# Focus and/or Context:
# A Second Look at Second Occurrence Expressions

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## 1 Introduction

Recent discussion of the meaning contribution of focus centered around the question of how focus information is integrated into semantic and pragmatic interpretation. One type of theory assumes that certain operators can make direct use of focus information. These theories stipulate that focus-sensitive operators like *only* or *even*, quantificational adverbials, and reason clauses have to be associated with a focus in their scope. Such "association with focus" theories have been proposed, for example, by Jackendoff (1972), Jacobs (1983), Rooth (1985), von Stechow (1990) and Krifka (1992). More recently, Rooth (1992) has proposed that focus contributes in a more indirect way to the interpretation of these operators. Rooth argued that the quantificational domain of such operators is fixed by contextual factors, and that these contextual factors in turn are influenced by focus. More specifically, focus is seen as a device that introduces and regulates contextual variables that are then taken up by certain operators. One important argument for the contextual account of focus is that it does not have to stipulate focus in certain cases, namely so-called "second occurrence expressions", in which there is little, if any, phonological evidence for it.

This article is mainly conerned with the validity of this argument. In section (2) I will give a short overview of association-with-focus theories. Section (3) will present the problem of "inaudible" foci in second occurrence expressions. Section (4) introduces the contextual theory of focus and shows that within this theory we do not have to assume any focus within second occurrence expressions. Section (5) then discusses problems for the contextual account that have to do with expressions that differ minimally from second occurrence expressions and in which we do find secondary focus markings. Section (6) then presents a theory for what I call "proper" second occurrence expressions that explains the absence of focus with such expressions. The conclusion will be that the absence of focus in second-occurrence expressions does not constitute a compelling argument for preferring the anaphora account of focus over the association with focus theories.

## 2 Association with Focus Theories

It has often been observed that certain operators, like *only*, *even*, or *also*, quantificational adverbials like *always* or *never*, reason clauses and *why*-questions, comparative constructions and

a variety of other expressions depend in their interpretation on which expression is intonationally highlighted, or put in "focus". Jackendoff (1972) has assumed that such expressions must be "associated with" a focus in their syntactic domain, where focus is specified by a syntactic feature F, which in turn is realized by intonational prominence. The following examples illustrate the phenomenon and its analysis. In these examples the particle *only* has a VP *steams the vegetables* in its scope, and the focus feature is either on the object NP, on the verb, or on the whole VP. I mark the syllable that receives intonational prominence by capitalization. The meaning of the constituent [*only* VP] is given for each case as a predicate. Tense is suppressed throughout in this article.

(1) a. (Mary) only steamed [the VEgetables]$_F$
$\lambda x[\mathbf{steam}(x,\mathbf{v}) \,\&\, \forall y \in A(\mathbf{v})[\mathbf{steam}(x,y) \rightarrow y=\mathbf{v}]]$

b (Mary) only [STEAMED]$_F$ the vegetables
$\lambda x[\mathbf{steam}(x,\mathbf{v}) \,\&\, \forall R \in A(\mathbf{steam})[R\,(x,\mathbf{v}) \rightarrow R=\mathbf{steam}]]$

c (Mary) only [steamed the VEgetables]$_F$
$\lambda x[\mathbf{steam}(x,\mathbf{v}) \,\&\, \forall P \in A(\lambda x[\mathbf{steam}(x,\mathbf{v})])[P(x) \rightarrow P=\lambda x[\mathbf{steam}(x,\mathbf{v})]]$

In these represention A(X) stands for the alternatives to X, where X is the semantic representation of the expression in focus. So, the representation of [*only* VP] in (1.a) is a predicate that applies to all x such that x steamed the vegetables, and for all y that are alternatives to vegetables (e.g., the chicken, the fish, etc.) it holds that whenever x steamed y, then y turns out to be identical to the vegetables. Hence the second conjunct says that x did not steam anything else but the vegetables. The second conjunct in (1.b) says that x did not do anything else to the vegetables but steam them, and the second conjunct in (1.c) sazs that x did not do anything else but steam the vegetables. In a more adequate representation the alternatives in each case must be interpreted as intensional entities, and we should distinguish between a presuppositional component (the first conjunct) and an assertional component (the second conjunct), but such subtleties are irrelevant for the present discussion and will be suppressed throughout this article. What is crucial for our purposes is that in order to express the meaning differences between (1.a), (b) and (c), we have to take into account the meaning of the expression in focus, as the meaning representation contains a quantification over the alternatives of this meaning.

There are various ways of implementing the focus sensitivity of expressions like *only* that work under the assumption that the focus directly affects the quantificational domain of *only*. The common task that these implementations must accomplish is to identify the meaning contribution of the expression in focus, which is a problem as it seems that their scope, i.e. their c-command domain, and the focus need not be identical (cf. e.g. (1.a,c)). This can be done either in syntax or semantics, and within these general approaches we again find various options.

There are two types of syntactic theories that implement association with focus. First, we may assume that the focus-sensitive operator originates in a syntactic position in which it forms a constituent with the focus, and then assume that it may be moved to some other position that are not adjacent to the focus anymore. This theoretical option is explored in the work of Hajicová and

Sgall, who would (disregarding many details that are important for their theory in general but irrelevant here) analyze the above examples as having the following underlying structure:

(2) (1.a): Mary steamed [only [the vegetables]$_F$]

(1.b): Mary [only steamed$_F$] the vegetables

(1.c): Mary [only [steamed the vegetables]$_F$]

Another theoretical option assumes that it is not the focus-sensitive operator that may be moved, but the expression in focus, and that this movement allows for the focus-sensitive operator to identify the expression in focus. Focus movement has been proposed by Chomsky (1977), and although it has been considered problematic as a syntactic movement because it seems insensitive to syntactic island constraints, it is still a viable theoretical option (see Drubig 1994 for a recent defense). The readings of examples (1) can be represented in the following way:

(3) (1.a): Mary only [[the vegetables]$_i$ [steamed $t_i$]]

(1.b): Mary only [[steamed]$_i$ [$t_i$ the vegetables]]

(1.c): Mary only [[steamed the vegetables]$_i$ [$t_i$]]

Both syntactic theories allow for an integration of focus into semantic interpretation. For the first type of theory we have to assume that the focus is identified as a co-constituent of the focus-sensitive operator on the underlying structure, and that its scope is the dependency domain of the head of its focus. This is the VP *steamed the vegetables* in (2.(1.b,c)) and the NP *the vegetables* in (2(1.a)), which in turn scopes over the VP when we analyze it as a quantifier of type <<e,t>,t>. For the second type of theory we can assume a somewhat simpler interpretation when we allow that the index of the syntactic trace is passed on to semantic interpretation.

(4) $\|\text{only } [\alpha_i\ \beta]\|^g = \lambda x[\ \|\beta\|^{g\ \|\alpha\|/i}(x) \wedge \forall y \in A(\|\alpha\|^g)[\|\beta\|^{g\ y/i}(x) \rightarrow y=\|\alpha\|^g\ ]]$

For example, the VP of (3.(1.a)) would get the following interpretation:

(5) $\|\text{only } [[\text{the vegetables}]_i \text{ steamed } t_i]\|$

$= \lambda x[\|\text{steamed } t_i\|^{g\ \|\text{the vegetables}\|/i}(x) \wedge$

$\forall y \in A(\|\text{the vegetables}\|^g)(\|\text{steamed } t_i\|^{g\ y/i}(x) \rightarrow y=\|\text{the vegetables}\|^g]]$

$= \lambda x[\textbf{steam}(x,\textbf{v}) \ \&\ \forall y \in A(\textbf{v})[\textbf{steam}(x,y) \rightarrow y=\textbf{v}]]$

There are also two types of semantic theories, namely structured meanings and alternative semantics. Both frameworks allow for focus-sensitive operators to make use of the meaning of the expression in focus, although they need not form a constituent with the focus. The structured meaning approach (cf. Jacobs 1983, Jacobs 1991) assumes that focus introduces a partition of the scope of a focus-sensitive operator into a background part and a focus part; when the background B is applied to the focus F, we get back the standard meaning, B(F). See Krifka (1992) for an attempt towards a compositional derivation of such background-focus structures. Let me illustrate here the analysis of structure the VP of (1.a):

(6) $||$steams [the VEgetables]$_F||$ = $\langle\lambda y[\lambda x[\mathbf{steam}(x,y)]], \mathbf{v}\rangle$

$||$only$||(\langle B,F\rangle) = \lambda x[B(F)(x) \wedge \forall X \in A(F)[B(X)(x) \rightarrow X=F]]$

hence,

$||$only steams [the VEgetables]$_F|| = \lambda x[\mathbf{steam}(x,\mathbf{v}) \wedge \forall y \in A(\mathbf{v})[\mathbf{steam}(x,y) \rightarrow y=\mathbf{v}]]$

Alternative semantics (Rooth 1985) records the information contributed by the focus in a different way. Natural language expressions $\alpha$ have two types of interpretations, the "ordinary" meaning $||\alpha||_o$ and the "focus" meaning $||\alpha||_f$, where the focus meaning is of the type of sets of ordinary meanings. Rooth (1985) has given a compositional semantics for this framework. Here I will just illustrate it by showing the analysis of example (1.a). In order to get the semantics of *only* right, we have to work within an intensional model here; I will use w as a designated variable that ranges over possible worlds.

(7) $||$steamed [the VEgetables]$_F||_o = \lambda w \lambda x.\mathbf{steam}_w(x,\mathbf{v}_w)$

$||$steamed [the VEgetables]$_F||_f = \{\lambda w \lambda x.\mathbf{steam}_w(x,y) |\ y \in A(\mathbf{v}_w)\}$

$||$only $\alpha||_o = \lambda x[||\alpha||_o(x) \wedge \forall P \in ||\alpha||_f[P(x) \rightarrow P = ||\alpha||_o]]$

hence,

$||$only [steamed [the VEgetables]$_F||$ = $\lambda w \lambda x[\mathbf{steam}_w(x,\mathbf{v}_w) \wedge$

$\forall P \in \{\lambda w \lambda x.\mathbf{steam}_w(x,y) |\ y \in A(\mathbf{v}_w)\}[P_w(x) \rightarrow P = \lambda w \lambda x.\mathbf{steam}_w(x,\mathbf{v})]\}$

We get a property that applies to objects x in world w iff x steamed the vegetables in w, and for every property P of the type 'steamed some alternative to vegetables' that is true in w, it actually holds that P is the property 'steamed vegetables'.

One important difference between alternative semantics and structured meanings is that within alternative semantics one cannot refer to the meaning of the expression in focus and its alternatives directly (here, **v** and A(**v**)), but only to the scope and the alternatives to the scope of a focus-sensitive operator that are generated by the alternatives to the focus (here, $\lambda x.\mathbf{steam}(x,\mathbf{v})$ and $\{\lambda x.\mathbf{steam}(x,y) |\ y \in A(\mathbf{v})\}$). See von Stechow (1990) and Rooth (1995) for some consequences of this difference.

In the context of the present discussion it does not really matter which specific implementation of association with focus we choose, as the problems that have been pointed out and will be discussed in section (3) would apply to all of them. But we have to be clear about what the "association with focus" hypothesis actually claims. I can think of various versions of that claim. Perhaps the most central one, and certainly the one most relevant to our discussion, is the following:

(I) If an operator is analyzed as focus-sensitive (i.e., associated with a focus) in one type of use, it must be analyzed as focus-sensitive (associated with a focus) in all types of use.

Principle (I) does prevent us from analyzing, for example, *only*, as being associated with focus in certain types of constructions, and as not associated with focus in others. This principle clearly is

to be considered the null hypothesis; it is certainly not plausible to assume a structural ambiguity of operators like *only*. [1]

Version (I) states that every focus-sensitive particle is associated with a focus. The inverse claim is stated in principle (II):

(II) Every focus is associated to a focus-sensitive operator.

Principle (II) seems to be violated by cases of so-called "free focus", as e.g. contrastive or emphatic focus, in which no visible focus-sensitive operator is present. However, von Stechow (1980) and Jacobs (1984) have proposed that in such cases the focus is interpreted by the illocutionary operator of the sentence, for example the assertional or the interrogative operator. This can be illustrated with the following example:

(8) a. No, these vegetables cannot be the ones that Mary prepared. Mary STEAMED her vegetables.

b. ASSERT(Mary $[\text{STEAMED}]_F$ her vegetables)

c. It is asserted that Mary steamed her vegetables, i.e., **steam**(**m**,**v**),
and this assertion is appropriate if, at the current point of information exchange, it is relevant for which R, $R \in A$(**steam**), it holds that R(**m**,**v**)

The second sentence of (8.a) is represented as in (b). The focus on STEAMED is associated with the ASSERT operator, whose meaning relates to the current point in a discourse. The identification of the focus in this case is not relevant for the truth-conditional contribution of the assertion, but rather for an appropriateness condition. In the case at hand it must be relevant in which way Mary prepared her vegetables. This is indeed the case in a standard situation in which (8.a) can be uttered. For example, (8.a) is felicitous in a situation in which various vegetables were prepared in different ways, and the discourse participants are interested in the identity of the vegetables prepared by Mary.

A third version of the association-with-focus hypothesis is the following:

(III) The quantificational domain of a focus-sensitive operator is determined only by its focus and its scope.

It is quite obvious that this version of the hypothesis is wrong, which should not be astonishing, as natural language expressions in general are context-dependent to a high degree. As a simple example that shows that (III) is wrong, consider the following:

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[1] It may however be that (I) has exceptions; for example, we may argue for a focus-sensitive negation and a focus-insensitive negation. But notice that the case of negation is different, as there are important syntactic differences between these two uses of negation. For example, the negative particle *not*, as in *Not JOHN came*, can only be focus-sensitive.

(9) A: Did Mary talk to John and Bill?
B: Mary only talked to [BILL]$_F$.

Notice that B's reply can be true even if Mary talked to other persons than Bill, provided that she did not talk to John. Hence we should assume that A's question somehow restricts the relevant alternatives to *Bill* to the set that just contains John and Bill.

The version of the association-with-focus hypothesis that I am interested in here is (I), that every focus-sensitive operator must be associated to a focus. I am also sympathetic to (II), but this hypothesis is largely independent from the issues currently under discussion. (III) clearly is wrong, and shows that association with focus must be supplemented by other ways of restricting quantificational domains.

Hypothesis (I) can only be tested if the stipulated F feature can be identified independently. Otherwise we may assume that the focus is simply "inaudible" for some reason or other when an operator known to be focus-sensitive does not occur with an identifiable focus. But then it would be impossible to test hypothesis (I). Hence we should now turn to the realization of the focus feature. This has been investigated in great detail, and it is impossible to give even a rough overview over the relevant findings and theories in this article. However, I will at least mention various assumptions that are frequently made and that I will follow.

First, focus is in general realized by accent (intonational prominence), which is located on a syllable within the focus constituent. Other focus markings occur as well, in particular the use of particles (e.g. focus particles in Somali) and of dedicated syntactic focus positions (e.g. overt focus movement in Hungarian). Although the relevant issues are not investigated in detail, it seems that these focus markings typically occur in combination with intonational marking. For example, cleft constructions in English are a well-known instance of focus marking, but notice that they in general require that the clefted expression bears the main accent, except in corrections:

(10) a. It is [the young LAdy]$_F$ who came late.

b. *It is [the young lady] who CAME late.

The location of the accent within the focus is determined by accent realization rules. These rules often are discussed in terms of "focus projection"; it is said that a focus on a part of a complex constituent, as e.g. in [*steams* [*the VEgetables*]$_F$], licenses the focus on the larger constituent, as in [*steams the VEgetables*]$_F$, under certain conditions (cf. e.g. Höhle 1982, Selkirk 1984, 1993). I find it more intuitive to assume that the F feature is assigned to syntactic nodes, and in turn is expressed by accent. In this view we have two distinct syntactic representations *steams* [*the vegetables*]$_F$ and [*steams the vegetables*]$_F$, where focus happens to be realized by accent on the same syllable. Some of the relevant accent realization rules that have been proposed (sometimes from the viewpoint of focus projection) are the following:

Focus on a head-argument structure is realized on the argument, everything being equal. Hence we have, for example, [*steamed the VEgetables*]$_F$, not [*STEAMED the vegetables*]$_F$. In contrast, focus on a head-adjunct structure is realized on both head and adjunct. Hence we have [*ATE with a*

*SPOON*]$_F$, and by recursive application, [[*ate the VEgetables*] *with a SPOON*]$_F$. Focus on certain subjects follows the adjunct pattern, cf. the difference between [*the DOG is barking*] (with the argument pattern) and [*the DOG is YOUNG*]$_F$ (with the adjunct pattern, cf. Selkirk 1984, Gussenhoven 1984, von Stechow & Uhmann 1987). A rule that works against these standard accent realization patterns is that expressions that are anaphoric or that have been uttered immediately before cannot receive accent when part of a larger focus, and hence accent is realized on another constituent. For example, we have *Mary only* [*STEAMED them*]$_F$, not *Mary only* [*steamed THEM*]$_F$ (cf. Ladd 1980).[2] But a pronoun can receive accent when it is the only expression in focus, as in *Mary only steamed* [THEM]$_F$. Accent on a word, finally, is realized on the stressable syllable of that word.

The rules mentioned above already indicate that the focus-accent relation is relatively complex, but they do by no means exhaust the complexity. For example, we do find secondary accents on non-focused expressions or on expressions within a focus that do not receive the main accent (cf. Jacobs 1992). Also, phrase-final constituents in general receive an accent increase, a phenomenon that has lead to the "Nuclear Stress Rule" in Chomsky & Halle (1968). One methodological morale that could be derived from this phenomenon is that one should, if possible, test focus marking on constituents that are not phrase-final; the marking is, in general, much clearer in non-final positions. An interesting attempt for the formulation of a body of rules that show how focus features are spelled out in accentual patterns can be found in recent work by Jacobs (Jacobs 1991, 1992).

One general problem with the realization of focus by accent is that accent is expressed not discretely (as e.g. by means of segmental phonology), but rather within continuous dimensions like pitch height, duration, and intensity. This allows for more variation in realization, and, in the limiting case, for realizations that are expressed in a minimal way, or perhaps not at all. It is interesting that this does not affect the efficiency of communication very much. Written language does without focus accent marking in most cases[3], which shows that speakers and hearers can

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[2] An alternative account is that anaphoric or context-bound elements in general cannot be part of a focus (cf. Rochemont 1986, Sgall, Hajicová & Panenová 1987). The reason why I do not follow this analysis is that it leads to a problem when we analyze felicitous question-answer pairs under the plausible assumption that the wh-part of the question and the focus part of the answer correspond to each other. For example, a question like *I know that Mary blanchized the vegetables, but what did she do next? Did she prepare the meat?* can be answered by *No, she STEAMED them*, which must be analyzed as having *steamed them* in focus.

[3] In certain cases focus is marked in writing, e.g. by italics or spacing. A particular nice instance is a distichon by Friedrich Schiller, which contains the line

> *S p r i c h t die Seele, so spricht, ach! die S e e l e* nicht mehr.
> "When the soul t a l k s, then, alas!, it's not the s o u l that talks"

Notice that without focus marking this sentence would express a contradiction. The only case of systematic focus marking in a written corpus that I have found is in certain adult comics, like e.g. *The Incredible Hulk*. Focus is expressed in direct speech by italics. In general, books for children are a good source too, for example the works of

make up for the lack of clear focus marking using other interpretation strategies. Another methodological morale to be derived from the continuous way accent is marked is that focus realization rules should be investigated within a somewhat "exalted" register in which accent presumably is indicated more clearly.

The focus realization rules become particularly intricate in instances where we have more than one focus in a sentence. Here we have to distinguish two types. One type are cases in which one focus-sensitive operator is associated with more than one focus, as in the following example:

(11) Mary only introduced $[\text{BILL}]_F$ [to $\text{SUE}]_F$.
meaning: "the only pair ⟨x,y⟩ such that Mary introduced x to y is ⟨Bill, Sue⟩"

We find that both foci are expressed by an equally strong accent, if we allow for an independent strengthening of the final accent due to the nuclear stress rule.

The other type are cases in which we find more than one focus-sensitive operator in one sentence. According to hypothesis (I) we must assume that each focus-sensitive operator is associated with a focus, and according to the focus realization rule we should expect that each focus in turn is marked. We do indeed find clear cases of multiple focus marking in this. Typically the focus of one operator is marked somewhat weaker than the focus of another operator. In the following, I will use ` as a marker of the stronger accent and ´ as the marker of the weaker accent, when necessary.

(12) Everyone tried to cook as healthy as possible. $\text{Even}_1$ $[\text{`MAry}]_{F1}$ $\text{only}_2$ $[\text{´STEAMED}]_{F2}$ her vegetables.

In this case, *Mary*, the focus of *even*, receives the primary accent, and *steams*, the focus of *only*, receives a secondary accent. I indicate the relation between focus operator and associated focus by coindexing.

Example (12) was a case in which the two foci were disjoint. Another possibility is that one focus is in the focus of another one. In the following example, both foci are marked by accent on the same word:

(13) Most people try to vary their contributions to potluck parties. But Mary $\text{always}_1$ $[\text{only}_2$ [steams VEgetables$]_{F2}]_{F1}$.
"Whenever Mary does something related to food preparation, the only thing she does is steaming vegetables"

It is more difficult to come up with cases where one focus is embedded in another one, but they do exist. We will discuss such cases later, but for the time being the following example should suffice:

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Lewis Carroll. The lack of systematic focus marking in written text may be seen as indicating that focus is not that important for language after all. I don't think that this conclusion is valid; after all, there are writing systems that don't express something as central as vowels!

(14) Mary always$_1$ [only$_2$ ´STEAMS$_{F2}$ `VEgetables]$_{F1}$,
"Whenever Mary steams something and does nothing else to it, she does that to vegetables"

Jacobs (1991) suggests that in cases of multiple focus operators the strength of the prominence of each accent directly reflects the scopal order of the associated operators: If a focus operator $FO_1$ has scope over a focus operator $FO_2$, then the focus $F_1$ will be realized more prominently than the focus $F_2$. This predicts, for example, that in (11) we could not have weak stress on *Mary* and strong stress on *steamed*, as *even* has scope over *only*.

Cases of multiple focus marking certainly need more attention, and I do not want to defend a particular analysis here. But it seems to me that the examples cited above show that the phenomenon of secondary focus is real; there are clear cases in which a secondary focus-sensitive operator is associated with a focus that receives secondary stress. The problem is, however, that this doesn't seem to be always the case, as I will discuss in the next section.

# 3 A Problem for Association with Focus: "Inaudible" Foci.

The problem with hypothesis (I) is that it seems that certain foci that we are forced to assume seem to be inaudible. Hence this hypothesis is either not testable in these cases (because it stipulates the suppression of the ways in which its presence could be detected), or simply wrong. One example, due to Rooth (1992), is the following:

(15) Farmers that GROW rice often only EAT rice.
"Farmers that grow rice often eat nothing but rice"

Clearly, *rice* should count here as the focus of *only*. The accent on *grow* and *eat* presumably expresses the focus of the assertion operator (if we follow hypothesis II), which is interpreted in a contrastive way. Following this line of thought we arrive at the following analysis:

(16) ASSERT$_1$ [Farmers that GROW$_{F1}$ rice often only$_2$ EAT$_{F1}$ rice$_{F2}$]

We clearly have focus on *grow* and *eat*, obviously a contrastive focus, and this focus is clearly marked by accent. We also have to assume, for semantic reasons, that *rice* is the focus of *only*, but we find that it is not marked by any audible accent. This is surprising, because we should expect at least a secondary accent. We cannot explain this simply by the fact that *rice* has been previously mentioned, because if it is a focus constituent (and not just a part of a focus constituent), we should expect that it receives accent even if it is anaphoric or mentioned before.

Another case of this general type is illustrated with the following example, which is due to Rooth (1994):

(17) We only introduced MArilyn$_F$ to John F. Kennedy. We also only introduced Marilyn to [BObby Kennedy]$_F$.
"It holds for Bobby Kennedy as well that we introduced Marilyn and noone else to him"

We should assume that the second sentence has a secondary focus on *Marilyn* that is associated to *only*, but again it seems that this focus is inaudible in normal pronounciations.

Another example, one that is derived from Partee (1991, 1994) but slightly varied here to get a non-final focus, is the following one, which is to be understood as an exchange between a speaker A and a speaker B:

(18) A: Eva only gave xerox copies to the $[\text{POOR}]_F$ students.
B: No, $\text{PETR}_F$ only gave xerox copies to the poor students.
"It was Petr, not Eva, who gave xerox copies to the poor students and to no other students"

Again we should assume that the second sentence has a focus on *poor* to arrive at the indicated meaning, but this focus is not be expressed by accent.

As a final example, consider the following:

(19) Mary only $\text{STEAMS}_F$ vegetables, and even $\text{JOHN}_F$ only steams vegetables.
"... John, for whom this is particularly surprising, does nothing else to vegetables but steam them"

Again we should assume that, in the second clause, *steam* is the focus of *only*, but this focus does not have to be realized by any accent.

What all these cases have in common is that we expect but do not find an accent, and hence at least a residual focus marking by accent, on a constituent that has been mentioned immediately before (as in the *rice* example), or that is part of a constituent that has been mentioned before. Such cases have been called "second occurrence expressions" (cf. Partee (1994)).

One possible way to deal with these observations within hypothesis (I) would be to assume that focus need not be marked within second occurrence expressions. Although I feel that this view is defendable, especially if one adduces additional independent evidence of some sort for it, I also feel that this position is quite close to immunizing hypothesis (I) against possible falsification. And indeed, a rival theory to association with focus has been developed that appears to have no problem with the lack of focus marking in second-occurrence expressions, because it can assume that no focus is present in these cases. I will now turn to this type of theory.

# 4 A Contextual Theory of Focus Effects

Various authors have proposed that what has been analyzed as association with focus should rather be analyzed as instances of a more general phenomenon, namely the contextual restriction of domains of quantification (cf. in particular von Fintel 1994, who elaborates on Rooth 1992, but also Schwarzschild 1993, Dryer 1994). The phenomenon of situational and contextual restriction of standard instances of quantification is well known (cf. Roberts 1991); witness examples like the following, which are due to David Lewis and Irene Heim, respectively.

(20) a. (On opening the refrigerator:) There is no beer

b. Only one class was so bad that no student passed the exam.

(20.a) clearly means that there is no beer in the refrigerator, and (20.b) means that there is only one class x such that no student of x passed the exam. We can express this by assuming that the restrictor of quantifiers like *no beer* or *no student*, in this case *beer* and *student*, can be additionally restricted by the situation or the context, in this case by the contents of the refrigerator or by the qualification "of class x". In certain cases this situational or contextual restriction seems to be the only one that is in effect, as in certain instances of quantificational adverbials:

(21) Mary always is late.

This sentence does not mean that every situation s is such that Mary is late at s, but rather that every situation s that is of the type of an appointment for Mary (in the most general sense) is one at which Mary is late.

The contextual theory of focus effects now assumes that so-called focus sensitive operators are like quantificational adverbials insofar as their quantificational domain can be restricted solely by context, and hence that there are instances in which they are not associated with a focus. Hence his theory gives up hypothesis (I). One theoretical possibility then would be to assume that operators like *only* can be either focus-sensitive (and in addition context-sensitive, as we do not follow hypothesis III), or just context-sensitive. This option is certainly not very attractive, as it stipulates a deep-rooted ambiguity in the way these operators are interpreted. Hence it is proposed that the operators in question are just sensitive to context, and that focus introduces the relevant contextual features that in turn lead to the restriction of the quantificational domain. But contextual restrictions can come about in other ways as well, and hence we have instances of "focus sensitive" operators that are not associated with any focus.

Rooth (1992), von Fintel (1994) and others analyze the context-dependency of operators like *only* as an instance of anaphora. Focus introduces discourse entities (variables) of certain types; quantificational operators then can pick up these variables, which in turn restrict their quantificational domain. Hence von Fintel (1994) calls this the "anaphora account" of focus.

Let me illustrate how this theory works with a few simple examples. The first example concerns question/answer pairs, a standard case in which the role of focus is well known.

(22) A: Did Mary STEAM the vegetables, or did she FRY them?

B: Mary $\text{STEAMED}_F$ them

We are not interested here in the focus of the question, but in the focus within the answer. Following Hamblin (1973), we assume that the meaning of a question is the set of possible answers to that question. We assume in addition that this set is made accessible for future reference by storing it in a new variable, $C_1$:

(23) Did Mary STEAM the vegetables, or did she FRY them?
$C_1$ = {**steam**(**m**,**v**), **fry**(**m**,**v**)}

The focus in the answer introduces alternatives to the assertion that is actually made. Let me represent this here within Alternative Semantics (the other ways of representing them, as discussed in section 2, would do as well; also, I disregard intensionality here to keep things simple).

(24) $||\text{Mary STEAMED}_F \text{ them.}||_o$ = **steam**(**m**,**v**)
$||\text{Mary STEAMED}_F \text{ them.}||_f$ = {R(**m**,**v**)| R∈ A(**steam**)}

The set of alternatives that are introduced by the focus is evaluated on the level of the sentence (presumably because this sentence does not contain any focus-sensitive operator). The evaluation of a set of alternatives works as follows: A new variable of the same type is introduced (in Rooth 1992 this is done by adjoining the variable to a node in logical form, but clearly other implementations are possible), and this variable is related in a specific way to the interpretation of the sentence (Rooth 1992 expresses this relation by the symbol ~). The evaluation of the set of alternatives does not change the interpretation of the expression (it is simply its ordinary interpretation), but it introduces certain presuppositions.

(25) $||[\text{Mary STEAMED}_F \text{ them}] \sim C_2||_o = ||\text{Mary STEAMED}_F \text{ them}||_o,$
$= \textbf{steam}(\textbf{m},\textbf{v})$
presuppositions: (i) $C_2 \subseteq ||\text{Mary STEAMED}_F \text{ them}||_f,$
i.e. $C_2 \subseteq$ {R(**m**,**v**)| R∈ A(**steam**)}
(ii)$||\text{Mary STEAMED}_F \text{ them}|| \in C_2$
(iii) $\#C_2 \geq 2$

$||[\text{Mary STEAMED}_F \text{ them}] \sim C_2||_f = \{||[\text{Mary STEAMED}_F \text{ them}] \sim C_2||_o\}$
$= \{\textbf{steam}(\textbf{m},\textbf{v})\}$

The (ordinary) interpretation of the sentence Φ that is related by ~ to a variable $C_2$ is simply the ordinary interpretation of the sentence, $||\Phi||_o$. But several presuppositions are introduced, namely that $C_2$ is restricted by the alternatives of Φ (i.e., $C_2 \subseteq ||\Phi||_f$), that the ordinary meaning of Φ is an element of $C_2$ (i.e., $||\Phi||_o \in C_2$), and that $C_2$ contains at least another element, that is, that there are real alternatives to the ordinary meaning of $C_2$ (i.e., the cardinality of $C_2$ is ≥2). As every expression in Alternative Semantics comes with both an ordinary meaning and a focus meaning we also have to assign a focus meaning for Φ related to a variable. It is simply the singleton set of the ordinary meaning, which means that there are no "active" focus values; the contribution of focus has been "used up".

One last step establishes the connection between A's question and B's answer. It simply consists in establishing an anaphoric relation between $C_1$ and $C_2$:

(26) Anaphoric relation: $C_2 := C_1$, i.e. $C_2 = \{\textbf{steam}(\textbf{m},\textbf{v}), \textbf{fry}(\textbf{m},\textbf{v})\}$

Notice that all the equations introduced by the presupposition of the answer are satisfied under this equation. This captures the fact that B's utterance is a proper answer to A's question. If B would have answered with focus on, say, *them*, things would have been different:

(27) B: *Mary steamed $\text{THEM}_F$

$\|[\text{Mary steamed THEM}_F] \sim C_2\|_o = \textbf{steam}(\textbf{m},\textbf{v})$,

presupposition: $C_2 \subseteq [\![\text{Mary steamed THEM}_F]\!]_f$
i.e. $C_2 \subseteq \{\textbf{steam}(\textbf{m},x) | x \in A(\textbf{v})\}$

Note that the indicated presupposition fixes $C_2$ to subsets of sets of propositions like "Mary steamed the vegetables", "Mary steamed the chicken", etc., and hence the anaphoric relation $C_2 := C_1$ cannot be established.

Cases that have been analyzed as association with focus are treated in essentially the same way. That is, it is assumed that focus introduces a contextual variable, and that this variable in turn is anaphorically related to the restriction of the operator. Let me illustrate this with the following example:

(28) Mary only $\text{STEAMED}_F$ the vegetables.

The ordinary meaning and the focus meaning of *$\text{STEAMED}_F$ the vegetables* is as follows:

(29) $\|\text{STEAMED}_F \text{ the vegetables}\|_o = \lambda x.\textbf{steam}(x,\textbf{v})$
$\|\text{STEAMED}_F \text{ the vegetables}\|_f = \{\lambda x.\textbf{steam}(x,y) | y \in A(\textbf{v})\}$

Focus is evaluated at the level of the scope of the "focus-sensitive" operator, that is, at the level of the VP *$\text{STEAMED}_F$ the vegetables*:

(30) $\|[\text{STEAMED}_F \text{ the vegetables}] \sim C_2\|_o = \lambda x.\textbf{steam}(x,\textbf{v})$,
presuppositions: $C_2 \subseteq \{\lambda x.\textbf{steam}(x,y) | y \in A(\textbf{v})\}$,
$\lambda x.\textbf{steam}(x,\textbf{v}) \in C_2$,
$\#C_2 \geq 2$

The interpretation of *only* makes reference to its quantificational domain and its scope:

(31) $\|\text{only}_C\ [_{VP}\ \alpha]\|_o = \lambda x[\|\alpha\|_o(x) \wedge \forall P \in C[P(x) \rightarrow P = \|\alpha\|_o]]$

In the case at hand we arrive at the following interpretation:

(32) $\|[\text{only}_{C1}\ [_{VP}\ \text{STEAMED}_F \text{ the vegetables}]\|_o$
$= \lambda x[\textbf{steam}(x,\textbf{v}) \wedge \forall P \in C_1[P(x) \rightarrow P = \lambda x.\textbf{steam}(x,\textbf{v})]]$

By anaphoric identification $C_1 := C_2$ we arrive at the following interpretation:

(33) $\lambda x[\mathbf{steam}(x,\mathbf{v}) \wedge \forall P \in C_1[P(x) \rightarrow P = \lambda x.\mathbf{steam}(x,\mathbf{v})]]$,
where $C_1 \subseteq \{\lambda x.\mathbf{steam}(x,y) \mid y \in A(\mathbf{v})\}$, $\lambda x.\mathbf{steam}(x,\mathbf{v}) \in C_1$, and $\#C_1 \geq 2$.

This is obviously a correct interpretation. It differs from the one offered by direct association with focus insofar as the domain of quantification, $C_1$, may be just a proper subset of the focus value of the scope of *only*. This is certainly a welcome result, as it allows for additional contextual restrictions of the domain of quantification, as in the following case:

(34) A: Did Mary STEAM the vegetables, or did she FRY them?
$C_0 = \{\mathbf{steam}(\mathbf{m},\mathbf{v}), \mathbf{fry}(\mathbf{m},\mathbf{v})\}$

B: Mary $\text{only}_{C1}$ [[$\text{STEAMED}_F$ them] ~ $C_2$]

We get the appropriate result, namely $C_1 = \{\mathbf{steam}(\mathbf{m},\mathbf{v}), \mathbf{fry}(\mathbf{m},\mathbf{v})\}$, under the anaphoric identification of variables $C_1 := C_2$ and $C_2 := C_0$. We may even claim that a context variable introduced by a focus, like $C_2$, always must be anaphorically bound to an available variable (here, $C_0$). This would capture the fact that a phrase like *only STEAMED the vegetables* can be uttered only in a context in which various ways of preparing vegetables are under discussion.

It should be obvious that this indirect way of determining the quantificational domain by focus allows to do without any stipulation of a focus in the case of second occurrence expressions. This is illustrated in the following example:

(35) A: Mary $\text{only}_{C1}$ [[$\text{STEAMED}_F$ the vegetables] ~ $C_2$]
(fixes interpretation of variables $C_1 = C_2$ as:
$C_2 \subseteq \{\lambda x.R(x,\mathbf{v}) \mid R \in A(\mathbf{steam})\}$, $\lambda x.\mathbf{steam}(x,\mathbf{v}) \in C_2$, $\#C_2 \geq 2$)

B: (So what? Even $\text{JOHN}_F$) $\text{only}_{C3}$ steamed the vegetables.
$\|\text{only}_{C3}$ [$_{VP}$ steamed the vegetables]$\|_o$
$= \lambda x[\mathbf{steam}(x,\mathbf{v}) \wedge \forall P \in C_3[P(x) \rightarrow P = \lambda x.\mathbf{steam}(x,\mathbf{v})]]$

In case the quantificational domain of the second occurrence of *only*, $C_3$, is anaphorically fixed to $C_2$, we get the expected result: It is expressed that for all properties P, which are of the form "steamed the vegetables", "fried the vegetables" by way of the anaphoric relation of $C_3 := C_2$, it holds that only P = "steamed the vegetables" applies to the subject referent x.

In cases of second occurrence epressions the domain of quantification of an operator that has a second occurrence in its scope is fixed by the context variable of the preceeding expressions. Rooth (1992) argues that, as with other instances of quantification, the domain may be fixed non-linguistically. This is the way he analyses his *rice* example:

(36) Farmers that [[$\text{GROW}_F$ rice] ~ $C_1$] often $\text{only}_C$ [[$\text{EAT}_F$ rice] ~ $C_2$]

Here, $C_1$ and $C_2$ are anaphorically related to each other; this is a case of contrastive focus (in particular, we have that $C_1 \subseteq \{\lambda x.R(x,\mathbf{r}) \mid R \in A(\mathbf{grow})\}$ and $C_2 \subseteq \{\lambda x.R(x,\mathbf{r}) \mid R \in A(\mathbf{eat})\}$, and $C_1$

and $C_2$ can be identical if A(**grow**) = A(**eat**). But the domain C of *only* is not fixed anaphorically at all. Rather, the domain of quantification is fixed pragmatically, without the "helping hand" of focus. In particular, pragmatics dictates that C is restricted in the following way, as if it were associated with a focus on *rice*:

(37) $C \subseteq \{\lambda x.\mathbf{eat}(x,y) |\ y \in A(\mathbf{r})\},\ \lambda x.\mathbf{eat}(x,\mathbf{r}) \in C,\ \#C \geq 2.$

The contextual account of focus seems to have several clear advantages over theories of direct association with focus. In particular, additional contextual restrictions can be naturally expressed, and we do not have to stipulate inaudible foci in second occurrence expressions. However, it seems to me that certain important assumptions of this view have not been spelled out yet in full detail, and some predictions of that theory are not borne out by the facts. I will now turn to these issues.

# 5 Problems of the Contextual Theory

One question that has not been discussed in sufficient detail within the contextual account is at which point a focus gets evaluated. For example, it seems that the *rice* example could have been analyzed in the following way as well, where $C_1$ and $C_2$ are restricted by the focus values of $GROW_F$ and $EAT_F$, i.e. A(**grow**) and A(**eat**).

(38) Farmers that [$\text{GROW}_F \sim C_1$] rice often only$_C$ [$\text{EAT}_F \sim C_2$] rice

In cases where the focus determines the quantificational domain of an operator it seems that the focus must be evaluated with respect to the scope of the operator. For example, the variable $C_2$ could not restrict the quantificational domain $C_1$, as $C_1$ and $C_2$ are of different types; $C_1$ is of the type of a set of meanings of the type of its scope, here a set of VP meanings (extensionally, $\langle\langle e,t\rangle,t\rangle$), whereas $C_2$ is of the type of a set of meanings of the type of transitive verbs (i.e. $\langle\langle e,\langle e,t\rangle\rangle,t\rangle$).

(39) Mary only$_{C1}$ [[$\text{STEAMED}_F \sim C_2$] the vegetables]

Hence we may assume that a focus that restricts the quantificational domain of an operator and is within the scope of that operator must be evaluated at the level of the scope of that operator. Perhaps this is a principle that need not be stipulated, as focus evaluation on other levels would result in type incompatibilities, as illustrated in (29). However, there is no type incompatibility in the following case, and still we cannot have an anaphoric identification $C_1$=$C_2$:

(40) Mary only$_{C1}$ [$_{VP}$ claimed that John [$_{VP}$[$\text{STEAMED}_F$ the vegetables ~ $C_2$]]

Intuitively, a VP meaning like $\lambda x.\mathbf{fry}(x,\mathbf{v})$, "fry the vegetables", which may be an element of $C_2$, cannot be an element of the restrictor $C_1$. Rather, VP meanings like $\lambda x.\mathbf{claim}(x,\mathbf{fry}(\mathbf{j},\mathbf{v}))$, "claim

that John fried the vegetables", are suitable elements in the domain of quantification of *only*. Hence we must make sure that focus is evaluated at the level of the socpe of *only*:

(41) Mary only$_{C1}$ [[claimed that John STEAMED$_F$ the vegetables] ~ $C_2$]

The stipulation that is necessary for eliminating (40) is arguably quite natural. I consider the following problem to be more serious. According to the contextual theory the following dialogue should be perfectly possible, without any focus on *fried*:

(42) A: Mary STEAMED$_F$ the vegetables.
B: *So what? Even JOHN$_F$ only fried the vegetables.

The contextual theory predicts that the first sentence introduces a suitable contextual variable that is of the right type and sort to restrict the quantificational domain of *only* of the second sentence, and hence there is no need for any focus on the second sentence:

(43) A: Mary [[STEAMED$_F$ the vegetables] ~ $C_1$]
$C_1 \subseteq \{\lambda x.R(x,\mathbf{v}) \mid R \in A(\mathbf{steam})\}$, e.g., $\{\lambda x.\mathbf{steam}(x,\mathbf{v}), \lambda x.\mathbf{fry}(x,\mathbf{v}), \lambda x.\mathbf{sautee}(x,\mathbf{v}),...\}$
$\lambda x.\mathbf{steam}(x,\mathbf{v}) \in C_1$,
$\#C_1 \geq 2$

B: (So what? Even JOHN$_F$) only$_C$ fried the vegetables.
$\|\text{only}_C\ [_{VP}\ \text{fried the vegetables}]\|_o = \lambda x[\mathbf{fry}(x,\mathbf{v}) \wedge \forall P \in C[P(x) \rightarrow P = \lambda x.\mathbf{fry}(x,\mathbf{v})]]$

Anaphoric identification $C = C_1$ is possible.

Nevertheless, B's answer in (42) is definitely odd without focus on *fried*.

Another problem of the contextual theory in its particular formulation, the anaphora account, is that the status of the contextual anaphors is unclear, as they seem to violate general restrictions for anaphoric bindings. In a standard example like (44) it is generally argued that the quantificational domain of the operator C is fixed by the variable introduced by the focus $C_1$, hence that C is anaphoric to $C_1$. However, notice that *only* c-commands $C_1$, and hence this anaphoric relation seems to constitute a violation of binding principle B.

(44) Mary only$_C$ [steamed [[the VEgetables]$_F$ ~ $C_1$]]

Another case in which standard accessibility relations between anaphoric elements are violated is exemplified in the following text:

(45) Every farmer who [owns [a DONkey]$_F$ ~ $C_1$] beats it.
But no rancher who [owns [a HORSE]$_F$ ~ $C_2$] would ever beat it.

The contrast in this text is analyzed in the contextual theory by anaphorically relating $C_2$ to $C_1$. However, variables that are introduced within the scope of *every* in the first sentence should be inaccessible to anaphoric elements in the second sentence. Hence the anaphora account is forced

to assume that the kind of variables introduced by focus are of a different nature than the variables introduced by expressions like indefinite NPs.

I will not dwell on these problems of the anaphora account of focus. Rather, I will discuss another problem in more detail, a problem that I became aware of by an observation made in von Fintel (1994), who attributes it to Susanne Tunstall. Von Fintel illustrates this with the following example:

(46) A: Eva only gave xerox copies to [the GRAduate students]$_F$.
B: $^{??}$No, PETR$_F$ only gave xerox copies to them.

B's answer is certainly quite inappropriate with the indicated accentuation. Von Fintel speculates that the reason for this may be that *only* in B's answer still needs a focus on the recipient object of *gave*, but that a pronoun like *them* cannot express that focus.

There are several problems with this observation and von Fintel's attempt at an explanation. First, the observation certainly comes as a surprise for the anaphora account of focus, as this account predicts that the quantificational domain of the second occurrence of *only* can be fixed by the focus of the preceding sentence, and hence it does not need a focus on its own. Notice that (46) is perfectly parallel to example (35):

(47) A: Eva only$_{C1}$ [[gave xerox copies to [the GRAduate students]$_{F,i}$] ~ $C_2$]; $C_1 = C_2$
B: No, PETR$_F$ only$_{C3}$ [gave xerox copies to them$_i$]; $C_3 = C_2$

Second, although pronouns cannot receive accent when they occur within a larger focus, they certainly can receive accent when they are the only constituent in focus:

(48) Mary talked to John and Bill last night. Of all the male students she only likes THEM$_F$.

Notice that we should expect a secondary focus on *them* in (46) if we follow von Fintel, but (48) shows that *them* can be in focus, contrary to what he suggests. Interestingly, B's answer in (46) seems perfectly acceptable when we assume a secondary accent, and hence a focus, on *them*:

(49) A: Eva only gave xerox copies to [the GRAduate students]$_F$.
B: No, `PETR only gave xerox copies to ´THEM

In the following section I will turn to a more systematic investigation of second occurrence expressions.

# 6 An Anaphora Account of Second Occurrence Expressions

Let us have a look at a few additional instances that may be classified as "second occurrence expressions", at least to the degree that the anaphora account of focus would predict that we do not need any secondary focus to explain their interpretation:

(50) A: Eva only gave xerox copies to the `POOR students.

B: a) No, `PETR only gave xerox copies to the poor students.
b) ?No, `PETR only gave xerox copies to the ´POOR students.
c) ??No, `PETR only gave xerox copies to those students.
d) No, `PETR only gave xerox copies to ´THOSE students.

We find that if the second occurrence expression is an exact copy of the corresponding first occurrence expression, it should be completely destressed (a); a secondary stress on the syllable that was stressed in the first occurrence expression is slightly disfavoured (b). When we replace the stressed part of the first occurrence by an unstressed pronoun, we get an even less acceptable sentence (c); this is von Fintel's observation. The sentence becomes fully acceptable with a secondary stress on the pronoun (d).

In the examples we have considered so far, the expression in focus was replaced by a pronoun. We get quite similar results when we replace it by another expression that is equivalent in meaning:

(51) A: Mary only supports `AFrican-`AMErican job candidates.

B: a) So what? Even `JOHN only supports African-American job candidates.
b) ?So what? Even `JOHN only supports ´AFrican-´AMErican job candidates.
c) ??So what? Even `JOHN only supports black job candidates.
d) So what? Even `JOHN only supports ´BLACK job candidates.

What happens in cases in which parts of the second-occurrence expressions that are not in focus are replaced? The following examples seem to suggest that as soon as some element of the first occurrence is changed, the complete destressing of the second occurrence is disfavoured:

(52) A: Eva only gave xerox copies to the POOR students.

B: b) ??No, `PETR only gave them to the poor students.
c) No, `PETR only gave them to the ´POOR students.

(53) A: Mary only supports `POOR African-American job candidates.

B: a) So what? Even `JOHN only supports poor African-American job candidates.
b) ??So what? Even `JOHN only supports poor black job candidates.
c) So what? Even `JOHN only supports ´POOR black job candidates.

Also, cases in which the second occurrence expression exhibits a syntactic change with respect to the corresponding first occurrence disfavour destressing:

(54) A: Mary only gave John [a `BOOK]$_F$

B: a) So what? Even `SUE only gave John a book.
c) ??So what? Even `SUE only gave a book to John.
d) So what? Even `SUE only gave [a ´BOOK]$_F$ to John.

The data discussed here are relatively subtle and have been tested only orally and with a small number of speakers; certainly more and better controlled research will be necessary to establish them as facts. However, I am quite confident that the contrasts that they exhibit are real. What do they tell us?

I would like to suggest the following: What we have called "second occurrence expressions" actually belongs to two distinct types. One type, which I will call "proper second occurrence expressions", are expressions that are segmentally identical to their corresponding first occurrence expressions; they may differ from the first occurrence expressions insofar as they are destressed. This type is exemplified by the (a)-examples in the examples above. Proper second occurrence expressions exemplify a specific type of anaphora that has not been recognized as such so far. The other type, which I will sometimes call "quasi second occurrence", are not true segmental copies of the corresponding first occurrence expressions.

Let me elaborate on the idea that (proper) second occurrence expressions are a special type of anaphora. The way this type of anaphora is marked is by destressing. The antecedent is an immediately preceding expression that is segmentically identical to the second occurrence expression; this segmental identity can be seen as a condition for the identification of the antecedent. This is illustrated in the following text:

(55) A: Mary only STEAMS vegetables.
B: So what? Even JOHN [only steams vegetables]$_{SO}$

The SO (ìSecond Occurrenceî) marked constituent is expressed by destressing. It is interpreted by identifying an immediately preceding token of the same utterance, *only STEAMS the vegetables* in Aís assertion. Due to focus on *STEAMS*, this expression is interpreted as $\lambda x[\mathbf{steam}(x,\mathbf{v}) \wedge \forall R \in A(\mathbf{steam})[R(x,\mathbf{v}) \rightarrow R=\mathbf{steam}]]$, and it is this interpretation that is inserted as the meaning of the second occurrence utterance in B's sentence.

Notice that we do not need any overt focus marking in the second occurrence utterance to identify this specific interpretation, as the interpretation is simply copied from the antecedent occurrence. We may see this as an economy device that language provides: It is not necessary to ìrecomputeî the meaning of the SO utterance; rather, it had been computed immediately before, and the result of this computation can be reused, as it were. Second occurrence expressions share this property with other types of anaphora, such as pronouns or ellipsis. In the following two examples, a recognized anaphoric strategy and the second-occurrence strategy are juxtaposed for comparison:

(56) John [tried to convince Mary to come to the party]$_i$, and so$_i$ did Bill.

(57) JOHN [tried to convince Mary to come to the party]$_i$, and BILL [tried to convince Mary to come to the party]$_{SO,i}$

When the antecedent is ambiguous, we should expect that the same interpretation is selected in second occurrence expressions, a feature that is shared with other cases of anaphora. This is indeed the case:

(58) John [thought that everyone in that room spoke two languages]$_i$, and so$_i$ did Bill.

(59) A: John [thought that everyone in that room spoke two languages]$_i$,
B: No, `BILL [thought that everyone in that room spoke two languages]$_{SO,i}$

The sentence *everyone in that room spoke two languages* is scopally ambiguous between (a) "for every person x in this room there are two languages y, z such that x speaks y and x speaks z", and (b) "there are two languages y, z such that every person x in this room speaks y and speaks z". But the interpretation of this clause stays constant; (58) cannot mean that John thought (a) and Bill thought (b). Similarly, the interpretation stays constant in (59) as well. This can be attributed to the anaphoric character of second occurrence expressions. Hence the identity in intepretation of second occurrence expressions in a case like (53) is just another case of this general phenomenon.

# 7 A Problem with Pronouns

There seems to be one problem with the view of second occurrence anaphora outlined in the last section: If the accented expression in the antecedent was a pronoun, then it does not loose the accent in the second occurrence expression:

(60) A: John only introduced HIM$_F$ to Sue.

B: No, `BILL only inroduced ´HIM to Sue.
*No, `BILL only introduced him to Sue.

How can we explain this difference between full NPs and pronouns? We may assume that pronouns come in two varieties, strong and weak, which are distinguished on the phonological level. Strong pronouns must be used whenever the pronoun forms a focus; weak pronouns are used when the pronoun is outside of the focus or is only a part of the focus. Marking the type of the pronoun by superscripts, we can illustrate this as follows:

(61) a. John only introduced [HIM$^S$]$_F$ to Sue.

b. John only [introduced him$^W$ to Sue]$_F$

c. John only introduced him$^W$ [to Sue]$_F$

A number of languages is known to have a distinction between weak and strong pronouns; I am aware of French, Spanish, Italian, Czech, Bavarian, and Swahili. Even English shows a clear segmental distinction for the neuter pronoun; the form *it* is a weak form, and has to be replaced by a demonstrative like *that* in case of focus:

(62) Mary only saw THAT$^S$/*IT$^W$

I would like to suggest that the distinction between weak and strong pronouns is marked by accent on the word level in English. That is, I assume that weak pronouns like *him* and *her* are distinguished from their strong versions by a word phonological feature [-stress] and [+stress]

(and perhaps concomitant features, like [+cliticizable] vs. [-cliticizable]). Being a part of word phonology, this feature has to be copied within second occurrence utterances. This explains the pattern we have observed in (60).

(63) A: John only introduced HIM$^{S}_{F}$ to Sue.

B1: No, [`BILL]$_{F}$ [only inroduced ´HIM$^{S}$ to Sue]$_{SO}$.
B2: *No, [`BILL]$_{F}$ [only introduced him$^{W}$ to Sue]$_{SO}$.

Being in the focus of *only*, *him* in (60.A) must be a strong pronoun. In a second occurrence expression, as in B1, this feature of the pronoun must be retained, which results in an audible stress on *him* that is not due to focus within this sentence. In contrast, B2 is not acceptable, as the it violates the requirement that second occurrence expressions must retain all word phonological features of the corresponding first expression.

The same phenomenon can be illustrated in cases in which there is an overt segmental distinction between weak and strong pronouns:

(64) A: Mary only showed `THAT to him.

B: No, `JOHN only showed ´THAT to him.
B2: *No, `JOHN only showed it to him.

Hence it seems that if the distinction between weak and strong pronouns can be assumed even for languages like English, the special behavior of pronouns in second occurrence expressions can be explained.

# 8 Conclusion

In this article I have discussed two general strategies of relating the interpretation of focus-sensitive operators to focus, namely direct association with focus and indirect association via anaphoric elements. I have argued that the anaphora account seems to fare better because it provides a plausible way how focus and other contextual features conspire in restricting the quantificational domain of operators. But I have pointed out that there are several problems for the anaphora account that have not been addressed sufficiently so far. In particular, I have shown that the absence of focus in so-called second occurrence expressions, which was used as an essential argument for the anaphora account, can be explained in a different way, namely as the result of a special anaphoric strategy. All in all, I think that it is still open to discussion whether the anaphora account should be preferred to a model of direc association with focus.

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# Reply to Comments[4]

Manfred Krifka

The main purpose of my paper "Focus and/or Context: A Second Look at Second Occurrence Expressions" was to compare the respective virtues and problems of two ways of treating focus sensitivity, namely (a) theories that assume that operators like *only* are directly associated with a focus in their domain, and (b) theories that assume that operators like *only* are essentially context-sensitive, and that focus is one of the ways of selecting a context. Let me call them the "direct association theory" and the "context theory", for the purposes of this reply.

The paper concentrates on the apparent lack of focus in certain instances of so-called "second occurrence expressions", which seem to constitute a problem for the direct association theory. Interestingly, the comments by Mats Rooth indicate that there is (preliminary) evidence for a secondary focus marking in those second occurrence expressions. This secondary focus of second occurrence expressions seems to be marked in a more restricted way than other instances of focus, namely only by amplitude (intensity) and duration of the accent syllable, not by pitch ($F_0$-changes). It differs from the realization of primary foci, for which pitch is essential, and also from the realization of foci that are inferior to other foci, as in my example (12).

It is clear that Rooth's observations contradict my claim, which was based solely on auditory impressions, that there is no secondary focus in second occurrence expressions. However, when we try to integrate Rooth's finding into the general issue of direct association with focus vs. association by context, then it appears that they better fit to the direct association theories.

I can think of two ways of how to make sense of Rooth's observation. One is to interpret the secondary focus marking in second occurrence expressions as evidence for direct association with focus even within second occurrence expressions. This hypothesis has a problem, though; it would have to explain why the type of focus marking is different in this case from other cases of secondary focus (according to Rooth, it uses only amplitude and duration, but not pitch).

The second way is to assume the theory outlined in my article, with one slight change: I have assumed that second occurrence expressions consist are exact copies of the first occurrence, except that it is destressed (cf. section 6). This can be reconciled with Rooth's observation if we interpret "destressed" here as lacking any of the pitch features that normally indicate focus, but as retaining at least part of the amplitude and duration that are concomitant features of focus marking.

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[4]I thank Nicholas Asher, Christine Bartels, Jan Peregrin and Mats Rooth very much for their critical, insightful, and challenging comments, as well as the other discussants at the workshop in Bad Teinach. I wrote these replies during my residency at the Center for Advanced Study in the Behavioral Sciences, Stanford, and I acknowledge the support by the University Research Institute of the University of Texas at Austin and by the NSF grant #SES-9022192.

In either version, the theory of direct association with focus is strengthened. But it seems hard to reconcile Root's observation with the context theory. If the context theory were right, then the restriction of operators like *only* should neither require any focus in the second occurrence expression, nor should it depend on the type of anaphora that I have called "proper" second occurrence expressions.

Another observation by Rooth concerns expressions that behave like second occurrence expressions (in particular, expressions in which the secondary focus is marked not by pitch, but only by amplitude and duration), but which do not consist of a literal repetition of an immediately preceding utterance. But these second occurrence utterances are understood as having the same meaning as their antecedents, or at least as being implied by them (Rooth calls this "implicational bridging"). If this is right, and I now find these examples quite convincing, then my original characterization of second occurrence utterances as requiring a verbatim copy must be given up. Rather, it seems sufficient to claim that second occurrence utterances are easily recognized as being entailed by their antecedents.

The study reported in the comments by Christine Bartels compares second occurrence expressions with other types of repetitions (repeated renditions and echo renditions). The marking of the secondary focus tends to be weaker in the second occurrence expressions than in echo renditions, and the contrast to repeated renditions is even greater. This holds for both full NPs and for pronouns. What this suggests is that secondary occurrence expressions are indeed a grammaticalized form that is distinct from echo renditions.

Bartels records the same three dimensions of accentual focus marking as Rooth, pitch, amplitude and duration. However, as far as I can see, her data do not show that amplitude and duration is less reduced in second occurrence expressions than pitch, contrary to Rooth's observation. As this study involved more subjects and test sentences, we should be careful about taking Rooth's observations as an established fact at this point. Obviously, additional experimental work is necessary.

One of Bartels' findings directly contradicts one of the claims made in my paper (in section 7), namely that pronouns do not undergo the same reduction of focus marking as full NPs when they occur in second occurrence expressions. As a matter of fact, they do. But it seems from inspecting the bar charts for pitch peak and amplitude peak across all test words that the difference between primary occurrence and secondary occurrence is proportionally greater for full NPs than for pronouns. This means that, even though pronouns undergo reduction, they undergo less reduction that full NPs. However, the opposite holds for duration, where the reduction is proportionally greater for pronouns.

Bartels also does not find the difference between second occurrence expressions that are verbatim repetitions, and second occurence expressions in which a full antencedent NP is replaced by a pronoun. This contradicts claims that I made in section (6), that second occurrence expressions involve exact copies. As already indicated above, this strong characterization of second occurrence expressions must be given up in favor of a weaker one, namely, that the second occurrence expression should be easily recognized as being entailed by the antecendent.

Nicholas Asher's comments make a similar point: Verbatim repetition does not seem to be necessary for second occurrence expressions. Interestingly, his data suggest that the replacement of an item in focus by a pronoun leads to slightly worse results than other types of replacement (e.g., replacement of non-focussed items by pronouns, or replacement of the item in focus by a non-pronominal phrase). It is unclear why this is so, however. Asher also sketches an interesting way in which second occurrence anaphora can be modelled within SDRT.

Jaroslav Peregrin's comments concern the amount of recursion that we find with multiple foci. I agree with his observation that the depth of recursion that we find in natural language in general, and in particular concerning association with focus. It is true that it is hard to find examples like *we also only*$_1$ *introduced `MArilyn*$_{F1}$ *to 'BObby Kennedy* in a corpus, let alone cases with three distinct focus-sensitive operators in one clause. However, speakers readily agree on what these sentences mean, and so they should not be excluded as objects of our study. They are, of course, of particular interest, as they create severe problems for certain representation frameworks, like Alternative Semantics.

Also, Peregrin warns against identifying focus with "intonational highlighting", and I fully agree with him in this point. There are languages that mark focus in a variety of other ways, e.g. by world order, syntactic movement, or the use of particles. But note that "intonational highlighting" seems to play an ancillary role in many if not all of these ways of marking focus (for example, Peregrin mentions that, in Czech, there is is "a certain kind of intonation which the focus acquires in virtue of its placement at the very end of the sentence").