Second Occurrence Focus

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[–] **Abstract and Keywords**

A 'Second Occurrence Focus' (SOF) is the semantic focus of a focus sensitive operator (like *only*) which is contextually given. SOF has been claimed to be phonologically unmarked, which poses a problem for association with focus theories assuming a direct relation between focus and pitch accent. This chapter discusses the main semantic-pragmatic accounts of the SOF challenge but also empirical investigations which found that SOF actually is marked by secondary (i.e. non-nuclear) prosodic prominence, providing evidence in favour of association with focus theories. A similar prosodic pattern could be found in semantically and prosodically comparable structures such as cases of implicational bridging. Finally, an outlook on a possible unified approach of the phonological representation of second occurrence expressions is presented which is based on metrical stress.

Keywords: Second Occurrence Focus, pitch accent, secondary prominence, association with focus, focus sensitive operator, givenness, prosody, metrical stress, bridging

1. Introduction

A whole range of slightly different but related structures have been discussed under the notion of 'Second Occurrence Focus' (SOF). Taking the traditional view as a point of departure, we may conceive SOF as a specific type of focus, which is indicated morpho-syntactically by a focus-sensitive operator (such as *only* or *even*), and which is at the same time contextually given—in contrast to 'First Occurrence Focus' (FOF), which is contextually new.[1] An often cited example by Partee (1999: 215) is shown in (1), where *vegetables* occurs as an FOF element in (a) and as an overtly repeated SOF element in (b).[2]

a. Everyone knew that Mary only eats [VEgetables]$_{FOF}$.

(1) b. If even [PAUL]$_{FOF}$ knew that Mary only eats [vegetables]$_{SOF}$, then he should have

suggested a different restaurant.

This combination of 'focusedness' on the one hand and 'givenness' on the other causes a problem in terms of the expected prosodic marking of SOF elements, which can be described as follows: According to (direct) 'association with focus' theories (e.g. Jackendoff 1972; Rooth 1985; von Stechow 1990; Krifka 1992), a focus-sensitive operator like *only* has to be associated with a focus in its syntactic constituent which is indicated by prosodic prominence. Note that 'prosodic prominence' has often been equated with the concept of 'pitch accent', in particular '*nuclear* pitch accent', which is defined as the last and structurally strongest prominence in an intonation unit (cf. also Zubizarreta, this volume). We follow the view proposed in autosegmental-metrical approaches that the relevant prosodic domain for a nuclear accent is the *intermediate phrase* (ip; cf. Beckman and Pierrehumbert 1986; Ladd 2008).[3] In the present chapter, we will use *prominence* as a cover term for both (postlexical, i.e. actually realized) *stress* (also referred to as *metrical stress* later in the text), indicated by non-tonal phonetic features such as duration and intensity, and (pitch) *accent*, which additionally involves pitch movement. It has been claimed (e.g. by Partee 1991, 1999; Krifka 2004) that SOF—in contrast to FOF—is *not* marked by prosodic prominence (note the apparent deaccentuation of *vegetables* in (1b) above). The existence of such an 'inaudible focus' would violate association with focus theories, since it would imply either that focus (at least SOF) is not necessarily marked by prosodic prominence OR that operators like *only* do not always associate with focus.

Many papers have discussed this problem from a semantics and pragmatics point of view, but more recently there has also been a growing interest in phonetic and phonological aspects of SOF, including the evidence found in empirical investigations. This evidence suggests that SOF is in fact prosodically marked but only by a secondary prominence without pitch movement.

Since this specific prosodic marking is often regarded as the distinctive feature of SOF and other 'second occurrence expressions' (Krifka 2004), it is not an easy task to establish a conclusive definition of the phenomenon. The traditional definition given above is narrow in that it demands the occurrence of a focus particle and the literal repetition of a focused expression. In the following, we may also refer to this restrictive view as 'proper SOF' (Krifka 2004). However, in most of the more recent literature, a broader view has been advocated, suggesting that these conditions are neither sufficient nor necessary for a comprehensive account of SOF—including related second occurrence structures. Although it is agreed that SOF can *not* be distinguished from an ordinary focus by givenness alone (since an ordinary focus can be given as well; see next section), several studies insist that givenness in fact *is* a necessary precondition for SOF (which is the view of the so-called *splitters*, separating the effects of focus and givenness) while others consider only a division in focus and background necessary (view of *lumpers*, not separating the effects of focus and givenness). A final aspect of an *ex negativo* definition of SOF is that it is *not* just a second focus in the linear order of a clause or sentence (as may be suggested by (1))—rather, the focused phrase has to be derivable from the previous context (which implies that an SOF can also occur sentence-initially).

The rest of the chapter is structured as follows: After a presentation of the main (semantic-pragmatic) accounts of SOF and their general models of focus and givenness, as well as empirical evidence for a prosodic manifestation of focus in SOF structures (Section 2), semantically and prosodically

comparable configurations will be discussed (Section 3) leading to an outlook on a possible unified approach of the phonological representation of second occurence expressions (Section 4).

2. Solutions to the SOF problem

As a first step towards a solution to the SOF challenge it has to be noted that the lack of prominence on SOF items cannot simply be explained by their givenness in the discourse, since there are many instances in West Germanic languages in which contextually given constituents *do* receive focus prominence, as in examples (2)–(4), all adapted from Büring (2013: 2).[4]

(2)
    a. Who showed up last at John's party?

    b. [JOHN]$_F$ (showed up last at his party).

(3)
    a. Bob was completely drunk at John's party.

    b. No, [JOHN]$_F$ was completely drunk at his party.

In (2b), *John* is focused or F-marked (cf. Rooth, this volume) since it is the answer to the preceding question. The referential expression is necessarily marked by a (nuclear) pitch accent, despite its contextual givenness (*John* has been mentioned in (2a)). Similarly, in cases of overt contrast or correction as in (3b), focus prosody (here: nuclear accent due to the correction to *John*) overrides the prosody which would be expected on the basis of the information status of the discourse referents alone (here: deaccentuation due to the givenness of *John*).

The example in (4) contains foci which are associated with focus-sensitive operators. It reveals that associated foci can be given as well and, notably, this does even apply to 'First Occurrence Foci', making the term somewhat problematic here.[5]

(4)
    a. Many people only drank juice at John's party.

    b. Even [JOHN]$_{FOF}$ only drank [juice]$_{SOF}$ at his party.

Actually, the referent in question, *John*, does not surface in the same syntactic position in (4a) and (4b), a fact that prevents deaccentuation according to findings by Terken and Hirschberg (1994). The authors could show that persistence of the same syntactic surface position facilitates deaccentuation, in particular if accompanied by a persistence of grammatical function. In fact, this is the case with *only drank juice* in (4), which is a 'proper SOF expression' defined by Krifka (2004) as a verbatim repetition of a phrase.

Let us describe the SOF challenge more closely from a semantic point of view. The traditional assumption in direct association with focus models is that focus-sensitive operators determine a domain which contains a semantic focus. This semantic focus is obligatorily marked by a syntactic F-feature which in turn contains at least one element which is marked by a phonological focus, usually realized as a pitch accent (as in [eats VEgetables] in (1a)). The phenomenon accounting for the observation that not every element in a syntactic phrase corresponding to the semantic focus is prosodically prominent but generally only one element (the *focus exponent*) whose prominence 'stands for' the whole phrase, is known as *focus projection* (cf. Gussenhoven 1983; Selkirk 1995; Truckenbrodt 1995; Arregi, this volume). Along these lines, the challenge with SOF structures as introduced by Partee (1999) is that we have a semantic focus (*vegetables* in (1b)) which cannot be F-marked since it is *not* made prominent by a pitch accent. In other words, SOF structures such as those in (1b) demand a dissociation between semantic focus and phonological focus which is a contradiction in terms for traditional accounts of focus sensitivity (for a more detailed line of argumentation see Beaver et al. 2007).

Two general solutions to the SOF challenge (given the restricted view on SOF we have used so far) have been put forward: Pragmatic theories of focus (Section 2.1) and modified association with focus accounts (Section 2.2).

2.1. Pragmatic accounts of focus

The first solution is provided by pragmatic theories of focus starting with Rooth (1992) who allow that a semantic focus is not necessarily F-marked and thus not necessarily marked by pitch prominence. Approaches like these (e.g. von Fintel 2002; Roberts 1996; Schwarzschild 1999; Krifka 2004), called 'strong theories of focus sensitivity' by Rooth (1992), propose that a discourse entity becomes associated with a focus-sensitive operator (or, rather, with its free variable) simply for contextual reasons. That is, as opposed to direct association with focus theories, also termed 'weak theories of focus sensitivity' by Rooth, the interaction between focus and meaning is not mediated by rules of grammar (in particular syntax) but has to be explained by general principles of pragmatics (cf. Velleman and Beaver, this volume), as for example in the anaphora account of focus by von Fintel (2002), also argued for by Krifka (2004).

As an effect, there is no obligatory one-to-one relation between a focus—interpreted as a semantic focus of a quantificational or focus-sensitive operator—and its marking by a pitch accent any more. Instead, this relation is less direct and 'reduced' to an optional rule based on plausibility in the given context. In other words, some operators are claimed to be context-sensitive rather than focus-sensitive, in the same way as quantificational adverbials such as *always* in (5), whose domain can be restricted by context alone.

(5) Mary always is late.   (Krifka 2004: 196)

Generally, an SOF phrase may thus be fully deaccented due to contextual givenness, that is, it does not require a phonological reflex of an F feature. An example with the operator *only* is (6b) (derived from Partee 1991) with the repeated phrase *the poor students*.

a. A: Eva only gave xerox copies to [the POOR students]$_{FOF}$.

b. B: No, [PETR]$_F$ only gave xerox copies to [the poor students]$_{SOF}$.

(6)

c. B': No, [PETR]$_F$ only gave xerox copies to [THOSE students]$_{SOF}$.

(Krifka 2004: 202)

However, even proponents of pragmatic accounts concede that the realization of certain pronouns may challenge this approach. Von Fintel, for example, suggests that (6c) is only acceptable with a secondary prominence (indicated by small capitals) on the (non-contrastively used) pronoun *those*. One possible explanation for the alleged difference between (6b) and (6c) is based on the assumption that there are strong and weak varieties of pronouns, which are distinguished by a phonological feature [±stress]. The strong variety is used if the pronoun is in focus and thus surfaces with secondary prominence, that is [+stress] (see Krifka 2004: 205). Another explanation is that the operator *only* is directly sensitive to prosodic prominence after all, which would again be in line with an interpretation of *only* as being focus-sensitive (an assumption the association with focus accounts are based on; see the next section). There is evidence, though, that not all focus-sensitive operators have to be interpreted in the same way and that for some of them, for example *always*, a pragmatic interpretation may be more appropriate (see Beaver and Clark 2008: 154ff.).

2.2. Modified association with focus accounts

The second solution is embodied in a number of models we may call 'modified association with focus' accounts. What they have in common is that they keep up the claim that SOF is in fact focused (or F-marked) and realized with prosodic prominence, but that this prominence is only secondary (i.e. non-nuclear). Among the advocates of these accounts there is some debate as to whether it is possible to find a uniform explanation for focusing and its prosodic realization or whether it is necessary to distinguish between two sources—namely contrast to alternatives and newness/givenness (with varying terminology)—that determine the assignment of prosodic prominence. Beaver and Velleman (2011) call the first group *lumpers*, advertising a one-factor account, and the second one *splitters*, favouring a two-factor account.

2.2.1. Lumpers

The main proponents of the lumpers camp are Büring (2013) and Rooth (2010). They base their accounts of SOF to some extent on Schwarzschild (1999) who integrates the effects of focus into his definition of givenness (cf. Rochemont, this volume). Both Büring and Rooth claim that the difference between FOF and SOF can be accounted for in terms of domain size: While the domain of an FOF is maximal, that is, a whole sentence, and is thus marked by a nuclear accent, the domain of an SOF is smaller and can at most receive a secondary prominence (to be defined in greater detail below). Büring (2013) formulates this basic principle under the heading of the *Domain Theory of Primacy*, in combination with the FOCUSPROMINENCE principle (adapted from Truckenbrodt 1995):

Domain Theory of Primacy

(7) Among two foci F1 and F2 in a sentence, F2 is secondary to F1 iff F1's domain

properly contains that of F2.   Büring (2013: 3)

FOCUS PROMINENCE

(8) If P is the domain of a focus-sensitive operator O, the metrically strongest element

in P is contained in a focus of O.   Büring (2013: 6)

Büring claims that all foci have to be 'interpreted' by an operator. An operator may either be focus-sensitive (like the particles *only* or *even*) leading to an 'associated' focus, or not (like CONTEXTCONNECT (CC), being attached to the whole sentence) leaving the focus 'free'. Primary foci (F1) are always free foci, occurring, for example, in question–answer pairs or in overtly contrastive focus structures. Thus, in a combination of a free focus and an associated focus as in (9), the first occurrence of *faculty* is primary and carries the nuclear accent, whereas the associated focus is embedded and thus secondary—both in terms of semantic interpretation and phonological marking, two levels which are closely related in this account.

(9) CC$_1$ [The FAculty $_{F1}$ [only$_2$ quote the FAculty$_{SOF2}$]] [6]

The combination of two associated foci, as in example (4) above, repeated here as (10), is a less clear case. Here, Büring claims that one of the associated foci additionally serves as a free, sentential focus which thus receives the nuclear accent.

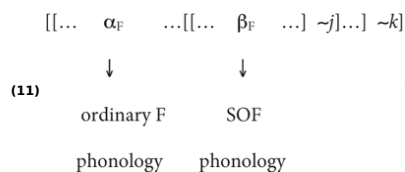(Many people only drank juice at John's party.)

(10)

CC$_1$ [[Even$_2$ [JOHN]$_{FOF2}$]$_{F1}$ only$_3$ drank [JUICE]$_{SOF3}$ at his party]

The argument for choosing *even John* as the free focus is not its novelty in the discourse (since both candidates for the primary accent, *John* and *juice*, are contextually given) but the fact that *even John* fills the structural gap in the open proposition 'x only drank juice at John's party', which can be interpreted as presupposed due to the indefinite expression *many people*. In other words, *even John* can be regarded as the answer to the contextually given question 'Who only drank juice at John's party?' (cf. Roberts' (1996) *Question Under Discussion*, or QUD) and is thus a legitimate free focus. Following the *Domain Theory of Primacy*, in combination with the FOCUSPROMINENCE principle, the free focus domain with *John* as focus exponent is maximal and contains the associated focus domain with *juice* as a secondarily prominent focus exponent. That is, *juice* only receives a postnuclear prominence. The structure in (10') illustrates the relation of embeddedness more clearly than (10).

(10') [Even JOHN [only drank JUICE at his party]]

Rooth (2010) summarizes this configuration of embeddedness of SOF in the scope of a primary focus and its phonological marking as follows:

$$[[\ldots \quad \alpha_F \quad \ldots[[\ldots \quad \beta_F \quad \ldots] \sim j]\ldots] \sim k]$$

$$\downarrow \qquad\qquad \downarrow$$

(11) ⁷

ordinary F   SOF

phonology   phonology

In the schema, SOF phonology is supposed to be indicated by secondary, that is postnuclear, prominences. These are not equivalent to pitch accents but to metrical stresses which lack tonal movement. The main syllables of SOF items are made prominent in particular by increased duration and intensity in comparison with fully unaccented syllables. In contrast, 'ordinary F phonology' (which also holds for FOF as introduced above) is marked by fully-fledged (generally nuclear) pitch accents. We will come back to the phonetic realization of these prosodic prominences in detail in Section 2.3 below and in subsequent sections.

2.2.2. Splitters

Being widely in accordance with the phonological analysis of SOF structures proposed by Büring and Rooth, advocates of the splitters camp (in particular Selkirk 2008 and Beaver and Velleman 2011) suggest a somewhat diverging semantic-syntactic-pragmatic model. As mentioned above, splitters argue for an independent role of newness/givenness from (contrastive) focus in the description of an element's prosodic marking.

Selkirk (2008) explains the phonology of SOF items by a combination of F(ocus)-marking and G(ivenness)-marking, the latter inhibiting the assignment of a fully-fledged pitch accent. She proposes that F-marking is always contrastive, following Rooth's (1992) interpretation of focus in his theory of alternative semantics. At the heart of Selkirk's account is the FOCUSPROMINENCE rule introduced in (8) (which Selkirk calls *Contrastive Focus Prominence Rule*) and the constraint DESTRESS GIVEN adopted from Féry and Samek-Lodovici (2006) which guarantees that a given constituent cannot be marked by a primary (i.e. nuclear) accent. Selkirk (2008: 342) proposes four different possibilities, shown in (12) (with the predicted phonological markings added).

Standard contrastive focus:	F-marked	(nuclear accent)
Second occurrence contrastive focus:	F-marked, G-marked	(secondary prominence, non-nuclear)
Given, non-contrastive:	G-marked	(no prominence)
Non-given, non-contrastive:	---	(nuclear accent)

(12)

('informational focus')

Let us have a look at our SOF example (10). At first sight, it seems as if no primary accent could be assigned, since all relevant elements are discourse-given. However, Selkirk (2008: 341) adds a *G-marking condition* (13) by which she differentiates between two levels of potential givenness, the *ordinary semantic value* and the *focus semantic value* (following Rooth 1992).

The G-marking condition

(i) An F-marked constituent α will be G-marked iff the phrasal scope φ of the focus ~ operator corresponding to it has an antecedent in the discourse for its focus semantic value $[[\varphi]]^f$.

(13)

(ii) Otherwise, a constituent α will be G-marked if it has an antecedent in the discourse for its ordinary semantic value $[[\alpha]]^o$.

An element is given with respect to its ordinary semantic value simply if it has been mentioned before in the discourse. If an element is F-marked, however, it only counts as given if it has an antecedent for its focus semantic value. In the case of (10), this focus semantic value for *juice* is the alternatives set {drank beer, drank wine, drank water,…. }, which has been introduced in the context by the phrase *only drank juice*. Thus, *juice* is both F-marked (due to its association with the focus-sensitive operator *only*) *and* G-marked. In contrast, *John* is only F-marked since an alternatives set such as {even Bill, even Mary,…. } has not been introduced before. In Selkirk's terms, *John* only has an ordinary semantic value which becomes irrelevant if the constituent is F-marked at the same time. A Selkirk-like analysis of (10) is given in (14).

(Many people only drank juice at John's party.)

(14)

[Even [JOHN]_F only [_φ[drank_G JUICE_{F,G} at his party_G]_φ~] ~]

A similar but more flexible approach has been proposed by Beaver and Velleman (2011) who replace Selkirk's concept of focus by *(pragmatic) importance* and newness/givenness by *(un-)predictability*. Importance is marked by the F-feature as in Rooth's and Selkirk's approaches, and unpredictability is indicated by an N-feature (for 'New'), which is derived from Schwarzschild's (1999) interpretation of F-marking. The authors show that predictability is different from givenness, and that it is (un-)predictability which is relevant for an element's prosodic realisation.

(15)
a. Who does John's mother love?

b. She loves JOHN$_{F,N}$

In (15b), *John* is contextually given but is unpredictable as an answer to the question. Thus, it is indexed with N. At the same time, it is pragmatically important and thus F-marked. As a consequence, it receives a pitch accent, despite its givenness at word level. Note that Beaver and Velleman (2011: 1674) generally interpret association with focus in terms of answering a QUD (see above and Beaver and Clark 2008). That is, an expression that associates with a focus-sensitive operator (as in FOF and SOF structures) provides an answer to the QUD just as *John* answers the overt question in (15). Both types of answer count as 'pragmatically important'.

An important addition to this model is the constraint that contextually given referents are only unpredictable if they occur in a 'new role' as does *John* in (15b). In a parallel structure like the one in (16b), *John* would be predictable and thus not N-marked (see also Terken and Hirschberg (1994) and the effect of persistence of the same syntactic position discussed above).

(16)
a. John loves somebody.

b. John loves MAry$_{F,N}$

Beaver and Velleman claim that both (un-)predictability and importance have an influence on the *communicative significance* of an expression, and relate this pragmatic significance to prosodic prominence in the following principle (Beaver and Velleman 2011: 1673):

Prominence Principle

(17) If one expression is more communicatively significant than another expression,

then the first should be more surface prominent than the second.

Together with the principle of *competition for prominence* (given in a slightly changed version in (18)), Beaver and Velleman suggest a pragmatic alternative to the FOCUSPROMINENCE rule in (8).

Competition for prominence (adjusted terminology in brackets)

Primary (nuclear) accent can appear only once in an English intonation

(intermediate) phrase (ip). From this and the prominence principle plus the concepts

(18)
of predictability and importance, it follows that expressions within an ip will have

to compete for primary (nuclear) accent. This competition is what determines how

informationally complex material will be realized within an ip.

In order to determine the most prominent element in an ip, the degree of communicative significance can be weighted in a cumulative manner. Unpredictability (N-marking) and importance (F-marking) can be thought of as contributing one point each to an element's prominence. This results in the following four possibilities:

Important and unpredictable information (contrastive focus or FOF):

F-marked, N-marked (two points)

Important and predictable information (SOF):

F-marked (one point)

(19)
Unimportant and unpredictable information (unfocussed, new):

N-marked (one point)

Unimportant and predictable information (unfocussed, given):

--- (no point)

An element with two points will usually be realized as a (primary) nuclear pitch accent. If more than one element in an ip gets two points, the rightmost is primary, the others secondary (i.e. prenuclear). The prominence assigned to an element with one point can only be non-nuclear/secondary, that is, either prenuclear (generally realized as a pitch accent) or postnuclear (non-tonal prominence).[8] If only one-point prominences are available in an ip, the rightmost one will be 'upgraded' and receive the nuclear accent.

(20)

(Many people only drank juice at John's party.)

Even JOHN$_{F,N}$ only drank JUICE$_F$ at his party.

Thus, the SOF example in (10) would be analysed by Beaver and Velleman as in (20), with *John* receiving the nuclear accent ('important' plus 'unpredictable' due to its new structural role) and thus winning the competition for prominence. *Juice* only bears a postnuclear prominence, since it is 'important' due to its association with the focus-sensitive particle *only* but at the same time predictable from the context. *Juice* is predictable because it occurs in a parallel structure to the one in the context sentence, here even in a 'proper SOF' structure defined above as a string identical repetition.

2.3. Empirical evidence

As mentioned several times above, the basic claim of all kinds of association with focus theories is that focus (or importance) is marked by prosodic prominence, and this claim has been challenged by SOF structures. In recent years a variety of production and perception studies on SOF—at least in West Germanic languages—were conducted to examine whether the theoretical claim of association with focus models can be empirically verified (e.g. Rooth 1996; Bartels 2004; Jaeger 2004; Beaver et al. 2007; Howell 2008 for American English; Féry and Ishihara 2009; Baumann et al. 2010 for German; van de Ven and Gussenhoven 2011 for Dutch). The studies clearly provide evidence for the fact that there actually *is* a phonological reflex of focus in SOF structures. However, SOF usually is not marked by fully-fledged (nuclear) pitch accents (i.e. by tonal movement), but by increased duration and intensity (compared to non-focus elements) reflecting secondary prominence. In other words, it could be shown that there *is* a correlation between focus and prosodic prominence but *not* between focus and (nuclear) pitch accent.

The first, rudimentary experimental study was conducted by Rooth (1996) who acoustically analysed utterances spoken by himself, which contained SOF and Non-Focus elements. He found that SOF expressions were louder and longer than their Non-Focus counterparts, thus providing first empirical evidence in favour of weak (syntactic/semantic) theories of focus sensitivity.

In a more systematic production study in which pairs of American English speakers read sentences in a dialogue, Bartels (2004) investigated the acoustic differences between FOF and SOF but did not compare them with the prosodic characteristics of Non-Focus constituents. In fact, Bartels could confirm the assumption that SOF is not marked by pitch prominence, but she also found that SOF expressions are realized with shorter duration and intensity than FOF expressions. Furthermore, Bartels compared FOF and SOF with echo renditions and showed that a mere repetition does not always trigger reduced prominence. That is, her data suggest that echo NPs generally carry pitch accents (like FOF) but that they are often acoustically less prominent than first occurrence renditions. In comparison with SOF, echo NPs were found to display greater acoustic prominence.

A larger-scale production and perception study by Beaver et al. (2007) concentrated on the prosodic difference between SOF and Non-Focus constituents. Twenty American English speakers read aloud short paragraphs like the ones in (21) and (22), with the (c) sentences being of particular interest. These sentences were composed of identical text but differed in the position of the SOF and Non-Focus elements (here: *Sid* and *court*, respectively).

(21)

a. Both Sid and his accomplices should have been named in this morning's court session.

b. But the defendant only named Sid$_{FOF}$ in court$_{NON-FOCUS}$ today.

c. Even the state prosecutor only named Sid$_{SOF}$ in court$_{NON-FOCUS}$ today.

(22)

a. Defense and Prosecution had agreed to implicate Sid both in court and on television.

b. Still, the defense attorney only named Sid$_{NON-FOCUS}$ in court$_{FOF}$ today.

c. Even the state prosecutor only named Sid$_{NON-FOCUS}$ in court$_{SOF}$ today.

The production data confirmed the tentative findings by Rooth (1996) in that a statistically significant increase in duration and relative energy (derived by multiplying duration by root-mean-square intensity)[9] could be found for SOF in comparison with Non-Focus. Differences in fundamental frequency were only marginal. This result adds to the evidence in favour of association with focus theories, since it shows that SOF elements are marked by a (slight) increase in prosodic prominence.

The crucial next step was to find out whether the rather subtle phonological differences between SOF and Non-Focus are actually perceivable. Beaver et al. selected a set of minimal sentence pairs like (21c) and (22c) from the production experiment which were taken from the same speaker. These pairs—without the context they were produced in—were presented to subjects who had the task of deciding in which sentence a particular target word (e.g. *Sid*) was perceived as more prominent than another word (e.g. *court*). Subjects identified the SOF items as the more prominent ones in 63 per cent of the cases which led the authors to conclude that the prosodic marking of SOF is indeed perceivable.

The empirical production data provided by Féry and Ishihara (2009) for SOF in German largely confirm the results for American English, in particular as far as the sentence-medial or 'post-FOF' position is concerned (i.e. no tonal movement but increased duration compared with non-focused items). Interestingly, Féry and Ishihara added conditions in which FOF, SOF, and Non-Focus elements occurred in sentence-initial position, as shown in (23) and (24).[10]

a. Die meisten unserer Kollegen waren beim Betriebsausflug lässig angezogen.

the most our-GEN colleagues were at.the staff outing casually dressed

'Most of our colleagues were dressed casually at the staff outing.'

b. Nur PEter_{FOF} hat eine Krawatte getragen.

(23) only Peter has a tie worn

'Only Peter wore a tie.'

c. Nur PEter_{SOF} hat sogar einen ANzug getragen.

only Peter has even a suit worn

'Only Peter even wore a suit.'

a Wen hat Peter geküsst?

whom has Peter kissed

'Who did Peter kiss?'

(24)

b. PEter _{NON-FOCUS} hat MaRIa geküsst.

Peter has Maria kissed

'Peter kissed Maria.'

Crucially, the authors found that SOF items in sentence-initial position were marked by a fully-fledged prenuclear pitch accent—showing a categorical difference to the same items in sentence-medial position. Still, sentence-initial SOF (23c) was marked as less prominent than FOF (which received a nuclear accent; (23b)), but more prominent than Non-Focus (24b).[11] It is claimed that this three-way difference can be explained by boosting and inhibiting factors of information structure: Focus leads to higher pitch, givenness to lower pitch. Since SOF is a combination of focus and givenness, its mean pitch value lies between FOF (higher) and Non-Focus (lower). Féry and Ishihara found similar effects for duration, with focused elements (i.e. FOF *and* SOF) being longer than Non-Focus words. However, there was no duration difference between FOF and SOF in sentence-initial position, although FOF was expected to be longer (focused, non-given, nuclear accent) than SOF (focused, given, prenuclear accent).[12] Féry and Ishihara (2009: 307) suggest that this outcome may in fact be due to a phrase boundary after the SOF constituent (*nur Peter* in (23c)) triggering a lengthening effect which masks the givenness effect (i.e. shortening) of SOF. As the relevant domain for pre-boundary lengthening the authors postulate the 'prosodic phrase' (*p-phrase*) which depends on syntax and may be embedded in an intermediate phrase. Thus, the (final) accent of a p-phrase may still be prenuclear (Féry and Ishihara 2009: 296).

A similar observation has been made by Jaeger (2004) who found for American English that SOF elements may receive a pitch accent if they form an intermediate phrase of their own. In such a case, which is actually rather likely in slow speech, the pitch accent is in fact nuclear. If a nuclear accent on an SOF element is possible, this serves as even stronger evidence in favour of (direct) association with focus theories.
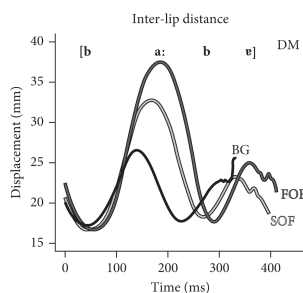
The acoustic findings for SOF prosody in the reported studies could also be supported by articulatory data from German. By using an electromagnetic articulograph, Baumann et al. (2010) investigated not only the tonal and durational marking of sentence-medial constituents in three different focus conditions (Background (= Non-Focus), SOF, FOF) but also the modifications of the opening and closing gestures of the lips during the production of the target words. Results confirm that SOF is generally not marked by a nuclear pitch accent and show gradient but systematic adjustments of acoustic and articulatory parameters (word durations and temporal and spatial modifications of lip opening and closing gestures) leading to an increase in prominence from Non-Focus through SOF to FOF. Table 1 provides an overview of the strategies used, which are to some extent speaker-specific.

Table 1 Summary of tonal, durational, and articulatory adjustments as prominence increases in the marking of target words in three different focus conditions				
	Tonal	**Durational**	**Articulatory**	
	(nuclear) pitch accent	acoustic word duration	duration of movements	target (inter-lip distance; sonority)	
FOF	yes	longer	longer	higher	↑ increase in prominence
SOF	no				
Non-F	no	shorter	shorter	lower	

Source: Adapted from Baumann et al. (2010: 75), in German.

Click to view larger

Figure 1 Averaged trajectories for lip opening and closing movements during the target word B/a:/ber for one speaker (DM) in three focus conditions (BG = Non-Focus, SOF, and FOF)

The investigation of lip movements, that is, the degree of mouth opening, relates prominence to *sonority*, that is, the relative loudness of sounds, and shows its relevance as a distinguishing factor between focus types (which is in line with Beaver et al.'s findings for relative energy). Figure 1 provides averaged trajectories for the distance between the upper and lower lip during the production of the target word B/a:/ber. Low displacements indicate that the lips are closed for the production of the stop consonants. Going from Background (Non-Focus) to FOF, there is an increase in duration and lip aperture (displacement) corresponding to prosodic prominence.

Summing up, the empirical studies—which did not try to *predict* a prosodic prominence but looked for experimental evidence—observed a secondary status of SOF elements in terms of their phonological marking. That is, they are usually not marked by pitch accents, and if they are, the accent is either prenuclear or is the only one in an intermediate phrase. In postnuclear position, SOF is marked by non-tonal prosodic parameters such as increased duration, intensity, and sonority. It has also been suggested that 'postnuclear' SOF prominence should be described in terms of L* pitch accents (which would by definition become nuclear; cf. Beaver et al. 2007: 28) or (low) *phrase accents* as defined by Grice et al. (2000) as edge tones with a secondary association to stressed syllables (cf. Baumann et al. 2010: 76). Although defined tonally, however, both concepts are mainly characterized by duration, at least in West Germanic languages.

3. Other second occurrence expressions

There has been some discussion in the literature on the question of whether the characteristic prosodic pattern of proper SOF widely discussed in this chapter is also present in other, less restrictive structures. Thus, the question is whether only verbatim repetitions of first occurrence expressions are marked by secondary prominences, or also 'quasi second occurrence expressions' (Krifka 2004) such as cases of bridging (Clark 1977) or 'implicit inferrability' (Partee 1999: 216), which do not display segmental copies of first occurrence expressions. An example from Rooth (1996: 216) showing a case of implicational bridging is given in (25).[13]

a. The provost and the dean aren't taking any candidate other than Susan and Harold

(25)   seriously.

b. Even [the CHAIRman]$_{FOF}$ is only considering [YOUNger]$_{SOF}$ candidates.

Rooth claims that *younger* is coded by the same type of secondary prominence as, for example, *juice* in (10) above, provided that the inference the speaker wishes to express is that Susan and Harold are among the younger candidates. Krifka (2004: 203) gives a similar bridging example in (26) but claims that the inferrable information, namely that African-Americans are black, has to be highlighted by a pitch accent, even though it is 'secondary' in nature. Following the definitions introduced in the present chapter, however, this accent has to be interpreted as a—probably somewhat lowered in pitch, but still phonologically primary—nuclear pitch accent.

a. Mary only supports [AFrican-AMErican]$_{FOF}$ job candidates.

(26)

b. So what? Even [JOHN]$_{FOF}$ only supports [BLACK]$_{SOF}$ job candidates.

Both analyses are purely based on the authors' (diverging) intuitions. However, the different analyses do not seem to be justified by different degrees of inferability of the constituents in question, since both SOF phrases, *younger candidates* and *black job candidates*, are generic but accessible terms containing lexically new (*younger, black*) and given (*(job) candidates*) items. Furthermore, taking into account that persistence of grammatical function facilitates deaccentuation (Terken and Hirschberg 1994), the adjective *black* in (26) should be even less prominent than the adjective *younger* in (25), since the former replaces another adjective (*African-American*) while the latter replaces a noun phrase (*Susan and Harold*) as part of a comparative construction. Clearly, systematic experimental studies are needed to investigate cases like these.

In fact, there is evidence from German corpus data (e.g. Baumann and Riester 2013) showing that postnuclear prominences do occur with phenomena which resemble proper SOF, for example epithets (cf. Clark 1977), defined as coreferential anaphors which consist of new lexical material. In the following example from a corpus of German radio news (DIRNDL, Eckart et al. 2012) the phrase *der serbischen Provinz* ('of the Serbian province') is an epithet to *Kosovo* mentioned in the previous sentence (Riester and Baumann 2013: 239f.). The *RefLex* annotation scheme for information status (Baumann and Riester 2012) is used here, which differentiates between various categories on a referential (R-) and a lexical (L-) level of givenness.

Der UNO-Sondergesandte Ahtisaari plädiert für eine Unabhängigkeit des Kosovo

unter internationaler Aufsicht. Dies sei die einzige politische und wirtschaftliche

Option für die ZUkunft [$_{R\text{-}GIVEN}$ der [$_{L\text{-}NEW}$ serbischen ProVINZ.]]

(27)

'UN Special Envoy Ahtisaari is making the case for an independence of the Kosovo

under international control. According to him, this is the only political and

economic option for the future of the Serbian province.'

Epithets like these (on the word *Provinz* ('province')) are regularly realized by postnuclear prominence and exhibit a similar combination of boosting (newness at word level) and inhibiting (givenness at referential level) factors as second occurrence foci, which are combinations of focus/importance and givenness/predictability features. Thus, both types of expressions have a 'hybrid' information structural status, which is indicated by the same type of secondary prosodic prominence.

Another widely discussed example potentially displaying 'SOF phonology' is Rooth's (1992: 109) rice-grower example, given in (28) with a Büring-style analysis.

(28) CC$_1$[People who GROW$_{F1}$ rice generally [only $_2$ EAT$_{F1}$ rice$_{SOF2}$]]

Krifka (2004) proposes that there are contrastive pitch accents on *grow* and *eat* but no accent on the second occurrence of *rice* despite its association with *only*. Beaver and Velleman (2011: 1679) contradict this analysis and suggest that the second occurrence of *rice* in fact receives a secondary prominence just like proper SOF structures, since *rice* is important (= F-marked) but predictable (= not N-marked) information. In addition, the model generates secondary prominences on all unpredictable (= N-marked) elements (see (29)).

(29) PEOple$_N$ who GROW$_{F,N}$ RICE$_N$ GEnerally$_N$ only EAT$_{F,N}$ RICE$_F$.

However, the difference between the structure in (28)/(29) and the SOF structures discussed in previous sections is the intervention of a contrastive element between the focus-sensitive operator and the associated element, that is, its semantic focus. Whereas in ordinary SOF structures, the second occurrence of *rice* would be expected (and has been found) to bear a secondary, postnuclear prominence, elements in the direct vicinity of contrastive accents have been shown to be downplayed in order to increase the prominence of the contrasted item. Postfocal words in particular have been found to be marked by a compression of the pitch range in both tone and intonation languages (cf. Xu et al. 2004; Xu and Xu 2005 on Mandarin and American English). Another aspect supporting the reduction of the prominence of the final element may be the avoidance of a stress clash between eat and rice. In a similar case displaying an overt contrast, namely another famous example by Rooth (1992) given in (30), no model would predict a secondary accent on the second occurrence of *farmer*, since it is not associated with a focus-sensitive operator. An analysis along the lines of Beaver and Velleman (2011) should look like this:

(30) An AMErican$_{F,N}$ FARmer$_N$ was TALking$_N$ to a CaNAdian$_{F,N}$ farmer.

It is doubtful whether the degree of prosodic prominence of the second occurrences of *rice* in (29) and *farmer* in (30) are really different, since their (surface) structures are very similar. Again, empirical evidence is necessary to shed light on this controversial issue.

So far we have only discussed examples of SOF and related structures in West Germanic languages. However, there are also comparable cases in other languages, for example Japanese. Ishihara (2003, 2007) found prosodic differences between clause types if they are embedded in a *wh*-phrase. He analyses all *wh*-phrases as prosodically defined focus domains (indexed *FI* for *Focus Intonation*) which display a pitch rise on the *wh*-element. If a *wh*-phrase is embedded in another one, as in (31) below (Ishihara 2007: 153), the embedded *wh*-element *náni-o* is both raised (due to focus) and lowered in pitch (due to embeddedness), thus surfacing on an mid pitch level.

(31) { **dáre**-ga [Mári-ga { **náni**-o nomíya-de nónda **ka** }$_{FI}$] ímademo obóeteru **no?** }$_{FI}$

'**Who** still remembers **what** Mari drank at the bar?'

In an embedded yes/no-question, on the other hand, pitch is only lowered since a yes/no-question is not interpreted as a domain of focus (analogous to the effect of postfocal compression mentioned above). Thus, embedded *wh*-phrases in Japanese show similar boosting and inhibiting effects as SOF structures in Germanic languages.

4. Towards a unified approach

The empirical studies reported above provide abundant evidence from West Germanic languages that SOF is mainly marked by non-tonal phonetic parameters such as duration and intensity and not by pitch movement (in postfocal position). This finding supports the proposal put forward by a number of authors in similar ways (Rooth 1996, 2010; Beaver et al. 2007; Büring 2013), namely that *metrical stress* is the basic focus marker rather than pitch accent. Metrical stress can be regarded as the representation of postlexical stress in a metrical grid (see Truckenbrodt 1995; Selkirk 2006; Myrberg and Riad, this volume), which can be applied to prosodic phrases of various sizes (in the present proposal the relevant domain is the intermediate phrase, which contains at least one—the nuclear—pitch accent). A *stress-first* approach like Büring's claims that SOF elements receive the strongest metrical stress in the scope of their operator and that their (lexical and structural) givenness or predictability prevents them from receiving additional prosodic/metrical prominence by tonal movement.

Note that non-tonal parameters are the primary markers of (postlexical) stress in *stress accent languages* (Beckman 1986) like the ones belonging to the West Germanic language family, but not in a pitch accent language like Japanese. Here, as we saw in the last section, the secondary prominence of SOF items is rather expressed by an intermediate pitch height.

The metrical stress approach is compatible with the modified association with focus theories presented above and can thus serve as a unifying approach within this framework. In a broad combination of rules proposed by Büring (2013) and the weighting procedure suggested by Beaver and Velleman (2011) (see (19) above) we can assign the following rudimentary metrical grid to our proper SOF example in (4), repeated here as (32):

(Many people only drank juice at John's party.)

(32)
```
            x
x                  x
```
Even JOHN only drank JUICE at his party

This pattern with two different prominence levels (1=secondary prominence, 2=primary prominence)[14] can be derived in various ways. Following Beaver and Velleman, we assign level 1 prominence to each element that is either unpredictable (N-marked) or pragmatically important (F-marked). Level 2 prominence is added if a constituent is both F- and N-marked (cf. (33)).

(Many people only drank juice at John's party.)

(33)
```
            x
x                  x
```
Even JOHN$_{F,N}$ only drank JUICE$_F$ at his party.

The same pattern follows from Selkirk's (2008) analysis, if level 2 is directly assigned to F-marked elements and G-marked elements reduce F-marks by one level. A similar result also emerges from Büring's analysis of the sentence, in that one prominence level can be assigned to each focus in its domain, be it associated or free (cf. (34)).

(Many people only drank juice at John's party.)

(34)
```
               x
x                      x
```
CC$_1$ [[Even$_2$ [JOHN]$_{FOF2}$]$_{F1}$ only$_3$ drank [JUICE]$_{SOF3}$ at his party]

Let us see how these abstract (or at least underspecified) prominence levels are realized. Büring's (2013: 7) STRESS-TO-ACCENT-RULE (in a modified version in

(35)) determines the mapping of prominence levels to pitch accents:

STRESS-TO-ACCENT-RULE

(35) Assign a pitch accent to the strongest/nuclear stress [level 2] and to every

metrically strong syllable preceding it.

This rule ensures that the rightmost prominence at level 2 surfaces as a nuclear pitch accent (as the head of an ip), in (34) on *John*. Furthermore, the rule entails that a postnuclear prominence at level 1 can only surface as a secondary prominence, marked by increased duration and intensity (on *juice* in (34)). We may equate this basic level with metrical stress (see (36)) and claim that this prominence level is generally assigned to SOF items.

(Many people only drank juice at John's party.)

(36)

| x | | level 2: nuclear accent |
| x | x | level 1: metrical stress |

CC_1 [[$Even_2$ [JOHN]$_{FOF2}$]$_{F1}$ $only_3$ drank [JUICE]$_{SOF3}$ at his party]

The metrical approach also accounts for the empirical/perceptual difference between prenuclear accents on the one hand and both nuclear accents and postnuclear prominences on the other. These differences can be represented by an additional, medial level in the metrical grid, leading to three levels with a stepwise increase in phonological prominence:

level 1: basic metrical stress level (increased duration and intensity of syllables)

level 2: level assigning pitch accents (additional tonal movement)

(37)

level 3: level assigning nuclear pitch accents (last accent in an intermediate

phrase; preceding pitch accents are prenuclear)

Let us apply these metrical prominence levels to a second occurrence expression as the one in (38) (which is a repetition of (29)), analysed by Beaver and Velleman. If we assume a division into two intermediate phrases, we receive two nuclear pitch accents, on *grow* and *eat*, as well as prenuclear pitch accents on *people* and *generally*. Furthermore, both occurrences of *rice* are marked by postnuclear non-tonal prominences.

(38)

	x			x		level 3: nuclear accent
x	x		x	x		level 2: pitch accent
x	x	x	x	x	x	level 1: metrical stress

[PEOple$_N$ who GROW$_{F,N}$ RICE$_N$]$_{ip}$ [GEnerally$_N$ only EAT$_{F,N}$ RICE$_F$]$_{ip}$

This simple incremental metrical model of the phonological realization of focus structures accounts for most of the empirical evidence for FOF and SOF, at least in Germanic languages. It is also compatible with many previous—and partly theoretical—proposals which suggest some sort of weighting procedure of boosting and inhibiting effects of focus and givenness on prosodic prominence. Additionally, an intermediate level of metrical prominence is proposed in order to distinguish between prenuclear and nuclear pitch accents, a difference which has been found to be relevant for a comprehensive description of SOF phonology (see Féry and Ishihara 2009).

In general, the solutions found for the SOF challenge largely support association with focus theories, since SOF—as well as semantically related structures—has been found to be marked by prosodic prominence which is, however, non-nuclear and thus secondary in nature.

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Notes:

([1]) Throughout this chapter, we will indicate a focus associated with a focus-sensitive operator by FOF and SOF, and a free focus (which is not associated with a focus-sensitive operator) just by F (unless the conventions used by specific theories are reported).

([2]) Capital letters indicate the presence of a pitch accent.

([3]) The superordinate prosodic domain is the intonation phrase (IP), which consists of one or more intermediate phrases (cf. Beckman and Pierrehumbert 1986). Each intermediate phrase contains one nuclear accent.

([4]) The semantic-pragmatic and prosodic analysis is restricted to the (b) sentences.

([5]) In fact, Büring (2013) suggests using the term 'primary focus' for focus expressions bearing the nuclear pitch accent, thus avoiding the potential inconsistency that a 'First Occurrence Focus' may contain a given element. However, defining a semantic-pragmatic category in terms of its prosodic realization runs the risk of circularity.

([6]) Secondarily prominent syllables are indicated by small capitals. The use of brackets and indices is taken from Büring (2013), with the exception of the convention introduced in footnote 1: associated foci are spelled out as FOF and SOF, free foci as F.

([7]) The symbols $\sim j$ and $\sim k$ indicate focus interpretation operators of different domains.

([8]) The structural difference between pre- and postnuclear prominences will be discussed in Section 2.3 and in the unified approach proposed in Section 4.

([9]) Beckman (1986) called this factor *total amplitude*, and found that it is the most relevant postlexical stress marker in English.

([10]) Only the relevant subscripts on the target words are indicated, as well as the pitch accents in the target sentences (by capitalization).

([11]) Nevertheless, Non-Focus items were marked by (prenuclear) pitch accents as well, which is a somewhat surprising result, since the Non-Focus target words in the experiment represent given information occurring in the same grammatical role as in the context question (cf. Terken and Hirschberg (1994) and the discussion in Section 2 above).

([12]) Nuclear accents usually show longer durations than prenuclear accents in West Germanic languages (see Silverman and Pierrehumbert 1990).

([13]) We will be using the subscript 'SOF' for all kinds of second occurrence expressions.

([14]) We disregard a potential 'level 0' for unstressed words here.

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