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A Lexical-autosegmental Analysis of Vowel Harmony in Hungarian

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0. INTRODUCTION*

Here I offer an autosegmental analysis of vowel harmony in Hungarian, different from the one given in Clements (1976). In section 1 I will briefly go through the relevant data, as these are reported in the literature. Then, in section 2, I will present the autosegmental analysis.

1. THE DATA

Hungarian has the following surface vowel system, given here using the orthographic representation (cf. Vago, 1980a: 2):

(1)	i	í	ü	ű		u	ú
		é	ö	ő		o	ó
	e				á	a	

Regular harmony is manifested by the fact that words have either only front or only back vowels. Certain vowels called *neutral* (i, í, é and, according to some, also e) can co-occur with both sets of vowels without ever causing what is called *disharmony* and for the purpose of VH they behave as if they were not present. The type of VH can be classified as *root-controlled* (Vago, 1980c: XIII), implying that the harmonic value of suffixes depends on the harmonic value of the root and *never* the other way around. The domain of harmony is the root plus following suffixes, possibly constituting the phonological word. Following the classification provided in Vago's work (e.g. Vago, 1980a) we may distinguish the following types of monomorphemic roots:

1.1. HARMONIC ROOTS

Roots of this type consist of either back or front vowels. Their suffixes (if alternating) are also either back or front, depending on the root:

* This note is extracted from a larger study (van der Hulst 1985) in which I discuss other segmental and autosegmental analyses of Hungarian VH. I would like to thank the following persons for their comments on a previous version of this article: Nick Clements, Colin Ewen, László Komlósi, Jan Kooij, András Kornai, Simone Langeweg, Catherine Ringen, John Stewart and Robert Vago. As always, the responsibility for remaining errors lies with me. During the 2nd Salzburg Summer Institute (1982) Paul Kiparsky showed me some unpublished work of his dealing with vowel harmony. The present proposal concerning the treatment of neutral vowels is inspired by that work.

(2) nak/nek 'dative' tól/től 'ablative'

a. [+back] *város* 'city' *városnak* *várostól*
b. [−back] *öröm* 'joy' *örömnek* *örömtől*

1.2. DISHARMONIC ROOTS

In roots of this type, mostly loans, we find back and front rounded vowels combined. Alternating suffixes take the value of the last root vowel:

(3) a. *kosztüm* 'costume' *kosztümnek*
b. *büró* 'bureau' *bürónak*

1.3. MIXED ROOTS

In this category we find roots consisting of back (rounded) vowels with neutral vowels. Three types of mixed roots have been distinguished:

(4) a. mixed A (mixed neutral)
b. mixed B (mixed vacillating)
c. mixed C (mixed harmonic)

1.3.1. Mixed Neutral Roots. Roots of this type have a neutral vowel in their last syllable and back vowels in the preceding syllable(s). They select suffixes with back vowels, determined by the first non-neutral vowel preceding the neutral vowel in the final syllable:

(5) *radír* 'eraser' *tányér* 'plate'

There appear to be no cases of this type with an *e* in the final syllable, although, as we will see below, words with *e* in the final syllable do occur in Hungarian.

1.3.2. Mixed Vacillating Roots. Roots with *e* in the final syllable do occur in Hungarian, but they typically take both [−back] and [+back] suffix alternants:

(6) *Ágnes* 'id.' *szalamander* 'salamander'

Most of the words of this class are fairly recent borrowings.

1.3.3. Mixed Harmonic Roots. This class consists of roots that end in a syllable with *e*; they only have front suffixes. According to Vago this set includes the following words "and a few others" (Vago, 1978):

(7) *József* 'Joseph' *október* 'October'

1.4. NEUTRAL VOWEL ROOTS

Among the roots containing only neutral vowels, we find about 60 examples that select a back suffix alternant (8a), two with *é* and the others with *í* or *i*. The majority of neutral vowel roots selects a front vowel alternant (8b):

(8) a. *híd* 'bridge' b. *szid* 'scold' *vér* 'blood'
cél 'aim' *víz* 'water' *kert* 'garden'

2. THE AUTOSEGMENTAL ANALYSIS

I will posit two sources for the surface root vowel *e*, one harmonic source and one neutral source, to explain the vacillating character of roots having *e* in their final syllable. To account for the behaviour of neutral vowels, I propose that they will be associated to an autosegment [−B] at the *end* of the derivation, rather than, as suggested in Clements (1976), at the *beginning*, on the assumption that predictable information is in general supplied as late as possible. I assume five underlying vowel segments and one harmonic segment:

(9)

	vowel segments [−round]	[+round]	harmonic segment
[+high]	I	U	[back]
[−high, −low]	E	O	
[+low]	A		

In addition the grammar contains a set of structure conditions, concerning segmental, autosegmental and sequential structure, capturing predictable information which is left unspecified in the lexical representations. Among the segmental and autosegmental structure conditions are two conditions which are relevant for the phenomenon of VH:

(10) $$\begin{bmatrix}-\text{round}\\-\text{low}\end{bmatrix} \rightarrow \underset{\perp}{[-B]}$$

(11) $$\begin{bmatrix}-\text{round}\\-\text{high}\end{bmatrix} \rightarrow \begin{Bmatrix}[-\text{low}] \;/\; \underset{X\;\;X}{\overset{[-B]}{\wedge}} \\ [+\text{low}]\end{Bmatrix}$$

(10) accounts for the fact that Hungarian does not have back unrounded, nonlow vowels. (11) says that an unrounded non-high vowel is mid if long (→*é*) but low otherwise (→*e*, *a*, *á*). (10) will *block* the universal association conventions from linking a [+B] to vowels that are [−round, −low], the block-

ing following from the universal principle of proper inclusion precedence. (11) does not block association, since its structural change is not in conflict with that of the association conventions. However, (11) *adjusts* the result of association. In particular it turns (12a) into (12b) thus capturing the fact that *a* alternates with *e* (a low vowel) but *á* with *é* (a mid vowel):

```
(12) a. [—B]     b. [—B]
          |            |
         /E/          /A/
```

The idea that predictable information is added at the latest possible stage (found for example in "anti-abstract" generative phonology; Ringen 1980) has received a new stimulus from the work of Kiparsky (1982) and Pulleyblank (1982). The other suggestion, i.e. to block association in the case of neutral vowels, derives in essential respects from ideas that have been expressed by Paul Kiparsky. Finally, to let structure conditions adjust the output at each stage of the derivation is nothing but resuscitating the device of *linking*, proposed by Chomsky and Halle (1968). I now turn to the question how roots and suffixes are to be represented, given the framework just sketched.

Harmonic roots (cf. (2)):

```
(13) a. +B        b. —B
        vÁrOs        ÖrÖm
```

Alternating suffixes will be represented as "defective", i.e. as lacking a segment on the backness tier:

(14) nAk

Disharmonic roots (cf. (3)):

```
(15) +B —B
      |   |
     kosztüm
```

So far the analysis does not differ significantly from the one presented in Clements (1976). Let us now turn our attention to *mixed roots*. The representation of *mixed neutral roots* (cf. (5)) will be:

```
(16) +B

     rAdÍr
```

It was argued at the beginning of this section that association of [+B] to the second vowel (i.e. /Í/) will be blocked by the presence of the language-specific structure condition in (10). This implies that Í will be skipped when the autosegment is associated to the vowel(s) of alternating suffix(es):


```
(17)      +B                      +B -B+B
         /  \                      |  |  |
     radÍr  nak       by (10)     radírnak
```

There are, as we have seen above, two remaining categories of mixed roots, typically containing an *e* in the final syllable. In the present analysis the surface vowel *e* has two possible sources:

```
(18) a. —B        b.               —B             —B
                                    |              |
        A              E  by (10)   E  by (11)     A
```

In the case of (18a) we are dealing with the harmonic vowel /A/ that is associated to the autosegment [—B] and in the case of (18b) we are dealing with the neutral vowel /E/ that is assigned an autosegment [—B] by rule (10), the result of which is adjusted by rule (11). The dual source of surface *e* is the key to the analysis of the categories *mixed vacillating roots* (cf. (6)) and *mixed disharmonic roots* (cf. (7)). The point is that a root with an *e* in the final syllable cannot be mapped onto a unique underlying representation. With this in mind it comes as no surprise that roots of this type typically vacillate:

```
(19)  ↓—————————————ágnes——————————↓
     +B—B                          +B
      |  |
     ágnes                        ÁgnEs
      [+low]                        [—low]
```

In the case of *József* native speakers have apparently decided to favour the disharmonic interpretation.

```
(20) +B—B
      |  |
     józsef
      [+low]
```

Finally, consider the monosyllabic *neutral vowel roots* (cf. (8)). Crucial to an account of these roots is the fact that harmony in Hungarian is root-controlled. We can express this fact by assuming a morpheme structure condition saying that each root must contain an autosegment, be it [+B] or [—B]. As it turns out we find both possibilities:

```
(21) a.  —B        b.   +B
         vÍz            hÍd
```

The autosegment in (21a) will be associated to the root, but this is not possible in example (21b). In both cases, however, the autosegment will be associated to a following alternating suffix.

```
(22) a.   —B          b.     +B              —B+B
         /  \                 |               |  |
        víz nek            híd nak   by (10)  hídnak
```

Clements (1976) provides two arguments in favour of representing neutral vowels with [—B] underlyingly. The first argument involves the diminutive of *Tibor* (*Tibinek*/**Tibinak*) and the second regular neutral vowel roots. In both cases we find front suffixes, and the question is how we can explain this. As for neutral vowel roots, we have just seen how the analysis works here: each root, including neutral vowel roots, must have an autosegment. As for the diminutive forms, let us simply see what will happen if we add nothing to the analysis:

```
(23)                          —B —B
                               |  |
      TIb+I+nAk  —(10)→   Tib+i+nAk  —?  →  ...
```

It seems to me that the most likely thing to happen after assigning [—B] to neutral vowels is application of the universal association convention leading to front suffixes.

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