

Been There, Marked That — A Theory of Second Occurrence Focus

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1 Introduction

The phenomenon of SECOND OCCURRENCE FOCUS (henceforth 2OF), illustrated in (1) (from Hajičová et al. (1998)) has received considerable attention in the literature (e.g. Gussenhoven, 1984; Hajičová, 1973, 1984; Partee, 1991, 1999):¹

- (1) (Everyone already knew that Mary only eats vegetables.)
If even PAUL_F knew that Mary only eats vegetables_F, then he should have suggested a different restaurant.

The second sentence in (1) has two foci, *Paul* and *vegetables*, marked by subscripted F. We know they are foci because the particles *even* and *only* are FOCUS SENSITIVE, which is to say that their meaning changes depending what in the sentence is focussed. Here the resulting interpretation is that Paul is the least likely person to know what Mary ate (*even*), and that vegetables are the only thing Mary eats (*only*). We thus say that *Paul/vegetables* are

⁰This article was inspired by the talks I heard and discussion I had at the NII Workshop on Focus in Tokyo, November 2005. I'd like to thank all the participants and the organizers, Chris Tancredi and Makoto Kanazawa, for this opportunity. Caroline Féry, Shinichiro Ishihara and Roger Schwarzschild offered comments on an earlier draft of this paper, for which I am extremely grateful.

¹Here and henceforth, parts of the examples that serve as context, and are not annotated for focus or intonation, are set in parentheses.

BOUND or ASSOCIATED foci, associated with (or bound by) *even* and *only*, respectively.

What is surprising is that only the first of these foci is marked by a pitch accent (indicated by capitals); normally all foci in English are pitch accented. That is to say, in the overwhelming majority of cases involving *even*, *only* and their focus sensitive kin, diagnosing focus by the meaning of the sentence and diagnosing focus by locating major pitch accents in the sentence yield converging results. Examples like (1) are a notable exception to this.

What seems to be common among them is that the same focus, associated with the same particle, has occurred in the previous sentence (and been properly accented there). It is because of this property that *vegetables* in the second sentence of (1) is called a second occurrence focus (as opposed to, say, simply an ‘unaccented focus’; notably, it is not called 2OF because it is the second focus in its clause).

As perhaps pointed out most clearly in Partee (1999), 2OF examples seem to force us to question either the assumption that foci always receive a prosodic realization, or the assumption that particles like *only* really (directly) associate with focus. Partee perceived at least the former possibility as a serious threat to current theories of focus, and — perhaps for the same reason — many works on focus seem to implicitly or explicitly endorse the view that the fault lies with our theories of *only* and its ilk, letting the focus–accent relation off the hook.

Beaver and Clark (2003), however, makes a convincing argument that the associates of *only* and the likes *are* grammatical foci. At the same time, it has been reported that 2OFi *are* prosodically marked, albeit not (always) by pitch accent, as is the custom for well-behaved ‘normal’ foci (Bartels, 2004; Rooth, 1996, 2004, and, to an extent, Krifka 2004); their reports have been confirmed by recent, more systematic studies reported in Beaver et al. (2004), Féry and Ishihara (2005), and Jaeger (2004). It seems, then, that the fault lies with our ideas about focus after all, in particular the assumed correlation between focus and pitch accent.

In the light of these findings, it may now be time to re-assess the question Partee asked: To what degree does 2OF challenge existing theories of focus, and what, if any, changes does it require? This paper is an attempt to formulate a theory of focus that is capable of capturing 2OFi and ordinary foci alike. My relieving conclusion will be that the data can be captured without radically re-writing the theory of focus, but that they do favor a

specific set of assumptions about focus representation and realization.

2 Second Occurrence Focus in a Nutshell

2.1 The Facts

All the experimental studies on 2OF quoted above agree that 2OFi are marked at least by duration: items in 2OF are significantly longer than their unfocussed counterparts in comparable position. Ordinary foci (and I *will* be more specific about what that means in a moment) share this lengthening effect; in addition, however, ordinary foci are always pitch accented, whereas 2OF are not.² Although pitch accents are by far the most important ingredient of perceived prominence (which is why 2OFi were regularly described as ‘unmarked’ in older accounts), speakers are actually able to perceive prominence on 2OFi, even when presented with the pertinent sentences out of context.

There is one qualification to be made, though: If a 2OF precedes, rather than follows the ordinary focus, it will get a pitch accent, as suggested in Rooth (1996) (p.220; see also the discussion of examples due to Dryer 1994 in Beaver et al., 2004), and experimentally shown in Féry and Ishihara (2005); that pitch accent is of course followed by the final and most prominent pitch accent — the NUCLEAR PITCH ACCENT, NPA — on the ordinary focus.

I will henceforth assume that the lengthening of foci is the consequence of metrical STRESS, i.e. prominence in the metrical structure. So all foci, ordinary and 2O, are made prominent by stress. In a nutshell:

- Second occurrence foci are not marked by pitch accent when they occur in post-nuclear position.
- They are, however, marked by lengthening.
- 2OFi are marked by pitch accent when pre-nuclear.

Unfortunately, these generalizations, to a certain extent, beg the main question: How come the 2OF does not get the nuclear accent? What does the

²As discussed most explicitly in Jaeger (2004), 2OFi sometimes do get a pitch accent if they form a prosodic phrase of their own; I will leave discussion of these cases for a later occasion.

element with the nuclear accent — the ‘ordinary’ or ‘first occurrence focus’ (1OF), as it were — have, that the element in 2OF does not? Unless we answer that question, the first bullet point above simply restates the definition of nuclear accent. In short, we need a definition of 2OF *vis-a-vis* 1OF that does not itself make reference to their prosodic realization. Once we have that, and only then, can we try to work the above generalizations into a theoretical account.

2.2 The Intuition, the Challenge, and a Preview of the Proposal

There is a prevalent intuition which can in one form or another be found in virtually all of the papers on 2OF mentioned. Since I take the same intuition as the starting point of the story I am going to tell, let me try to pinpoint it in a non-theoretical way here.

Second occurrence foci are generally previously mentioned, or, as I will say adopting the terminology of, among others, Schwarzschild (1999), Given. Ostensibly that is why they don’t *need* to be accented. On the other hand, they *are* focussed (since they are associated with a focus sensitive particle), which requires some kind of prosodic prominence, here: stress, realized most significantly by lengthening. Thus the basic intuition.

The first and main challenge in formalizing this intuition is, as I will show in 3.1 below, that Givenness does not reliably tell 2OFi from ordinary foci. In particular, while all 2OFi are Given, not all Given foci are unaccented, or ‘2O’.

My suggestion will be that the crucial distinction is between foci whose DOMAIN is MAXIMAL, i.e. the entire sentence, and foci whose domain is smaller. A focus with a non-maximal domain will potentially be realized as a 2OF. What complicates matters a bit is that the distinction between foci with maximal v. non-maximal domains cuts across the Given/New distinction, and that some foci have more than one domain; so clarifying the proposal requires a close look at focus representation and interpretation.

The second challenge is to explicate why the 1/2OF (or maximal/non-maximal domain F) distinction yields the prosodic consequences it does: Stress for all foci, pitch accents for all 1OFi, but for 2OF only if they precede a 1OF. Here, the account I will offer involves two steps.

First, perhaps obviously, **stress, rather than accent, is the basic realization of focus**: the metrical structure of a sentence will be constructed in such a way that focussed elements are metrically strong, i.e. receive phrase level or sentence level stress (I will formalize this more below) — a position independently advocated in Truckenbrodt (1995, 1999) (and, following that work Büring and Gutiérrez-Bravo, 2001; Samek-Lodovici, 2002, among others). Pitch accent assignment then proceeds ‘mechanically’, as it were, given the prosodic structure; it does not ‘see’ features like F(ocus), or any aspect of syntactic structure for that matter.

The second step is that **foci with a non-maximal domain are banned from bearing sentence-level stress** (and thus indirectly from bearing the NPA). So if the last metrically strong element in a sentence is a 2OF, the NPA will ‘shift’ to the left, leaving the 2OF stressed (lengthened), but unaccented. If in pre-nuclear position, the 2OF will receive a (non-nuclear) pitch accent, just like any other metrically strong element.

Crucially, however, this effect will follow from my proposal without encoding the distinction between 1OFi and 2OFi in the representation at all, other than in their domains, which are given to us independently. There is, I claim, no theoretically significant distinction between 1OFi and 2OFi, or any other two types of foci such as Given and non-Given foci. Every focus comes with a domain, and that is all we need.

3 Predicting Second Occurrence Foci

3.1 Given–New Does Not Correlate With 2OF–1OF

The intuitive story told above suggested to reconstruct the notion of 2OF as ‘focussed and Given’, whereas ordinary or first occurrence foci (1OF) would be ‘focussed and new’. In this section I will show why this is not a tenable move.

It is well known that Given elements can be focussed in the classical sense, pitch accent and all:

- (2) Who showed up last at John’s party?
 - a. [Those German FRIENDS of John’s]_F (showed up last at his party).
 - b. JOHN_F (showed up last at his party).

Sentence (2a), read as an answer to (2), shows that (2) is in principle sufficient to license deaccenting (more accurately: non-accenting) of *John*; we interpret this to mean that *John* is Given after uttering (2). (2b) then shows that despite being Given, *John* can be, and in fact has to be, accented if it is focussed. The same effect can be seen in (3):

- (3) Bob was completely drunk at John's party. — No, JOHN_F was completely drunk at his party.

Note that *John* in (2b) and (3) is assumed to be focussed because it is the answer to the preceding *wh*-question, and the element that is corrected, respectively, not because it is associated with any focus sensitive particle. Such foci are usually referred to as FREE (as opposed to bound or associated) foci. But as (4) shows, associated foci can be Given, too:

- (4) John is having a party. But only JOHN_F knows when and where.

I will return to the rationale behind such 'Given foci' in subsection 3.2 below. For now simply note that they can bear the nuclear pitch accent in sentences with 2OF:

- (5) (Many people only drank juice at John's party.) Even JOHN only drank juice at his party.
(6) Our grad students only quote the faculty. — No, the FAculry only quote the faculty.
(7) Whose students don't even quote Smith? — SMITH's students don't even quote Smith.

So in, say, (5), *juice* is the 2OF as before, and *John* is the '1OF', except that it does not actually occur for the first time. Since 'first occurrence focus' thus seems an inapt name, even in scare quotes, I will henceforth descriptively use the term PRIMARY FOCUS for the focus that bears the NPA. So what this section has shown is that the difference between primary focus and 2OF can not generally be reduced to the latter being focussed and Given, while the former is focussed and non-Given. Likewise, while all 2OFi in our examples are bound, this doesn't set them apart from primary foci either, which can be bound as well.

3.2 The Domain Theory of Primacy

What does that leave us with? An interesting suggestion made in various places in the literature is that determining if a focus will be realized as a 2OF has to do with the DOMAIN (or SCOPE) of the focus.³ Intuitively, the focus whose domain or scope includes that of the other focus is the primary focus. I will henceforth use the term domain (of a focus), rather than scope, to avoid confusion. The main idea can then be stated as follows:

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Among two foci in a sentence, the primary focus is the focus whose domain contains the domain of the other.

But how do we diagnose the domain of a focus? It seems plausible for the case of Q/A-focus as well as correction and contrastive focus (i.e. all free foci) that their domain should be the entire sentence. I represent this as follows:

(8) [JOHN_{F₁} showed up last at his party] \sim_1 CC

The notation is inspired by Rooth (1992), with indices added to the focus (for reasons that will become clear immediately). In a nutshell, by the semantics of \sim , we get a set of propositions of the form ‘that x showed up last at John’s party’. CC stands for a constant I call CONTEXTCONNECT, which says that there must be a salient antecedent in the context whose meaning is an element of the set of propositions introduced by \sim .⁴ In plain words,

³This idea is most clearly articulated and even implemented in Jacobs (1991). In Jacobs’s system, if F_n ’s domain includes F_m ’s, n will be smaller than m , which in turn will force the constituent containing F_m to be prosodically subordinated to that containing F_n . Indeed, Jacobs’s system employs many of the same ingredients as the one I present here, including indexed foci and the idea that being a primary focus is, or at least can be, a function of being a free focus. Jacobs (1991) does not discuss 2OFi, and indeed does not at all discuss accenting, only metrical prominence. Yet, my proposal can be seen as a direct extension of Jacob’s.

Rooth (1996) seems to be the first to mention scope of the associating operator as a determinant of primary/2OF status, but does not offer a full account of the phenomenon: “[2]OF . . . is apparently licensed by a special . . . discourse and/or syntactic configuration. [. . .] [I]n all of the examples, there is another competing focus . . . with wider scope.” (p.214).

Scope, or more precisely: the question whether two foci belong to the same Chomskian *phase* is also mentioned as a factor determining prosodic subordination in Ishihara (2005).

⁴ \sim CC is thus a thinly disguised version of the Givenness condition in Schwarzschild (1999); my reasons for implementing it like this will become clear below.

$\sim_1 CC$ requires that there be an expression denoting a proposition entailing that x showed up last at John’s party in the context. This could be a sentence like *Frank showed up last at John’s party*, or, by assumption, the question *Who showed up last at John’s party*.⁵

The domain of a focus associated with a focus sensitive particle, on the other hand, will be smaller:⁶

(9) [the FACULTY_{F1} [only₂ quote the faculty_{F2}]] $\sim_1 CC$

I’ve coindexed the focus on the object and the focus sensitive particle *only* to indicate that the position of *only* demarcates the domain of the focus associated with it. So we have a free focus F1, whose domain (marked by $\sim_1 CC$) is maximal, i.e. the whole sentence, and an associated focus F2, whose domain is VP. Since the former domain includes the latter, by the domain theory of primacy, F1 will be the primary focus.

So we have derived that a free focus will get primacy over an associated focus. It is less obvious how to handle examples like (5), repeated below with ornaments, which has two associated (and Given) foci. Here it seems that neither focus’s domain properly contains the other’s:

(10) (Many people only drank juice at John’s party.)
 [[Even₁ JOHN_{F1}] [only₂ drank juice_{F2} at his party]].

The *c*-command domain of *even* is the subject DP, and the *c*-command domain of *only* is VP. If these are the domains of F1 and F2, respectively, neither contains the other, and it is unclear why F1 gets prosodic primacy over F2.⁷

⁵The idea that free foci are associated with an inaudible root-level operator is of course not new, cf. Jacobs (1984, 1988, 1991/2), Krifka (1991/2) and von Stechow (1981) a.o.

⁶This is where we need indexed foci; otherwise we couldn’t express that the second occurrence of *faculty* is not associated with the sentence level \sim_1 . Rooth’s original proposal does not index foci: an operator will automatically associate with any foci in its domain (unless there is another operator intervening; I omit details here). Explicit semantics for indexed foci are already available, however: Jacobs (1991); Krifka (1991/2) within a structured meanings framework, Kratzer (1991); Wold (1996) within a multidimensional framework.

⁷One might suspect that the *semantic scope* of *even* in (10) is in fact the entire sentence. If we understand the domain of a focus to be the semantic scope of the operator it is associated with, the domain of F1 does include that of F2 and the primacy of F1 over F2 is explained. But as (i) shows, this won’t work in general:

I propose that, in addition to being an associated focus, F1 is also a free, sentence-wide focus. Generally, primary foci are always free foci. On this view, a complete representation of (10) will look as in (11):⁸

(11) [[even₁ JOHN_{F1,3}] [only₂ drank juice_{F2} at his party]] ~₃ CC

Of course we need to explain why F1 doubles as the free sentence focus, rather than F2; otherwise we haven't really explained why the nuclear pitch accent falls on *John*, rather than *juice*. Note that *John* is Given, so that can't be it. Note, too, however, that *John* would be accented in this sentence even if we drop all focus sensitive particles:

(12) (Many people only drank juice at John's party. For example,) JOHN drank juice at his party.

So we have reduced one question — why certain Given associated foci double as free foci — to another: why certain Given elements are free foci. And fortunately, we can rely on a rich body of literature to address that latter question. I will follow the story in Schwarzschild (1999) to explain the selection of a Given focus among a set of Given items, which goes like this: it is not Given in the contexts in (10) and (12) that (even) John (only) drank juice at his party. Nor is it Given that (even) John drank (only) something at the party. What *is* Given is that someone drank (only) juice at John's party. Thus, marking F1 as sentence focus is the cheapest way of making the whole sentence Given.

The semantics of ContextConnect sketched above derive this: When coindexed with *John*, as in (11), it requires that there be a salient antecedent expressing a proposition of the form 'that (even) x drank (only) juice at

(i) (We all agreed that Sam's mother loves Ernie.) Only₁ John_{F1} suggested that Sam's mother also₂ loves Sue_{F2}. And only₁ John_{F1} suggested that Sam's mother also₃ loves SAM_{F3}.

The nuclear accent is on the final *Sam*. But obviously, the domain of the operator *Sam* is associated with, *also*, is much smaller than, and properly contained in, the semantic scope of *only*, which is the whole sentence; and this holds regardless of whether you consider the syntactic or semantic scope of *also*.

⁸Jacobs (1991) uses structures that express the very same intuition, cf. e.g. his structures S2–S4 and discussion thereof (p.4f). He does not, however, discuss what determines the choice of free foci in that paper (i.e. try to answer the question we are asking right below), and indeed some of his examples, e.g. S4 (p.5) suggest that he does not assume subordinated, non-free foci to be accentless in general.

John’s party’ in the context, which there is in (10). If we coindexed CC with *juice*, on the other hand, it should be the case that a proposition of the form ‘that (even) John (only) drank x at John’s party’ is around in the context, which isn’t the case. If you will, ContextConnect selects a focus at the sentence level with an eye on contrast with previous utterances, regardless of Givenness at the word level.⁹

Explicating the notion of free focus in terms of Givenness derives another result: Any associated focus that is not Given will automatically have to be a free focus. Put differently, non-Given foci will never be realized as 2OFi. For example, the following is not acceptable without an accent on *grad students*:

- (13) (Who only quotes the faculty? — Let’s see,) the FACULTY only quote the GRAD students.

We can note immediately that ‘x only quote the grad students’ is not Given; therefore, additional F-marking is required to satisfy ContextConnect. The correct representation is (14):

- (14) [the faculty_{F1} only₂ quote the grad students_{F1,F2}]_{~1} CC

Now both *faculty* and *grad students* are free foci, and the NPA goes to the final one (the last fact will follow once I have explicated my assumptions about focus realization in section 4 below). Crucially, all of this follows without representing Givenness and Focus separately. Any non-Given element will end up being a free focus, and thus won’t be realized as a 2OF.

To sum up, free foci are foci with a MAXIMAL DOMAIN: the whole sentence. Formally, free foci are associated with the root level operator $\sim C(\text{ontext})C(\text{onnect})$. ContextConnect requires that the sentence as a whole be contrastive with some previous utterance. A free focus will win primacy over an associated focus, whose domain is non-maximal. If a sentence has two associated foci, the primary one will be the one that is also a free focus.

⁹We also have to explain why CC can’t be coindexed with *both* elements, *John* and *juice*, which would also meet the conditions above, but yield the wrong accent pattern with a pitch accent on *juice*. Any standard story about excluding ‘over-focussing’ will do here, for example AVOID F as in Schwarzschild (1999).

4 Deriving the Domain Theory of Primacy

I will now show how the Domain Theory of Primacy can be derived from a general theory of focus realization. Consider again our perennial example:

(15) Many people only drank water. Even John only drank water.

The representation for the second sentence I suggested is repeated in (16):

(16) [even_{F1} John_{F1,F2} only_{F3} drank water_{F3}]_{~2} CC

Let us now state the principles according to which metrical structure is built. Most important for our purposes is the principle which ensures metrical prominence for focussed elements, which is given in (17):

(17) FOCUSPROMINENCE:
If P is the domain of a focus sensitive operator O, the most prominent element in P is a focus of O.

The name FOCUSPROMINENCE is borrowed from Truckenbrodt (1995), who introduces a similar principle. I use ‘(focus sensitive) operator’ as a cover term for focus sensitive particles and $\sim CC$. To be on the safe side, I also give a formal definition of the notion of domain:

(18) Domain of a Focus/an Operator:
P is the domain of a focus F and the domain of its operator O iff P is the biggest constituent containing F, but excluding O.

Let us apply this to (16). The domain of *only* is VP, which contains precisely one focus, *water*, which, by (17) wants to be maximally prominent in VP.¹⁰ This is achieved by assigning phrase level prominence to it, making it the metrically strongest element in VP:

(19) only_{F1} drank water_{F1}^{*}

¹⁰This idea is aired for example in Rooth (1996); to the best of my knowledge, it has never been elaborated on: “[W]ithin the scope of a focus interpretation operator, the corresponding F is the most metrically prominent [sic] element. Depending on other factors, this prominent element might or might not surface with a pitch accent. [...] At present, we are not in a position to say why this is so; it might be the result of the mapping between syntax and phonology, the presence of pitch accents being sensitive to ... factors such as discourse anaphoricity.” (p.219)

The domain of *even* is the subject DP, whose sole focus is *John*. By giving *John* phrase level stress, (17) is met for the subject domain.¹¹ Crucially, *John* is also the focus of $\sim_2 CC$, whose domain is the entire clause. By (17) *John* needs to be maximally prominent in it, in particular more prominent than *water*, which means it needs to bear sentence level (nuclear) stress. The following structure results:

$$(20) \quad [\text{Even } \overset{*}{\underset{*}{\text{John}}}_{\text{F2}} \text{ only}_1 \text{ drank } \overset{*}{\text{water}}_{\text{F1}}] \sim_2 CC$$

The actual accent pattern is now derived by the following simple stress-to-accent rule:

- (21) Stress-to-Accent-Rule:
Assign a pitch accent to the strongest/nuclear stress and to every metrically strong syllable preceding it.

$$(22) \quad [\text{Even } \overset{\text{PA}}{\underset{*}{\underset{*}{\text{John}}}}_{\text{F2}} \text{ only}_1 \text{ drank } \overset{*}{\text{water}}_{\text{F1}}] \sim_2 CC$$

How does this framework handle sentences with more than one free focus? Consider first an example without focus sensitive particles:

- (23) Frederick the Great spoke French to his family, and German to his horses.

Concentrating on the last bit, both *German* and *(to) his horses* are free foci:

$$(24) \quad [\dots \text{German}_{\text{F1}} \text{ to his horses}_{\text{F1}}] \sim_1 CC$$

According to (17), either one of them could legitimately become most prominent in the domain of $\sim_1 CC$. As a matter of fact, the last one has to be. Why is that?

I assume, following much work in prosodic phonology, that sentence level prominence, NUCLEAR STRESS (NS), in metrical structure marks the head of

¹¹A legitimate question is whether *John*, even without phrasal stress, would be maximally prominent in the domain of *even*. Since *John* is also the focus of $\sim CC$, nothing hinges on this in the present case.

a prosodic constituent, the INTONATIONAL PHRASE (IP). In the unmarked case, the head of IP wants to be aligned with the right edge of IP, as stated in the following constraint (cf. Truckenbrodt, 1995):

- (25) IP-HEAD-RIGHT
 The head of the intonational phrase is the rightmost stress (at the next lower level) within IP.

Note that IP-HEAD-RIGHT is violated in 2OF structures such as (20)/(22) above, where the head of IP (sentence level stress) is the penultimate phrasal level stress. We interpret this to mean that FOCUSPROMINENCE (17) is a stronger constraint than (25) (in fact, FOCUSPROMINENCE is inviolable, as we will see below). (25) will ‘push’ the NS to the right where there is a choice, i.e. when there are two elements that would satisfy FOCUSPROMINENCE if made maximally prominent, as in (24).

IP-HEAD-RIGHT also provides the missing piece in our explanation of why non-Given elements are never realized as 2OFi. Consider, for example, (26), a variant of our earlier (13):

- (26) (Many people only drank non-alcoholic drinks at John’s party.) Even JOHN only drank SOY milk.

It is impossible to leave *soy milk* unaccented here. If you do, you have to accommodate that *soy milk* has been discussed before, or is the only non-alcoholic beverage there is.

I argued above that the correct representation for examples like this is (27):

- (27) [even₁ John_{F1,F2} only₃ drank soy milk_{F2,F3}]_{~2} CC

Crucially, both *John* and *soy milk* are free foci in addition to being associated foci. This is because neither ‘even John only drank y’ nor ‘even x only drank soy milk’ are Given; but ‘(even) x (only) drank y’ is, since it’s Given that people only drank non-alcoholic beverages. Among these free foci, the rightmost one will be picked as the head of IP, in accordance with (25), yielding the structure (28a), rather than (28b):

- (28) a. (even John only drank soy milk)_{IP}
- PA
|
*
*
*
*
*
*
- PA
|
*
*
*
- b. #(even John only drank soy milk)_{IP}

Note again that (28b) meets FOCUSPROMINENCE, since the maximally prominent element in the sentence *is* a focus of \sim_2 CC, so IP-HEAD-RIGHT is the crucial constraint to rule it out.

To sum up this section, we have derived the Domain Theory of Primacy from three principles regarding the syntax-to-prosody mapping: FOCUSPROMINENCE, the Stress-to-Accent Rule, and IP-HEAD-RIGHT. It may seem no bargain to trade in one principle for three, but these three principles are in fact needed to derive the realization of regular focus patterns anyway, as I have shown in earlier work. So effectively we have gotten the Domain Theory of Primacy for free.

Before closing this section, let me explicate why I chose to define domains in (18) as the biggest constituent *excluding* OP (but including F), rather than the smallest constituent including OP and F. Consider (29):

- (29) (He was arrested because he wore a straw hat?!?!?) — No, he was arrested because he ONLY wore a straw hat.

The nuclear accent in (29) falls on *only*. The focus of *only*, however, is a *straw hat*, and arguably, that DP does bear 2OF stress. This suggests a representation along the lines of (30):

- (30) ...because he [ONLY₂]_{F1} wore [a straw hat]_{F2} \sim_1 CC
- PA
|
*
*
*
*

Only, being a free focus (it is Given that he wore a straw hat, but not that he only wore a straw hat), is maximally prominent within the whole sentence. *A straw hat* is the focus of *only* and is maximally prominent within the VP *wore a straw hat*, but crucially not within *only wore a straw hat*. So if *only* were part of its own focus domain (that is to say, the domain of *only₂* and

F2), it would violate FOCUSPROMINENCE by being itself more prominent than its focus. Among other things, it would wrongly follow that a focus sensitive particle can never be maximally prominent in a sentence without automatically violating FOCUSPROMINENCE.

By defining the domain of the particle so as to exclude the particle itself, we avoid this unwelcome result: the domain of *only*₂ in (30) is *wore a straw hat*, and F2 is maximally prominent in that domain.

5 Additional Support for the Domain Theory of Primacy

5.1 Crossing Dependencies Yield Ineffability

The account we have given here makes a prediction not made by any previous account: it should be impossible to have a primary focus occur within a 2OF's domain. Strikingly, this prediction is born out, as the following example, which Roger Schwarzschild (p.c.) brought up a couple of years ago, shows:

- (31) What did John only eat in PARIS?
- a. #John only ate crêpes in PARIS.
 - b. #John only ate CRÊpes in Paris.

Neither (31a) nor (31b) is appropriate to answer the question in (31). (31a) seems to answer the wrong question, whereas (31b) wrongly asserts that John eats nothing other than crêpes while in Paris. Schwarzschild used this example to show that association with focus and question/answer focus both must be realized. If their demands clash, as in (31), where the answer focus should be on *crêpes*, but the associated focus must be *Paris*, the pattern becomes ineffable.

In the context of our present discussion, however, we should ask: Why can't *Paris* be a 2OF? It is Given (i.e. has a non-maximal domain), and it sits after the focus with the maximal domain. So why not accent *crêpes* and merely stress *Paris*?

The present proposal provides a straightforward answer: The dependencies between the two foci and their operators cross. Consider the representation in (32):

- (32) [John only₁ ate crêpes_{F2} in Paris_{F1}]_{~2} CC

By FOCUSPROMINENCE, the most prominent element in the domain of *only*, VP, must be a focus of *only*, which means: F1, *Paris*. But, also by FOCUSPROMINENCE, the most prominent element in the domain of \sim_2 CC must be a focus indexed 2, i.e. F2, *crêpes*. But F2 is within the domain of F1, which means it can't possibly be less prominent than F2 within *only*'s domain, but more prominent than F2 within the maximal domain.

If this is the correct explanation, one crucial property of all previous examples was that the free focus preceded not just the associated focus, but the entire *domain* of the associated focus (most easily seen from the fact that it preceded the focus sensitive particle itself). And indeed, to answer (31), we can change the linear order to get the same effect:¹²

- (33) a. CRÊpes, John only eats in Paris.
 b. It's CRÊpes that John only eats in Paris.

This state of affairs provides strong evidence for our treatment of 2OFi. Note that, for example, a theory that would exclusively refer to the Given v. New focus would not seem to be able to make this prediction.

5.2 Semi-Crossing Dependencies

The trouble with Paris-type sentences like (31) disappears the moment we allow the associated focus to be a free focus in addition. Consider the following advice from Mr Manners:

- (34) (One should only wear hats outside, just like) one should only wear SWEAT pants at HOME.

The last sentence in (34) is fine with accents on *sweat pants* and (the nuclear accent on) *at home*. Note that the configuration is almost the same as in the unacceptable (31) above, except that in (34) the PP, in addition to being associated with *only*, is also a free, contrastive, focus:

¹²As Lawrence Cheung (p.c.) pointed out to me, the question can also be answered by a simple *CRÊpes*. This suggests that the term answer is derived from a structure akin to (33a), as suggested in Merchant (2004). It also suggests that 2OFi can be elided. I suspect that the generalization is that a focus can be elided only if all operators it associates with are elided, too (virtually the same conclusion is reached in Han and Romero (2004), note 15 on p.199), but I don't have explored that systematically yet.

(35) [one should $\overset{*}{\text{only}_2}$ wear $\overset{*}{\text{sweat pants}_{F1}}$ at $\overset{*}{\text{home}_{F1,2}}$] $\sim_1 CC$

We can make sense of this pattern: *at home* is a focus associated with *only*, and it is most prominent within *only*'s domain, the VP. That's as it should be. The root level \sim_1 has two foci associated with it, *sweat pants* and *at home*, and one of them is the most prominent in the root domain. That's as it should be, too; we have already seen that if an operator is associated with two foci, the linearly last focus with maximal domain ends up being nuclear, and this is what happens here, too.¹³

In sum, we have seen that examples in which domains overlap provide additional evidence in favor of the domain theory of primacy. This concludes the main proposal of the present paper. Before summarizing, though, I'd like to spend the following section speculating about a refinement of the notion of domain.

6 Prosodic Focus-Domains?

We saw in section 5.1 above that the notion DOMAIN OF A FOCUS is crucial to explain when 2OF is (not) possible. For example, in (31) (*What does John only eat in Paris? — # He only eats crêpes in Paris.*), the problem, as we diagnosed it, was that the domain of the associated focus, VP, also contains a free focus. FOCUSPROMINENCE imposes irreconcilable demands on such a structure: the associated focus must be maximally prominent in VP, while the free focus, which is also within VP, must be maximally prominent in the whole clause. In other words, FOCUSPROMINENCE has the following generalization as a corollary:

(36) The domain of an operator O cannot contain a focus which is the focus of a higher operator O*.¹⁴

¹³It is not clear to me what triggers the rather strong accent on the other free focus *sweat pants*, which seems to correspond to an intermediate phrase head; but see section 6 below for some pertinent remarks.

¹⁴Unless the focus of O is also a focus of that higher operator, recall (35); an operator O* is higher than O iff O*'s domain contains O.

So far we have assumed that the domain referenced here is the syntactic domain of O — the biggest syntactic constituent excluding O but not its foci, call this the SYNTACTIC POSITION. But given that prominence itself is a prosodic notion, we could also try to define the crucial notion of domain in prosodic terms, call this the PROSODIC POSITION. One way to do this is as in (37)–(39):

- (37) A set $p = \phi_1, \dots, \phi_n$ of prosodic phrases ϕ at level i is a P-DOMAIN iff
- a. p is contiguous (there is no material linearly between ϕ_1 and ϕ_n that is not part of p), and
 - b. all elements in p are contained in the same prosodic phrase at level $i + 1$.
- (38) A p-domain p CONTAINS a focus F iff all terminals belonging to F are contained in the elements of p .
- (39) A domain p is the DOMAIN OF AN OPERATOR O AND ITS FOCUS F iff p is the biggest p-domain that contains F but excludes O .

‘Prosodic phrase’ in (37) is meant as a cover term for IP, iP, and whatever phrase levels there are below iP. It is beyond the scope of this paper to explicate levels below iP in detail, so I will use unlabeled brackets to indicate prosodic phrases at those levels. Likewise, it is unclear what phonetic correlates of these lower level phrases we should expect to find, so the following discussion should be understood as merely an indication of what general structures we’d have to assume in order to make the prosodic domain story work, and to assess whether these seem at least plausible given our intuitions about prosodic units and breaks. Let us start with our standard example *even JOHN only drank juice at his party*; a possible structure for it is given in (40):

$$(40) \quad \left(\left(\left(\text{even}_1 \right) \left(\text{John}_{F1,3} \right) \right) \left(\text{only}_2 \right) \left(\text{drank juice}_{F2} \right) \left(\text{at his party} \right) \right)_{iP} \sim_3 CC$$

Here we have to assume two prosodic levels below iP which I agnostically called 0 and 1. We want *John* to be the domain of *even/John*, so it has to be its own phrase at some level (here: 0), so it can form a p-domain by (37), and it has to be separated from the rest of the sentence by a higher phrase boundary (i.e. grouped together with *even*) so it can be the biggest p-domain

including *John* but excluding *even*.¹⁵ The domain of *only/juice* in (40) is *drank juice at his party*, since it is the biggest contiguous string of prosodic phrases (here at level 0) which contains the focus, excludes the operator, and does not contain higher phrase boundaries (level 1 or iP).¹⁶ (Note that this domain is not itself a prosodic phrase at any level, but a sequence of level 0 phrases.) Finally, the domain of $\sim_3 CC/John$ is the entire iP (or the IP containing it, which isn't indicated in (40)), since the operator $\sim_3 CC$, being unpronounced, is not part of any prosodic phrase.

Generally, all examples we discussed so far are re-analyzable under this prosodic view on focus domains. I will now turn to examples that I think argue in favor for the prosodic position.

6.1 Case 1: Higher foci to the left of F

Our first argument in favor of the prosodic position comes from examples like (41), from Taglicht (1984), which Roger Schwarzschild (p.c.) pointed out to me as a challenge to (36):

(41) (She scrubbed the front steps, but) she only SWEPT the KITCHen.

¹⁵To see why, suppose we assigned the following structure instead:

(i) ((even)(John)(only drank juice)(at his party))_{iP}

Here, *John* is a p-domain in the sense of (37), but so is *John only drank juice* and *John only drank juice at his party* (the grouping into *only drank juice* and *at his party* is thrown in for good measure and irrelevant for these consideration, as long as there are no higher boundaries within the VP). All three of those p-domains contain the focus *John* and exclude the operator *even*, which means that the biggest one among them, *only drank juice at his party*, is the domain of *even/John*, contrary to what we want.

¹⁶Other possible structures include those in (i):

- (i) a. (only)(drank juice at his party)
- b. (only)(drank juice)(at his party)
- c. (only)(drank)(juice)(at his party)
- d. (only drank)(juice)(at his party)

Note that the domain of *only/juice* in (id) is *juice at his party*, not *drank juice at his party*, an option we will discuss below. It is important to keep in mind that the choice of p-domains does not change the interpretation of the sentence (in particular: the semantic scope of *only*).

The NPA in this sentence falls on *kitchen*; the focus of *only, swept*, is less prominent than *kitchen*. But *kitchen* is contained within the VP, hence within the syntactic domain of *only*, in violation of FOCUSPROMINENCE according to the syntactic position.

Prosodically, however, there is a clear phrase break between *swept* and *kitchen*, which, following standard English ToBI conventions, I will take to be an INTERMEDIATE PHRASE (ip) boundary (not to be confused with the higher IP, which is the intonational phrase). A more detailed (but not yet complete) description of the structure of this example is thus as in (42):

$$(42) \quad \left(\begin{array}{c} \left(\begin{array}{c} * \\ \text{she only}_1 \end{array} \right) \left(\begin{array}{c} * \\ \text{swept}_{F1,2} \end{array} \right) \end{array} \right) \left(\begin{array}{c} * \\ \text{the kitchen}_{F2} \end{array} \right) \begin{array}{c})_{IP} \\)_{ip} \end{array} \sim_2 CC$$

Now note that on the prosodic definitions, in particular (37), *swept the kitchen* in (42) cannot be a p-domain, since it contains an iP boundary (the only way a p-domain could contain an iP boundary is if it were made up of ips only, but clearly *swept* is not an iP). To tell what the domain of *only/swept* is, we must, once again, consider a phrase level below iP. For concreteness, assume (43):

$$(43) \quad \left(\begin{array}{c} \left(\begin{array}{c} * \\ \text{(she)(only}_1 \end{array} \right) \left(\begin{array}{c} * \\ \text{(swept}_{F1,2}) \end{array} \right) \end{array} \right) \left(\begin{array}{c} * \\ \text{(the kitchen}_{F2}) \end{array} \right) \begin{array}{c})_{IP} \\)_{iP} \end{array} \begin{array}{c})_0 \\)_0 \end{array} \sim_2 CC$$

The domain of *only/swept* now is just *swept*, in which the focus *swept* is, trivially, maximally prominent. The biggest prosodic domain containing the free focus *kitchen*, but not its operator $\sim CC$ is IP, within which *kitchen* is maximally prominent, again in compliance with FOCUSPROMINENCE.

The prosodic position thus not only preserves generalization (36), but even explains why (41) has the ‘split’ prosodic pattern it does. Generally, the prosodic position allows us to ‘shorten’ the domain of an operator by inserting a prosodic boundary within its syntactic scope, but following the focus.

Crucially, this doesn’t undermine our earlier explanation of the ineffability of (31), because there the higher focus linearly intervenes between *only* and its focus, so inevitably, the biggest prosodic constituent including *only*’s focus, but not *only* itself will contain the higher focus (though see the next subsection for some qualifications).

Now, a proponent of the syntactic position may claim that I simply misdiagnosed the syntactic domain of *only* in (41), which may well not be VP, but just V. If so, (36) holds without any recourse to prosodic domains, simply because *swept* is maximally prominent in the syntactic constituent *swept*.

This is a good reply, but I doubt that it addresses the problem generally. Consider (44):

- (44) (Philippe will buy only FRENCH cheese. — Same here:) I only buy GERman BEER.

This sentence poses the exact same challenge to the syntactic position as (41): *German* is the focus of *only* (note that the sentence doesn't claim that the speaker buys nothing other than beer), but the free focus *beer* is the most prominent element in the syntactic domain of *only*, VP. On the prosodic definition of domain, this sentence is not problematic, because it has the same indicative ip break between the two foci:

- (45) $\left(\begin{array}{c} \\ \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \\ \\ \end{array} \right)_{IP}$
 I only buy German beer

German is maximally prominent in the first ip, and *beer* is, in the root IP.¹⁷ Again, a rather marked prosody comes to the rescue. A proponent of the syntactic position would have to claim that *buy German* forms a syntactic constituent — a daring proposition.

Examples like these, then, argue in favor of a prosodic definition of focus domains: elements that belong to the syntactic scope of a focus sensitive operator can be outside of its prosodic domain; in that case, it doesn't matter if that material is prosodically stronger than the focus associated with the focus sensitive operator, which is expected if FOCUSPROMINENCE talks about prosodic, rather than syntactic domains.

6.2 Case 2: Higher foci to the right of F

There is another consequence of the prosodic position. By the definition of domain in (37)–(39), the domain of operator O must not include O. This

¹⁷The actual domain of *only/German* would be either *buy German* or just *German*, depending on lower level phrasing; in either case, FOCUSPROMINENCE is met.

means that there could be material *between* O and its focus F which nevertheless doesn't belong to the focus domain of O/F. This configuration is schematized in (46):

$$(46) \quad (\text{OP}_1 \text{ X})(\dots)(\text{F}_1)(\dots)$$

If for whatever reasons, X forms a prosodic constituent with O, the biggest prosodic domain containing F₁ but not OP₁ will be ...F₁..., excluding X. So even if X were more prominent than F₁, this wouldn't violate FOCUS-PROMINENCE, since X is not the domain of OP₁/F₁.

I would like to suggest that Rooth's (1992) famous example (47) is of that kind:

$$(47) \quad \text{People who GROW rice only EAT rice.}$$

On the most natural reading of this sentence, the focus of *only* is *rice*, yet there is no pitch accent on *rice*. Tancredi (2005) shows convincingly that *rice* in (47) has the hallmarks of a 2OF. But how can *rice* be maximally prominent in the domain of *only* when it is linearly separated from it by *eat*, which is clearly more prominent?

Suppose that the prosodic domains in (47) are structured as follows:

$$(48) \quad \dots (\text{only}_1 \text{ eat}_{\text{F}_2}) (\text{rice}_{\text{F}_1})_0^{\text{iP}} \sim_2 \text{CC}$$

The biggest p-domain that includes F₁ but excludes *only*₁ is (*rice*)₀ (not *eat rice*). And within that domain, *rice* is, once again trivially, maximally prominent.

Now, if we had a full theory of what can and what can't form prosodic phrases below the iP-level, we could make exact predictions about what can and cannot intervene between an operator and its focus. The two boundary conditions are these: i) OP and the INTERVENOR have to be able to form one phrase, to the exclusion of the focus, and ii) that phrase must be smaller than iP (since the phrase containing the focus must be of the same level and doesn't contain a pitch accent). Without such a theory, we can only predict tendencies: the longer and more structurally complex the intervener is, the less likely it is to form a single sub-iP level phrase with OP.

Consider two more examples in which intervention seems intuitively completely impossible:

- (49) a. (I hear you even wrote books about SILENCE? —) # No, but I even wrote an ARTICLE about silence.
 b. I think you're more intelligent than everybody else, but that doesn't mean I only want to TALK to you.

In (49a), *even* can only be understood as associating with *article* (rather than *silence*), which is pragmatically odd. (49b) has a perfectly well-formed and coherent reading, but only as an indecent offer (*only* associates with *talk*), even though it should have a perfectly innocent reading if *only* could associate with *you* in the way it can with *rice* in (47) above.

In each example, the intervener is underlined. To rescue them, it and the operator would have to form a single prosodic phrase. What we have to assume, then, is that size limitations on these prosodic phrases bar such structures. For example, (49a) must have one of the prosodic structures in (50a–d), but not the one in (50e):

- (50) a. (I even)(wrote)(an ARTICLE)(about silence)₀
 b. (I even)(wrote an ARTICLE)(about silence)₀
 c. (I even wrote)(an ARTICLE)(about silence)₀
 d. (I even wrote)(an ARTICLE about silence)₀
 e. *(I even wrote an ARTICLE)(about silence)₀

Likewise, in our original *crêpes* example, *only eat crêpes* must be barred from forming a single phrase to the exclusion of *(in) Paris*.¹⁸

If, on the other hand, the intervener is as small as a single verb, Rooth's *grow rice* – *eat rice* type of example can be replicated at will, as for example in (51):¹⁹

¹⁸According to Rooth (in preparation), *John only ate CRÊPES in Paris* is in fact a marginally acceptable answer in (31); perhaps its is acceptable exactly for those speakers who can indeed phrase this example as *(only ate crêpes)* rather than *(only ate)(crêpes)*.

¹⁹The same is illustrated in the near minimal triplet in (i), where acceptability seems to get progressively worse:

- (i) a. People who vacation in Westwood only DINE in Westwood.
 b. ??People who vacation in Santa Monica only spend MONEY in Santa Monica.
 c. #?People who vacation in Beverly Hills only eat DINNER in Beverly Hills.

Most speakers accept (ia) without hesitation, in which only the free focus, which is moreover just a single word, intervenes between *only* and its focus. (ib) is liked less than (ia), because a verb and its object intervene, but is still judged more acceptable than (ic),

- (51) (I only have a credit card. — That’s quite alright,) we only ACCEPT credit cards.

In sum, then, the prosodic view predicts that all an only things that can form a sub-iP level prosodic phrase with the OP are potential interveners. In the absence of precise information about the formation of these phrases, we can’t make exact predictions, but we do predict that the acceptability of an intervener is directly related to factors like size and complexity, which are known to restrict prosodic phrase formation, and the data surveyed seem at least compatible with that, though clearly, much more work is needed.

In this section we saw that examples like (41) and (44) provide evidence in favor of defining focus domains prosodically. Doing so also gives us handle on analyzing Rooth’s example (47) and our various variants of it, though many empirical and theoretical details are in need of further investigation in this realm.

7 Conclusion

In this paper I have offered a novel theory of focus realization and, in particular, second occurrence focus. The theory takes seriously a number of recent findings from experimental studies on the topic, and offers a treatment — the first to the best of my knowledge — that can account for all of the cases discussed in the literature on 2OF.

I have shown that the domain of a focus, rather than its status as Given v. new, draws the correct line between ‘normal’ foci and 2OFi. This means that we do not need to represent two orthogonal dimensions of information structure, say F(ocus) and G(ivenness) in the grammar in order to capture 2OFi. A unified account along the lines of Schwarzschild (1999) will do, once

which for most speakers can only mean that that those people don’t eat anything other than dinner in Beverly Hills (the reading of interest is one where they eat dinner in Beverly Hills only).

The latter contrast indicates that something other than mere length influences the formation of Small Domains as well; (ib) and (ic) both have V and DP intervene between *only* and its focus, but the verb+DP combination in (ib) is semantically much more idiomatic than that in (ic); that is to say, it seems much less natural to contrast spending money with spending other things (time?) than it is to contrast eating dinner with eating other meals.

we incorporate the notion of foci with non-maximal domains, along the lines of Jacobs (1991) and Rooth (1992) among others.

The different prosodic realizations of primary foci and 2OFi, as well as of 2OFi in pre- v. post-nuclear position has been shown to follow from a very simple and general theory of focus realization that makes crucial use of the notion of prominence within a domain. In this, I followed the seminal account of Truckenbrodt (1999) as well as my own earlier work.

Finally I have speculated that prosodic, rather than syntactic, domains are relevant for the evaluation of FOCUSPROMINENCE. Doing so allowed us to capture another set of examples, and provides at least a perspective on analyzing examples which would otherwise be problematic for the domain theory.

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