Association by movement: evidence from NPI-licensing

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Abstract 'Only' associates with focus and licenses NPIs. This paper looks at the distributional pattern of NPIs under 'only' and presents evidence for the movement theory of focus association and against an in situ approach. NPIs are licensed in the 'scope' (or the second argument) of 'only', but not in the complement (or its first argument), which I will call the 'syntactic restrictor'. While earlier approaches argued that 'only' licenses NPIs in the unfocused part of the sentence it occurs in except in its focus, evidence from DP-'only' shows that NPIs are also not licensed in the unfocused part of the syntactic restrictor. The distribution of NPIs provides a test for the size of the syntactic restrictor, and this test is applied to the case of VP-'only'. The evidence shows that (i) the restrictor can be smaller than the entire VP and is not necessarily identical to the surface complement of 'only'; (ii) in the case of association with a head the restrictor comprises an XP containing the head; and (iii) in cases of association into an island, the restrictor comprises the entire island. Generalizations (i)–(iii) can be captured straightforwardly by a movement approach but are incompatible with an in situ analysis. Contextual domain restriction of the kind used in in situ approaches accounts for the appropriate

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semantics in cases where the semantic focus is properly contained in the syntactic restrictor of 'only'.

1 Focus movement

The exclusive 'only' can directly attach to the constituent it associates with (marked by italics), or it can associate with a constituent *contained* in the constituent it attaches to:

(1) a.   John played only *baseball*.
    b.   John only played *baseball*.

Theories of focus association differ with respect to whether or not the focused constituent in (1b) moves to associate with 'only'.

'Only' is an operator that takes two arguments, a property p and a focus argument f. The proposition $p(f)$ is called the *prejacent* of a sentence involving 'only'. According to Horn (1969), $only(f)(p)$ presupposes the prejacent $p(f)$ and asserts that all propositions of the form $p(a)$ that are not already entailed by the prejacent are false, where a is an element of the same semantic type as f. I will assume the following lexical entry for 'only':[1]

(2)   *Meaning of 'only'*:
           $[\![only]\!] = \lambda f. \lambda P_{<e,t>}. \ \forall a \in C : p(a) \rightarrow (\hat{}p(f) \Rightarrow \hat{}p(a))$
   Presupposition: $p(f)$

This paper presents a syntactic argument in favor of a movement theory of association with VP-'only' (e.g. (1b)), contributing to earlier arguments in Tancredi (1990), Drubig (1994), Krifka (1996), Fox et al. (2001), Tancredi (2004), Krifka (2006). In particular, I propose that in the case of VP-'only', focus association involves covert movement of the focus constituent to the complement position of 'only'.[2]

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[1] Following Rooth (1992), I assume C to be a contextual variable, which is filled in by a general pragmatic mechanism restricting domains of quantification. Whether the truth of the prejacent is part of the assertion (Kuroda, 1969; Lakoff, 1970; Taglicht, 1984; Atlas, 1993, 1996), a presupposition (Horn, 1969, 1996), a conventional implicature (Karttunen & Peters, 1979), a conversational implicature (McCawley, 1993), or a combination of a presupposition and an implicature (Ippolito, 2006) is still controversial. See Ippolito (2006) and Roberts (2006) for a recent overview. Horn (2002, to appear) proposes that the prejacent is entailed but outside the scope of what is asserted: it is *assertorically inert*.

[2] I assume that 'only' can attach to the entire proposition above the subject, even when pronounced at the beginning of the VP. The subject can be part of the focus of 'only' (the scope would have to be the polarity of the sentence):

   (i)   They promised to stage Macbeth in its entirety, but then *Macbeth* only
              gave his soliloquy. So the witches didn't give their dialog, …

Focus movement establishes the configuration necessary to interpret 'only':[3]

(3)   'Only' at LF

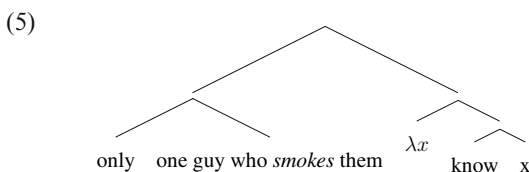   only   restrictor   scope
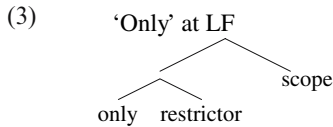
The alternative to focus movement is the in situ theory, which establishes the focus of VP-'only' without syntactic movement. In Rooth (1992) the focus of 'only' is determined by contextually restricting its quantification domain, making use of the focus semantic value of its complement. The possibility of contextual domain restriction does not preclude focus movement, but it renders it unnecessary.

Focus movement and in situ association predict the same truth conditions, and can therefore only be distinguished by looking at syntactic evidence. Movement is *island sensitive*. By contrast, as is well known, focus association appears not to be affected by island constraints (Anderson, 1972; Jackendoff, 1972; Rooth, 1985):

(4) a.   You can do lots of things with bananas. I even know a guy who *smokes* them. (Anderson, 1972, 897)
   b.   I don't know anyone who grows bananas, I only know a guy who *smokes* them.

Island insensitivity is unexpected under a movement analysis of focus association. Drubig (1994), however, presents evidence that in cases of association into islands, it is *the entire island containing the focus* that moves; he proposes a pied-piping analysis of focus movement:[4]

(5)

        only   one guy who *smokes* them λx know   x

The distribution of NPIs discussed in this paper provides an argument for focus movement, and also for Drubig's claim that in cases of association into an island, the entire island containing the focus moves. In cases of association with a head, the evidence suggests that a bigger constituent containing the head moves.

In the following, I will use underlining to mark the <u>syntactic restrictor</u> (i.e. the first argument) of 'only', and italics to mark the *semantic focus*. The scope of the 'only'-phrase, that is, the second argument, will be ⌜marked by corner symbols⌝:

(6)   I only ⌜know <u>one guy who *smokes* them</u>⌝.

2 NPIs in the scope of 'only'

2.1 NPI-licensing and Strawson Entailment

Klima (1964, 311) observes that negative polarity items are licensed by 'only':

(7)   Only *young* <u>writers</u> ⌜ever accept suggestions with any sincerity.⌝

NPIs are licensed in downward entailing (DE) environments according to the analysis in Ladusaw (1979), building on Fauconnier (1975, 1979). Consider 'every', which licenses NPIs in its restrictor but not in its scope:

(8) a.   *Every <u>linguistics student</u> ⌜knows any famous linguist.⌝
    b.   Every <u>student with any linguistic knowledge</u> ⌜knows McCawley⌝.

The distribution of NPIs correlates with downward monotonicity. A DE operator such as sentential negation reverses the direction of entailment. The expression *It is not the case that ...* , which takes sentences as its argument, is downward entailing in this argument (von Fintel, 1999):

(9) a.   It rained hard. → It rained.
    b.   It is not the case that it rained. → It is not the case that
          it rained hard.

The notion of downward entailment can be generalized to expressions that do not take sentences as their arguments (von Fintel, 1999, 98): ''A determiner reverses entailment (is downward entailing, from sets down to subsets) in a given one of its argument slots iff we can replace a set in that slot with any of its subsets while preserving truth.'' A formal definition of a cross-categorial notion of entailment can be found in von Fintel (1999), among others.

Based on this definition, 'every' is DE in its first argument, where NPIs are licensed, but not in its second argument, where they are not:

(10) a.   Every <u>student</u> ⌜knows McCawley⌝.
       → Every <u>linguistics student</u> ⌜knows McCawley.⌝
   b.   Every <u>student</u> ⌜knows a famous linguist.⌝
       ↛ Every <u>student</u> ⌜knows McCawley.⌝

The focus sensitive operator 'only' licenses NPIs in its scope, but not in its restrictor, and thus displays the converse pattern of NPI-licensing compared to 'every'.[5]

(11) a.   Only <u>*John*</u> ⌜ate any kale⌝.
   b.   *Only <u>*any student*</u> ⌜ate kale⌝.

'Only' poses a challenge to the Fauconnier/Ladusaw approach to NPI-licensing, though, since 'only' is not DE in *either* argument (as discussed e.g. in Atlas (1993, 1996)):

(12) a.   Only <u>*John*</u> ⌜ate vegetables⌝.↛ Only <u>John</u> ⌜ate kale⌝.
   b.   Only <u>*students*</u> ⌜ate kale⌝. ↛ Only <u>Linguistics students</u> ⌜ate kale⌝.

The account of NPI-licensing in terms of DE environments seems to break down. Von Fintel (1999) observes that the inference to the subset in (12a) becomes valid if *the presupposition of the conclusion is presumed to be true*:

(13) a.   Only <u>*John*</u> ⌜ate vegetables⌝.
   b.   Presupposition of (13c): John ate kale.
   c.   → Only <u>*John*</u> ⌜ate kale⌝.

The conclusion in (13c) presupposes the statement in (13b). Once (13b) is granted, together with the premise in (13a) one can infer (13c). As for (12b), however, even granting the presupposition of the conclusion does not lead to a valid inference to the subset in the first argument of 'only':

(14) a.   Only <u>*students*</u> ⌜ate kale⌝.
   b.   Presupposition of (14c): Linguistics students ate kale.
   c.   ↛ Only <u>*linguistics students*</u> ⌜ate kale⌝.

Von Fintel (1999) defines a weaker notion of entailment, dubbed 'Strawson Entailment'. This is "a notion of entailment that will only check whether an inference is truth-preserving *under the assumption* that all the conventional implicatures and presuppositions of premises and conclusion are

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[5] 'Every' and DP-'only' differ furthermore in that 'every' is a determiner, whereas DP-'only' is not and co-occurs with a determiner, similar to 'all':

  (i)a.   *Every the student knew him.
    b.   Only/all the students knew him.

  That 'only' is not a determiner is supported by the fact that it is not a conservative operator; according to Barwise and Cooper (1981) and Keenan and Stavi (1986) all natural language determiners are conservative. 'All' does not only display the converse behavior with respect to NPI-licensing, in fact 'all' is also tantamount to the converse of 'only' in terms of its truth conditions (Horn, 1996, 18).

  (ii)   Only As are Bs ↔ All Bs are As.

  See Clark (2006) for further discussion of the equivalence, and see von Fintel (1997) for some evidence that they're not quite equivalent in their usage.

satisfied'' (p. 103). Von Fintel then proposes to weaken the condition on the distribution of NPIs and require merely Strawson Downward Entailing (SDE) environments.[6]

'Only' is SDE in the second but not in the first argument—just where NPIs are licensed. SDE thus allows us to maintain the elegant Fauconnier/Ladusaw account of NPI-licensing in terms of downward monotonicity even in light of the apparent counterexamples involving 'only'.[7]

This is a desirable result, also since other tests for polarity converge on 'only x' as a downward monotone operator. Barwise and Cooper (1981, 194–196) observe that quantifiers with the same monotonicity combine with 'and', whereas quantifiers with opposite monotonicity combine with 'but'. As discussed in Horn (1996, 10), 'only' coordinates with 'and' if its conjunct is downward monotone, and with 'but' if it is not:

(15) a.   many men {#and/but} only 3 women
     b.   no men {and/#but} only 3 women

Also, 'only' patterns with other ''negative'' elements in that it allows for inversion (cited after Horn, 1996):

(16)   Only *in stories* $\ulcorner$ does a dropped glass betray agitation$\urcorner$. (Graham Greene)

Strawson Entailment weakens the condition on NPI-licensing and is in danger of overgenerating and predicting too many environments for NPIs such as 'any', as noted in Giannakidou (2006). Some other focus particles that do not license NPIs, such as 'even', are also not SDE, as would be predicted:[8]

(17) a.   Even *John* $\ulcorner$ate vegetables$\urcorner$.
     b.   Conventional Implicature of (17c) (Karttunen & Peters, 1979, 25/26):
          i.   There are other x under consideration besides John such that x ate kale.
          ii. For all x under consideration besides John, the likelihood of x eating kale is greater than or equal to the likelihood of John eating kale.
     c. $\not\rightarrow$Even *John* $\ulcorner$ate kale$\urcorner$.

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[6] Jay Atlas pointed out to me that Strawson entailment is similar to the notion of 'weak downward monotonicity' proposed in Hoeksema (1986), discussed in Atlas (1996, 275–277) and Giannakidou (2006, 578). Weak downward monotonicity requires that 'only a is B' > 'only a is C' if $C \in B$, and $a \in C$. Both Atlas (1996, 275) and Giannakidou (2006, 581) note that based on this definition even proper names would be weakly downward entailing, such that *John eats vegetables* weakly entails *John eats kale*. Clearly, *John eats kale* does not presuppose *John eats kale*, however, and proper names are not SDE, so weak entailment as it is used here is quite different from SDE.

[7] Giannakidou (2006, 579) claims that 'only' is actually not Strawson Entailing in its second argument: ''If we use the actual presupposition of *only*, that *someone ate a vegetable*, we do not get DE: from *only John ate a vegetable* we cannot infer *only John ate broccoli*.'' The counterargument, however, erroneously grants the presupposition of the premise A instead of that of the conclusion B—which of course is not sufficient to license the downward inference.

[8] The conventional implicatures of Karttunen and Peters (1979) are often analyzed as presuppositions (cf. Guerzoni, 2003, and discussion therein, and Giannakidou, 2006). Giannakidou (2006) claims that 'even' is SDE since it has an existential presupposition, but this is not correct, as the example presented in (17) illustrates.

Sentence (17c) is not entailed by (17a), even granting the conventional implicature (or presupposition) (17b) introduced by (17c), since these premises are compatible with a situation in which John has not eaten any kale. However, it would seem that—contrary to fact—clefts should license NPIs (Giannakidou, 2006):

(18) a.   It's *John* ⌐that ate vegetables⌐.
     b.   Presupposition of (18c): Exactly one person ate kale.
     c.   → It's <u>*John*</u> ⌐that ate kale⌐.

A similar problem arises for the restrictor of singular definite descriptions (Lahiri, 1998). SDE poses at best a necessary condition on NPI-licensing, but not a sufficient one. One way to amend the theory is to furthermore restrict NPIs to not occur in upward entailing environments, as proposed in Lahiri (1998), Cable (2002), Guerzoni and Sharvit (2006). Both clefts and the restrictor of singular definite descriptions are in fact also Strawson *upward* entailing (SUE):

(19) a.   It's *John* ⌐that ate kale⌐.
     b.   Presupposition of (19c): Exactly one person ate vegetables.
     c.   → It's *John* ⌐that ate vegetables⌐.

Strong NPIs are licensed in SDE that are not SUE. This modified theory still needs to be supplemented by a theory of free-choice 'any' to account for the licensing of 'any' under certain modals which are clearly not even SDE. These NPIs must be licensed by some weaker condition. A distinction between the licensing of NPIs under SDE operators like 'only' and under modals seems warranted, since the class of NPIs licensed by certain modal contexts is more restricted. While SDE operators such as 'only' license NPIs that Zwarts (1998) calls 'strong', e.g. minimizers, modals do not:

(20) a.   Only John lifted a finger.
     b.   *John may lift a finger.

Conversely, there are also NPIs that have *stronger* requirements than a SDE environment, a class called 'strict NPIs' in Zwarts (1998). Strict NPIs are not licensed by 'only':

(21) a.   *Only John thinks that Mary arrived until Friday.
     b.   *Only John has been here in years.
     c.   *Only John has been here either.

Gajewski (2005), following Zwarts (1998), presents evidence that these strict NPIs require anti-additive contexts, and shows that 'only' does not render its scope anti-additive. Anti-additive contexts form a subset of SDE contexts. This paper is only concerned with the licensing of strong NPIs such as 'lift a finger' and weak NPIs such as 'any'. These are the types of NPIs licensed by 'only'.

There are various competing theories of NPI-licensing, apart from the one based on downward monotonicity considered here. Based on various cases

that suggest that the correlation between downward monotonicity and NPI environments is not perfect, Linbearger (1980, 1987) proposes that NPI always involves negation, even if a negative statement is sometimes only implicated. Atlas (1996) invokes pseudo-anti-additivity to account for NPIs under 'only'; Klooster (1998) proposes hidden negations; Giannakidou (2006), following Zwarts (1995), uses non-veridicality as a criterion. Since the main goal of this paper is to introduce distributional generalizations about NPIs under 'only' and present an argument for focus movement based on them, I will not compare different theories of NPI-licensing as to how well they fare in accounting for the facts discussed here. I will henceforth simply assume the theory in von Fintel (1999), which I believe offers an elegant way to account for the observed pattern.

2.2 NPIs and the syntactic restrictor of 'only'

The approach based on Strawson Entailment predicts that NPIs should be licensed within all parts of a sentence containing 'only' that are not the focus that 'only' associates with. This, as a rule, seems to be correct, and it is the generalization that has been argued for in the recent literature; cf. Horn (1996), von Fintel (1999), Beaver and Clark (2002).

However, on closer look this generalization turns out not to be quite accurate. Sometimes NPIs are not licensed even in the unfocused part of a sentence involving 'only'.

(22)   All the advisors were at the ceremony.
          *Only <u>anyone's *parents*</u> ⌜didn't show up at the graduation.⌝

When 'only' attaches to a DP, no NPIs are licensed within it, *even in those parts of the DP that are not part of the focus*. Consider also the following examples:

(23) a.   *Only <u>any inhabitant of *Twin Earth*</u> ⌜met Particle Man⌝.
     b.   *Only <u>an *author* of any comic</u> ⌜met Particle Man⌝.
     c.   Only <u>an inhabitant of *Twin Earth*</u> ⌜ever met any aliens⌝.

The generalization that I want to propose is that NPIs are not licensed in the syntactic restrictor of 'only'. The fact that NPIs cannot be licensed in the unfocused part of the DP that 'only' attaches to is due the fact that the entire DP forms the syntactic restrictor, and not just what appears to be its semantic focus.

(24)   *Generalization about NPIs and 'only':*
          'Only' licenses NPIs in its scope (its second argument), but not in
           its syntactic restrictor (its first argument).

The evidence suggests then that the generalization about NPIs requires reference to syntax. The key to understanding the distribution of NPIs under 'only' is to distinguish between the syntactic restrictor of 'only' (its complement) and the actual semantic focus, which can be properly contained in it, a distinction already made in Jacobs (1983).

There are apparent exceptions to the proposed generalization, where NPIs do seem to be licensed in the syntactic restrictor of 'only'. Especially cases like (25b) have sometimes been invoked to argue that 'only' licenses NPIs in its focus (Linebarger, 1987; Geurts & van der Sandt, 2004). However, these cases invariably involve NPIs that are licensed by operators other than 'only', a point already made in Horn (1996, 27ff), von Fintel (1999), Beaver and Clark (2002), Beaver (2004):

(25) a. Negation:
     Only <u>that John didn't bring any present</u> ⌜was surprising⌝.
    b. Generic/universal operator in 'law-like' statements (Horn, 1996, 27ff):
     Only <u>anyone from Paris</u> ⌜would have known about this place⌝.

The NPIs remain licit even when 'only' is omitted, and these cases are consequently irrelevant for the present discussion. In sentence (26a) the NPI is licensed by negation, in (26b) the NPI is licensed generic by a universal operator.

(26) a. That John didn't bring any present was surprising.
    b. Anyone from Paris would have known about this place.

The proposed characterization of the distribution of NPIs under 'only' must permit then that syntactically, the first argument of 'only' can be bigger than the semantic focus. But how do we get the correct truth conditions, e.g. in example (23a)? One way to achieve this and resolve the mismatch between syntactic complement and semantic focus the theory of focused based on alternative semantics proposed in Rooth (1985, 1992).

In the case of DP-'only', alternatives to the entire DP are considered. The correct semantic focus can be obtained by contextual domain restriction, which generally restricts quantificational domains in natural language (von Fintel, 1994). The following alternative set has to be made contextually relevant in order to achieve the reading intended in (23a):

(27) C = {an inhabitant of Twin Earth, an inhabitant of Earth, an inhabitant of Mars, …}

The new generalization about the distribution of NPIs licensed by 'only' in (24) is based on the distinction between the semantic focus of 'only' and its syntactic restrictor. This generalization constitutes the crucial premise for the argument for focus movement, to which I will turn shortly. First, however, I want to address a serious challenge for the theory of NPI-licensing based on SDE that this generalization poses: the unfocused part of the complement of 'only', which does not license NPIs, *seems to be SDE*.

2.3 An existential presupposition?

The restrictor of 'only' is generally not SDE, as was shown above in (14). However, the environments that are not part of the focus in the DP 'only'

attaches to actually *do* allow downward inferences. So wouldn't NPIs be expected to be licensed?[9]

(28) a.   Only <u>an inhabitant of *Twin Earth*</u> ⌜met Particle Man⌝.
    b.   Presupposition of (28c): A female inhabitant of Twin Earth met Particle Man.
    c.   → Only <u>a female inhabitant of *Twin Earth*</u> ⌜met Particle Man⌝.

There is a potential remedy for this problem. What if the presupposition of 'only' is actually weaker, and not the entire prejacent is presupposed (as in Horn, 1969) but only an existential presupposition is made (as in Horn, 1996)? Let's consider the following lexical entry for 'only':

(29)   *Meaning of 'only':*
$\llbracket$only$\rrbracket = \lambda f.\ \lambda P_{<e,t>}.\ \forall a \in C : p(a)\ \rightarrow\ (\hat{}(p(f) \Rightarrow \hat{}p(a)))$
Presupposition: $\exists x.\ p(x)$

The only difference to the proposal in Horn (1996) is that what is abstracted over is not the semantic focus of 'only' but its syntactic complement.[10] Assuming (29), it seems that the downward inference is indeed no longer warranted:

(30) a.   Only <u>an inhabitant of *Twin Earth*</u> ⌜met Particle Man⌝.
    b.   Presupposition of (30c): $\exists x.x$ met Particle Man.
    c.   ↛ Only <u>a female inhabitant of *Twin Earth*</u> ⌜met Particle Man⌝.

The existential version of 'only' seems to make a wrong prediction, however. Consider the following example (Horn, 1996; Ippolito, 2006; McCawley, 1993; Van Rooij & Schulz, 2005).

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[9] Roberts (2006) suggests that this is not so, based on the observation that the following inference appears to be invalid:

(i)   Only <u>John and Mary and *Monty*</u> ⌜ate vegetables⌝.
SDE ↛ Only <u>John and *Monty*</u> ⌜ate vegetables⌝.

But the same argument based on coordination could be made to argue against SDE in the scope of 'only', at least under one reading:

(ii)   Only <u>John</u> ⌜ate kale and spinach⌝. *SDE* ↛ Only <u>John</u> ⌜ate kale⌝.

I think the issue at play is the interpretation of 'and' and 'or' in SDE environments. The additional complication is that part of the coordinate structure in (i) is focused and part is unfocused, so it's not clear what to expect with respect to the interpretation of the connector. When one looks at a disjunction that is entirely in the unfocused part of the DP, the downward inference goes through, just as expected (at least under one interpretation of 'or'):

(iii)   Only <u>John or Mary's *sister*</u> ⌜ate vegetables⌝. *SDE* → Only <u>John's *sister*</u> ⌜ate vegetables⌝.

[10] Following Rooth (1999) and contrary to Geurts and van der Sandt (2004) I assume that focus alone does not introduce an existential presupposition; the presupposition used here is lexically triggered by 'only'. This assumption, however, is not crucial for the present proposal, as far as I can see. For arguments in its favor see Kratzer (2004) and Jacobs (2004).

(31) a.   Only Muriel, Lyndon, and Ed voted for Hubert.
    b.   #Yes, indeed, only Muriel and Ed did.

Why is this exchange odd? We would expect that (31a) means that some voted for Hubert and no one other than Muriel, Lyndon and Ed did, which is perfectly compatible with a scenario were Muriel and Ed voted for him and Lyndon didn't. Clearly, however, this is not what (31a) intuitively means, and we feel justified in inferring that Lyndon voted for Hubert from (31a). This problem is all the more pertinent since it seems to undermine the downward monotonicity of 'only', as a reviewer observes:

(32) a.   Only *John and Mary* ⌜ate vegetables⌝.
    b.   Presupposition of (32c): $\exists x.x$ ate kale.
    c. $\nrightarrow$ Only *John and Mary* ⌜ate kale⌝.

McCawley (1993, 311) suggests that the stronger claim that each individual of the coordination in (31a) has voted for Hubert is due to a conversational implicature (example numbers adjusted):

> If one of the persons enumerated in [31a] is known by the speaker not to have voted for Hubert, then the speaker is being misleading: he could have been more informative by leaving that person out of the list. Thus, [31a] could be uttered cooperatively only if for each of the three persons enumerated, either the speaker knows that the person voted for Hubert or he does not know whether that person voted for Hubert, cooperativeness would demand that he indicate that (say, by saying *Only Muriel, Lyndon, and perhaps Ed. . .*), since it is so easy for him to indicate that his knowledge about Ed is incomplete, and since his addressee presumably cares who voted for Hubert (if he doesn't, then why utter the sentence at all?).

If McCawley is right and the inference in (31a) is just an implicature and not an entailment, maybe we need to amend the SDE approach to NPI-licensing such that Strawson-Entailment is evaluated at a level of representation that ignores conversational implicatures. For the purposes of implicature calculation, 'John has three children' asymmetrically entails 'John has two children', but the following exchange is odd:

(33) a.   John has three children.
    b.   #Yes indeed, John has two children.

So maybe 'Only John and Mary ate vegetables' Strawson-entails 'Only John and Mary ate kale' in the same sense as 'John has three children.' entails 'John has two children': it does so if we ignore conversational implicatures. And the exchange in (31a) is strange for the same reason that (33) is: it would be acceptable if we failed to apply Gricean reasoning.[11]

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[11] One reviewer notes a problem related to the case involving coordinate structures in (31a):

    (i)   I only ⌜showed Mary *every photo*⌝.

By the existential theory, this sentence is predicted to mean that I showed Mary something but nothing other than every photo, and should then be compatible with a scenario where I showed three out of five photos to Mary. This is clearly not what we take this sentence to mean.

It is not clear though whether assuming an existential presupposition for 'only' really solves the problem. The alternative set is further restricted by context. For instance, in the particular context given above for (30a) we only seem to be ruling out that female inhabitants from other planets than Twin Earth met particle man, and if this is the correct meaning than we can assume that the context is restricted such that whoever met Particle Man must be in the following set:

(34)   C = {a female inhabitant of Twin Earth, a female inhabitant of
        Earth, a female inhabitant of Mars, ...}

This assumption, together with the presupposition in (30c), actually *would* license the inference that we were trying to avoid.

However, the presupposition that prosodic emphasis on 'Twin Earth' in (23a) imposes on the context is merely that there must be an antecedent of the shape 'an inhabitant of x' (Rooth, 1992b). This presupposition does not *necessarily* restrict the alternative set considered for 'only' in the way outlined in (34). It might be that in particular contexts the alternative set is restricted in a way that would actually warrant a downward inference. But this contextual information seems not to be available for the assessment of SDE. It is necessary to distinguish which aspects of the meaning of the utterance are due to context and which are grammatically encoded in the structure. The presupposition introduced by prosody together with the presupposition introduced by 'only' is not sufficient to render SDE, as will be further discussed in Sect. 4 below.

Once we require SDE-licensing to be a logical property of the environment in question, irrespective of context, it actually becomes irrelevant whether or not the presupposition of 'only' is the entire prejacent of an existential presupposition: the unfocused part of the restrictor is not SDE under either analysis. Regardless of what the proper meaning of 'only' will turn out to be, generalization (24) can be used as a litmus test for the syntactic complement of 'only'. This test will be employed to argue for focus association by movement in the following.

3 An argument for focus movement

'Only' licenses NPIs in its scope, but not in its restrictor. The distribution of NPIs can be used, therefore, to establish which constituents are part of the restrictor and which are part of the scope of 'only'. The generalization about the syntactic restrictor of 'only' that emerges using this test provides an argument for focus movement.

3.1 NPI-licensing and VP-'only'

The in situ theory interprets association with VP-'only' without focus movement, which would mean that the entire VP counts as the syntactic restrictor of VP-'only'. The following data, however, shows that NPIs can be licensed in the unfocused part of the VP that 'only' attaches to:

(35) a.   There was only ever *one glove* there that I saw. (Horn, 1996, 17)
     b.   There only was any precipitation in *Medford*. (von Fintel, 1999, 31)

This stands in sharp contrast to the case of DP-'only' observed above, where NPIs are not licensed in the unfocused parts of the DP that 'only' attaches to. Consider also:

(36) a.   John only gave any kale to *his* friends.
     b.   John only gave *kale* to any of his friends.

The syntactic restrictor of 'only' cannot be the entire VP, otherwise the NPIs should not be licensed. The solution proposed here is that (35) and (36) involve focus movement of the associating DPs to the complement position of 'only':[12]

(37) a.   John only ⌜gave any kale to *his* friends⌝.
     b.   John only ⌜gave *kale* to any of his friends⌝.

Focus movement provides 'only' with its first argument, its syntactic restrictor:

(38) a.   [only *his* friends] [λ x. John gave any kale to x].
     b.   [only *kale*] [λ x. John gave x to any of his friends].

Movement is subject to constraints, and if association involves movement then we expect it to obey these constraints. The first piece of evidence that focus movement indeed obeys standard constraints on movement comes from the fact that NPI-licensing is more restricted in the double object construction than in the dative construction. Bruening (2001) observes that in double object (DO) constructions, the scope between the indirect and direct object is frozen ((39a)), as opposed to dative constructions where both scopes are available ((39b)):

(39) a.   I gave a child each doll.   *a > each*, **each > a*
     b.   I gave a doll to each child.   *a > each*, *each > a*

The explanation that Bruening (2001) proposes is that although both arguments can undergo LF-movement, in the case of the DO-construction, the lower one cannot move across the higher one. The prediction is, now, that focus associating with the second argument in the DO-construction does not license an NPI in the first argument, since the second argument cannot undergo movement to associate with 'only' such as to c-command the first. This is borne out:

(40) a.   She only ⌜gave *her* student any funding.⌝
     b.   *She only ⌜gave any student *summer* funding.⌝

Given the distribution of NPIs in the case of DP-'only', the fact that VP-'only' licenses NPIs in the non-focal part of the VP is evidence for focus movement.

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[12] I assume that in cases where 'only' associates with *both* arguments, either they stay in situ or they move together as a constituent, as proposed in Tancredi (1990).

The double object restriction is a first piece of evidence that regular constraints on movement apply. The next two sections present evidence that in cases where the actual focus cannot move on its own, a constituent containing the focus moves.[13]

3.2 The Head Restriction

There is no $\bar{A}$-Head-Movement, e.g. heads cannot be topicalized. The only way for a head to be moved by $\bar{A}$-Movement is to move a bigger constituent that contains the head:

(41) a. *Read she (did) SPE.
     b. Read SPE she did.

The following generalization with respect to focus-associating movement is predicted to hold:

(42)   *Prediction I: The Head Restriction*:
        If 'only' associates with the head of a constituent, it does not
        license NPIs in the complement of the head.

Association with a transitive predicate does not license an NPI in its complement:

(43) While John was willing to help cook the vegetables, he was a bit particular about which chore he was going to be assigned.
    a. *John only ⌜*cut* any vegetables⌝.
    b. John didn't *cut* any vegetables.

I am using sentential negation as a baseline for NPI-licensing, since it licenses NPIs in its scope irrespective of the shift in focus. The position of the direct object should be SDE:

(44) a. John only *cut* vegetables.
    b. Presupposition of (44c): John did something with kale.
    c. → John only *cut* kale.

Applying the same logic as in the case of DP-'only', the facts cannot be explained if 'ate' is the syntactic restrictor of 'only', and 'any vegetables' is in the scope of 'only', that is, if the LF of the sentence in (43) were to look as follows:

(45)   [only *cut*] [λ x. John x any vegetables]

If, however, we take *the entire VP* to be the restrictor of 'only' in this example, then the example looks similar to the case of DP-'only' discussed above,

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[13] Daniel Büring pointed out to me that NPIs do not appear to be licensed by VP-'only' in *adjuncts*. The relevant examples involve VP-adjuncts:

(i)   ??She only ⌜met *John* on any weekday⌝.

This would be expected only if the adjunct attaches higher than 'only', which would require a 'right-ascending' analysis of VP-adjuncts. However, arguments against such a right-ascending view of VP-modifiers are presented in Larson (2005), and references therein. I have to leave this as an open issue.

insofar as the environment that does not support NPIs, even though it is not in focus, is part of the syntactic restrictor of 'only':[14]

(46)　　　[only *cut* any vegetables] [λx. John x]

The correct semantic focus can again be achieved by using alternative semantics. Alternative semantics is perfectly compatible with focus movement—it just renders it superfluous if the goal is to account for truth conditions. The observed NPI pattern, however, suggests that focus movement does in fact take place. This move to combine domain restriction with a movement theory was also used in Krifka (1996), Kiss (1998), Krifka (2006). Prediction (42) is further confirmed by focus association with heads other than the verb:

(47)　　There are several parks in this city, and one is allowed to drive through, but only at 10 mph. I wonder whether John always went *through* the parks, or whether he sometimes went *around* any park.

　　　a.　　*John only ⌜drove *through* any park⌝.
　　　b.　　John didn't drive *around* any park.

Association with the preposition in (47) does not license an NPI inside of the PP. A similar observation can be made for association with complementizers:

(48)　　Did she tell you at what time we will arrive?

　　　a.　　*She didn't tell me when *any*one will arrive. She only ⌜told me that anyone will arrive⌝.
　　　b.　　She didn't tell me when *any*one will arrive. In fact, she didn't tell me *that* anyone will arrive.

NPIs within a relative clause are not licensed by association with its head:

(49) a.　*She only ⌜went to *a talk* that was given by any student⌝.
　　　b.　She didn't go to a *talk* that was given by any student.

The final example involves association with the head of a DP that also contains a possessor. The contrast between (50a, b) illustrates the point:

(50) a.　*Anna only ⌜knew anyone's *parents*⌝, but she didn't know any of the other guests at the commencement.
　　　b.　Anna didn't know anyone's *parents*, but she knew all the other guest at the commencement.

The contrast between (47) through (50) on the one hand, where NPIs within the unfocused part of the VP are *not* licensed, and (36) on the other, where NPIs within the unfocused part of the VP *are* licensed, cannot be explained by the in situ theory of focus association. Yet all of these facts can be accounted for by postulating focus movement, if focus movement necessarily has to be XP-movement. Association with a head involves movement of an XP that contains the head.

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[14] Jon Gajewski (p.c.) asks why the direct object cannot evacuate the VP, and the remnant VP subsequently associate with 'only'. I have no way of ruling this out.

3.3 The Island Restriction

Movement is island sensitive. Focus association into islands, however, is rather freely allowed (Anderson, 1972), as was illustrated in (4)—a fact often taken to speak against the movement approach to focus association.

Drubig (1994) offers a way to rescue the movement theory of focus association by proposing that in cases where an operator associates into an island, the entire island moves. If this hypothesis is correct, then the entire island should be the restrictor of 'only', not just the semantic focus. The prediction is that NPIs are not licensed anywhere in the island:

(51)   *Prediction II: Island Restriction:*
       Association with a constituent within an island cannot license an
       NPI in the same island.

A complication regarding the distribution of NPIs in islands needs to be taken into account in testing this. The following contrast seemingly supports (51):

(52) a.   ?I only ⌜saw offprints of any pictures of _John_⌝.
     b.   *I only ⌜saw those offprints of any pictures of _John_⌝.

This looks like a typical specificity effect, as is observed for wh-extraction:

(53) a.   Who did you see pictures of t?
     b. ?*Who did you see the pictures of t?

But definite descriptions even block NPI-licensing by sentential negation:

(54) a.   I didn't see offprints of any pictures of John.
     b.   *I didn't see those offprints of any pictures of John.

Guerzoni (2004) proposes that NPIs are licensed within islands exactly when no logical operator is intervening, following Linbearger (1980). In the following I will only consider cases in which sentential negation *does* license NPIs into an island, as is generally the case. For example, NPIs in the subject position of an embedded clause are licensed by sentential negation in a higher clause, as is observed in May (1985):[15]

(55) a.   Philby doesn't believe that anyone suspects Burgess.
     b.   Philby doesn't believe anyone suspects Burgess.

Evidence against phrasal covert movement out of islands for cases like (55) is discussed in Guerzoni (2004). In order to test whether association into islands can license NPIs within the same island, we therefore have to make sure no logical operator intervenes. We are now in a position to construct test cases for the prediction in (51).

The following example illustrates that associating with a constituent *within* a relative clause does not license NPIs *anywhere else in the same island*:

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[15] 'Believe' is potentially a problematic example since it is a 'Neg-raising' predicate. Licensing is also possible under 'say' or 'claim'.

(56) a. Yesterday during the dinner we talked about the restaurants we had been to, and who had recommended them to us. Mary was very negative about many places. I don't mind that she's very picky about restaurants, but i think she was just trying to flatter John. She never complained about a restaurant that *John* had recommended to anyone.

   b. Yesterday during the dinner we talked about the restaurants we had been to, and who had recommended them to us. Mary, as always, seized the opportunity to annoy John. *?She only ⌐complained about a restaurant that *John* had recommended to anyone.⌐

The next example is based on 'because'-clauses. 'Because'-clauses constitute islands of extraction. For example, scope taking movement from the 'because'-clause is impossible. The prediction is now that association into the 'because'-clause does not license NPIs within the 'because'-clause:[16]

(57)   *Mary only ⌐gave a book to John because *Bill* gave any book to him⌐.

As predicted, focus association into an island does not license NPIs within the same island. The explanation for the island restriction is the same as that for the head restriction: the entire island moves, and becomes the restrictor of 'only':

(58)   Association into an island
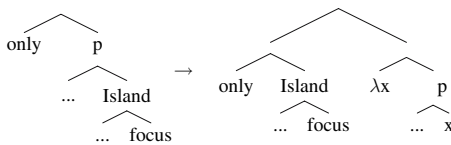
A further prediction is, then, that NPIs should be licensed in the parts of the VP that do not pertain to the 'because'-clause. This is indeed correct:

(59)   She only gave anything to anyone because *you* did.
        (cf. Linbearger (1980) and Beaver and Clark (2002) for similar examples)

The movement theory explains the difference between (57) and (59). Earlier accounts of NPIs licensed by 'only' (Horn, 1996; von Fintel, 1999; Beaver & Clark, 2002) would expect NPIs to be licensed in all non-focal parts under 'only' and thus fail to make this distinction. All instances of NPIs licensed by VP-'only' in the unfocused part of the sentence reported in Beaver and Clark (2002) involve constructions in which focus movement can derive a configuration in which [only + focus-constituent] c-commands the NPI. None of the examples involve NPIs that are trapped with the focus in an island. The data is thus compatible with the focus movement

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[16] Linbearger (1980, 1987) claims that 'because' is an intervener that blocks NPI-licensing. If so, the example would not be showing what I claim it shows. Evidence that 'because' is *not* an intervener for NPI-licensing comes from replacive negation, discussed in Sect. 5.

theory (and the same is true for similar examples reported in Horn (1996) and von Fintel (1999)):[17]

(60) a. I only ⌜ever had *cream of mushroom*⌝.
    b. The central problem is that it is only ⌜ever possible to sample a child's language *over a fixed period of time and within a finite number of situations*⌝.
    c. Because we found one order of this group to be much more likely than any other, we probably only ⌜care to see the map distances *for this single order*⌝.
    d. The timing belt should be changed at 60,000 miles OR 60 months, and most people only ⌜bother with *the mileage*⌝.
    e. Like rintintin you only ⌜give a shit for *me*⌝.
    f. ...if the left flipper is too weak for a bearkick, as it often is because people who run arcades are usually assholes and only ⌜give a shit about *their street fighter shit games*⌝, use that left flipper to send the ball back into the swamp.
    g. Well, I certainly don't give a damn. I only ⌜gave a damn because I thought *you* did⌝.
    h. If you were a kid in Cleveland, you only ⌜gave a damn about *two things—the Beatles and Ghoulardi*⌝.
    i. Stuart David, visionary and poet, cursed it before trying it, and would only ⌜lift a finger to *pick his nose or write a book*.⌝
    j. They're vicious, greedy, buggers who'd only ⌜lift a finger to save their best friend *if they thought they'd profit from it.*⌝

This section presented evidence for the claim that focus movement is island sensitive. The observed distribution of NPIs is predicted by the theory defended here, but remains unaccounted for within the in situ theory of focus association.

4 Why move?

The analysis of association of 'only' involves two ingredients: movement and contextual domain restriction. This hybrid approach faces the following criticism: if contextual domain restriction can render the correct semantic focus where movement is impossible, then why move in the cases where movement *is* possible?

Focus movement minimizes the size of the syntactic restrictor, which may have an effect on the strength of the statement that is grammatically

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[17] The example in (60 g) poses a challenge: While the NPI in the antecedent for the VP ellipsis is in an environment that is predicted to be SDE, an NPI would not be licensed in the ellipsis site. But maybe the VP in the ellipsis site is not formally identical to the antecedent, but only semantically, and really includes the indefinite 'someone'. In fact, Sag(1976, 157ff) uses precisely this kind of evidence to argue that ellipsis does not require linguistic identity, but merely semantic equivalence.

encoded by the sentence. On the assumption that the presupposition introduced by 'only' is indeed existential, the following rationale motivating movement can be given: focus movement strengthens the presupposition introduced by 'only'. We can then invoke the principle 'Maximize Presupposition' from Heim (1991) as the driving force behind associating movement. Consider the presupposition for association with a direct object, depending on whether or not focus movement is involved. The presupposition in (b) entails the one in (a), but not vice versa, i.e. focus movement renders a stronger presupposition:

(61) a.　No Movement: John only ⌜played *baseball*⌝.
　　　　　Presupposition: ∃x. John x-ed.
　　 b.　Focus Movement: John only ⌜played *baseball*⌝.
　　　　　Presupposition: ∃x. John played x.

Focus movement would thus not be triggered by a syntactic feature that is placed on the actual semantic focus, but by the strength of the resulting readings.[18] Grammar seems to try to keep the syntactic restrictor as small as possible. A related principle was proposed by Jacobs (1983, 86) for German *nur* 'only': it seems that *nur* must be placed as close to the focus as possible, effectively minimizing the syntactic restrictor.[19]

　　This approach has the additional benefit that moving a constituent that contains a focus is not an instance of pied-piping (as in Drubig, 1994). Horvath (2000) observes that pied-piping is usually only triggered by either heads or specifiers, and concludes that focus movement cannot be a case of pied-piping. Focus movement even occurs when the focus is deeply embedded in a syntactic island, and thus does not show the typical properties of pied-piping.[20]

　　The movement analysis presented here conflicts with the analysis in Rooth (1996), who presents evidence for island-insensitive focus movement. This

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[18] Disconnecting focus movement from the focus contained within the moved constituent is also argued for in Horvath (2000).

[19] Further discussion of the word order facts in German can be found in Jaeger and Wagner (2003) and Büring and Hartmann (2002). Roger Schwarzschild (p.c.) raises the question why there is no focus movement for DP-'only'. But focus movement in the case of DP-'only' would not lead to an interpretable configuration. The second argument of 'only' must be a property, and applying the first argument to it must yield a truth value. Applying the first argument to the second argument after focus movement in DP-'only' would not yield a truth value but a value of the type of the DP, e.g. an individual if the DP is a referring expression.

[20] Daniel Büring and Yael Sharvit point out a problem, namely the interaction between focus movement and scope. Consider the following example:

　　(i)　She only ⌜wanted to kiss *at most 3 students*⌝.

　Why is it that association with focus does not seem to force wide scope of the quantifier over the intensional verb? In order to account for this, I have to assume that the correct scope readings can be accounted for by either semantic or syntactic reconstruction of focus movement. Focus movement is restricted by the same constraints that apply to scope-taking movement (double object restriction, head restriction, island restriction), but it differs in undergoing obligatory reconstruction.

data comes from multiple focus constructions, where two foci are inside the same island, but associate with different focus operators:[21]

(62)   We only recovered the diary entries that *Marilyn* made about John. We also$_1$ only$_2$ recovered the diary entries that *Marilyn$_2$* made about *Bobby$_1$*.

According to the theory presented here, focus movement from islands is impossible. One reason not to invoke movement for (62) is that extraction from beneath 'only' is usually impossible (Beaver & Clark, 2003). The correct focus constituent for the higher focus operator, given the assumptions here, must be the entire 'only'-phrase then:

(63) a.   Domain, focus constituent, and focus for 'only':
           They also only ⌜found the diary entries that *Marilyn* made about Bobby⌝.
     b.   Domain, focus constituent, and focus for 'also':
           They also ⌜only found the diary entries that Marilyn made about Bobby⌝.

How is the correct focus association achieved without movement? I see two potential solutions to determining the focus of each focus adverb. One option is to index foci as proposed in Kratzer (1991) and Wold (1996). The presuppositional skeleton used to evaluate each focus operator consists of the constituent it attaches to, with the coindexed (and only the coindexed) foci replaced by variables. A second possibility is to freely allow contextual domain restriction to settle the actual focus for each operator, which is the position taken in Schwarzschild (1999) and Schwarzschild (2004).

The semantics of 'only' given in (29) and the additional assumption that the first argument of 'only' is its syntactic restrictor and not its apparent semantic focus would in fact suggest that *there is no direct association between 'only' and prosodic focus*. Prosodic focus marking introduces the presupposition that certain antecedents are available in the context (Rooth, 1992). The relation between this presupposition and the apparent semantic focus of 'only' is only indirect. 'Only' can take a restrictor that properly contains prosodic focus marking, but this need not mean that only alternatives of the relevant shape are considered.[22]

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[21] Krifka (2006) argues that in this particular example the 'about'-phrase is in fact not inside the island, but attaches to the higher proposition as a topic phrase ('about Bobby, …'). But the following example does not have the same attachment ambiguity, and yet it is acceptable:

    (i)   Of all rumors about JFK, they only confirmed the claim that *Marilyn* had an affair with him. They also$_1$ only$_2$ confirmed the claim that *Marilyn$_2$* had an affair with *Bobby$_1$*.

 Multiple association into islands with different focus operators appear to be possible.

[22] The same prediction is tacitly made by the approach based on F-marking and Focus Projection in Büring (to appear) and Büring (p.c.). I do not assume F-marking or Focus Projection here. For a discussion of the issues involved see Wagner (2005).

The following example illustrates that the semantic focus can indeed be bigger than just the accented constituent, even in cases where the stress pattern is clearly marked:

(64)   Many students in the program are in trouble because of the language requirement, even though they know some foreign language. The requirement explicitly calls for knowledge of Latin or Russian. Jim only knows Ancient Greek. So he was told take either Latin or Russian classes. And he's not the only one who is in trouble.

   a.   Mary only ⌈knows *MODERN Greek*⌉.
   b. ?#Mary only ⌈knows *Modern GREEK*⌉.
      So she's got the same problem. She'll have to learn Latin or Russian.

The prosody on 'Modern Greek' in (64a) signals that there is a contrasting antecedent 'Ancient Greek' in the discourse; it does not rule out considering 'Latin' as an alternative for 'Modern Greek' in evaluating the meaning of 'only'. Consider also the following case of association with an entire VP, which still allows for an anaphoric shift of prominence within the VP (the domain of 'only' in this sentence would have to be the polarity):

(65)   In order to pass this class, you had to present in class or at least review one of the readings, and you had to write a final squib. Bill only reviewed one of the readings. So he didn't pass, since he didn't write the final paper. And he's not the only one who failed.

   a.   Mary only *PRESENTED one of the readings*.
   b. #?Mary only *presented one of the READINGS*.
      So she also didn't pass, since she didn't write the final paper.

Conversely, 'only' can also fail to associate with a constituent in its scope although it is accented. In (66a, b) below, 'only' can associate with 'a record' only, despite of the fact that there is another accented DP in its scope:[23]

(66)   Some people are just not satisfied with a single present. John only gave *a book* to MARY, and she was very upset about it.

   a.   Similarly, Anna only gave *a record* to BILL, and he never talked with her again.
   b.   [or:] Similarly, Anna only gave BILL *a record*, and he never talked with her again.

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[23] Beaver and Clark (2003) presented similar examples arguing that 'only' associates with focus obligatorily. Asking several native speakers, I had difficulty replicating the judgment reported below, at least with accented 'Nutrapup', but I think the judgment is correct if 'Nutrapup' is replaced with 'it' (and maybe with unaccented 'Nutrapup'):

(i)   A: Does Sandy feed Nutrapup to her dog?
       B: #Yes, Sandy only feeds Nutrapup to [Fido]$_F$, and she also only feeds Nutrapup to [Butch]$_F$.

More generally, von Fintel (1994) and Beaver and Clark (2003) argue that the focus of 'only' has to contain some level of prominence and is incompatible e.g. with clitics. This raises questions for any indirect theory of focus association, which I will not discuss in this paper.

The relation between 'only' and prosodic emphasis is indirect, although in general there is of course a close correlation. E.g., if someone utters 'only *Modern* Greek' out of the blue, a listener would probably assume that all alternatives to '*Modern* Greek' are of the shape 'x Greek'. But this might simply be the most likely context to accommodate—we have to distinguish which aspects of the meaning of the utterance are due to the (sometimes accommodated) context and which are due to what is grammatically encoded.

An existential entry for 'only' would give a motivation for association by movement: the presupposition introduced by 'only' is strengthened by making the restrictor smaller, in a way that cannot be achieved by simply shifting the prosodic focus. But this analysis of 'only' has been challenged recently (Horn, 2002; Ippolito, 2006; Horn, to appear), and it remains to be seen how movement can be motivated with a revised entry for 'only'.

5 Other focus operators

In this paper sentential negation is used as a baseline for the licensing of NPIs, since shifting the focus in the scope of sentential negation does not seem to affect their distribution. There is a contrastive use of negation, however, which, similar to the case of 'only', associates with focus. Karttunen and Peters (1979) call this use of negation 'contradiction negation', Jacobs (1982) and McCawley (1991) use the term 'contrastive negation', and Jacobs (1991) dubs it 'replacive negation'.[24] According to Jacobs (1991) (and similarly McCawley, 1991), replacive negation negates the sentence it occurs in and furthermore entails there to be an alternative to the focus such that if it is substituted the polar opposite of the sentence becomes true. This alternative, when realized at all, is usually introduced by 'but'.[25]

Replacive negation is a focus sensitive operator that licenses NPIs in its restrictor, but not in its scope.[26] Consider first cases of replacive negation in which negation attaches to the subject:[27]

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[24] Horn (1985) discusses instances of replacive negation under the cover term 'metalinguistic negation'. I follow McCawley (1991, 189) in his view that replacive negation is not necessarily metalinguistic, but lends itself easily to express metalinguistic negation.

[25] 'But' is also used in exceptives. In German, there are two translations for 'but', one for the exceptive case ('außer') and one for cases of replacive negation ('sondern') (Jacobs, 1982, 1991).

[26] Karttunen and Peters (1979), Horn (1985), Jacobs (1991) all report that it does not license NPIs at all, but see also McCawley (1991) for counterevidence. Jacobs (1991, 587) in fact also discusses a case of an NPI licensed by replacive negation as a problem—as expected, it is an NPI that constitutes the focus of replacive negation.

[27] Barwise and Cooper (1981, 196–200) note that in general, 'not' cannot attach directly to many expressions; for example they report the following judgment: *[Not John left.]. Precisely these cases necessarily involve replacive negation and call for a salient alternative for which the expression is true, often overtly realized using 'but': [Not John but Bill left]. The cases that Barwise and Cooper (1981) give as grammatical do not seem to require the replacive use (e.g. [Not everyone left]) and do not call for an overt alternative. They hypothesize that these expressions are necessarily upward entailing, so it is not surprising that attaching negation to 'only x' forces a replacive reading.

(67) a. Not any <u>inhabitant of *Earth*</u> but an inhabitant of *Twin Earth* ⌜met Particle Man⌝.

    b. Not an <u>*author* of any comic</u> but *a reader* of some comic ⌜met Particle Man⌝.

    c. *Not *Particle Man* but *Universe Man* ⌜met any inhabitant of Twin Earth yesterday⌝.

When attached to the subject, replacive negation shows exactly the converse pattern with respect to NPI-licensing compared to 'only'. The phrases [only + focus-constituent] and [replacive neg + focus-constituent] have opposite monotonicity properties, which is further confirmed by the coordination test:

(68) a. Not the entire family but only John showed up at the graduation.
    b. #Not the entire family and only John showed up at the graduation.

Similar to the case of association with 'only', replacive negation is also possible at a distance when negation is realized as 'VP-negation'. McCawley (1991) calls it 'anchored contrastive negation'). Consider association of replacive negation with 'because'-clauses:[28]

(69) a. *Mary didn't ⌜ give anything to anyone <u>because *Anna* did</u>, but because John did ⌝.

    b. Mary didn't ⌜ give a book to John <u>*because anyone else did*</u>, but because she wanted to ⌝.

Example (69) illustrates that, as expected under the assumption that association involves movement, NPIs are licensed in the syntactic restrictor (the 'because'-clause), but not in the scope.[29]

Since 'because'-clauses are islands, a further prediction for replacive negation is that association into an island should license an NPI in the same island, *even the non-focal part*, because it will move along and end up in the syntactic restrictor. This prediction is borne out:

(70)   Mary didn't ⌜give a book to John <u>because *Bill* gave any book to him</u>⌝, but because Anna did.

Replacive negation is similar to 'only' in that it introduces a presupposition, apart from negating the sentence it occurs in, namely that for some alternative

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[28] Linbearger (1987, 345) observes an additional restriction on NPIs in 'because'-clauses. 'Because'-clauses in the scope of replacive negation involving NPIs are implicated to be false:

    (i) a.   *Grass isn't green because it has any chlorophyll in it.
       b.   Grass isn't green because it has any green paint in it, for heaven's sake!

  According to Linbearger, example (a) is odd because it wrongly implicates that grass doesn't have any chlorophyll in it (and not just because it wrongly asserts that chlorophyll is not what colors it green). The bias in interpreting these sentences is reminiscent of the biased interpretation of questions when they contain NPIs (Guerzoni, 2003; Guerzoni & Sharvit, 2006).

[29] McCawley (1991) argues for a slightly different generalization about the distribution of NPIs under contrastive negation, which predicts a wider range of environments where NPIs can be used. I got varying judgments for the crucial examples and will leave this as an open issue.

the sentence is correct. This additional presupposition might be responsible for the following observation from Ippolito (2006) (cf. Van Rooij & Schulz, 2005):

(71)   # Not only *the Red Sox* ⌜can beat the Yankees⌝, and in fact the Red Sox can't.

The first conjunct in (71) intuitively entails that the Red Sox can beat the Yankees, and is thus incompatible with the second conjunct. This observation has been raised as a problem for the analysis of 'only' as carrying existential presupposition (Geurts & van der Sandt, 2004; Ippolito, 2006; Roberts, 2006). If (71) is the negation of 'Only the Red Sox can beat the Yankees', and 'only' has merely an existential presupposition, then (71) counterintuitively should be compatible with a scenario where someone went to a show, but John did not.

However, (71) is not a simple negation of the sentence 'Only the Red Sox can beat the Yankees': it involves replacive negation. Consider the following contrast, due to Beaver (2004), illustrating that only the example that obligatorily involves replacive negation, (72a), leads to infelicity, while (72b) is felicitous:

(72)   I don't know whether Muriel likes Hubert, but…
         a.   *Muriel likes not only Hubert.
         b.   Muriel does not like only Hubert.

The focus of replacive negation in this case seems to be [only the Red Sox], the constituent negation attaches to.[30] What are plausible alternatives for [only the Red Sox]? One possibility is that while the alternative set for 'the Red Sox' would be the set of salient alternative teams including 'the Red Sox', the set of alternatives of 'only the Red Sox' is the principle filter (Barwise & Cooper, 1981, 209) defined by [the Red Sox], i.e. those elements of the power-set of all salient alternatives that contain [the Red Sox]. This type of alternative set has also been used in Rooth (1992) and Guerzoni (2003, 190, and references therein). The presupposition of replacive negation will then require in (71) that some alternative to 'only the Red Sox', that is some set containing the Red Sox and at least one other team, can beat the Yankees. This presupposition entails that the Red Sox can beat the Yankees.

This entailment holds whether or not the presupposition of 'only' is merely existential or comprises the entire prejacent. An outstanding question for the existential theory of 'only' remains, however: Is it plausible that the alternative set for [only x] when associating with negation is the principle filter generated by 'x' under this weak reading, and doesn't this point to an analysis of 'only' where the entire prejacent is presupposed? See Horn (2002, to appear) for further discussion of the proper treatment of the prejacent.

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[30] Beaver (2004) similarly argued that focus association is at play here, but suggested that in this type of example negation forms a constituent and associates with 'only'. This is implausible, first because 'only' is unstressed (although stressable in general), and second because even if the constituency of 'not' and 'only' were a plausible hypothesis for the case in which they are adjacent, this clearly would not work for the case of association at a distance—unless of course one posited focus head movement of 'only', which is illicit if the argument in this paper is correct.

The set of alternatives for [only x] can be further motivated by the fact that [only x] is infelicitous as the focus of 'even':[31]

(73)   #Even only John went to the movies.

If the alternative set for [only John] is indeed the principal filter defined by 'John', then the existential presupposition of 'even' contradicts what is asserted: each alternative entails that somebody other than John went to the movies.[32]

The difference between sentential negation and replacive negation with respect to their interaction with focus and its effects on NPI-licensing suggests that some but not all operators interact with focus by association via syntactic movement. An interesting and possibly related contrast can be observed between 'only' and the exclusive use of 'just'. Based on the test involving NPIs, 'just' does not behave like 'only' when it comes to NPI-licensing. Consider the following contrast:

(74) a.   She has only (ever) lifted a finger for *her* students.
     b. *She has just (ever) lifted a finger for *her* students.

One possible explanation is that 'just' does not associate by movement, but 'only' does, despite their similar meanings.[33] This would mean that the restrictor of 'just' is always the entire constituent it attaches to, and hence NPIs are ruled out. If true, whether or not an operator associates via movement might be one dimension along which focus operators can differ (cf. Beaver & Clark, 2003, for a discussion of differences between focus operators).

6 Conclusion

The distributional pattern of NPIs under VP-'only' seems incompatible with an in situ approach. Similar observations can be made looking at replacive negation. The data presented in this paper was argued to support the idea that association involves movement, and association into islands and association

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[31] Only scalar uses of 'only' seem to be acceptable: 'Even only a hint might have helped.' But here the alternative set would look different, and consist of other members of the scale.

[32] If 'even' could simply associate with 'only', analogous to the suggestion for the case of 'not' in Beaver (2004), and if furthermore, again following the analysis in Beaver (2004), the two alternatives considered were 'Only John went to the movies' and 'John went to the movies', then this sentence should actually be acceptable since there is a true alternative that is more likely and there is no alternative that is less likely, so both presuppositions are met and the truth of the alternative is compatible with what is asserted.

[33] Similar but not identical. 'Just' has been argued to always invoke scalar readings, as opposed to 'only'. See König (1991). An illustration of this semantic difference can be found in Horn (to appear):

   (i) a.   John is not just sick, he is dead.
       b.   *John is not only sick, he is dead.

 More discussion of 'just' vs. 'only', and 'not just' vs. 'not only' can be found in Horn (2000).

with heads requires moving constituents that properly contain the semantic focus (Drubig, 1994, Krifka, 1996, 2006). The proposed solution was shown to capture the observed facts, but raised several questions that remain to be answered, most importantly the question of the motivation for movement in focus association, and related to it the proper treatment of the prejacent of 'only'.

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