

# *Vowel harmony and the stratified lexicon of Hungarian\**

*Zsuzsa Kertész*

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## **0 Introduction**

It is fairly common for languages to have a tendency to adapt borrowed elements to their phonological system—this is what we call LOANWORD ADAPTATION. Segments that are not part of the phonemic inventory of a particular language are replaced with ‘similar’ sounds, the ill-formed consonant clusters are dissolved by epenthesis, hiatuses are filled, etc.

There is, however, a phenomenon with the opposite effect: certain languages sometimes alter their adaptation processes, and accept loanword forms unchanged, thus violating their own phonological (phonotactic and/or morphophonological) constraints. What is more, these alterations are not at all random but more or less systematic, depending on the nature of the receiving language. The resulting forms are, of course, ‘marked’ in the language—some theories claim that they fall into a special stratum of the language’s lexicon (cf. among others, Itô & Mester 1995 about Japanese).

The objective of this paper is (i) to set up a coarse typology of languages concerning loanword adaptation and (ii) to describe a recent phonological process of Hungarian, which I maintain, is an interesting instance of a language tolerating non-native structures in its lexicon.

## **1 The typology of adaptation**

A typological difference can be assumed between languages depending on their ‘ability’ or ‘willingness’ to incorporate new elements. Before getting involved in discussing the nature of adaptation and starting to analyse adaptation peculiarities of different languages, the terminology to be used must be clarified.

I will call a language ASSIMILATING if it has a tendency to adjust a borrowed element according to its own phonological (phonotactic, morphophonological etc.) rules or constraints. The reason that motivates this term is a model that assumes a

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more or less homogeneous lexicon, to which all new elements are adjusted (assimilated), instead of being separated in a different stratum.

A language will be labelled as TOLERATING if it tolerates forms that do not in all respects conform to its phonological (again, phonotactic, morphophonological) requirements. Instead of assimilating borrowed elements into the 'homogeneous' lexicon, new layers are created for them. It is like a house with a porch, (where the house symbolises the core lexicon, and the porch represents the peripheral strata): new elements can wait on the periphery till their nativization is finished and they are allowed into the 'house'. I do not, of course, believe that there are clear examples of this or that type; we can only say that languages tend to have one feature more dominant than the other.

In Optimality Theory, FAITHFULNESS is group of demands which require the output form to differ from the input just as much as inevitably needed (cf. Rebrus 2001: 95). Faithfulness in this paper simply means that the form of a borrowed element in the receiver language should resemble the form in the source-language as much as possible. In other words, the source-form is considered the input, and the borrowed form the output. In tolerating languages, faithfulness is relatively high-ranked, i.e., it stands above certain native constraints. In this way, native constraints can be violated if, in return, faithfulness is obeyed.

Let us now consider what can be said about the adapting nature of different languages. English, for example, seems to have an assimilating tendency: it can be said that most elements becoming part of the vocabulary get totally assimilated to the phonological system of English (not without exceptions, of course). English does not 'house' any segments that are not in its phonemic inventory (the opposite is not very frequent; however, there are some languages to do that).<sup>1</sup> English does not violate any of its own phonotactic constraints in order to receive a word that has an ill-formed English cluster.

Presumably, towards the other end of this scale is Japanese (among others of course), whose phonological system cannot be formulated with the rules regarding the Japanese native vocabulary exclusively. Older and recent loanwords and mimetic (onomatopoeic) words in Japanese fall into different layers of the lexicon, (according to Itô & Mester 1995, see later). These layers or strata contain different constraints: one constraint being in force in one stratum seems not to operate in another. Itô & Mester (1995: 823) point out that the distribution of these constraints or restrictions is rather difficult to systematise: if we wanted to set up a model of the lexicon with concepts of set theory then we would find that the different layers cannot be represented as a diagram of concentric circles (symbolising a subset relationship between the different strata). Because of the different scopes of particular constraints—as mentioned above—plenty of overlaps would make the diagram very complicated. We do not, however, deal with the Japanese lexicon in this pa-

<sup>1</sup> Hungarian, for example, does not have a short low central unrounded vowel [a]. Still, it appears to be present in some non-assimilated foreign proper names and nouns, e.g., *Nastase* [nastase] instead of \*[nastose], *Kvó vadisz* ('Quo vadis') [kvo: va(:)dis] rather than \*[kvo: vōdis], and sporadically in some more or less nativized loans, e.g., %dzsihad, %dzsihád, \*dzsih[ɔ]d 'jihad'. Frequently used foreign names, however, are almost all pronounced with an [ɔ]: *Kant* [kɔnt], *Dante* [dɔnte]. Some would argue that it is the rate of nativisation—i.e., the length of time the elements are present in the language—, rather than the frequency of use, that is relevant (Péter Szigetvári, p.c.).

per. Primarily, we are going to concentrate on the case of Hungarian. (Note that Itô & Mester (1995) give a very detailed survey of the stratified lexicon of Japanese, concerning all the presumable layers.)

What is it then, that determines the nature of a language in terms of adaptation? It is suspicious that adapting ‘habits’ somehow have to follow from other typological specialities of a language but the concrete implications are not known. In the case of Japanese, it may be expected that the language tolerates more violations than, say, English does. This expectation is suggested by the strict phonotactic rules of Japanese, which, in fact, only allow a well-describable number of legal syllables and sound sequences. On the other hand, English, that has complex clusters, and allows basically all the major types of syllables (see among others, Rebrus 2001 : 90)—branching onsets and codas, light, heavy and superheavy syllables etc.—does not bear any phonotactic deviations. If a language formulates plenty of permissions ‘within its own structure’, in other words within the core lexicon *in one pattern* (say, syllable structure), then probably it does not admit violations to it *in another pattern* (e.g., phonotactics, morphophonology). If, however a language has strict rules and constraints that are ‘difficult’ to obey, then presumably, extra permissions are drafted in the periphery, so, constraint violations are permitted.

I must admit though that I have not studied enough languages to make strong generalisations of the above kind. I do not intend to give a detailed typological survey in this paper, still, even if the question raised cannot easily be answered, I maintain that the problem is thought provoking and deserves further elaboration and that the typology above is useful in determining the direction of further research.

## 2 *Csekkol*-type loans in Hungarian

In the second part let me turn to a fairly recent and marginal phenomenon of Hungarian morphophonology. Nádasdy (1989) in connection with another borrowing phenomenon—which will be examined in this chapter—uses the word ‘recent’ for loans that have been borrowed into Hungarian since the middle of the 18th century (Nádasdy 1989 : 195). In this chapter, ‘recent’—unless indicated otherwise—will refer to elements that have become part of the vocabulary in the last 50–100 years, but some of them are very fresh borrowings, introduced into Hungarian in the last two decades.

In present-day Hungarian some newly borrowed elements (most of them of English origin) seem to disobey the rules of Hungarian palatal harmony. All the elements to be examined are English verbs that receive a derivational suffix in Hungarian in order to fit the Hungarian verbal paradigm, which does not permit putting personal suffixes (not even if the personal suffix is present in the form of a zero allomorph, e.g., in 3rd person singular present tense indefinite conjugation) to the pure borrowed stem but a verbal derivational affix is needed. The suffix in point (*-ol*) has five allomorphs in Hungarian: *-l*, *-ol*, *-el*, *-al*, and *-öl*, where *ö* is used for a front mid rounded vowel, see the examples in (1):

- (1) *trombita* ~ *trombitál* 'trumpet' ~ 'play the trumpet'  
*hegedű* ~ *hegedül* 'violin' ~ 'play the violin'  
*nyár* ~ *nyaral* 'summer' ~ 'go for a holiday'  
*sí* ~ *síel* 'ski' ~ 'ski'  
*darab* ~ *darabol* 'piece' ~ 'cut into pieces'  
*kürt* ~ *kürtöl* 'horn' ~ 'blow a horn'

## 2.1 Hungarian vowel harmony

The following section gives a very brief summary of Hungarian vowel harmony. As this is a well-elaborated and frequently discussed area of Hungarian phonology (Vago 1980; Kornai 1990; Nádasy & Siptár 1994; Ringen & Vago 1995, 1998; Polgárdi & Rebrus 1998; Dienes 1997; Siptár 1999; Siptár & Törkenczy 2000; Rebrus 2000, etc. just to mention some of the most recent studies), I will neither go into details nor argue for or against particular theoretical frameworks that are claimed to be suitable for describing the phenomena of harmony—I will only discuss as much of vowel harmony as is needed for outlining a background for the analysis of the phenomena to be described.

Hungarian has 7 short and 7 long vowels:

	FRONT		CENTRAL	BACK
CLOSE	<i>i</i> [i]	<i>ü</i> [y]		<i>u</i> [u]
	<i>í</i> [i:]	<i>ű</i> [y:]		<i>ú</i> [u:]
CLOSE-MID		<i>ö</i> [ø]		<i>o</i> [o]
	<i>é</i> [e:]	<i>ő</i> [ø:]		<i>ó</i> [o:]
OPEN-MID	<i>e</i> [ɛ]			<i>a</i> [ɔ]
OPEN			<i>á</i> [a:]	

Hungarian is basically an agglutinating language and most suffixes to appear in the language have several allomorphs determined by the harmony. The simplified rules of harmony look like the following:

(a) If a stem contains back vowels only, then the suffix<sup>2</sup> has to contain a back vowel as well.<sup>3</sup> There are no exceptions to this either in the native or in the 'foreign' (borrowed or newly borrowed) vocabulary. Examples:

- (3) *asztal* 'table' *asztal+tól* 'from (the) table'  
*város* 'city' *város+ban* 'in (the) city', etc.

(b) If a stem contains a front round vowel as its last vowel then the suffix attached to it has to contain a front vowel, if the suffix is a 3-form suffix, its vowel has

<sup>2</sup> Here we do not distinguish between derivational and inflectional suffixes since both classes have harmonising 'members'.

<sup>3</sup> Note that there are suffixes that do not harmonise at all.

to be *ö* (that is, the vowel of the suffix undergoes both palatal and labial harmony; for a detailed discussion of this in a Government Phonology–Optimality Theory framework, see Polgárdi & Rebrus 1998). Examples:

- |     |                         |                                 |                                      |
|-----|-------------------------|---------------------------------|--------------------------------------|
| (4) | BASE                    | 2-FORM SUFFIX                   | 3-FORM SUFFIX                        |
|     | <i>sofőr</i> ‘driver’   | <i>sofőr+nek</i> ‘driver+dat’   | <i>sofőr+höz</i> ‘to (the) driver’   |
|     | <i>parfüm</i> ‘perfume’ | <i>parfüm+nek</i> ‘perfume+dat’ | <i>parfüm+höz</i> ‘to (the) perfume’ |
|     | <i>ökör</i> ‘ox’        | <i>ökör+nek</i> ‘ox+dat’        | <i>ökör+höz</i> ‘to (the) ox’        |

(c) If a stem contains a front unrounded vowel as its only vowel then a suffix with a front vowel is the unmarked case. There are several exceptions to this, however (about 60 items, Nádasdy & Siptár 1994: 103); these words are most often referred to as ANTIHARMONIC. In Ringen and Vago’s analysis these exceptional stems are assumed to have a floating [+back] feature, which ‘cannot associate with the root vowel’ (Ringen & Vago 1995: 314) but is able to influence the backness of the suffix vowel. The phenomenon is a crucial point in our discussion of recently borrowed elements, see later. Examples:

- (5) *híd* ‘bridge’    *hídon*, \**híden* ‘on (the) bridge’  
*héz* ‘rind’    *héjon*, \**héjen* ‘on (the) rind’

Note that there are elements other than nouns in this group:

- (6) ADJECTIVES:  
*híg* ‘runny’, *hígak* ‘runny-pl’
- VERBS:  
*szív* ‘smoke’    *szív+hat*, \**szív+het* ‘can/is allowed to smoke’  
*vív* ‘fence, fight’    *vív+hat*, \**vív+het* ‘can/is allowed to fight’

(d) If the last vowel of a stem is a front unrounded vowel but it is immediately preceded by at least one syllable containing a back vowel then the suffix contains a back vowel. Because in these cases the front unrounded vowels (*é*, *i*, *í*, and debatably *e*) behave as if they were transparent or non-existing in the word from the point of view of harmony, they are often called NEUTRAL or TRANSPARENT vowels. Examples:

- (7) *tányér* ‘plate’    *tányérban*, \**tányérben* ‘in (the) plate’  
*Zsuzsi* ‘Suzie’    *Zsuzsival*, \**Zsuzsivel* ‘with Suzie’  
*papír* ‘paper, sheet’    *papíron*, \**papíren* ‘on (the) sheet’

(e) The status of *e* mentioned above is problematic. Its behaviour is rather controversial and usually it is not considered a transparent vowel (Péter Rebrus, p.c., Dienes 1997: 157). When a two-syllable stem has *e* as its last vowel and the preceding

syllable contains a back vowel then the stem in many cases will vacillate which suffix allomorph to choose<sup>4</sup>—the one with the back or the front vowel. Examples:

- (8) *fotel* ‘armchair’    %*fotellal*/*%fotellet* ‘with (the) armchair’  
*mágnes* ‘magnet’    %*mágnessel*/*%mágnessal* ‘with (the) magnet’  
*farmer* ‘jeans’    %*farmerom*/*%farmerem* ‘my jeans’

We find that the situation is even more complicated if we have a look at the following data:

- (9) *haver* ‘buddy, pal’    %*haverral*/*%haverrel* ‘with (the) buddy’  
*fotelok/fotelek* ‘armchairs’    *haverok/??%haverék* ‘buddies’  
*%fotelom*/*%fotelem* ‘my armchair’    *haverom/??%haverem* ‘my buddy’

In the case of *haver* (and many other words), most speakers would not accept both forms of certain suffixes. That is, while some suffixes (like *-val*, instr.) can occur with vacillating forms of suffixes, others (for example, the plural suffix) seem to be acceptable with only one form. It is suspicious that it is not only the stems that should be labelled as ‘vacillating’ but also the affixes that alternate their vowels when being attached to a vacillating stem.

## 2.2 Vowel harmony and the different strata of the lexicon

### 2.2.1 Complex harmonic stems

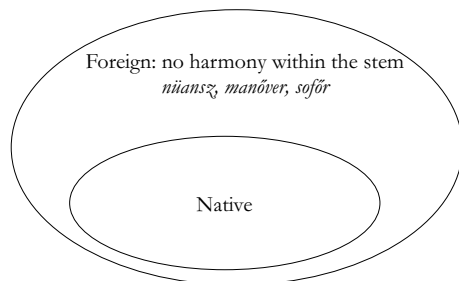
If we examine elements that have back vowels and front round vowels mixed (some of them are listed in point (b) above—with other words with a round vowel in the last syllable), we find that these words are not very old borrowings from different languages (French, Greek, cf. Nádasdy & Siptár 1994: 102). In the native stratum of Hungarian, stems of this type are not found: the phenomenon is usually analysed as vowel harmony operating within stems not allowing mixed stems containing front vowels other than *e*, *é*, *i* or *í*. Interestingly, the stems described in point (c) have been borrowed into Hungarian in the last 2–3 centuries as well.

If we want to set up a model of this phenomenon, similar to that of Itô & Mester (1995), it would look like (10).

Thus, words like *nüansz* ‘nuance’, *sofőr* ‘driver’, *attitűd* ‘attitude’, *amőba* ‘amoeba’, *parfüm* ‘perfume’, *kosztűm* ‘costume’ etc. would belong to the periphery of the diagram below. However, as apart from this one feature these elements all conform to the rules of Hungarian phonology (they have primary stress on their first syllable, in vowel harmony they behave like native elements in that they choose suffixes according to their last vowel, they undergo voicing assimilation ‘in the Hungarian way’) they can be labelled as [+foreign] in the lexicon, but this labelling does not have particular importance.

<sup>4</sup> A slash ‘/’ is used when both forms are accepted by most informants, ‘%’ means that part of the speakers finds one of the two forms ill-formed and uses the other one.

- (10) Mixed stems are forbidden to appear in the native stratum but permitted in borrowed elements.



### 2.2.2 Vacillating and antiharmonic stems

In the following section(s) the term ‘vacillating’ will be used for the stems described in point (e) and ‘antiharmonic’ will refer to those illustrated in point (d) above.

As we will see it, antiharmony is not a property of a closed class of the Hungarian vocabulary. Certain verbs borrowed from English receive a non-harmonising verbal suffix, although a harmonising allomorph of the verbal suffix does exist in the language. Examples can be seen below in (11). As these words are not very old borrowings and since their use is extremely marginal, there is no rule about their orthographical representation. For this reason, I will write their form in the regular Hungarian spelling as their pronunciation suggests, and use an IPA transcription in square brackets.

- |      |   |   |
|------|---|---|
| (11) | <i>(be)csekk-ol</i> [tʃɛk:ol]                       | ‘to check (in)’                             |
|      | <i>fidol</i> [fi:doɪ]                               | ‘to feed’ (as a linguistic term only)       |
|      | <i>blidol</i> [bli:doɪ]                             | ‘to bleed’ (as a linguistic term only)      |
|      | % <i>szévol</i> [se:voɪ] (also % <i>szével</i> )    | ‘to save’ (a computer file only)            |
|      | <i>fleppol</i> [flɛp:ol]                            | ‘to flap’ (as a linguistic term only)       |
|      | <i>renkol</i> [rɛŋkoɪ]                              | ‘to rank’ (usually as a linguistic term)    |
|      | % <i>klikkol</i> [klik:ol] (also % <i>klikkel</i> ) | ‘to click’ (as on the Internet only)        |
|      | <i>lexol</i> [lɛksoɪ]                               | ‘to lax’                                    |
|      | <i>flémol</i> [fle:mol]                             | ‘to flame’ (as a computing expression only) |

Here we mention two examples to be dealt with in §2.7: *szeccsöl* ‘to sketch’, *keccsöl* ‘to make useless efforts’. Note that the above examples can only be used in rather special environments with a narrowed meaning; most of them are technical terms. The sentences in (12) are pragmatically marked:

- (12) \**Fídtam/megfídtam a macskát.*  
‘I have fed the cat.’
- \**A fiatalember szévolta/megszévolta az életemet.*  
‘The young man saved my life.’
- ?\**Az igazgató renkolta a jelentkezőket.*  
‘The applicants were ranked by the director.’

Now let us examine what kind of phonological regularities can be found (if any) in the examples mentioned above. It is noticeable that the elements borrowed from English are all monosyllabic verbal stems. In Hungarian, it is impossible to borrow stems and put them into the verbal paradigm without providing a verbal suffix to them (e.g., *-ol*, *-oz(ik)*). Oddly enough, these verbs choose an allomorph of the verbal suffix containing a back vowel (*-o-*), which choice results in antiharmony (although the suffix in question is a harmonising one).

Note that there are plenty of newly borrowed elements of the same or similar type that take the same verbal suffix and do behave harmonically:

- (13) *hekkel* [hɛkːɛl] 'to hack'  
*denszel* [dɛnsɛl] 'to dance (informal style)'  
*reppel* [rɛpːɛl] 'to rap-sing'  
*printel* [printɛl] 'to print'  
*csetel* [ʃɛtɛl] 'to chat (on the Internet)'  
*netel* [nɛtɛl] 'to use the Internet'  
*webel* [vɛbɛl] 'to use the world wide web'

To account for these data I will review some findings about the behaviour of recent loanwords from the point of view of syllable structure.

### 2.3 The Heavy Syllable Requirement

If we look at the above data carefully, we can notice that, in fact, they can be divided into three groups.

GROUP 1 contains stems that disobey the rules of vowel harmony (*csekkol*, *renkol*, etc.).

GROUP 2 consists of elements of the harmonising type: *hekkel*, *reppel*, etc. but only the ones whose root-syllable is heavy.

GROUP 3 is the set of harmonising elements with a light syllable in the stem: *csetel* instead of \**csettel*, and *netel* instead of \**nettel*.

In his 1989 article, Ádám Nádasy shows that a great number of loanwords (most of them have been borrowed from German, more precisely, a certain urban dialect of German, Nádasy 1989: 201) became nativised in Hungarian obeying a kind of requirement which prefers heavy syllables to light ones. As a result of this requirement, plenty of monosyllabic loanwords ending in a single consonant preceded by a short vowel, geminate their last consonant even if it is not suggested by the spelling of the source-form (Nádasy 1989; Siptár 1994). (Note that Nádasy (1989) examines polysyllabic words as well, in which single intervocalic consonants in light syllables undergo gemination in many cases. Polysyllables seem to be less interesting in our case.) Interestingly, voiced obstruents have a special status in this phenomenon. Among monosyllabic words we hardly find any elements ending in a voiced obstruent which becomes geminated: the only frequently used example, which is not an acronym or abbreviation is [klubː] 'club'. Nádasy points out however, that there seem to be no real counterexamples either, 'since the voiced



obstruents are hardly ever found after a short vowel in recent borrowings' (Nádasdy 1989: 206). Here we list some of these counterexamples (many of them are very recent loans):

- (14) *drog* 'drug', *szkeg* 'fin', *tab* 'tab key', *szmog* 'smog', *log* 'log', *dog* 'mastiff, Great Dane', *blog* 'blog (short for 'biographical weblog')' etc.

He also mentions that there are some polysyllabic examples in which intervocalic voiced non-continuants do become geminated, cf. *hobbi* 'hobby', *rabbi* 'rabbi' etc. (Nádasdy 1989: 206), still, with voiced continuants no examples were found (though no counterexamples, either). Törkenczy (1989) examines the phenomenon from the point of view of syllable structure. He finds that in Hungarian, a branching onset followed by a non-branching nucleus requires a branching coda unless the coda-position is occupied by a voiced obstruent (Törkenczy 1989: 283). However, he does not discuss syllables with non-branching onsets.

Summarising what the two authors state in connection with the lack of gemination in the case of voiced obstruents we can say that there are not many monosyllabic examples with a non-branching onset in which gemination of voiced obstruents is observed (%*bo*[b:]) 'bobsleigh' and some acronyms cf. Nádasdy 1989: 206), while in the case of syllables having a branching onset, the gemination of voiced obstruents seems to be excluded.

The reason why this is interesting for us is that on the basis of the above, the classification of %*webel*/%*webezik* is not clear: it can be put in Group 3 mentioned above and then it has to be claimed that Group 3 has monosyllabic stems (with a light syllable) in it regardless of the voicing of the last consonant of the stem. Another possibility is to assume that it belongs to Group 2, that is, 'normally' it would behave as a monosyllable that obeys the Heavy Syllable Requirement, but having a voiced stop in its coda it is exempted from this requirement.

Of course, there are exceptions to the Heavy Syllable Requirement anyway, but the tendency is still observable in Hungarian when it comes to loanword adaptation. Nádasdy suggests that these elements (i.e., the ones that satisfy the requirement) be labelled in the lexicon as [+German], regardless of their actual etymology—since, in fact, the first elements to undergo gemination were of German origin. Later the 'tendency' was sort of transmitted to words borrowed from other languages—English, for example. Considering the *csekkol*~*hekkel*-type data, the tendency appears to be still operating but nowadays (in fact, in the past 2–3 years) it seems to be suspended in some cases, cf. *wapol* [vɔpɔl] instead of \*[vɔpɔ:l].

What is even more interesting from the point of view of stratification is that Hungarian basically does not have a requirement that demands syllables (or even monosyllable words) to be heavy. A good example to demonstrate this is the minimal pair *sok* ([−foreign]) 'many' ~ *sokk* ([+foreign]) 'shock'. Note that even though Hungarian does distinguish between short and long consonants, this distinction does not have a high functional load in the native stratum. There are plenty of minimal pairs of the above kind but in most cases, one member of these pairs—the one containing a geminate—is labelled [+foreign]:

- (15) *sok* ‘many’ ~ *sokk* ‘shock’  
*lak* ‘dwelling’ ~ *lakk* ‘varnish’  
*lap* ‘sheet’ ~ *lapp* ‘Lapp’

Counterexamples can be found as well: *hal* ‘fish’ [hɒl] ~ *hall* [hɒ:l] ‘hear’; but note that *hall* [hɒ:l] can also mean ‘hall’ in Hungarian.

On the basis of the above data, we are witnessing a strange phenomenon, namely, a peripheral stratum of the lexicon introducing a requirement, which is not known in the core-stratum. See sections 2.6 and 2.8 about this problem.

#### 2.4 Constraints never violated in Hungarian

Although it takes us somewhat far from the discussion of irregularities concerning harmony in loanwords, at this point it is worth listing at least some restrictions of Hungarian phonology/morphophonology that can never be violated even in the foreign stratum.

(a) Word stress in Hungarian falls on the first syllable *without exception*, regardless of the stress-placement of the foreign element in its source-language.

(b) \*-O/Ö#: Hungarian forbids words (more precisely, lexical items) ending in short *o* or *ö*. Siptár & Törkenczy (2000:61) mention that ‘foreign compounds’ whose first members are bound morphemes of usually of Greek or Latin origin, occur with a short *o*: *pszichoszomatikus* ‘psychosomatic’, *autoszegmentum* ‘autosegment’, *radioaktív* ‘radioactive’, *hiponímia* ‘hyponymy’ etc. However, when the first members of these compounds occur independently (with an independent meaning), their short *o* automatically becomes long: *pszichó* ‘psycho’, *rádió* ‘radio’, *hipó* ‘household bleach’, *autó* ‘automobile’ (note that — probably under the influence of *autó* — a lot of compounds containing *auto-* can occur with a long [o:] in pronunciation: %*autómata* ‘automaton’, %*autódidakta* ‘self-educated’, *autómobil* ‘automobile’).

(c) \*VVCC: In Hungarian, syllables with branching coda not divided by morpheme boundary can only contain a branching nucleus if the segment associated with the nucleus is [a:] or [e:]. Törkenczy (1994) claims that the domain of operation of this constraint is the morpheme rather than the syllable. A good example to demonstrate that \*VVCC is indeed a morpheme structure constraint is the word *piercing* which in Hungarian is pronounced with a short *i* in the first syllable. Since the word is a relatively new borrowing, however, \*VVCC has already operated in it, it can be assumed that the constraint is a very strict one, which holds in the periphery as well.

#### 2.5 Antiharmony and the Heavy Syllable Requirement: possible implications

At this point, it is reasonable to systematise our data concerning the Heavy Syllable Requirement and Antiharmony and see if any implications can be assumed on the basis of the operation of one or the other restriction in the examples. (16) below summarises the behaviour of the loanwords examined regarding the two constraints.

(16)	1	2	3	4	5	6	7
	CC[–voice]	C[–voice]	CC[+voice]	C[+voice]	CC[+voice]	[+heavy syll.] [+harmony]	[+heavy syll.] [–harmony]
	<i>csekk</i> <sup>5</sup>	<i>cset</i>	<i>klub</i> [b:]	<i>drog</i>	<i>meggy</i> [ʃ:]	<i>print-el</i>	<i>lex-ol</i>
	<i>stop</i> [p:]	<i>net</i>	<i>rig</i> [g:]	<i>tab</i>	<i>segg</i>	<i>densz-el</i>	<i>blid-ol</i>
	<i>sokk</i>	<i>wap</i> [vɔp]	?% <i>teg</i> [g:]	% <i>teg</i> [g]	<i>agg</i> (obsolete)	% <i>szév-el</i>	% <i>szév-ol</i>
	<i>matt</i>		<i>rabbi</i>	<i>szkeg</i>	? <i>fedd</i> (obsolete)		<i>renk-ol</i>
	<i>Cliff</i> [f:]		<i>hobbi</i>	<i>dog</i>			<i>fid-ol</i>
	<i>Pitt</i> [t:]		% <i>teddi</i>	% <i>tedi</i>			
	<i>vicc</i> [ts:]			<i>Fred</i>			
	<i>repp/rap</i> [p:]			<i>Brad</i>			
				<i>blog</i>			
				<i>web</i>			

Let me summarize the characteristics of the data in each group in the chart above:

Group 1 (CC [–voice]): this group consists of monosyllables that contain a geminated voiceless obstruent in the coda preceded by a short vowel. (The source language forms have single consonants.)

Group 2 (C [–voice]): monosyllables with a single voiceless consonant in the coda, preceded by a short vowel.

Group 3 (CC [+voice]): monosyllables having a geminated voiced obstruent coda preceded by a short vowel. For the sake of simplicity, words with intervocalic voiced geminates will be mentioned here as well.

Group 4 (C [+voice]): monosyllables with a single voiced obstruent in the coda, preceded by a short vowel.

Group 5 (CC [+voice], native): native monosyllables ending in a voiced geminate.

Group 6 ([+heavy syllable], [+harmony]): monosyllabic stems that have a heavy syllable but no geminated consonant in the coda of the stem syllable *and* receive a harmonic suffix in verbal derivation.

Group 7 ([+heavy, –harmony]): monosyllabic stems that have a heavy syllable but no geminated consonant in the coda of the stem syllable *and* receive a non-harmonising suffix in verbal derivation.

Group 1 in fact, causes no surprise: this phenomenon is summarised in Nádasy (1989).

Group 3 and 4 are also mentioned in Nádasy (1989) but with fewer examples. Some of the words, especially those in 4, although not all of them, are very recent borrowings. (A good example to illustrate the different behaviour of voiced

<sup>5</sup> Glosses: *csekk* 'check', *stop* 'stop', *sokk* 'shock', *matt* 'checkmate', *vicc* 'joke', *repp/rap* 'rap'; *cset* 'chat', *net* 'net, Internet', *wap* 'wap'; *klub* 'club', *rig* 'rig', *teg* 'tag', *rabbi* 'rabbi', *hobbi* 'hobby', *ted(d)i* (*mackó*) 'teddy bear', *drog* 'drug', *tab* 'tab key', *szkeg* 'fin', *dog* 'mastiff, Great Dane', *blog* 'blog, weblog', *web* 'the world wide web'; *meggy* 'sour cherry', *segg* 'arse', *agg* 'old', *fedd* 'rebuke'; *printel* 'print', *denszel* 'dance', *szévell/szévöl* 'save a file'; *lexol* 'lax', *blidol* 'bleed', *renkol* 'rank', *fidol* 'feed'.

and voiceless obstruents is the name of the film star *Brad Pitt* as pronounced by Hungarians. If his first name is used only (in, say, some TV-show) *d* is definitely short. However, the *t* in his family name is almost always pronounced long.)

Group 5 demonstrates that voiced geminated obstruents in coda-position of monosyllabic words hardly occur in the native stratum either. The constraint ruling out voiced obstruents in that position seems to be in force both in the native and the foreign stratum, allowing only a small number of exceptions.

Group 2 illustrates—though with very few examples—that the tendency of coda-gemination seems to be suspended in present-day Hungarian (note that they are much more recent loans than e.g., *csekkol*). It is hard to decide whether this suspension is reflected in some examples of Group 4 as well since the ‘alienating’ phenomenon described by Nádasdy (1989) and the small number of elements in Group 5 make it probable that voiced obstruents resist gemination very often.

Groups 6 and 7 list examples that contain a heavy syllable in the source languages as well.

## 2.6 Constraint ranking in the foreign stratum

In a constraint-based theory, \*LS (LIGHT SYLLABLES FORBIDDEN) could be proposed to capture the Heavy Syllable Requirement. (Note that this constraint does not affect the suffix itself: \**csekkollok*.)

There have been several attempts to approach Hungarian vowel harmony with the help of a single constraint only. What makes it rather complicated is that the rules of harmony have plenty of ‘regular’ exceptions, and thus these rules can be violated in different ways. For the sake of simplicity—and also because in the case of the borrowings examined harmony is violated in one predictable way—in the following section we will refer to this constraint simply as VOWEL HARMONY, and a deviation from it will be referred to as antiharmony unless otherwise indicated.

We have two constraints to be ranked in the foreign stratum: VOWEL HARMONY and \*LS. If we want to follow the hypothesis stated for the case of Russian and Kazakh by Holden (1976), we have to assume that the constraints are ranked according to the domain of their operation, that is, the greater the domain the constraint refers to the higher the given constraint can be ranked. For example, a constraint concerning a whole phonological word (e.g., vowel harmony in many languages) is ‘more important’, ranked higher than those that operate on a sound cluster or a syllable. In the following we will see that, according to the data in point, constraint ranking is rather difficult in Hungarian, if not impossible.

(a) If VOWEL HARMONY is ranked above \*LS as we expect regarding the size of the domains, then the forms like *csetel* should be optimal. However, in most cases, we have different surface forms: \**csekel*, \**fidel*, \**klipel* are all non-existing forms. Note that there are cases when \*LS cannot be violated at all because the source-form does have a heavy syllable anyway:

- (17) *to rank* > *renk-ol* \**rek-ol*, \**ren-ol*  
*to feed* > *fid-ol* \**fid-ol*

It can be seen that ranking VOWEL HARMONY above \*LS is only relevant when the borrowed form contains a light syllable which becomes heavy (by, in most cases, consonant gemination) in Hungarian.

(b) If \*LS is a more important restriction than VOWEL HARMONY—which is not expected on the basis of the domains—then the result will be the *csekkol*-type words.

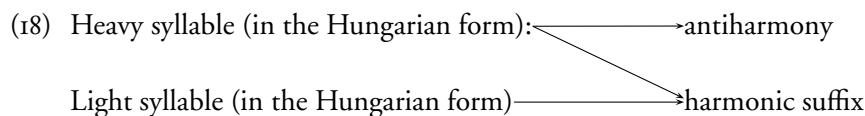
(c) However, a vast majority of the examples shows that both constraints are equally satisfied in some more or less assimilated words: *printel*, *hekkel*, *denszel*, etc.

On the basis of the data in (16), the following implications can be observed:

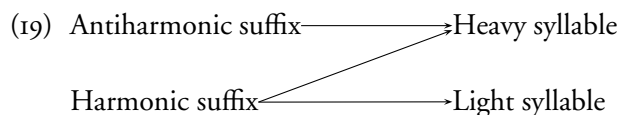
(a) If the stem contains a heavy syllable—disregarding whether it is found in the source-form as well or is the result of gemination in Hungarian—then it is impossible to predict whether the stem gets a harmonising or an antiharmonic suffix.

(b) If, on the other hand, the stem preserves its light syllable in the borrowing process, then it will receive a harmonising suffix. It has to be made clear, however, that because of the small number of data it is more secure to say that it is a tendency and one has to wait a few years before making stronger statements.

The above (quasi) implications are represented by the figure below:



From the direction of antiharmony, the following implications can be drafted:



If we examine the typological characteristics of Hungarian again, we find that as for the Heavy Syllable Requirement, Hungarian allows less forms on the periphery than in the core lexicon (native stratum). In other words, Hungarian is more permissive in the core stratum than in the peripheral stratum or strata. While both heavy and light syllables are well-formed in Hungarian in monosyllables, even with geminates in the coda (although most of them are sonorant geminates, cf. *hall* ‘hear’, *száll* ‘fly’), in the foreign stratum the heavy syllable is almost a must (disregarding the most recent loans which do well with their original light syllables, cf. *csetel*, *netel*). If we believe in the typology given the first part of this paper, then the behaviour of Hungarian in this respect is hard to explain. This fact does not ruin our hypothesis of a stratified lexicon in Hungarian, still, makes it rather complicated to represent the scopes of the different constraints—since, the Heavy Syllable Requirement (unlike many other constraints, e.g., vowel harmony) is applied to foreign words (and probably to onomatopoeic words) only. The only reasonable suggestion is maybe claiming that the foreign stratum in this case simply means ‘branding’ the

foreign elements (i.e., making them marked in a way) rather than permitting more constraint violations in them.

## 2.7 The role of analogy

One cannot account for the above data without making a comparison with another group of words that have not been mentioned so far. A group of earlier borrowings (typically of German origin) exhibits a similar tendency of antiharmony. In this section we try to reveal the similarities between the two groups (i.e., German borrowings and the later loans, most of which come from English) and try to find out whether the antiharmony observed in the later group can be explained with analogy.

(20)	% <i>stír-öl</i> /% <i>stír-ol</i>	'stare'
	<i>gründ-ol</i>	'found, collect'
	<i>riszt-ol</i>	'share (money)'
	<i>dekk-ol</i>	'wait' (original meaning 'retreat')
	<i>curükk-ol</i>	'draw back, move backwards'

Similarly to the more recent loanwords, most of these words are monosyllabic (except for *curükkol*) and all of them have a final heavy syllable. However, unlike the English loans examined earlier, some of these stems have a front rounded vowel as the last vowel: *curükkol*, *gründol*. (I have found no examples with a stem-final *ö*.) As we have seen earlier in point (c) in §2.2, all the native antiharmonic stems of Hungarian contain *i*, *í*, or *é*. Both the group of German loans and that of more recent English borrowings contain exceptions to this: in the English group there are words having an *e* in their stem, which is never found in antiharmonic stems in the native stratum (except for the word *derék* 'waist' whose last vowel shortens to *e* when certain suffixes are added to it). Moreover, the German group introduces *ü* as a possible vowel in antiharmonic stems.

The behaviour of the German group causes difficulties when trying to account for labial harmony. In the case of *stírol*, the presence of the *o* in the suffix can be explained as an antiharmonic feature, since the only [+back] form of the given suffix is the one containing an *o*.<sup>6</sup> But how can we account for the *-ö* in the alternative form *stíröl*? It is claimed that a [+front, +round] suffix can get its + value for the round feature from a [+round] vowel in the stem exclusively. (In the native stratum, a three-form suffix contains *ö* if and only if the last vowel of the stem is [+front, +round] (Nádasdy & Siptár 1994).)

Now the problem clearly is the absence of a round vowel in the stem *stír-*, which still gets a [+round] suffix. Moreover, it is hard to test, whether in these words the *-el* allomorph of the suffix ever occurs (there are no examples with the

<sup>6</sup> If we disregard *-al*, which is only attached to so-called lowering stems. The class of lowering stems (considering nouns) seems to be a closed class of the Hungarian vocabulary, apparently no loanwords can get into this group, which means that no borrowed form is allowed to choose this allomorph of the suffix. Note that all Hungarian adjectives and thus borrowed adjectives as well behave like lowering stems (with a few exceptions).

-*el* verbal suffix). What can be assumed here is that the default vowel is *-o* in the suffix, which is added an **I** (palatal) element (according to the autosegmental approach) without getting the **U** (labial) element to be delinked. This is a possible analysis of the odd behaviour of this stem; however, the stem has to be marked in the lexicon as exceptional, which—though non-round—chooses a round suffix. I also maintain that assuming a different suffix (suffix<sub>2</sub>) with only two allomorphs (*-oll-öl*) but with the same meaning can be a solution: however, in this way we still do not escape marking the stem somehow as one which chooses suffix<sub>2</sub> (with two allomorphs) instead of suffix<sub>1</sub> (with at least three allomorphs).

The German examples are relevant from our point of view because the behaviour of the ‘English’ group (the *csekkol*-type words) can be explained by assuming an analogical effect on them. It does not mean, of course, that the problem is solved since we still have no explanation for the peculiarities of the German group, but it deserves mentioning that the phenomenon is not at all new in Hungarian: it seems to be an odd but relatively frequent example of marking foreign elements. It also has to be made clear that in fact, from a descriptive aspect, the members of the two groups are very alike: most of them are monosyllables (except for *curükkol*), they contain a neutral vowel or *e* in the stem (except for *curükkol* and *gründol*), and the last syllable in the stem is heavy.

A few words have to be said about two examples mentioned earlier in this chapter: *szkeccsöl* and *keccsöl*. They get a verbal suffix containing the problematic *ö* although their stems contain no round vowels at all. Although we have no data about their first occurrence in Hungarian, it can be assumed that the abnormal behaviour of the suffix is due to analogy, motivated by the peculiarities of earlier German borrowings. Thus, one more similarity is found between the two groups: both have members that behave oddly concerning labial harmony as well.

## 2.8 Stratifying processes in Hungarian—a summary

In this paper we examined strategies of loanword adaptation in Hungarian. We looked thoroughly at one particular subgroup of the Hungarian lexicon: the one containing words that fail to obey Hungarian vowel harmony. To be able to describe this group, it was necessary to study some other peculiarities of adaptation in Hungarian, in the first place the Heavy Syllable Requirement (Nádasdy 1989). Our observations led us to the assumption that there might be some relationship between the behaviour of the words in point in terms of vowel harmony and syllable weight. A possible—and, unfortunately, very vague—implication was given in 2.5, according to which stems that behave antiharmonically end in a heavy syllable without exception.

It was mentioned that as regards the Heavy Syllable Requirement, Hungarian seems to behave unusually in terms of adaptation in that—at least in the case of this process—the ‘possibilities’ admitted on the periphery are more restricted than in the native stratum. In other words, introducing an extra restriction in the peripheral stratum, the language permits more structures (both heavy and light syllables) in the native vocabulary than in foreign words (where light syllables are ruled out in a lot of cases). Of course, this is an oversimplified description of the phenomenon which

has some other factors to consider. Also, we have only studied a very narrow group of borrowings, mostly words of German and English origin, thus, we are not in the position to say anything about loanwords from other languages. Nevertheless, this phenomenon in Hungarian forces us to revisit our typology drafted in the first part of the paper; and maybe modify it somehow in order to be able to account for such features that might occur in the case of other languages as well.

REFERENCES

- Dienes, Péter (1997) Hungarian neutral vowels. *The Odd Yearbook 1997*: 151–180.
- Holden, Kyril (1976) Assimilation rates of borrowings and phonological productivity. *Language* 52: 131–147.
- Itô, Junko and Armin R. Mester (1995) Japanese phonology. In: John A. Goldsmith (ed.) *The Handbook of Phonological Theory*, Cambridge, MA & Oxford: Blackwell. 817–838.
- Kiefer, Ferenc (ed.) (1994) *Strukturális magyar nyelvtan 2: Fonológia*. Budapest: Akadémiai Kiadó.
- Kornai, András (1990) Hungarian vowel harmony. In: István Kenesei (ed.) *Approaches to Hungarian 3: Structures and Arguments*, Szeged: JATEPress. 183–240.
- Nádasdy, Ádám (1989) Consonant length in recent borrowings into Hungarian. *Acta Linguistica Hungarica* 39: 195–213.
- Nádasdy, Ádám and Péter Siptár (1994) A magánhangzók. In: Kiefer (1994: 42–182).
- Polgárdi, Krisztina and Péter Rebrus (1998) There is no labial harmony in Hungarian: a government phonology analysis. In: Casper de Groot and István Kenesei (eds.) *Approaches to Hungarian 6: Papers from the Amsterdam Conference*, Szeged: JATE. 3–20.
- Rebrus, Péter (2000) Morfofonológiai jelenségek. In: Ferenc Kiefer (ed.) *Strukturális magyar nyelvtan 3: Morfológia*, Budapest: Akadémiai Kiadó. 763–947.
- Rebrus, Péter (2001) Optimalitáselmélet. In: Péter Siptár (ed.) *Szabálytalan fonológia*, Budapest: Tinta Könyvkiadó. 77–116.
- Ringen, Catherine O. and Robert M. Vago (1995) A constraint based analysis of Hungarian vowel harmony. In: István Kenesei (ed.) *Approaches to Hungarian 5: Levels and Structures*, Szeged: JATEPress. 307–319.
- Ringen, Catherine O. and Robert M. Vago (1998) Hungarian vowel harmony in Optimality Theory. *Phonology* 15: 393–416.
- Siptár, Péter (1994) A mássalhangzók. In: Kiefer (1994: 183–272).
- Siptár, Péter (1999) Hangtan. In: Katalin É. Kiss, Ferenc Kiefer and Péter Siptár *Új magyar nyelvtan*, Budapest: Osiris Kiadó. 293–390.
- Siptár, Péter and Miklós Törkenczy (2000) *The Phonology of Hungarian*. Oxford: Oxford University Press.
- Törkenczy, Miklós (1989) Does the onset branch in Hungarian? *Acta Linguistica Hungarica* 39: 273–272.
- Törkenczy, Miklós (1994) A szótag. In: Ferenc Kiefer (ed.) *Strukturális magyar nyelvtan 2: Fonológia*. Budapest: Akadémiai Kiadó. 273–392.
- Vago, Robert M. (1980) *The Sound Pattern of Hungarian*. Washington DC: Georgetown University Press.