_{NP}$ every city that Bill is $[_{VP}$ e$]]_1\ [_{IP}$ Al is $[_{VP}$ required to $[_{VP}$ visit $e_1]]]]$

Example (31a) is ambiguous between the matrix reading where the elided VP is interpreted as *try to visit* and the embedded reading where the elided VP is interpreted as *visit*. The embedded quantificational element *every city that Bill did* undergoes QR and adjoins to IP, as in (31b). Either the high VP *try to visit* or the low VP *visit* can be copied to the ellipsis site.[7] In contrast, only the matrix reading is available in (32a). This is because the lexical form of the auxiliary that governs the elided VP is compatible only with the matrix VP, and thus only the higher VP can be copied to the elided VP.

In the following, I will more closely examine examples like (32a) where the form of the auxiliary governing the ellipsis site forces the matrix reading. To account for the matrix reading of ACD, we must assume that the NP containing the ellipsis site raises to the matrix clause. I use the matrix reading of ACD as a piece of supporting evidence for the existence of wide scope VP-*even*. The argument goes as follows. Suppose that embedded VP-*even* associates with (part of) the embedded NP. To resolve ACD, the embedded NP needs to undergo QR, adjoining to the matrix IP. Since the raised NP contains the focus that *even* associates with and *even* must c-command the focus, we conclude that the embedded VP-*even* must also be adjoined to the matrix IP.

Example (33a) demonstrates that VP-*even* can associate with part of the NP containing the ellipsis site. To resolve ACD, the quantificational NP *every city that his enemy did* must move out of the VP via QR, as in (33b). The focus contained in the moved NP is c-commanded by *even*.

(33) a. Al_i even visited every city that $[his_i$ enemy$]_F$ did.
b. $[_{IP}$ even $[_{IP}\ [_{NP}$ every city [his enemy]$_F$ PAST $[_{VP}$ e$]]_1\ [_{IP}$ Al PAST $[_{VP}$ visit $e_1]]]]$

Consider now (34), where the last sentence is like (33a) except that VP-*even* and the NP containing the ellipsis site are embedded in a nonfinite clause. VP-*even* in the infinitival clause associates with *his enemy*, a part of the NP containing the elided VP.

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[7] QR in ACD resolution may target the embedded IP, as in (i). From this LF, we obtain the embedded reading where the VP *visit* gets copied to the ellipsis site. However, this LF does not provide us with the antecedent *try to visit*. The matrix reading is possible only if the NP containing the ellipsis site raises to the matrix clause.
(i) $[_{IP}\ Al_i$ tried $[_{IP}\ [_{NP}$ every city that Bill PAST $[_{VP}$ e$]]_1\ [_{IP}\ PRO_i$ to $[_{VP}$ visit $e_1]]]]$

(34) The king is ordering Al to visit every city that someone else is required to visit. Al is required to visit every city that his sister is, and he is required to visit every city that his teacher is. Moreover, Al_i is required to even visit every city that $[his_i \text{ enemy}]_F$ is.[8]

To resolve ACD, the object *every city that his enemy is* undergoes QR and adjoins to the matrix IP. We can then copy the VP *required to visit* to the ellipsis site. The c-command requirement of *even* forces us to interpret VP-*even* at the position above the QR-ed object, as in (35).[9] The wide scope *even* in (35) introduces the ExistP that there is an x such that Al is required to visit every city that x is required to visit (x ≠ Al's enemy), which is consistent with the given context.

(35) $[_{IP} \text{ even } [_{IP} [_{NP} \text{ every city } [his_i \text{ enemy}]_F \text{ is } [_{VP} \text{ e}]]_1 [_{IP} Al_i \text{ is } [_{VP} \text{ required to visit } e_1]]]]$

Example (36) makes exactly the same point. The matrix reading of ACD obtains by moving *every problem [his$_i$ supervisor]$_F$ is* and adjoining it to the matrix IP. At LF, the embedded VP-*even* must c-command the moved element, hence it is interpreted in the matrix clause, just as in (35).

(36) Joe always tries to solve every problem that other people try to solve. He is trying to solve every problem that his classmate is trying to solve, and he is also trying to solve every problem that his tutor is trying to solve. Moreover, he_i is trying to even solve every problem that $[his_i \text{ supervisor}]_F$ is.

It is possible to construct examples of ACD in NPI-licensing contexts, as in (37).

(37) Mary tried to lift the piano, the desk, and the box, but couldn't lift any of them. Bill said that he can lift all of them. However, he has failed to lift the piano that Mary has failed to lift, and has also failed to lift the desk that she has failed to lift. Moreover, he has failed to even lift $[\text{the box}]_F$ that she has.

The negative predicate *fail* is able to license NPIs in its complement, as in *Bill failed to lift anything*. Moreover, when *even* is in the complement of *fail*, only the "easy" reading is available, as in *Bill failed to even lift the lightest box*. The lexical theory derives this reading from NPI *even*,

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[8] Although the last sentence in (34) is judged to be acceptable, the better option would be to have VP-*even* in the matrix clause, as in *Al$_i$ is even required to visit every city that [his$_i$ enemy]$_F$ is*. See Sect. 4 for discussion.

[9] Technically speaking, *Al* should undergo QR to bind *his*, as in (i). I ignore this detail here.

(i) $[_{IP} \text{ even } [_{IP} Al_{i,2} [_{IP} [_{NP} \text{ every city } [his_i \text{ enemy}]_F \text{ is } [_{VP} \text{ e}]]_1 [_{IP} e_2 \text{ is } [_{VP} \text{ required to visit } e_1]]]]]$

while the scope theory assumes that *even* scopes over *fail* at LF. Independently, ACD needs to be resolved. Since the elided VP requires the matrix reading *failed to lift*, the NP with the ellipsis site *the box she has* must undergo QR to the matrix IP. It follows that at LF the embedded *even* is interpreted above the QR-ed NP to meet the c-command requirement, as in (38a). This serves as a piece of evidence for the scope theory of *even*. In contrast, the lexical theory would say that *even* in the last sentence in (37) is an NPI, in which case *even* has to stay in the scope of *fail* at LF, as in (38b). However, in this LF *even* cannot c-command the focus, and thus we would have to abandon the c-command requirement. Alternatively, it might be possible to assume that *even* in (38b) is associated with the trace that is focused (cf. Rullmann 2003). However, note that it is not the entire QR-ed NP that is focused, but only part of it. It is not clear how we can obtain the intended focus association from the assumption that the trace of the entire NP is focused.

(38) a. $[_{IP}$ even C $[_{IP}$ $[_{NP}$ [the box]$_F$ that she has $[_{VP}$ e]]$_1$ $[_{IP}$ he has $[_{VP}$ failed to lift e_1]]]]
b. $[_{IP}$ $[_{NP}$ [the box]$_F$ that she has $[_{VP}$ e]]$_1$ $[_{IP}$ he has $[_{VP}$ failed $[_{IP}$ even$_{NPI}$ $[_{IP}$ PRO$_i$ to lift e_1]]]]]

In (39) and (40), I provide more examples of embedded VP-*even* under an NPI licensor. The auxiliary that governs the elided VP forces the matrix reading of ACD, hence the NP containing the ellipsis site has to undergo QR to the matrix clause. In order to satisfy the c-command requirement, *even* in these examples must be interpreted at the matrix clause.

(39) Ann was going out for dinner with her brother, but her brother was forbidden to enter every restaurant because he was dressed awfully. Ann, as his companion, was also refused entry. She was forbidden to enter every 5-star restaurant that her brother was forbidden to enter. She was also forbidden to enter every 3-star restaurant that her brother was forbidden to enter. Moreover, Ann$_i$ was forbidden to even enter every [1-star restaurant]$_F$ that her$_i$ brother was.

(40) Ann hates her brother Bill, and so she always tries to do the opposite of what he does. For example, Ann almost always reads things that Bill refuses to read. However, there was one time when Ann was so tired that she didn't want to read anything, not even the things that Bill refused to read. So, at least once, Ann$_i$ has refused to even read everything that [her$_i$ brother]$_F$ has.

Before closing this section, let me present a few cases where a sentence with *even* may contain a focused constituent that does not associate with *even*. The last sentence in (41) has

exactly the same configuration as the examples above: *every city that his enemy is* needs to move out of the embedded clause to resolve ACD, and *even* must take wide scope to c-command the focus. The ExistP of *even* says that there is an x such that Al is required to visit every city that x is required to visit (x ≠ Al's enemy). However, this is not satisfied in (41).

(41) The king is ordering each of his servants to visit every city that someone else is required to visit. Conan is required to visit every city that his sister is. Bill is required to visit every city that his teacher is, and Al_i is required to even visit every city that $[his_i \text{ enemy}]_F$ is.

In order to obtain an ExistP that is consistent with the context, we could adopt Wilkinson's (1996) claim that there may be a "free" focus that is not associated with *even* and that this focus triggers an existential presupposition which is introduced into the presuppositions of *even* (see also Kempson 1975, Kadmon 2001). Putting details aside, we could assume that there is an additional focus on the subject *Al*, as in (42a), which yields the ExistP in (42b). This ExistP is satisfied in (41). (43) is an additional example of the same kind.

(42) a. $[_{IP}$ even C $[_{IP}$ $[_{NP}$ every city that $[his_i \text{ enemy}]_F$ is $[_{VP}$ e$]]_1$ $[_{IP}$ $[Al_i]_F$ is $[_{VP}$ required to visit $e_1]]]]$

b. ExistP: There is someone other than Al who is required to visit every city that someone other than his enemy is required to visit

(43) Andy, Bob, and Joe are ambitious students, and they always try to solve every problem that other people are trying to solve. Andy is now trying to solve every problem that his classmate is trying to solve, and Bob is trying to solve every problem that his tutor is trying to solve. Joe is the most ambitious of the three, and he_i is trying to even solve every problem that $[his_i \text{ supervisor}]_F$ is.

4. Revisiting scope fixing effects

In the previous section, I showed that an embedded VP-*even* can take wide scope. However, a question remains as to why there are cases where the scope of embedded VP-*even* does seem to be restricted to the embedded clause, as in Rooth's bathroom example repeated in (44a). While much attention has been paid to the comparison between embedded VP-*even* and embedded NP-*even* (see Sect. 2.2), the comparison between embedded and matrix VP-*even* seems to be largely overlooked. For example, in (44) it is possible to place *even* in the matrix clause, as in (44b). This is not surprising given that the context requires us to have a wide scope ExistP.

(44) Mary promised to clean the kitchen, and Bill promised to clean the living room.
a. #Someone promised to even clean [the bathroom]$_F$.
b. Someone even promised to clean [the bathroom]$_F$.

I submit that the comparison between embedded and matrix VP-*even* is crucial in understanding the scope fixing of VP-*even*. In particular, I claim that scope fixing is observed not because the scope of VP-*even* is restricted, but because there is a preference for placing *even* in the matrix clause on the surface when wide scope interpretation is needed. VP-*even* in (44a) is in the embedded clause at SS, but at LF it must be interpreted at the matrix clause in order to yield an appropriate ExistP. This discrepancy between SS and LF can be easily resolved by placing *even* in the matrix clause, as in (44b). This difference between embedded and matrix VP-*even* accounts for why the latter is strongly preferred to the former, even to the extent that embedded VP-*even* is judged to be infelicitous. Of course, language does allow for discrepancies between SS and LF; for instance, it is well known that the non-surface scope interpretation obtains in examples such as (45a). Thus there is no principled reason why (44a) should be rejected. What I am suggesting is that it is *preferable* to match the surface syntactic structure and the semantic interpretation when possible. Thus the non-surface scope reading in (45a) is possible, but dispreferred. This reading can be easily made salient if it is reflected to the surface word order, as in (45b). Similarly, on this view, given a choice between (44a) and (44b), it is better to use (44b) to express the wide scope interpretation of *even*.

(45) a. Someone loves everyone.
b. Everyone was loved by someone.

The preference of having no discrepancy between SS and LF may be overridden when there is some signal for interpreting embedded *even* at the matrix level. The examples of ACD in (46) illustrate the point. As shown in Sect. 3.2, embedded VP-*even* in (46a) is acceptable. (46b) shows that the corresponding matrix *even* in (46b) is also acceptable (see footnote 8).

(46) The king is ordering Al to visit every city that someone else is required to visit. Al is required to visit every city that his sister is, and he is required to visit every city that his teacher is. Moreover,
a. Al$_i$ is required to even visit every city that [his$_i$ enemy]$_F$ is.
b. Al$_i$ is even required to visit every city that [his$_i$ enemy]$_F$ is.

We know that, in order to resolve ACD, the embedded object *every city that his enemy is* must undergo QR to the matrix clause, which in turn forces the embedded *even* to be interpreted at the matrix clause. Put differently, embedded VP-*even* in (46a) needs to take wide scope at LF in order to resolve ACD. In this way, embedded VP-*even* in (46a) has a syntactic motivation for a wide scope interpretation, which embedded VP-*even* in (44a) lacks. In (44a), the wide scope interpretation is required solely to obtain the ExistP that is consistent with the context. In (46a), in contrast, the driving force for the wide scope interpretation does not stem from the need to derive an appropriate ExistP, but from the need to resolve ACD. Note that even though both embedded and matrix VP-*even* are acceptable in (46), there is still a preference for the matrix VP-*even* in (46b). This is consistent with the idea that it is preferable to make the surface syntactic structure and the semantic interpretation mirror each other when possible.

In sum, I have argued that the seeming scope fixing of embedded VP-*even* can be simply explained as a preference for matrix VP-*even*. The scope of embedded VP-*even* is not in fact fixed, even though it often looks fixed. This is because a wide scope interpretation is better expressed by matrix VP-*even*; the matrix VP-even avoids discrepancy between the surface syntactic structure and the semantic interpretation. As shown, when there is strong motivation for interpreting embedded VP-*even* at the matrix level (e.g., in order to resolve ACD), a wide scope interpretation becomes more accessible.

5. Conclusions and open questions

In this paper, I presented novel evidence for wide scope VP-*even* that is independent of the presuppositions of *even*. In particular, I examined cases of ACD where embedded VP-*even* associates with a nominal constituent (or part of it) that raises out of the embedded clause via QR, and argued that *even* in these cases must scope over the matrix clause in order to meet the c-command requirement. I provided examples where VP-*even* takes scope over an NPI licensor, which shows that *even* in NPI-licensing contexts is not necessarily an NPI, contra the lexical theory. Thus, we see evidence for a wide scope *even*, at least in environments where a focused constituent undergoes QR to a position above an NPI licensor.

As a way of concluding, I address two remaining issues: *even* in a finite clause and crosslinguistic variations.

5.1. *Even* in a finite clause

It is well known that QR is clause-bound: QR is possible out of a nonfinite clause, but not out of a finite clause. For instance, *every city* can scope over *someone* in (47a), but not in (47b).

(47) a. Someone refused to visit every city.

b. Someone doubts that Bill visited every city.

Importantly, the examples presented in this paper are limited to the cases where QR is possible, namely, cases where VP-*even* is embedded in a nonfinite clause and associates with an element (or part of it) that undergoes QR to the matrix clause. It has been shown, however, that an "easy" reading obtains both with VP-*even* in nonfinite clauses (as in (48)) and with VP-*even* in finite clauses (as in (49)).

(48) a. The censorship committee kept John from even reading [Syntactic Structures]$_F$.
b. Al refused to even eat [truffles]$_F$.
c. Al didn't even read [Syntactic Structures]$_F$.

(49) a. I doubt that Bill can even understand [Mother Goose]$_F$.
b. If Bill even reads [Mother Goose]$_F$, I'll give him $10.
c. Every student who even read [Mother Goose]$_F$ passed the course.

The embedded contexts in (49) are the contexts where NPIs are licensed, and both the "easy" and "hard" readings are available in these examples. The lexical theory holds that both an NPI *even* and a regular *even* are available in the scope of the NPI licensors in (49). In contrast, the scope theory holds that *even* may scope over or under the NPI licensor, and the theory is often criticized for allowing *even* to escape syntactic islands (Rullmann 1997, among others).

As far as I can tell, the discussion on *even* in the literature is generally based on the assumption that the scope theory and the lexical theory are mutually exclusive; researchers who argue for the scope theory dispense with an NPI *even*, and those who argue for the lexical theory do without a wide scope *even*. I do not share this view. In Sect. 3.2 I showed that a wide scope VP-*even* needs to be acknowledged in contexts where QR is possible, supporting the scope theory. Yet at the same time, the island sensitivity problem in (49) seems to support the lexical theory; by acknowledging the existence of an NPI *even*, we can avoid positing an unusual scope assignment for *even* (Rullmann 1997, among others). The discussion here suggests that we may want to retain both a wide scope *even* and an NPI *even*, subject to syntactic environments.

Alternatively, we might enrich the scope theory with an additional semantic mechanism that allows us to calculate presuppositions of *even* "globally" (as if *even* took wide scope) even though *even* is syntactically in the scope of the NPI licensor. Such a proposal has been made by Lahiri (2006) (see also Rullmann 2007 for a similar proposal). Lahiri points out that the scope theory of *even* is not necessarily committed to actual syntactic movement of *even*, and suggests that different "scopes" of *even* are the result of an EmphAssert operator (which Lahiri adopts

from Krifka 1995) that is attached at different sites. More specifically, the EmphAssert operator does the trick of generating wide scope effects: the operator can be attached to the matrix clause even when *even* remains in the embedded clause syntactically.

I stay agnostic regarding the choice between these two options, although I believe that the second one is more suitable for *even*, in light of comparison with corresponding items in other languages, to which I turn next.

5.2. Crosslinguistic variation

The data presented in this paper are restricted to English *even* occurring in certain embedded contexts. However, to better evaluate the workings of the scope and the lexical theory, one should examine items corresponding to *even* both within and across languages, as emphasized by Giannakidou (2007). Following Giannakidou, I use EVEN to refer to crosslinguistic items corresponding to *even*. I here present a brief discussion of EVEN items in Japanese and German that associate with a numeral.

It has been noted that when *even* associates with a numeral in positive contexts, as in (50a), it brings up a sense that the quantity expressed by the numeral is large. The LF representation of (50a) is given in (50b).

(50) a. Ed has two children and Fred even has $[\text{three}]_F$. (Rullmann 1997: 45)
b. $[_{IP}$ even C $[_{IP}$ Fred has $[\text{three}]_F]]$

I submit that the ScalarP of *even* is responsible for the large reading: the ScalarP says that 'that Fred has three' is the least likely among the alternatives of the form 'that Fred has n'. We may assume that p is less likely than q if p entails q; in other words, being stronger in terms of entailment is a sufficient condition for being less likely (Lahiri 1998, Chierchia 2004, cf. Guerzoni 2003: 96-97). The ScalarP in (50) is sensible when three is the largest among the quantities contained in the alternatives.[10] We obtain the same interpretation with the particle *-mo* in Japanese. For example, *-mo* in (51a) expresses that five is a large quantity. In negative

[10] Under the present analysis, the relevant alternatives are the following: {that Fred has three, that Fred has two, that Fred has one}. However, as pointed out by Rullmann (1997), the question remains as to what happens to the propositions containing four or more children. To answer this question, I assume that the speaker's expectation is at work. Guerzoni (2003:109-110) suggests that the notion of likelihood involves modality in that likelihood is determined based on the speaker's expectation. In (50a), the worlds where Fred has more than three children are excluded because they are too far away from the speaker's expectation (cf. Chierchia's (2004) "scale truncation").

sentences such as (51b), however, both the "large" and "small" readings are available (Numata 1992).[11,12]

(51) a. Al-ga hon-o [go-satu]$_F$-mo yon-da.
Al-NOM book-ACC [five-CL]-MO read-PAST
'Al even read five books.'
b. Al-ga hon-o [go-satu]$_F$-mo yoma-nak-atta.
Al-NOM book-ACC [five-CL]-MO read-NEG-PAST
'(lit.) Al didn't even read five books.'

Both the scope and the lexical theory are capable of accounting for the "small" reading of (51b). The scope theory assumes that, as in (52a), *-mo* 'even' scopes over negation at LF and evokes the ScalarP that 'that Al didn't read five books' is the least likely among the alternatives 'that Al didn't read n books'; i.e., 'that Al read five books' is the most likely among the alternatives 'that Al read n books'. This is satisfied when five is the smallest among the alternatives. The lexical theory posits the LF in (52b) where the NPI *-mo* combines with the positive proposition 'that Al read five books' and introduces the ScalarP that 'that Al read five books' is the most likely among the alternatives of the form 'that Al read n books', which holds when five is the smallest quantity.

(52) a. Scope theory: [$_{IP}$ -mo C [$_{IP}$ not [$_{IP}$ Al read [$_{NP}$ [five]$_F$ books]]]]
b. Lexical theory: [$_{IP}$ not [$_{IP}$ -mo$_{NPI}$ C [$_{IP}$ Al read [$_{NP}$ [five]$_F$ books]]]]

However, only the scope theory is able to explain the "large" reading of (51b). Note that, while (51b) under the "small" reading asserts that Al read less than five books, (51b) under the "large" reading asserts that there are five books that Al didn't read. That is, to obtain the intended truth conditions for the "large" reading, *five books* must undergo QR above negation. Since *-mo* must c-command the focus *five* (see Sect. 3.1.1), it follows that *-mo* must be above *five* at LF, as

[11] The "large" reading of (51b) obtains in the following scenario: The students had to read seven books during the break. As for Tim, there are four books that he failed to read. Al is worse; there are as many as five books that he didn't read. Five here is considered to be large; the speaker expected the number of books that Al wouldn't read to be smaller than five.

[12] The "large" reading is not easily available with the corresponding English sentence *Al didn't even read five books*. I suspect that this is because *not (...) even* is taken to be an idiomatic expression; it is generally used as a "frozen" expression in order to indicate that the item that *even* associates with is the most likely (or the most plausible) alternative, as in *Not even Chomsky was able to solve the problem* (Chomsky is the most likely/plausible person to be able to solve the problem) or in *Not even five people came* (having five guests is the most likely/plausible).

in (53). In this configuration, *-mo* is not in the scope of negation, which in turn suggests that *-mo* is not an NPI. In (53) *-mo* triggers the ScalarP that 'there are five books that Al didn't read' is the least likely. Assuming that being stronger entails being less likely, the ScalarP makes sense when five is the largest quantity among the alternatives.

(53) $[_{IP}$ -mo C $[_{IP}$ $[_{NP}$ $[\text{five}]_F$ books$]_1$ $[_{IP}$ not $[_{IP}$ Al read $e_1]]]]$

Turning now to German, it has been argued that German makes a lexical distinction between a regular EVEN and an NPI EVEN (König 1991, von Stechow 1991, Rullmann 1997, Hoeksema and Rullmann 2001, Schwarz 2005). *Sogar* in (54a) triggers the same ScalarP as English *even* and Japanese *-mo*, and indicates that five is large. On the surface, *sogar* cannot be under negation, as in (54b), but it can be above negation, as in (54c). In (54c), five may be interpreted to be large or small, and this can be explained if we assume that *sogar* is a wide scope regular EVEN (just like Japanese *-mo* in (53)). In contrast, *einmal* must be under negation on the surface, and in (54b) it signals that five is a small quantity. These properties follow from the assumption that *einmal* is an NPI EVEN.

(54) a. Hans hat {sogar / *einmal} $[\text{fünf}]_F$ Bücher gelesen.
Hans has even five books read
'Hans even read five books.'

b. Hans hat nicht {*sogar / einmal} $[\text{fünf}]_F$ Bücher gelesen.
Hans has not even five books read
'Hans didn't even read five books.'

c. Hans hat {sogar / *einmal} $[\text{fünf}]_F$ Bücher nicht gelesen.
Hans has even five books not read
'Hans even didn't read five books.'

The observation in (54) seems to support the claim that *sogar* and *einmal* are interpreted in situ (see, for instance, Büring and Hartmann 2001). In contrast, as discussed above, Japanese *-mo* may be interpreted at a position different from the surface position. More specifically, the fact that *-mo* under negation can scope over negation at LF shows that *-mo* is neither a positive polarity item (PPI) nor an NPI. If it were a PPI, it should not appear under negation on the surface. If it were an NPI, it should not be able to scope over negation at LF.

I would like to emphasize that the claim made in this paper is not inconsistent with the existence of an NPI EVEN like German *einmal*. My claim here is that English *even* and Japanese *-mo* in NPI-licensing contexts are *not necessarily* NPIs, but this leaves room for positing an NPI

EVEN in general. In English, it has been observed that *so much as* behaves as a negative-counterpart of *even*, suggesting that it is an NPI (Heim 1984, Rullmann 1997). Further investigation is required to clarify crosslinguistic issues.

References

Beaver, David. 2001. *Presupposition and Assertion in Dynamic Semantics*. Stanford: CSLI.

Bouton, Lawrence. 1970. Antecedent-contained proforms., *Proceedings of Chicago Linguistic Society* 6, 154-167.

Büring, Daniel. 2007. Cross-polar nomalies.

Büring, Daniel, and Katharina Hartmann. 2001. The syntax and semantics of focus-sensitive particles in German. *Natural Language and Linguistic Theory* 19, 229-281.

Chierchia, Gennaro. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. In A. Belletti ed., *Structures and Beyond*, 39-65. Oxford: Oxford University Press.

Chomsky, Noam. 1976. Conditions on rules of grammar. *Linguistic Analysis* 2, 303-350.

Fiengo, Robert, and Robert May. 1994. *Indices and Identity*. Cambridge, MA: MIT Press.

Geurts, Bart, and Rob van der Sandt. 2004. Interpreting focus. *Theoretical Linguistics* 30, 1-44.

Giannakidou, Anastasia. 2007. The landscape of EVEN items. *Natural Language and Linguistic Theory* 25, 39-81.

Guerzoni, Elena. 2003. *Why Even Ask? On the Pragmatics of Questions and the Semantics of Answers*. Ph.D. dissertation, Massachusetts Institute of Technology.

Guerzoni, Elena. 2006. Intervention effects on NPIs and feature movement: Towards a unified account of intervention. *Natural Language Semantics* 14, 359-398.

Heim, Irene. 1983. On the projection problem for presuppositions. *Proceedings of the Second West Coast Conference on Formal Linguistics (WCCFL 2)*, 114-125.

Heim, Irene. 1984. A note on negative polarity and downward entailingness. C. Jones and P. Sells eds., *The Proceedings of the 14th Conference of the North East Linguistic Society (NELS 14)*, 98-107.

Herburger, Elena. 2003. A note on Spanish *ni siquiera*, *even*, and the analysis of NPIs. *Probus* 15, 237-256.

Hoeksema, Jack, and Hotze Rullmann. 2001. Scalarity and polarity: A study of scalar adverbs as polarity items. In J. Hoeksema, H. Rullmann, V. Sanchez-Valencia and T. van der Wouden eds., *Perspectives on Negation and Polarity Items*, 129-171. Amsterdam: John Benjamins.

Horn, Laurence. 1972. *On the Semantics Properties of Logical Operators in English*. PhD dissertation, University of California at Los Angeles.

Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Kadmon, Nirit. 2001. *Formal Pragmatics: Semantics, Pragmatics, Presupposition, and Focus*. Oxford: Blackwell.

Karttunen, Lauri. 1973. Presuppositions of compound sentences. *Linguistic Inquiry* 4, 169-194.

Karttunen, Lauri, and Stanley Peters. 1979. Conventional implicature. In C. K. Oh and D. A. Dinneen eds., *Syntax and Semantics 11: Presuppositions*, 1-55. New York: Academic Press.

Kempson, Ruth M. 1975. *Presupposition and the Delimitation of Semantics*. Cambridge: Cambridge University Press.
Kennedy, Christopher. 1997. Antecedent-contained deletion and the syntax of quantification. *Linguistic Inquiry* 28, 662-288.
König, Ekkehard. 1991. *The Meaning of Focus Particles*. London: Routledge.
Krifka, Manfred. 1991. A compositional semantics for multiple focus constructions. In J. Jacobs ed., *Informationsstruktur und Grammatik, Sonderheft der Linguistischen Berichte*, 17-53.
Krifka, Manfred. 1995. The semantics and pragmatics of polarity items. *Linguistic Analysis* 25, 1-49.
Krifka, Manfred. 2006. Association with focus phrases. In V. Molnar and S. Winkler eds., *The Architecture of Focus*, 105-136. Berlin: Mouton de Gruyter.
Lahiri, Utpal. 1998. Focus and negative polarity in Hindi. *Natural Language Semantics* 6, 57-123.
Lahiri, Utpal. 2006. Scope, presuppositions and dimensions of meaning: Some observations on scalar additive particles in English, Hindi and Spanish. Handout for Sinn und Bedeutung 11. Universitat Pompeu-Fabra, Barcelona.
Larson, Richard, and Robert May. 1990. Antecedent containment or vacuous movement: Reply to Baltin. *Linguistic Inquiry* 21, 103-122.
May, Robert. 1985. *Logical Form: Its Structure and Derivation*. Cambridge, MA: MIT Press.
Merchant, Jason. 2000. Antecedent-contained deletion in negative polarity items. *Syntax* 3, 144-150.
Numata, Yoshiko. 1992. *'Mo', 'Dake', 'Sae', etc. - Toritate ['Also', 'Only', 'Even', etc. - Emphasizing]*. Tokyo: Kuroshio.
Rooth, Mats. 1985. *Association with Focus*. Ph.D. dissertation, University of Massachusetts at Amherst.
Rullmann, Hotze. 1997. *Even*, polarity, and scope. M. Gibson, G. Wiebe and G. Libben eds., *Papers in Experimental and Theoretical Linguistics*, 4, 40-64.
Rullmann, Hotze. 2003. Additive particles and polarity. *Journal of Semantics* 20, 329-401.
Rullmann, Hotze. 2007. What does *even* even mean? Handout. A talk given at the University of Calgary.
Sag, Ivan. 1976. *Deletion and Logical Form*. Ph.D. dissertation, Massachusetts Institute of Technology.
Schwarz, Bernhard. 2005. Scalar additive particles in negative contexts. *Natural Language Semantics* 13, 125-168.
von Stechow, Arnim. 1991. Current issues in the theory of focus. In A. von Stechow and D. Wunderlich eds., *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 804-825. Berlin: Walter de Gruyter.
Taglicht, Josef. 1984. *Message and Emphasis: On Focus and Scope in English*. London: Longman.
Wagner, Michael. 2006. Association by movement: Evidence from NPI-licensing. *Natural Language Semantics* 14, 297-324.
Wilkinson, Karina. 1996. The scope of *even*. *Natural Language Semantics* 4, 193-215.