Underspecified Precendence Relation and Vowel~Zero Alternations in Hungarian[*]

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0. Introduction

Hungarian nominal stems can differ along three parametric dimensions: ±"Epenthetic," ±Shortening and ±Lowering. In ±"Epenthetic" stems (traditionally named so because of an influential analysis in Vago 1980) the vowel in the final syllable may alternate with Ø in a closed class of words before a certain class of suffixes, as shown in (1) below: [1]

(1) *"EPENTHETIC" stems*

stem	+ACC(-t)
a. ter**e**m 'hall' vs.	term-e-t
b. szob**o**r 'statue' vs.	szobr-o-t

(2) *NON-EPENTHETIC stems*

stem	+ACC(-t)
a. perem 'edge' vs.	perem-e-t
b. tábor 'camp' vs.	tábor-t

+SHORTENING stems as in (3) show three idiosynchratic alternations before Class I (Level 1 or synthetic) suffixes: (a) they undergo shortening of the vowel of the final syllable, (cf. *ny**á**r vs. ny**a**r-a-t)*; (b) they require the lowering of the otherwise mid suffixal (linking) vowel (cf. *nyar-**a**k vs. pár-**o**k*); (c) they introduce a phonotactically unmotivated linking vowel before the suffix (cf. *nyar-**a**t vs. pár-t*). Notice that all these alternations happen at the same time:

(3) *SHORTENING stems*

stem	+ACC (-t)	+PL(-Vk)
a. ny**á**r 'summer'	nyar-**a**-t	nyar-**a**k
b. mad**á**r 'bird'	madar-**a**-t	madar-**a**k

(4) *NON-SHORTENING stems*

stem	+ACC(-t)	+PL(-Vk)
a. pár 'pair'	pár-t	pár-ok
b. tanár 'teacher'	tanár-t	tanár-ok

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[1] I use the notation of Hungarian orthography throughout the paper. Length alternation is indicated as a~á, e~é, o~ó, i~í, ö~ő, ü~ű.

+LOWERING stems share two of the properties of the shortening stems: before Class I suffixes they (a) require the lowering of the suffixal (linking) vowel and (b) introduce a phonotactically unmotivated linking vowel:

(5) *LOWERING stems*

	stem	-ACC(-t)	-PL(-Vk)
a.	ház ‘house’	ház-**a**-t	ház-**a**k
b.	fog ‘tooth’	fog-**a**-t	fog-**a**k

(6) *NON-LOWERING stems*

	stem	+ACC(-t)	+PL(-Vk)
a.	gáz ‘gas’	gáz-t	gáz-**o**k
b.	jog ‘law’	jog-**o**-t	jog-**o**k

Descriptively it seems, then, that there are three irregular stem classes and three logically independent properties, some of which the stem classes share with each other. These three properties are shortening or deletion of the vowel of the final syllable, introduction of a phonotactically unmotivated linking vowel and lowering of the linking vowel and the vowel of the V-initial suffix.

Interestingly enough, these irregular properties do not seem to be completely independent from each other. First, some words are acceptable in two (and only two) varieties, as shown in (7). In these forms either both shortening (+S) and lowering (+L) has happened, or neither. We never find forms where only one of these has happened, e.g. **sáras, *saros.*

(7)

	+ S, +L	*-S, -L*	*-S, +L*	*+S,-L*	*Gloss*
a.	sar-as	sár-os	*sár-as	*sar-os	‘mud-adj’
b.	mocsar-as	mocsár-os	*mocsár-as	*mocsar-os	‘wetland-adj’

There is also a second indication of the interaction of properties. There is a [mid] suffix *-on-en-ön* ‘on’ which belongs to the class of alternation-triggering suffixes (cf. *bokor~bokron* in (8) below). However, the vowel of this suffix cannot lower, as shown in *ház~ház-on.* Curiously, this suffix does not induce shortening either, as shown in *madár-on* (instead of *madaron). Why would the shortening of the stem depend on the quality of the suffix vowel?

(8) *on-en-ön* [-low]

+L stem	*+E stem*	*+S stem*	*V-final stem*
ház ‘house’	bokor ‘bush’	madár ‘bird’	kapu ‘gate’
ház-on	bokr-on	madár-on	kapu-n

These facts then suggest that the three properties of shortening stems are somehow linked.

Another piece of the puzzle that has to be noted is that it is only a certain class of suffixes that induce the stem alternations shown above. Namely Class I (Level I, or synthetic) suffixes trigger alternations, while Class II (Level II, analytic) suffixes do not. Membership in the alternation-triggering suffix class (Class I) is not predictable phonologically (contra Booij 2002, van Oostendorp 2004 e.g.):

(9) S*ome representative members of Class I and Class II suffixes*
a. -t (ACC); -Vk (PL); -unk/-ünk (1PL.POSS); -(j)a/-(j)e (1SG.POSS) **Class I**
b. -ul/-ül (ADJ); -nak/nek (DAT/GEN); -rA (SUBLAT.); -i (ADJ) **Class II**

E.g. both Class I and Class II suffixes can have a -VCX form, as is evident from the above lists. Nor is category membership a good indicator: e.g. nominal case endings might be either Class I or Class II (cf. the Class I suffix *-t* (ACC) vs. the Class II *-nak/nek* (DAT/GEN) above). However, there is a defining property of Class I suffixes, namely, that they do not tolerate hiatus. Instead, they trigger vowel deletion at a stem+suffix juncture:

(10) a. kapu 'gate' +unk '1PL POSS' → kapunk 'our gate' **Class I**
b. bantu 'bantu' + ul 'ADJ' → bantuul 'in Bantu' **Class II**

From this property of Class I suffixes, as well as the introduction of the "extra" linking vowel in the irregular stems seen above, one could argue that the two suffixal classes pose differing constraints on the shape of the preceding stem: Class I suffixes require a stem of […V] shape: (cf. (3a) *nyara-t* 'summer-ACC'), while Class II suffixes require a stem of […C] shape (cf. *nyár-ban* 'summer-INESS'). This seems to be a general property of Finno-Ugric and was true of Old Hungarian. Finnish has been argued by Kiparsky (2003) to have a similar pattern described by the STEM CONSTRAINT, which requires stems to end in a -V:

(11) STEM CONSTRAINT
Stems must end in -V.

In modern Hungarian, however, this constraint is not an imperative except in the irregular stems; invariant stems do not have to satisfy it.

The puzzle that the present paper addresses thus has three key components: the idiosynchratic stem classes, the interaction of the alternating properties, and the interaction of the alternations with the particular suffix class chosen. Furthermore, we want to understand the interaction among these three components. The paper proposes the following solution to the above problem: Epenthetic and shortening stems undergo metathesis to satisfy the Class I-Class II restrictions. What looks like a vowel of the suffix is in fact the metathesized vowel of the stem. More specifically, the order of the final segments in the epenthetic and shortening stem classes is lexically unspecified (e.g. t→e→r→{e,m}). Lowering stems, on the other hand, end in a vowel. Class I and Class II suffixes differ in the linearization rule they induce. Class I suffixes attach to vowel-final stems, hence they define a vowel-final ordering, while Class II suffixes attach to a consonant-final stem.

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1. Background

Hungarian has [±back] and [±round] VOWEL HARMONY (12), and the vowel inventory in (13):

(12)	a.	kapu 'gate'	kapu-**nak** (DAT)	}	*Lexical Representation*
	b.	köteg 'bunch'	köteg-**nek** (DAT)	}	$nV_{[+low]}k$
	c.	eper 'strawberry'	eper-**hez** (ALLAT)	}	hVz
	d.	ökör 'mule'	ökör-**höz** (ALLAT)	}	
	e.	bokor 'bush'	bokor-**hoz** (ALLAT)	}	

In this paper I assume that harmonizing vowels have a featural representation that is underspecified for the contextually predictable features (cf, Kiparsky 1993, Siptár and Törkenczy 2000). These features include the harmonizing features ([+/-back] and [+/-round]) as well as a default [mid] height. The lexical representation of (12a) *kapunak* is then *kapu+nV$_{[+low]}$k*: which tells us that except for the [+low] feature, the features of the suffix vowel are predictable from the context:

(13) Vowel inventory of Hungarian short vowels

i	*ü[y]*	*u*
	ö[ø]	*o*
e[ɛ]		*a[ɥ]*

2. The Analysis of Irregular Stem Classes

The aim of this paper is to concentrate on the regularity in all the irregularities: the fact that all the irregular stems appear to be vowel-final before Class I suffixes. The stem alternation could be thought of resulting from this constraint: (1b) *szobro-t* 'statue-ACC' satisfies the constraint that stems must be V-final, while **szobor-t* does not. The stems before Class II suffixes (including the Ø nominative suffix) satisfy the opposite requirement, C-finality: *szobor-ban* 'statue-NESS' vs. **szobro-ban.* In modern Hungarian the stem requirements are, however, only active in the irregular stems, and only to a limited extent in regular stems (namely in HIATUS RESOLUTION). Note that the present paper implements this insight in a rule-based framework.

2.1. Epenthetic and Shortening Stems

Imagine that parts of the representation could be unspecified as to their linear order, as shown in (14), where the order of the stem-final {VC} pair is unspecified. This would allow us to give a uniform representation to epenthetic (14a) and shortening (14b) stems. (In the examples below I use the symbol → as the graphic representation of precedence, following Raimy (2000). Pairs of sounds not connected by → are not underlyingly linearized.)

(14) a. b→o→k→{o, r}
b. m→a→d→a→{a, r}[2]

I argue below that indeed this is the case. The linear order of the elements is then specified by the context, namely the suffix that attaches at the end of the stem in the following way:

(15) LINEARIZATION (LIN)
Class I suffixes introduce a link of immediate precedence between the stem-final vowel and the first segment of the suffix. Class II suffixes introduce a link of immediate precedence between the stem-final consonant and the first segment of the suffix.

When a Class I suffix attaches to a stem like the ones in (14), the Linearization rule will define a vowel-final ordering, as shown in (16-17):

(16) b→o→k→{o,r} +Class I sfx → b→o→k→r→o +Class I sfx
(17) m→a→d→a→{a,r} +Class I sfx → m→a→d→a→r→a +Class I sfx

The linearization rule in (15) above predicts all the relevant properties at once: First, it predicts the V~Ø alternation for words like (16) and the shortening stem alternations for words like (17), as they are a by-product of the metathesis to satisfy the stem constraint imposed by the suffix. Second, the fact that consonant-initial Class I suffixes attach to shortening and epenthetic stems with a phonotactically unmotivated linking vowel is explained, as the vowel is a vowel of the stem. Finally, the lowering property of shortening stems and the interaction of lowering and shortening in shortening stems is explained too, as the low vowel of the suffix is in fact the metathesized, inherently low vowel of the stem (as in *madar**a**-t*; cf. (3b) and (17)).

Observe also that the stems in question show a three-way contrast:

(18)

	STEM	UR FORM	ACC (-t)	PL (-Vk)	
a.	mora	mora	mor**a**t	mor**a**k[3]	[regular V-final stem]
b.	tanár	tanár	tanárt	tanár**o**k	[regular C-final stem]
c.	madár	madara	madar**a**t	madar**a**k	[shortening stem]

The shortening stem behaves neither like a regular C-final, nor like a regular V-final stem. Exactly the same argument can be made for epenthetic and lowering stems. This suggests that the vocalic content of the final vowel in shortening

[2] Long vowels are represented by V_i+V_i.
[3] An independent process lengthens all fully specified final short [+low] vowels before suffixes. This is not represented here, to avoid confusion.

stems is featurally underspecified, as opposed to stems ending in full vowels (cf. also Siptár and Törkenczy 2000, e.g.):

(19) Shortening stems:

i. C V C V {C V} (shortening) ii. C V C V (regular)
| | | | | | | |
m a d a r [+low] m o r a

Epenthetic stems:

iii. C V C {V C} (epenthetic) iv. C V C V C (regular)
| | | | | | | | |
b o k r d o n o r

Lowering stems:

v. C V {C V} (lowering) vi. C V C V (regular)
| | | | | | | |
h a l [+low] m o r a

The unspecified features are determined by Vowel Harmony, as we saw in Section 1. The vowel of harmonizing suffixes is also underspecified, containing only the feature that is not predicted by vowel harmony.

(20) V[+high,+round] n k {-unk/-ünk}

The examples in (21) show, then, a more explicit formulation of the derivation of an epenthetic stem like *bokor* and of a shortening stem like *madár* 'bird':

(21) a. 1. b o k {V, r} -V[+high,+round] n k
2. b o k r V -V[+high,+round] n k (by LIN in (15))

b. 1. m a d a $\{V_{[+low]}$ r} -V[+high,+round] n k
2. m a d a r $V_{[+low]}$ -V[+high,+round] n k (by LIN in (15))

2.2. Vowel Deletion

In the previous section we have seen how the Linearization rule in (15) interacts with the underlying form of lexical representations. The application of this rule results in representations like *bokr*V-V[+high,+round]*nk* as in (21a.1) above. This representation, however, is not the output: Hiatus Resolution as well as Vowel Harmony have to apply. I argue that the rule of Hiatus Resolution has to precede Vowel Harmony. Let us look first at Hiatus Resolution, which is a general property of stem-Class I suffix junctures in Hungarian. Observe a regular vowel-final stem in Hungarian: *kocsi* 'coach,' which ends in a fully specified vowel.

When a vowel-initial Class I suffix is attached to it, one of the adjacent vowels in the sequence thus created has to delete.[4]

(22)		STEM	CLASS I SUFFIX		
	a.	kocsi	-$V_{[-low]}$n	→kocsin	‘on (the) coach’
	b.	kocsi	-Vk	→kocsik	‘coach.PL’
	c.	kocsi	-$V_{[+high, +round]}$nk	→kocsink	‘our coach’

Hiatus across a stem-Class I suffix juncture is then resolved via vowel deletion. Ideally, there would be a uniform VOWEL DELETION rule that can handle words ending in a fully specified (22) as well as words ending in an underspecified (21) vowel. This section proposes exactly this.

2.2.1. Vowel Deletion at the Stem-Class I Suffix Juncture

In this position, both the segmental material and the skeletal position delete, resulting in a single short vowel:

(23) $[\ldots V]_{stem}\ [V\ldots]_{class\ I} \rightarrow [\ldots V]_{stem}\ [\_\ldots]_{class\ I}$ **OR** $[\ldots\_]_{stem}\ [V\ldots]_{class\ I}$

|	|		|			|
α	β		α	~~β~~		~~α~~	β

How do we determine which vowel has to delete? I propose that in this configuration, it is the less specified vowel that deletes. Thus the rule for vowel deletion I propose is as follows:

(24) $V_i \rightarrow$ Ø/ V_j in a stem-Class I suffix juncture, where the set of specified features of V_i < the set of specified features of V_j.

The rule in (24) above applies in a similar way to regular stems like those shown in (22) and epenthetic and shortening stems like those in (25-26) below:

(25)	*Epenthetic stems*				
	a.	bokrV	-a	→bokra	‘his/her bush’
	b.	bokrV	-$V_{[+high, +round]}$nk	→bokrunk	‘our bush’
	c.	bokrV	-$V_{[-low]}$n	→bokron	‘on (the) bush’

(26)	*Shortening stems*				
	a.	madar $V_{[+low]}$	-a	→madara	‘his/her bird’
	b.	madar $V_{[+low]}$	-$V_{[+high, +round]}$nk	→madarunk	‘our bird’
	c.	madar $V_{[+low]}$	-Vk	→madarak	‘bird.PL’

[4] We know that the suffixes below are vowel-initial because they always attach with a vowel that to consonant-final stems, even if this is not motivated phonotactically, e.g. *tan~tan-**o**k* ‘teaching-pl.’ vs. *tank* ‘tank.’

What would happen if two vowels were to be (under)specified to the same degree? Recall that non-lowerable suffixes do not trigger shortening on the stem. Interestingly, it is in this one case that the two adjacent vowels are underspecified exactly to the same degree. The vowel deletion rule as specified above cannot apply; therefore, we get the default form of the stem.

(27) madar$V_{[+low]}$-$V_{[-low]}$n (madáron)

2.2.2. Lack of Vowel Deletion at the Stem-Class II Suffix Juncture

Recall that a defining property of Class I suffixes was that they do not tolerate hiatus, as opposed to Class II suffixes, which do tolerate hiatus quite happily. In other words, hiatus is treated differently across stem-Class II junctures in Hungarian than in Stem-Class I junctures. The rule of Vowel Deletion introduced above does not apply at the stem-Class II suffix juncture. Since no vowel deletion happens, the result is a vowel-vowel sequence:[5]

(28) $[\ \ldots V]_{\text{stem}}\ [V\ldots]_{\text{class II}} \rightarrow [\ldots V]_{\text{stem}}\ [V\ldots]_{\text{class II}}$
$\alpha\ \ \beta \qquad\qquad \alpha\ \ \beta$

(29) kapu -ig → kapuig ‘up to (the) gate’
gate -till

How does this affect the shape of irregular stems when they are suffixed with a V-initial Class II suffix? In fact, it does not. This is because before Class II suffixes in epenthetic and shortening stems the Linearization as in (15) chooses a consonant-final ordering of the stems in question. Hence we do not have a VV sequence in the first place, and therefore neither hiatus nor vowel deletion will have the context to occur, as shown below.

(30) 1. bok{V, r} -ul ‘bush-ADJ’
2. bokVr-ul (by LIN in (15))

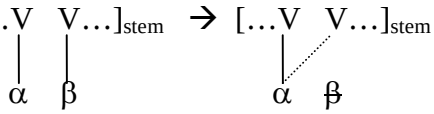
(31) 1. mada{$V_{[+low]}$, r} -ul ‘bird-ADJ’
2. mada$V_{[+low]}$r-ul (by LIN in (15))

2.2.3. Stem Internal VV Junctures

There is another context, though, besides stem-Class I suffix junctures where vowel deletion can be argued to happen: stem-internally. Such a sequence is created, e.g., in a shortening stem that precedes a Class II suffix. In this case the

[5] There are random exceptions to this generalization, discussed, e.g., in Siptár and Törkenczy (2000).

Linearization rule in (15) will force a consonant-final ordering of the stem, in effect creating a VV sequence (e.g. as in (31) above). In this position the content of one of the vowels is deleted, but both skeletal slots are preserved, giving rise to a long vowel.

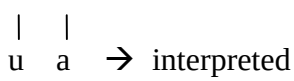
(32) 

Shortening stems always induce lowering. There are precisely 19 examples of shortening stems where the shortened vowel is not *á* or *é* (cf. Siptár and Törkenczy 2000:60):

(33)

	stem	*-ACC*	*gloss*		*stem*	*-ACC*	*gloss*
a.	híd	hidat	‘bridge’	k.	nyúl	nyulat	‘rabbit’
b.	ín	inat	‘tendon’	l.	rúd	rudat	‘pole’
c.	nyíl	nyilat	‘arrow’	m.	úr	urat	‘gentleman’
d.	víz	vizet	‘water’	n.	út	utat	‘road’
e.	szűz	szüzet	‘virgin’	o.	szú	szuvat	‘woodworm’
f.	tűz	tüzet	‘fire’	p.	cső	csövet	‘pipe’
g.	fű	füvet	‘grass’	q.	kő	követ	‘stone’
h.	nyű	nyüvet	‘maggot’	r.	tő	tövet	‘stem’
i.	kút	kutat	‘well’	s.	ló	lovat	‘horse’
j.	lúd	ludat	‘goose’				

The stems in (33a-c) are disharmonic (e.g. hídnak, etc.); the long vowel -í therefore is represented as composed from two skeletal positions linked to [i a]. *Víz* is not disharmonic, and I represent it as being composed of [i e]. The other examples, I assume, are represented similarly: [ü e], [u a], [ö e], [o a].

(34) a. 

b. k $V_{[+high, +round]}$ $V_{[+low]}$ t (kuat) → k $V_{[+high, +round]}$ $V_{[+high, +round]}$ t (kuut)

The rule of stem-internal V deletion, then, deletes the segmental content, but not the skeletal slot. This leaves us with a long vowel. Notice that except for not deleting segmental content, the rule is identical to the one in (24), proposed to handle vowel deletion at the stem-Class I suffix juncture.

(35) **Stem-Internal V-Deletion Rule**
The segmental content of V_i → Ø/ V_j stem internally, where the set of specified features of V_i < the set of specified features of V_j.

This concludes the brief discussion on the nature of Vowel Deletion in Hungarian across various junctures and how it interprets the output of the Linearization rule. The representations produced by Vowel Deletion (or the lack of thereof, as in (30-31)) are interpreted by Vowel Harmony in the standard way outlined in Section 1, Vowel Harmony filling in the contextually predictable features (cf. Kiparsky 1993, Siptár and Törkenczy 2000, among others). This means, e.g., that the representations in (30-31), repeated below, will be interpreted as shown in the third step:

(30) 1. bok{V, r} -ul ‘bush-adj’
2. bokVr-ul (by LIN in (15))
3. bokor-ul (by Vowel Harmony)

(31) 1. mada{$V_{[+low]}$, r} -ul ‘bird-adj’
2. mada$V_{[+low]}$r-ul (by LIN in (15))
3. madaar-ul (by Vowel Harmony)

2.3. Lowering Stems

Similarly to Siptár and Törkenczy (2000), I propose that lowering stems end in a partially specified vowel (36). The order of the elements in lowering stems is fully specified; therefore, we do not observe stem alternation.

(36) h→á→z→$V_{[+low]}$ ‘house’

Class I suffixes attach to the final unspecified vowel as shown below:

(37) h→á→z→$V_{[+low]}$ → t ‘house (acc.)’
(38) h→á→z→$V_{[+low]}$ → V→k ‘house (pl.)’

Class II suffixes, however, attach to the consonant, because by stipulation underspecified final vowels are transparent from the point of view of Class II suffixes, so the last consonant counts as the final element. However, unlike in epenthetic and shortening stems, the linear order of the elements is fixed in lowering stems; therefore, there is no way to reorder (metathesize) the underspecified final vowel. More precisely, I propose that a vowel that immediately follows, but does not immediately precede any segment is left unparsed.

(39) START→h→á→z → b→a→n→END ‘house(iness)’

3. Restrictions on Unordered Segments

Which segments can be unordered? Does the proposed analysis face the danger of letting segmental metathesis run for free? I believe not. Recall that the position of the unordered pair was always final. Why? I would like to argue that underspecified orderings can be allowed to be freely distributed, but are learnable only when alternations can be observed. Alternations are observed in final position, where the variable context (i.e. suffixes) imposes differing demands.

As for restrictions of content, we have seen that the range of consonants that can be unordered is not a coherent group (there are examples with *t, d, k, n, m, r, l, z*); however, the vocalic content is: it is always an underspecified vowel. I would like to speculate that the identity of this vowel might be predictable from contrastiveness for height. At least, there is a curious correlation in Old Hungarian and in Modern Hungarian between the vowel inventory and the underspecified (epenthetic) vowel. In Old Hungarian, it is the non-contrastive *ü* that is the epenthetic vowel. With the loss of ***i*** and the introduction of *ö, a* became the non-contrastive vowel. At the same time, the epenthetic vowel has also lowered to a transparent V and *a.*

(40) *Old Hungarian:*

VOWEL INVENTORY	EPENTHETIC VOWEL	DIPHTHONGS
i ü ~~i~~ u e a o	ü, u	$V_i u \rightarrow V_i$ $V_i ü \rightarrow V_i$

Modern Hungarian:

VOWEL INVENTORY	EPENTHETIC VOWEL	DIPHTHONGS
i ü u e ö a o	V, a	$V_i a \rightarrow V_i$

Thus, with the possibility of predicting the place and possibly partially the content of the underspecified pairs, the analysis does not risk letting segmental metathesis run for free.

4. Summary of the Analysis

The main goal of this paper was to capture the relationship between the irregular stem classes as well as the relationship between the seemingly independent irregular properties. The main ingredients of the analysis were the following: The "linking vowels" in irregular stems are final vowels of the stem. The underspecified linear order captures the correlation between shortening and lowering stems, as well as the stem alternations. The Vowel Deletion rule

interprets the structure that results from Linearization, while Vowel Harmony determines the full featural content of the underspecified vocalic segments.

Finally, comparing the analysis with other proposals, note that the existing current proposals (cf., e.g., Nádasdy and Siptár 1995 and Siptár and Törkenczy 2000, to cite but the most influential ones) treat the three stem classes as unrelated to each other. A partial exception is Rebrus (2000), who does capture the similarity between epenthetic and shortening stems. However, none of these analyses predicts the interaction of the irregular properties, nor do they explain the data patterns in (7-8).

References

Booij**,** G. 2002. *The Morphology of Dutch*. Oxford: Oxford University Press.

Kiparsky, P. 1993. Blocking in non-derived environments. In Sharon Hargus and Ellen Kaisse, eds., *Studies in Lexical Phonology*, pp.277-313. San Diego: Academic Press.

Kiparsky, P. 2003. Finnish noun inflection. In Diane Nelson and Satu Manninen, eds., *Generative Approaches to Finnic and Saami Linguistics*, pp.109-161. Stanford: CSLI.

Nádasdy, A., and P. Siptár. 1994. A magánhangzók [The Vowels]. In: Kiefer, F. ed., *Strukturális Magyar Nyelvtan: Fonológia [Structural Hungarian Grammar: Phonology]*, pp.42-182. Budapest: Akadémiai Kiadó.

van Oostendorp, M. 2004. Crossing morpheme boundaries in Dutch. *Lingua* 114:1367-1400.

Raimy, E. 2000. *The Phonology and Morphology of Reduplication*. Berlin: Mouton de Gruyter.

Rebrus, P. 2000. Morfofonológia. [Morphophonology.] In F. Kiefer, ed., *Strukturális Magyar Nyelvtan: Morfológia [Structural Hungarian Grammar: Morphology]*, pp.763-947. Budapest: Akadémiai Kiadó.

Siptár, P., and Törkenczy M. 2000. *The Phonology of Hungarian*. Oxford: Oxford University Press.

Vago, R. 1980. *The Sound Pattern of Hungarian.* Washington: Georgetown University Press.

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APPENDIX

Sketch of a possible OT implementation of the analysis:

Stem metathesis:

Irregular stem

/bok{or}+ -t/	Stem Constraint	Linearity	Adjacency
Bokor-t	*		
→Bokro-t			*

Regular stem

/tábor+ -t/	Stem Constraint	Linearity	Adjacency
→Tábor-t	*		
Tábro-t		*	*

Vowel deletion:

/V // V/ [αF] [γH] [βG]	*Hiatus	Linearity	MAX F
V [αF, βG, γH]		*	
V // V [αF] [γH] [βG]	*		
→V // Ø [αF] [βG]			*
Ø // V [γH]			**