Focus and Intonation

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Contents

1 Introduction and Terminology

INTONATION describes the way the fundamental frequency of the voice, also called its PITCH or F^0, changes over the course of an utterance. A slightly broader term is PROSODY which covers not just intonation, but also additional aspects of phonetic realization such as pauses, lengthening of segments, perhaps loudness and spectral tilt; intonation in particular, and perhaps

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prosody in general roughly corresponds to the colloquial term 'inflection'. Certain aspects of prosody (and intonation) are grammatical in nature and as such represented in a phonological representation, called PROSODIC STRUCTURE. At a minimum, prosodic structure will encode prosodic constituent structure, relative metrical strength or stress of syllables, and location and nature of certain tonal (or 'intonational') events.[1]

FOCUS —at least in connection with languages such as English— is the term used to describe effects of prosody on meaning and *vice versa*. The basic idea is that prosodic prominence in an unusual place serves to emphasize the meaning of the element(s) thusly marked. For example *Kim* is assumed to be focused in (1b), but not (1a) or (1c), and *Harry* is focused in (1c), but not (1a/b) (we'll return to the question what if anything is focused in (1a) in section 4.1 below):

(1) a. Kim will read Harry's book.
     b. KIM will read Harry's book.
     c. Kim will read HARry's book.

To come to terms with the relation between focus and intonation, the following simplified picture may be instructive: Each sentence S has a 'neutral intonation' (part of its 'neutral prosody'), its citation form, the way it is uttered out-of-the-blue. Neutral prosody is modelled by the prosodic structure grammar assigns to S (where S is a syntactic tree, not just a string of words) on purely structural grounds. Where the prosody of a sentence S does not correspond to that neutral intonation, this is the reflex of additional, meaning-related marking, the sentence's focusing, or more generally, its INFORMATION STRUCTURE (where information structure is simply a cover term for whatever semantic or pragmatic categories such as focus, background, givenness, topic etc. one thinks may influence prosody in this way).

Roughly, neutral intonation is characterized by local frequency maxima (or sometimes: minima), so called PITCH ACCENTS (PAs), on (virtually) all content words. MARKED PROSODY most typically omits PAs on content words at the end of the sentence (e.g. *book* in (1c)).[2] This in turn yields the prosodic impression that the last pitch accent (which is *not* on the final content word, as in the neutral prosody) is the strongest, most prominent (e.g. *Harry* in (1c)). The semantic or pragmatic intuition is that omitting

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[1]See Ladd (1996) for an excellent introduction..

[2]In some cases, marked intonation will also have PAs on words that are normally unaccented, e.g. *Kim WILL read Harry's book*.

final PAs yields the effect of emphasizing the last constituent that *does* bear a pitch accent.

It is common (though perhaps bad) practice to only indicate the last PA in orthographic renderings, as in (1) above, and not indicate any PAs in the neutral pronunciation. An alternative more faithful to the actual intonation is as in (2a) and (b), corresponding to (1a) and (c) respectively:

(2)　　a.　KIM will READ HARry's BOOK.
　　　　b.　KIM will READ HARry's book.

In (2), the final PA is marked by larger capitals, reflecting speakers' judgements (mentioned above) that the last PA —even in neutral prosody, (2a)— is more prominent than the previous ones (interestingly, phonetically, the last PA is not always more elaborate —higher, longer or louder— than the others, its main distinctive feature being, it seems, its relative position in the sentence). The last PA is also referred to as the NUCLEAR PITCH ACCENT (NPA). Marked intonation can thus also be seen as a (leftward) shifting of the NPA; its interpretation, on this view, is emphasis on the element bearing the shifted NPA.

Since Jackendoff (1972), a privative feature [F] is used to mark focused constituents in the syntactic representation. [F] yields the interpretation of emphasis (or something like it, see section 3.2 below), and a prosodic realization which —in English at least— has the NPA within the [F]-marked constituent.

Perhaps [F] is just a convenient way to talk about the abstract concept focus, as opposed to the prosodic features that realize it, and to structurally disambiguate sentences with the same prosodic structure but —by pragmatic criteria— different foci. If so, ultimately grammar could interpret prosody directly, without the mediation of [F]. The details of such an elimination are very unclear at present though, so most works assume that [F] is a *bona fide* element of grammatical —specifically: syntactic— representation.[3]

Summarizing our terminological usage: when people hear utterances, they perceive prominence on certain elements; this perception is based on prosodic properties, most significantly the placement of pitch accents. On the meaning side, people perceive emphasis, the grammatical counterpart to which is interpretation as focus (more on which below), or more generally, in terms of information structure. The syntactic feature [F] mediates between emphasis

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[3]See Büring (2006), Reinhart (2006), ch.3 and Schwarzschild (1997) on eliminating [F]s.

and prominence, via effects on interpretation and prosodic representation.[4]

We haven't used the term STRESS in the discussion of focus so far. Much of the non-phonological literature uses 'stress' and 'accent' interchangeably, usually to describe PAing (or its perceptive counterpart, prominence). In phonology, stress more generally describes a strength relation between syllables, which can be realized phonetically in a variety of ways, including accented (more stressed)—not accented (less stressed), nuclear accent (more stressed)–pre-nuclear accent (less stressed), longer (stressed)–shorter (less stressed), full vowel (more stressed)–reduced vowel (less stressed), or perhaps sometimes not at all. Crucially, stress is a relational, and hence graded notion (though people occasionally talk about 'word stress', 'phrasal stress', 'sentential stress' as a shorthand for 'strongest stress within the word/phrase/sentence'), while accenting is absolute (a syllable is accented or not), and accordingly, a syllable may be stressed to a certain degree and still be accentless. It is plausible to think that, ultimately, focus is realized by stress, which in turn results in pitch accenting by prosody-internal principles. [5] For the purpose of this overview, however, we will stick to the more directly observable correlate, accenting.

2   Semantic Meaning of Focus

2.1   Associated Focus

Focus may influence truth conditional meaning, but it doesn't itself have truth conditional meaning. If Kim brought Harry's book and comb, (3a) is false, but (3b) may be true; if Kim brought Harry's and Jo's book, (3b) is false, but (3a) may be true:

(3)   a.   Kim only brought Harry's BOOK to the meeting.
         b.   Kim only brought HARry's book to the meeting.

Leaving out *only* in both sentences makes them truth-conditionally equivalent (though of course they still convey different emphases). That is, FOCUS SENSITIVE ELEMENTS (FSEs) like *only* change truth conditions depending on the focus they ASSOCIATE with; focus alone doesn't.

The contribution of focus to the meaning of FSEs like *only* can be modelled using ALTERNATIVE SETS, also called FOCUS SEMANTIC VALUES. Whatever type of meaning a constituent X ordinarily has, its AS, written $[\![X]\!]_{\mathcal{F}}$,

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[4]We do not assume any semantic representation, hence there is no semantic F-feature or the like here.

[5]Ladd (1996), Truckenbrodt (1995).

is a set of meanings of that type. If X contains a focus, $[\![X]\!]_{\mathcal{F}}$ corresponds to the meanings of expression that are like X, but with the focus replaced by an alternative. Thus the VP in (3a) has an alternative set of properties (i.e. meanings!) like {brought Harry's book, brought Harry's bike,... }, that in (3b) like {brought Joe's book, brought Frida's book,... }. The FSE then relates the AS of its argument to its ordinary denotation; roughly, *only VP* will denote the set of individuals that have the property denoted by VP, but not other properties from VP's AS.[6][7]

2.2   Free Focus Has No Truth Conditional Content

As for FREE FOCUS (i.e. focus not associated with a FSE), it is sometimes suggested that it introduces an existential presupposition, e.g. *KIM took Harry's book* would presuppose that someone took Harry's book.[8] This idea has been refuted in various ways. First, the sentence can answer the questions in (4), neither of which implies (and hence license a presupposition to the effect) that someone took Harry's book:

(4)   a.   Who, if anyone, took Harry's book?
        b.   Did anyone take Harry's book?

Second, a sentence like (5) would be falsely predicted to presuppose that someone took Harry's book (and hence be contradictory) (Jackendoff, 1972):

(5)   NOBody took Harry's book.

Third, there is clear difference between (6a), which —due to the cleft construction— does presuppose that someone took Harry's book, and (6b) —plain free focus— which doesn't (Rooth, 1999):

(6)   a.   Was it KIM who took Harry's book?
        b.   Did KIM take Harry's book?

Similarly, it is sometimes suggested that free focus entails exhaustiveness of the answer. But again, there is notable difference between plain focus, (7a), and a cleft, (7b), with only the latter truly entailing exhaustivity (and hence

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[6]In point of fact, *only* needn't exclude *all* alternatives in AS, as long as it excludes at least some.

[7]AS are introduced in Rooth (1985), which also shows how to calculate them compositionally and without the need to syntactically move the focus; for a similar, but technically different approach see von Stechow (1989); Beaver and Clark (2008) for a recent monograph.

[8]E.g. Geurts and van der Sandt (2004); see also the replies in the same issue.

creating a contradiction)(Rooth, 1999):

(7)   a.   (Who attended the meeting?) KIM attended the meeting. Maybe Jo did too.

        b.   (Who attended the meeting?) It was KIM who attended the meeting. # Maybe Jo did, too.

Data like these show that existence and exhaustivity may be implicatures of focus, but not parts of truth conditional meaning. This leaves us to look for the meaning of free focus elsewhere.

3   Pragmatic Meaning of Free Focus

3.1   Mentalist and Discourse-Related Approaches

An intuitive characterization of focus meaning would be that focus marks what the speaker intends to highlight, or emphasize, or regards as most important, or most informative.[9] This is an example of what I will call a MENTALIST theory of focus meaning. The obvious problem with the above mentalist characterization is that the attitudes it ascribes to speakers are difficult to verify independently, or even elicit systematically.

A variant of this problem regards characterizations like 'focus presupposes the existence of closed set of relevant alternatives'[10]: this is either almost trivially true, if we understand 'existence' to be about actual, real-world existence, or again immensely difficult to track down, if we talk about existence in the speaker's (or addressee's) mind.

Even more formal-looking characterizations like 'focus creates/presupposes an open formula and then provides a unique value for the variable in that formula' [11], or 'focus instructs the hearer to open a new a file card and write something on it'[12] are haunted by basically the same problem: It presupposes the reality of a certain kind of representation in the participants' minds (assuming in this case that formulas wouldn't be supposed to be objects in the real world), to which independent access would be needed in order to make the claim falsifiable.

For this reason, most formal work on the interpretation of free focus has instead taken felicity in a discourse to be the main data to be accounted for:

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[9]E.g. Miller (2006).

[10]E.g. Vallduví and Vilkuna (1998:83).

[11]E.g. López (2009:34ff), Vallduví and Vilkuna (1998:83ff) a.m.o..

[12]E.g. Erteschik-Shir (1997:4), Vallduví (1990); see Hendriks (2002) Dekker and Hendriks (1996) for essentially this criticism..

Which focusing of a given sentence is felicitous as an answer to a particular question, or in response to a particular statement, or as a narrative continuation of a previous sentence. The meaning of focus under that view consists of discourse appropriateness conditions. Call these DISCOURSE RELATED approaches to focus meaning.

(One may argue that on such a view, focus doesn't have *meaning* so much as merely a pragmatic function; this is a valid point, though I will continue to use the term meaning in what follows.)

To give an example, answers to constituent questions show a very systematic focusing pattern, describable as in (8):

(8)   Question/Answer Congruence (QAC):
       In an answer, focus marks that constituent which corresponds to the
       wh-phrase in the question.[13]

(9)   Q: Who did Jones' father recommend for the job?
       A: He recommended JONES for the job.

(A formal rendering of) (8) can be seen as part of a discourse grammar, providing a partial analysis of the meaning of focus via the notion 'felicitous focusing in a (question-answer) discourse'.

At the same time, many if not most approaches will —implicitly or explicitly— assume that, truly, QAC in (8) doesn't constrain the relation between a focused declarative sentence and a preceding interrogative sentence, but between a focused declarative sentence and some sort of *context representation construed on the basis of the question* (and maybe additional context as well). This allows the analyst to extend the analysis to cases in which, say, a pertinent question is assumed to be on participants' minds, but never explicitly uttered:

(10)   [A and B find the door to the classroom locked. Says A:] JONES
       has keys to this room.

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[13]Note that it is not claimed that *wh*-phrases themselves are focused. It is true that many languages which syntactically dislocated focus use the same dislocation for *wh*-phrases. But the inverse is not true, nor do languages like English, which mark focus intonationally, mark *wh*-phrases in the same way (i.e. by NPA), unless they are *in addition* pragmatically focused:

(i)   We only know WHAT she ate (but not where).

By the pragmatics of contrastive focus to be sketched below, regular *wh*-phrases do systematically not qualify as foci, either.

Here we can assume that the question of who has keys to the room is on A and B's mind, even though it hasn't been uttered. A plausible analysis assumes that focus in A's answer is licensed by question/answer congruence (QAC), where 'question' is understood as the QUESTION UNDER DISCUSSION, QUD, in a discourse model.[14] Overt QAC as in example (8) above would then be the special case of a QUD set by an actual question utterance.[15]

So even discourse related approaches to focus are mentalist in this sense. But in contradistinction to approaches that talk about 'importance', 'highlighting' or open formulae in speakers' minds, discourse related theories show a direct way in which to access the pertinent mental discourse representation independently: *when* there is an explicit cotext (e.g. an interrogative utterance), it has a defined effect on context representation (e.g. setting the QUD); and all relevant aspects of context representation *can* at least be manipulated by particular utterances such as explicit questions, statements etc.

3.2 Alternative Semantics for Free Focus

Let us assume, then, that discourse context, as construed in conversationalists' minds, and to be modelled in a formal approach to focus, includes a question under discussion (which in turn may be set by an explicit utterance or through more indirect means). Question/answer congruence can then be defined in terms of AS as introduced in section 2.1 above as follows. The AS of a declarative sentence will be a set of sentence meanings, for concreteness: a set of propositions. A question denotation, too, is modelled as a set of propositions, roughly the set of all literal answers (true or false). Then QAC can, to a first approximation, be stated as follows:

(11) A declarative sentence S matches the QUD only if every proposition in the question meaning is an element of the AS of S.
formally: $\text{QUD} \subseteq [\![S]\!]_{\mathcal{F}}$

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[14]e.g. Roberts (1996).

[15]A related but separate issue regards accommodation of QUDs:

(i) (A and B looking at a monumental building. Says A:) My FATHer built this structure.

Here B may not have the question of who built the structure on her mind, but upon A's utterance may be ready to accommodate that that is a question their conversation should tackle. Arguably, it is implausible that B would accommodate the existence of an actual utterance of the question (which she knows didn't take place).

Another discourse context that typically determines focus is found in so-called CONTRASTIVE FOCUS:

(12)   Contrastive Focus: Focus marks the constituent that distinguishes a sentence (or parts thereof) from a previously uttered one.
         T: Last year Jones' father recommended Smith for the job.
         C: This year he recommended JONES for the job.

The relation between T (for target) and C (for contrast) is simply that the denotation of T must be an element of the AS of C: $[\![T]\!]_{\mathcal{O}} \in [\![C]\!]_{\mathcal{F}}$ (the same rule captures corrections as a special case of contrast).

As Rooth (1992) points out, both (12) and (8)/(11) can be seen as anaphoric processes, in the sense that T and Q(UD), respectively, are salient antecedents to which the focusing in A/C relates. However, an essential disjunction remains, as the antecedent is a subset of the AS in the Q/A case, but an element of AS in the contrastive case.

Finally, some more terminology: In (12C), the entire sentence is the DOMAIN OF THE FOCUS *Jones*. What that means is that we work with alternatives at the sentence level (propositions), not the alternatives to the focus alone (individuals). Syntactically, the domain consists of the focus and its BACKGROUND; semantically, the background corresponds to the invariable part of the alternatives ('Jones' father recommended... for the job'), the focus to the variable one (though of course, the alternatives, being set-theoretic objects, do not literally have an internal structure, i.e. there are no semantic objects that correspond to focus and background in isolation).[16]

In some cases, the domain of the focus is smaller than the whole sentence (and accordingly the alternatives are not propositions), e.g. VP in (3), or, as in (13), DP (from Rooth, 1992, note that there is no contrast at the higher nodes, say, 'met an X farmer')

(13)   A CaNADian farmer met an AMERican farmer.

Focus domain —and derivatively: background— are essential in understanding focus; the notion of focus only makes sense as *focus within a domain*. The focus is that element within its domain that makes the (denotation of the) domain different from the target (or the question). As (8) and (12) aptly illustrate, the focus itself needn't even be new (Jones is previously mentioned in the immediate context), it is only 'new' relative to its background, in its

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[16]The background, or some semantic representation thereof, is often called the 'presupposition' (e.g. Chomsky, 1971; Jackendoff, 1972) —a misnomer since i) the background is not usually propositional and hence can't be presupposed, and ii) there is no semantic presupposition to free focus, see section 2.2 above.

domain. Focus is thus by its very nature a relational phenomenon; it would be a hopeless task to try to grapple with the formal modelling of focus independent of its background.[17]

3.3 Given and New

As just pointed out, a notion like 'not previously mentioned', or plainly 'new', is not sufficient to model focus. On the other hand, focus alone is not sufficient to explain (marked) accent patterns generally:

(14)   (Context: We got a toy car for Veronica. What else might she like?)
     a.   She'd probably also like a gaRAGE for her car.
     b.   A gaRAGE for her car.
     c.   She'd probably like a bed for her DOLLs.

(15)   (What did you buy Max for his birthday?)
     I bought him a WATCH at the anTIQUE store.

The focus in (14a) must be the entire object *a garage for her car* (cf. also the term answer in (14b)), yet the accent falls on the head noun *garage*, not the phrase final PP, as usual (e.g. (14c)). The intuitive reason is that *(her) car* in (14a/b) (but not *(her) dolls* in (14c)) is anaphoric, or GIVEN.

Conversely, while the answer-focus in (15) must be *a watch* —which, to be sure, is accented— there is another pitch accent on the final PP *at the antique store*, ostensibly because it is not given.[18]

These examples show that givenness is not just the inverse of focus. Given elements can occur within a focus, and then get DEACCENTED as in (14a/b),[19] and non-given elements can be outside of a focus and be accented, see (15).

There is also a crucial difference in formal properties: Roughly, an element is given if its meaning is salient in the discourse, prototypically if some synonymous or semantically close related expression (e.g. a hyperonym) has been mentioned before. As such, givenness is privative: one can say of an expression in context, but regardless of its syntactic environment, whether it is given or not. As emphasized in section 3.2 just above, this is different for focus, which is by its very nature relational.

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[17]An early statement of this is found e.g. Akmajian (1973:218); for discussion see Lambrecht (1994, sec.5.1)..

[18]The given/new terminology seems to go back to Halliday (1967); for further discussion see Ladd (1980), van Deemter (1994,1999), and Schwarzschild (1999).

[19]'Deaccenting' is the usual term for this phenomenon: An element in a syntactic position which would, in default prosody, receive an accent, goes accentless. One shouldn't literally assume, though, that there once was an accent on that very element which then is removed by some kind of transformation.

That being said, it is worth noting that for a constituent C to be given is a degenerate case of contrastive focusing, namely a focus domain without a focus in it. To sketch the reasoning: If C doesn't contain a focus, its AS is the singleton set containing its ordinary meaning. Thus, any 'target' for that focus domain would, in order to be an element of C's AS, have to be synonymous with C. Building on this, Schwarzschild (1999) provides a unification of contrastive focus and givenness, which he calls Givenness (with a capital G). The remarks about the difference between focus and givenness made above do not apply to Schwarzschildian Givenness (see op.cit. for further details).

4 Grammatical Properties of Focus

4.1 Size: Broad, Narrow, Sentence-Wide

Using questions and contrasts, we can pragmatically diagnose focus and hence become more clear about the relation between [F]-marking and its prosodic realization. For example, (16) can answer any of the questions in (16a), or —preceded by 'No!'— correct any of (16b). (17) answers/corrects (17a/b). Crucially, swapping the intonations between (16) and (17) yields infelicitous discourses:

(16)   Excess heat damaged the FUSilage.
   a.   (i)   What happened?/What caused the accident?
        (ii)   What effects did the excess heat have?
        (iii) What did the excess heat damage?
   b.   (i)   Someone shot at the plane.
        (ii)   Excess heat melted the windows.
        (iii) Excess heat damaged the internal wiring.

(17)   Excess HEAT damaged the fusilage.
   a.   What damaged the Fusilage?
   b.   A saboteur damaged the fusilage.

Such a pattern indicates that the NPA on *fusilage* in (16) (which is where the NPA falls in neutral intonation) is compatible with focus (and hence [F]) on the entire sentence, the verb phrase, or the object nominal, whereas the 'shifted' NPA on *heat* in (17) can only signal subject focus.

(16) as a reply to (16ai)/(16bi) is called WHOLE-SENTENCE FOCUS, all other cases in (16) and (17) NARROW FOCUS. Note that narrow foci can be larger

than a single word, e.g. VP in (16aii)/(16bii). The term BROAD FOCUS is sometimes used synonymously with whole-sentence focus, sometimes somewhat vaguely to mean foci larger than a single word or phrase.

The size of the focus is occasionally referred to as the scope of the focus, or its domain. We discourage both usages: Since foci can be scope-bearing elements (e.g. quantifiers), 'scope of a focus' to mean its size invites confusion with the logical scope of the focused element. On the other hand, we use domain of the focus to mean the larger constituent which includes the focus and its background (see sec. 3.2 above).

It turns out that what we referred to as the normal intonation of a sentence systematically coincides with the realization of a whole-sentence focus. From this we may conclude that either all sentences have a focus (and the apparently focus-less ones are simply whole-sentence-foci), or that focusing only changes normal prosody in case there is a contrast between focus and non-focus within a sentence.

We can now make precise some more terminology: sentences may have normal intonation, or marked intonation. The former may correspond to sentence-wide focus (or perhaps the absence of focus altogether), the latter to non-sentence-wide (=narrow) foci (or some other IS-related property). The inverse is not true: some narrow focus patterns are realized by neutral intonation (e.g. object focus in (16aiii)/(16biii)). This is why we speak of marked intonation and narrow focus, but not focus intonation and marked focus.

There is an independent question whether, apart from the *placement* of PAs, there aren't any other cues to the presence of (narrow) focus, prime candidates being the shape (rising, falling, sharp rising...) and scaling (higher than previous, lower than previous...) of PAs. The answer to that question is not clear, but it seems that while there are unambiguous phonetic cues to narrow focus, these are not obligatorily present in all narrow focus sentences. For example (16), rendered with four pitch accents of roughly descending height can answer any of the questions in (16a) (or correct any of (16b)), but with only one PA, on *fuselage*, or the PA on *fuselage* significantly higher than the previous ones, may introduce a bias to understand it as a narrow focus answer to (16aiii) (or a correction to (16biii)).

In closing we note that a single sentence may contain more than one focus:

(18)   a.   (Who wants tea, or coffee?) KIM wants TEA.
        b.   (The floor was scratched when John moved the dresser. — No! It was scratched when) SUE moved the FRIDGE.

Moreover, there may be sentences with discontinuous single foci:

(19)   a.   (What did you do to John?) I TOLD him about the GAME.
       b.   (What happened to the book?) MICHELA sent it BACK to the LIBrary.

Alternative semantics for focus as sketched in section 3.2 provides a way of handling such cases as well by interpreting both foci *in situ*.

4.2   Types: Corrective, Presentational, New-Information

Apart from differences in focus size, it is regularly suggested that there are different types of focus, such as informational, contrastive, corrective etc.[20]

Informally speaking, informational focus, sometimes also called presentational focus or new-information focus, would generally mark the non-given parts of an utterance (see sec. 3.3), without necessarily establishing a contrast to a particular alternative (in many cases, then, answer focus is, or at least can be, presentational). Contrastive focus, on the other hand, juxtaposes two, perhaps always exclusive, alternatives; the prime instance of this would be corrections.

The crucial question is what evidence we have that these are distinguished by *grammatical* means, e.g. different pitch accent patterns or types. Prosodic evidence in English seems inconclusive. In particular, it is hard to distinguish between the claim that a particular focus is, for example, corrective (and hence realized, say, with a larger pitch excursion), and the claim that a(n ordinary) narrow focus is realized in a contrastive utterance (which therefore has a larger pitch range in general).

On the other hand, Italian and many other Romance languages, have a focus fronting construction in which an intonationally distinguished, and pragmatically focused element appears in non-canonical left-peripheral position. Focus fronting never happens with answer foci (these must be realized right-peripherally), but typically occurs in corrections or explicit juxtapositions. This kind of pattern can be taken as evidence that grammar does distinguish different kinds of foci, although analyses that aim to derive the differences while maintaining a unified concept of focus have been proposed.[21]

It is important to distinguish constructions like Romance focus fronting, which (ostensibly) marks a particular pragmatic type of focusing, from constructions like the English cleft (which is also occasionally referred to as a focusing construction). English clefts have particular *semantic* properties,

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[20]See e.g. the seven types of focus in English distinguished in Gussenhoven (2007,sec.2), or the discussion in Dik (1997,sec.13.4).

[21]Brunetti (2004), López (2009), Rizzi (1997), Samek-Lodivici (2006).

namely an existence presupposition and an exhaustivity claim.[22] As we saw above, focus conversationally implicates the same things. As such, focusing and clefting often align for pragmatic reasons as in (20a), but it is straightforward to dissociate them, (20b) (Prince, 1978, p.885/898):

(20) a. It was MaGRUDer that leaked it.
      b. It was ALSO during these centuries that VAST inTERnal miGRAtion from the SOUTH took place.

A more complicated case is presented by Hungarian, which has a preverbal position that has largely the same semantic properties as English clefts (existence presupposition and exhaustivity claim). Unlike with English clefts (and Romance focus fronting), however, answer foci and corrective foci virtually obligatorily appear in that position, unless they are decidedly incompatible with its semantic properties. Conversely —and also unlike with English clefts, see (20b)— elements in that position are always stressed and interpreted as pragmatic foci (e.g. in Q/A sequences). É. Kiss (1998) concludes that foci in the preverbal position in Hungarian are a different type of focus (she calls them 'identificational') than focus in postverbal position (É. Kiss's 'informational focus'); it seems equally possible, though, that exhaustivity (and existence) are contributed by the position (like in English clefts), while the meaning of focus in pre- and postverbal position is the same.[23]

To conclude, it is hard to determine with certainty whether there are different types of grammatical focus. It is at least not obvious that intonational focus in English (and other Germanic languages) differentiates systematically between uses such as contrastive, informational or identificational.

4.3   Focus Realization Rules

We mentioned several times above that one main principle of focus realization in English (and many other languages) is that foci bear the NPA. Truckenbrodt (1995) makes the strong claim that this is indeed the only effect focusing has on prosody, with all other effects following from prosody-internal regularities, and in particular from what may be called PROSODIC INERTIA: that those principles that determine neutral prosody remain active in focused structures as well. As a consequence, neutral prosody is retained as much as compatible with the requirement that focus bear the NPA.[24]

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[22]I deliberately use the unspecific term 'claim' since the status of exhaustivity in clefts —entailment, presupposition, or conventional implicature— is hard to pin down.

[23]Brody (1995), Horvath (1986, 2010), Szendrői (2001,2004).

[24]Truckenbrodt's (1995:165) constraint actually requires 'highest prominence', which it is clear from his discussion, means highest stress, which in turn coincides with the NPA

Of particular importance is the assumption that the final PA in a prosodic domain (usually the clause) is grammatically the strongest. This is of course the theoretical counterpart to our earlier observation that the final PA is *perceived* as the most prominent. It means that —within a prosodic constituent— one cannot have a stronger PA followed by a weaker one (though the inverse is possible). Assuming that focus needs to contain the strongest PA, PAs after the focus must be omitted altogether (since otherwise, *they* would be strongest). Furthermore and trivially, if the focus doesn't contain a PA by virtue of unmarked prosody (say focus on a pronoun, or an auxiliary, or some other functional element, or a phrase final predicate —see right below), one will be added. In a nutshell: The focus contains a PA; apart from that everything up to and including the focus will retain unmarked prosody, everything after the focus until the end of the focus domain remains accentless.

One peculiarity of unmarked intonation that is retained under focusing is PREDICATE INTEGRATION, roughly: predicates (in particular: verbs) remain accentless if following an accented argument. This effect has been widely discussed in English intransitives, as well as head final verb phrases in Dutch and German:[25]

(21) a. Your MOTher called. (*not:* Your MOTher CALLED)
      b. ein BUCH lesen (*not:* ein BUCH LESen)
          a   book   read
          'to read a book'   [German]

Whatever the exact scope and characterization of predicate integration is, its is —under the view argued for here— not a consequence of some focus realization rule (as it is for Gussenhoven, 1983; Selkirk, 1984, 1995, cf. the latter's FOCUS PROJECTION RULES), but of unmarked intonation. So if we claimed above that within a focus (and before it), unmarked intonation occurs, this will include unaccented predicates in integration configurations. Such predicates will only be accented if they are focused, and their argument is not.[26]

If, as in (21), an argument–predicate sequence happens to occur in sentence-final position, integration will lead to a 'shift' of the NPA to the left. But crucially, there is no need for a rule of NPA shift, nor indeed for a rule of

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on his assumptions.

[25]It is sometimes claimed that integration in intransitive sentences is restricted to unaccusative verbs. As (21a) —and many other examples found in the literature— shows, this is incorrect.

[26]On integration (under various names) see a.m.o. Schmerling (1976), Fuchs (1984,1976), Gussenhoven (1983), Jacobs (1991/2b, 1992, 1999); and, from a slightly different vantage point Sasse (1987), Jäger (2001); for a recent prosody-based analysis Truckenbrodt (2006).

NPA placement (such a rules is e.g. formulated in Cinque, 1993, and widely adopted); it simply follows from two factors: local PA omission on a predicate due to integration, and the purely prosodic definition of NPA as the final PA.

5 Summary

This article surveyed some core semantic, pragmatic and phonological properties of focus and intonation. Perhaps surprisingly, no definition of focus was offered. Rather I suggested a rough demarcation of phenomena potentially amenable to an analysis utilizing focus (marked accent patterns), introduced a formal tool to formulate focus-related grammatical conditions (alternative sets) and then gave a semi-formal characterization of two of the most common and best understood focus phenomena: question/answer focus and contrastive focus.

A complete theory of focus would offer similar characterizations of all phenomena within this realm, whatever they may be, and hopefully be able to unify them formally (unless, of course, they turn out to be properly grammatically distinguished in a way not attributable to other factors). At present, some generalization of contrastive focus along the general lines of anaphoric contrast seems most promising in this regard, but many details remain to be worked out.

Crosslinguistic studies of focusing are of utmost importance in this project. Considering the lack of a general and sufficiently precise definition of focus, the starting point for the more successful crosslinguistic studies are again uncontroversial instantiations of the general phenomenon, namely answers and contrastive utterances. Once the grammatical realization of such constructions in a language is well understood, one can proceed to ask what other pragmatic (or grammatical) configurations in that language receive the same or a similar realization, thereby widening again the scope of focus theory in general, and allowing for meaningful crosslinguistic comparison.

Hopefully this article can serve as a guideline to researchers new to this endeavor, and aid in avoiding common terminological and methodological pitfalls.

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