A comparative evaluation of feature- and stress-based models of structural focus

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Abstract

The purpose of this paper is to enumerate the most salient cross-linguistic attributes of focusing, identifying key characteristics to be addressed by theoretical models. Such characteristics include positional restrictions, the adjacency requirement between focus and verb, directionality effects, parallels between the syntactic behaviour of wh-phrases and foci and prosodic phenomena. In addition, based on our conclusions, we will assess the explanatory power of the three most influential models, each representing one of the main trends within linguistic research.

Since discourse functions are more conspicuously encoded in the syntax of so called discourse configurational languages the examples presented during the discussion will primarily be taken from this group. Linguistic data drawn from focus-in-situ languages will be presented for the sake of contrastive arguments whenever necessary.

Our conclusion will be that a stress-based approach accounts for a wider range of focus-related phenomena than the feature based models.

Introduction

Syntactic transformations relating to discourse functional aspects of language received scarce attention up until the middle of the 1980s in the generative framework. Discourse configurationality, that is the property of languages whereby the discourse-semantic functions of topic and focus are reflected in the particular syntactic positions of the elements fulfilling those functions, was not formerly recognised as a factor in the taxonomy of languages types. However, the extension of particular generative frameworks to languages exhibiting this kind of property (e.g. Svolacchia, Mereu, & Puglielli, 1995, Horváth, 1995) lead to the recognition of the need for theoretical models where such functions are clearly described and accounted for.

In the following discussion we will concentrate on the discourse function 'focus' and examine the semantic and syntactic attributes of the operation. The issues under discussion will often be illustrated with Hungarian examples. Nevertheless, since certain features of focusing are not overtly exhibited in Hungarian, a number of other 'type B' discourse configurational languages will be drawn upon (Kiss, 1995).

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Firstly, we will present a brief overview of how focusing is approached from the semantic point of view. All of the discussed models agree regarding the most fundamental functions of focusing such as exclusive identification, expression of new information or establishing contrast. Of course the analyses vary when it comes to more abstract details regarding the exact nature and operation of focusing. These details will also be outlined and compared.

The second section is concerned with the most salient syntactic properties of focusing. Particular attention will be given to cross-linguistically relevant features such as the tendency of focused constituents to surface in a verb adjacent position, the intrinsic similarities between the syntactic behaviour of foci and wh-elements, the correspondence between directionality effects observed both in focusing and in case assignment and, finally, prosodic prominence. Some language particular attributes will also be described. These will include the optional presence of morphological markers and the head-finality constraint of focused phrases in Hungarian.

In the third section we will present a short review of the three most influential models of focusing, namely Horváth's theory (1995), based on parallels between the syntactic behaviour of case and foci, Bródy's framework (1990), emphasising the similarities between wh- and focus-phrases and a non-feature driven account, and Szendrői's stress-based approach (2003). We will conclude the paper with the summary and comparative evaluation of the three approaches and suggestions for possible further research.

Semantic aspects of focusing

The term "focus" is used to refer to the constituent of a sentence which expresses new information, identification (with or without exclusion), contrasting or exhaustive listing by identifying all and only the elements of a contextually relevant set of which the predicate holds (Kiss, (1995). Focusing is a universal operation found in every language although some cross-linguistic variation can be observed as to the exact functions focused constituents fulfil and the (morpho-)syntactic and prosodic processes that focusing involves. Regarding the ways of investigating and describing focusing, Kiss differentiates between quantificational and non-quantificational approaches (Kiss, (1995). In her quantificational analysis Szabolcsi (1981) places the emphasis on the logico-semantic properties of the operation. Consider the semantic reformulation of (1).

(1) HARRISON FORD *kapta   meg*
    HARRISON FORD got-Past   Vprt (Verbal Particle)

    Rick Deckard   *szerepét.*
    Rick Deckard-acc.   role-acc

HARRISON FORD got the role of Rick Deckard.

For every x, x got the role of Rick Deckard if and only if
x=Harrison Ford

Focusing the subject of the sentence singles out one member of a previously established set within the domain of the discourse (in this case for instance a group of actors who may have played the role). She also points out that the truth conditions of a sentence are affected by the presence of a focus operator (2-4). (2b) is a logical consequence of (2a) whereas (3b) is not a logical consequence of (3a), therefore a conjoint sentence containing either (3a) or (3b) and the negation of the other does not result in a contradiction.

(2) a. *Rick megsemmisitette Polokovot   es   Luba Luftot*.
        Rick eliminated   Polokov-acc and   Luba Luft-acc
    b. *Rick megsemmisitette Polokovot*.
        Rick eliminated   Polokov-acc

(3) a. *Rick POLOKOVOT   ES   LUBA LUFTOT   semmisitette*
        Rick Polokov-acc   and Luba Luft-acc   eliminate-Past
         meg.
        Vprt (Verbal Particle)
        It was Polokov and Luba Luft that Rick eliminated.

    b. *Rick POLOKOVOT   semmisitette   meg.*
        Rick Polokov-acc   eliminate-Past Vprt
        It was Polokov that Rick eliminated.

(4)   *Rick nem POLOKOVOT   semmisitette   meg hanem*
        Rick no Polokov-acc   eliminate-Past Vprt but
        POLOKOVOT   ES   LUBA LUFTOT   semmisitette   meg.
        Polokov-acc   and   Luba Luft-acc eliminate-Past Vprt.

        It was not Polokov but Polokov and Luba Luft that Rick eliminated.

Another quantificational analysis of focusing was proposed by Kenesei (1986) who distinguished between focus operators expressing identification and exclusion in the case of contrastive focus. The latter takes place when the focused constituent operates over a closed set of individuals thus identification of one member (of whom/which the predicate holds) also determines a complement subset of which the predicate does not hold. The former possibility, however, that is identification without exclusion, is a more problematic issue. Kiss (2002) gives examples of various contexts where, according to her proposal,

exclusion is not present in the interpretation. Consider the sentence where an adverbial of manner is focused (5).

(5) a. *A   macska CSENDESEN   osont   be   a   szobába.*
        The   cat   QUIETLY   sneak-Past VP   the room Ill(lative)

   The cat QUIETLY sneaked into the room.

   b. *A   macska CSENDESEN, nem LASSAN   osont   be   a*
       szobába.

       The cat   QUIETLY   not   SLOWLY sneak-Past VP   the
       room-Ill

       The cat QUIETLY sneaked into the room, not SLOWLY.

   c. *A   macska   csendesen   beosont   a   szobába.*
       The   cat   quietly   VPsneak-Past the   room-Ill

   The cat quietly sneaked into the room.

According to Kiss (2002), who follows Szabolcsi's argument (1983), adverbials of manner cannot express identification through exclusion due to the fact that they do not denote individuals (see 5a) although they can be individuated by listing (5b). Treating the issue this way leaves no explanation as to why native speakers would still interpret (5c) differently from the sentence containing focus but no alternative adverbials (5a). One may take an opposing view to Kiss's (2002) and propose that, the focusing of *csendesen* 'quietly' does actually create a complement set. According to this analysis the main function of focusing remains identification while exclusion is a logical consequence of the operation.

Presenting an alternative approach, Rooth (1985) seems to grasp this exact aspect of semantics involved in the interpretation process. In his analysis a set of alternatives are generated by the focus based on the discourse context, which to an extent corresponds to the complement set described in the previous approaches. The shortcoming of this model (as pointed out by Kiss) is that it does not emphasise the exhaustiveness expressed through focusing offering only a partial description of the operation (Kiss, 1995). Additionally, one would need to assume that a further operation is carried out during the interpretation process, that is the identification of the individual denoted by the focus and exclusion of the rest, the former's logical consequence mentioned above.

Syntactic aspects of focusing

The idea that grammar unambiguously determines focus is most saliently demonstrated by phenomena observed in the so-called designated focus

languages (for instance Hungarian) or languages in which focus is (also) morphologically marked (e.g. Somali). In Hungarian functions of focus such as exhaustive identification are exclusively associated with the syntactic position immediately preceding the verb while Somali makes use of the focus markers baa/ayaa, waxaa and waa to indicate "nominal" and "verbal" focus (Svolacchia et.al., 1995). That the displacement of focused constituents in Hungarian is not an instance of scrambling has been demonstrated by Horváth (1986).

In her analysis Kiss argues for a non-transformational view of this operation claiming that the order of "scrambled" constituents is in fact the result of random base generation. She points out that scrambling often has no effect on the semantic interpretation of the sentence owing to the indefiniteness of the relative scope order of postverbal constituents (see (6) and (7) (Kiss, 1995). This in turn would be in favour of an account which treats focusing as a movement operation, since it affects scope and, as it was illustrated in the previous section, influences sentence interpretation.

(6) [VP *Hol* [V' *beszél   minden ember két   nyelvet?*]]
         where   speaks   every person two languages

     a. 'Where does everybody speak two (potentially different) languages?'
     b. 'Where are two (particular) languages spoken by everybody?'

(7) [VP *Hol* [V' *beszél két   nyelvet   minden ember?*]]
         where   speaks two languages every   man
     a. 'Where are two (particular) languages spoken by everybody?'
     b. 'Where does everybody speak two (potentially different) languages?'

Certain parallels between focusing and structural Case assignment, namely that the focus needs to appear in the governing domain of the verb just like arguments receiving structural Case, and similar positional considerations concerning focused constituents and wh-elements also suggest that the surface constituent order is the result of movement. All these characteristics confirm the view held in generative linguistics that focusing is not merely a pragmatic operation determined by discourse-related considerations but it is in fact encoded in the grammatical representation of sentences.

The formal characteristics of focusing

Focus-verb adjacency

Having established that focusing is not merely a stylistic variation of word order but it is also reflected in the grammatical representation of the utterance, we will now take a look at linguistic data in order to describe the most salient characteristics of the operation from a syntactic point of view. The examples are drawn from Hungarian where focusing targets a designated position in keeping with certain structural constraints that cannot be observed in focus is situ languages such as English. The focus position is located immediately to the left of the V. (8b) shows that the direct object normally occupies a postverbal position when it is not focused.

(8) a. *A   BANÁNT   falta   fel   a*
       maki.
       The   BANANA-acc   devour-Past-3rd sing   Vmod(up) the
       lemur

       The lemur devoured the BANANA.

    b. *A   maki   felfalta   a   banánt.*
       The   lemur   Vmod+devour-Past-3rd sing   the   banana-acc

       The lemur devoured the banana.

Note that Hungarian makes use of a wide range of verbal modifiers (Vmod) which, in focusless sentences, are left-adjoined to the verb and are generally assumed to form a both phonologically and morphologically complex constituent with it (8b) (Kiss 2002, Szendrői, 2005). This complex formation, nevertheless, is not borne out in focused sentences where the Vmod surfaces to the right of the verb (8a). Moreover, the strict adjacency between the Vmod and V, which is illustrated in (9a), may be broken by other intervening verbal complements when a focused constituent occupies the preverbal position. This is shown in (9b) where the direct object modified by the adjective precedes the Vmod, whereas (9c) illustrates that the Vmod can also remain adjacent to the verb. (Thus, as it was mentioned earlier, postverbal complement order is said to be free in Hungarian due to scrambling (Kiss, 1995).

(9) a. *A   keselyű szerintem/valószínűleg   fel*
       The   vulture   I-think/probably   Vmod
       *szerintem/valószínűleg falta
       **I-think/probably   devour-past-3d sing
       a   pici makit.
       the   tiny lemur-acc

I think/Probably the vulture devoured the tiny lemur.

b. *Szerintem A KESELYŰ falta   a   pici*
I-think   THE VULTURE devour-past-3rd sing the tiny
makit   fel.
lemur-acc   Vmod

I think THE VULTURE devoured the tiny lemur.

c. *Szerintem A KESELYŰ falta   fel   a*
I-think   THE VULTURE devour-past-3rd sing Vmod the
pici   makit.
tiny   lemur-acc

I think THE VULTURE devoured the tiny lemur.

With regards to further restrictions on word order in focused sentences, Kiss points out that focused phrases must always be head-final. The examples in (10) exemplify how Hungarian deals with modified noun phrases (10a and b) and relative clauses containing postmodifiers (10c, d and e) (Kiss, 2002).

(10)a. **Számomra* [DP *A   TALÁLKOZÁS PÉTERREL*] *volt a*
For me   THE MEETING   PETER-   was the
legemlekezetesebb.
memorable-superlative

For me, it was the meeting with Peter that was the most memorable.

b. *Számomra* [DP *A   PÉTERREL VALÓ TALÁLKOZÁS*] *volt a*
For me   THE PETER   BEING MEETING   was the
legemlekezetesebb.
memorable-superlative

For me, it was THE MEETING WITH PETER that was the most memorable.

c. **Csak* [DP *AZOK A   VEZETŐK,   AKIK MÉG SOHA   NEM*
Only   THOSE THE DRIVERS   WHO STILL NEVER NOT
OKOZTAK BALESETET]   *kapnak díjkedvezményt.*
CAUSED   ACCIDENT-acc get   discount-acc

It is ONLY THE DRIVERS WHO HAVE NEVER CAUSED AN ACCIDENT that get a discount.

d. *Csak* [DP *AZOK A VEZETŐK* t$_i$] *kapnak díjkedvezményt*
    [CP *AKIK MÉG SOHA NEM OKOZTAK BALESETET*]$_I$

e. *Csak* [DP *AKIK MÉG SOHA NEM OKOZTAK BALESETET, AZOK A
    VEZETŐK*] *kapnak díjkedvezményt.*

(Modified from Kiss, 2002)

The prepositional phrase in (10a) intervenes between the noun and the verb resulting in an incorrect utterance, while its preposed version (10b) allows for the adjacency between the noun and the verb. Similarly, the postmodifier of the focused relative clause has to be moved to a postverbal position (10d) or alternatively to the left of the NP (10e). The phenomena described above lead to the formulation of the Head-Finality Constraint (11) (Kiss, 2002).

(11) Head-finality Constrain
     A phrase in Spec, FP must be head-final.

Pure syntactic analyses so far have failed to give an explanation as to the motivation of the constraint. There have been suggestions, however, that prosodic considerations are at play here, namely that the focus and the verb need to form a single phonological phrase in Hungarian (Vogel and Kenesei, 1990 referred to in Kiss, 2002 p.88).

To sum up, we have established a salient characteristic of Hungarian sentences with structural focus, namely the strict adjacency requirement between the focused constituent and the verb. We also noted that some aspects of this requirement cannot be explained on exclusively syntactic terms.

Focusing and Wh-movement

Certain grammatical categories and groups of lexical items exhibit properties that are analogous to those of focused constituents. In Hungarian, for instance, wh-phrases are assumed to move to the focus position. This view is supported by the fact that wh-elements and foci are in complementary distribution and in Hungarian interrogative sentences verbal modifiers are left stranded behind the verb the same way as during focusing. It has been suggested that this phenomenon is due to the fact that wh-elements are inherently focused. Consider the following examples:

(12) a. *Mennyi   idő   alatt   írtad   meg a*
        how much time   under   write-Past-2nd sing Vmod the
        disszertációdat?
        dissertation-acc

        How long did it take for you to write your dissertation?

b. *A   disszertációdat mennyi   idő   alatt   írtad*
The dissertation-acc how much time under   write-Past-2nd sing
meg?
Vmod

How long did it take for you to write your dissertation?

c. **Mennyi   idő   alatt   a   disszertációdat   megírtad?*
how much time under the dissertation-acc   Vmod+write-
past-2nd sing

d. **A   disszertációdat mennyi   idő   alatt   megírtad?*
The   dissertation-acc how much time under Vmod+write-
past 2nd sing

Examples (12a) and (12b) demonstrate that the relative order of the wh-phrase and the verb is unchanged. The intervening of any constituent between the wh-phrase and the main verb results in an incorrect utterance (see (12c) and (12d)).

While foci and wh-elements are in complementary distribution it is possible for a sentence to contain more than one of the same category. In such cases only one constituent is moved to focus position, while the rest stay in situ (13). (13a) and (13b) illustrate that the choice regarding which wh-phrase is preposed does not affect the interpretation of the sentence. According to Kiss this is owing to their being generated in the same phrase (that is VP) and thus located an equal distance from the focus position at D-structure (Kiss, 2002).

(13) a. *Ki   festette   meg kinek   a   portréját?*
Who paint-past-3rd sing Vmod   whose the portrait-acc

Who painted whose portrait?

b. *Kinek   a   portréját   festette   meg ki?*
Whose the portrait-acc paint-past-3rd sing Vmod who

Who painted whose portrait?

c. *PÉTER festette meg VIKI portréját.*
PETER paint-past-3rd sing Vmod VIKI portrait-acc

PETER painted VIKI'S portrait.

The analysis above confirms the parallel between real wh-elements and foci from the syntactic point of view. The question to be considered at this point is whether the correspondence of formal properties of foci and

wh-elements stems from a certain extent of overlap between the semantic features of the two. If that is the case, any proposed model of focusing will need to capture this generalisation. Indeed, Jackendoff's (1972) observation regarding question-answer pairs confirms this assumption. According to his analysis, an appropriate wh-question carries the same presupposition as the focused sentence thus making the identification of the focus possible. The focus is the part of the utterance that is not contained in the presupposition, as in 14 (presented in Szendrői, 2005).

(14) a. MARY cleaned out the doghouse.
     b. Who cleaned out the doghouse?
     c. ∃x (x cleaned the house)

Focusing and structural Case

The [+Focus] feature

The strict adjacency of focused constituents to the verb and the directionality of government in certain focus prominent languages signify the next important feature of the phenomenon to be considered. It was first pointed out by Horváth that these characteristics correspond to the syntactic behaviour of structural Case. This observation along with Jackendoff's (1972) earlier proposal to represent focusing in syntax with the feature [+Focus] provided the base for one of the most influential models of focus outlined by Horváth in 1986.

According to Jackendoff, the semantic functions associated with focusing (such as identification, contrast, etc.) are reflected in the syntactic representation of the utterance by the feature [+F(ocus)] which may freely be assigned to any constituent (Jackendoff, 1972):

(15) [+F] marking
    Mark any constituent as [+F].

(16) Focus assignment
    The semantic material associated with surface structure nodes
    dominated by F is the Focus of the sentence. To derive the
    Presupposition, substitute appropriate semantic variables for
    the focused material.
                                 (Jackendoff, 1972:240)

The assumption that languages make use of a [+F] feature which is on a par with features familiar from e.g. Case theory has become an essential part of practically all generative approaches. However, the exact nature of the source and assignment of the feature has been a matter of debate.

Focus and Case

The strongest argument for drawing a parallel between the two notions comes from languages with type B configurationality in which the focused constituent must surface in a designated position in order to receive the appropriate focal interpretation. There is a tendency for foci to appear next to the verb following movement which is demonstrated in the Hungarian and Aghem examples below:

(17) a. *Peter MARIVAL   ment   el   Lappfoldre.*
      Peter Mary-INSTR went   Vmod Lapland-to

      Peter went to Lapland WITH MARY.

    b. *Peter elutazott Lappfoldre Marival.*
       Peter went   Lapland-to Mary-INSTR

       Peter went to Lapland with Mary.

    c. *fɨl   á   mɔ   zɨ   ÁN 'SÓM bɛ́-'kɔ*
       friends SM P_2 eat   IN   FARM fufu

       The friends ate fufu IN THE FARM.

    d. *fɨl   á   zɨ   kɨbɛ́ án   'sóm*
       friends SM P_2 eat   fufu   in farm

       The friends ate fufu in the farm

                      (Aghem examples from Horváth, 1995)

In the focusless sentences (17b) and (17d) both *Marival* 'with Mary' and *'sóm* 'in the farm' are in the right periphery, whereas in (17a) and (17c), when focused, they occupy the immediately preverbal and postverbal positions respectively. Although adjacency of focus to the verb is common, it is not a universal requirement. Nevertheless, the examples illustrate another property often attested within this category, that is the directionality effect involved in the phenomenon. Numerous examples are presented in the literature confirming the assumption that the relative position of focused elements to the verb reflects the directionality of government involved in Case assignment in the given language (see (17)). Furthermore, following Chomsky's (1971) and Jackendoff's (1972) arguments, Szendrői (2003) points out that additional support for the parallel nature of the two notions is provided by the fact that both focus

and Case are established at S-structure and cannot be determined at D-structure.

Our conclusion is that a sufficiently explanatory model will need to allow for the strict adjacency requirement and directionality of focusing, as well as for its indeterminacy at D-structure level. Preferably, some sort of explanation for the presence or otherwise of morphological focus markers should be provided, too.

Prosodic aspects of focusing

In enumerating the most important formal properties of focusing, so far we have only concentrated on purely syntactic issues. Although the correspondence between the surface position of focus and the stress pattern of a sentence was recognised as early as the 1970s by Chomsky (1971), Jackendoff (1972) and later also described by Selkirk (1984) traditional approaches to focusing tended to consider the phenomenon to be the consequence of underlying syntactic operations involving the grammatical feature [+Focus]. According to the traditional generative analyses, focusing is primarily substantiated by the assignment of the [+F] feature to a particular constituent in a sentence while the mapping of main stress onto the constituent is considered to be a subsequent phonological operation. Furthermore, this phonological component is only taken to concern speech production and interpretation on the articulatory and auditory level. The prosodic module of language is said to be separated from syntax and semantics and only the latter two provide input to the conceptual-intentional system. Thus the information conveyed by the stress pattern is not directly available at this point but encoded in the syntactic representation of the sentence. In fact, this need for the syntactic representation to include information regarding the focal status of constituents necessitated the proposal of the [+F] feature in the first place. Models adhering to this analysis of focusing belong to the so called accent-to-focus view (Szendrői, 2005).

More recent models of focusing put forward by Reinhart (1995), Neeleman & Reinhart (1998) and Szendrői (2003, 2005) take an alternative view. Basing their account on the earlier mentioned stress-focus correspondence principle ((18)) they argue that the consistent correspondence between prosodic prominence and focal function is in fact the most significant quality of focusing.

(18) Stress-focus correspondence:
     The focus of an utterance always contains the main stress of
     the utterance.

According to their 'focus-to-accent' approach there is no need for a syntactic feature to encode focus in the grammar since it is determined on the phonetic level of the derivation. Or more precisely the set of possible

foci are generated based on the prosodic makeup of the utterance. As it was emphasised by Szendrői (2005) a sentence may have a number of possible focus interpretations. Capturing this idea, Reinhart suggests the following generalisation:

(19) The focus set of IP consists of the constituents containing the main stress of IP.

(Reinhart, 1995)

Without committing ourselves to either the 'accent-to-focus' or the 'focus-to-accent' view at this point, it will suffice to bear in mind that ample cross-linguistic data bear witness to the tendency that the main stress of a sentence falls on its focused constituent.

Theoretical approaches to focusing

As demonstrated above, focusing exhibits a wide range of seemingly unrelated characteristics and a large degree of cross-linguistic variation. Perhaps due to the diversity of these properties most theoretical models proposed to tackle the issue of analysing focus tend to single out particular attributes to concentrate on. In our description of the most significant features of the operation we have already talked about the striking parallels between the distributional properties of focused constituents and wh-elements and about the tendency of the verb and the focus to be in a government configuration familiar from the theory of case assignment. The first two groups of models put their emphasis on these properties respectively. What unites these analyses is their purely syntactic approach which is presumably the result of the earliest efforts to integrate the notion into a larger generative framework. The third group of models, however, breaks with the tradition and takes the phonological prominence of focus as a starting point in the analyses (Szendrői, 2005).

Analysing focus like Structural Case

The Focus Parameter

The strict positional constraints exhibited in sentences with focus constructions served as the basis for Horváth's (1995) proposal claiming that the adjacency requirement is due to a feature assigning process analogous to that described in Case Theory. According to the earliest version of the model, constituents to be interpreted as focus move to a specific position in order to receive the feature [+F] whose source was first hypothesised to be the verb. Cross linguistic variation, or, to be precise, the difference between the constituent order of discourse configurational and focus-in-situ languages, was accounted for by the so called Focus Parameter:

(20) FOCUS-Parameter:
    a. [+Focus]: a feature associated freely with any category –
        deriving the English-type languages, i.e. Focus in situ
    b. The "grammaticalised" version of the [+Focus] feature: an
        intrinsic part of the feature-matrix of a single category, namely
        V – meant to derive the Hungarian-type, structurally limited,
        instantiations of Focus

(Horváth, 1995)

At first sight this proposal seems to be able to capture valid generalisations regarding the way focusing is substantiated across languages. However, it turns out that both these stipulations have serious shortcomings. Our earlier conclusion that focusing is an S-structure phenomenon is not reflected in the first point of the Focus-parameter as presented above.

As to the second point of the Focus-parameter, cross-linguistic data (e.g. Somali examples in Svolacchia et al., 1995) and a number of additional arguments presented by Horváth (1995) cast doubt on the claim that the verb would be the source of [+F]. Consequently, Horváth modified her theory, suggesting that the source of the feature [+F] is in fact a functional category (such as I or C) and the role of V is to lexicalise the, otherwise covert, functional head. This analysis implies that if the verb is not overtly present in the sentence another constituent will need to move to lexicalise the appropriate functional head. Regarding the exact position of focused constituents, which, according to the model, varies across languages, the most likely candidates are [Spec, IP], [Spec, CP], a VP adjoined position or an A' position under V' (Kiss, 1995).

In its most up to date form Horváth's theory identifies four factors which play key roles in focusing leading to variations as to its formal properties. The first factor corresponds to the earliest version of the Focus Parameter. In type B discourse configurational languages the source of [+F] is not considered to be the verb but a functional head:

(21) The nature of the feature [+F]:
      (i) freely occurring, i.e., not transferred from another category.
      (Deriving focus-in-situ languages.)
      (ii) assigned by a specific X^0 category; (Deriving designated focus
      languages)

(modified from Horváth, 1995)

Horváth also assumes parametric variation regarding the nature of the assigning category:

(22) What X^0 functional category of the clause is the assignor, i.e. the
      source of the feature (e.g. I vs. C)

(Horváth, 1995)

The third factor determines whether an overt lexical category is needed for feature assignment. This requirement, if present, is responsible for instance to the obligatory verb movement in Hungarian:

(23) Whether the feature assigning category needs to be 'lexicalised'
                                                        (Horváth, 1995)

Additionally to feature assignment under government and adjacency Horváth claims that [+F] can be assigned in a Spec-head relation as well:

(24) The mode/nature of the process of feature assignment:
        (i) feature transfer, subject to the Locality Conditions of Horváth
        (1981, 1986), namely government and adjacency
        (ii) SPEC-head "agreement"/relation

                                                        (Horváth, 1995)

A particularly strong point of the approach is that it does not require any new principles or parameters to be integrated in the larger structure of generative theory. Although the original Focus Parameter was specifically concerning the [+Focus] feature the four factors presented above are also taken to apply to syntactic features in general.

As one would expect, the model is particularly suitable to capture the reason behind the occurrence of certain formal properties of focusing which we identified above. For instance verb movement along with the focus-verb adjacency in languages like Hungarian are the direct consequence of the third factor of variation in feature assignment described in (23). The correspondence between the directionality effects of focusing and case assignment also follows logically from the fact that the same rules of feature assignment are at work in both instances.

The focus-case parallel approach, however, fails to give an account of the similarities in the behaviour of foci and wh-elements or other inherently focused constituents. One may suppose that the treatment of such items would be on a par with the treatment of inherent case. In discussing the quantificational properties of focus, Horváth does refer to an earlier study by Lasnik and Stowell (1991) in which foci are assumed to "contain a covert operator 'only'" which would imply some sort of indirect parallel between wh and focus phrases (wh-elements being quantificational). However, such an analysis from a semantic point of view would not express the contrastive nature of focus, so thus seems untenable.

The analysis lacks an explicit account of the factors that may bear relevance to the presence or otherwise of various focus particles. Furthermore, due to the fact that Horváth's analysis aims to describe focusing from a purely syntactic point of view the issue of prosodic prominence was ignored. Presumably, stress assignment would follow

syntactic derivation and the constituent marked [+F] would receive main stress. This would imply a high degree of independence between the phonological and the grammatical modules of Language.

Analysing focusing like wh-phenomena

As demonstrated above there are similarities regarding the syntactic and semantic properties of focused and interrogative constructions which suggest a fundamental parallel between the two operations. Both foci and wh-elements occupy the same syntactic position if the other is not present, multiple foci and multiple wh sentences exhibit the same distributional properties as to the location of the second focused or wh constituent and they are in complementary distribution. As to the semantic similarities, it has been demonstrated that an appropriate wh-question and focus construction pair have the same presupposition (Jackendoff, 1972). These considerations lead to the proposal of analyses attempting to account for focus phenomena using the so called Focus Criterion which corresponds to the Wh Criterion originally outlined by Rizzi (1996):

(25) Wh Criterion:
  a. A wh-operator must be in a spec-head configuration with an $X^0_{[+wh]}$.
  b. An $X^0_{[+wh]}$ must be in a spec-head configuration with an wh-operator.

                                                                        (Rizzi, 1996)

According to Rizzi, it is a question of parametric variation whether clause b. applies at LF only or already at S-structure. This variation is responsible for the difference in the surface structure of languages with multiple wh-movement and languages like English in which only one wh-phrase is fronted overtly while the rest are moved only at LF. As for syntactic levels of application, the Focus Criterion, proposed by Bródy (1990), also differentiates between languages in which the focus needs to move overtly to [Spec, FP], as in the case of Hungarian, and languages like English in which movement is covert and takes place at LF (note that Bródy assumes that focus has its own FP projection). This differentiation is an essential feature of the criterion as it is the formal representation of the fundamental difference between designated focus and focus-in-situ languages. Assignment of the feature [+F] takes place under spec-head agreement and the source of the feature is assumed to be the verb which may also be overtly preposed.

(26) Focus Criterion
  a. At S-structure and LF the Spec of an FP must contain a +f-phrase.

b. At LF all +f-phrases must be in an FP.

(Bródy, 1990, (10a, b))

In her review of Bródy's analysis, Horváth argued strongly against an FP in the formal representations of focus constructions. Her opposing view was based on data from various African languages in which certain predictions implied by Bródy's theory turned out to be false (see Horváth, 1995). Another argument against FPs involves data on focused verbal projections. According to Bródy's model, no variation in word order due to focusing should be displayed regardless of the syntactic category of the focused constituent in any language. Certain languages (e.g. Kikuyu), however, exhibit exactly this kind of variation (Clements, 1984).

Summary and evaluation

Similarly to the 'focus-case' approach discussed above, the most fundamental hypothesis in Bródy's model and its various versions is the assumption that focusing is a process of feature assignment. The need for constituents to receive the [+F] feature, whether through spec-head agreement or under government and adjacency, is assumed to be the trigger for focus movement which is observed in designated focus languages. By the parameterisation of clause a. of the Focus Criterion the model aims to account for the difference between designated focus and focus-in-situ languages such as Hungarian and English respectively. In the case of Hungarian the additional verb-movement and the resulting adjacency condition is also accounted for by the claim that the source of [+F] is the verb itself. The similar behaviour of foci to wh-phrases is a logical consequence of the hypothesis that wh-elements are inherently focused.

If we consider the nature of and the supposed motivation for the operation (that is, feature assignment and the positional constraints on feature assignment) this framework seems to agree with the first approach to a fairly large extent. Therefore, it is not surprising that the additional constraint imposed on it by the Focus Criterion has made the model more restrictive than that of Horváth's in which we do not find a similar rule. As a result, Bródy's theory seems to be unable to account for a wider range of variation than what could have been observed between Hungarian and English. It has to be noted that the framework was outlined based mainly on Hungarian data.

This restrictiveness mainly manifests itself in shortcomings when it comes to the description of word order variations. Now let us consider the characteristics of focusing which were identified as key features to be accounted for by the competing models. As we mentioned above, the adjacency requirement between the verb and the focused constituent is explained by the assumption that feature assignment takes place under spec-head agreement or government and adjacency. The directionality

effects commonly observed across languages may also be considered to be the consequence of general and independent rules of feature assignment. At this point, however, it needs to be restated that, unlike in Horváth's theory, the verb is taken to be the exclusive source of the [+F] feature. This is another restriction that negatively affects the flexibility of the model.

As for the presence or otherwise of focus particles in a language, the model does not offer any explicit account and this is also the case regarding prosodic properties. Thus, Bródy's theory provides a somewhat more rigid account of focusing than Horváth's. The restrictions imposed by and resulting from the Focus Criterion have some undesirable effects on the overall potential of the framework.

The stress-based approach to focusing

The stress-based approach to focusing is founded on the so-called stress-focus correspondence principle (18) which was originally proposed by Chomsky (1971), and later in Jackendoff (1972) and Selkirk (1984). A more developed theory was not outlined until Reinhart and Neeleman's work (1998) in which it is claimed that, contrary to the accent-to-focus view, focus is encoded in the phonetic structure of the sentence. The most recent model based on this assumption is outlined by Szendrői (2005), who accepts Bródy's assumption that foci, at least in designated focus languages, are associated with their own functional head. According to the analysis, focused constituents land in [Spec, FP] and verbs are moved to the head of FP. The crucial difference between the two accounts lies in the supposed motivation of this movement. Szendrői suggests that the FP is licensed in order to create a syntactic slot for the focus where it can receive the most prominent stress of the utterance. Furthermore, the concomitant verb movement in Hungarian also takes place to this end as it is necessary to license [Spec, FP].

Syntactic derivation

To illustrate how this analysis works in practice consider the unmarked and focused Hungarian sentences presented earlier in (2) and (3). Stress is taken to be leftward oriented in Hungarian both at word and clausal levels. So in order for the object to get focal interpretation it needs to move to the leftmost specifier position in the clause which is licensed by the accompanying verb movement to the head of FP. Verb movement is indicated by the stranded verbal particle. Although the direct object is preceded by the topic 'Rick', the main stress of the sentence still falls on the object, since topics are adjuncts left-adjoined to the phrase.

Phonological structure

The derivational phase that takes place at the phonological level involves a similar process resulting in the representation of the matching prosodic structure. It is hypothesised that the two structures generated this way are subsequently mapped onto each other in accordance with the so called syntax-prosody mapping rules and stress assignment following structure mapping is assumed to take place based on language particular stress rules (Szendrői, 2003). The syntax-prosody mapping rules and the stress rule operating in Hungarian are presented in (27) and (28).

(27) Syntax-prosody mapping of clauses (Hungarian)
     a. Align all the left-edges of the largest extended projection of the verb with the left-edge of an intonational phrase.

     b. Align all the left-edges of the intonational phrase with the left edge of the largest extended projection of the verb.

     c. Align all the right-edges of the largest extended projection of the verb with the right-edge of an intonational phrase.

     d. Align all the right-edges of the intonational phrase with the right edge of the largest extended projection of the verb.
                                    (Szendrői, 2003)

(28) Hungarian stress rule:
     a. Assign a Strong label to the leftmost phonological word in the phonological phrase. Assign Weak to the other phonological words.

     b. Assign a Strong label to the leftmost phonological phrase in the intonational phrase. Assign Weak to the other phonological phrases.

     c. Assign a Strong label to the intonational phrase.

                                      (Szendrői, 2003)

Figure 1 illustrates the syntax-prosody mapping rules and the Hungarian stress rule in operation. The topic of the sentence is skipped by the stress rule and gets assigned weak stress. One step down the tree, the leftmost constituent of the intonational phrase is the focalised direct object which receives main stress and focal interpretation. In the case of the unmarked version of the sentence the VP+V complex would follow the topic in the left-periphery of a VP and consequently it would be assigned main stress. This is indeed the case, as in Hungarian sentences without focus the most prominent stress always falls on the verb.
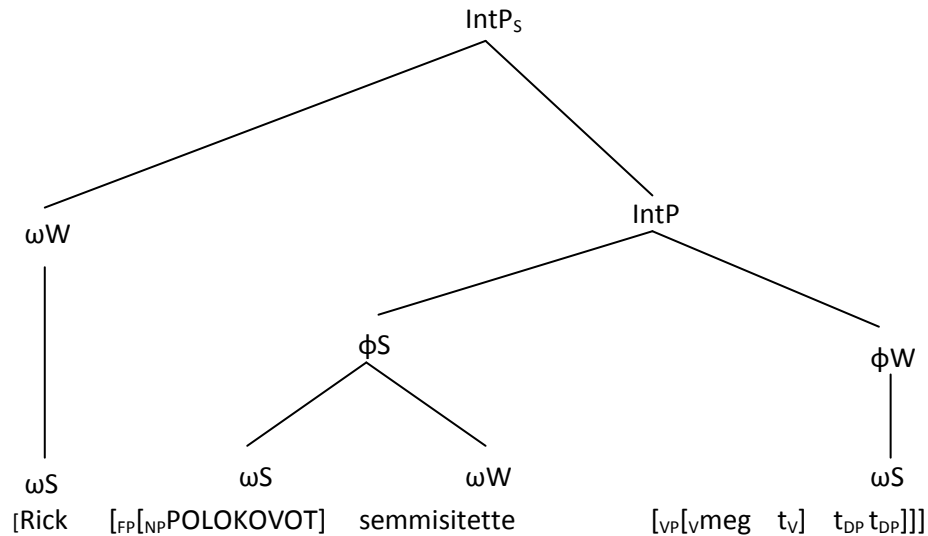
```
                                    IntP_S
                          /                      \
                                                  IntP
                                            /              \
      ωW                                  φS                 φW
       |                          /            \              |
                                                              
      ωS                        ωS              ωW            ωS
    [Rick          [_FP[_NPPOLOKOVOT]   semmisitette    [_VP[_Vmeg  t_V]  t_DP t_DP]]]
```

Fig 1. The application of syntax-prosody mapping rules and Hungarian stress rule

Multiple foci and multiple wh sentences

In the two feature-driven approaches to focusing, sentences containing multiple foci or multiple wh-elements do not receive a satisfactory explanation. Bródy (1990) considers the non-moved constituents to be operators in situ but, as Kiss (1998) and Szendrői point (2003) out, such an analysis would imply ambiguity between the various readings of the sentence. This is, however, not the case, as is illustrated in (29a). Kiss (1998) assumes that both focused constituents project their own FPs and V-movement takes place over the lower one, but this idea is criticised by Szendrői (2003) on the ground that the second focus cannot intervene between the verb and its particle (29b).

(29) a. *CSAK   HÁRMAN ettek   meg   CSAK KÉT*
        Only   three   eat-Past-3rd-Pl Vmod   only   two
        KENYERET.
        bread-acc

     It was only three people who ate only two (slices of) bread.
     *It was only two (slices of) bread that only three people ate.

     b. **CSAK HÁRMAN* ettek   CSAK KÉT KENYERET *meg*.
        Only   three   eat-Past-3rd-P only two bread-acc Vmod

     It was only three people who ate only two slices of bread.
                                                          (Kiss, 1998)

Szendrői accounts for the observed word order phenomena by claiming that, while the first focused constituent is able to move to [Spec, FP], the lack of another main stress position prohibits the movement of the second one. Instead an extra stress rule is applied at a later point in the derivation allowing the second focus to get focal stress. Last resort rules such as this one may sometimes seem to undermine the explanatory power of theoretical models but Szendrői's analysis finds strong support in economical considerations. These are briefly outlined in the following points:

1. As was stated above, Szendrői justifies her view based on the principle or rule of economy. She does this by comparing the number of operations needed to derive interpretation 'I1' where the first constituent 'only three (people)' takes scope over the second one 'only two (slices of bread) and reciprocal interpretation   'I2'.

2. 1ˢᵗ derivation (D1) of I1: The first constituent moves to [Spec, FP] receiving main stress and focal interpretation. The second constituent stays in its base generated position and receives focal stress by the extra stress rule. Since the first focus asymmetrically c-commands the second one, it takes scope over it.

3. 1ˢᵗ derivation (D2) of I2: (the second constituent taking scope over the first one): This is in essence the mirror image of D1. The second constituent moves to [Spec, FP] where it takes main stress and thus focus interpretation. The first constituent remains in situ resulting in the opposite scope interpretation to the one in D1.

4. All the other derivations (that is the one involving subsequent quantifier raising of the second constituent following the process described in D1, thus yielding I2, OR quantifier raising of the first constituent after D2 resulting in I1) involve more operations consequently violate the rule of economy. This also applies to the derivation in which the first constituent moves and the second constituent also moves but to an A-bar position under c-commanded by the first resulting in I1, as this involves two movements instead of one.

So, as we can see from Szendrői's reasoning, the stress-based theory of focusing provides a satisfactory account of the word order phenomena exhibited by multiple-focus sentences (at least in Hungarian) (Szendrői, 2003).

Head-finality

The obligatory head-finality exhibited in Hungarian sentences was not addressed in either of the feature-based models. This feature is explained in Szendrői's framework the following way. Fig 2 illustrates that in Hungarian modified DPs stress falls on the [Spec, NP] (Szendrői, 2003). This generalisation in conjunction with the Hungarian stress rule which asserts that stress assignment is leftward oriented restricts the relative position of constituents within the focus phrase the same way as the position of foci is restricted within the sentence. In particular, the specifier of DP would need to receive main stress even if it was not in its unmarked position, which is the case in the ungrammatical (10a). This in return would unavoidably involve the application of the extra stress rule and result in the violation of the rule of economy.
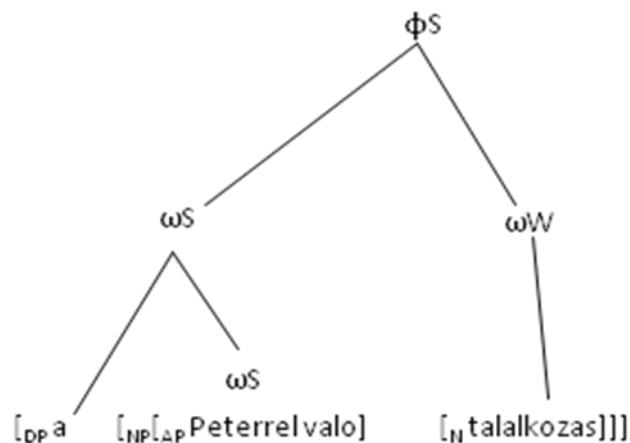

Fig 2: The stress pattern of Hungarian modified DPs.

Summary and evaluation

The stress-based analysis represents a very flexible but sufficiently restrictive approach to focusing which is able to account for most of the fundamental characteristics of the operation identified earlier. The only exceptions are the issues regarding morphological properties and the directionality effect that provided the base for a parallel to be drawn between focusing and case assignment. This is because the stress-driven approach dispenses with the [+F] feature altogether.

Properties of focusing in designated focus languages such as the motivation for focus and verb movement, the possible resulting word orders, the adjacency requirement or the various constraints on relative constituent order within phrases are all consistently accounted for.

Furthermore, Szendrői's model breaks with the conventional attempts to encode focusing in purely syntactic representations which frequently

result in somewhat restricted accounts. The theoretical implications of the stress-based approach help accommodate focusing in the bigger picture of generative grammar. Thus the framework emphasises the inevitable correspondence between the various aspects of grammar such as syntax, prosody, pragmatic and discourse levels and, indirectly, semantics (Szendrői, 2003).

Conclusion

In this paper we have given a brief description of the most salient semantic and syntactic characteristics of structural focus and presented an overview of three influential generative approaches to the phenomenon. In order to compare these models four criteria should be borne in mind. Firstly, we need to consider the explanatory power of the analyses and take into account the degree of economy involved in the approaches. The preferred model must fit in the larger picture of the theory of generative grammar and finally, one should consider whether the approaches are capable of accounting for cross-linguistic variation.

As for the first point, Horváth's 'focus-case parallel' model provided us with an explanation for verb preposition to [Spec, IP] in conjunction with focus movement, the resulting adjacency condition and the directionality effects. One issue left with scarce explanation is the question of morphological focus markers. Since none of the described frameworks address the latter problem this will not affect the judgement in our comparison.

Bródy's approach based on the Focus Criterion, has proven to make a number of false predictions with regards to various scope and word order phenomena. Although it accounted for positional constraints in a few languages as well as for the directionality effects, it did not seem to be insightful regarding focus indeterminacy at D-structure. Furthermore, the prosodic characteristics of focusing were neglected in both feature-driven theories.

Szendrői's stress-based approach is capable of providing an explanation for all significant characteristics of focusing apart from the directionality correspondence between [+F] and case assignment.

The comparison of the approaches in terms of economy is somewhat more difficult. Horváth identified four factors of parametric variation, Bródy's analysis is based solely on the Focus Criterion while Szendrői's model makes do with a group of syntax-prosody mapping rules and language particular stress rules. However, Horváth claims that the four parameters given to describe the syntactic behaviour of focus are independently at work in all instances of feature assignment. Furthermore, although Bródy's model only uses the Focus Criterion, it was demonstrated that this affects the flexibility of the analysis. Thus it seems both Horváth's and Szendrői's theories are preferable over Bródy's.

To establish which one may be the stronger candidate let us consider their compatibility with other modules of linguistic theory. We already

pointed out that one of the 'focus-case parallel' view's strongest points is its generalisability with regards to feature assignment. Nevertheless, its fundamental commitment to attempting to encode focusing on exclusively syntactic terms implies a high degree of independence between the different modules of Language. Contrastively, as we mentioned earlier, the stress-focus correspondence principle at the core of Szendrői's model, simultaneously refers to notions relating to different subcomponents of grammar thus involving prosodic as well as discourse-pragmatic and semantic factors in the derivation. This feature of the prosodic approach may make it preferable over Horváth's.

Nonetheless, due to its being a relatively recent model of focusing, it has yet to be tested against wider cross-linguistic data. Recall the issue of false predictions made by the assumption that an FP is projected in the clause structure of focused sentences. A hypothesis accepted by Szendrői's analysis. The re-analysis of data used in previous studies following the feature-based paradigm may be a good starting point for research. This of course would necessitate additional data collection to establish the relevant prosodic features of the languages in question.

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