Secondary Stress in Hungarian: (Morpho)-Syntactic, Not Metrical

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1. Secondary stress in Hungarian

It is generally accepted that Hungarian has initial primary stress. As for secondary stress, Varga (2000) distinguishes the following four types:

1. first syllable of the second member of a compound
2. first syllable of a deaccented word
3. first syllable of a polysyllabic function word
4. odd non-initial syllable of a non-compound stressed for metrical reasons

The first three types of secondary stress are determined by morphological and/or syntactic factors, while the fourth type is purely phonological. In this paper, the term *secondary stress* always refers to the fourth, phonological type of stress.

The assignment of secondary stress in Hungarian is far from being consensual. The most widely cited view, originating from (Hayes, 1995: 330), citing Kerek (1971), is that the language displays a very basic quantity-insensitive left-to-right trochaic foot assignment, i.e., that secondary stress falls on every odd-numbered syllable.

(1) *Secondary stress pattern predicted by Kerek (1971)*
ˈkɒtoˌlit͡sizˌmuʃ ‘catholicism’
ˈfɛlɛˌkɛzɛˌtijɛˌkeː ‘of denominationals’
ˈkɛrɛʃˌkɛdɛˌlɛm ‘commerce’
ˈbɛfɛkˌtɛtøːk ‘investors’

Conversely, (Szinnyei, 1912: 12) argues for a quantity-sensitive pattern: according to him, secondary stress falls on the third and fifth syllable unless the third syllable is light, in which case secondary stress is on the fourth and sixth syllables. Szinnyei and Kerek make different predictions for words in which the third syllable is light.[1]

(2) *Secondary stress pattern predicted by Szinnyei*
ˈkɒtoliˌt͡sizmuʃ ‘catholicism’
ˈfɛlɛkɛˌzɛtiˌjɛkeː ‘of denominationals’
ˈkɛrɛʃkɛˌdɛlɛm ‘commerce’
ˈbɛfɛktɛˌtøːk ‘investors’

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[1]It is interesting to note that, although Hayes (1995) discusses both patterns in (1) and (2), almost all of the Optimality Theory literature on stresstreats the quantity-insensitive pattern as the only one possible in Hungarian.

 Proceedings of the 28th West Coast Conference on Formal Linguistics, ed. Mary Byram Washburn et al., 51-59. Somerville, MA: Cascadilla Proceedings Project.

Finally, Hammond (1987) argues for a secondary vs. tertiary stress distinction. He introduces an extra metrical tier, the colon tier, which gives more prominence to odd-numbered non-primary feet. In (3), tertiary stress is indicated by the symbol ˈ.

(3) *Secondary stress pattern predicted by Hammond (1987)*
ˈkɒtoliˌt͡sizmuʃ ‘catholicism’
ˈfɛlɛkɛˈzɛtiˌjɛkeː ‘of denominationals’
ˈkɛrɛʃkɛˌdɛlɛm ‘commerce’
ˈbɛfɛktɛˌtøːk ‘investors’
ˈfeːlɛˈmɛlɛˌtɛid ‘your mezzanines’
ˈkiʃkunˈfeːlɛɟˌhaːzaːˈbɒn ‘in Kiskunfélegyháza’ (proper name)
ˈɛlkaːˈpostaːˌʃiːtotːˈɒlɒˌniːtotːˈaːtok ‘you (pl.) have decabbagized it’ (sic!)

Even though the existence of secondary stress has rarely been questioned in the literature, empirical evidence supporting it is not easy to come by. The authors of this paper (both native speakers of Hungarian) have no intuition regarding non-primary stress, and an impressionistic survey (involving cca. 40 native speakers aged 20–34) yielded the same results.

Moreover, as argued by Kálmán & Nádasdy (1994), there is no phonological evidence for secondary stress: there are no phonological patterns that are sensitive to the placement of putative secondary stress in Hungarian.

Last, but by no means least, there is no phonetic proof for secondary stress, either. Although Varga (2000) states that “the *phonetic reality* of Hungarian secondary stress is not questioned” [a magyar mellékhangsúly *fonetikai realitását* nem vonják kétségbe], we found no studies describing acoustic or articulatory correlates of secondary stress in Hungarian.

In the remainder of this paper, we examine possible phonological and phonetic evidence for Hungarian secondary stress. In section 2, we discuss a phonological phenomenon that is argued to be sensitive to the placement of secondary stress by Varga (2000), while section 3 presents the results of our pilot study on the phonetics of Hungarian secondary stress.

2. Phonological evidence for secondary stress?

Varga (2000) uses a rule-based, multi-level model of stress assignment, where only primary stress is assigned on the lexical level. Secondary stress is assigned post-lexically, within the domain the phonological phrase. However, an even later, optional deletion rule can eliminate any secondary stress. If any secondary stress can be erased before it is ever phonetically realised, how can one be sure that it was there in the first place?

2.1. The ‘patronising’ intonation pattern

The central claim of Varga (2002) is that, *contra* Kálmán & Nádasdy (1994), there is a phonological process that is sensitive to the placement of secondary stress: the alignment of the so-called ‘patronising’ intonation pattern. Varga describes the use of this intonation pattern as follows.

[… it expresses the fact that the speaker considers the content of the sentence to be self-evident (obvious, natural, predictable, etc.). At the same time, this melody conveys the intellectual or administrative superiority of the speaker, therefore it can simultaneously express a paternalising and categorical attitude, but it is not unfriendly.]

Varga (2002)

As for its phonological shape, the ‘patronising’ intonation pattern consists of a fall–high–fall melody. According to Varga, it is derived from a neutral sentence by inserting a high melody between the last and the penultimate falling contour of a sentence, and the insertion of the high tone can only happen provided there are at least three syllables between the two falling melodies.

The crux of Varga’s argument is that the high tone of the ‘patronising’ intonation pattern can only associate with a syllable that has secondary stress. Thus, (4b) is a grammatical ‘patronising’ variant of the neutral sentence in (4a), but (4c) is not.

(4) a. *Neutral intonation*

ba-
A nem
rátaival
beszél így.

b. *'Patronising' intonation (grammatical):*

ba- taival
A nem
rá-
beszél így.

c. *'Patronising' intonation (ungrammatical):*

ba- ival
A nem
ráta-
beszél így.

'He doesn't speak to his friends like this.'

To support the hypothesis that the difference between the acceptability of (4b) and (4c) is due to the placement of secondary stress, Varga conducted a perception experiment involving 105 university and college students aged between 18 and 36. He made recordings of four sentences (shown in (5)) with the 'patronising' intonation pattern.

(5) *Test sentences of Varga (2000)*

a. A ˈbarátaimnak ˈJóska. 'To my friends, I am Jóska.'
b. A ˈbarátaival ˈnem beszél így. 'He doesn't speak to his friends like this.'
c. Ez egy ˈkiapadhatatlan ˈerőforrás. 'This is an unfailing resource.'
d. ˈKísérletezhetnétek egy ˈmásikkal. 'You (pl.) could experiment with a different one.'

Each of the four sentences had variants with different placement of the inserted high melody. Three of the sentences (5a, b, and d) had light third syllables in the domain where the inserted high tone (H) could potentially be placed (note that Kerek and Szinnyei make different predictions for the secondary stress pattern of these sentences).

The task of the experiment's subjects was to mark each sentence as acceptable or unacceptable after listening to the recording twice, and then to choose the best sentence from all four groups after a third round of listening. One point was assigned to every sentence that was judged acceptable, and an additional point was assigned to the sentences that were judged the best in their batch (i. e., the best 'patronising' variant of the same neutral sentence) in the third round of listening. Crucially, sentences with the neutral intonation pattern were *not* presented to the subjects.

Of the four groups of sentences, three (5a, b, and c) showed a statistically significant preference for attaching H to the third syllable. In the longest sentence, (5d), H could attach to either the fifth or the sixth syllable of the relevant domain, and preferences for both syllables were significantly higher than for the other syllables. Varga suggests that the reason for this was that some speakers used the Szinnyei-type dialect, assigning secondary stress to the fourth and sixth syllable of the domain.

2.2. Varga (2000): problems

Unfortunately, the 'patronising' intonation pattern is missing from the grammar of both of the authors of this paper, so we cannot turn to our own judgements regarding the grammaticality of each variant. We do, however, feel that both Varga's experimental design and his interpretation of the results raise doubts regarding the connection between this intonation pattern and secondary stress.

First, sentences with neutral intonation were not included in experiment, which might well have shifted the baseline for the acceptability of the 'patronising' sentences: we cannot exclude the possibility that at least some speakers would have judged all 'patronising' sentences unacceptable if contrasted with

their neutral counterparts. This suspicion is especially strong for the third round of listening where participants had to choose the best variant of each sentence.

Awarding an extra point for the best variant in each batch had another undesirable consequence, we feel: it pushed differences between individual variants toward being statistically significant.

However, even if we disregard these concerns, we believe that the results of the experiment are far from conclusive. First, it is not clear where the H attaches in case there is more than one secondary stressed syllable in the domain. Varga stipulates that H cannot attach to the last syllable of the domain, because that would create a clash. This, however, still does not explain why the fifth syllable is preferred over the third in (5d).

Moreover, the fact that the fifth and the sixth syllable achieved similarly good results for (5d) is quite difficult to explain. If we follow Varga in assuming that the experimental subjects contained speakers that assigned secondary stress according to Szinnyei's algorithm (stressing the fourth and sixth syllables when the third was light), then the same speakers should have adopted the same algorithm for (5a) and (b) and attach the H to the fourth syllable instead of the third. However, variants of (5a) and (b) with H on the fourth syllable got extremely low acceptability scores.

If, on the other hand, speakers are assumed to be able to choose a different stress algorithm for different sentences, then the claim about the intonation pattern being sensitive to secondary stress is unfalsifiable.

3. Experiments

3.1. Methodology

In order to test if there is a phonetic realization of secondary stress in Hungarian, we carried out two acoustic experiments. Acoustic phonetic analysis was conducted to obtain results from the experiments using the Praat software (Boersma & Weenink, 2008).

Raphael et al. (2007) provide 3 phonetic correlates for the phonological notion of stress:

- fundamental frequency (F0, pitch)
- vowel duration
- intensity

F0 in Hungarian is determined by the information structure of the sentence (cf. Varga 2002) Vowel duration in Hungarian is only influenced by the lexical length contrast and local factors like following sonorants. Vowel undershoot is linked to vowel duration and intensity (Lindblom, 1963), but Szeredi (2009) shows that optional vowel reduction can happen in every non-primary-stressed syllable. Therefore, following Varga, we assume vowel intensity is the main cue for hypothetical secondary stress in Hungarian.

Despite the above, we have checked the effect of all three cues in our experiments. The prosodic properties of the target vowels were measured at the point with the highest intensity. The first three formants, fundamental frequency and intensity were measured for every vowel in test words.

Statistical analysis was carried out using the freeware R software (R Development Core Team, 2009). The statistical measurement used to determine if a syllable was more salient in a given phonetic property (thus having more stress) was pairwise *t*-test of the sample of values of this property in neighbouring syllables. This means that for every repetition for every speaker, values for each pair of neighbouring syllables is assembled, and their difference δ is calculated. The *t*-test then provides the probability p that these δ values are sampled from a population with a mean $\mu_\delta = 0$. Calculating with a 95% confidence interval, $p < 0.05$ means that one of the two syllables is significantly more stressed in the dimension of the given property than the other syllable, as it is illustrated in Table 1.

3.2. Phonetic evidence for stress: preliminary study

For the preliminary study two speakers were asked to read written sentences both in casual and in formal careful speech. Both speakers were native speakers of the Educated Colloqiual Hungarian dialect based in Budapest (Nádasdy, 1985). They were instructed to read the test sentences three times

speaker	repetition	intensity (dB)		δ
		σ_1	σ_2	$\sigma_2 - \sigma_1$
1	1	70.904	71.795	0.891
1	2	73.052	73.524	0.472
1	3	70.907	73.281	2.372
2	1	61.551	63.766	2.215
		...		
mean		69.147	70.695	1.548

$t = 4.367$ with $\mathrm{d.f.} = 8$
$p \approx 0.00239 \Rightarrow \sigma_2$ has significantly more intensity than σ_1

Table 1: Illustration of the pairwise *t*-test (test word [fɛlɒdɒtot]).

in a casual environment, then they were asked to read the sentences twice as if they were in a formal situation to obtain data for formal speech as well.

The quality of the recordings for one of the speakers was unfortunately not adequate, therefore results will only be presented for the other speaker. The small sample size for this experiment obviously means that its result should not be taken as statistically significant, but these results had been encouraging and had given reason for conducting the main experiment.

This small scale preliminary study has shown, however, that of the three possible phonetic correlates of stress provided by Raphael et al. (2007: 232) and listed in section 3.1, vowel duration and vowel quality seem to be irrelevant for non-primary stress in Hungarian. Fundamental frequency is not relevant either, as it is clearly determined by syntactic and pragmatic structure and every test word showed a strictly monotone falling pitch, as part of the post-verbal domain.

Therefore, we posit that vowel intensity is the main cue for hypothetical secondary stress in Hungarian. Our results indicated that intensity does not correlate with syllable weight. Eliminating influences of clause structure, words consisting entirely of light syllables usually did not show secondary stress at all: the first syllable had the highest intensity and the intensity peaks on the following vowels decreased gradually. If there was a slight increase of intensity, it was found in the place where Szinnyei had predicted it.

These results have encouraged further research into the topic, and the involvement of more test sentences, more speakers and better contextual control.

3.3. Phonetic evidence for stress: the main pilot study

In this study, seven test sentences from the recordings for the *Synactic locality* project[2] were examined. This experiment was conducted with six native speakers of Educated Colloquial Hungarian, who were instructed to focus on the meaning of the sentence. The register used by the subjects, with the exception of one, was rather casual. Every sentence was read three times by each speaker, yielding a sample size of 18 for each test word.

Test sentences were selected according to the phonological shape of the word following the verb. As test words were in the post-verbal domain, they were also post-focal, thus, each one had the same syntactic prosodic property, therefore difference in their stress pattern can only be attributed to lexical stress. Four test words had a heavy third syllable and three had a light third syllable, so that the Szinnyei-type stress pattern could also be tested.

Vowel duration was not measured in this experiment, as the results of the preliminary study demonstrated convincingly that it is mainly the function of the lexical length contrast and neighbouring consonants. These results have also shown that pitch is not relevant for the study of theHungarian stress pattern: our statistical method shows that no syllable is significantly salient in pitch. Vowel quality is also a poor indicator of secondary stress as it can be illustrated by the first formant values of the test word [rɛndɛlkɛzeːʃrɛ]. Our results indicate that besides the first syllable, the second and the fifth are the

[2]The *Syntactic locality in a Minimalist approach* project (OTKA NF-73537) of the Research Institute for Linguistics, Hungarian Academy of Sciences, Project Manager Balázs Surányi.

least reduced, as the vowel /ɛ/ tends to raise towards [ɪ] in the Hungarian reduction pattern (cf. Szeredi, 2009). This would mean that there is no secondary stress on either the third or the fourth syllable, as here are the most reduced vowels, which is contradictory to both the binary trochaic or the Szinnyei-type analysis.

3.3.1. Words with heavy third syllable

Words with heavy third syllable are predicted to have secondary stress on their odd-numbered syllables by all accounts. This hypothesis would be confirmed, if a significant rise of intensity were found between the second and the third (and the fourth and fifth) syllables and a significant drop thereof between the third and the fourth syllables. Investigating mean intensity for each syllable shows that there is no general pattern for words of this shape, but this can be attributed to the different consonantal environment for the examined syllables or other extrinsic factors.

For a more detailed statistical analysis we examined the statistics provided by the pairwise *t*-test as described in section 3.1. The summary for the expected stress pattern and the result of pairwise *t*-test is shown in Table 2.

Differences in intensity between syllables in test words												
test word	σ_1		σ_2		σ_3		σ_4		σ_5		σ_6
expected pattern for binary trochaic stress		$>$		$<$		$>$		$<$		$>$		
mɛkproːbaːlkozotː	mɛk	=	proː	$<$	baːl	$>$	ko	$<$	zotː			
mɛgoldaːʃːɒl	mɛg	$<$	ol	$>$	daːʃ	$>$	ʃɒl					
aːlːiːtoːlɒg	aːl	$>$	liː	=	toː	$<$	lɒg					
mɛgoldotːɒ	mɛg	=	ol	$>$	dot	=	tɒ					

Table 2: Summary of the stress pattern of test words with heavy third syllable

The only word showing the textbook binary pattern is [mɛkproːbaːlkozotː]. The third and fifth syllables have significantly greater intensity than the second and fourth. Curiously, the first syllable – that should, by all accounts, display primary stress – does not have significantly higher intensity than the second. This could be attributed to the fact that this first syllable is a verbal prefix. There has't been any claim in the literature about verbal prefixes being extrametrical, but if this were the case, there would be no explanation for having an *iambic* pattern on the rest of the word: *[<mɛg>.proː.bál.ko.zòtː].

First syllables of the other two test words with verbal prefixes do not show the effect of primary stress either: the stress pattern of [mɛgoldaːʃːɒl] can be explained with the extrametricality of the verbal prefix, but there is no secondary stress effect on either the third or the fourth syllable. The word [mɛgoldotːɒ] shows non-significantly lower intensity on its first syllable and steady decrease thereafter, with a significant drop only between the second and the third syllables, therefore its behaviour can be explained with verbal prefix and final syllable extrametricality.

Our only test word without a verbal prefix and heavy third syllable is [aːlːiːtoːlɒg], which shows primary stress, and, curiously, a significant rise of intensity *after* the third syllable. This pattern would suggest an analysis with ternary feet, and *without* extrametrical final syllables, that would falsify any analysis of the test words with verbal prefix seen above.

To sum up, for the behaviour of words with heavy third syllable, every proposed theoretical account would predict secondary stress on the third syllable, ie. a significant rise of intensity before it and a significant drop after it. This is only found for the word [mɛkproːbaːlkozotː], where – under an anaysis without secondary stress – this can be accounted for with the effect of non-prosodic features, most likely with the effect of vowel height, as the vowel in the third syllable is the most open vowel in the word (and in the Hungarian vowel system).

The other three test words do not show the effect of secondary stress as predicted: their intensity pattern is hard to explain by the notion of stress, as contradictory forces seem to work against each other, like the extrametricality of the final syllable. Therefore these patterns are better explained without proposing the existence of secondary stress in Hungarian.

3.3.2. Words with light third syllable

Words with light third syllables have different predictions according to the two analyses. By the standard account of binary trochaic stress, they are predicted to behave exactly the same way as words in the previous section did: to have secondary stress on their odd-numbered syllables. In the Szinnyei-type analysis, they are predicted to have secondary stress on their fourth syllable (and if test words were longer, on every following even-numbered syllable as well). Therefore, a significant rise of intensity between the third and fourth syllables would provide argument for the Szinnyei-analysis, while a significant drop would provide argument for the binary analysis.

There have been three test words in our experiment, however we analyse the behaviour of four, as the test word [rɛndɛlkɛzeːʃeːrɛ] was shortened to [rɛndɛlkɛzeːʃrɛ] in most repetitions, with the deletion of the long [eː] segment. As this vowel is in the fifth syllable that should bear secondary stress in the binary analysis (*[ˈrɛndɛlˌkɛzeːˌʃeːrɛ]), this process gives reason to doubt this analysis before even checking the place of statistically significant rises and drops in intensity.

The summary of these statistics is shown in Table 3. Focusing on the contour of intensity between the third and fourth syllables, it can be seen that only [fɛlɒdɒtot] shows a (borderline $p \approx 0.05$) significant rise here, supporting the Szinnyei-hypothesis very lightly. It is evident that none of these words show a significantly high intensity on the third syllable, which means we have found no support for the binary trochaic analysis in this group of words either.

Differences in intensity between syllables in test words												
test word	σ_1		σ_2		σ_3		σ_4		σ_5		σ_6
expected pattern for binary trochaic stress		$>$		$<$		$>$		$<$		$>$		
expected pattern for Szinnyei-type stress		$>$		$=$		$<$		$>$		$<$		
rɛndɛlkɛzeːʃeːrɛ*	rɛn	$>$	dɛl	$>$	kɛ	$=$	zeː	$=$	ʃeː	$=$	rɛ	
rɛndɛlkɛzeːʃrɛ	rɛn	$<$	dɛl	$>$	kɛ	$=$	zeːʃ	$=$	rɛ			
lɛgnɛhɛzɛbː	lɛg	$>$	nɛ	$=$	hɛ	$=$	zɛbː					
fɛlɒdɒtot	fɛ	$<$	lɒ	$>$	dɒ	$<$	tot					

Table 3: Summary of the stress pattern of test words with light third syllable

The appearance of primary stress on the first syllable is problematic again: the only word with a verbal prefix in this group ([fɛlɒdɒtot], as our results show significantly greater intensity on its second syllable than on its first. The fourth syllable of this word is more stressed as well, thus, if it is not the effect of the Szinnyei-type ternary stress, it shows the pattern with extrametricality of the verbal prefix and without the extrametricality of the last syllable – a third configuration that can be argued for in an analysis for verbal prefixes and secondary stress. The first syllable of the test word [lɛgnɛhɛzɛbː] is also a prefix, but acoustically, it is the only significantly stressed vowel in the word. This would mean no extrametricality of prefix and no secondary stress on either syllable, thus extrametricality of the final, or in a binary analysis, final *two* syllables. These contradictory parameter configurations are shown in Table 4.

attested stress pattern	extrametrical prefix	number of extrametrical final syllables
mɛ́kproːbàːlkozòtː	–	0
fɛlɒ́dɒtòt	+	0
lɛ́gnɛhɛzɛbː	–	2
mɛgóldaːʃːɒl	+	1

Table 4: Contradictory parameters for extrametricality for words with prefixes assuming a binary trochaic secondary stress analysis

The problem of [rɛndɛlkɛzeːʃeːrɛ] has been already raised. The deletion of the fifth vowel contradicts the binary trochaic account and supports the Szinnyei-type analysis, however, in those recordings where

the speaker did not omit this vowel, there is no significant stress on the fourth syllable, and the intensity of this problematic vowel is not significantly lower than the intensity of any neighbouring vowel, although the median would suggest otherwise.

The pattern for this test word where it underwent the deletion process is problematic again: it shows a significant rise in intensity after its first syllable, having the primary stress on the second, similarly to words that had verbal prefixes, although the first syllable is part of the stem here, and a drop of intensity for the remaining syllables. Under the Szinnyei-type pattern of stress, and the explanation provided by this analysis, the fourth syllable should have more intensity, but this is not true, as it can clearly be seen in our results.

To conclude the examination of light third syllable test words, no evidence has been found for the binary stress pattern at all, and only one case of the very problematic intensity figures for the word [fɛlɒdɒtot] could provide argument for the Szinnyei-type analysis. No other word shows significant increase before the fourth syllable.

3.4. Summary of the experiments

Looking at the results of the studies above, it seems that neither the binary trochaic, nor the Szinnyei-type account can predict the place of greater intensity, longer duration or higher pitch. Eliminating influences of clause structure, there is no consistent and statistically significant intensity increase that could be indicative of secondary stress. In the production of test words, there is usually an intensity peak on the first or on the second syllable and a series of syllables with low intensity.

We have not found correlation between significantly high intensity and syllable weight: the steady drop after the main stressed syllable did not discriminate between heavy and light syllables. In the case of an intensity peak in the later syllables, factors other than stress, like the openness of the vowel or phrasal melody, seem to be at work.

4. Conclusions and further research

Having examined possible phonetic and phonological evidence for secondary stress in Hungarian, we found no convincing support for the existence of either of the three patterns put forth in the literature.

Naturally, the sample sizes and the insufficient of control of possible influencing factors in the experiments presented in this paper (including that of Varga 2000 and our own) mean that no conclusive statements can be made at this point. Therefore, we plan to gather further empirical data by replicating Varga's experiment with the neutral sentences included, as well as conducting acoustic and perceptual experiments on a wider sample and better control of factors like vowel duration and quality.

However, some tentative patterns that contradict earlier sources do emerge from our pilot studies. First, verbs with prefixes do sometimes show stress clash (*contra* Varga): the second syllables of our test words show equal or higher intensity than the first. Second, they contradict Gráf's (1998) observation (reinterpreted by Varga 2000 as another possible phonological effect of secondary stress) that optional lenition of [b], [d], [g] (cf. Siptár 1995) is blocked in syllables bearing secondary stress: in our sample, the test word [fɛlɒdɒtot] was very frequently articulated with a fricative as the onset of the third syllable as [fɛlɒðɒtot], with even occasional deletion, uttered as [fɛlɒːtot].

Given that we found no evidence for the existence of a pattern that has rarely been questioned in previous phonetic or phonological literature, the question arises what the source of these claims could be. Our educated guesses include non-native perception/training, dialectal variation or diachronic change, and the unreliability of impressionistic descriptions. What is certain is that Hungarian is not the only language with its 'well-known' secondary stress pattern called into question: Arantes & Barbosa (2008) made similar claims on the non-existence Brazilian Portuguese secondary stress, and anecdotal claims along the same lines exist for Catalan, European Portugese and even Finnish.

In fact, much of the Hayesian typology of stress systems has recently been shown to be mistaken (Rice, 2008; Hyde, 2008), and, with the rise of the 'laboratory phonology' paradigm, impressionistic descriptions of "clearly audible" phenomena have been falsified (cf. Ernestus & Baayen 2006 on final devoicing in Dutch, among many others). In sum, more solid fieldwork is indispensable for sound theoretical analyses of even such apparently well-described languages as Hungarian.

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