Why Some Foci Must Associate[1]

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1997

Abstract

The association of *only* with focus is explained in terms of (a) a semantics for *only* which makes no mention of focus and (b) discourse appropriateness conditions on the use of focus and principles of quantifier domain selection. This account differs from previous ones in giving sufficient conditions for association with focus but without stipulating it in the meaning of lexical items. Detractors have contended that foci have different pragmatic import depending on whether or not they are associated with a higher operator. I give evidence against this claim. Others argue that there is no deterministic connection between intonational focus and association. One argument for this is the fact that association readings are possible even when nothing in the scope of the operator is focussed. The present account predicts the absence of intonational focus in these cases and explains how the readings come about. The wide variety of associating operators provide incentive for pursuing accounts like the present one based on independent principles of grammar.

Introduction

The phenomenon of interest here is the difference in meaning engendered by the pattern of phonological prominence in the scope of operators like *only*. The sentence *John only examined BILL's arm* excludes his examining someone else's arm (capitals indicate contrastive stress), while *John only examined Bill's ARM*, excludes his examining other parts of Bill. Rooth(1984) conceived of these meaning differences as differences in the selection of a domain of quantification for *only*. In the first case, *only* might quantify over a domain of properties which includes examining Bill's arm, examining Chelsea's arm, examining Hillary's arm etc. In the second case, the domain might include examining Bill's arm, examining his head and examining his foot. This conception led Rooth to conjecture that association

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with focus could be derived as "a theorem of a pragmatic theory of the meaning of focus and of domain selection." As compelling as this sounds, it has not been the goal of formal accounts[1] of association with focus to derive such a theorem. In some accounts, the theory of domain selection is too weak or inexplicit to support any theorem. This is often considered a welcome outcome. It predicts that association with focus is optional, at least as far as grammar in some narrow sense is concerned. On this view, the readings of the two examples above could be reversed in principle, leaving the stress placement intact. This would be an important result if it could be demonstrated, but I don't think it has been. The other reason why a theorem has remained elusive has to do with the relevance of the first ingredient, the pragmatics of focus, to association. Researchers have pretended that foci embedded under operators like *only* and *always* do not carry the same pragmatic import as unembedded foci. This is a surprising claim. It means that the language has an elaborate syntactic-phonological system concerned with moulding an utterance to background discourse and that this system shuts down as soon as it meets one of these operators. This view challenges the traditional idea that in tone languages suprasegmentals have truth conditional import whereas in intonation languages they don't.

Our first objective will be to dispute the claim that embedded and unembedded foci are pragmatically distinct. To do that, we will appeal to a principle of the "pragmatic theory of the meaning of focus". We will show that the principle applies indiscriminately to both types of foci. This principle will then be used in conjunction with a few plausible assumptions about how domain selection works to derive an instance of association with focus along the lines of Rooth's conjecture.

Although we will be narrowing our gaze to association with *only*, the set of operators that associate with focus is wide and varied, as Dretske(1972) has pointed out. It includes verbs such as *begin* and *stop*, adverbials such as *by mistake* and *the most*, determiners, adjectives and syntactic constructions of various sorts. This variety demands an approach to association with focus with some explanatory depth. Such a approach might potentially draw on several subtheories; domain selection would be just one of them. Exactly which other theories will only become clear as a result of other studies like the current one in which association with focus is derived.

Alternative Sets
In the literature on the interpretation of focus, a distinction is made between pragmatic and semantic uses of focus. In the former case, the presence and placement of focus is explained in terms of surrounding discourse. Often, the focus is said to mark what is new relative to prior discourse, or somewhat differently, it marks a point of contrast with other contributions to the discourse. When a focus is used semantically, it makes a contribution to the content of what is expressed. In some of these cases, the placement of focus appears to have truth-conditional effects. This type of focus figured in Jackendoff(1972)'s rule of association with focus. The notion

of an "alternative set" has proved useful in explicating both types of foci.

1.   The <u>alternative set</u> for utterance E, ALT(E) is a set meanings. F is a member of ALT(E) if and only if you get to F, by computing the meaning of E in the normal way, except that you use alternative meanings for focussed expressions in E. X is an alternative meaning for α if X is the same type as the regular meaning of α.

The idea here is that ALT(*John invited Andre for DINNER*) should contain the propositions named below:

> John invited Andre for dinner.
> John invited Andre for lunch.
> John invited Andre for breakfast.

Notice that the proposition expressed by E is itself a member of ALT(E). Also note that I am using capitalization to indicate the presence of focus. Below, I very briefly discuss how this is realized phonologically. For now, let us just say that capitalized words are pronounced with contrastive stress.[2]

Since the definition in (1) doesn't limit E to sentential utterances, we can talk about alternatives for expressions of other categories. For example, ALT(*invited ANDRE for dinner*) includes the properties named below:

> invited Andre for dinner.
> invited Albert for dinner.
> invited Lyn for dinner.

A Pragmatic Use of Focus

Armed with our characterization of the alternative set, we now proceed to an example of a pragmatic use of focus. Consider the data below, to be understood as an assertion followed by three candidates for a denial of that assertion:

2.   John invited Lyn for dinner.   (target)
>   (a) no, John invited ANDRE for dinner.   (denial)
>   #(b) no, John invited Andre for DINNER.   (denial)
>   #(c) no, John invited ANDRE for DINNER.   (denial)

The '#' next to (b-c) Indicates that they are infelicitous in this context. Intuitively, (b-c) are no good because *dinner* is focussed, yet it is old information. If this were the whole story, then the following candidate should sound funny as well, but it doesn't:

3.   (d) no, John invited HIMSELF for dinner.

The pronoun referring to John represents old information, yet it is and should be focussed.[3] Instead of appealing to old/new information, we will capture what is going on in (2), via the following condition ($\|T\|$ is shorthand 'for the proposition expressed by T'.):

4.   <u>Felicity Condition for Uttering a Denial</u>
>   If D is intended as a denial of T, then,
>   D must be minimally focussed so that:
> $\|T\|$ is a member of ALT(D).

Let us look at what (4) has to say about (2). The target of the denials is in

fact a member of ALT(a), since it can be arrived at by replacing *Andre* with *Lyn* in a. The target is not a member of ALT(b), since replacements to *dinner*, won't yield the target. Finally, ALT(c) does in fact contain the target, again, gotten by replacing *Andre* with *Lyn*. However, the focus on *dinner* is unnecessary to arrive at this result, and so (c) is not minimally focussed. Except for the minimality requirement, (4) is essentially the *Contrast phrase constraint* of Rooth(1992:81). One finds similar constraints in Carlson(1984), Rochemont(1986) and elsewhere. The minimality requirement captures what Bolinger(1972:642) describes as de-accenting. This then is our example of a pragmatic use of focus, so called because the focus is licensed in an utterance by a principle that relates that utterance to prior discourse.

A Semantic Use of Focus.

Next, we turn to our example of association with focus, involving what we call for the time being, a semantic use of focus. Consider the pair below:

5.　　(a) John only invited Andre for DINNER.
　　　(b) John only invited ANDRE for dinner.

If John invited Andre for lunch, then intuitively, (a) is false, while (b) may be true. Since (a) and (b) differ only in the placement of focus, we conclude that focus plays a role in determining content. Following proposals in the literature (see von Stechow 1991 for details), we capture this observation in the recipe in (6) for assigning truth conditions to sentences of the form "John only VP".[4]

6.　　"John only VP" is true in world w, if and only if:
　　　"John VP" is true in world w and
　　　For every property P, in ALT(VP),
　　　　　John has P in w if and only if "John VP" entails that John has P.

According to (6), (5a) expresses a true proposition just in case:

7.　　John invited Andre for dinner and the following are false:
　　　　　John invited Andre for lunch.
　　　　　John invited Andre for breakfast.
　　　　　　　... 　　other things of the form: "John invited Andre for X"
　　　　　　　　　that are not entailed by John's inviting Andre for
　　　　　　　　　dinner.

Since the property of inviting Andre for lunch is in ALT(VP) for (5a), the recipe in (6) tells us that John doesn't have that property since his inviting Andre for dinner doesn't entail his having it. On the other hand, since that property is not in ALT(*invited ANDRE for dinner*), John's having it is not excluded by (5b). Crucially, the placement of focus is a determinant of content in (5a) and (5b). This analysis is to be characterized as one in which focus is used semantically.

In saying that a focus is used semantically, what I mean then is that the focus, or its interpretive counterpart 'ALT', is directly involved in figuring the truth conditional meaning for an expression containing it. This way of looking at the foci in (5) is more or less consonant with the analyses in, for example, Jacobs(1991), Kratzer(1991), Krifka(1992), Partee(1991), Rooth(1992:111) and von Stechow(1989). Others, including for example, Dretske(1972), Rooth(1992), Taglicht(1984:§4.2.2) and Vallduví(1990:§7) have argued for a

less direct involvement of focus in the semantics.

Two Distinct Uses of Focus?

The distinction between pragmatic and semantic foci is reflected in the literature through the use of terminology borrowed from the grammar of anaphora. Consider the two sentences below:

8.   a. He is intelligent.
      b. Every man thinks that he is intelligent.

In a., the pronoun *he* is said to be **free**. Its interpretation depends on the discourse in which a. is uttered. For this reason, a. makes demands on the surrounding discourse and cannot be uttered out of the blue. In b., on the other hand, the pronoun, *he*, can be **bound**. In that case, it is interpreted sentence internally, and hence is 'invisible' for the discourse. Pragmatic foci are, by analogy, called 'free foci'. The semantic foci discussed above are said to be 'bound' by the occurrence of *only* in whose scope they lie and with which they associate.

Adopting this analogy one would be led to expect that one focus cannot be both 'pragmatic' and 'semantic', just as a pronoun cannot be both free and bound (within a single binding domain). In order to test for this possibility using the tools we have so far, we need to look at an example having the following two characteristics. On the one hand, it must be a denial, thus providing the possibility of having a focus governed by the Felicity Condition in (4). On the other hand, the focus it contains should sit in the scope of *only*. Here is one such case:

9.   T. John invited Lyn for dinner.   (target)
       D1. No, he only invited ANDRE for dinner. (denial)
      #D2. No, he only invited Andre for DINNER. (denial)
      #D3. No, he only invited ANDRE for DINNER. (denial)

The data here looks suspiciously like what we saw above in (2). In particular, the focus on *Andre* is required and focus on *dinner* is precluded. Presumably, the explanation here is again the same as in (2). *Andre* in the denial contrasts with *Lyn* in the target, while *dinner* appears in both the denial and the target and hence should not be focussed. Before actually looking at how the Felicity Condition in (4) covers these cases, I think we can conclude that the foci here are being used pragmatically. They are governed by prior discourse. Nevertheless, these foci are in the scope of *only* and hence are also being used semantically. For example, it is the focus on *Andre* in D1 that makes it semantically equivalent to:

10.   No, he invited only Andre for dinner.

In seems then that one and the same focus can be used pragmatically and semantically. The analogy with pronouns is misleading, if not just wrong.

Before turning to a more detailed explanation of (9) in terms of the Felicity Condition, let me raise a possible objection to the conclusions just drawn. One might suggest that D2 is infelicitous because it doesn't entail that the target is false, whereas D1 does. A minimal requirement for the denials in (9) is that they entail that the target is false. This observation allows us to

maintain the view that the foci in (9) are really all semantic and something other than the Felicity Condition accounts for the intuitions here. The problem with this story is that it leaves D3 unexplained. D3 excludes John's having invited anybody for anything, if such an invitation is not entailed by his having invited Andre for dinner. Among other things, this entails that (9T) is false, hence D3 should be a possible denial of (9T), if all that mattered was whether it contradicted (9T). In fact, D3 is not felicitous, and that is explained by taking the foci in D3 to be pragmatic.

Our interim conclusion now is that some foci are used semantically, some pragmatically, and some both semantically and pragmatically, as in (9). The semantic effect of focus in (9) follows from the recipe for *only* sentences given above. The pragmatics of these foci should fall out of the Felicity Condition stated above, but here there appears to be a problem. Recall, according to that condition, if D1 is intended as a denial of T, then D1 must be minimally focussed so that:

$\|T\|$ is a member of ALT(D1).

However, a partial listing of ALT(D1) suggests that we aren't going to find the meaning of T in there:

11.   ALT(D1) includes the propositions named below:
   a. John only invited ANDRE for dinner.
   b. John only invited LYN for dinner.
   c. John only invited ANDRE AND LYN for dinner.

I would like to argue that the source of this problem is our definition for alternative sets, for as I will show in a moment, the problem is resolved if we modify our definition so that:

12.   alternative sets are closed under disjunction.

Consideration of a wider range target/denial pairs, in particular those in which quantifier scope relations differ between target and denial, should lead to a definition for alternative sets which is more general than (1) and from which (12) would follow. Since this would take us too far afield, it is best to leave (12) as an amendment to the definition in (1).

Given (12), in addition to what is listed in (11), ALT(D1) will include:
(b. or c.) =   [John only invited LYN for dinner] or [John only invited
               LYN AND ANDRE for dinner.]

Assuming for the moment that Lyn and Andre are the only individuals there are, (b. or c.) is in fact equivalent to the proposition expressed by *John invited Lyn for dinner*, the target of D1. To see this, note first that both b. and c. entail that John invited Lyn for dinner, so the disjunction also has this entailment. Going the other way, if John invited Lyn for dinner, then either he invited just Lyn or he invited Lyn and Andre. Hence, (b. or c.) is equivalent to the target of D1, assuming Lyn and Andre are the only individuals there are. But what if there are other individuals, say Albert? In such a case, ALT(D1) would include the following:
   b. John only invited LYN for dinner.
   c. John only invited LYN AND ANDRE for dinner.
   d. John only invited LYN AND ALBERT for dinner.

e. John only invited LYN AND ANDRE AND ALBERT for dinner.

f. (b. or c. or d. or e.)

in this case, f. is equivalent to *John invited Lyn for dinner*. Again, all the disjuncts of f. entail his inviting her and if he invited Lyn then either he invited her alone or he invited her with one or both of the men.

With our revised definition of alternative sets, the Felicity Condition on Denials correctly predicts that in (9), D1 is a felicitous denial of T. It is important to note that even with the revision in (12), the Felicity Condition continues to predict that D2 (= *he only invited Andre for DINNER*) and D3 (=*he only invited ANDRE for DINNER*) are infelicitous. All of the elements of ALT(D2) entail John's having invited Andre, hence all disjunctions of elements in ALT(D2) share this entailment. Since T doesn't carry this entailment, it is not in ALT(D2). D3 is out on the grounds of minimality, as in (2c) above.

Association with Focus: Semantics or Pragmatics?

We've now analyzed three types of examples, one type in which a focus is used just pragmatically (2), one in which the focus is just semantic (5) and a mixed case (9). In an effort to simplify matters, we return for a moment to the pure semantic case:

5.   (a) John only invited Andre for DINNER.

      (b) John only invited ANDRE for dinner.

It is my intuition that the contrastive stress on *dinner* in (a) and on *Andre* in (b) make these potential utterances inappropriate in some contexts. In particular, as with all contrastively stressed utterances, they require some explicit or implicit target of contrast. In this respect, these examples do not differ from their counterparts with *only* removed:

13.   (a) John invited Andre for DINNER.

      (b) John invited ANDRE for dinner.

But if that is indeed the case, then even those foci that we think of as purely semantic are really discourse-sensitive as well, hence we seem to have only two types of foci: purely pragmatic and mixed. If in fact every semantic focus is also pragmatic but not vice-versa, perhaps we should be deriving the semantic effects of focus from the pragmatics. In other words, association with focus should be derived from other parts of the grammar and not treated as an independent phenomenon.

In order to do that we will need to make some assumptions about how domains of quantification are selected. To see what is needed, we should first check how much can be gained just from the pragmatics of focus. The subject of our investigation will be (9):

9.   T. John invited Lyn for dinner.   (target)

      D1. No, he only invited ANDRE for dinner. (denial)

     #D2. No, he only invited Andre for DINNER. (denial)

     #D3. No, he only invited ANDRE for DINNER. (denial)

Recall, we have identified the focus in D1 as pragmatic, since its presence is governed by the Felicity Condition on Denial. At the same time, it is semantic for it associates with *only*. Until now, the semantics of this focus was

captured with reference to alternative sets in the rule in (6) which determines the truth conditions for D1:

6.   "John only VP" is true in world w, if and only if:
        "John VP" is true in world w and
        For every property P, in ALT(VP),
            John has P in w just in case "John VP" entails that John has P.

If we remove mention of alternative sets we have:

14.   "John only VP" is true in world w, if and only if:
        "John VP" is true in world w and
        For every property P,
            John has P in w just in case "John VP" entails that John has P.

Focus, or its interpretive counterpart, alternative sets, does not feature in this rule. If association with focus is really just a by-product of the pragmatics of focus, then this type of rule should be sufficient for capturing the truth conditions for D1. So our task now is to see how far we can go with this rule.

First, we make one more change to the rule. Quantifiers in natural language rarely quantify over the whole universe, but rather over some domain of discourse. We will make this explicit with a domain of quantification variable, DomQ:

15.   "John only VP" is true in world w, if and only if:
        "John VP" is true in world w and
        For every property P in DomQ,
            John has P in w just in case "John VP" entails that John has P.

To begin with, the rule in (15) says that D1=*John only invited ANDRE for dinner* entails that John invited Andre for dinner. In fact, without knowing what is in DomQ, we can't deduce much else from that rule. Turning our attention to the composition of DomQ then, I would argue that at the very least the property of *inviting Lyn for dinner* must be in DomQ. Notice, that if it or some subproperty isn't in DomQ, then D1 will not contradict T=*John invited Lyn for dinner* and hence will not be a denial at all. Compare, the following case:

16.   a.   The car and the bike were in the garage when it collapsed.
        b.   That can't be, NOTHING was in the garage when it collapsed.

It is likely that the domain of quantification for *NOTHING* does not include the garbage pails, for example. But, in order for b. to be a denial of a. it must include the car and the bike or at least one of them. My intuition is that it includes both.

Returning to D1, with our assumption about DomQ in place, we now have that D1 (=*John only invited ANDRE for dinner*) is true according to rule (15), if:

17.   John invited Andre for dinner and the following are false:
        John invited Lyn for dinner.
        [and other things of the form P(j) where P ∈ DomQ and P(j) is
        not entailed by *John invited Andre for dinner*.]

This means that D1 entails that John invited Andre for dinner and that he didn't invite Lyn for dinner. The latter entailment has simply to do with the

meaning of *only* and the fact that D1 is a denial of T, it doesn't follow from any account of focus. We have yet to consider the consequences of our removing mention of the interpretive counterpart of focus in our semantics. The intuition behind the original semantics for *only* was that while D1 rules out John's inviting Lyn for dinner, it should not rule out John's having properties that are not alternatives to inviting ANDRE for dinner. For example, it should not rule out John's having vacuumed or his having invited Andre for lunch (compare (13a)). However, since vacuuming may very well be relevant in a conversation about dinner invitations, it is plausible that the property of vacuuming, which we will call VAC, would be in DomQ. But if VAC is in DomQ, then according to (17), D1 entails that John didn't vacuum. Since D1 does not in fact seem like it could be used to say, among other things, that John didn't vacuum, rule (15) appears to make false predictions.

   This is exactly the point at which standard accounts of association with focus take what I believe to be a wrong turn. A connection is noticed between the placement of focus and the content expressed and so this connection is stipulated in the semantics while ignoring the pragmatics of the focus. Instead of taking that path, we will turn at this point to consider the pragmatics of the focus in question, after which we return to the problem posed in the previous paragraph.

   Above, we said the Felicity Condition requires T to be a member of ALT(D1):

18. T. John invited Lyn for dinner. (target)
   D1. no, John only invited ANDRE for dinner.

next we considered the contents of ALT(D1) (closed under disjunction):

19. ALT(D1) contains:
   a. John only invited Lyn for dinner.
   b. John only invited Andre and Lyn for dinner.
   c. (b. v a.)

Then it was shown that the proposition denoted by *John invited Lyn for dinner* is equivalent to c. (or to some larger disjunction, depending on the number of individuals in the universe) and hence the Felicity Condition was satisfied.

   All of that calculation was made under the assumption that the semantics for D1 makes reference to the alternatives to the VP attached to *only* in D1. But what happens when the rule in (15), which makes no reference to focus, is adopted? In such a case, as we have recently seen, unwanted properties such as VAC, may enter in to DomQ. Let's assume for the moment that VAC is indeed in DomQ. In that case, since *John invited Lyn for dinner* doesn't entail *John vacuumed*, it follows from a. in (19) that John didn't vacuum. By similar reasoning, it follows from b. in (19) that John didn't vacuum. If a. and b. entail that John didn't vacuum, so does c., and since *John invited Lyn for dinner* doesn't have this entailment, we may conclude:

    c. $\nvDash$ John invited Lyn for dinner.

This type of reasoning will apply for any other combinations of elements in ALT(D1). If that is the case, then the proposition expressed by *John invited Lyn for dinner* will **not** in the end be a member of ALT(D1). So if the Felicity

Condition is to be satisfied, VAC must be excluded from DomQ.

To summarize so far, we start again with the pair below:

20.   T. John invited Lyn for dinner.   target
        D1. no, John only invited ANDRE for dinner. denial

D1 is meant as a denial of T. The intuition is that while D1 would exclude John's having invited Lyn to dinner, it does not exclude John's having vacuumed. This fact is intuitively associated with the placement of focus in D1. And it is here explained in terms of a Felicity Condition governing the placement of focus in any denial, whether or not it contains *only*. The explanation presupposes a semantics which makes no reference to focus and it goes as follows: The only way D1 could exclude John's vacuuming would be if DomQ, the domain of quantification for *only*, contained VAC. However, if it contained that property, the Felicity Condition could not be met, hence that property is not in DomQ and the unwanted entailment doesn't arise.

Association with Focus as a Pragmatic Phenomenon

The reasoning used here to connect the Felicity Condition with the question of whether DomQ contained VAC relied on two facts: (a) The target of the denial didn't entail that John didn't vacuum and (b) for any NP_e (an NP of type e), a sentence of the form "John **only** invited NP_e for dinner" would entail that John didn't vacuum, if VAC was in DomQ. (b) follows from the fact that there is no NP_e, such that a sentence of the form: "John invited NP_e for dinner" entails that VAC is true of John. It seems then, that in order for the Felicity Condition on Denials to be met for D1, any property P in DomQ must be such that either:

21.   a)   the target entails that John doesn't have P

                        or:

        b)   for some NP_e, a sentence of the form, "John invited NP_e for dinner" entails John has property P.

In (21b) one can discern a crude statement of the association with focus effect. Since (21) is derived from the Felicity Condition on Denials, we have come some way towards explaining rather than stipulating this effect in D1. What I would like to do now is to introduce some general assumptions about quantificational domains, and then use them to fine tune (21).

It has been observed that a domain of quantification whether it consists of kinds, events, propositions or other entities, will not contain two entities that bear a part-whole relation to one another (see for example Carlson 1977:346ff, Kratzer 1989:608ff). Similarly here, let's assume that DomQ will not contain a property P1 as well as one of its subproperties, where P2 is a subproperty of P1, if every individual who has P1 necessarily has P2. The property of inviting Lyn for a meal is a subproperty of the property of inviting Lyn for dinner hence it will not be in DomQ. The second assumption we will make is that DomQ is consistent, in the following sense. For any two properties in DomQ, it is possible that an individual could have both of them. Since the property of inviting Lyn for dinner is in DomQ, the consistency assumption tells us that DomQ doesn't contain the property of never having invited Lyn for

dinner. This assumption might be explained in terms of how *only* functions in discourse. *only* statements are ways of 'naming' propositions that should be eliminated from the common ground of information mutually agreed upon by participants in the conversation. In this case, DomQ is a subset of the set of P, such that P(j) is a proposition in the common ground. Since the common ground must be consistent, DomQ will be as well. On this view, it also follows that the target property is a member of DomQ in the denial, since the target has just been mentioned.

Returning to (21), our assumptions now guarantee that (a) is never met. Above we argued that the target itself would have to be in DomQ in order for D1 to be a denial. If DomQ also contained P such that the target entails that John doesn't have P, then DomQ would be inconsistent. Given the consistency assumption we can simplify the observation in (21). We now have that if a property P is in the domain of quantification for *only* in D1, the Felicity Condition will not be met unless:

22. for some NP_e, a sentence of the form, "John invited NP_e for dinner" entails John has property P.

We can see right away then, that DomQ will not contain properties of the form: "invited Andre for X", where X$\neq$*dinner*, thereby distinguishing D1 from what was observed about the meaning of *John only invited Andre for DINNER*.

Summing so far, by simply paying attention to the pragmatics of focus in denials and by making a few assumptions about domain selection, we have arrived at a result that looks very much like what is usually assumed to be a part of the semantics of *only*. To see this more clearly, we first describe the association effect <u>observed</u> for D1.

23. If D1 excludes John's having property P then:
    for some NP_e, a sentence of the form, "John invited NP_e for dinner" is equivalent to P(j).

rephrasing this will help us detect a problem in our own (22):

24. If D1 excludes John's having property P then:
    for some NP_e, a sentence of the form, "John invited NP_e for dinner" :
     i. entails P(j).
     ii. is entailed by P(j).

So far, we have seen that (i) follows from the pragmatics. What of (ii)? First, let us convince ourselves that (ii) is really part of the association effect. Consider the property ISI that John has if and only if he invited Isi for some meal. Such a property meets the requirement in (i), since *John invited Isi for dinner* entails that he has ISI. It does not meet the requirement in (ii). Should it in fact be excluded from DomQ? The answer is yes, for if ISI were in DomQ, then D1, *John only invited ANDRE for dinner*, would entail that John didn't invite Isi for any meal. This follows from rule (15): since *John invited Andre for dinner* doesn't entail that John has ISI, D1 says he doesn't, provided ISI is in DomQ. Intuitively, D1 could not be used to say among other things, that Isi was never invited for any meal. So, something must be preventing ISI from appearing in DomQ.

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The Felicity Condition is at work here, as well. To see how this follows, consider first the following elements of ALT(D1):

25.   a. John only invited Isi and Albert for dinner
       b. John only invited Lyn for dinner.
       c. (a. v b.)

According to rule (15), a., b. and c. have the following entailments respectively, assuming ISI ∈ DomQ:

26.   a.   John invited Isi for dinner.
       b.   John didn't invite Isi for a meal.
       c.   either John invited Isi for dinner or he didn't invite him for a meal.

Any proposition in ALT(D1) has one of these entailments. Since the target, *John invited Lyn for dinner*, doesn't carry any of these entailments, it couldn't be in ALT(D1). In this case, the Felicity Condition on Denials is not met. To meet this condition, ISI must be excluded from DomQ. It seems that for the Felicity Condition on Denials to be met for D1, any property P in DomQ must be such that:

27.   for some NP$_e$, a sentence of the form, "John invited NP$_e$ for dinner"
       entails and is entailed by John having property P.

We have almost shown this. The only kind of property left out is one that is entailed by the target itself, such as the property of having invited Lyn for a meal. The argument we just gave about ISI doesn't apply here. The Felicity Condition does not rule this property out of DomQ, however, the requirement that DomQ not contain subproperties does. Since the property of inviting Lyn for dinner must be in DomQ, in order for it to be a denial, subproperties thereof couldn't be in there.

With this our task is now complete. We have shown that, at least for the case studied here, the association with focus effect can be derived from general assumptions about domain selection along with the Felicity Condition on Denials.

Effability

Above we argued that if the domain of *only* included VAC, the property a vacuumer has, then *John only invited ANDRE for dinner*(D1)cannot serve as a denial of *John invited Lyn for dinner* (T). The argument depended on the fact that D1 entails that John didn't vacuum and all alternatives to D1 share this entailment. Since T doesn't have this entailment, it won't be among the alternatives. The alternatives were gotten by replacing Andre with other meanings **of type e** and by taking disjunctions of these. If replacements of type <<e,t>,t> are allowed, the argument doesn't go through. Taking the domain of *only* to include the properties denoted by the following three verb phrases: *invited Andre for dinner, invited Lyn for dinner* and *vacuumed,* T is truth-conditionally equivalent to the disjunction of the four propositions gotten by replacing the meaning of *Andre* in D1 with the meanings of:

$$\lambda P[P(Lyn')],$$
$$\lambda P[P(Lyn') \& P(Andre')],$$

$$\lambda P[P(\text{Lyn}') \ \& \ \text{John-vacuumed}'],$$
$$\lambda P[P(\text{Lyn}') \ \& \ P(\text{Andre}') \ \& \ \text{John-vacuumed}'].$$

There is of course something funny about the last two meanings. They do not appear to be the meanings of any English noun phrase. One would like to find a way to characterize such meanings and exclude them. This is an important question for semantic theory; it crops ups elsewhere in accounts of question meanings, for instance and in discussion of VP ellipsis. Nevertheless, it is orthogonal to the issues addressed here, since it does not divide the semantic and pragmatic approaches. If the meaning of $\lambda P[P(\text{Lyn}') \ v \ \text{John-vacuumed}']$, is an alternative to the meaning of *Andre*, then ALT(*saw ANDRE*) will contain the property that holds of X just in case X saw Lyn or John vacuumed. This means, by the rule in (6) above, that *John only saw ANDRE* entails that John didn't vacuum and didn't see Lyn. This is a false prediction of the semantic account. Note that this problem will not be solved by an appeal to relevance in the construction of alternative sets.

Association without Focus?

In the discussion so far, I argued for a new 'pragmatic' approach to association with focus which accounted for the same facts as the semantic approach but less stipulatively. In this section, I would like to consider a case in which the two approaches diverge on the facts as well.

The kind of example I have in mind is one in which there appears to be no focus in the scope of *only*. Such examples have been discussed in various places beginning perhaps with Taglicht(1984:§4.2). The semantic account given above and repeated here, makes a clear prediction in this case:

6.   "NP_e only VP" is true in world w, if and only if:
        "NP_e VP" is true in world w and
        For every property P, in ALT(VP),
                NP_e has P in w just in case "NP_e VP" entails that NP_e has P.

If the VP to which *only* is attached does not contain any focus, then ALT(VP) will be a set containing just the property expressed by the VP itself. In this case, *only* will be superfluous. According to the pragmatic account I have given, *only* could very well be significant in such a case, and the specific contribution it makes would depend on the pragmatics of the utterance in which it occurs.

The following example is taken from Partee(1991:179) (the names have been changed to protect the innocent):

28.   A: Eve only gave xerox copies to the GRADUATE STUDENTS.
       B: No, PETER only gave xerox copies to the graduate students.

B's utterance is interpreted as if there was a focus on *graduate students* and *only* associated with that focus. Yet, the phrase *graduate students* is not pronounced with the kind of accent characteristic of foci associated with *only*. In fact, pronouncing it with such an accent renders B's utterance anomalous in this context.

Before considering responses to this problem on the part of advocates

of the semantic accounts, let us consider what the pragmatic account has to say. Assume for the moment that the domain for *only* in B's utterance is identical to that of *only* in A's utterance. In this case, the alternative set for B would contain the meaning of A's utterance, as is required by the Felicity Condition on Denials. This requirement is met regardless of whether or not there is a focus in the scope of *only*. Since focus is not required, the Felicity Condition precludes it, thus explaining why focussing *graduate students* leads to anomaly. Also note, that if the domain for *only* was not the same in the two examples, the Felicity Condition would be violated, so this too follows on the pragmatic account.

Viewing the focus in the scope of *only* as basically pragmatic, we are able to explain why there cannot be focus in this case. Accounts that view focus in the scope of *only* as basically semantic, predict the wrong meaning for B's utterance. There are a number of responses to this type of example on the part of advocates of the semantic account. According to some, the mechanism behind association with focus allows a certain amount of flexibility whereby the rule in (6) captures what happens on the 'association reading' but there are non-association readings as well. In that case, one could argue that there is no association in (28B) and the meaning is arrived through a different method. This view of association leads directly to the question of why association usually seems to be obligatory, as in the cases discussed earlier. One might explain the seeming obligatory character of association by appeal to discourse or other non-semantic factors that favor the association reading. This move appears to me to be especially difficult in the following twist on (28). Imagine that instead of correcting A on who gave the copies, B wanted to correct A on what was given just to the graduate students. In this case, you might expect the following exchange:

29.   A: Eve only gave xerox copies to the GRADUATE STUDENTS.
       B: No, she only gave ORIGINALS to the graduate students.
        (#..she gave xerox copies to everyone).

What is striking about B's response is that it must be interpreted with *only* associating with *originals* even though that is not what B intends and that is somehow less relevant or cohesive with what A just said, to the point of anomaly. An optionality account would now have to explain why association must happen in (29B) but not in (28B).

Instead of optionality, one might argue that there must be association though not necessarily locally, between *only* and the foci in its scope. The idea would be that in the case of (28B), *only* somehow associates with the foci in the previous utterance. This is close to what Partee says about (28). This suggestion appears to correctly distinguish (28) and (29). For in (29), using the alternative set for the VP (sister to *only*) in A to calculate the meaning of *only*+VP in B would lead to the wrong meaning. It would entail that Eve gave xerox copies to nobody. But this story is undermined by the fact that B could arrive at the intended meaning, by slightly modifying his reply:

30.   A: Eve only gave xerox copies to the GRADUATE STUDENTS.
          B1:   No, ORIGINALS she only gave to the graduate students. (..she gave xerox copies to everyone).
          B2:   No, it was ORIGINALS that she only gave to the graduate students.

Here, obligatory association is avoided by moving the focus outside the scope of *only* (cf. Jackendoff 1972:251,258), but now how does the meaning for the *only*-VP in B1/B2 get set? It can't be from association locally, if there is no focus in the scope of *only*, nor can it be from A's utterance, since in this respect, B1/B2 are no different from the original choice for B given in (29).

      Up to this point, I have been assuming that there is no focus in the scope of *only* in (28B). Responding to similar examples adduced by Vallduví(1990), Hoeksema and Zwarts(1991:fn3) claim that the phrase in question (corresponding to *graduate students* in our case) is in fact focussed. They claim moreover that it is stressed, just not as prominently as in other cases. As evidence for their position, they note that in comparable Dutch examples where the putative focussed phrase is a pronoun, a strong or stressable pronoun is required (*mij*), whereas its weak variant (*me*) leads to ungrammaticality.[5] The idea then is that *graduate students* is deaccented, but it is not defocussed and so the problem raised above goes away. On this view, accent is not a necessary indicator of the locus of association. There are very interesting and open phonological issues lurking here among them the connection between stress and accent (see Ladd 1996:§6.2), the semantics-pragmatics of reduction (of pronouns and non-pronouns) as well as the distinction between accents that indicate focus and those that do not (cf. Vallduví and Zacharski1993, Tancredi 1997). Although we cannot do justice to these isses here, the following dialogues do raise serious questions for the suggestion to divorce accent from focus:

31.   A: John invited Lyn for lunch.
          B: no, he only invited ANDRE for DINNER. (# ... he invited ALBERT for lunch)
32.   A: John invited Lyn for lunch.
          B: no, he invited Lyn for DINNER.
          C: impossible, he only invited ANDRE for dinner.

In (31), *only* associates both with *Andre* and with *dinner*, all other invitee-meal pairs are eliminated. In (32C), *only* associates just with *Andre*, here other dinner invitees are eliminated. However, in this case, *dinner* is deaccented since it appears in B, the target of C's denial. If association depended on focussing independently of accenting, then the denials in (31B) and (32C) should potentially be synonymous. And by similar reasoning, B's reply in (29) above, should not be anomalous. Rather, with focus on *originals* and on *graduate students*, it should mean that Eve gave originals to the graduate students and she did no other giving.

      We have already seen what the pragmatic approach has to say about (28B), we should briefly see what it has to say about the variants in (29-30) repeated below:

29.   A: Eve only gave xerox copies to the GRADUATE STUDENTS.
        B: No, she only gave ORIGINALS to the graduate students.
30.   A: Eve only gave xerox copies to the GRADUATE STUDENTS.
        B1:   No, ORIGINALS she only gave to the graduate students.
        B2:   No, it was ORIGINALS that she only gave to the graduate
                students.

Why can't (29B) mean what (30B) means? Imagine that it did. In that case, the domain of quantification for *only* would have to include properties of the form: "give originals to X", including, for example, the property of giving originals to the professors. The elements of ALT(29B) would all entail that Eve doesn't have this property, whereas A's utterance has no such entailment, so its meaning will not be in ALT(B) and the Felicity Condition is violated. In order to show what happens in (30) one needs to decide on a syntax for B's utterances. Let's assume the following:

33.   [ORIGINALS] λx_i[she only gave x_i to the graduate students]

We take meanings to be functions whose domain are points of references, that is, pairs consisting of an assignment function and a world as in Montague's "Universal Grammar" (Montague 1974). Properties are then functions from points of reference to functions characterizing sets of individuals. The phrase *give x_i to the graduate students* would denote the property which when applied to <g,w> yields the function characterizing the set of individuals who gave $g(x_i)$ to the graduate students in w. The meaning for (33) intended by B is arrived at by taking the domain of *only* to be properties denoted by expressions of the form: "give x_i to X" for some X. So, the lambda expression in (33) denotes a property true of an object just in case Eve gave that object to the graduate students and to noone else. ALT(33) contains the meaning of:

34.   [xerox copies] λx_i[she only gave x_i to the graduate students]

(34) expresses the meaning of A's utterance, so the Felicity Condition on Denials is met.[6]

Let me end by addressing a potential misinterpretation of examples like (28B). This example does not show that focus is irrelevant to the setting of the domain of quantification for *only*. It only shows that focus is not necessary for the setting of the domain. However, as (29B) shows, when focus is present, it must associate[7] and this is what "a pragmatic theory of the meaning of focus and of domain selection" have been enlisted to explain. And as we have seen, a theory in which association with focus is derived rather than stipulated can provide us with a means to decide when and where focus will be necessary.

Prospects

In deriving associations with focus, we drew on the pragmatics of focus as it applies to denials and on a few principles governing domain selection, namely that domains are consistent and that they do not contain an element and its subpart. There is no doubt wide room for improvement here in detail and in scope.   By limiting our discussion to denials, we get a very narrow

picture of the pragmatics of focus (for other types of cases see discussion of association with focus in Roberts1995:§2.2.1, Schwarzschild1996:§5 and Tancredi1997). And there is more to be learned about domain selection (probably much of it outside "core grammar") and other factors relevant to association with focus.

All this should not detract from the main point which lies in the deductive structure of the account. Further speculation about example (28) will help to draw out the ramifications of this approach. Recall, in (28B) we had a reading without focus that was achieved through association with focus in (28A). Focus brings out one of many possible readings of a sentence; readings that are available even without focus. The possibility of having these readings, as opposed to the choice of one of them, has nothing to do with focus. Let's assume that this is true in all or many cases of association with focus. This leads to a particular view of questions about the nature of operators that associate and the kinds of things that focus can contribute to content. These issues boil down to questions about the kinds of parameters that can be filled in by discourse, the roles these parameters play in particular lexical items and the subset of these parameters that function in the pragmatics of focus. In effect, there is no interesting, substantial, characterization of 'focussing operator'. There are only particular points at which lexical semantics and discourse grammar converge to yield the association phenomenon. Detailed analysis of these points of convergence afford us the opportunity to learn more about the independent principles of grammar that lie behind them.

1.These were recently surveyed in **Notes** Rooth(1995) and von Stechow (1991).

2.For simplicity I am assuming a one to one correspondence between focus and prominence. This assumption is reasonable for the examples considered here. Consideration of a wider range of cases would require a prior theory of the focus-prominence relation (cf. Selkirk 1996 and references therein, Schwarzschild 1996).

3.Perhaps, one might say that *himself* is not a referring expression and is in fact new here. Consider then the following case:

    A: John thought that Selma should be appointed.
    B1: no, SELMA thought that Selma should be appointed.
   #B2: no, Selma thought that SELMA should be appointed.

Assuming that the immediate constituents of B1 and B2 are the subject NP and the following predicate, then all the proper subparts of B1 and of B2 are construable (Rochemont 1986:65's term) from prior discourse, while neither B1 nor B2 itself is. An approach in which contrastive focussing depends directly on what is new/old or inferable from prior discourse couldn't distinguish B1 and B2.

4.In (6), the notion of entailment is to be understood relative to certain background information. The discussion of *Mary only kissed* [*the boy scouts*] in Bonomi and Casalegno (1993:12) illustrates the need for this. Imagine that Mary kissed David, the other two boy scouts and noone else. The sentence is then true, however conditions like those in (6) are not met, assuming logical entailment. Kissing David is in ALT(VP) but Mary's kissing the boy scouts doesn't logically entail that she kissed David. The <u>fact</u> that David is a boy scout must be in the background set of assumptions. See also Bonomi and Casalegno (1993:fn16).

5.Von Fintel(1994:45) shows that stressed and unstressed pronouns in English behave similarly.

6.I do not know why in (29B) the phrase *originals* cannot move at LF to produce the felicitous meaning of (30B). Is LF movement in general blocked if it means passing an occurrence of *only*? Can *John only gave a (certain) book to GLORIA* mean that there is a certain book that John gave only to Gloria? I'm not sure. If not, what is the source of this restriction on LF movement?

7.Note, this claim is not identical to the claim that *only* will associate with whatever in its scope is intonationally prominent. Aside from the phonological issues mentioned earlier (in the vicinity of example (31)), it is also important to remember the focus-prominence relation mentioned in footnote 2. Assuming a theory of projection such as the one in Selkirk(1996), an accent on a transitive verb, for example, could potentially be marking focus on just the verb or focus on the whole VP, depending on the discourse. This means that if an operator is present and it doesn't associate with the verb but with the whole VP, we have no proof against the claim that operators always associate with a focus in their scope.

References

Bolinger, D. 1972 "Accent is Predictable (If You're a Mind-Reader)," *Language* 48.3:633-644

Carlson, G. 1977 *Reference to Kinds in English,* Doctoral dissertation, University of Massachusetts, Amherst.

Carlson, Lauri: 1984 "Focus and Dialogue Games: A Game Theoretical Approach to the Interpretation of Intonational Focusing," in L. Vaina and J. Hintikka (eds.) *Cognitive Constraints on Communication*, Reidel, Dordrecht, p295-333.

Dretske, Fred: 1972 "Contrastive Statements," *Philosophical Review* 81:411-437

Dryer, Matthew S.: 1994 "The Pragmatics of Association with *only*" Paper delivered at the 1994 Winter Meeting of the L.S.A., Boston, Massachusetts.

von Fintel, Kai: 1994, "Restrictions on Quantifier Domains," Ph.D Dissertation, University of Massachusetts, Amherst.

Hoeksema J. and F. Zwarts: 1991 "Some Remarks on Focus Adverbs," *Journal of Semantics*, 18.1-2:51-70.

Jackendoff, R.: 1972, <u>Semantic Interpretation in Generative Grammar</u>, M.I.T. Press, Cambridge.

Jacobs, J. 1991: "Focus Ambiguities," *Journal of Semantics* 8:1-36.

Kratzer, A. 1989: "An Investigation of the Lumps of Thought," *Linguistics and Philosophy* 12.5, 607-653.

Kratzer, A.: 1991 "The Representation of Focus," in Arnim von Stechow and Dieter Wunderlich, (eds.) *Semantik/Semantics: An International Handbook of Comtemporary Research*, 825-834, de Gruyter, Berlin.

Krifka, Manfred: 1992 "A Framework for Focus-Sensitive Quantification," <u>Proceedings of the Second Conference on Semantics and Linguistics Theory,</u> (Ohio State Working Papers in Linguistics No. 40) David Dowty and Chris Barker (eds.), pages 215-236, Columbus, Ohio.

Ladd, D. Robert: 1996: *Intonational Phonology*, Cambridge Studies in Linguistics, 79, Cambridge University Press, Cambridge.

Montague, Richard: 1974, *Formal Philosophy*, Richmond Thomason (ed.), Yale University Press, New Haven.

Partee, B: 1991 "Topic, Focus and Quantification," <u>Proceedings of the First Conference on Semantics and Linguistics Theory,</u> (Cornell Working Papers in Linguistics No. 10) Steven Moore and Adam Zachary Wyner (eds.), pages 159-187, Cornell University.

Roberts, Craige: 1995 "Information Structure in Discourse: Towards an Integrated Formal Theory of Pragmatics," ms. The Ohio State University.

Rochemont, M.: 1986 *Focus in Generative Grammar*, Benjamins, Amsterdam.

Rooth, Mats: 1984 "How to Get Even with Domain Selection," in   Proceedings of NELS 14, Charles Jones and Peter Sells (eds.), Distributed by GLSA, Amherst, p377-401.

Rooth, Mats: 1985 Association with Focus, Ph.D. dissertation, University of
        Massachusetts, Amherst, Distributed by GLSA, Amherst.
Rooth, Mats: 1992 "A Theory of Focus Interpretation," *Natural Language*
        Semantics 1:75-116
Rooth, Mats: 1995 "Indefinites, Adverbs of Quantification and Focus
        Semantics," The Generic Book, G.N. Carlson and F.J. Pelletier (eds.),
        University of Chicago Press.
Rooth, Mats: 1995 "Focus," in Lappin, S. (ed.), *The Handbook of*
        Contemporary Semantic Theory, Blackwell Publishers, London.
Selkirk, E. O.: 1996 "Sentence Prosody: Intonation, Stress and Phrasing," in
        The Handbook of Phonological Theory, John A. Goldsmith (ed.) Basil
        Blackwell: London.
Schwarzschild, Roger: 1996 "Givenness and Optimal Focus," ms. Rutgers
        University.
Taglicht, J.: 1984 Message and Emphasis, Longman, London and New York.
Tancredi, Chris: 1997 "Focus and Associative Operators, " ms. Yokohama
        National University.
von Stechow, Arnim: 1989 "Focusing and Background Operators," Techincal
        Report 6, Fachgruppe Sprachwissenschaft, Universität Konstanz. [in
        Discourse Particles. Werner Abraham (ed.), John Benjamins]
von Stechow, Arnim: 1991 "Current Issues in the Theory of Focus," in Arnim
        von Stechow and Dieter Wunderlich, (eds.) *Semantik/Semantics: An*
        International Handbook of Contemporary Research, 804-825, de
        Gruyter, Berlin.
Vallduví, Enric: 1990 *The Informational Component*, Ph.D. dissertation,
        University of Pennsylvania. (Appeared as Vallduví, Enric 1992. The
        Informational Component, Garland, New York.)
Vallduví, Enric and Richard Zacharski: 1993, "Accenting Phenomena,
        Association with Focus and the Recursiveness of Focus-ground," in
        Proceedings of the Ninth Amsterdam Colloquium.