Association with Focus, Islands, and Choice Functions A Binding Approach*

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Abstract

As has been argued convincingly in Reinhart (1994, 1997), analyzing indefinites in terms of choice functions allows for a straightforward account of the fact that indefinites do not obey constraints on movement. In this paper, I argue contrary to recent research that, in general, association with focus (AwF) behaves island-insensitively, too. To account for this fact, I propose a binding analysis for AwF in the framework of the structured meaning approach to focus background structures that crucially relies on the use of choice functions: It is choice functions that allow for an explicit treatment of alternative sets within the structured meaning approach, it is choice functions that account for the island-insensitivity of AwF, and it is choice functions that constitute the common semantic core of indefinites, *wh*-phrases and focus, and thus serve as a basis for an account of the various relationships between the different phenomena in question.

1 Association with Focus

It is a well known fact that a focus particle like *only* is sensitive to the focus background structure of its syntactic scope in that a difference in the placement of focus results in a difference in truth-conditions, cf. for example (1a) vs. (1b).

(1) a. John only introduced [BILL]$_F$ to Sue.
         (= Bill is the only person x such that John introduced x to Sue)
     b. John only introduced Bill to [SUE]$_F$.
         (= Sue is the only person y such that Bill was introduced to y by John)

Usually, this phenomenon is referred to as 'Association with Focus' (AwF). Since *only* (being a VP-adjunct) is not adjacent to the focus it is associated with, the problem is to derive this truth-conditional effect in a compositional way. Roughly speaking, there are two lines of research tackling this problem.[1]

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[1]   In the following, the discussion is restricted to those semantic/pragmatic approaches to focus-sensitivity that posit a more or less direct relationship between the focus-sensitive expression and the focus itself. It should be

2 Two Approaches to Association with Focus

2.1 The One-Dimensional Approach: Focus Movement

The first approach, originally proposed by Chomsky (1976) for contrastive focus, assumes covert movement of the focus to the focus-sensitive expression it is associated with. Given binary branching, there are exactly two ways of implementing this idea, see (2); either the focus *Bill* adjoins to *only* and forms a constituent with it, cf. (2a), or it adjoins to VP, cf. (2b).

(2) John only introduced [BILL]$_F$ to Sue.

    a. John [[only [Bill$_F$]] λx [$_{VP}$ introduced x to Sue]]

    b. John only [$_{VP}$ [Bill$_F$ λx [$_{VP}$ introduced x to Sue]]]

As far as (2a) is concerned, it is immediately clear that the focus particle *only* now has direct access to the focus it is associated with. Concerning (2b), however, it seems that there is still no way for the focus particle *only* to access the meaning of the focus *Bill*, since the moved constituent is simply semantically reconstructed.

Therefore von Stechow (1981) proposes to interpret the F-Index carried by the moved focus constituent as triggering the building of a structured property, i.e., of an ordered pair $\langle \alpha, \beta \rangle$ that consists of exactly two parts, namely a focus α, and a background β, where $\beta(\alpha)$ is well-formed and denotes a property. According to von Stechow (1991:819f), (2b) is to be represented along the lines of (3).

(3) *only*$'(\langle \text{Bill}, \lambda x. \text{introduced } x \text{ to Sue}\rangle)(\text{John})$

Since *only* now operates on a structured property rather than an unstructured one, it has immediate access to both of its parts, the focus *Bill* and the background *being introduced to Sue*. Given these assumptions, the semantics of *only* —ignoring its presupposition— can be defined as follows: If, for any given individual b and any alternative x to the focus a, $P(x)(b)$ is true, then x must be identical to the focus a.

(4) *only*$'(\langle a, P \rangle)(b) = 1$ iff $\forall x \in \text{Alt}(a) :$ if $P(x)(b) = 1$, then $x = a$

Because of its obvious relatedness to the categorial semantics of *wh*-questions, I'd like to dub this approach the 'categorial approach' to focus background structures.

The movement approach, however, faces a serious problem, for it is common knowledge since Anderson (1972) and Jackendoff (1972) that AwF does not obey well-known island constraints like, for example, the Complex Noun Phrase Constraint (CNPC), cf. (5a).

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pointed out, however, that there are also different lines of research that try to derive the observed focus effects from independently needed mechanisms like, for example, 'association with presupposition' (see, for example, the discussion in Rooth 1999) or 'felicity conditions' for utterances (cf. Schwarzschild 1997). In a recent paper Beaver & Clark (2000) argued that, on the one hand, the 'indirect' approach can not account for core properties of focus particles, whereas, on the other hand, the 'direct' approach seems to be to strict to adequately handle adverbs of quantification like *always*, and therefore rather a mixed approach seems to be called for. In any case, since the following discussion focuses on the use of focus particles, the restriction to 'direct' approaches seems to be justified.

(5) a. Dr. Jones only rejected [the proposal [that John$_F$ submitted]]
     b. *[Which student]$_1$ did Dr. Jones reject [the proposal that t$_1$ submitted]
     c. #Dr. Jones rejected [the proposal that most students submitted]
         (For most students x: Dr. Jones rejected the proposal that x submitted)

Proponents of the movement approach thus have to conclude that there are at least two kinds of LF-movement, one that obeys island constraints (*wh*-movement and quantifier raising, cf. (5b) and (5c)) and one that doesn't (focus movement, cf. (5a)).

2.2 The Two-Dimensional Approach: Introducing Alternatives 'in situ'

Mainly to avoid this conclusion, Rooth (1985) developed an 'in situ' semantics for AwF that has been dubbed 'alternative semantics' in von Stechow (1991).[2] The basic idea is that a focused constituent introduces a set of alternatives to it and that this set —modulo semantic composition— projects up to the sister node of the focus particle *only* that, in turn, is allowed to retrieve this information.

To model this idea, Rooth (1985, 1992) postulates the existence of a second dimension of interpretation computing for any expression α the set of its alternatives. To this effect, he introduces a recursive focus-sensitive evaluation function that is defined as indicated in (6).

(6) a. $[\![\alpha]\!]_F = \{[\![\alpha]\!]\}$
     b. $[\![\alpha_F]\!]_F = \{u \in D_\tau : \tau = \texttt{type}(\alpha)\}$
     c. $[\![[\alpha\ \beta]]\!]_F = \{u : \exists a \in [\![\alpha]\!] \wedge \exists b \in [\![\beta]\!] \wedge u = a(b) \text{ or } u = b(a)\}$

If α is not focused (i.e., F-marked) it intuitively does not introduce any alternatives; therefore its alternative set is simply the singleton set whose only element is α itself, cf. (6a). If, however, α *is* focused it intuitively *does* introduce alternatives; therefore its alternative set is identical to the whole domain corresponding to α's logical type or maybe to a contextually restricted subset, see (6b). The interpretation of binary branching, then, is rather straightforward: The alternative set corresponding to the mother node is simply the set of all well-formed function-argument combinations with elements of the alternative sets of the daughter nodes, cf. (6c).

If, for example, the domain of individuals is restricted to Bill, Paul, and Ringo, and the mechanics are applied to example (2) above, this results in the sets of alternatives given in (7).

(7) a. $[\![Bill_F]\!]_F = \{$Bill, Paul, Ringo$\}$
     b. $[\![Bill_F\ to\ Mary]\!]_F = \{$Bill to Mary, Paul to Mary, Ringo to Mary$\}$
     c. $[\![introduced\ Bill_F\ to\ Mary]\!]_F = \{$introduced Bill to Mary, introduced Paul to Mary, introduced Ringo to Mary$\}$

Having defined for each LF-constituent α the set of its alternatives, the next step is to make the alternatives available to the focus particle *only*. To this effect, Rooth (1992) assumes that an

operator $\sim$ and a context variable Γ adjoin to the sister node of *only*, cf. (8b). Γ is taken to be anaphorically related to the context variable C being implicit in the semantics of *only*.

(8) a. John only introduced [BILL]$_F$ to Sue.
    b. John [only(C) [[introduced Bill$_F$ to Sue] $\sim \Gamma$]]

The interpretation of this operator now has two important effects. First, focus is bound by stipulation, cf. (9b), and, second, the interpretation of the contextual restriction C is restricted via Γ to a subset of the set of alternatives of the sister node of *only*, cf. (9c).

(9) a. $[\![[\alpha\,[\sim\Gamma]]]\!] = [\![\alpha]\!]$
    b. $[\![[\alpha\,[\sim\Gamma]]]\!]_F = \{[\![\alpha]\!]\}$
    c. Presupposition of $[\alpha\,[\sim\Gamma]] : [\![\Gamma]\!] \subseteq [\![\alpha]\!]_F$

If *only* is given a semantics like the one in (10), the correct truth-conditions are derived.

(10) $\forall x : only'(C)(\alpha)(x) = 1$ iff $\forall P \in C$: if $P(x)$ is true, then $P = \alpha$.

Since these mechanics make no use of any kind of movement, no constraints on movement can be violated, and, consequently, it seems that the assumption that there is only one kind of movement, namely island-sensitive movement, can be maintained.

However, as Kratzer (1991) points out, this impression is an illusionary one. To see this, consider the discourse sequence in (11a), followed by the elliptical construction in (11b). (11b) is a case of VP-ellipsis and it is usually assumed that on logical form both the antecedent VP and the elided VP are identical (see, for example, Sag 1976). That is, the LF-representation underlying (11b) can be considered to be identical to (11c).

(11) a. What a copy cat you are! You went to Block Island because I did. You went to Elk Lake Lodge because I did. And you went to Tanglewood because I did.
    b. I only [went to Tanglewood$_F$] because you did [e]
    c. I only [went to Tanglewood$_F$] because you [went to Tanglewood$_F$]

Now, if (11c) is interpreted according to the mechanics developed in Rooth (1985, 1992), this results in an alternative set that contains alternatives which are intuitively excluded by the preceding discourse, cf. (12b).

(12) a. I only [went to Tanglewood$_F$] because you [went to Tanglewood$_F$]
    b. Alt$_{\langle x,y \rangle}$ = {I went to x because you went to y;
                    x,y $\in$ {Block Island, Elk Lake Lodge, Tanglewood}}

To be more concrete: The proposition that *I went to Tanglewood because you went to Block Island* is clearly not a salient alternative in the context of (11a). It rather seems that the correct set of alternatives is that given in (13b), where the instantiations of the F-marked constituents are always parallel. To derive this set of alternatives, however, the F-marked constituent has to be QRed out of VP, cf. (13a).

(13) a. I only [Tanglewood$_F$ [[went to t_1] because you [went to t_1]]]
     b. Alt$_{\langle x,x \rangle}$ = {I went to x because you went to x;

        x ∈ {Block Island, Elk Lake Lodge, Tanglewood}}

But, in general, this results in exactly the same violations of island constraints that motivated the development of an in situ semantics for AwF, cf. (14).

(14) a. You always contacted every responsible person before me.
     b. I only contacted [the person who chairs [the zoning board]$_F$] before you did.

Kratzer (1991) therefore proposes to pursue a different, representational variant of alternative semantics, one that was already mentioned in Rooth (1985) and goes back to Jackendoff (1972). This proposal crucially relies on the following two assumptions about F-marking:

(15) a. All F-marked constituents bear an F-Index i, $i \in \mathbb{N}$.
     b. No two constituents bear the same F-Index in a given tree.

Now, substituting F-indices for F-markers is basically all that is needed to handle the problematic case of VP-ellipsis contexts. Suppose that the F-marked expression in the antecedent VP carries an F-index, say F1. Because of the identity condition on VP-ellipsis, the F-marked constituent in the elided VP has to carry exactly the same F-index, cf. (16b). If it is assumed —as Kratzer does— that a focused constituent α_{Fi} is mapped to a corresponding focus variable v_i, both occurences of the focused constituent are mapped to exactly the same variable, and, as a consequence, the correct set of alternatives can be derived without having to move the focus out of VP, cf. (16c).

(16) a. I only [went to Tanglewood$_{F1}$] because you did [e]
     b. I only [went to Tanglewood$_{F1}$] because you [went to Tanglewood$_{F1}$]
     c. $[\![[I\ went\ to\ v_1]\ because\ you\ [went\ to\ v_1]]\!]_F^g = $ Alt$_{\langle x,x \rangle}$

This, however, is not yet the end of the story. As Krifka (1991) points out, there are cases of multiple focus in which AwF behaves selectively. To see this, consider example (17).

(17) a. John only introduced BILL$_{F1}$ to Mary.
     b. John also$_{(F2)}$ only$_{(F1)}$ introduced BILL$_{F1}$ to SUE$_{F2}$.

In the context of (17a), (17b) is understood as 'it is also true for Sue that Bill is the only person which John introduced to her.' Thus, the additive particle *also* seems to associate with the prominent focus on *Sue* whereas the exclusive particle *only* seems to associate with the second occurence focus on *Bill*.[3,4]

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[3] *Bill*, being a second occurence of the focused constituent *Bill* in (17a), apparently lacks a pitch accent. However, as is argued in Krifka (1997), Beaver & Clark (2000) and references therein, there is good evidence from weak pronouns that nonetheless second occurence expressions (SOE) are syntactically focused, and that the focus is realized by features other than pitch, e.g. duration or amplitude. Here, and in the following SOE are indicated by small caps.

[4] For a thorough investigation of the syntax and semantics of German focused/unfocused *auch* ('also') as well as a proposal for a unified treatment of both uses, cf. Reis & Rosengren (1998).

It turns out, however, that neither the denotational variant nor the representational variant of alternative semantics is able to cope with examples like this without moving the focus *Sue* out of the scope of *only*. The reason is simply that alternative semantics is unselective in nature. But if the focus *Sue* is moved out of the scope of the focus particle *only*, this again —as Rooth (1996:288) showed himself— generally results in the violation of island constraints, cf. (18).

(18) a. We only$_{(F1)}$ recovered [the diary entries [that MARYLIN$_{F1}$ made about John]]
b. We also$_{(F2)}$ only$_{(F1)}$ recovered [the diary entries [that MARYLIN$_{F1}$ made about BOBBY$_{F2}$]

Thus it seems that, in general, neither the denotational nor the representational variant of alternative semantics is able to avoid reference to the kind of movement that mainly motivated its development, namely island-insensitive focus movement.

The previous discussion can be summarized as follows: To avoid island-insensitive movement, an in situ approach to AwF is called for. Although intended as an in situ approach to AwF, alternative semantics can not avoid reference to island-insensitive movement in general and thus looses much of its prior attractiveness.[5]

3 A Binding Approach in Terms of Choice Functions

In the following section, I will, therefore, argue that it is possible and reasonable to combine a structured-meaning approach to focus-background structures with an in situ analysis of focus. What could such an analysis look like? To get a first idea, I'd like to point at some similarities between indefinites, *wh*-phrases, and focus.

3.1 Indefinites, *wh*-Phrases and Focus – Some Similarities

First of all, it has been observed that focused constituents and indefinites are subject to the same or at least similar restrictions concerning word order in German (see Lenerz 1977). Given the basic word order indirect object (IO) before direct object (DO), a focused direct object mustn't scramble over a non-focused indirect object, see (19), and an indefinite direct object mustn't scramble over a definite indirect object, cf. (20).

(19) a. ??(weil)   er [das BUch]$_{F,DO}$ [dem Hans]$_{IO}$ gegeben hat   (DO > IO)
(because) he [the BOOK]$_{F,DO}$ [the Hans]$_{IO}$ gave   has
'(Because) he gave the book to Hans'
b. (weil)   er [dem Hans]$_{IO}$ [das BUch]$_{F,DO}$ gegeben hat   (IO > DO)
(because) he [the Hans]$_{IO}$ [the BOOK]$_{F,DO}$ gave   has
'(Because) he gave the book to Hans'

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[5]   Moreover, it has been argued for in Krifka (1999) and Reich (2001, to appear) that the structural information available only within the categorial approach to focus-background structures is independently needed for an adequate treatment of question-answer sequences.

(20) a.??(weil) er [ein Buch]$_{DO}$ [dem Hans]$_{IO}$ gegeben hat (DO > IO)
     (because) he [a   book]$_{DO}$ [the Hans]$_{IO}$ gave   has
     '(Because) he gave a book to Hans'

   b. (weil)   er [dem Hans]$_{IO}$ [ein Buch]$_{DO}$ gegeben hat (IO > DO)
     (because) he [the Hans]$_{IO}$ [a book]$_{DO}$ gave   has
     '(Because) he gave a book to Hans'

Secondly, it is well known, that the property of being island-insensitive is not restricted to AwF, but can be observed with respect to indefinites, too (cf. already Ross 1967). In (21), for example, the indefinite *a student* allows for an intermediate reading, where *usually* has wider scope than *a student* and *a student* outscopes the definite complex noun phrase *[the first three proposals that . . .]* (cf. e.g. Rooth 1996:284).

(21)   Dr. Svenson usually rejects [the first three proposals [that a student submits]].
       (Usually: if there is a student x, then Dr. Svenson rejects the . . . x submits.)

In Reinhart (1994, 1997) and Rooth (1996) a similar claim is made with respect to in situ *wh*-phrases in English, cf. (22a). Actually, my informants weren't able to confirm this judgement. In any case, its German counterpart (22b) is definitely ungrammatical.

(22)   a. Tell me who rejected [the proposal [that who submitted]].
         (Tell me about all pairs $\langle x, y \rangle$: x rejected the proposal that y submitted.)
       b. *Sag mir, wer das Papier ablehnte, das wer einreichte.

Nevertheless, German exhibits an intimate connection between *wh*-phrases and indefinites, since for most of the pronominal *wh*-phrases in German, e.g. *wer* ('who'), *was* ('what'), *wo* ('where'), there exists a homonymous indefinite counterpart, cf. (23a) vs. (23b).

(23)   a. Wen / Was hat Peter empfohlen?
         Who / What has Peter recommended
         'Who/what did Peter recommend?'
       b. Peter hat wen   / was   empfohlen.
         Peter has someone / something recommended
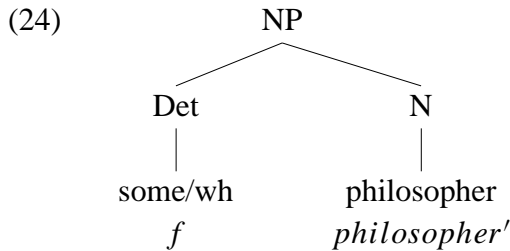   'Peter recommended someone/something'

Finally, *wh*-phrases, indefinites and focus all relate to the notion of 'new' information in one way or another. Whereas indefinites —discourse theoretically spoken— typically introduce new discourse referents and *wh*-phrases typically ask for 'new' information, it is the focus of a sentence that typically supplies the 'new' information asked for.

All these similarities constitute, I think, at least suggestive evidence that indefinites, *wh*-phrases, and focus form some sort of natural class of 'indefinite' or 'weak' phenomena. If this is correct, this should be reflected by a common core in their analysis.

3.2   Indefinites, *wh*-Phrases and Choice Functions

Actually, Reinhart (1994, 1997) —cf. also Winter (1997), Kratzer (1998) and von Stechow (2000)— already proposed a semantics for indefinites and *wh*-phrases that is meant to account

for the observed island-insensitivity of indefinites (and *wh*-phrases in English). Concretely, Reinhart (1994) proposes to treat the indefinite article as well as *wh*-expressions as introducing a choice function that operates on the restriction supplied by their complement, cf. (24).

(24)

$$\begin{array}{c} \text{NP} \\ \diagup \quad \diagdown \\ \text{Det} \qquad \text{N} \\ | \qquad\quad | \\ \text{some/wh} \quad \text{philosopher} \\ f \qquad\quad philosopher' \end{array}$$

Formally, a choice function is any function whose domain consists of a set of non-empty sets mapping each of these sets to one of its elements, cf. (25).

(25) $\texttt{choice}(f) = 1$ iff (i) $\emptyset \notin \texttt{Dom}(f)$ and (ii) $\forall X \in \texttt{Dom}(f): f(X) \in X$.

As regards to content, a choice function simply chooses an element from a given set. The observed island-insensitivity, then, follows directly from the assumption that the choice function variable introduced —for example by an indefinite noun phrase— gets bound via existential closure, cf. (26).

(26) Usually, $\exists_f$ Dr. Svenson rejects [the first three prop. [that f(student) submits]]

The basic idea, then, is quite parallel to that of alternative semantics: no movement involved, no violation of island constraints.

3.3 Foci as Choices on Alternatives – An Informal Sketch

Now, what I take to be the common core of the semantic analysis of indefinites, *wh*-phrases and focus is the binding analysis in terms of choice functions.[6] In the following, I will first give an informal sketch of the basic idea, and then specify the precise semantics.

Consider again example (27a) below. First of all, it seems quite uncontroversial that, intuitively, a focused constituent like *Bill* introduces a set of contextually salient alternatives.[7] Formally, this intuition can be captured by replacing the focused constituent *Bill* with a variable X of type $\langle e, t \rangle$, cf. (27b).

(27) a. John only introduced [BILL]$_{F1}$ to Mary.
      b. John only introduced X_1 to Mary.
      c. John only introduced $f_1(X_1)$ to Mary.
          Where f_1 is that choice such that $f_1 : \{X_1\} \to D_e$, $f_1(X_1) = $ Bill

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[6] This immediately raises the question why *wh*-phrases (in German) behave island-sensitively, while indefinites and AwF do not. In Reich (2001, to appear) it is argued (i) that *wh*-phrases should in fact be analyzed as functional expressions with an indefinite core, and (ii) that the functional part of *wh*-phrases is subject to movement operations and thus triggers island effects. In a nutshell, the answer is that *wh*-phrases contain an additional island-sensitive component that the semantics of indefinites and AwF lack.

[7] For a somewhat different position see Schwarzschild (1997).

This assumption, however, leads to two problems. First, the resulting expression won't be interpretable, for it results in a type-mismatch; second, the information about Bill gets lost. But if it is assumed that in fact a choice function f_1 operates on this variable, the type-mismatch is resolved; and if it is further assumed that the focus Bill is a salient alternative to himself, i.e., that Bill is an element of X, and that the choice function f_1 chooses exactly this individual from X, this results in a representation like (27c) that is essentially equivalent to (27a).

It is quite clear that, as long as one thinks of f_1 as a constant, nothing is really gained. But if one thinks of f_1 as a variable, f_1 can be bound. So let's assume that f_1 is in fact a variable. Now, what I'd like to suggest is the following: Focus particles play a similar role in AwF-constructions like existential quantifiers do in existential closure —they are coindexed with the focus they associate with and bind the choice-function variable introduced by the focus, cf. (28a) and (28b).

(28) a. John only$_{F1}$ introduced [BILL]$_{F1}$ to Mary.
b. John only [F1 [introduced Bill$_{F1}$ to Mary]]
c. $only'(\langle f_{Bill}, \lambda f_1.\text{John introduced } f_1(X_1) \text{ to Mary}\rangle)$
Where f_{Bill} is that choice such that $f_{Bill} : \{X_1\} \rightarrow D_e$, $f_{Bill}(X_1) = \text{Bill}$

Following Heim & Kratzer (1998), I assume that the binder index F1 adjoins to its sister node at LF; the resulting node, however, is not simply interpreted by λ-abstraction over the choice-function variable f_1, but results in the formation of a structured property or —to keep things simple— a structured proposition, cf. (28c).[8] The background of this structured proposition is identical to the λ-abstract that results if λ-abstraction over the choice-function variable f_1 takes place; its focus f_{Bill} is identical to the minimal choice-function that is defined on the set of alternatives X_1 and that chooses Bill from this set. Since Bill is the only value under f_{Bill}, the information about Bill isn't lost. As is the case in the movement variant of the structured propositions approach, applying the background $\lambda f_1.$*John introduced $f_1(X_1)$ to Mary* to the focus f_{Bill} results in the unstructured proposition *John introduced Bill to Mary*.

Given that the representation in (28c) is derivable in a compositional way, it is straightforward to give a semantics for *only* that results in the desired truth-conditions, cf. (29): Every choice function f' with the same domain as f and for which $\alpha(f')$ is true must be identical to f.

(29) $[\![only'(\langle f, \alpha\rangle)]\!] = 1$ iff $\forall f'(\text{Dom}(f') = \text{Dom}(f) \wedge \alpha(f') \rightarrow f = f')$.

Since f_{Bill} in example (28c) above is only defined for the alternative set X_1 this is equivalent to say that the only choice function for which $(\lambda f_1.$*John introduced $f_1(X_1)$ to Mary*$)(f')$ is true, is the one choosing Bill from the set of alternatives; and this is exactly what intuitions say.

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8   Here, and in the following assignment functions are completely ignored for expository reasons.

3.4 Basic Assumptions

So much for the general idea. Now let's have a look at the precise semantics. Following Kratzer (1991), I assume that focused expressions carry F-indices rather than simple F-markers and that no two expressions in a tree bear the same F-index. Contrary to her, however, I further assume that focus particles carry a binder index Fi that has to be distinguished from the bound index Fi carried by the focus (indicated by the feature [±p]), for only the latter is subject to phonological interpretation, cf. (30).

(30) *Assumptions about F-indexing*

    a. Distinguish bound indices $\langle Fi, +p \rangle$ (Fi) from binder indices $\langle Fi, -p \rangle$ (Fi)

    b. No two constituents bear the same (bound) F-Index in a given tree.

Concerning the translation of (bound) F-indices, I assume a rule like the one specified in (31a). (31a) treats an F-indexed constituent α_{F1} as a kind of 'opaque' expression which is mapped to a complex variable $f_1(X_1)$ consisting of a choice-function f_1 of adequate type and a variable X_1 that constitutes the argument for the choice-function f_1. If F-indexing is conceived of as a syntactically transparent process, e.g. adjunction, a compositional representation that is completely parallel to the structure of indefinites is available, too, see (31b).

(31) *Translation of F-indexed Foci*

    a. If $(\alpha)' \in \mathtt{Cat}_\sigma$, then $(\alpha_{Fi})' = f_i(X_i)$, where $f_i \in \mathtt{Var}_{((\sigma t)\sigma)}$ and $X_i \in \mathtt{Var}_{(\sigma t)}$.

    b.
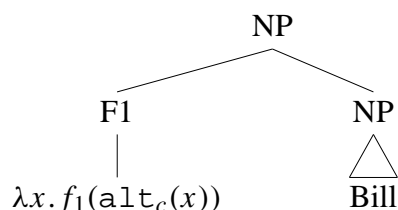
    c. where $\mathtt{alt}_c(x) =$ the unique $X \in \{Y; x \in Y\}$ such that all and only the elements of X are salient alternatives to x in c.

(31b) assumes the existence of an alternative function $\mathtt{alt}_c$ that specifies for any context c and any individual (property, proposition, or whatever) x the contextually salient alternatives to x in c, cf. (31c). It should be noted that the alternative function $\mathtt{alt}_c$ itself —or, more precisely, the F-index corresponding to $\mathtt{alt}_c$— needs to be conceived of as a focus-sensitive operator.[9] This assumption allows to derive adequate alternative sets in nested focus structures. Given that (32a) is assigned the focus structure in (32b) —see the discussion in section 4 below—, the F-index F1 binds the focus F2 within the complex noun phrase and, thus, triggers via the alternative function $\mathtt{alt}_c$ the construction of a set of structured individuals, cf. (32e).

(32)   a. John only invited the man with the BLUE shirt.

    b. John only$_{F1}$ invited [the man with the [BLUE]$_{F2}$ shirt]$_{F1_{F2}}$

    c. John only [F1 [invited [$\mathtt{alt}_c$ [F2 [the man with the [BLUE]$_{F2}$ shirt]]]$_{F1}$]]

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9   For a similar proposal, cf. Rooth (1996).

d. *only'*$(\langle f_{\langle g_{\text{blue}}, \lambda f_2.\text{the man with the } f_2(X_2) \text{ shirt}\rangle}, \lambda f_1.\text{John met } f_1(X_1)\rangle)$, where

e. $X_1 = \texttt{alt}_c(\langle g_{\text{blue}}, \lambda f_2.\text{the man with the } f_2(X_2) \text{ shirt}\rangle)$
$= \{\langle g', \lambda f_2.\text{the man with the } f_2(X_2) \text{ shirt}\rangle; g' \text{ is a choice with domain } \{X_2\}\}$

From this set the structured individual $\langle g_{\text{blue}}, \lambda f_2.\text{the man with the } f_2(X_2) \text{ shirt}\rangle$ is chosen, cf. (32e). As a consequence, the focus particle *only* quantifies over choice functions choosing structured individuals of the form $\langle g_x, \lambda f_2.\text{the man with the } f_2(X_2) \text{ shirt}\rangle$, $x \in X_2$, rather than unstructured ones.

Now let's come to the somewhat more involved process of focus binding. As I already hinted at, I follow Heim & Kratzer (1998) in assuming that binder indices adjoin to their sister node at LF. The translation rule for binary branching of this kind is given in (33).

(33)   *Translation of adjoined binder-indices Fi*
Let α be a branching node with daughters β and γ, where β dominates only an F-index F$i = \langle Fi, -p\rangle$, then

$$(\alpha)' = \langle \iota f[\texttt{min-ch}(f, \lambda f_i.\gamma') \wedge (\lambda f_i.\gamma')(f) = (\gamma)'_{Fi}], \lambda f_i.\gamma'\rangle.$$

The translation of such structures looks rather complicated, but, conceptually, it is rather simple. Suppose, for example, that γ is of type t, that is, suppose that γ denotes a proposition. Then α denotes a structured proposition where the background is simply the result of λ-abstracting over the choice-function variable f_1, that is, the background is a property of choice-functions. The focus part of the structured proposition is a definite description denoting a choice-function f. There are two conditions that uniquely determine this choice function f. The first condition on f states that the choice function f is minimally defined with respect to the background, cf. (34). Given example (28a) above, this is equivalent to say that the domain of f is the singleton set containing only the set X of contextual salient alternatives to *Bill*.

(34) $\texttt{min-ch}(f, P) = 1$ iff $\texttt{choice}(f) \wedge f \in \texttt{Dom}(P)$
$\wedge \forall g(\texttt{choice}(g) \wedge g \in \texttt{Dom}(P) \rightarrow \texttt{Dom}(f) \subseteq \texttt{Dom}(g))$

This first condition leaves us with as many choice functions as there are contextually salient alternatives to Bill. But we want the definite description to denote exactly that choice function that chooses the focus Bill from this set. This is the task of the second condition. This condition states that the proposition that results if the background $\lambda f_1.\gamma$ is applied to the choice function f must be identical to the proposition denoted by γ if the F-index on the focus Bill is simply ignored. Setting aside questions of hyperintensionality, this condition can only be met, if f chooses the focus Bill. Again, this is exactly the desired result.

Note that the second condition crucially relies on the following requirement: 'translate γ as usual but ignore the F-index Fi.' Formally, this requirement is equivalent to the 'modification' of a given translation function. An exact definition that is reminiscent to the modification of variable assignments is given in (35).

(35) *'Modifying' a translation function* $(\cdot)'$

Let $(\cdot)'$ be an arbitrary function from the set $\mathcal{F}$ of all possible LF-structures into the set $\mathcal{A}$ of all possible $\mathcal{L}$-expressions. Then $(\cdot)'_{\mathrm{F}i}$ is the unique function from $\mathcal{F}$ into $\mathcal{A}$ which fulfills the following conditions:

(i) $(\alpha_{\mathrm{F}i})'_{\mathrm{F}i} = (\alpha)'$;

(ii) $(\mu)'_{\mathrm{F}i} = (\mu)'$ for all $\mu \in \mathcal{F}$ that carry no index Fi.

In (36) the analysis of example (28a) is summarized. Although the representation in (36c) actually is the correct one, I prefer to use the more transparent notation given in (36d) that corresponds to the interpretation of (36c).

(36)   a.   John only$_{\mathrm{F}1}$ introduced Bill$_{\mathrm{F}1}$ to Mary.
       b.   only [F1 [John introduced Bill$_{\mathrm{F}1}$ to Mary]]
       c. $only'(\langle\iota f[\mathtt{min\text{-}ch}(f, \lambda f_1.\text{J. introduced } f_1(X_1) \text{ to M.}) \wedge$
              $\text{J. introduced } f(X_1) \text{ to M.} = \text{J. introduced Bill to M.}], \ldots\rangle)$
       d. $only'(\langle f_{\mathrm{Bill}}, \lambda f_1.\text{John introduced } f_1(X_1) \text{ to Mary}\rangle)$,
              where f_{Bill} is the unique choice such that $f_{\mathrm{Bill}} : \{X_1\} \to D_e$, $f_{\mathrm{Bill}}(X_1) = \text{Bill}$

To keep things simple, I made the assumption that the sister node of the focus particle *only* is of type t. However, *only* in examples like the one above is typically considered to be a VP-adjunct. Moreover, in examples like (37) there are good reasons to assume that *only* is an adjunct to the DP *Peter*.[10]

(37)   [Nur$_{\mathrm{F}1}$ PEter$_{\mathrm{F}1}$] hat ein Buch gekauft.
       [only$_{\mathrm{F}1}$ PEter$_{\mathrm{F}1}$] did a   book buy
       'Only PEter bought a book'

So the question emerges whether the mechanics developed so far for sisters of type t can be generalized to cover sisters of arbitrary conjoinable type. In fact, this is absolutely straightforward, cf. (38).

(38)   *Translation of adjoined binder-indices Fi* (generalized).
       Let α be a branching node with daughters β and γ, where β dominates only an F-index F$i = \langle \mathrm{F}i, -\mathrm{p}\rangle$, let γ be of conjoinable type (τt), and P a variable of type τ:
       $(\alpha)' = \lambda P.\langle \iota f[\mathtt{min\text{-}ch}(f, \lambda f_i.\gamma'(P)) \wedge (\lambda f_i.\gamma'(P))(f) = (\gamma)'_{\mathrm{F}i}(P)], \lambda f_i.\gamma'(P)\rangle.$

After having introduced the basic assumptions of this choice function approach to AwF, I'd like to emphasize some of its most central properties.

3.5   Some Properties

Island-sensitivity. First of all, and not very surprisingly, the proposed semantics predict island-insensitivity of AwF. The reason for this being exactly the same as with indefinites and *wh-*

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10   But cf. the discussion in Jacobs (1983), Büring & Hartmann (2001).

phrases in Reinhart's approach: There is no movement involved, therefore there are no violations of movement constraints.

No need for non-standard rules for functional application. Actually, there already exists a proposal for an in situ semantics for AwF within the categorial approach, namely the one proposed in Krifka (1991). Krifkas approach, however, differs from the one proposed in the previous subsection in many crucial respects. The most important difference, I think, consists in Krifka's assumption that the relevant structure is already introduced at the level of the focused constituent, and not —as is assumed here— at the level of the focus particle *only*. Since the relevant structure must be allowed to project all the way up to the focus particle *only*, Krifka (1991) needs to make some non-standard assumptions concerning the interpretation of 'ordinary' binary branching. This is avoided in the binding approach pursued here, since the focus particle *only* always immediately destroys the structure introduced by its binder index.

The need for binders – a relational approach. This remark points to another central aspect of the semantics proposed here. What about cases of so-called 'free' focus, that is, examples in which no possible binder seems to be present, cf. for example (39a). If we apply the mechanics developed above the translation of (39a) results in something like (39b). Since the choice function f_1 is not bound, the truth-conditions of (39b) depend on the context. But this is certainly not true for (39a).

(39) a. John introduced Bill$_{F1}$ to Mary.
   b. John introduced $f_1(X_1)$ to Mary.

To get the correct truth-conditions, even so-called 'free' foci need to be bound by some covert operator. Actually, this has already been argued for in Jacobs (1984) and is known under the label 'the relational approach to AwF.' Concretely, Jacobs proposes that free foci are bound by focus-sensitive operators like `assert` or `ask` that indicate the mood of the sentence, cf. (40).

(40) a. `assert`$_{F1}$ John introduced $f_1(X_1)$ to Mary.
   b. `assert`($\langle f, \lambda f_1.$John introduced $f_1(X_1)$ to Mary$\rangle$)

In Reich (2001, to appear) it is argued that this notion needs to be generalized to so-called rhetorical relations including, e.g., the rhetorical relations `contrast` and `answer`.

No stipulation of focus binding. Actually, it was a bit sloppy to say that Jacobs (1984) proposed that free foci are *bound* by covert operators, for Jacobs presupposes a categorial movement approach and this kind of approach allows, at least in principle, arbitrary many focus-sensitive expressions to access one and the same focus. This may be welcome with respect to examples like (41a).

(41) a. John even$_{F1}$ only$_{F1}$ introduced Bill$_{F1}$ to Sue.
   b. *John even [F1 [only [F1 [introduced Bill$_{F1}$ to Sue]]]]
   c. John [even only]$_{F1}$ introduced Bill$_{F1}$ to Sue.

In general, however, this property seems to lead to too many unavailable readings. Within alternative semantics this is avoided by stipulating that retrieving alternatives binds focus. Within the semantics proposed here, on the other hand, a bound focus is unavailable for further interpretation without further assumptions. This is simply because the interpretation of adjoined binder indices involves λ-abstraction over the choice-function variable introduced by the focus, and another try to bind the same variable necessarily leads to vacuous binding; vacuous binding, in turn, results in the definite description being undefined. As a consequence, it is predicted that *even* and *only* in an example like (41a) do not 'share' their focus, but that *even* is in some sense parasitic on *only*, cf. (41c). This possibility is discussed in von Stechow (1991).

3.6 Some Problems Reconsidered

Finally, let's check whether the choice function approach is able to adequately handle the problematic cases of focus in VP-ellipsis contexts and in cases of 'selective' AwF.

VP-ellipsis. Since the assumptions about F-indexing are an extension of those assumed in Kratzer's approach, it comes as no surprise that Kratzer's Tanglewood-example is handled correctly. Since both instances of the focused expression carry the same F-index, identical choice-function variables are introduced which results in a binding effect, cf. (42).

(42) a. only [F1 [I [went to Tanglewood$_{F1}$] because you [went to Tanglewood$_{F1}$]]]
      b. $only'(\langle f, \lambda f_1.$ I went to $f_1(X_1)$, because you went to $f_1(X_1)\rangle)$
          where $f : \{X_1\} \rightarrow D_e$, $f(X_1) =$ Tanglewood.

Instances of selective AwF. Moreover, making use of co-indexation it is also to be expected that examples like (43b) are treated correctly. Actually, it needs some calculation to see this. The most relevant steps are given below.

(43) a. John only introduced Bill$_{F1}$ to Mary.
      b. John also$_{F2}$ only$_{F1}$ introduced Bill$_{F1}$ to Sue$_{F2}$.
      c. also [F2 [only [F1 [John introduced Bill$_{F1}$ to Sue$_{F2}$]]]]
      d. $\alpha :=$ only [F1 [John introduced Bill$_{F1}$ to Sue$_{F2}$]]

First of all, the binder index F2 corresponding to *also* needs to be translated. This, in turn, requires the calculation of the ordinary translation α' of the *only*-phrase and its modified translation $(\alpha)'_{F2}$ that ignores the F-index F2, cf. (44). Some calculation shows that the respective representations are equivalent to (44a) and (44b).[11]

(44) $also'(\langle \iota f[\text{min-ch}(f, \lambda f_2.\alpha') \wedge ((\lambda f_2.\alpha')(f) = (\alpha)'_{F2}), \lambda f_2.\alpha'\rangle)$
      a. $(\alpha)' = only'(\langle g, \lambda f_1.$J. introduced $f_1(X_1)$ to $f_2(X_2)\rangle)$,
          where $g : \{X_1\} \rightarrow D_e$, $g(X_1) =$ Bill

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[11] Note that in determining the choice function g it is necessary to make use of the modified translation $(\alpha)'_{F2}$—corresponding to the ordinary translation α' in case of f— and the double modified translation function $(\alpha)'_{F2,F1}$.

b. $(\alpha)'_{F2} = only'(\langle g, \lambda f_1.\text{J. introduced } f_1(X_1) \text{ to Sue}\rangle)$,
where $g : \{X_1\} \rightarrow D_e, g(X_1) = \text{Bill}$

Given this, it is absolutely straightforward to determine the focus bound by *also*. The first condition imposed on f by the definite description requires f to be some arbitrary choice function defined on the singleton set containing only X_2, cf. (45a). The second condition requires f to pick out exactly the focus Sue, cf. (45b).

(45) a. $[\![\texttt{min-ch}(f, \lambda f_2.\alpha')]\!] = 1$ iff f is a choice from $\{X_2\}$ to D_e,
      b. $[\![(\lambda f_2.\alpha')(f) = (\alpha)'_{F2}]\!] = 1$ iff $f(X_2) = \text{Sue}$

Therefore, the representation of (43b) turns out to be equivalent to (44)'.

(44)' $also'(\langle f, \lambda f_2.only'(\langle g, \lambda f_1.\text{J. introduced } f_1(X_1) \text{ to } f_2(X_2)\rangle)\rangle)$, where

      a. $g : \{X_1\} \rightarrow D_e, g(X_1) = \text{Bill}$, and
      b. $f : \{X_2\} \rightarrow D_e, g(X_2) = \text{Sue}$.

Given a suitable semantics for *also*, this finally results in the correct truth-conditions.

Let's summarize. The categorial choice function approach proposed in this section is a selective binding approach. Since it is a binding approach, focus is interpreted in situ and AwF is not subject to any island constraints imposed on LF-movement; since it is selective, cases of selective AwF can be accounted for, too. Moreover, introducing choice functions into the analysis of AwF, first, allowed for an explicit treatment of alternative sets even within a categorial approach, and, second, accounts for the similarities between indefinites, *wh*-phrases and focus in treating them as a natural class of 'weak' phenomena; in especially, the similar behavior of indefinites (*wh*-phrases) and AwF with respect to islands for movement receives a natural and homogeneous explanation.

4   Is AwF Really Island-Insensitive?

In the previous discussion, it has always been taken for granted that AwF is in fact island-insensitive. This property, however, has been called into question in Steedman (1991), Drubig (1994, 1997) and Krifka (1996, 1998). In the last part of this paper their arguments will be presented and evalutated. It will be argued that, on the one hand, Steedman and Drubig (1994, 1997) are correct in positing the focus background structures that they do, but that, on the other hand, these focus background structures are not due to an inherently island-sensitivity of AwF, but should be better considered as an epiphenomenon of the island-sensitivity of *wh*-phrases in 'topical' or 'contextually salient' *wh*-questions.

4.1   The Semantic Argument

Starting from considerations on coordination, an isomorphism constraint on syntactical and phonological constituency, and a corresponding constraint on information structure, Steedman (1991) comes to the conclusion that the only well-formed partition of (46b) into theme and rheme is that given in (46b).

(46) a. They only asked the man who chairs the ZONING board.
     b. ($_{theme}$ They only asked) ($_{rheme}$ the man who chairs ($_{focus}$ the ZONING board)).

Now, what is relevant for AwF according to Steedman's intuition, is not the focused constituent *the zoning board*, but the rheme *the man who chairs the zoning board*; the task of the focus *the zoning board* simply being to constrain possible alternatives to the rheme. Since the rheme is identical to the island, association with rheme does not violate any island constraints. Given a framework that doesn't syntactically represent the distinction between theme and rheme, this is equivalent to say that the island is focused itself and that the focus particle *only* associates with the island rather than with the focused constituent contained in the island.[12]

Starting from Steedman's intuitions, Krifka (1996, 1998) presents an argument that is intended to show that in fact the respective island needs to be focused to derive the correct truth conditions in an example like (46). To see this, consider example (47a) in a context where Sue, Mary and Jane are the only contextually salient authors, Bill and John are the only contextually salient boys, Bill read Sue's and Mary's book, John only read Jane's book, and, finally, Sam only talked to Bill.

(47) a. Sam only talked to [the boy who read SUE's book]
     b. $\neq \forall x$: if Sam talked to the boy who read x's book, then $x = $ Sue.
     c. $= \forall x$: if Sam talked to x, then $x = $ the boy who read Sue's book, where
        $x \in$ {the boy who read y's book; y is an author}

Intuitions say that in this context (47a) is true, since Sam only talked to Bill and Bill is the only boy who read Sue's book. However, given the semantics of *only* as stated in (47b), (47a) is predicted to be false. This is simply because Bill is at the same time the boy who read Sue's book and the boy who read Mary's book. Thus, the conditional can be falsified by assigning Mary to x. (47c), on the other hand, predicts (47a) to be true: Since Bill is both, the boy who read Sue's book and the boy who read Mary's book, the set of alternatives reduces to the set consisting of Bill and John. Since Sam only talked to Bill, the condition in (47c) is fulfilled.

Actually, this argument crucially relies on two assumptions. First, for (47c) to be true in this context, the universal quantifier implicit in the semantics of *only* mustn't quantify over the definite descriptions themselves (i.e., over non-constant individual concepts), but needs to quantify over their referential value in the context specified; if it quantified over the definite descriptions, the semantics in (47c) would be subject to exactly the same criticism. Second, this argument presupposes a specific semantics for *only*, namely the one given in (48).

(48) a. $[\![only'(\langle x, \alpha \rangle)(b)]\!] = 1$ iff $\forall y \in \texttt{alt}(x)(\alpha(y)(b) \rightarrow y = x)$
     b. $[\![only'(\langle f, \alpha \rangle)(b)]\!] = 1$ iff $\forall f'(\texttt{Dom}(f') = \texttt{Dom}(f) \land \alpha(f')(b) \rightarrow f = f')$

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[12] In Rooth (1996) an analysis is presented that captures the intuition that the nested focus serves the task to constrain possible alternatives (cf. also fn. 9 above). Since these mechanics rely on the assumptions that, first, it is the relative clause rather than the complex noun phrase itself that needs to be F-marked, and, second, F-marked constituents need to be moved, I will refrain from discussing this proposal.

However, in Rooth (1985) a somewhat different semantics for *only* has been proposed, and this semantics has been adapted to the categorial approach in von Stechow (1991), cf. (49). Given this semantics, it is not the focus itself that is subject to comparison in the consequence of the conditional, but the different possible instantiations of the focus particle's scope.

(49) a. $[\![only'(\langle x, \alpha \rangle)(b)]\!] = 1$ iff $\forall y \in \mathtt{alt}(x)(\alpha(y)(b) \to \alpha(y) = \alpha(x))$
      b. $[\![only'(\langle f, \alpha \rangle)(b)]\!] = 1$ iff
$$\forall f'(\mathtt{Dom}(f') = \mathtt{Dom}(f) \wedge \alpha(f')(b) \to \alpha(f') = \alpha(f))$$

This time, the island is contained in the constituents being compared, and this has non-trivial consequences. Since the argument presupposed that the relevant semantic value of *the boy who read Sue's book* is identical to the semantic value of *the boy who read Mary's book*, one has to conclude (by functionality) that the predicate *having talked to the boy who read Sue's book* is identical to the predicate *having talked to the boy who read Mary's book*.[13] Therefore, the semantics for *only* given in (49) allows for the correct truth-conditions without making reference to the island being focused.

Nevertheless, it seems to be rather difficult to evade Steedman's intuitions. As the following discussion is intended to show, this is simply because the complex noun phrase is in fact focused —but not for the reason argued for above.

4.2   The Syntactic Argument (Steedman 1991, Drubig 1994)

Independently from Steedman (1991), Drubig (1994) presents a syntactic argument for the assumption that in an example like (46a) the island, i.e., the complex noun phrase containing the focused constituent, is focused itself. This is argued for on the basis of so-called negative contrastive constructions (NCCs). Negative contrastive constructions are constructions like the *not . . ., but . . .*-construction in English or the corresponding *nicht . . ., sondern . . .*-construction in German. These constructions seem to involve a conjunction of at least two explicitly contrasted constituents, cf. (50a).

(50) a. John did*n't* invite [Mary], *but* [Sue].
      b. John did*n't* invite [Mary] to the party, *but* [Sue].

Drubig (1994) assumes, first, that in negative contrastive constructions the contrasted constituents that specify the contrasted alternatives are F-marked, and, second, that the second of these alternatives is made explicit by the *but*-phrase, since the *but*-phrase tends to occur at the end of the sentence, cf. (50b).

If this is correct, the second conjunct in negative contrastive constructions should provide for some evidence whether AwF is in fact island-sensitive in these cases, or not. If it is, one would expect that in examples corresponding to (46a) above, the *but*-phrase mustn't correspond

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[13]   It should be emphasized that I do not claim that the *property* (type $(s(et))$) of *having talked to the boy who read Sue's book* is identical to the *property* of *having talked to the boy who read Mary's book*. It would be silly to claim that. What I do claim, however, is that the argument actually presupposes a semantics for *only* that compares extensions rather than intensions of focused expressions.

to a constituent being contained in an island. And in fact, as the data in (51) shows, this seems to be the case.

(51)   He didn't interrogate [the man who invited the ex-convict with the RED shirt], but

    a. *the BLUE shirt
    b. *with the BLUE shirt
    c. *the ex-convict with the BLUE shirt
    d. the man who invited the ex-convict with the BLUE shirt

Generalizing from negative contrastive constructions, where the contrasted alternatives are given explicitly, Drubig (1994) concludes that in constructions involving focus particles like *only* or *also*, where the alternatives are given implicitly, the island is F-marked too. Subscribing to the same intuitions as Steedman (1991), he claims that the focus particle associates with the island rather than with the focused constituent contained in it. Moreover, he takes the observed island effects to constitute clear evidence for a movement approach to AwF: If a focused constituent isn't moved, why should it obey constraints on movement after all?

4.3   Focus Phrase and Focus Constituent

In Drubig (1994), the focused island is called a 'focus phrase' and the embedded focus is called a 'focus constituent.' If Drubig is right in assuming that 'focus phrases' exist,[14] then the question emerges what it is that forces F-marking on the syntactic island in an example like (51). Drubig (1997) gives the following answer. Specific DPs (and only specific DPs) like, e.g., *the JAPANESE car* contain an additional functional projection, a focus projection 'FocP', located between NP and DP. On the level of logical form the focus constituent, i.e., the prenominal adjective *japanese* in case of (52), has to move to the specifier position of FocP.

(52)   a.   the $[\text{JAPANESE}]_F$ car
    b. $[_{DP_{[+F]}}$ $[_{D'}$ the $[_{FocP}$ $[\text{JAPANESE}]_{[+F],i}$ $[_{Foc'}$ $\text{Foc}_{[+F]}$ $[_{NP}$ t_i car$]]]]]$

Second, a percolation mechanism is developed that allows the [+F]-feature to percolate from FocP to DP. In a more complex noun phrase like the one in (51) above, see (53a), this results in a logical form as indicated in (53b).

(53)   a. $[_{DP1}$ the man who invited $[_{DP2}$ the ex-convict with $[_{DP3}$ the $[\text{BLUE}]_F$ shirt$]]]$
    b. $[_{\textbf{DP1},F}$ the $[_{FP1}$
       $[_{\textbf{DP2},F}$ the $[_{FP2}$ $[_{\textbf{DP3},F}$ the $[_{FP3}[\text{BLUE}]_{3,F}$ $[_{NP3}$ t_3 shirt$]]]_2$ $[_{NP2}$ ex-c. with $t_2]]]_1$
                    $[_{F1'}$ F $[_{NP1}$ man who invited $t_1]]]]$
    c.   ⟨blue, λX. the man who invited the ex-convict with the X Shirt⟩

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[14]   Actually, I think that he *is* correct in assuming that the respective islands are F-marked. As I have argued in Reich (2001), there is good evidence that the *but*-Phrase is derived by some elliptical process, presumably background deletion. If this is correct, exactly the same argument applies that forces F-marking of constituents corresponding to a *wh*-phrase in Q/A sequences (see Reich 2001, to appear).

Given these assumptions, the [+F]-feature introduced by the focus constituent *blue* percolates from [Spec, FP3] to DP3. Since DP3 is moved to [Spec, FP2] it is allowed to percolate to DP2; since DP2 is moved to [Spec, FP1] the desired F-marking results. When it comes to interpretation, there are basically two options. Either (53b) is interpreted within some variant of alternative semantics;[15] or (53b) is interpreted within the categorial approach.[16] If it is, the prenominal adjective needs to be moved across three DPs to derive the correct structured meaning, clearly a violation of the Complex NP Constraint.

5 'Island-Sensitivity of AwF': An Epiphenomenon

The previous discussion showed, I think, that in fact an in situ semantics for AwF is called for. If, however, a syntactic and semantic in situ approach to AwF is maintained, the question remains to be answered why AwF seems to behave island-sensitively in a case like (51), or to put it somewhat different, why there exist 'focus phrases' at all.

Actually, there seems to be a rather straightforward answer to this question. Since the work of M.A.K. Halliday (1967) it has been commonly assumed that in an answer to a *wh*-question every constituent corresponding to a (complex) *wh*-phrase is focused.[17] Since *wh*-phrases behave island-sensitively, cf. (54a), it follows immediately that these focused constituents are never contained in an island.

(54) a. *Who$_i$ did he interrogate the man who invited t_i?
      b. Who$_i$ did he interrogate, the man who invited ... with the RED shirt?

If it is further assumed that an utterance of (51), here repeated as (55) for convenience, presupposes the contextual salience of an explicitly or implicitly given question that the utterance of (51) is meant to answer —e.g., a question like (54b)—,[18] then the island-sensitivity of AwF turns out to be simply an epiphenomenon of the island-sensitivity of *wh*-phrases.

(55) He didn't interrogate [the man who invited the ex-convict
      with the RED shirt], but

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[15] This is the option chosen in Krifka (1996). Krifka's approach, however, is a mixed one in that it assumes, on the one hand, *movement* of 'focus phrases,' but, on the other hand, an *in situ* treatment of 'focus constituents.' As a consequence, F-markers that are assigned to 'focus phrases' are predicted to be of an essentially different nature than those being assigned to 'focus constituents.' To my opinion, however, an approach that allows for a uniform treatment of all F-markers (foci) is, from a theoretical point of view, certainly to be preferred over a mixed approach like the one developed in Krifka (1996). For a thorough discussion of Krifka (1996) as well as a counterproposal formulated within alternative semantics that tries do do without the assumption of 'focus phrases' cf. von Heusinger (1997, 1998).

[16] This is the option chosen in Drubig (1994, 1997).

[17] This assumptions has been challenged in Schwarzschild (1999). For a recent defense of this position and an explicit model that derives the respective F-markers from the semantics of *wh*-questions, the semantics of focus background structures and the semantics/pragmatics of rhetorical relations, cf. Reich (2001, to appear).

[18] To my opinion, the assumption that an utterance of (55) requires a 'backgrounded' or 'topical' question to be felicitous seems to be a rather natural one, for it is well-known that questions, no matter whether explicitly or implicitly given, play a crucial role in discourse structure (cf., e.g., Büring 1997 for recent discussion).

a. *the ex-convict with the BLUE shirt

b. the man who invited the ex-convict with the BLUE shirt

This way of explaining the contrast in (51) makes a rather clear prediction: Other things being equal, *wh*-constructions and NCC-constructions should behave structurally parallel. And, in fact, as far as German is concerned, this is certainly true for complex NPs, factive islands and *wh*-islands.

6 Summary

In this paper I have argued that for an adequate treatment of AwF phenomena an in situ approach is called for. Having shown that alternative semantics needs to make reference to island-insensitive focus movement in more complex examples, a categorial in situ approach to AwF has been proposed that crucially relies on the use of choice functions and substitutes focus binding for focus movement. Considering choice functions as the common core in the semantic analysis of *wh*-phrases, indefinites and focus, it comes as no surprise that *wh*-phrases, indefinites and focus are related to each other in various ways. Finally, two arguments challenging the view that AwF is genuinly island-insensitive have been taken up, and it has been argued that the observed island-effects should be considered as an epiphemonenon of the island-sensitivity of *wh*-phrases in contextually accessible *wh*-questions.

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