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*Rhythmical variation in Hungarian**

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1 Introduction

The kinds of rhythmical variation I will examine in this paper can be observed in some double-accented Hungarian words, and can be exemplified by the changes that the stressing of the numeric compound *'tizen'három* 'thirteen' may undergo when it is embedded in phrases.[1] The stressing of this word may become *tizen'három* in the phrase *'pont tizen'három* 'exactly thirteen' and *'tizenhárom* in the phrase *'tizenhárom 'pont* 'thirteen points'. The two processes, however, are not quite symmetrical in their range of application; the first kind of change occurs in only a subset of the words affected by the second kind. The symbol ' in the examples represents a pitch accent on the syllable whose orthographic form it precedes.[2]

These changes are the Hungarian counterparts of the two kinds of rhythmical variation in English, manifested, for instance, by the different realisations of the word *'thir'teen*, when it is embedded in phrases like *'thirteen 'points* or *'just thir'teen*. However, while rhythmical variation in English is extremely widespread, in Hungarian it is restricted to certain classes of words. Besides, rhythmical variation in English lacks the

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[1] In *tizenhárom*, *tizen-* consists of the stem *tíz* 'ten', with a shortened vowel, plus the suffix *-en* 'on, on top of', so *tizenhárom* is literally 'on ten, three'. Similarly, in *huszonhárom* '23', *huszon-* consists of the stem *húsz* 'twenty', with a shortened vowel, plus the suffix *-on* (a variant of *-en*). The other two-digit numbers ending in zero do not take the *-en/-on* suffix, and occur in their unchanged stem forms before the added digit; *negyvenhárom* '43' consists of the unchanged stem *negyven* '40' and the other stem *három* 'three'. That *negyven* also ends in *en* is a coincidence; *en* here is not a suffix.

[2] Accents on vowel letters in Hungarian orthography (e.g. *á* in *tizenhárom*) indicate length, not stress.

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asymmetry between the two processes; both kinds of change affect the same set of words.

This article concentrates on rhythmical variation in Hungarian and on the implications of this variation for metrical theory. §2 describes stress in Hungarian words and phrases, and the facts of Hungarian rhythmical variation. §3 examines the possibility of adapting first Selkirk's (1984) grid-based model, and then Hayes' (1984) metrical adjunction theory (together with its extensions in Kager & Visch 1988 and Hayes 1995) to the data of Hungarian rhythmical variation, and shows that such adaptations raise serious problems. The Selkirk model leads to an unnecessary differentiation of pitch accents according to strength, while the Hayes model (and Kager & Visch's extension of it) is unable to grasp the non-relational aspect of Hungarian pitch accents. §4 demonstrates that Gussenhoven's (1991) accent-based approach is easily adaptable to Hungarian rhythmical variation, offering one single rule (the postlexical Rhythm Rule) for both kinds of variation, thus treating the two related processes in a uniform manner, and even managing to incorporate the asymmetrical part of the variation. However, this has a price: the addition of a rather ad hoc condition. Besides, since Hungarian rhythmical variation is lexically and syntactically restricted, Gussenhoven's approach (just like the other approaches) has to make reference to particular word classes and to the syntactic properties of the phrase in which the variation takes place. Therefore in §5 I propose a 'split analysis' of Hungarian rhythmical variation. I suggest that the kind of rhythmical variation exemplified by *'pont tizen'három* (i.e. the one that affects fewer words) belongs to precompiled lexical phonology, in the sense of Hayes (1990), whereas the other kind of rhythmical variation, exemplified by *'tizenhárom 'pont* (which applies to a wider set of words), belongs to the P1 stratum of postlexical phonology, in the sense of Kaisse (1985, 1990). Thus we lose the apparently precious generalisation that the two processes are underlyingly the same, expressible by one single rule. But such a generalisation, though it seems to hold for English, cannot be right for Hungarian, given the asymmetrical nature of the processes involved. By splitting Hungarian rhythmical variation into a precompiled (lexical) and a P1 (postlexical) component, we give recognition to the asymmetry. Nevertheless, the close kinship between the two processes is still expressed by their accommodation in the rule strata: P1 rules are those rules of postlexical phonology which are closest to lexical phonology (with precompiled rules).

The examples of Hungarian rhythmical variation in this study are based on my native-speaker intuitions, but have been informally confirmed by many colleagues and friends.

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2 Stress and the facts of rhythmical variation in Hungarian

2.1 Stress in Hungarian words and phrases

In its citation form, a Hungarian lexical word (i.e. a non-function word) typically has one single primary stress, which falls on its first syllable, no matter whether the word is simple, e.g. *'iskola* 'school', or a derivative, e.g. *'forrósodik* 'grows hot', or a compound, e.g. *'hidegvérű* 'cold-blooded'.[3]

A primary-stressed syllable in Hungarian is intonationally prominent, i.e. pitch-accented. In addition, it has some non-intonational prominence, too, achieved by extra intensity and/or junctural or durational means. This means that a primary-stressed syllable initiates one of the pitch contours that are characteristic of intonational pitch accents in Hungarian. The falling pitch contour, displayed in (1a, b), is one of these contours, and the syllables initiating it (underlined in the examples) are primary-stressed.

(1) a. <u>for-</u>rósodik 'is getting hot' b. <u>hi-</u>degvérű 'cold-blooded'

A syllable that is not pitch-accented but is still salient because it has some perceptible extra prominence produced by extra intensity and/or junctural or durational features is taken to be secondary-stressed. The syllables *so-* in *forrósodik* and *vé-* in *hidegvérű* are optionally secondary-stressed.[4] Syllables that are neither primary-stressed nor secondary-stressed are unstressed.

A phrase can contain several primary-stressed (i.e. pitch-accented)

[3] A marginal class of interjections have the single primary stress on the last syllable, e.g. *a'há!* 'I see!'.

[4] Kager (1995: 374), based on Kerek (1971), takes it for a fact that Hungarian words have secondary stresses on all odd-numbered syllables to the right of the primary-stressed first syllable. This, however, is far from being obligatory and there is still a great deal of uncertainty about the actual form of this variation. In fact, Kerek (1971) himself quotes some of the contradicting views from various Hungarian authors. It seems that secondary stress in Hungarian words may optionally fall on the third, fifth and other odd-numbered syllables of words, but in compounds the presence of a secondary stress on the first syllables of non-initial constituents may interfere with this counting (cf. Szende 1976: 120), as is demonstrated by the possible pronunciations *'rette,netes* 'horrible' and *'iskola-,televízió* 'schools television'. Kálmán & Nádasdy (1994: 408) imply that in compounds only those non-initial members receive secondary stress which are immediate constituents of the compound. Although we still do not know the precise nature of the factors that may influence the placement of secondary stresses on odd-numbered syllables in particular words, it seems to be the case that such stressing occurs in emotionally charged, emphatic speech. In any case, secondary stresses, as defined here, are irrelevant to rhythmical variation in Hungarian.

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syllables. For instance, the phrase in (2), *'Eszterházy 'Péter 'legújabb 'könyve*, has four:

(2) Esz- Pé- leg- köny-
terházy ter újabb ve

Eszterházy Peter newest book + his 'Peter Eszterházy's latest book'

The primary stresses of a phrase are not identical in actual physical prominence. It is generally assumed that the lefthand one is typically stronger than its sister on its right, and since one phrase can be embedded in another, several degrees of primary stress prominence can occur.[5] For instance, the four primary stresses in (2) are said to have three degrees of prominence, with the leftmost one being the strongest, the third the second strongest and the second and fourth ranking equal as the third strongest, as shown in (3); cf. É. Kiss (1992: 94):

(3) 'Eszterházy 'Péter 'legújabb 'könyve

```
[*          ][ *  ][*       ][ *     ]
[*                ][*                ]
[*                                   ]
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However, since all four satisfy the definition of primary stress, i.e. they are all associated with intonational pitch accents, they are all primary stresses. The actual amount of non-intonational prominence (extra intensity, etc.) accompanying the pitch accent does not form part of the definition.[6]

The deaccented portions of phrases will contain secondary stresses on the first syllables of words. (But secondary stresses are optionally deleted at the end of the derivation.) While unstressed syllables are never foot-heads, primary-stressed and secondary-stressed syllables constitute the heads of left-dominant feet.[7]

[5] Cf. É. Kiss (1987–88, 1992). Instrumental studies seem to support this assumption, cf. Hunyadi (1997).

[6] There are, however, exceptional phrases in which the initial lexical item resists a primary stress (pitch accent) and even in neutral rendering is only secondary-stressed, e.g. *,kissé 'ideges* 'a little nervous', *,valamilyen 'kád* 'kind of bathtub', etc. Another exception is the stressing of the topic constituent at the beginning of the sentence. According to É. Kiss (e.g. 1987–88), the topic is typically less prominent than the beginning of the comment, i.e. the focus. In order to avoid having the strongest stress on the initial topic, É. Kiss (1987–88: 12) proposes a filter which eliminates any pitch accent on the topic (unless it is in a separate intonation unit).

[7] This three-degree stress system has been adopted in other works on Hungarian prosody as well, e.g. in Vogel & Kenesei (1987).

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Though compounds in Hungarian normally have only one primary stress, which is initial, a small number of compounds have exceptional, phrase-like stressing. These will be called phrasal compounds and include hyphenated compounds such as *'ütött-'kopott* 'battered', *éjjel-'nappal* 'day and night', *'hanyatt-'homlok* 'head over heels', numerals such as *'háromszáz'tizen'három* '313', *'tizen'három* 'thirteen' and *ugyan*-compounds such as *'ugyan'annyi* 'the same amount'. They have underlying representations with more than one primary stress: one on the first syllable of each of their stressable constituents. Just as in phrases, the first primary-stressed syllable in these compounds is slightly stronger than the other primary stress(es); cf. (4a, b):

(4) a. ü- ko- tött- pott — 'ütött-'kopott — [*][*] [*] — 'battered'

beaten worn

b. ti- há- zen- rom — 'tizen'három — [*][*] [*] — 'thirteen'

ten + on three

2.2 Rhythmical variation processes in Hungarian and English

Some, but not all, of the phrasal compounds are RHYTHMICALLY VARIABLE (RV) words, e.g. (4b). An RV word is double-accented, and is capable of undergoing both kinds of rhythmical variation when it is embedded within syntactic phrases or larger numeric compounds. For instance, (5a) shows the isolated pronunciation of the RV word *tizenhárom* 'thirteen', with the stress pattern of (stronger) primary + (weaker) primary stress. This may become non-primary + primary in (5b) or primary + non-primary in (5c).

(5) a. 'tizen'három — 'thirteen'
pattern [tizenhárom]
[B C]

b. 'pont tizen'három — 'exactly thirteen' — *Trochaic Reversal*
pattern [pont [tizenhárom]]
[A [B C]]

c. 'tizenhárom 'pont — 'thirteen points' — *Final Weakening*
pattern [[tizenhárom] pont]
[[B C] D]

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[B C] stands for the two, potentially primary-stressed elements of the word *'tizen'három*. The syntactic pattern is right-branching [A [B C]] in (5b) and left-branching [[B C] D] in (5c). The realisations (5b) and (5c) exemplify the two types of rhythmical variation in Hungarian.

The more radical type, occurring in the right-branching pattern shown in (5b), can be called TROCHAIC REVERSAL, because the original strong + weak sequence (i.e. 'trochaic' prominence) is reversed, and becomes a weak + strong sequence by loss of the initial primary stress (the one on B), producing words with a single, word-final accent. The result is in dramatic contrast with the general Hungarian tendency of having a single, word-initial accent. Trochaic Reversal occurs only in RV words.[8]

The less radical type, shown in the left-branching pattern of (5c), will be called FINAL WEAKENING, because the final element of the double-accented compound (i.e. C), which is normally somewhat weaker than the first, becomes even weaker by losing its primary stress. This change brings the double-accented word into line with the general Hungarian tendency of having a single, word-initial accent. Final Weakening occurs not only in RV words, but also in non-RV double-accented phrasal compounds when they are followed by a primary-stressed word in the same phrase. For instance, *egy 'ütött-'kopott 'autó* 'a battered car' can be realised as *egy 'ütött-kopott 'autó*, but *'nagyon 'ütött-'kopott* 'very battered' cannot be realised as **'nagyon ütött-'kopott*.

So there is an asymmetry between Trochaic Reversal and Final Weakening. While the former is restricted to RV words, the latter characterises all double-accented phrasal compounds, both RV and non-RV.

The phenomenon of rhythmical variation in Hungarian is clearly reminiscent of the parallel phenomenon of rhythmical variation in English, in which e.g. the isolated form *'thir'teen* of (6a) may become *'thirteen* in (6b) and *thir'teen* in (6c). The symbol ' in the English examples represents not only primary stress, but also the most prominent pre-primary secondary stress. (In English both of these are pitch-accented; the pre-primary secondary stress initiates a head contour, the primary stress initiates a nuclear contour.)

(6) a. 'thir'teen
b. 'thirteen 'men (*Iambic Reversal*)
c. 'just thir'teen (*Initial Weakening*)

Although the two processes are obviously related (cf. e.g. Jones 1964:

[8] I use the term Trochaic Reversal as the opposite of Iambic Reversal, the English counterpart of the process. The term Trochaic Reversal was first used by Gussenhoven (1983) for one of the rhythm rules of Dutch. But Gussenhoven's Trochaic Reversal is somewhat different from mine: it is the durational restructuring of post-accentual syllables and does not involve changes of intonational pitch accents.

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253–254), it is the more radical kind shown in (6b) that has received more attention in English linguistics. This is often called IAMBIC REVERSAL (Liberman & Prince 1977), because the originally weak+strong (i.e. 'iambic') prominence pattern of a word is reversed, giving a strong+weak prominence pattern, when the word is followed by an initially-stressed word in the same phrase. INITIAL WEAKENING is the name I use for the less radical rhythmical change (6c): the already weaker initial stress becomes even weaker.[9]

In English, rhythmical variation is not restricted to certain classes of words; practically all words and phrases embedded in larger phrases may systematically undergo the variation if they have the underlying secondary+primary stress pattern; cf. e.g. *'pontoon 'bridge*, *'Dundee 'marmalade*, *'academic 'discipline*, *'good-looking 'tutor*, *'three red 'shirts*, etc. (cf. Hogg & McCully 1987: 129–137).[10] Moreover, the kind of asymmetry we find between the two processes of rhythmical variation in Hungarian does not exist in English; the same set of words is targeted by both types of variation.

Rhythmical variation in Hungarian (at least the more radical kind that I have called Trochaic Reversal) is severely constrained and is restricted to the following classes of phrasal compounds:

(7) *Rhythmically variable words* (RV words)
  a. *Inherently double-accented numeric compounds*
    (i) Two-digit cardinal and ordinal numerals in which the second digit is not zero:
      'tizen'három 'thirteen'
      'nyolcvan'hat '86' (*nyolcvan* = '80', *hat* = 'six')
      'negyven'ötödik '45th' (*negyven* = '40', *ötödik* = 'fifth')
    (ii) Three-digit cardinal or ordinal numerals in which either the second or the third digit is zero:
      'ötszáz'három '503' (*ötszáz* = '500', *három* = 'three')
      'ötszáz'harminc '530' (*harminc* = '30')
      'száz'tizedik '110th' (*száz* = '100', *tizedik* = 'tenth')

[9] There is a vast literature in English linguistics on Iambic Reversal (or Stress Shift, cf. e.g. Wells 1990). In addition to Liberman & Prince's tree-and-grid-based account (1977), there are many other proposals. These include Kiparsky's tree-based 'Rhythm Rule' (1979), Prince's grid-based 'move x' (1983) and Selkirk's grid-based 'Beat Movement' (1984). Halle & Vergnaud (1987) use the term Rhythm Rule not only for shifts of word stress at the phrase level, as in the example *'thirteen 'men*, but also for the word level phenomenon of weakening the final foot in words like *for'maldehyde*. (For a criticism of this extension of the term see Burzio 1994: 70.) Others have provided accounts of Initial Weakening, e.g. Giegerich's tree-based 'W-Pairing' (1985), or tried to treat both Iambic Reversal and Initial Weakening along the same lines: Hayes' tree-and-grid-based 'Rhythmic Adjustment' (1984), Gussenhoven's accent-based 'Rhythm Rule' (1991), etc.

[10] Although Iambic Reversal in English is practically unlimited, there are a few lexically marked exceptions, e.g. *Montana*, *Alberta*, *titanic*, etc. (cf. Hayes 1984: 56).

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(iii) Four-digit cardinal or ordinal numerals in which two of the last three digits are zero:
'ezer 'kilencszáz '1900' (*ezer* = '1000', *kilencszáz* = '900')
'ezer 'kilencven '1090' (*kilencven* = '90')
'ezer 'kilenc '1009' (*kilenc* = 'nine')
'ezer 'ötszázadik '1500th' (*ötszázadik* = '500th')

b. *Derivatively double-accented numeric compounds*
These contain three accents underlyingly, but retain only two accents after Trochaic Reversal applies to an internal constituent in them; e.g. if the constituent *tizenhárom* 'thirteen' within *'száz 'tizen 'három* '113' undergoes Trochaic Reversal, the originally triple-accented word becomes *'száztizen 'három*, which is a derivatively double-accented numeric compound.[11]

c. Ugyan-*compounds*
These are composed of the bound stem *ugyan-* 'the same' and a demonstrative stem, e.g. *'ugyan 'annyi* 'the same amount' (*annyi* = 'that much'), *'ugyan 'az* 'the same' (*az* = 'that'), *'ugyan 'olyan* 'exactly like that', *'ugyan 'ott* 'in the same place' (*ott* = 'there'), *'ugyan 'akkor* 'at the same time' (*akkor* = 'then'), etc.[12]

If the numerals in (7) are followed by any of the words *ezer* 'thousand', *millió* 'million' or *milliárd* 'billion', they remain double-accented and RV, e.g. *'tizen 'háromezer* '13,000', *'tizen 'három millió* '13,000,000' and *'tizen 'három milliárd* '13,000,000,000'. This is because the words *száz* 'hundred', *ezer* 'thousand', *millió* 'million', *milliárd* 'billion', when they are preceded by numerals in numeric compounds, do not receive a separate primary stress, e.g. *'ötezer* '5,000', *'hatszáz* '600', *'tízmillió* '10,000,000'.

Other double-accented phrasal compounds, e.g. *'ütött-'kopott* 'battered', etc., are not RV, but Final Weakening may affect them, too. Therefore, the test frame we can use for discovering RV words is based on

[11] As we shall see, Trochaic Reversal is blocked if its application leads to more than four interstress syllables. This considerably limits the possibilities of producing derivatively double-accented compounds. For instance *'kétszáztizen 'hat* '216' is a derivatively double-accented numeral, produced by applying Trochaic Reversal to *tizenhat*. However, *'kétszáztizen 'hat* cannot undergo Trochaic Reversal in *'ezer 'kétszáztizen 'hat* '1216' to produce a double-accented **'ezerkétszáztizen 'hat*, because the output would contain five interstress syllables.

[12] It seems that in addition to the RV numeric and *ugyan*-compounds there are a few stereotyped collocations which may also occasionally display rhythmical variation. These include semi-lexicalised phrases such as *'két 'tojás* 'two eggs', as in *'Végy két 'tojást* 'Take two eggs' *vs. 'két tojás 'sárgája* 'the yolk of two eggs' and *'egész 'nap* 'all day', as in *'Aludt egész 'nap* 'He was sleeping the whole day' *vs. 'Egész nap 'aludt* 'The whole day he was sleeping'. However, collocations like these are sporadic and difficult to identify; besides, they undergo rhythmical variation in a less systematic fashion than the double-accented numerical and *ugyan*-compounds do, so I do not deal with them here.

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Trochaic Reversal. It contains the primary-stressed word *pont* 'exactly', as shown in (8):

(8) *Test frame based on Trochaic Reversal*

'pont _____
'A ['B 'C]

If the double-accented word [B C] loses its first primary stress (the one on B) in the pattern [A [B C]], it can be regarded as an RV word. Here are some examples:

(9) a. 'pont 'tizen'hat → 'pont tizen'hat
'exactly sixteen'
b. 'pont a 'huszon'ötödik → 'pont a huszon'ötödik
'exactly the 25th'
c. 'pont 'hatszáz'három → 'pont hatszáz'három
'exactly 603'
d. 'pont 'ezer'háromszáz → 'pont ezer'háromszáz
'exactly 1300'
e. 'pont 'ugyan'annyi → 'pont ugyan'annyi
'exactly the same amount'

Needless to say, the words so discovered may also undergo Final Weakening, i.e. the word [B C] may lose its second primary stress (the one on C) in the pattern [[B C] D]:

(10) a. 'tizen'hat 'utas → 'tizenhat 'utas
'sixteen passengers'
b. a 'huszon'ötödik 'utas → 'a 'huszonötödik 'utas
'the 25th passenger'
c. 'hatszáz'három 'utas → 'hatszázhárom 'utas
'603 passengers'
d. 'ezer'háromszáz 'utas → 'ezerháromszáz 'utas
'1300 passengers'
e. 'ugyan'annyi 'utas → 'ugyanannyi 'utas
'the same number of passengers'

2.3 Rhythmical variation and interstress syllables

Rhythmical variation in Hungarian is never strictly obligatory, but it is very likely when a primary-stressed syllable of an RV word is flanked by adjacent primary-stressed syllables on both sides. The reduction of the medial primary stress in this case will leave one interstress syllable, as is shown in (11):

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(11) a. *pattern*: [A [B C]]
'pont 'száz'tíz → 'pont száz'tíz 'exactly 110'
exactly 100 10

b. *pattern*: [[B C] D]
'száz'tíz 'kérdés → 'száztíz 'kérdés '110 questions'
100 10 question

The process is also quite likely when the number of interstress syllables created by rhythmical variation is two, as in the examples in (12):

(12) a. *pattern*: [A [B C]]
'száz'harminc'négy → 'százharminc'négy '134'
100 30 4
'fél 'tizen'kettő → 'fél tizen'kettő 'half past 11'
half 10+on 2 (*lit.* 'half 12')
'négy 'huszon'ötkor → 'négy huszon'ötkor 'at 4·25'
4 20 5+at
'pont 'ugyan'az → 'pont ugyan'az 'exactly the same'
exactly same

b. *pattern*: [[B C] D]
'harminc'négy 'könyv → 'harmincnégy 'könyv '34 books'
30 4 book
'huszon'öt 'ötvenért → 'huszonöt 'ötvenért 'for the price of 25·50'
20 5 50+for
'ugyan'az 'tökben → 'ugyanaz 'tökben 'it's just the same'
same marrow+in

Rhythmical variation is also quite normal when it leaves a sequence of three syllables between the primary stresses. The examples in (13a) show the right-branching pattern [A [B C]], those in (13b) display left-branching [[B C] D].

(13) a. *pattern*: [A [B C]]
'négyszáz'ötven'kettő → 'négyszázötven'kettő '452'
400 50 2
'negyed 'tizen'kettő → 'negyed tizen'kettő 'a quarter past 11'
quarter 10+on 2 (*lit.* 'quarter 12')
'mindig 'ugyan'az → 'mindig ugyan'az 'always the same'
always same
'Fiat 'ezer'ötszáz → 'Fiat ezer'ötszáz 'Fiat 1500'
Fiat 1000 500
'Club 'kilencven'kilenc → 'Club kilencven'kilenc 'Club 99'
Club 90 9
'hoztam 'tizen'egyet → 'hoztam tizen'egyet 'I've brought eleven'
brought+I 10+on 1+ACC

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b. *pattern*: [[B C] D]

a 'tizen'három 'vértanú	→ a 'tizenhárom 'vértanú	'the thirteen
the 10 + on 3 martyr		martyrs'
'ugyan'az a 'kérdés	→ 'ugyanaz a 'kérdés	'the same
same the question		question'
'ezer'ötszáz 'vagonnal	→ 'ezerötszáz 'vagonnal	'with 1500
1000 500 wagon + with		wagons'

If, as a result of rhythmical variation, the number of interstress syllables becomes four, the alternation is still possible; but if the alternation raises this number to more than four, it becomes unlikely.[13]

(14) a. *pattern*: [A [B C]]

'október 'huszon'harmadika	→ 'október huszon'harmadika
October 20 + on 3rd	'October 23rd'
'kilencezer 'kilencszáz'tíz	→ * 'kilencezer kilencszáz'tíz
9000 900 10	'9910'
'adtam neki 'száz'ötvenet	→ 'adtam neki száz'ötvenet
gave + I him 100 50 + ACC	'I've given him 150'
'adtam neki 'háromszáz'ötvenet	→ * 'adtam neki háromszáz-
gave + I him 300 50 + ACC	'ötvenet
	'I've given him 350'

b. *pattern*: [[B C] D]

'kilencven'kilenc 'igaz	→ 'kilencvenkilenc 'igaz
90 9 true person	'99 just persons'
'Huszon'harmadik 'János	→ 'Huszonharmadik 'János
20 3rd John	'Pope John XXIII'
a 'háromszáz'kilencedik 'utas	→ * a 'háromszázkilencedik
the 300 9th passenger	'utas
	'the 309th passenger'

Some phrases are the concatenations of two RV words: $[[B_1\ C_1]\ [B_2\ C_2]]$. These will be submitted to both Final Weakening and Trochaic Reversal. In such phrases, either or both of the internal primary stresses may be lost, and there is no limitation on the number of interstress syllables between the remaining primary stresses (i.e. the number of interstress syllables may exceed four). These phrases can be time or price indications (15a) or year numbers (15b), in which both of the constituents are RV; or combinations of RV numeric and *ugyan*-compounds (15c, d).

[13] These numbers are based on empirical observation. It seems that, instead of a 'Quadrisyllabic Rule' (which requires three interstress syllables in English rhythmical variation, cf. Hayes 1984), Hungarian has a 'Pentasyllabic Rule' (with four interstress syllables). These are, of course, tendencies rather than rules. About 16% of Wells's (1990) examples of English Iambic Reversal violate Hayes' Quadrisyllabic Rule and include stressings like *'complementary 'colours*, *'categorical de'nial*, *e'lectromagnetic 'spectrum*, *'deoxyribonucleic 'acid*, etc.

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(15) *pattern*: $[[B_1\ C_1]\ [B_2\ C_2]]$

a.	'tizen'három-'negyven'öt 10+on 3 40 5 '13·45'	→ 'tizenhárom-'negyven'öt *or* 'tizen'három-negyven'öt *or* 'tizenhárom-negyven'öt
b.	'ezer'kilencszáz'ötven'hat 1000 900 50 6 '1956'	→ 'ezerkilencszáz'ötven'hat *or* 'ezer'kilencszázötven'hat *or* 'ezerkilencszázötven'hat[14]
c.	'ugyan'úgy 'tizen'hármat same way 10+on 3+ACC 'likewise thirteen'	→ 'ugyanúgy 'tizen'hármat *or* 'ugyan'úgy tizen'hármat *or* 'ugyanúgy tizen'hármat
d.	'tizen'hármat 'ugyan'úgy 10+on 3+ACC same way 'likewise thirteen'	→ 'tizenhármat 'ugyan'úgy *or* 'tizen'hármat ugyan'úgy *or* 'tizenhármat ugyan'úgy

We can sum up this section by saying that rhythmical variation in Hungarian exists on a much more restricted scale than in English: it is only the double-accented numeric and *ugyan*-compounds that can undergo both kinds of rhythmical variation, and even these only if the number of syllables between the two preserved stresses does not exceed four.

In the following sections I will try to find the most suitable theoretical framework in which Hungarian rhythmical variation can be accounted for.

3 Grid-based accounts of rhythmical variation in Hungarian

3.1 The adaptation of Selkirk's grid-only model to Hungarian

The first two frameworks that I will briefly examine are Selkirk's grid-only theory of rhythmic patterns (1984), and Hayes' tree-plus-grid-based theory of metrical adjunction (1984), with the extension of the latter in Kage & Visch (1988).[15] I will demonstrate that while the Hungarian version of Selkirk's model can show pitch accents (primary stresses) but overdifferentiates them, Hayes' model (or the Kager & Visch extension) is not able to deal with the pitch accents of Hungarian at all.

In Selkirk's theory (1984) the grid is constructed by TEXT-TO-GRID ALIGNMENT RULES and then modified by GRID EUPHONY RULES. The two types of English rhythmical variation require two different grid euphony

[14] The syntactically proper analysis of year numbers is right-branching:
(i) 'ezer'kilencszáz'ötven'hat [E [A [B C]]]
However, this analysis would only allow the reduction of primary stress on the syllable *öt-*: *'ezer-'kilencszázötven'hat*. The fact that Hungarian native speakers prefer *'ezerkilencszáz'ötven'hat* or *'ezerkilencszázötven'hat* shows that a reanalysis of year numbers as $[[B_1\ C_1]\ [B_2\ C_2]]$ may take place.

[15] For an early attempt to adapt the Selkirk model to Hungarian rhythmical variation, see Varga (1994).

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rules: Beat Movement (which is motivated by a drive to eliminate a grid clash) causes Iambic Reversal, while Beat Addition (motivated by the principle of rhythmic alternation) is responsible for Initial Weakening.

Grids for Hungarian words can be built on the basis of Selkirk's universal text-to-grid alignment rules. We assume that, as a result of these rules, all Hungarian lexical words will come out of the lexicon with a column of four grid marks (beats) over their first, i.e. primary-stressed, syllable, and with columns of two grid marks over the unstressed syllables, as in (16).[16]

(16)
```
L4:  *
L3:  *
L2:  *  * *
L1:  *  * *
     'iskola 'school'
```

In compound words, the Compound Stress Rule (CSR) will eliminate the Level 4 (L4) beat over the first syllable of a non-initial immediate constituent, leaving a secondary (non-pitch-accented) stress, marked ˌ (cf. (17a)). In phrases, the Hungarian version of the Nuclear Stress Rule (NSR) will promote the prominence of the leftmost constituent in the phrase in such a way that it should become stronger than the strongest prominence on its right, and grid construction will proceed in a cyclical fashion so that Level 5 (L5) or higher levels will be reached; cf. (17b).

(17) a. *Compound Stress Rule*

```
*
*       *
*  * * *  *
*  * * *  *
'iskolaˌtáska 'schoolbag'
```

b. *Nuclear Stress Rule*

```
*
*    *
*    *
* *  * *
* *  * *
'édes 'álom 'sweet dream'
```

Phrasal compounds in Hungarian, including RV words, have a peculiar status: they are words, but with regard to stress they are treated as if they were phrases and their constituents lexical words. The rule responsible for their stressing is the Nuclear Stress Rule, which, in this context, will be called the PHRASAL COMPOUND STRESS RULE (PCSR). The underlying grids

[16] Hungarian shows a relative constancy in the duration of syllables and a lack of vowel reduction, so each syllable has to be aligned not only with a demibeat on Level 1 (L1) but also with a basic beat on Level 2 (L2) (Selkirk 1984: 41). These are features of syllable-timing, even though Hungarian is not a pure syllable-timed language. Since in Hungarian every syllable has an * on both L1 and L2, we could simplify our grids by leaving out L1 and starting with L2 as the bottom level. However, this might confuse the reader, who would always have to add one level to the height of each column. Therefore the idea of starting with L2 has been abandoned.

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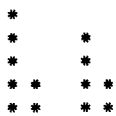
for *ütött-kopott* 'battered' and *tizenhárom* 'thirteen' can be constructed as shown in (18a) and (18b), respectively.

(18) a. *PCSR* (non-RV)



'ütött- 'kopott 'battered'

b. *PCSR* (RV)



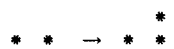
'tizen'három 'thirteen'

By applying the text-to-grid alignment rules that we have described, we can produce underlying metrical grids for Hungarian words and phrases.

When a syllable is associated with a beat on L4, or higher, that syllable is primary-stressed and will be pitch-accented. As we have seen, the primary stresses are not equally prominent; the higher the column of the primary-stressed syllable, the more prominent it is. A primary-stressed syllable minimally requires a beat on L4. When the highest beat associated with a syllable is on L3, the syllable is secondary-stressed, and when the highest beat associated with a syllable is on L2, the syllable is unstressed.

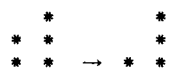
The underlying grids may be modified by optional grid euphony rules, whenever their structural description is satisfied in a cycle. These grid euphony rules are the Hungarian versions of Beat Addition, Beat Deletion and Beat Movement. Each of them is the mirror image of its English counterpart: the English and Hungarian versions of these rules differ in their parametric settings. A general condition for all Hungarian grid euphony rules is that the bottom level in these rules is minimally L2.

(19) a. *Hungarian Beat Addition* (BA)

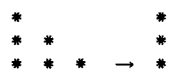


(right-dominant, L-R)

b. *Hungarian Beat Deletion* (BD)



c. *Hungarian Beat Movement* (BM)



restriction: BM can only affect an RV word if the clash is within a constituent which immediately dominates the RV word.

It is these rules that are responsible for Trochaic Reversal and Final Weakening in the RV words of Hungarian. Since they affect L4 grid

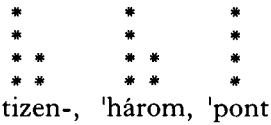
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marks (i.e. primary stresses) only in RV words, they differ from the Selkirk rules in one important respect: they need information from outside the grid, i.e. they have to 'see' whether or not a word is an RV lexical item:

(20) *General restriction on Hungarian grid euphony rules*
The affected (i.e. added, deleted or moved) beat cannot be on L4, unless it is over a syllable of an RV word.

Final Weakening requires the application of both Beat Addition and Beat Deletion, as is shown in (21):

(21) a. *Lexicon*

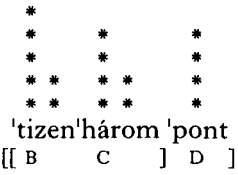


b. *Cycle 1*

PCSR as in (18b)

c. *Cycle 2*

NSR



d. BA, TPPC



e. BD



The TPPC in (21d) is Selkirk's Textual Prominence Preservation Condition (Selkirk 1984: 56, 100–101).[17]

[17] This condition says that if, by the application of Beat Addition, another syllable reaches the prominence level of the originally strongest stressed syllable of the phrase, then the originally strongest stressed syllable will be automatically promoted by one level.

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But Beat Addition is not allowed to take place in (22b), as it would incorrectly add an L4 beat to the last syllable in the compound *faiskola* 'tree nursery' ('tree'+'school'), which is not an RV word. The underlying grid (22a) shows the effect of the Compound Stress Rule and Beat Addition. (To save space, numbers replace the columns of grid marks over the syllables, each number corresponding to the number of grid marks in the column.)

(22) a. CSR, BA
4 3 2 3
'fa,isko,la

b. BA, TPPC impossible
5 3 2 4
* 'fa,isko'la 'tree nursery'

(22b) is impossible because of the restriction in (20)

Beat Deletion is also not permitted in (23b), where the beat which it would delete (over the first syllable of the word *orvos* 'physician') is not in an RV word. (23b) is the result of NSR on the first cycle (*egy magyar orvos*), NSR on the second cycle (*egy magyar orvos sikere*), BA (twice) and the TPPC.

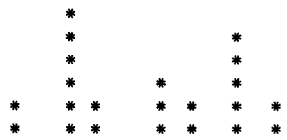
(23) a. BA (twice), TPPC
2 6 2 4 2 5 2 3
egy 'magyar 'orvos 'sike,re

b. BD impossible
2 6 2 3 2 5 2 3
* egy 'magyar ,orvos 'sike,re
'the success of a Hungarian doctor'

(23b) is impossible because of the restriction in (20)

Unfortunately, however, Beat Deletion, as formulated in (19b), cannot eliminate the second accent of a non-RV phrasal compound (e.g. *'ütött-'kopott* 'battered') either, because it is not an RV word, although such phrasal compounds *may* lose their second accent before an accented word.

(24) BD impossible



egy 'ütött-,kopott 'autó 'a battered car'

(24) is impossible because of (20), although it would be correct. Nevertheless, we cannot reformulate the Beat Deletion rule so as to enable it to handle cases like (24), because the rule is also needed in Trochaic Reversal (see below), where non-RV phrasal compounds like *'ütött-'kopott* never lose their accent.

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Trochaic Reversal will require the application of Beat Movement and Beat Deletion, cf. (25).

(25) a. *Lexicon*



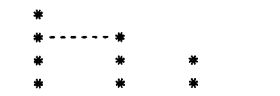
'mind, a, 'tizen-, 'három

b. *Cycle 1*

PCSR as in (18b)

c. *Cycle 2*

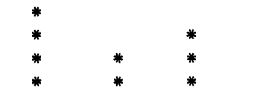
NSR



'mind a 'tizen'három

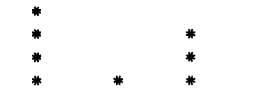
[A [B C]]

d. BM



'mind a 'tizen'három

e. BD



'mind a ˌtizen'három 'all the thirteen'

But Beat Movement cannot take place in (26b), because it would move an L4 beat in a non-RV word. (26a) is the result of CSR and NSR.

(26) a. NSR

2 5 4 2 2 3 2
egy 'új 'iskolaˌtáska

b. BM impossible

2 5 3 2 2 4 2
* egy 'új ˌiskola'táska
'a new schoolbag'

(26b) is impossible because of the restriction in (20)

Hungarian Beat Movement has a special restriction (given in (19c)), *viz.* that it is only applicable to an RV word if the clash that it resolves is within

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a constituent that immediately dominates the RV word. Consequently, Beat Movement will not occur in (27f):

(27) a. *Lexicon*



b. *Cycle 1*

PCSR — as in (18b)

c. *Cycle 2*

NSR



d. BA, TPPC



e. BD



f. *Cycle 3*

NSR



'the ship's thirteen passengers'

Although there is a clash in (27f), it cannot be resolved by Beat Movement, because the clash is not within a constituent that immediately dominates the RV word *tizenhárom*. If the Beat Movement rule did not have this restriction and operated in (27f), its application would eventually lead to the wrong pattern **a 'hajó ,tizen'három 'utasa* (through BM, BD and BM).

To sum up, we have found that the adaptation of Selkirk's grid-only model (1984) to Hungarian rhythmical variation faces a number of problems.

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First, the Hungarian versions of the grid euphony rules have to be lexically constrained, which is prohibited in Selkirk's original framework. As shown in (22b), (23b) and (26b), Hungarian Beat Addition, Beat Deletion and Beat Movement cannot add, delete or move L4 grid marks (i.e. primary stresses) unless these grid marks are within RV words.

Secondly, as (27f) has shown, the Hungarian version of Beat Movement can only affect an RV word if the clash that it resolves is within a constituent that immediately dominates the RV word. Again, such syntactic stipulations are excluded from Selkirk's framework.

Thirdly, though the analysis accounts for both kinds of rhythmical variation in RV words (i.e. Trochaic Reversal and Final Weakening), it ignores those cases of Final Weakening which occur in double-accented non-RV words, cf. (24). That is to say, it treats Trochaic Reversal and Final Weakening as if they were symmetrical, but is still unable to provide a unified account for them.

Fourthly, in the Hungarian version of Selkirk's model the levels of the grid have categorical, non-relative meaning: L4 (and higher) grid marks show pitch accent (primary stress). However, since the analysis has a new step for every prominence change, including the insignificant changes in prominence of primary stresses, it unnecessarily differentiates the pitch accents according to their strengths, cf. e.g. the different realisations of *'mind a 'tizen'három* in (25c) and (25d).

3.2 Hayes' metrical adjunction theory and its extensions

A theory that gives a unified treatment to both kinds of rhythmical variation in English is Hayes' (1984) METRICAL ADJUNCTION THEORY. Hayes' approach presupposes a tree-plus-grid framework; the tree represents linguistic stress, the grid represents rhythmic structure. What motivates rhythmical variation is not the elimination of a clash in the grid but the production of a more eurhythmic text by a particular spacing of grid marks at some level of the grid. Ideally, this interval between the grid marks is four syllables (including the first stressed syllable), which is divided into two two-syllable intervals by a mark on the next lower level. These requirements are expressed by Hayes' Quadrisyllabic and Disyllabic rules.

Under Hayes' analysis both Iambic Reversal and Initial Weakening can be collapsed into a single adjunction rule called Rhythmic Adjustment:

(28) *Rhythmic Adjustment*
In the configuration ... X Y ... DTE ..., adjoin Y to X.

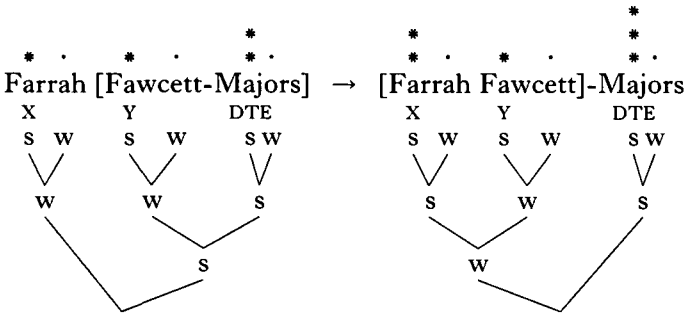
By 'adjunction' here Hayes means 'that the sequence XY is made a constituent, with Y weak relative to X' (Hayes 1995: 383).

Rhythmic Adjustment in (28) is a leftward operation, and is the characteristic feature of rhythmical variation in English. When the rule

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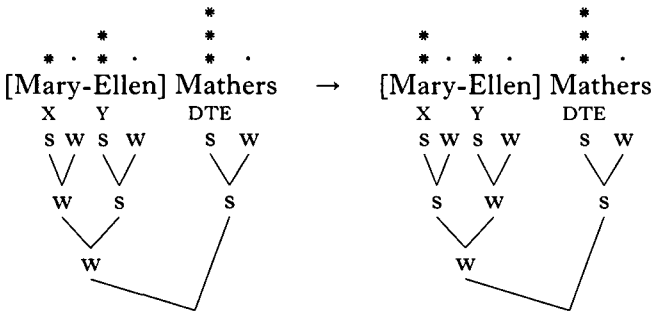
functions as 'Initial Weakening' (Hayes calls it 'Beat Addition', though he defines Beat Addition differently from Selkirk), it carries out a rebracketing, as in (29). As a result, *Fawcett*, i.e. the initial constituent of *Fawcett-Majors*, is weaker than before the adjustment.

(29)



When X and Y are sisters, Rhythmic Adjustment functions as 'Iambic Reversal' (which Hayes calls the 'Rhythm Rule'). In this case the adjunction is vacuous in terms of constituent structure but renders Y weak in relation to X; it carries out a relabelling.

(30)



In order to avoid overgeneration in certain left-branching structures, Hayes (1984) introduces the principle of Maximality. This principle states that metrical rules must analyse their terms maximally. This is satisfied in two cases: (i) Y and DTE are sister nodes and they are both c-commanded by X (cf. (29)), (ii) X and Y are sister nodes and they are both c-commanded by DTE (cf. (30)).[18]

Hayes' model has been extended to further features of rhythmical variation in English and Dutch by Kager & Visch (1988). Dutch

[18] In Hayes' more recent work (1995: 385), the principle of Maximality has been abandoned and its job is done by the more general principles of the Continuous Column Constraint and the Faithfulness Condition. Incidentally, for reasons we cannot enter into here, Hayes (1995) adopts separate accounts for the Rhythm Rule and Beat Addition, and so loses the generalisation present in the Rhythmic Adjustment of Hayes (1984), which unified those rules.

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Rhythmic Adjustment is not only leftward, as in English, but also rightward, as in Hungarian.

Kager & Visch (1988: 52) define rightward Rhythmic Adjustment as the mirror image of leftward Rhythmic Adjustment:

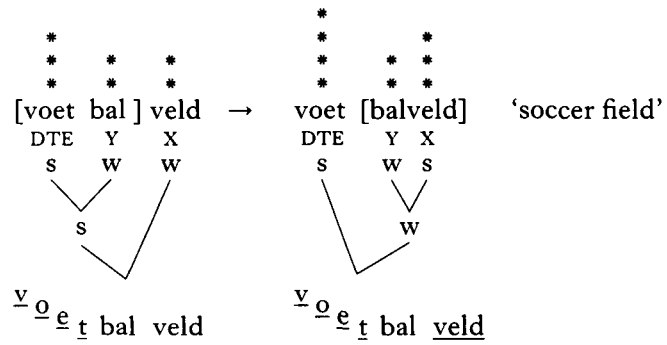
(31) *Rhythmic Adjustment* (rightward)
In the configuration ... DTE ... Y X ..., adjoin Y to X.

It is rightward Rhythmic Adjustment that characterises Hungarian rhythmical variation. Dutch is ambidextrous in this respect; it has both leftward and rightward Rhythmic Adjustment.

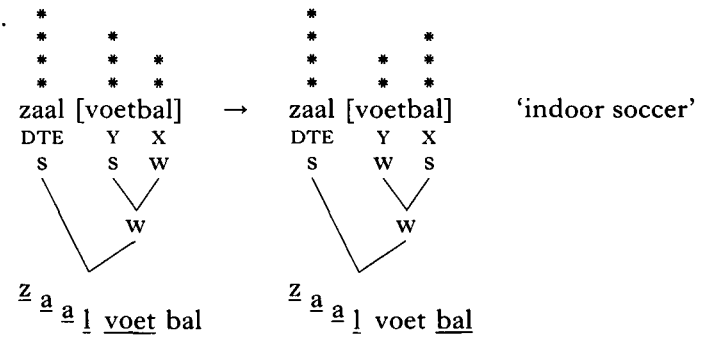
The phrases in (32) and (33) exemplify rightward Rhythmic Adjustment in Dutch and Hungarian. In each example I provide the metrical tree, the grid and also the schematic intonation curve with underlining below the stressed syllables.

(32a) shows 'Final Weakening' in Dutch (Kager & Visch call it 'Rightward Strengthening'). As a result of the adjustment, *bal*, the final constituent of *voetbal*, is weaker than before the adjustment. (32b) illustrates 'Trochaic Reversal' (Kager & Visch call it 'Rightward Shift'):

(32) a.



b.



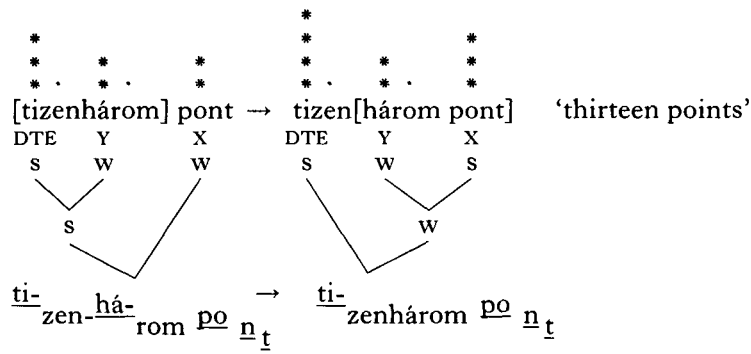
The problem with the tree-plus-grid representations produced in metrical adjunction theory is that they are unable to show more than one

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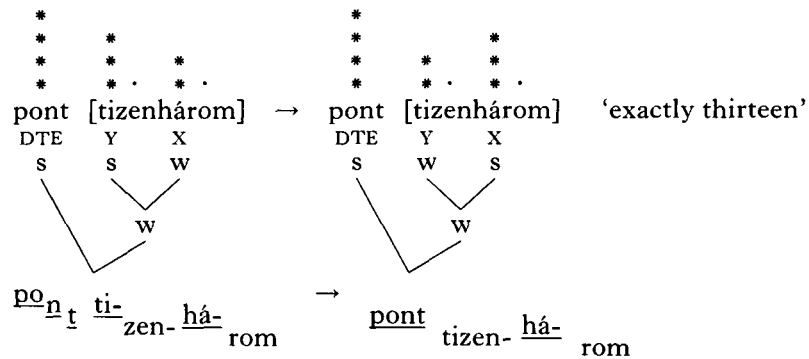
pitch accent reliably, *viz.* the one on the syllable with the highest column in the grid (i.e. the DTE). In Hayes' view, 'phrasal stress is an independent domain, and pitch accents are constrained to attach to the strongest available stresses' (Hayes 1995: 370). What is not clear is how many of the strongest stresses should be associated with pitch accents: i.e. whether the syllables with e.g. the second and third-highest columns are also pitch-accented.

If we apply metrical adjunction theory to Hungarian examples like *tizenhárom pont* 'thirteen points' or *pont tizenhárom* 'exactly thirteen', we get the same trees and grids for Hungarian as for Dutch *voetbalveld* and *zaalvoetbal*, respectively. But despite the representational identity of the corresponding Hungarian and Dutch examples, the pre-adjustment versions of the Hungarian examples contain three pitch accents, while their Dutch parallels have only one, and the post-adjustment versions of the Hungarian examples contain two pitch accents, whereas the parallel examples in Dutch again have only one.

(33) a.



b.



The *s*/*w* labels in the trees and the column heights in the grids offered by metrical adjunction theory can indicate prominence relations, but cannot express the primarily non-relational aspect of pitch accents. Pitch accents are distributed independently of these prominence relations.

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Hungarian rhythmical variation is based on the existence and deletability of pitch accents, but the apparatus of metrical adjunction theory is unable to show these pitch accents or the manipulations affecting them. An alternative framework is therefore needed, whose adaptation to Hungarian can handle pitch accents adequately, but without differentiating them according to their phonetic strengths. Such a framework is offered by Gussenhoven (1991).

4 An accent-based account of rhythmical variation in Hungarian

4.1 Gussenhoven's Rhythm Rule

Gussenhoven (1991) starts out from the following two assumptions: (i) the English stresses which are associated with pitch accents, whether they are traditionally regarded as primary (nuclear) or secondary (prenuclear), are all accents, and (ii) the process called Iambic Reversal or Stress Shift is not stress shift at all but deaccentuation of the medial accent in a series of three accents within the phonological phrase. He formulates the English Rhythm Rule as (34), where ϕ stands for 'phonological phrase'.

(34) *English Rhythm Rule* (Gussenhoven 1991: 17)

$$* \rightarrow \emptyset / _{\phi}(* __ * \ldots)_{\phi}$$

The rule works from left to right. The asterisks represent accents on syllables that are the heads of phonological feet. The English Rhythm Rule is a postlexical rule, but it works cyclically in the sense that it respects constituent structure and 'will apply in lower constituents before it applies in higher ones' (Gussenhoven 1991: 18).

Gussenhoven's Rhythm Rule explicitly provides a unified analysis for both types of English rhythmical variation: Iambic Reversal and Initial Weakening. Incidentally, it also explains the reduction of the medial stress in words like *'indi,vidua'listic*.[19]

This model recognises only three stress degrees for English: accented foot-heads (corresponding to primary-stressed and pre-primary secondary-stressed syllables in other analyses), non-accented foot-heads (corresponding to tertiary-stressed and post-primary secondary-stressed

[19] Gussenhoven (1991)'s Rhythm Rule preserves the peripheral accents and cancels the medial accent in a phonological phrase; as a result the phrase becomes more prominent towards its edges than towards its middle. Selkirk, too, in more recent work (1995: 565), recognises a Phrase Edge Prominence constraint, which she states in the following form: 'The most prominent syllable of an edge constituent is more prominent than that of a constituent not located at an edge.' However, she thinks this can be achieved by strengthening the edges rather than by deaccenting the middle (1995: 564–568).

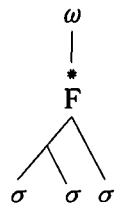
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syllables of other analyses) and non-foot-heads (corresponding to other syllables).[20]

4.2 The adaptation of Gussenhoven's model to Hungarian

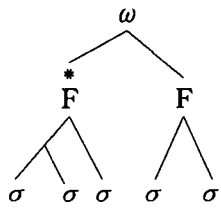
I shall now attempt to use Gussenhoven's framework for Hungarian rhythmical variation. The lexical representations of simple and derived Hungarian words are unproblematic: such words invariably have a primary stress on their first syllables. Consequently, their representations are accented single feet; each of them contains an unbounded, left-branching foot, as in (35a):

(35) a.



'i s k o l a 'school'

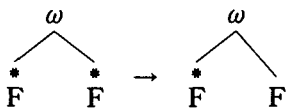
b.



'i s k o l a ˌ t á s k a 'schoolbag'

Ordinary compounds, as in (35b), contain two (or more) feet, each of which coincides with an immediate constituent of the compound word, but the non-initial feet occur without their accent, due to the Compound Stress Rule (36):

(36) *Compound Stress Rule*



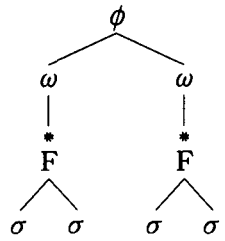
Unaccented feet may weaken further by losing their secondary stress and thus their foot status. This process, Foot Deletion, yields single-footed *'iskolatáska* from double-footed *'iskolaˌtáska*.

[20] Gussenhoven (1991: 6) admits that the last accented foot-head in an English phonological phrase (primary or nuclear stress in other analyses) has greater prominence than the other accented foot-heads in the same phrase (secondary or prenuclear or head stresses in other analyses). But he attributes this greater prominence of the final accent to its position and to the presence of the final boundary tone, which enhances the accent melodically, and so he assigns no theoretical status to the difference between nuclear and prenuclear accents. This conflation of primary and secondary stresses (i.e. nuclear and prenuclear accents) into the single category of accented foot-heads in English is debatable (cf. Ladd 1986: 316). This, however, does not affect the analysis of the Hungarian stresses.

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Phrases are composed of words, or lower-ranking phrases; each lexical word corresponding to an accented foot:

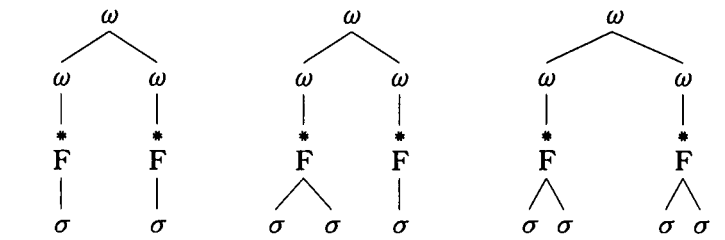
(37)



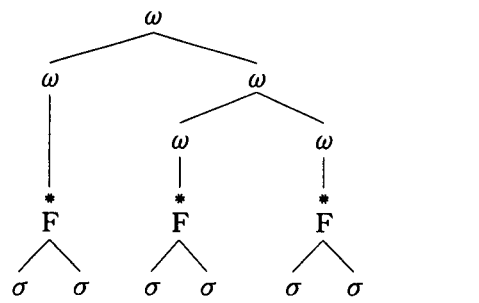
'é d e s 'á l o m 'sweet dream'

Both RV and non-RV phrasal compounds have a phrasal prominence pattern: they are quasi-phrases and can be labelled as words dominating lower words; cf. (38).[21]

(38) a.



b.



In (38b) an RV numeral is part of a larger numeral, and we have more than two accents in the phrasal compound.

[21] The label ω (phonological word) for the phrasal compound node has been suggested by an anonymous reviewer. Earlier I used the label RVW (rhythmically variable word), which was not general enough and created the false impression that it was a separate unit in the prosodic hierarchy.

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The Rhythm Rule for Hungarian is optional and can be formulated as (39):

(39) *Hungarian Rhythm Rule* (RR)

$* \rightarrow \emptyset / _{XP}(* __ * \ldots)_{XP}$

Condition

XP is a syntactic constituent

(a) which immediately dominates an RV word to which the accent to be cancelled belongs, or

(b) which starts with a double-accented non-RV word to which the accent to be cancelled belongs.

Euphonic restriction

Application is unlikely if it leads to an interval of more than 4 syllables between two consecutive pitch accents.

The Hungarian Rhythm Rule also works from left to right and will also apply in lower constituents before it applies in higher ones. (40a) (cf. (21)) and (40b) (cf. (25)) illustrate how the accent-based Hungarian Rhythm Rule can account for Final Weakening and Trochaic Reversal:

(40) a. *Lexicon*

```
  *       *      *
tizen-,  három, pont
```

PCSR

```
  *    *
[tizenhárom]
[ B    C  ]
```

RR-1 *n/a*

Phrasing

```
   *    *      *
[[tizenhárom] pont]
[[ B    C  ]  D ]
```

RR-2

```
  *          *
[tizenhárom pont]  'thirteen points'
```

b. *Lexicon*

```
   *        *       *
mind,  a,  tizen-,  három
```

PCSR as in (40a)

RR-1 *n/a*

Phrasing

```
   *      *    *
[mind  [a tizenhárom]]
[  A   [  B    C   ]]
```

RR-2

```
   *          *
[mind a tizenhárom]  'all the thirteen'
```

while (41) provides more complex cases:

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(41) a. *Lexicon*
* * * *
a, hajó, tizen-, három, utasa

PCSR — as in (40a)

RR-1 — *n/a*

Phrasing-1
* * *
[[tizenhárom] utasa]
[[B C] D]

RR-2
* *
[tizenhárom utasa]

Phrasing-2
* * *
[a hajó [tizenhárom utasa]]
[A [B C D]]
'the ship's thirteen passengers'

RR-3 — blocked because neither condition of (39) is fulfilled

b. *Lexicon*
* * * *
száz, tizen-, három, utas

PCSR-1 — as in (40a)

RR-1 — *n/a*

PCSR-2
* * *
[száz [tizenhárom]]
[A [B C]]

RR-2
* *
[száztizenhárom]

Phrasing
* * *
[[száztizenhárom] utas]
[[A B C] D]

RR-3
* *
[száztizenhárom utas]
'113 passengers'

In (41b), the initial constituent is the derivatively double-accented RV numeral *'száztizen'három* '113'. (It has become double-accented as a result of RR-2; cf. §2.1.) So condition (a) of (39) is satisfied and the Rhythm Rule can apply again (RR-3), deleting the accent on *három*.[22]

[22] It has been suggested by the associate editor that the blocking of RR-3 in (41a) and the non-blocking of RR-2 in (41b) follow naturally from Kager & Visch's (1988) Strong Domain Principle, which prohibits adjustment of the head in a strong domain but not in a weak domain. A problem here is that Kager & Visch's representations show only prominence relations and not pitch accents, and so they cannot show what happens to pitch accents (cf. §3.2). (41a) can undergo Rightward

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In the next example the euphonic restriction attached to (39) does not hold, because the repeated application of the RR affects two different double-accented compounds.

(42) *Lexicon*
```
  *      *      *      *
tizen-, három, negyven, öt
```

PCSR
```
  *     *       *      *
[tizenhárom] [negyvenöt]
[ B1    C1   ] [ B2     C2 ]
```

RR-1 *n/a*

Phrasing
```
   *     *       *      *
[[tizenhárom] [negyvenöt]]
[[B1    C1    ] [ B2     C2 ]]
```

RR-2
```
  *             *      *
[tizenhárom negyvenöt]
```

RR-3
```
  *                    *
[tizenhárom negyvenöt][23]   '13·45'
```

The Hungarian Rhythm Rule, as formulated in (39), is also capable of producing Final Weakening in a non-RV phrasal compound, and can thus cater for the asymmetry between Trochaic Reversal and Final Weakening. The word *ütött-kopott* in (43) (cf. (24)) is a non-RV phrasal compound, satisfying condition (b) of (39).

(43) *Lexicon*
```
      *       *       *
egy, ütött, kopott, autó
```

PCSR (non-RV)
```
  *      *
[ütött-kopott]
[B       C    ]
```

RR-1 *n/a*

Phrasing
```
      *      *      *
egy [[ütött-kopott] autó]
    [[B       C    ] D   ]
```

RR-2
```
     *             *
egy [ütött-kopott autó]   'a battered car'
```

One could object that Gussenhoven's accent-based account breaks down in deaccented portions of utterances, where there are no pitch accents, but where both kinds of rhythmical variation can nevertheless be

---

Strengthening, but the resulting representation only shows that the prominence of *u-* has increased in relation to the prominence of *há-*. Similarly, (41b) can undergo Rightward Shift, with the result that *há-* becomes more prominent than *ti-*. However, nothing is revealed about the pitch accents themselves (apart from the fact that the DTE of the whole phrase is pitch-accented).

[23] Since the Hungarian Rhythm Rule works from left to right, the analysis in (42) is unable to produce *'tizen'három negyven'öt*, although it is a possible stress pattern. This shortcoming will be overcome by the Split Analysis presented in §5.3.

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observed (cf. Hayes 1995: 370). Gussenhoven (1991: 25–28) foresaw this objection and pointed out that in these cases 'pre-boundary lengthening' automatically creates different patterns of durational prominence in English; these patterns give rise to a sensation of rhythmical variation. As for Hungarian, we assume that the syllables that preserve their primary stress in rhythmical variation become secondary-stressed in the de-accented portion of an utterance, and as such, they are still distinguishable from unstressed syllables by extra intensity and/or junctural or durational means.:

(44) 'Nincs még ˌfél tizenˌkettő. 'It is not yet half past eleven.'
not + is yet half 12

We have found that Gussenhoven's accent-based approach suits Hungarian better than Selkirk's grid-based analysis, or Hayes' (and Kager & Visch's) metrical adjunction theory. First, it is simpler than the other analyses, because it is based on pitch accents and does not distinguish accentual strengths. Secondly, the Hungarian version of the Gussenhoven model can also account for Final Weakening in non-RV phrasal compounds, thus incorporating in its apparatus the asymmetry of Hungarian rhythmical variation.

However, the price of this is that the Hungarian Rhythm Rule will have an 'asymmetrical' condition (condition (b)), which is an ad hoc solution. Condition (a) accounts for both kinds of variation in RV words, and it is immaterial whether the RV word is initial or non-initial in the phrase. Condition (b), however, accounts for Final Weakening in non-RV double-accented phrasal compounds, and these compounds must be initial in the phrase. Another problem is that the adapted version of Gussenhoven's model has to make reference to lexical class and syntactic constituency, although this was not intended in the original model. In this respect it fares no better than the Hungarian adaptation of the Selkirk model. This is because rhythmical variation in Hungarian is confined to certain classes of lexical items and has some syntactic restrictions, too.

These facts raise the suspicion that rhythmical variation may be analysable in terms of Kaisse's (1985, 1990) P1 rules, or even in terms of Hayes' (1990) precompilation theory, in which reference to specific lexical and syntactic information could be more naturally accommodated. We shall now examine these possibilities.

5 The split analysis of Hungarian rhythmical variation

5.1 Hayes' precompilation rules

An obvious way in which syntax affects phonology is with respect to phonological phrasing: it determines the division of the segmental string into prosodic units of varying sizes, thus forming a prosodic hierarchy. In addition to this, however, there are also phonological rules which refer to specific syntactic and/or lexical information and which cannot be

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accounted for on the basis of phonological phrasing alone. Hayes (1990: 87) claims that:

> all phonological rules fall into two classes: (a) truly phrasal rules, which apply postsyntactically and may refer only to the levels of prosodic hierarchy; (b) lexical rules, which apply presyntactically within the lexicon. Of the latter, a subset are 'precompiled rules', which derive multiple diacritically-marked allomorphs for certain classes of words. At the interface of syntax and phrasal phonology the appropriate diacritically-marked allomorphs are inserted in the relevant syntactic contexts.

Hayes refers to his proposal as precompilation theory. The paradox that syntactic rules may not refer to phonological properties but may refer to properties of individual words and morphemes leads Hayes to suggest that words appear in syntactic representations as abstract place markers that lack phonological content. Lexical insertion then takes place in two steps: the first is insertion of the abstract place markers into the syntactic trees, the second is phonological instantiation of the abstract place markers with phonemic material. Consequently, most of the phonological rules that have been analysed in the past as making reference to syntactic representations ('direct-syntax rules') should be seen as selecting the appropriate precompiled allomorphs for phonological instantiation: 'phrasal allomorphs may be derived by phonological rule within the lexical phonology, so that whole classes of words will have multiple precompiled allomorphs' (Hayes 1990: 92).

Since in Hungarian only two isolated classes of words (double-accented numeric compounds and *ugyan*-compounds) can undergo both kinds of rhythmical variation, and only in specific syntactic contexts, we have to examine whether and to what extent this alternation can be analysed in terms of precompiled phrasal allomorphy within the lexicon.

5.2 Kaisse's P1 rules

Hayes (1990) himself does not mention rhythmical variation as a case of precompilation. However, he explicitly says that his precompiled rules correspond to what Kaisse (1985: 1990) calls P1 rules (or 'external sandhi rules'), which – according to Kaisse – do include the rules of English rhythmical variation (cf. Kaisse 1990: 131–137). Kaisse's P1 rules are a special subset of postlexical rules, which are 'closest to the lexicon and thus share many characteristics with lexical rules' (1990: 130) and which 'apply after all lexical rules and before all P2 rules' (1990: 128), the latter being the classical postlexical rules. Hayes (1990), however, claims that 'the simplest explanation for why P1 rules act as if they were lexical is to assume that they *are* lexical', i.e. precompiled (Hayes 1990: 103).

According to Kaisse (1990: 135–137), English rhythmical variation has a number of P1 (i.e. lexical-rule-like) characteristics. First, it has lexical exceptions, e.g. *superb*, *abstemious*, *grotesque*, etc., which do not undergo

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the variation. Secondly, its output is available to rules of versification (*A 'Tennessee 'drummer called 'Bette...*). Thirdly, its output may be lexicalised; see e.g. the adjectives *'abstract*, *'abject*, etc. Fourthly, it is sensitive to nested compound and syntactic bracketing (cf. *'one-thirteen 'Jay Street vs. Bill's 'thirteen 'clothes pins*). A fifth lexical characteristic of English rhythmical variation is that it is structure preserving in the sense that both the input and the output stress patterns are possible lexical stress configurations (cf. *'Missis'sippi vs. 'Abernathy*). It is only the criterion of ingradience whose fulfilment is questionable. P1 rules should not be gradient, but rhythmical variation does display some gradient features. We know from Hayes (1984) that the closer together the stressed syllables are, the more likely it is that rhythmical variation will apply (cf. *'Tennes'see abbrevi'ations vs. 'Tennessee 'relatives*). However, distances measured in terms of syllable numbers can be defended as not representing true gradience.[24] In sum, Kaisse believes that rhythmical variation in English *essentially* belongs to P1 rules.

The possibility of explaining Hungarian rhythmical variation in terms of P1 rules is somewhat less clear. First, though it has no lexical exceptions (that I know of), the phenomenon involves restriction to exceptional lexical classes: *viz.* only double-accented numeric compounds and *ugyan*-compounds can undergo Trochaic Reversal and Final Weakening; the rest of the double-accented phrasal compounds can undergo Final Weakening. Secondly, the output of Hungarian rhythmical variation is visible to rules of versification; the metre in the first line of (45) requires *harmincegyedikén* to have undergone Trochaic Reversal to match the metre in the second line, where it follows from the normal stressing of the words:

(45) 'Május harminc'egyedikén
May thirty first + on
'érkezik a 'nagynénikém
arrives the auntie + my
'On May 31 my auntie arrives'

The lexicalisation criterion works only for Final Weakening: some words seem to be lexicalised examples of this process, e.g. *'limlom* 'junk, odds and ends', *'eszem-iszom* 'feasting'. Trochaic Reversal does not lexicalise, but this is not a damaging counterargument if we take into consideration that lexicalisation of rhythmical variation has affected very few words even in English, where the variation is far more widespread. The fourth feature of P1 rules is strongly present in Hungarian rhythmical variation: this variation is sensitive to syntactic bracketing; cf. the special restriction on the Hungarian Beat Movement Rule given in (19c), or conditions (a) and (b) of the Hungarian Rhythm Rule given in (39).

The fifth criterion, structure preservation, is again only half-obeyed, because only Final Weakening produces outputs that are normal stress

[24] A greater problem for the ingradience criterion is that the spacing requirement of eurhythmy may count not syllables but actual time, a possibility suggested by Hayes (1984: 70–73).

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configurations in Hungarian words, cf. *'tizenhat* 'sixteen' *vs. 'bizonylat* 'testimonial'. The other kind of variation, Trochaic Reversal, yields abnormal word stress patterns, cf. *tizen'hat* 'sixteen'. But the situation becomes more acceptable if we remind ourselves that these words behave like phrases in their stressing, and although the majority of Hungarian phrases have primary stresses on all the lexical words in them (with the first primary stress being the strongest), as in e.g. *'édes 'álom* 'sweet dream', there also exist Hungarian phrases which have secondary stress on their initial member in a neutral rendering, e.g. *ˌkissé 'ideges* 'a little nervous'.[25] That is to say, the result of Trochaic Reversal coincides with the neutral stress pattern of some Hungarian phrases. With regard to the sixth diagnostic feature, ingradience, the situation in Hungarian is exactly like that in English.

To sum up, we can say as a first approximation that Hungarian rhythmical variation also belongs to P1 rules, even though in some respects this affiliation is less clear than in the case of English rhythmical variation.

5.3 Splitting Hungarian rhythmical variation into two components

While Hayes regards P1 rules and precompilation rules as practically the same (1990: 103), Kaisse does not. She says that 'precompiled rules might be partly diagnosable by their having lost even more phonetic motivation than P1 rules' (Kaisse 1990: 130). It seems that this loss is exactly what characterises Hungarian Trochaic Reversal.

In Hungarian, rhythmical variation can take place only in double-accented phrasal compounds, and such words are a minority. Final Weakening may affect all these double-accented phrasal compounds, i.e. not only RV words like *'tizen'három* 'thirteen', but also non-RV phrasal compounds like *'ütött-'kopott* 'battered'. However, Trochaic Reversal applies only to a subset of these phrasal compounds, *viz.* to RV words like *'tizen'három*. So Trochaic Reversal is more restricted than Final Weakening. There is no account for this asymmetry other than that it is a lexical property of RV words to accept Trochaic Reversal, and it is a lexical property of the other phrasal compounds to resist it. Therefore, while a P1 (postlexical) analysis seems plausible for Final Weakening, a precompilation (lexical) analysis seems more suitable for Trochaic Reversal. This division of Hungarian rhythmical variation into a precompiled (lexical) and a P1 (postlexical) component will be referred to as the Split Analysis of Hungarian rhythmical variation.[26]

[25] Cf. note 6.

[26] I owe the idea that Final Weakening belongs to postlexical phonology to an anonymous reviewer, who, however, has not specified whether it should be P1 or P2. In an earlier version of this article I tried to account for both Final Weakening and Trochaic Reversal in terms of precompilation. That approach had the disadvantage of concealing the asymmetry that exists between the two kinds of variation, and it required three rules.

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In English, the corresponding kinds of rhythmical variation are very general in their application and affect the same kinds of words (*viz.* words having a secondary stress + primary stress pattern, not counting the lexical exceptions), and both kinds can be regarded as essentially belonging in stratum P1 of postlexical phonology.

Adapting Hayes' precompilation theory to Hungarian Trochaic Reversal, I shall use the diacritic 'B C' for RV words that are to be inserted in the phonological instantiation frame of Trochaic Reversal. An asterisk over a capital letter represents accent on the word which the capital letter stands for. The lexicon of Hungarian includes the following 'phonological instantiation frame':

(46) *Trochaic Reversal frame*

$$/\ {}_{XP}[\ \left\{ \begin{array}{c} \overset{*}{A} \\ {}_{RV}[\overset{*}{B}\ \overset{*}{C}]_{RV} \end{array} \right\}\ {}_{RV}[\ _\ ]_{RV}\ ]_{XP}$$

In this frame, the subscript XP represents a syntactic constituent or a phrasal compound, and the dash indicates the position into which an RV word will have to be inserted. This position is preceded by a single-accented constituent (A) or a double-accented RV word (B C) within the phrase.

The rule is as follows:

(47) *Trochaic Reversal*

$$* \rightarrow \emptyset\ /\ \left[\underset{B}{__}\ \overset{*}{C} \right]_{\text{[Trochaic Reversal frame]}}$$

e.g. tizenhárom → tizenhárom; ugyanaz → ugyanaz

Rule (47) creates the end-stressed versions of the RV words pre-syntactically and ensures that these versions should be given phonological instantiation postsyntactically.

Final Weakening will be treated as a P1 (postlexical) rule:

(48) *Final Weakening*

$$*\rightarrow\emptyset/_{XP}(_{PC}(*\ __\ )_{PC}\ *\ \cdots)_{XP}$$

Condition: XP is a syntactic constituent starting with a double-accented Phrasal Compound (PC), RV or non-RV.

Double-accented phrasal compounds are either inherently double-accented, e.g. *'tizen'három* 'thirteen', or double-accented through Trochaic Reversal, e.g. *'száztizen'három* '113' (cf. (§2.2)).

Both the Trochaic Reversal Rule and the Final Weakening Rule have a general euphonic restriction: their application is unlikely if it leads to an interval of more than four syllables between two consecutive primary stresses (pitch accents). But when both Trochaic Reversal and Final

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Weakening apply in different double-accented words of the phrase, this euphonic restriction does not hold.

We shall now consider how the rules apply. In (49) the only change that can affect the double-accented word *tizenhárom* 'thirteen' is Final Weakening.

(49) PCSR

```
    *   *
[tizenhárom]
[ B     C  ]
```

Final Weakening

```
          *     *        *
XP[PC [tizenhárom]PC pont]XP  →
  [  [ B     C  ]   D  ]

          *              *
XP[PC [tizenhárom]PC pont]XP
  [  [ B     C  ]   D  ]
```

In (50) the Trochaic Reversal Rule in the precompiled (lexical) phonology produces the end-stressed version of the double-accented word *tizenhárom*, which cannot undergo Final Weakening in the postlexical phonology, because it does not meet the structural description of the Final Weakening Rule.

(50) PCSR as in (49)

Frame for tizenhárom Trochaic Reversal frame

Trochaic Reversal

```
  *   *                    *
[tizenhárom]  →  [tizenhárom]
[ B     C  ]     [ B     C  ]
```

Instantiation

```
    *              *
[mind a [tizenhárom]]
[ A     [ B     C  ]]
```

In (51) below, the double-accented RV word *tizenhárom* 'thirteen' is not in a Trochaic Reversal Frame, so it cannot undergo Trochaic Reversal, but can be submitted to Final Weakening within its own, lower phrase (*tizenhárom utasa*). Final Weakening applies in this internal phrase because its structural description is met. The higher phrase (*a hajó tizenhárom utasa*) does not match the structural description of Final Weakening and so does not allow another application of Final Weakening.

(51) PSCR as in (49)

Final Weakening

```
          *        *     *        *
XP[a hajó XP[ PC[tizenhárom]PC utasa]XP] XP  →
  [   A    [  [ B     C  ]   D    ] ]

          *        *              *
XP[a hajó XP[ PC[tizenhárom]PC utasa]XP] XP
  [   A    [  [ B     C  ]   D    ] ]
```

'the ship's thirteen passengers'

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In (52) the double-accented word *tizenhárom* is submitted to Trochaic Reversal in the context *száz-* '100', and so a derivatively double-accented RV compound comes into being: *'száztizen'három* '113', which is reanalysed as [B C]. This may then undergo Final Weakening in the phrase.

(52) PCSR — as in (49)

Frame for tizenhárom — Trochaic Reversal frame

Trochaic Reversal

```
  *   *                *
[tizenhárom]  →  [tizenhárom]
[ B     C  ]     [ B     C  ]
```

Instantiation

```
    *       *
[száz [tizenhárom]]
[  A  [ B     C  ]]
```

Reanalysis

```
    *       *                *       *
[száz [tizenhárom]]  →  [száztizenhárom]
[  A  [ B     C  ]]     [  B        C  ]
```

Final Weakening

```
                *       *       *
XP[ PC[száztizenhárom]PC utas]XP  →
  [  [  B        C    ]  D   ]

                *               *
XP[ PC[száztizenhárom]PC utas]XP
  [  [  B        C    ]  D   ]
```

'113 passengers'

In (53) the double-accented word *tizenhárom* undergoes Final Weakening. The output of (53) cannot be submitted to Trochaic Reversal on *negyvenöt* '45', because this would mean going back from the postlexical (P1) stratum to lexical (precompiled) phonology.

(53) PCSR

```
  *   *          *       *
[tizenhárom]  [negyvenöt]
[ B1    C1  ]  [ B2     C2 ]
```

Final Weakening

```
                *   *           *       *
XP[ PC[tizenhárom]PC [negyvenöt]]XP  →
  [  [  B1   C1   ]  [ B2      C2 ]]

                *               *       *
XP[ PC[tizenhárom]PC [negyvenöt]]XP
  [  [  B1   C1   ]  [ B2      C2 ]]
```

'13·45'

As an alternative to (53), PCSR can be followed first by Trochaic Reversal on *negyvenöt*, and then by Final Weakening on *tizenhárom*, as shown in

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(54). Since both Trochaic Reversal and Final Weakening apply in different double-accented phrasal compounds, there is no restriction on the number of interstress syllables.

(54) PCSR — as in (53)

Frame for negyvenöt — Trochaic Reversal frame

Trochaic Reversal

```
  *     *                *
[negyvenöt]   →   [negyvenöt]
[ B2    C2 ]      [ B2    C2 ]
```

Instantiation

```
  *     *              *
[[tizenhárom] [negyvenöt]]
[[ B1   C1  ] [ B2    C2 ]]
```

[27]

Final Weakening

```
          *     *              *
XP[PC [tizenhárom]PC [negyvenöt]]XP   →
  [   [ B1    C1  ]  [ B2    C2 ]]

          *                    *
XP[PC [tizenhárom]PC [negyvenöt]]XP
  [   [ B1    C1  ]  [ B2    C2 ]]
```

In (55), the double-accented non-RV word *ütött-kopott* 'battered' undergoes Final Weakening.

(55) PCSR

```
  *     *
[ütött-kopott]
[ B     C   ]
```

Final Weakening

```
              *     *          *
egy XP[ PC[ütött-kopott]PC  autó]XP   →
     [    B      C    ]     D  ]

              *                *
egy XP[ PC[ütött-kopott]PC  autó]XP
     [    B      C    ]     D  ]
```

'a battered car'

Finally, (56) and (57) show that both Trochaic Reversal and Final Weakening apply cyclically. The reanalysis of *száztizenhárom* as [B C] after the first instantiation of Trochaic Reversal in (56) is necessary because it is a derivatively double-accented numeric compound (cf. (7b)).

[27] Earlier analyses have been unable to derive the pattern *'tizen'három negyven'öt*, although it is correct; cf. (42).

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(56) PCSR — as in (49)

Frame for tizenhárom — Trochaic Reversal frame

Trochaic Reversal-1

```
  *   *                *
[tizenhárom]  →  [tizenhárom]
[ B     C ]      [ B     C ]
```

Instantiation

```
    *       *
[száz [tizenhárom]]
[ A [ B     C ]]
```

Reanalysis

```
    *       *          *       *
[száz [tizenhárom]]  →  [száztizenhárom]
[ A [ B     C ]]        [ B       C ]
```

Frame for száztizenhárom — Trochaic Reversal frame

Trochaic Reversal-2

```
    *       *                  *
[száztizenhárom]  →  [száztizenhárom]
[ B         C ]      [ B         C ]
```

Instantiation

```
   *             *
[pont [száztizenhárom]]
[ A  [ B        C ]]
```

'exactly 113'

In (57) the postlexical rule of Final Weakening applies cyclically. The generally assumed non-cyclicity of postlexical rules can only mean that the Strict Cycle Condition does not hold postlexically, and 'not that the rule does not respect constituent structure' (Gussenhoven 1991: 17); cf. §4.2. In (57) the Final Weakening Rule first applies to the lower phrase that meets its structural description (*a tizenhárom utas*) and then to the higher phrase (*ugyanaz a tizenhárom utas*).

(57) PCSR

```
  *    *    *    *
[ugyanaz], [tizenhárom]
[B1   C1 ] [B2   C2  ]
```

Final Weakening-1

```
    *    *          *    *          *
XP[ugyanaz a  XP[PC[tizenhárom]PC  utas]XP]XP
  [B1    C1      [ [B2    C2  ]   D  ]  ]
```

→

```
    *    *          *          *
XP[ugyanaz a  XP[PC[tizenhárom]PC  utas]XP]XP
  [B1    C1      [ [B2    C2  ]   D  ]  ]
```

Final Weakening-2

```
      *    *          *          *
XP[PC[ugyanaz]PC a  XP[tizenhárom utas]XP]XP
  [ [B1    C1 ]      [B2    C2    D  ]  ]
```

→

```
      *          *          *
XP[PC[ugyanaz]PC a  XP[tizenhárom utas]XP]XP
  [ [B1    C1 ]      [B2    C2    D  ]  ]
```

'the same thirteen passengers'

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The derivations in the preceding subsection show that the Split Analysis of Hungarian rhythmical variation can generate all the stress patterns that the grid-based and accent-based accounts are capable of producing, and in fact more: it can even generate cases like *'tizen'három negyven'öt*, cf. (54).

However, by splitting Hungarian rhythmical variation into a lexical (precompiled) and a postlexical (P1) component, and thus having two rules instead of one, we lose the generalisation that the two kinds of rhythmical variation are the same thing, and we fail to offer a unified treatment of them in the form of a single rule. Nonetheless, the Split Analysis is chosen because it accounts for the fact that the two kinds of Hungarian rhythmical variation are asymmetrical in their application, a fact that other analyses either ignore or deal with in an ad hoc manner. Besides, by accommodating Trochaic Reversal in the precompiled stratum of lexical phonology, and Final Weakening in the P1 stratum of postlexical phonology, the close link between the two is expressed: P1 rules are those rules of postlexical phonology which are closest to lexical phonology.

Moreover, the Split Analysis ensures intrinsic rule ordering: if both Trochaic Reversal and Final Weakening affect a derivation, Trochaic Reversal, being lexical, must come first, and cannot be applied once Final Weakening has taken place, cf. (52)–(54). When more than one application of Trochaic Reversal or Final Weakening is possible, the rule will apply cyclically, cf. (56)–(57).

In addition, the Split Analysis avoids the pitfall of requiring postlexical phonological rules that refer to lexical type and syntactic constituency. Of course, precompiled rules and P1 rules also refer to lexical and syntactic information, but this feature is a natural characteristic of these kinds of rules.

6 Conclusion

This article has examined the two kinds of Hungarian rhythmical variation: Trochaic Reversal and Final Weakening. These can be said to show a rightward direction of adjustments (in the sense of Kager & Visch 1988), as opposed to the leftward adjunctions in English. However, they crucially depend not on the changes in prominence relations that the rightward adjustments cause, but on the deletion of a pitch accent between two pitch accents under certain conditions.

After examining various frameworks in search for the most adequate analysis (including Selkirk 1984, Hayes 1984, Hayes 1995, Kager & Visch 1988, Gussenhoven 1991), it has been suggested that Final Weakening should be regarded as a P1 (postlexical) rule (in the sense of Kaisse 1985, 1990), and Trochaic Reversal as a precompiled (lexical) rule (in the sense of Hayes 1990). The analysis proposed preserves the advantages of the accent-based approach developed in Gussenhoven (1991), but it splits the unitary account offered by Gussenhoven (for English) and offers two rules

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for Hungarian. The Split Analysis expresses the asymmetry that exists between the two kinds of rhythmical variation in Hungarian.

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