A stress-driven approach to the syntax of focus[*]

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Abstract

A focused constituent contains the most prominent stress of the clause. (Selkirk 1984, Reinhart 1995) Reinhart accounts for this by a PF/LF mapping rule. I extend this view to Hungarian, a language with contrastive focus-movement and show that a range of data, some of which pose a problem for a feature-driven approach, can be accounted for straightforwardly. Among these are the uniqueness of focus-movement and the fact that verb-focusing does not strand the particle of particle-verbs (verb-movement generally strands it). The analysis extends to blocking effects between focusing and a phenomenon called 'particle climbing'.

1 Introduction

It is a well-known claim in the literature that the semantic focus of the sentence contains the main stress assigned to that sentence (Selkirk 1984, Reinhart 1995, Harlig and Bardovi-Harlig 1988). My aim is to show here that in Hungarian this prosodic constraint has direct consequences for the syntax of the language in the form of triggering phrasal movement. It is of course an equally well-known claim that phonology cannot influence syntax (Vogel and Kenesei 1990, Miller, Pullum and Zwicky 1997). However, I think this latter claim is questionable as far as a subset of phonological rules are concerned: the prosodic rules that apply at the clause-level. Note that this is in fact expected in Minimalism (Chomsky, 1995), where it is assumed that operations performed by the computational system are only driven by interface needs (i.e. PF and LF).

The first three preliminary sections contain the following: a short introduction to the characteristics of Hungarian clause-structure; the standard analysis of the Hungarian FocusP due to Bródy (1990, 1995); and the description of the Hungarian stress rule. In

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Section 4, I claim that although Bródy's analysis is in itself correct, the motivation for it is wrong. Instead, I shall claim that the position known as [Spec, FP] is created in order to provide a position where the neutral, main stress rule assigns stress. In the case of 'focusing' what really happens is movement of a constituent to the neutral stress position from a position that otherwise would not get stress. This is in order to satisfy a focus-stress correspondence rule (cf. Reinhart, 1995).

The rest of the paper describes different phenomena which receive a straightforward analysis under this stress-driven focus movement approach. We obtain an explanation of the long-standing puzzle that FocusP is not recursive in Hungarian, although topic positions are. It is argued here that the second focus and any subsequent foci, but crucially not the first one, gets stress by an extra, marked, stress rule (Section 5). Section 6 is about verb focusing. In this construction a Particle-V complex does not strand its particle. This fact has been noted by Bródy (1990:213), who described it as a syntactic filter. The present approach allows for a more insightful explanation. In Section 7, I shall argue that the same syntactic position, [Spec, FP], hosts particles (or other verbal modifiers) in the so-called 'climbing' sentences. In this case, the opposite of 'focusing' happens: the position is created to *avoid* stressing the otherwise clause initial verb. It follows that climbing and focusing should block each other, which is indeed the case. Section 8 contains a final point concerning infinitival sentences with a focus, which provides an argument for a complex predicate analysis of particle-verbs, following Neeleman (1994).

The last section discusses the theoretical implications of the paper. The analysis presented is compared with one which makes use of a syntactic +Focus-feature. It is suggested that the +Focus-feature is unnecessary. Finally, I propose a modification to the Minimalist architecture of the grammar following Jackendoff (1997).

2 Hungarian clause-structure

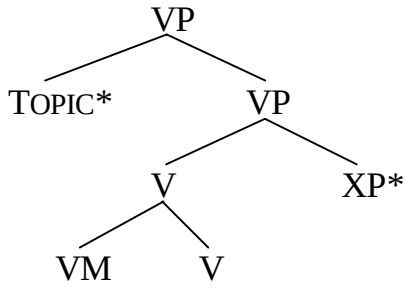
Hungarian is famous for being a 'free word order' language. In (1), it is shown that all the six logically possible word order variations for a three-word sentence are grammatical. However, not with the same meaning. Studies over the past twenty years have revealed that the Hungarian sentence is hierarchically structured. For example, communication functions, such as topic or focus, are syntactically encoded. The structure of the neutral sentence (i.e. one without a contrastive focus) for which I argue in this paper is in (2)[1]. Not all aspects of the phrase marker are addressed in the paper.

[1] * denotes the possibility of recursion.

For example, the inner structure of the VP is largely ignored, as it is of no importance to the questions addressed here. I assume, following É.Kiss (1994:19), that it is V-initial.

(1) (a) Józsi ismeri Marit.
Joseph-nom knows Mary-acc
(b) Józsi Marit ismeri.
(c) Marit Józsi ismeri.
(d) Marit ismeri Józsi.
(e) Ismeri Marit Józsi.
(f) Ismeri Józsi Marit.
'Joseph knows Mary.'

(2)



Sentences like the one in (3) contain particle-verbs. In Hungarian, there is a large class of verbal modifiers (VM)[2] that form a lexical unit with the V. They can modify the theta-grid or the c-selectional properties of the V. Following Neeleman's (1994) analysis for similar constructions in Dutch, I take the Hungarian particle verb to form a complex verb. The particle is assumed to be left-adjoined to the verbal head in syntax. Note that phonologically speaking the VM-V complex is one word, with one stress falling on the VM, as in Hungarian stress at the word-level is on the left.

(3) (a) Péter meg[3] ette a kenyeret.
Peter VM ate the bread-acc
'Peter ate the bread.'

[2] In this paper most of the examples contain particles which form a subclass of verbal modifiers. All my claims hold for the other types, too. For a definition of verbal modifiers see Bródy (1990:202).

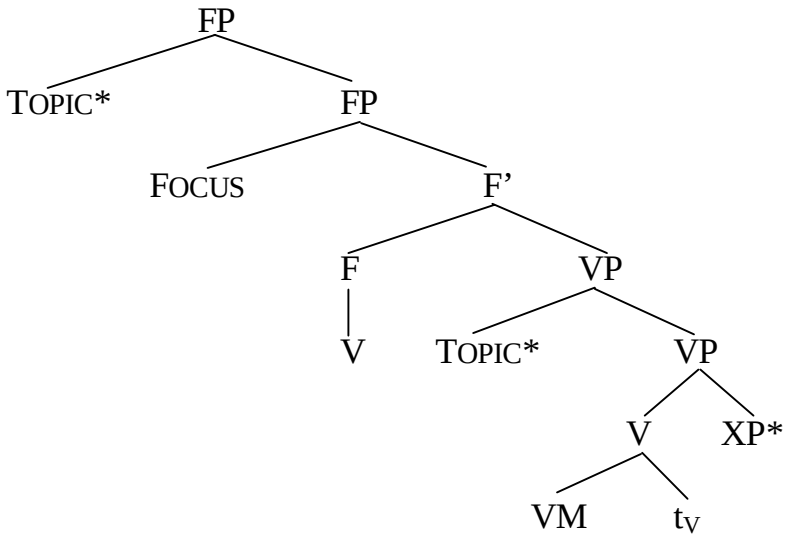
[3] Note that *meg* in Hungarian is a perfectivizer particle. It has lost its original locative meaning.

(b) Péter ki ment a szobából.
Peter out went the room-loc
'Peter went out of the room.'

In (4) it is shown that even the same word order may correspond to different meanings, accompanied by different intonational patterns[4]. The sentence in (4b) means 'It is Joseph, and not Peter or John that knows Mary.' It contains a contrastive focus. (5) shows the structure I propose for a sentence with focus. It will be discussed in the next section.

(4) (a) Józsi "ismeri Marit.
Joseph-nom knows Mary-acc
'Joseph knows Mary.'
(b) "JÓZSI ismeri Marit.
Joseph-nom knows Mary-acc
'It is Joseph who knows Mary.'

(5)



[4] Throughout the paper I mark contrastive interpretation with CAPs and the place where the main sentential stress falls with "a double quotation mark.

3 FocusP

Bródy (1990, 1995) argues that Hungarian projects a Focus projection on the left-periphery of the sentence. Contrastively focused constituents, arguments and adjuncts alike, move to [Spec, FP] in order to check their +Focus-feature. There they receive focal stress and contrastive interpretation. In a tensed sentence, this is accompanied by V movement to F, thus the focused constituent and the V are adjacent. The data supporting V-movement are sentences that contain verbal modifiers (VM). In Hungarian the default position for VM is preverbal; it is immediately in front of the V. In sentences which have a focused element, the VM follows the V. This, Bródy (1990, 1995) claims, is an indication of V-movement.

(6) (a) MARI hívta fel Pétert.
MARY rang VM Peter.
(b) *MARI fel hívta Pétert.
MARY VM rang Peter.
'Mary rang up Peter.'

In infinitival sentences Verb-raising seems to be optional. In these sentences, therefore, there is an empty head position by hypothesis.[5]

(7) (a) Jobb lenne PÉTERT hívni fel.
better would-be Peter-acc call-to up
(b) Jobb lenne PÉTERT fel hívni.
better would-be Peter-acc up call-to
'It would be better to ring PETER.'

I accept this analysis as far as the syntactic positions of the constituents are concerned, but I shall argue against the claim that the *motivation* for focus movement is the presence of a syntactic +Focus-feature. Instead, I claim that the movement is triggered by stress (See Section 4).

[5] I assume that functional heads have to lexicalize at some point in the derivation. See Section 8 for a technical discussion of the licensing of this empty head.

4 Stress in Hungarian

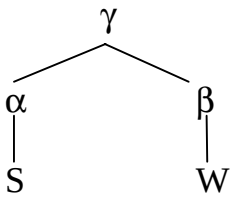
Let me say a few words about the Hungarian stress rule. Unlike its German or Italian counterpart, the Hungarian stress rule is relatively 'blind' to syntactic structure.[6] It is as follows:

(8) Hungarian stress rule:
Stress is assigned to the leftmost constituent dominated by XP. (See É.Kiss 1992:93 for a similar approach)

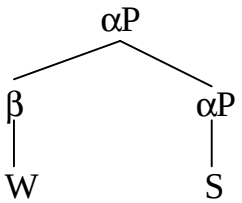
Domination is understood in terms of Chomsky (1986), therefore the stress rule skips adjoined elements. In the following diagrams I shall use Liberman's (1975) Strong/ Weak (S/W) notation. S/W are assigned from bottom to top on the syntactic tree, with S assigned to the top node. The main stress falls on the node that is only dominated by S-s.[7] I further assume that functional elements are intrinsically non-stress bearing units (cf. Zubizarreta, 1997). A reformulation of (8) in these terms is given in (9). (9a) spells out the general rule; (9b) and (9c) apply in more restricted contexts. Therefore, (9b) and (9c) are ordered in an ELSEWHERE- relation with respect to (9a).

(9) Hungarian stress rule (reformulated):

(a)



(b)



[6] I assume that Cinque's (1993) Neutral Stress Rule (NSR) applies in these languages. The NSR states that stress falls on the most embedded constituent on the projection line of the clause.

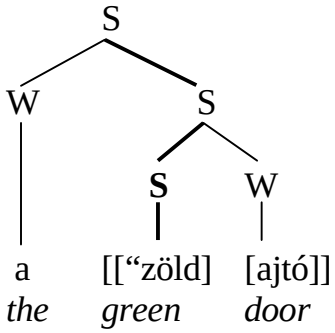
[7] The relevant S, and the path leading there are **bold** on the diagrams. If a rule other than (9a), the most general rule, is used, a reference to the rule used is shown on the right.

(c) *F^0
|
S

Let me first illustrate the application of this rule on noun phrases and adjectival phrases. As it is shown in (10), stress falls on the Spec of an AP or a NP if they have an overt Spec. Otherwise it would fall on the A or N head.

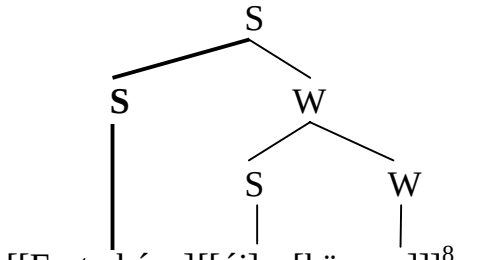
(10)

(a)



↵(9c)

(b)



[8]

Eszterhazy *new* *book-poss*

‘Eszterhazy’s most recent book’

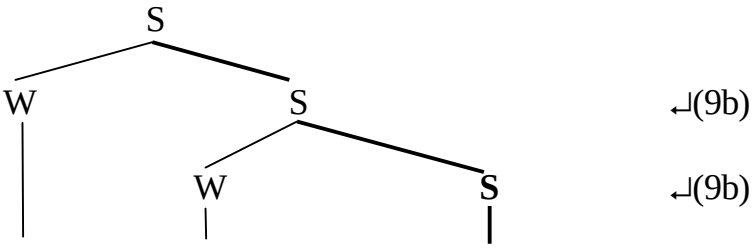
(modified example from É.Kiss, 1992:94)

In a neutral sentence the main stress of the sentence is the one assigned at the VP level, as in (11). It falls on the V, as the verb is the leftmost non-adjoined constituent in the VP.

[8] Note that the Obligatory Contour Principle does not seem to be observed in Hungarian, except that there is a slight pause between the primary stress and the rest of the DP.

(11)

(a)



[$_{VP}$ A nö [$_{VP}$ a kalapját [$_{VP}$ [$_{V}$ ”le vette.]]]
the woman her hat-acc off took

(b) [$_{VP}$ A kalapját [$_{VP}$ a nö [$_{VP}$ [$_{V}$ ”le vette.]]]
her hat-acc the woman off took
‘The woman took her hat off.’

Topicalized constituents such as ‘the woman’ and ‘her hat’ in (11) may bear secondary stress, if they carry new information, but never main stress. They do not have to be V adjacent, and more than one of them can appear in one sentence in any order, see (11a) and (11b). Based on these observations I shall assume in what follows that they are adjoined to VP. If FP is projected they adjoin to FP (or to VP, for that matter, see Section 5.2). On these assumptions the topicalized constituents will never bear main stress as they are not the first constituent dominated by VP in (11), as VP does not dominate them, only one segment of it does.

5 Stress-driven focus movement

5.1 Phonological and semantic focus: the mapping rule

As shown in (11), main stress falls on the V (or on its particle) in a neutral Hungarian sentence. Let me make the following simple assumption.

(12) Reinhart’s (1995) stress-focus mapping rule:
The focus of a clause is a(ny) constituent containing the main stress of the clause, as determined by the stress rule.

(Reinhart 1995:62)

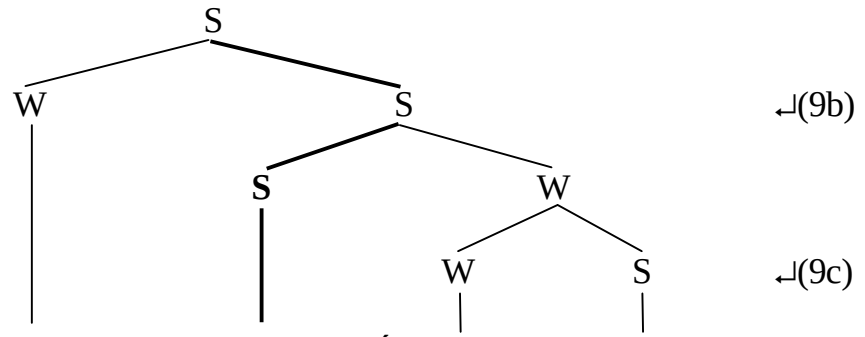
In English, if a constituent other than the object is to be focused, this constituent gets stress by a special stress rule, in order to satisfy (12). The main claim of this paper is

that, in Hungarian, the Reinhartian requirement on focus can be satisfied by movement of the focused constituent to a left-peripheral position.[9,10]

(13) Stress-driven movement:
In Hungarian, movement of the focused constituent to the left-periphery is triggered by (12), the requirement that a focused constituent be stressed.

In a non-neutral sentence, the main stress falls on the leftmost element dominated by the lowest segment of FP: on the focused constituent (cf. 9). Topics adjoin to FP in this case. This is illustrated in (14).

(14)



[$_{FP}$ A nö [$_{FP}$ A ”KALAPJÁT vette [$_{VP}$ [$_{V}$ le t_V] t_{DP}*]] (nem a sálját.)
the woman her cap-acc took off
‘It was her hat that the woman took off (not her scarf.)’

Let me spell out some immediate consequences of this approach. In the analysis presented in Bródy (1990, 1995), the movement of the focused constituent is motivated by the need to check the +Focus-feature. Three questions come to mind. First, as the +Focus-feature is only interpreted at LF, why does the movement of the focused

[9]Hungarian, too, has a special stress rule which applies in cases when a constituent that cannot be base-generated or moved to the leftmost position is focused. For example, when the N head of a DP is focused: ‘Peter bought [a used “CAR]’. See Section 4.3 for discussion.

[10]It follows from basic considerations on movement that a Cinque-type stress rule cannot trigger syntactic movement to the stress-position, as this movement would involve lowering. On the other hand, it might in fact be possible to analyze the cleft construction in English as focus-driven movement. In English main stress falls on objects. In a cleft the focused constituent moves to the object position of a higher clause which only consists of a dummy verb ‘is’ and a dummy subject ‘it’: ‘It is “JOHN who spoke to me.’

constituent happen overtly? Second, why is this movement accompanied by the movement of the V to F at least in a tensed clause? And third, why does the focused constituent move to the left-peripheral position? Bródy (1990, 1995) gives the following, partial answers to these questions. The +Focus-feature is strong in Hungarian, hence the overt movement of the focused constituent. So is the V-feature of (a tensed) F, hence V-to-F. The movement is to the left-periphery, in order to allow the focused constituent to take scope. These answers are unsatisfactory in several respects.

A stress-driven analysis, on the other hand, seems to shed more light on these issues. In order to satisfy (12), the focused constituent needs to get stress. Therefore, it moves to the left-periphery, as stress is assigned to the left-most constituent of the clause in Hungarian. It also follows that this movement is to a specifier position (and not e.g. phrasal adjunction) since that way, by (9b), the stress rule would not assign stress to the constituent. The movement of the verb is necessary to licence the functional head position (see Section 8 for further discussion). Finally, as the movement of the focused constituent is driven by stress, it evidently cannot be postponed until the covert syntax.

5.2 Discrepancies between PF stress and LF focus

In (14), the focused constituent *is* the stressed constituent. But (12) allows for cases where the focused constituent *contains* the stressed constituent. As Kenesei (1998) describes extensively, such cases do exist. These sentences illustrate what Reinhart (1995) calls a 'focus set'. The possible foci of one particular stress pattern are members of the sentence's focus set. In (15), for example, the focus set is: {[Spec, FP], FP}.

(15) (Focus: [Spec, FP])
(a) János [$_{FP}$ "A CIKKEKET olvasta] és nem a könyveket.
John the articles read and not the books
'John read the ARTICLES, and not the books.'

(Focus: FP)
(b) János [$_{FP}$ "A CIKKEKET OLVASTA]
John the articles read,
és nem a fürdöszobában énekelt.
and not the bathroom-loc sang
'John READ THE ARTICLES, and not sang in the bathroom.'

Kenesei (1998) also describes cases where the moved constituent is in fact bigger than the constituent that is taken as focus at both PF and LF. Note that (12) still holds in (16).

(16) [$_{FP}$ A “tegnapi cikkeket [$_{F}$ olvasta] [$_{VP}$ János]], ...
the yesterday’s articles rea John
‘It was yesterday’s articles that John read ‘

(a) ... nem a maiakat. (Focus: adjunct in [Spec, FP])
… not today’s ones.

(b) ... nem a könyveket. (Focus: [Spec, FP])
… not the books.

(c) ... nem a fürdöszobában énekelt. (Focus: FP)
… not sang in the bathroom.

Reinhart (1995) shows cases in English where the only option available for satisfying (12) is by means of an extra prosodic operation. She claims that a special stress rule may assign extra stress to a position which would otherwise not bear the main stress of the sentence. For example, to the subject in ‘ “JOHN built a desk.’. In this case, however, the focus set is {DP$_{JOHN}$}, not {DP$_{JOHN}$, IP} as one would expect. She claims that this is due to a straightforward case of economy: IP was already in the original focus set defined by the neutrally stressed ‘John built a “desk.’, therefore applying the extra stress rule under the focus=IP interpretation would involve an extra, unnecessary operation.

The same phenomenon can be illustrated in Hungarian. The neutral stress (cf. (9)) is assigned to the leftmost constituent of the FP, i.e. to [Spec, FP], and within [Spec, FP] to the leftmost constituent, i.e. to the modifier in (17).

(17) [$_{FP}$ Péter [$_{FP}$ egy “használt autót [$_{F}$ vett]]], ...
Peter a used car bought
‘Peter bought a USED car, ...’

(a) ... nem egy újat. (Focus: adjunct in [Spec, FP])
... not a new one.

(b) ... nem egy sorsjegyet. (Focus: [Spec, FP])
... not a lottery ticket.

(c) ... nem a Városligetben sétált. (Focus: FP)
... not walked in the city park.

As (17b) and (17c) show, 'percolation' of the focus is possible, which supports the hypothesis that this is indeed a stress assigned by the neutral stress rule described in (9). This claim is strengthened by the comparison of (17) with (18). In the latter a special, marked stress rule assigned stress to the head of [Spec, FP], and 'percolation' of focus is not possible.

(18) [$_{FP}$ Péter [$_{FP}$ egy használt "autót [$_{F}$ vett]]], ...
Peter a used car bought
'Peter bought a used CAR, ...'

(a) ... nem egy (használt) tévét. (Focus: head of [Spec, FP])
... not a (used) telly.

(b) *... nem egy sorsjegyet. (Focus: [Spec, FP])
... not a lottery ticket.

(c) *... nem a Városligetben sétált. (Focus: FP)
... not walked in the city park.

Note that Hungarian provides an argument in favour of Reinhart (1995) contra the original 'Focus Percolation'-idea of Selkirk (1984). Selkirk (1984) claimed that if a head X is marked as focus, the whole XP can be optionally marked as such, and that if a YP which is a complement to X is marked focus, X can be marked as such. Thus focus may eventually 'percolate' from a head, or a complement of a head to the phrase. In contrast, Reinhart (1995) claims that 'percolation' is possible from a neutral stress position, but not possible from a special stress position. In English, or Dutch, (or for that matter in any language where Cinque's (1993) NSR applies), the neutral stress position, being defined as the most embedded position, will be a complement or in the absence of a complement, a head. Therefore, in these languages it is impossible to see whether Selkirk's or Reinhart's definition applies to 'percolation'. This is not the case in Hungarian, as here the neutral stress position is the specifier of XP.

5.3 Shortest stress shift

Note that the examples in (18) raise a problem in their own right. Here we see, contrary to expectations, that the main stress of the sentence is not assigned by the stress rule in

(9), but by a special phonological operation, and still the constituent containing it is moved. This is, however, only an apparent problem as we shall now see.

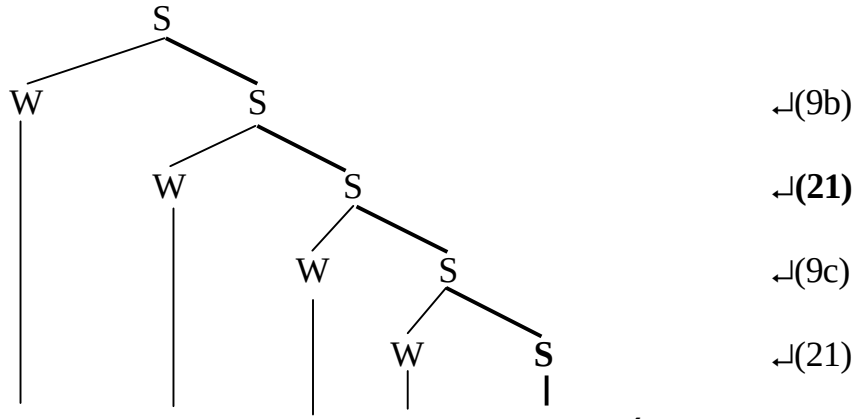
In (18), the stress falls on 'car' in the DP 'a used "car'. This is assigned by some sort of special stress rule which here aims to ensure focusing of the head rather than the adjunct. In Liberman's system marking a constituent Strong inevitably means marking its (only) sister Weak. Therefore the special stress rule can be formulated as in (19).

(19) Special stress rule
S/W⇒W/S

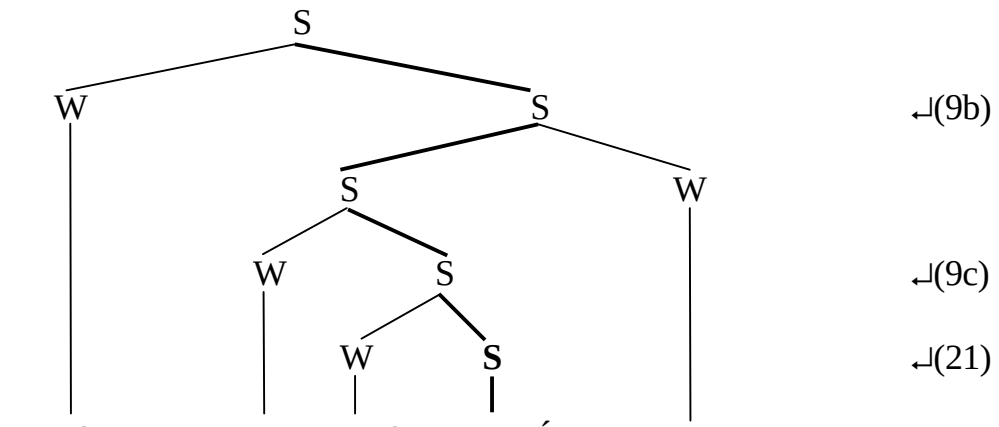
However, I assume that this rule aims to minimize the distance between this stress position and the position of the neutral stress (as of (9)). Why this should be so can be illustrated under a S/W notation of sentential stress. (18) is repeated here under (20a), and a version where 'the used "car' stays in its base position is shown in (20b). For 'car' to be only dominated by S-s in its base position (19) has to apply on more levels of the tree. However, if the DP moves to the left-periphery, only one application of (19) is necessary.

(20)

(a)



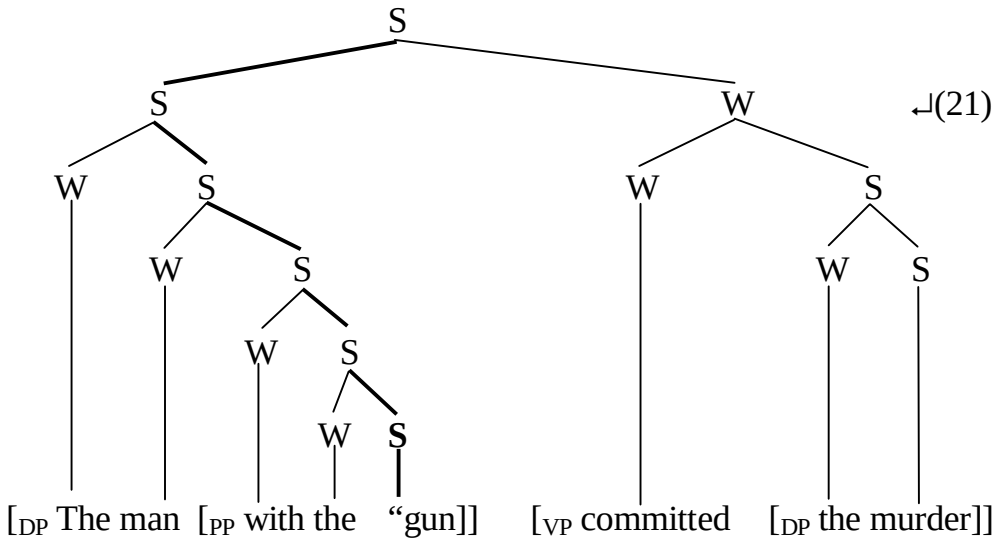
(b)



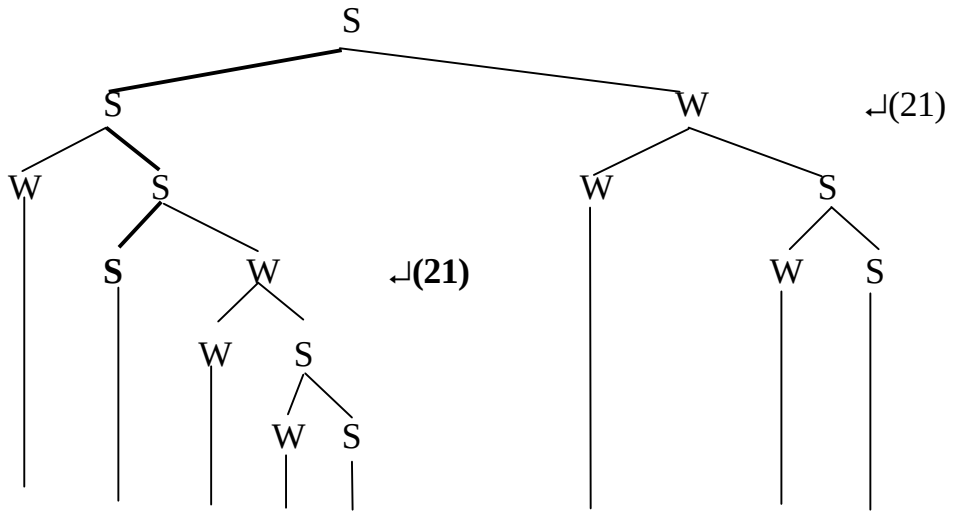
A similar problem was noted by Reinhart (p.c.) for English. Given that in English the neutral stress falls on the object, focusing of the subject always involves a stress shifting operation. The following examples illustrate that the notion of shortest possible stress shift is also at play here.

(21)

(a) Focus set:{ $DP_{\text{the gun}}$, $PP_{\text{with the gun}}$, DP_{subj} , *IP}



(b) Focus set:{ $DP_{\text{the man}}$, $*DP_{\text{subj}}$, *IP}



[$_{DP}$ The "man [$_{PP}$ with the gun]] [$_{VP}$ committed [$_{DP}$ the murder]]

Although both (21a) and (21b) have stress within the DP_{subj}, (21b) cannot actually have the interpretation answering the question :'Who committed the murder?' (i.e. Focus=subject). This is so because the same interpretation can be obtained (as in (21a)) by fewer instances (in fact only one instance) of stress shifting operations.

5.4 Summary of the analysis

Let me summarize the main points of the analysis. As the focused constituent always carries the main stress in a clause, we have to encode this in our grammar. This is done with the help of a separate mapping rule (cf. 12) in Reinhart (1995). There is no need for a special 'percolation' rule; examples like (15b) are captured by the mapping itself, as it is one-to-many. Moreover, examples like (18c) are ruled out by economy considerations.

There is only one characteristic of the above examples about which Reinhart's mapping rule is agnostic. In (16) the whole DP is *pied-piped* even if only the adjunct is focused. I assume that this mechanism of pied-piping happens because there are restrictions on extraction in Hungarian such as 'do not move a head, or a specifier out of its phrase'. Interestingly enough, in Serbo-Croat, where so called split constituents do occur, in a sentence with the interpretation 'I saw the LITTLE student.', it is possible to front only the adjunct 'LITTLE': *MALOG sam video studenta* (little aux saw t student) (Alex Perovic p.c.) I think that the difference between the two languages can be captured

by the claim that left-branch extractions are much more restricted in Hungarian, whereas in Serbo-Croat they are acceptable.

The characteristics of the analysis I have proposed are shown in Table 1. The following sections aim to show that this analysis allows us to provide answers to long standing puzzles in Hungarian syntax.

Examples		stress-driven approach
(15a)	Relation between stress and focus captured by ...	one-to-many mapping.
(15b) but not (18c)	Cases where focus is larger than stress are captured by ...	the mapping itself (no extra mechanism) plus economy considerations.
(17a)	Cases where focus is smaller than the moved constituent are captured by ...	restrictions on extraction.

Table 1

6 Uniqueness of the [Spec, FocusP] position

6.1 Multiple foci

As there is only one main stress in a clause, one might think that only one focused constituent can be present in a clause in languages that project a focus position. As it turns out, this is much too strong. As the following example illustrates, there are in fact cases where semantically there are two contrastively focused constituents in a sentence:

(22) CSAK KÉT LÁNY választott CSAK EGY KÖNYVET.
only two girls *chose* *only one book-acc*
It was only two girls who chose only one book.
*It was only one book which only two girls chose. (É.Kiss 98:16)

Bródy (1990) argues that in this case the second constituent is an operator in situ. É.Kiss (1998) argues that this cannot be right, as the sentence is not ambiguous between the two readings where one focused constituent takes scope over the other. If this case was comparable to wh in situ one would expect ambiguity. She proposes that FP is recursive in Hungarian, and that the V moves to the higher F head via the lower one. The following examples show that her reasoning cannot be correct.

Following Bródy (1990) I assume that a diagnostic of verb movement in Hungarian is that the particle of a particle verb has to be stranded in the VP. If in (23) 'two slices of bread' was indeed a lower [Spec, FP], particles should never precede it. They are independently ruled out from a topic position, because they are not referential.

(23) CSAK HÁRMAN ettek meg CSAK KÉT KENYERET.
Only three ate VM only two bread-acc
'It was only three people who ate up only two slices of bread.'

Thus, on the basis of (23), I assume that only one focused constituent can undergo focus movement in Hungarian, the second one remains in situ and gets focal stress via a last resort, extra, stress rule[11].

Under a stress-driven movement view of FocusP we have good reason for this uniqueness of the syntactic focus-position. There is one main stress in every sentence, so there is at most one position where a constituent can be base generated or move to bear this stress. There is a last resort rule that can assign *extra* stress to another constituent, but crucially, the constituent which receives stress by this rule does not move, as this movement would be a violation of economy in the strictest sense of the word: applying last resort stress *plus* movement is evidently less economical than applying only last resort stress.

The option of minimizing the length of the shifting operation, as in (20) and (21), is not available in (23) because it does not involve stress shift. Rather stress appears in two positions.

[11]See Neeleman and Reinhart (1998) for an argumentation along these lines for Dutch. In a Dutch embedded clause the neutral stress position is the object (Cinque, 1993). Neeleman and Reinhart (1998) show that scrambling, which they take as base generation in different orders, may result in a structure where the stress in its neutral position can apply to a constituent other than the object (e.g. to avoid stressing of a weak object pronoun). However, if scrambling is blocked for independent reasons, (e.g. if no adverb is present), an extra, stress shifting operation applies.

6.2 Recursive topics

Let me say a few words on the syntactic position of topicalized constituents. The minimal assumption at this stage is that they can appear adjoined to VP or FP. According to Rizzi (1997, Fn17), in Hungarian they only adjoin to FP. He claims that the unavailability of the VP-adjoined topic positions is due to the presence of V-to-F movement. I do not see why this should be so. As presumably FP is not projected unless necessary one has to assume that topicalization by adjunction to VP is possible. The question is whether it is ruled out when FP projects. I think the answer is no. As a particle or a resultative forms a complex predicate with the V, it will mark the original position of the V once the V has moved to F. One may therefore assume that the following sentences have the structures indicated.

(24) [$_{VP}$ Péter [$_{VP}$ tegnap [$_{VP}$ meg ette az ebédet]]]
Peter yesterday VM ate the lunch-acc
'Peter ate the lunch yesterday.'

(25) (a) ([$_{FP}$ tegnap) [$_{FP}$ PÉTER ette ([$_{VP}$ tegnap) [$_{VP}$ meg t_V (tegnap)
yesterday Peter ate yesterday VM yesterday
az ebédet] (tegnap)]]]
the lunch-acc yesterday
'It was PETER who ate the lunch yesterday.'

(b) [$_{FP}$ Ezen a héten [$_{FP}$ PÉTER festi [$_{VP}$ a kerítést [$_{VP}$ [$_{V}$ zöldre t_V] t_{DP}]]]]
This week-loc Peter paints the fence-acc green-loc
'This week, it's Peter who paints the fence green.'

One may argue that the occurrence of 'yesterday' right-adjacent to the V in (25a) is in fact in VP proper, based on the assumption that it can occur after the verbal particle too. Assuming that the order of constituents in the Hungarian VP is free, one may argue that VP adjoined and VP internal positions are indistinguishable on syntactic grounds. However, the following argumentation supports the availability of VP adjoined topic positions. In particular, it supports the analysis that 'yesterday' in (25a) and 'the fence' in (25b) right-adjacent to the V, are adjoined to VP. É.Kiss (1995) argues that idiom chunks cannot be topicalized, or if they are, they lose their idiomatic meaning, and get a referential meaning instead. As (26d), with 'the match' in front of the particle, is ungrammatical under the idiomatic meaning, we may assume that it is indeed VP-

adjoined. Thus, the stranded particle in Hungarian can be assumed to mark the left edge of the VP.

(26) (a) János ki húzta a gyufát.
John out pulled the match-acc
'John pulled out the match.'
'John provoked punishment.'

(b) A gyufát ki húzta János.
the match-acc out pulled John
'John pulled out the match.'
'*John provoked punishment.'

(É.Kiss 1995:212)

(c) JÁNOS húzta ki a gyufát.
John pulled out the match-acc
'JOHN pulled out the match.'
'JOHN provoked punishment.'

(d) JÁNOS húzta a gyufát ki.
John pulled the match-acc out
'JOHN pulled out the match.'
'*JOHN provoked punishment.'

7 Verb focusing: no particle stranding

By now, it has become a familiar claim about Hungarian clause-structure that the V leaves its particle stranded in the VP in the case of V-to-F movement accompanying the movement of a focused constituent to [Spec, FP]. Interestingly enough, this is not the case if the verb itself is focused. Here, the particle normally appears in front of the verb, (27). The V-VM order is only possible if the verbal head itself is contrasted, (28).

(27) De,[$_{VP}$ én [$_{VP}$ "ODA VITTEM a levelet]].
But I VM took the letter-acc
'But, I DID take the letter there.'

(28) Péter éppen "FEKÜDT le, nem ÜLT le.
Peter just lay down not sat down
'Peter was lying down, not sitting down.'

This restriction has been captured by a kind of 'doubly-filled COMP-filter' by Bródy (1990:212): either the F head contains a *complex* head, or [Spec, FP] is overtly filled, but not both. One of the strongest arguments in favour of a stress-driven approach to focus is that this phenomenon receives a straightforward explanation. In (28) stress falls on the verbal head. The verb moves to F to get stress from the neutral stress rule, and contrastive interpretation, hence the reading that contrasts the simplex, verbal head. In (27) stress falls on the complex verb also by the neutral stress rule. Strictly speaking, within the VM-V complex, which is a phonological word, it falls on the verbal modifier. But crucially, here the verb stays in situ, because it is already in a stressed position. There is *no trigger* for its movement, therefore, the VM-V order is not disturbed. Phonetically the stress is focal, and so is the interpretation.

8 Particle climbing

So far I have shown that the position known as [Spec, FP] is not there to provide contrastive interpretation, but it is licensed by the movement of the V to provide a position where a constituent that otherwise would be unstressed can get the main stress of the sentence. It is only by Reinhart's (1995) generalization (cf.12) that the link between stress and focus is established. Now, I would like to show that the same position can be created for the opposite reason: to *avoid* stressing of a constituent that would otherwise be clause-initial. Note that this kind of stress-avoiding operation can only apply to verbs given the leftward orientation of the Hungarian stress rule and the V-initial nature of the VP.

In Hungarian, there are several classes of infinitival complement taking Vs. One of these classes is called 'climbing verbs'. A characteristic of 'climbing verbs', noted by Komlósy (1992), is that they cannot bear phonetically neutral sentential stress.[12] Instead, they invite something in front of them. This constituent can take neutral stress and thus

[12] Note that there is in fact one construction in which these verbs appear clause initially: when they are contrastively or emphatically focused (cf. i). Here they bear phonetically focal stress. In fact these verbs behave as if they were functional heads (or 'semi-lexical' as in van Riemsdijk, 1998: Fn12). As I have claimed in (9c), functional heads do not take neutral stress. However, they do allow contrastive stressing and contrastive interpretation, even if it needs some contextualizing (cf. ii).

(i) (Én) "AKAROK menni.
I want-I go-to
'I WANT to go.' = It's not true that I don't want to go.

(ii) Ez "AZ út Budapestre. Nincs választék.
this the road Budapest-to There's no choice.
'This is THE road to Budapest. There's no choice.'

neutral interpretation, as in the case of climbing (cf. 29), or focal stress and contrastive interpretation (cf. 30).

(29) “Szét fogom akarni kezdeni szedni a rádiót.
apart will-I want-to begin-to take-to the radio-acc
‘I will want to begin to take apart the radio.’

(30) A “RÁDIÓT fogom akarni kezdeni szét szedni.
the radio-acc will-I want-to begin-to apart take-to
‘It is the radio that I will want to begin to take apart.’

The phenomenon known as climbing is the following. Given a series of infinitival complement taking ‘climbing verbs’, the most embedded V or its particle, if it has one, appears in front of the leftmost, finite V. This is illustrated in (31) =(29).

(31) “**Szét** fogom akarni kezdeni **t szedni** a rádiót.
apart will-I want-to begin-to take-to the radio-acc
‘I will want to begin to take apart the radio.’

Climbing is blocked unless all the Vs involved in the sequence (here *fogom* ‘I will’, *akarni* ‘to want’, *kezdeni* ‘to begin’) are from the class of Vs so called ‘climbing verbs’; an issue not addressed here. Climbing is also blocked if a constituent is contrastively focused, (cf. 32a), either in the main clause or in the infinitival clauses (Koopman and Szabolcsi (1998)). An intervening quantifier or topic does not block climbing, (cf. 32b).

(32) (a) (*Szét) A RÁDIÓT (*szét) fogom akarni kezdeni
apart the radio-acc apart will-I want-to begin-to
*(szét) szedni.
apart take-to
‘It is the radio that I will want to begin to take apart.’

(b) “Szét fogom a rádiót akarni kezdeni szedni.
apart will-I the radio-acc want-to begin-to take-to
‘As for the radio, I will want to begin to take it apart.’

Given the blocking effect between climbing and focusing it is a natural idea to assume that they compete for the same syntactic position, the [Spec, FP][13]. More importantly the blocking effect is due to the fact that once focusing happened there is *no trigger* for climbing. Recall that focus-movement happens to ensure that the DP gets stressed, and that climbing happens to ensure that the V does not get stressed. Clearly, focus-movement alone satisfies both its own need to get stressed and the verb's need not to get stressed. Thus, in sentences with a focused constituent, climbing is ruled out by economy.

To summarize, in (30), [Spec, FP] is licensed by the movement of the V in order to facilitate stressing of constituents that otherwise would not be in a position to get stress. Or, as in the case of climbing (cf. 29), this position can be created to avoid stressing of a constituent that otherwise would get stressed.

9 Infinitivals

A similar puzzle arises in infinitival clauses that involve a focus. As I have shown in examples (7a) and (7b) above, if a constituent is preposed, both particle-V and V-particle orders are possible. I accept Bródy's (1990) analysis that in the VM-V order the verb has remained in situ, and in the V-VM order it has moved to F. Let me address a technical issue here.

The position known as [Spec, FP] is licensed by the movement of the V in examples like (6a). However, in examples like (7b) I assume that the head position is created and left empty. Recall that the focused constituent cannot be in a position adjoined to VP; it is a Spec of a higher head position. Let me introduce the following assumption (cf. Grimshaw, 1995):

(33) An empty head position has to be associated with a categorially matching, overt head at some point in the derivation.

A straightforward way of satisfying (33), also spelt out in Nash and Rouveret (1997:10-11) is (34). In the case at hand, the V moves to F, as in (7a).

(34) A categorially matching, overt head raises to the empty head.

[13]My analysis takes climbing to be phrasal movement, but note that it is in no way crucial to it whether this is in fact so. If climbing was head movement, blocking could not be a result of the fact that they compete for the same position. However, it would still hold that blocking is due to the fact that there is no trigger for climbing if focusing occurs, as the V is not clause initial anymore.

An equally straightforward way is the following:

(35) The empty head raises to a categorially matching, overt head.

According to Zwart's (1997:199) analysis of Dutch embedded sentences, in order to satisfy something like (33), AgrS moves to C, as in embedded clauses the V does not move to AgrS. Similarly, I claim that (35) happens in (7b). The empty head F raises to the higher V. Of course, (35) is only available here because there is no overt complementizer, which is the case with Hungarian embedded infinitivals in general. Thus the assumption in (33) provides us with a tool to explain the optionality found in (7). In root contexts, or in embedded clauses with a complementizer, only (34) is available, hence the V-to-F movement. In infinitivals, given that V-movement is optional here, one might think that climbing and focusing may cooccur. For finite clauses, I have already shown in the previous section that this is blocked by the fact that they compete for the same, stressed position and that once focusing happened there is no trigger for climbing. Let us see the examples with infinitives:

(36) (a) Jobb lenne [$_{FP}$ PÉTERT [$_{VP}$ [$_{V}$ kezdeni] [$_{VP}$ [$_{V}$ rá
better *would-be* *Peter-acc* *begin-to* *VM*
beszélni t_{DP}.]]]]
talk-to
'It would be better to begin to persuade PETER.'

(b) *Jobb lenne [$_{FP}$ PÉTERT [$_{PredP?}$ rá [$_{VP}$[$_{V}$ akarni]
better *would-be* *Peter-acc* *VM* *want-to*
[$_{VP}$[$_{V}$ t_{PRT} beszélni t_{DP}]]]]]
talk-to
'It would be better to want to persuade PETER.'

As (36b) shows, climbing is blocked in the infinitival case, too. This is expected, as in (36b) the particle occupies a Spec position, whereas it is in a head-adjoined position in (7b). Thus I derive that a 'FOCUS-Particle-Verb' sequence is only grammatical if the particle and the verb form a complex head. Otherwise the particle and the focused XP compete for the same position, both in the case of finite and infinitive verbs. These data provide an important argument against the treatment of verbal modifiers as specifiers of the V (or some functional head (e.g. PredP)) to which they are lexically related. Therefore, it provides an indirect argument for a complex predicate analysis of VM-V complexes following Neeleman (1994) (cf. also Komlósy and Ackerman (1983)).

10 Theoretical consequences

10.0 In the previous sections I developed an analysis of focus-movement in Hungarian which relies on insights of Bródy (1990, 1995) as far as syntactic structure is concerned. However, my analysis follows Reinhart (1995) in finding a motivation for the syntactic operations. This stress-driven approach to focus-movement allowed me to provide explanations for several problems (Sections 5 to 8). Now, I would like to address two theoretical issues.

First, I would like to discuss how an approach along the lines of Bródy (1990, 1995), which motivates focus movement with the presence of a +Focus-feature, can account for the data presented in this paper. (Section 9.1)

Second, I shall try to locate where the mapping in (12) applies in the grammar. A modification of the standardly assumed Minimalist architecture of the grammar, will be proposed, along the lines of Jackendoff (1997). It will also be shown that the modification can be independently motivated.

10.1 The issue of the +Focus-feature

In the discussion at the end of Section 4.1. and in the summary in Section 4.3 I have already anticipated that an approach that is based solely on the existence of a +Focus-feature has difficulties addressing some of the data in question. Let us follow here Kenesei (1998), who accounts for the correspondence of stress and focus by assuming that the +Focus-feature is interpreted as [+stress] at PF.

Recall the following examples,already discussed in Section 4, repeated here for convenience. Kenesei describes cases where the constituent that is interpreted as focus at LF is larger than the constituent that bears stress at PF: (15b)=(37). In a +Focus-feature approach, (37) has to be accounted for by some kind of *percolation* of the +Focus-feature upwards on the LF branch,

(56) János [$_{FP}$ "A CIKKEKET OLVASTA] és nem a fürdöszobában énekelt.
John the articles read, and not the bathroom-loc sang
'John READ THE ARTICLES, and not sang in the bathroom.'

(37) [$_{FP}$ A "TEGNAPI cikkeket [$_{F}$ olvasta] [$_{VP}$ János]], ...
the yesterday's articles read John
'It was yesterday's articles that John read
... nem a maiakat. (Focus: adjunct in [Spec, FP])
... not today's ones.'

Kenesei (1998) also shows cases where the moved constituent is in fact bigger than the constituent that is taken as focus at both PF and LF: (16a)=(38). Kenesei (1998) and Bródy (p.c.) argue that (38) is comparable to *pied-piping* in wh-movement. There, the feature is assigned to the wh-word and it percolates up to the wh-phrase thus allowing the whole phrase to undergo movement. Although the parallelism is clearly valid, what is crucial for the discussion here is that the pied-piping mechanism required to account for (38) is *not* the same as the percolation-mechanism. This claim is supported by (37) and (38), since in (38) pied-piping applied, but percolation did not, and vice versa, in (37) no pied-piping happened, but percolation did.

Sentences like (18c)=(39) suggest that further assumptions are needed in a +Focus-feature approach. Recall that (39) is predicted to be ungrammatical under a Reinhartian analysis, as here, the stress is not assigned by the neutral stress rule. The focus does not 'percolate' to FP, because FP was already in the focus set of the original, neutral stress position. In comparison, a feature-driven approach seems to have difficulties accounting for the ungrammaticality of (39), especially in the light of the grammaticality of (37). What distinguishes (37) from (39) is the *nature* of the stress they contain. In the first instance, stress is assigned in its neutral position, in the second, a special stress rule is involved. It seems to be problematic to formulate this distinction if it is the +Focus-feature that is interpreted as +stress.

(38) [$_{FP}$ Péter [$_{FP}$ egy használt "autót [$_{F}$ vett]]], ...
Peter a used car bought
'Peter bought a used CAR, ...
*... nem a Városligetben sétált. (Focus: FP)
... not walked in the city park.'

It is similarly unclear how the following facts would be accounted for, unless something close to (12) is assumed, maybe in the form of a PF-filter.
- position of the FocusP is on the left-periphery in Hungarian
- uniqueness of the focus-position (cf. Section 5)
- VM-V order when the V is focused (cf. Section 6)
- blocking between particle climbing and focusing (cf. Section 7 and 8)

Note, however, that I have shown above that these facts follow from the mapping in (12), economy considerations, and restrictions on movement. Therefore, the existence of a +Focus-feature seems to be unmotivated.

10.2 PF-LF mapping – the architecture of the grammar

If one is to accept (12) instead of the existence of a +Focus-feature, there are some crucial questions that have to be addressed. First, where in the grammar does (12) apply? In order to find at least a tentative answer to this question, one has to establish where in the grammar the notions that (12) refers to are defined. Such notions are STRESS and FOCUS. As Zubizarreta (1998:30) points out these notions are intrinsically non-lexical, as their meaning is defined over the *structure* which is non-existent in the lexicon. These notions cannot be lexical, or be put together from atomic parts which are themselves lexical. Thus, we are facing a situation where the whole is more than the sum of its atomic parts – in my mind a necessary condition for the existence of structure in the first place. So I conclude that the existence of such notions need not surprise us and that the architecture of the grammar has to be such that it allows for the postulation of these notions, and of principles over these notions.

STRESS is normally assumed to be a notion defined over the prosodic structure on the way to PF.[14] I assume that FOCUS is an LF (or semantic) notion. Since (12) refers to both these notions, it will have to apply at a level where both STRESS and FOCUS are available.

I would like to follow Jackendoff's (1997) reasoning that there is a level in the grammar, where phonological and semantic information are both present. His main argument comes from the nature of lexical insertion he proposes. In agreement with similar approaches by Di Sciullo and Williams (1987), Halle and Marantz (1993:122) and others, he assumes that lexical insertion is postponed until S-structure (Jackendoff, 1997:86). This is because lexical items are 'finely individuated' (Jackendoff, 1997:91) both in phonology and in semantics, but not in syntax. The phonological, and semantic information is not referred to in syntax; why carry it along syntax then? Thus at S-structure, the matching between kæt (the phonological representation of a lexical item) and CAT (the semantic representation) has to be done. But, as Jackendoff argues, this match does not happen via syntax, because the lexical items are not finely individuated in syntax. For this particular item, all the information the syntax needs, and therefore

[14] Interestingly enough, no [+stress] lexical feature is generally assumed. If this is indeed the case, then it is even more natural to get rid of its semantic counterpart: the +Focus-feature.

has, is that it is a noun, countable, etc. Thus phonology and semantics have to have direct communication at this level.

Of course one may try to maintain that they only communicate via syntax and 'track' lexical items through the syntax with the help of a diacritic. For the particular example, one may assume that the item kæt/Noun/CAT has index No. 85 in syntax: kæt/Noun$_{85}$/CAT (Jackendoff, 1997:92). This is, however, conceptually inelegant for two reasons. First, each lexical item needs a separate index, a huge burden for storage. Second, this index is never referred to in any sense by a syntactic rule. Note the close correspondence between this idea and that of a syntactic +Focus-feature.

Jackendoff (1997:93-96) gives three more arguments for the existence of a level where phonology and semantics communicate directly. First, lexical items like *hello* have phonological properties, and semantic properties, but no syntactic properties, e.g. no syntactic category.[15] Thus in order for the phonological form to match the semantic form a mapping has to be done directly between phonology and semantics. Second, language acquisition at the one-word stage is devoid of syntax altogether, therefore words at this stage behave like adult *hello*, with phonology mapped onto semantics directly. His third argument concerns the fact that semantic focus corresponds to phonological stress. This, he argues, calls for a direct phonology-semantics link, rather than a syntactic encoding of focus (and stress) especially because even in cases where syntax is involved, such as topicalization in English, stress still, redundantly marks focus. This third argument is in fact the one argued for in greater detail in this paper.

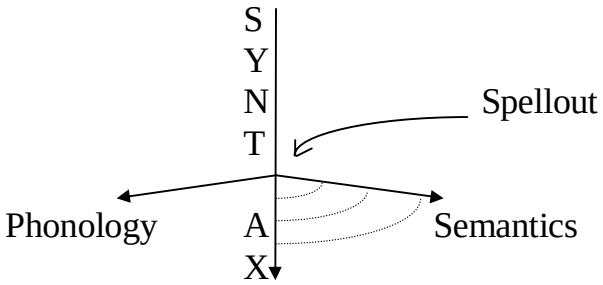
Thus I propose the following architecture to the grammar: a modification of the standard Minimalist architecture in the sense that it assumes that semantic information is already available at the 'Spellout' point. At this level, the mapping of syntax to phonology is done, together with a mapping of syntax to semantics. If covert syntactic operations exist, the syntactic and semantic modules have to communicate again later on.

[15] Note that items like *hello* cannot be dismissed as non-linguistic signs, as they occur in quotational contexts (ia), but not in contexts reserved for non-linguistic signs (ib)

ia 'Hello', he said.

ib Then John went, '[belching noise]'/ *'Hello'. (Jackendoff, 1997:94).

(39)



One independent reason for assuming a mapping between syntax and semantics at the 'Spellout' point may come from Fox's (1994) reasoning on Quantifier Raising. Here I adopt Reinhart's (1995) interpretation. Fox claims that QR does not happen unless it has an impact on interpretation. The argument can be illustrated by the following data.

(40) (a) A doctor examined every patient. ambiguous
(b) A doctor examined every patient and a nurse did too. ambiguous
(c) A doctor examined every patient and Lucy did too. not ambiguous

(41a) is ambiguous as to whether there was one single doctor who examined every patient, or a different one for each patient. In the second case, QR has applied to 'every patient'. (41b) is also ambiguous, but most importantly if QR applies in one of the conjuncts of coordination, it also applies in the second conjunct. Thus (41b) cannot be interpreted as a situation that involved a separate doctor for each patient, but only a single nurse. Fox takes this as a condition on movement out of a coordinated structure. The interesting piece of data is that (41c) is not ambiguous. The explanation Fox gives is that QR can not apply in the first conjunct only, because it would violate the above condition on extraction from coordinate structures. It can also not apply to both conjuncts as the second conjunct has no scope taking element in it. The application of QR to 'Lucy' would not change the interpretation of the conjunct, therefore is ruled out.

This concept is known as 'reference set economy'. Fox argues that structures are paired with a particular interpretation. These pairs are then compared to each other cross-derivationally. In particular, he assumes that the computation of a particular structure S_1, paired with a particular interpretation I_1, is possible unless there exists a pair S_2-I_1 where S_2 involves less operations, or is in any other sense more economical than S_1. If syntax is mapped onto semantics at the Spellout point, and from then on after each covert syntactic operation, then one may *locally* decide whether a particular instance of

QR changed anything on this representation. This may be done as follows. A syntactic operation applies to a particular intermediate structure (D stands for 'derivation') D_1, producing D_2. Since the mapping between syntax and semantics is done iteratively, one obtains the pairs D_1-I_1, D_2-I_2. The performed syntactic operation is assumed to be ruled out if I_1=I_2.

11 Conclusion

The aim of this paper was to show that the one-to-many mapping between stress and semantic focus of Reinhart (1995) originally proposed for English and Dutch proves to be a powerful tool in accounting for a range of data in Hungarian, a language with focus-movement. These include the uniqueness of the syntactic 'focus'-position, which follows from the fact that there is one neutrally assigned main stress in every clause. Another phenomenon accounted for is the fact that the VM-V order is preserved in cases of verb-focusing. The reason proposed for this is that given the V-initial nature of the VP and the leftwardness of the stress assignment rule the V is stressed in the first place, therefore does not move even if it is contrastively focused. Third, this view of the [Spec, FP] position allows a straightforward analysis of particle climbing as movement of the particle to avoid stressing of the V. Blocking effects between climbing and focusing follow from the claim that once focusing happened, there is no trigger for climbing. A final point concerned these blocking effects in infinitival sentences, providing an indirect argument for a complex predicate analysis of Hungarian particle verbs.

The last section discussed two theoretical implications of the results of the previous sections. It was argued that an approach which makes use of a syntactic +Focus-feature makes use of a superset of the assumptions of the present proposal, therefore the feature seems to be redundant. A tentative change of the architecture of the grammar was proposed to allow for direct communication between semantics and phonology.

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