

## ISSUES IN HUNGARIAN PHONOLOGY: PRELIMINARY QUERIES TO A NEW PROJECT

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### 0. Preliminaries

This paper was originally written as a 'reminder' for participants of a Hungarian Phonology Project launched in 1987 at the Linguistics Institute of the Hungarian Academy of Sciences. It raises a few issues that the present authors think are to be discussed and tentatively agreed on before the project gets under way. Some of these issues are genuinely open, others are apparently settled but not in what we think is the proper way. In what follows, we are going to give a sketchy account along the lines we think we should proceed in some cases; in others, we merely raise the problems. As this paper was originally conceived of as internal discussion material, references are omitted throughout.

### 1. Transcription

To begin with the most basic technicalities, we are going to suggest a transcription system for Hungarian. Only 'broad' sound types are going to be dealt with here; how to represent finer distinctions—if and when these are needed in a **phonological** discussion—will be left for the individual authors to decide. We have tried to make the suggested transcription system conform to the following desiderata:

a) It should be easy to type. Reduce to minimum the symbols that a conventional typewriter cannot produce. Hence e.g. the vowels in *hat* 'six', *vet* 'cast' are to be written simply as /a/ and /e/, respectively; the roundness of *a* and the openness of *e* will be understood by convention. (In phonetic transcription, where needed, they may be represented as [ɔ], [ɛ].)

b) It should be kept similar to Hungarian orthography. Thus, we suggest /j/ for the consonant in *jó* 'good', similarly /ö/ and /ü/ for the rounded front vowels.

c) American tradition, rather than British/IPA conventions, should be followed. The literature of modern phonology uses the former, including major

treatments of Hungarian (like Hall or Vago). Thus e.g. the consonants in *só* 'salt', *cső* 'tube' will be written as /š/, /č/.

d) The symbol /c/ is ambiguous and should be avoided. In the literature, it is used either for the initial consonant of *cél* 'aim' or that of *tyúk* 'hen'. The first squares with Hungarian orthography (e.g. *cél* = /ce:l/) but is on the whole less widespread, and brings in an asymmetry with respect to *dz* (cf. *léc* - *lécből* 'lath/of lath') since the latter can only be represented as /d<sup>z</sup>/ at best. (/ʒ/ is another possibility for *dz*; but it is ambiguous—IPA /ʒ/ = our /ž/, does not resemble the orthographic symbol, and cannot be produced on a typewriter.) The second interpretation (i.e. *tyúk* = /cu:k/) is so much at odds with Hungarian orthography that it is a constant source of misunderstanding. Our suggestion is /t<sup>s</sup>e:l/, /t<sup>y</sup>u:k/.

e) There are five consonants that we think are best represented by compound symbols: /t<sup>y</sup>, d<sup>y</sup>, n<sup>y</sup>; t<sup>s</sup>, d<sup>z</sup>/. The second letter is raised in order to

- (i) make sure that the 'one segment - one letter' principle is observed, at least in terms of non-raised characters. Thus, *koca* 'sow' is represented by four symbols: /kot<sup>s</sup>a/ since the raised character does not 'count';
- (ii) make it possible to represent differences as in *rácáfol* 'refute' vs. *átzálló* 'junction': /ra:t<sup>s</sup>a:fol/ vs. /a:t<sup>s</sup>a:l<sup>o</sup>:/ (or -/llo:/).

Once /t<sup>y</sup>/ is introduced, *gy* = /d<sup>y</sup>/ and *ny* = /n<sup>y</sup>/ follow (as in Vago); this looks satisfactory to us. The reason why the letter *y* is preferred to *j* is that /t<sup>j</sup>/ etc. suggest palatalized dentals; /t<sup>y</sup>/ etc. would also if the palatal semivowel were represented as /y/ but we have already discarded that possibility. Symbols like /t<sup>j</sup>/, /d<sup>j</sup>/ might also be proposed, but then /ŋ/ would result for the palatal nasal which looks too much like the conventional symbol for the velar nasal. (/ɲ/ would be better but this is not easy to reproduce on most typewriters.)

It is somewhat unfortunate that the affricates are not represented in a uniform manner (/č/, /j/ vs. /t<sup>s</sup>/, /d<sup>y</sup>/); this might be avoided by using /t<sup>š</sup>/, /d<sup>ž</sup>/ for the palato-alveolars, but the loss in simplicity is not sufficiently made up for by the gain in transparency, especially that the symbols /t<sup>š</sup>/, /d<sup>ž</sup>/—strictly speaking—misrepresent the place of articulation for the initial portions of these affricates.

In the tables below the proposed transcription system is summarized; along with the phoneme symbols, some major speech sounds (of doubtful status) are also included. Phonetic symbols are only given where they differ from the corresponding phonemic characters. It should be noted, however, that in most cases simple orthographic forms can also be quoted; transcription should

be restricted to cases where the conventional orthography would be misleading or inadequate.

### Vowels

Letters	Phonological transcription	Phonetic symbols	Alternative symbols used in other works
a	/a/	[ɔ]	[ɒ]
á	/a:/	=	—
hardver	?	[ã]	[a]
arra	?	[ɔ:]	[ã], [ɒ:]
ajánl	?	[ã:]	—
e	/e/	[ɛ]	[æ]
é	/e:/	=	—
gyerek	?	[ë]	[e]
erre	?	[ɛ:]	[ë]
i	/i/	=	—
í	/i:/	=	—
o	/o/	=	—
ó	/o:/	=	—
ö	/ö/	=	[ø], [œ]
ő	/ö:/	=	[ø:]
u	/u/	=	—
ú	/u:/	=	—
ü	/ü/	=	[y]
ű	/ü:/	=	[y:]

## Consonants

Uncontroversial: p b t d k g  
 f v  
 m n l r

The rest:

Letters	Phonological transcription	Phonetic symbols	Alternatives in other works	Examples
sz	/s/	=	–	
z	/z/	=	–	
s	/š/	=	/ʃ/	
zs	/ž/	=	/ʒ/	
cs	/č/	=	/tʃ/	
dzs	/j/	=	/dʒ/, /ʒ/	
c	/tʰ/	=	/ts/, /c/	
dz	?	[dʒ]	/dz/, /ʒ/	
ty	/tʸ/	=	/c/	
gy	/dʸ/	=	/ʒ/	
ny	/nʸ/	=	/ɲ/	
h, ch	/h/	[x]	– [ç]	ihlet, pech, technika
h, ch	/h/	[h], [ɦ]	– [x]	hír, gólyahír, Bach, machinál
j, ly	/j/	[j]	/y/	jó, pálya
j	/j/	[ç]	–	kapj

Length: double consonant symbols (see below); e.g.

*reccs* /rečč/ ‘crack’      *adta* /atta/ ‘he gave it’  
*hattyú* /hatʸtʸu:/ ‘swan’      *látja* /la:tʸtʸa/ ‘he sees it’  
*vicces* /vitʰtʰeš/ ‘funny’      *lesz* /less/ ‘will be’

Devoicing (for sonorants): subscript circle, e.g. [ɾ̥].

Stress: vertical stroke before the syllable (if necessary): /ˈmajd el ˈpustult/ ‘he almost died’.

Further examples:	<i>kétsoros</i> /ke:tšoroš/ 'double-breasted'
<i>pác</i> /pa:t <sup>s</sup> / 'pickle'	<i>barackból</i> /baradzgbo:l/ 'from peach'
<i>csurran</i> /čurran/ 'spill'	<i>csekélység</i> /čeke:jše:g/ 'trifle'
<i>gyöngy</i> /d <sup>y</sup> ön <sup>y</sup> d <sup>y</sup> / 'pearl'	<i>átjött</i> /a:tjött/ 'he came over'

## 2. Long consonants or geminates?

Vowel length, then, will be indicated by a colon, including /a/-/a:/, /e/-/e:/.

2.1. However, we suggest that consonant length should be indicated by doubling. One of our reasons is a practical one: Hungarian orthography—as well as that of many other languages—does exactly that. As a phonological issue, consonant length is trickier: do we have, in *olló* [ol:o:] 'scissors', a geminate (/ollo:/) or a long /l:/ (/ol:o:/)?

2.2. Does the place of the syllable boundary have anything to do with this issue? One type of reasoning says that whenever a geminate is 'ambisyllabic' in the loose sense that its first 'half' closes one syllable and the second opens another, we have a cluster of two identical consonants (/ol-lo:/); whereas if all of it is in the same syllable—a state of affairs that may only arise word finally in Hungarian—it is a single long consonant (e.g. *ott* /ot:/ 'there'). This might as well be true, but it would bring chaos to our phonological transcription—notice that *ott* /ot:/ would then differ from *ottan* /ottan/ 'id.' or *ott is* /ottis/ 'there, too' in transcription (and, by implication, in analysis).

2.3. Does consonant shortening/lengthening help?

	Long		Short
1.	<i>ott</i> 'there' [t:]	<i>ott van</i> 'it is there'	[t]
2.	<i>csöpp</i> 'drop' [p:]	<i>csöppnyi</i> 'a little'	[p]
3.	<i>írott</i> 'written' [t:]	<i>írt</i> 'wrote'/'written'	[t]
4.	<i>lobban</i> 'flare' [b:]	<i>lobog</i> 'blaze'	[b]

As the examples suggest, the same morpheme may appear with a long consonant in some cases, and with a short consonant in others. This is mostly a mechanical consequence of phonetic context (i.e. the result of a rule of neutralization): in examples 1 to 3 above the long version must be underlying, and shortening automatically applies next to another consonant. In example 4, however, it appears that we also have a lengthening rule: this is triggered by the suffix *-An*, hence the change is morphologically conditioned here. (Autosegmentally speaking, we might suggest that the instantaneous suffix is of

the shape  $-CAn$ , where C denotes an empty (unassociated) consonant slot, and A is a low vowel unspecified for backness that regularly undergoes vowel harmony; as the suffix is attached to stems like *lob-*, *poty-*, *csöp-*, the segmental matrix ('melody') of the stem final consonant will spread onto the empty consonant slot of the suffix.) However, *potty* 'plop', *csöpp* 'drop' end in long consonants in isolation as well. Is it perhaps the case that we do not have lengthening before  $-An$  but, rather, shortening before  $-Og$ ? But then how can that shortening be accounted for? (Notice that *kattog* 'clatter', *csattog* 'flutter', *brummog* 'growl' etc. do not shorten.)

Now if we interpret the alternations above as 'double /tt/ vs. single /t/' rather than 'long /t:/ vs. short /t/' , we cannot speak about shortening/lengthening but we have to recognise consonant deletion/insertion instead. I.e., *csöpp* will 'drop' one of its /p/'s before  $-nyi$ , and *lob* will 'acquire' another /b/ before  $-An$ , etc. This looks rather distressing from a taxonomic phonemic point of view. In traditional generative terms, on the other hand, there is nothing wrong with a rule like

$$C_i C_i \rightarrow C_i / Y \text{ --- } Z$$

for the shortening (i.e. degemination) cases and the opposite for lengthening (gemination). Coindexing is a rather powerful notational device, however; in more recent versions of generative phonology it is avoided, if possible. Hence, the only remaining formal possibility (short of  $C \rightarrow [-\text{long}] / Y \text{ --- } Z$ ) is the autosegmental solution

$$\begin{array}{ccc} C & C & \rightarrow C / Y \text{ --- } Z \\ \swarrow & \searrow & | \\ & & X \end{array}$$

Notice that in the autosegmental framework the whole dilemma discussed in this section reduces to a mere notational issue. Whether we transcribe a geminate as /t:/ or /tt/, what it really is, on this view, is  $\begin{array}{c} C \quad C \\ \swarrow \searrow \\ t \end{array}$ , i.e. a

single segment on the melodic tier associated with two timing slots, hence it is **both** a 'long segment' and a 'geminate' at the same time. It is still distinct—in principle, if not in Hungarian surface forms—from a 'cluster of identical consonants',  $\begin{array}{c} C \quad C \\ | \quad | \\ t \quad t \end{array}$ , see below.

$$\begin{array}{c} | \quad | \\ t \quad t \end{array}$$

2.4. What happens on concatenation of morphemes? How does the [t:] in *matt* 'unpolished' differ from [t:] in *maradt* 'remained'? Phonetically, they are identical. Grammatically, however, they are quite distinct: the last two consonants of *maradt* are separated by a morpheme boundary. The fact that, on the surface, *matt* and *maradt* form a perfect rhyme (end identically), is due to (voice assimilation and) a very late (postlexical) rule saying that two adjacent identical consonant segments will appear on the surface as a single long consonant. Schematically, this rule could be written as

$$/C_iC_i/ \rightarrow [C_i:]$$

or else, in autosegmental terms (of course, *maradt* is not the proper example here since Voice Assimilation already creates a linked structure; the rule, however, is still needed for cases like *hattól* 'from six'):

$$\begin{array}{ccc} \overset{\vee}{C} & C & \longrightarrow & C & C \\ | & | & & \vee & \\ X & X & & X & \end{array}$$

The derivations then run roughly as follows:

	Underlying:	/marad+t/	/matt/
1. Voice Assimilation:		maratt	-
2. Long Cons. Formation:		marat:	mat:
	Surface:	[mərət:]	[mət:]

The rule of LCF is obligatory and context-free (it neutralizes the distinction between /tt/ and /t:/). Since it is postlexical, it also applies across word boundary, cf. *matt* = *maradt* = *hat tojás* 'six eggs' = *vad táj* 'wild scenery'. [In fact, it may not even be a language specific rule of Hungarian: it is one of the possible outcomes of the universal OCP (obligatory contour principle)]. Hence, we may safely opt for the type of transcription (and phonological analysis) that represents the pre-LCF stage (i.e. /tt/ etc.) in morpheme-internal cases as well.

2.5. Are vowel length and consonant length analogous?—The rule of LCF (actually, its possible counterpart 'LVF') does not apply to vowels:

<i>leesik</i> 'fall of'	↯	*[lɛ:šik], *[lɛ:šik]
<i>bantuul</i> 'in Bantu'	↯	*[bɒntu:l]
<i>ki indít</i> 'who starts'	↯	*[ki:ndi:t]

(However, a vowel degemination rule may apply in fast speech, merging two adjacent identical short vowels into one **short** vowel, with the output being one syllable rather than two.)

That is, in vowels the distinction /ii/ vs. /i:/ is well founded (they do not get neutralized), in consonants the distinction /tt/ vs. /t:/ is spurious (they get neutralized). For consonants, practical (cf. 2.1) and theoretical (cf. 2.4) considerations both favour the notation (and analysis) /tt/. (By contrast, in phonetic transcription we will retain [t:] to suggest the effect of LCF. Hence we are also able to indicate occasional cases where the LCF fails to apply. This normally happens with affricates (across word boundary): *Tóth Tamás* [-t:-] but *Gács Csaba* [-čč-] <proper names>, except in fast speech where [-č:-] is also possible.)

2.6. In sum: long vowels are better treated as independent entities ('phonemes') since /ii/ ≠ /i:/. Doubling the whole inventory of consonants, however, is superfluous and pointless. Anybody who wants to claim that Hungarian has fifty, rather than twenty-five, distinctive consonant phonemes will soon bump into Occam, coming with razor in hand.

### 3. Vowel length: SLH or ECH?

In present-day Hungarian, vowel length shows a certain degree of variability. The point of this section is not simply to draw attention to this fact—it is generally known anyway—but to propose that, in phonological discussion, the variants that actually occur in educated speakers' normal pronunciation should be taken as a point of departure. In other words, it is not literary/stage/radio pronunciation (Standard Literary Hungarian) and—even less—the naturally obsolete orthographic forms that we should consider the type of data to be accounted for, but rather what can be labelled Educated Colloquial Hungarian, i.e. our own speech. Of course, this does not only apply to vowel length; but this is a rather appropriate example given that the differences are easier to pin down in this area. Consider the following:

Spelling	SLH	ECH	Gloss
	(obsolete)	(= normal, unmarked)	
<i>fiú</i>	†/fiu:/	/fiu/	boy
<i>tetű</i>	†/tetü:/	/tetü/	louse
<i>házból</i>	†/ha:zbo:l/	/ha:zbo/	from the house
<i>hegyről</i>	†/hedʷrö:l/	/hedʷröl/	down the hill
<i>óvoda</i>	†/o:voda/	/ovoda/	nursery school
<i>vízi</i>	†/vi:zi/	/vizi/	water (adj.)
<i>árbot</i>	†/a:rbotʰ/	/a:rbo:tʰ/	mast

We are aware that this decision will introduce a lot of uncertainty, even controversial data, into our discussions. It would be much easier to simply confine ourselves to literary pronunciations as they appear in a conventional dictionary. But isn't it equally clear, especially to phonologists, that the real data are not to be found in dictionaries? Therefore, we propose that actually occurring ('colloquial') forms should be considered to be the norm—at least in cases where the differences are obvious—and literary pronunciation should only be mentioned for completeness' sake, if at all.

#### 4. Marginal vowels

In this section, we will give a brief overview of issues concerning the phonological status of unrounded short [ä], mid [ɛ], as well as long [ɔ:] and [ɛ:].

##### 4.1. Unrounded short [ä] (IPA [a])

Unrounded [ä] appears on the surface (apart from regional dialects) in the following cases:

(i) In nonfinal closed syllables it is the normal (colloquial) realization of /a:/, as in *általános* [ältɔla:noš] 'general', *vásárváros* [va:šárva:roš] 'market town'; in certain phonetic contexts with vacillation (where the postlexical shortening rule concerned is optional/rate-dependent): *áttekinthető* [át:ɛkinthetö:] ~ [a:tɛkinthetö:] 'perspicuous'.

(ii) Also with [ä] ~ [a:] free variation in words like *Svájc* 'Switzerland', *spájz* 'larder', *Mozart* (here, however, 'free variation' means inter-speaker variability rather than intra-speaker vacillation).

(iii) On the other hand, [ä] ~ [ɔ] (inter-speaker) variation is found in words like *gavott* 'gavotte', *hardver* '(computer) hardware', *Csajkovszkij*

'Tchaikovsky', and in *halló* [hálo:] 'hullo' as used in phone calls (where classical minimal pairs can also be found for both [ɔ] and [a:]: *haló* 'dying' vs. *hal* [ã] 'hullo' vs. *háló* [a:] 'net').

The question that arises at this point is what the phonological status of all these [ã]'s can be. There are a number of convincing arguments to the effect that /a/ behaves morphophonologically as a nonround vowel (cf. the length alternation /a:/ ~ /a/ and the vowel harmony alternation /e/ ~ /a/; in both cases an intermediate nonround low back vowel is derived that surfaces via an /a/ → [ɔ] realization rule). Since the rounding of /a/ is phonologically irrelevant (non-distinctive), and phonetically rather moderate as opposed to mid and especially high back vowels (though this does not weigh much in phonology), it is at least possible to claim that /a/ is in general (i.e. not only in the alternating cases) underlyingly nonround. (Consider a parallel case: the centrality of [a:] and the fact that in terms of tongue height it is lower than [ɔ] or [ɛ] are just as redundant phonologically as the roundness of [ɔ] is; consequently, although phonetically it is central and 'lower low', in the phonological pattern of Hungarian it behaves as a low back vowel. Hence, in the roundness of [ɔ] also proves irrelevant, the *a* ~ *á* alternation will fit the rest of the pattern where alternants only differ in length (cf. 4.2 on *e* ~ *é*).)

Now if we accept this reasoning, the following can be said about the three groups of surface [ã]'s exemplified above:

(i) In addition to the morphophonological rule /a:/ → /a/ (*nyár* ~ *nyara* 'summer' nom./acc.), followed by rounding adjustment /a/ → [ɔ], there is also a surface (postlexical) shortening rule that will of course be applied (much later than rounding adjustment and whose output will therefore remain unrounded).

(ii) For speakers who say [špájz] etc., underlying nonround /a/ will be a (lexical) exception to rounding adjustment in these words; for other speakers the lexical representation is /špa:jz/ to which shortening or rounding adjustment will of course be inapplicable.

(iii) The word *halló*—and, for some speakers, the set of words belonging to this category—is exceptional in that it will be (optionally or categorically) exempt from the rounding adjustment /a/ → [ɔ]. (Alternatively, in terms of underspecification theory, garden-variety /a/ will be underlyingly unspecified for rounding whereas the vowel in *halló* etc.—and *spájz* etc. for [ã] speakers—will be specified as [-round]; rounding adjustment would then be a 'fill-in rule' in that it cannot change feature specifications, only fill in blanks; the desired result then follows without any rule exception feature.)

In sum: if these conjectures are on the right track, nonround /a/ is not 'marginal'—in fact, it is one of the most loaded elements of the Hungarian vowel system; what is marginal is the range of cases where it surfaces unaltered.

#### 4.2. Short mid [ĕ] (IPA [e])

The case of mid [ĕ] is in some respects similar to that of [ă], in others it is quite different. On the surface it appears with regional/cultural restrictions (i.e. in certain regional varieties): its use is much wider than that of—dialectal!—[ă], but does not include standard Hungarian in the strict sense. (The postlexical shortening of /e:/ as in the second syllable of *keményiség* 'hardness' results in a vowel tenser than [ĕ], just like that of /o:/ and /ö:/; that is, [ĕ] and [e:], [o] and [o:], [ö] and [ö:] differ not only in length but also in tenseness.)

If, in standard Budapest Hungarian, [ĕ] does not appear even to the limited extent that [ă] does, why do we mention it here? The reason is that Hungarian morphophonology works as if there was an /ĕ/ in the system. The nonround member of the alternation  $o \sim \ddot{o} \sim e$  (at the level of the immediate output of the rule) is mid, whereas the front member of the alternation  $\acute{a} \sim \acute{e}$  and the long member of  $e \sim \acute{e}$  (*kefe* ~ *kefét* 'brush' nom./acc.) are low (at the same level), hence an  $e/\acute{e}$ -adjustment (redundancy) rule is needed to convert such derived  $e$ 's into a low, and derived  $\acute{e}$ 's into a mid (and tense) vowel. These facts, however, are still not sufficient to justify an underlying /ĕ/, unless the ambiguous behaviour of  $e$  in vowel harmony could be explained by positing mid /ĕ/ along with low /e/ (but this is a long story, and we are not going to discuss it further here).

#### 4.3. Long [ɔ:], [ɛ:]

Along with the surface shortening rule mentioned in the previous two sections, there are surface lengthening rules as well. 'Pause-substituting' (hesitational or phrase-final) and emphatic lengthenings do not convert short vowels into their long counterparts; rather, they either leave vowel quality unaffected or modify it in another direction (e.g. emphatic *ooolyan* 'so much' with an  $o$  opener than usual, whereas long /o:/ is closer/tenser than /o/). Other types of surface lengthening will produce [i:] out of /i/, [o:] out of /o/, etc. For instance, names of letters and sounds are usually quoted in a lengthened version, e.g. *Ezt rövid [i:] -vel kell írni* 'This is spelt with short I', *A magyarban nincs rövid [o:] -ra végződő szó* 'There are no word-final short O's in Hungarian', etc.

However, such (surface) lengthening of [ɔ] and [ɛ] will produce [ɔ:] and [ɛ:] rather than [a:] and [e:]. (This can be explained simply by assuming that such lengthening takes place at a point where the adjustment rules mentioned

above have already applied.) For instance, the length of the initial vowels in *erre* [ɛ:rɛ] 'this way' and *arra* [ɔ:rɔ] 'that way' can be derived by compensator lengthening although, on a strictly taxonomical view, these are independent (micro)phonemes, cf. the minimal pairs *erre* 'this way'/'*ere* 'his vein', *arra* 'that way'/'*ara* 'bride': [ɛ:rɛ/ɛrɛ], [ɔ:rɔ/ɔrɔ].

The names of the letters/sounds *a* and *e* exhibit a curiously intricate pattern. The basic case can be observed in contexts like *nagy* [ɔ:-val írju] 'it is spelt with capital A', *kétféle* [ɛ:-vel beszél] 'he distinguishes two types of E in his speech', etc. (Minimal pairs can be found again: *a-hoz* [ɔ:hoz] 'to A' vs. *ahhoz* [ɔhoz] 'to that', *e-szer* [ɛ:sɛr] 'E times' vs. *eszer* [ɛsɛr] 'Social Revolutionary', *a-féle* [ɔ:fe:lɛ] 'of the type A' vs. *afféle* [ɔfe:lɛ] 'sort of', *e-bé* [ɛ:bɛ] 'into E' vs. *ebe* [ɛbɛ] 'his dog', etc.) On the other hand, the musical notes A and E are called [a:] and [e:], and the word *ábécé* 'alphabet' itself makes it likely that the name of the letter A used to be pronounced [a:] (Latin influence?). Letters used for identification show an even more chaotic picture: the bus 7/a is [he:t ɔ:], but a school class 7/a is [he:t a:] (although 7/e is [ɛ:] rather than [e:]); *A épület* 'building A' can be either [ɔ:] or [a:] but *épület* can only be [ɛ:]; in geometry, *a pont* 'point A' is either [a:] or [ɔ:] but *e pont* is always [ɛ:], etc. Abbreviations, if they are pronounced as a sequence of letters, contain [a:] and [e:] if A or E is initial (*AB* 'abortion committee', *EKG* 'electrocardiogram') but [ɔ] and [ɛ:] if final (*MTA* 'Hungarian Academy of Sciences', *BSE* 'Budapest Sports Club'). Those abbreviations that are read out as words (*USA* 'United States', *ELTE* 'Eötvös Loránd University') behave as normal words do: they end in short [ɔ]/[ɛ] which regularly undergoes Low Vowel Lengthening ([uša:bɔn] 'in the US', [ɛlte:röl] 'from ELTE'), hence they are uninteresting for our present purposes. What is much more interesting though is that [ɔ:] and [ɛ:] never undergo LVL: [ɛmte:ɔ:vɔl], not [ɛmte:a:vɔl] if the nominative is [ɛmte:ɔ:]. (See also the examples listed earlier in this paragraph.)

Now, are [ɔ:] and [ɛ:] to be regarded as independent (micro)phonemes or as rule-generated realizations of [ɔ]/[ɛ]? Cases like *arra* can be explained by (lexically conditioned) compensatory lengthening, despite (surface) minimal pairs. But if the name of the letter E is underlyingly a short /e/ (= [ɛ]), how can its surface lengthening block the application of a morphophonological rule like LVL (cf. *e-nek* [ɛ:nɛk] 'for E' ≠ *ének* [e:nɛk] 'song')?

### 5. Semivowels and diphthongs

According to the traditional classification, Hungarian /j/ is an obstruent, in particular, a fricative. This is not borne out by either its phonetic or phonological properties. Phonetically, the 'elsewhere' allophone of /j/ is a palatal approximant since no noise is generated as it is produced. There is one type of context where one of its fricative allophones appears: postconsonantal final position (before pause). Here, if the preceding consonant is voiceless, a voiceless (fortis) palatal fricative ([ç]) is pronounced: *kapj* 'get-IMP', *rakj* 'put-IMP', *döfj* 'stab-IMP'; if the preceding consonant is voiced, a lenis palatal fricative appears which, due to a very general and very late rule, loses most of its voicing but does not become fortis: *férj* 'husband', *dobj* 'throw-IMP', *szomj* 'thirst'.

Phonologically, /j/ cannot be an obstruent either; if it were, it should participate in voicing assimilation (cf. *ajtó* \*[ɔçto:] 'door', *fáklya* \*[fa:gja] 'torch').

5.1. But if /j/ is not a fricative, what is it? The offhand answer to this question is that it is a semivowel (glide). But then another question arises: are there diphthongs in Hungarian? Inaccurate questions deserve inaccurate answers: whether we answer yes or no, we miss some of the truth. The point is that we have to distinguish phonetic and phonological diphthongs. The existence of phonetic diphthongs is not a matter of analysis: it is a matter of fact. It is the phonological analysis of (phonetic) diphthongs (which unquestionably do occur in Hungarian utterances) where argumentation is necessary (or at all possible).

Now there are quite reliable arguments that there are no diphthongs in the phonological system of Hungarian. First of all: since /j/ may occur before/after almost any vowel, introducing diphthong-phonemes would almost triple the inventory of Hungarian vowels without the description gaining anything at all. Secondly, Hungarian 'diphthongs' never alternate with monophthongs (cf. English *crime/criminal* etc.). Further arguments are provided by the selection of the definite article before jV-initial words (*a játék* 'the game', \**az játék*) and the form of the instrumental suffix on Vj-final words (*vajjal* 'with butter', \**vajval*). Finally, the fact that /j/ can be geminated (as in *vajjal*) is in itself sufficient to exclude the possibility of a diphthongal analysis.

5.2. In short, jV and Vj sequences cannot be analysed as phonological diphthongs. But are there other types of diphthongs in Hungarian? There is one possible candidate left: *au* as in *autó* 'car', *augusztus* 'August', *tautológia* 'tautology', *kalauz* 'ticket inspector', etc. The first problem is whether *au* in such words is tautosyllabic or not. The intonation of yes/no questions indicates

that *autó* 'car' (for a substantial number of Hungarian speakers) is disyllabic (cf. *Megjött már az ↑au-↓tó?* 'Has the car arrived yet?', and not: *a-↑u-↓tó?*). However, the same test proves that *kalauz* is definitely trisyllabic; and it is inapplicable to *augusztus*, *tautológia*. Be that as it may, at least in *autó* (and presumably in all compounds in *autó-* or *auto-*, e.g. *autójavító* 'car repair shop', *automatizálás* 'automation') there is phonetic [ɔw] in at least some Hungarians' speech. This can be analysed phonologically in three ways: as a diphthong /aw/, as a vowel+glide sequence /a+/w/, or as a vowel sequence /a+/ɪ/ (with a—possibly optional—realization rule /u/ → [w] / a —). Which analysis is correct? Given the more or less marginal lexical load and the overall variability of the whole phenomenon, the third solution appears to be the most preferable; at any rate, the first possibility can be safely excluded, hence the last putative diphthong can be eliminated from the system.

**5.3.** Returning now to the question of how to classify /j/, we have seen that it is not an obstruent—but not the nonsyllabic portion of a diphthong either. Consequently, it will either be a glide or a liquid. Although traditionally the label 'liquid' (and the corresponding combination of major class features) is reserved for /l/ and /r/, there are good reasons to believe that the whole idea of 'glides' subsuming—in English—prevocalic /j/ and /w/ as well as the nonsyllabic portion of diphthongs like /aɪ/ and /aʊ/ is misguided in the first place. Hence, it appears feasible, even in English, to extend the category of 'liquid' (nonnasal sonorant consonants) to include prevocalic /j/ and /w/ along with /l/ and /r/ and reserve the category 'glide' (nonsyllabic nonconsonant) to the offglides of diphthongs. (Notice that the central postalveolar approximant [ɹ] and the palatal approximant [j] differ in place of articulation only; in all other respects (including distribution) they are completely parallel.)

In Hungarian, the solution sketched here is even less controversial: we are not aware of any argument that would diminish the appeal of a classification that recognizes six sonorant consonant phonemes in Hungarian: nasal /m n ŋ/ and nonnasal /l r j/; call the latter 'liquids' if a label is needed.

## 6. Palatalization

Let us define 'palatalization' as a phonological process in which a consonant is affected by a following palatal consonant, i.e. /j/, /tʲ/, /dʲ/, or /nʲ/. (In particular, let us exclude the fully automatic, low-level, non-neutralizing—and probably non-language-specific—type of 'phonetic palatalization' that is triggered by nonlow front vowels and /j/ and produces more or less palatalized

velars/dentals/labials as in *kín* 'torture' vs. *kút* 'well'. This will be classed as 'no palatalization' below.) In Hungarian, two major types (and several subtypes) of palatalization can be distinguished.

### 6.1. Lexical palatalization

There is, first of all, the grammatical (i.e. 'pre-phonological') palatalization of the *lát-lássa* 'see/let him see' type. This is non-neutralizing (as there is also *látja* 'he sees it'). We are not going to discuss this type here.

The classical, 'par excellence' type of palatalization is also triggered by /j/ but the result is a palatal consonant in the strict sense. This rule applies across certain types of morpheme boundary only, e.g.

*látjátok* [la:tʲ:a:tok] vs. *átjárok* \*[a:tʲ:a:rok]  
'you-pl. see it'                      'I (often) go through'

Such differences should provide an important criterion for determining the domain of application of a rule (i.e. whether it is lexical or postlexical).

What segments are palatalized by /j/? Labials and velars are immune to palatalization: *szomjas* 'thirsty', *bakjuk* 'their buck'. Consider next the behaviour of sibilants before /j/. Sequences like /sj/, /žj/ are fairly rare: their infrequent occurrence is partly due to the pre-phonological rules mentioned earlier in this section (cf. 8.4 on possessive -j-). But sibilant + /j/ sequences are not prohibited in general: *grizjellegű* 'farina-like', *Vászja* 'Vassya', *elegem van az uram "kuss"-jaiból* 'I am fed up with my husband's "shut up"s', *az amerikaiak a Nimitzjeikkel* 'the Americans with their Nimitzes'. Strictly phonologically, then, sibilants are not affected by /j/.

Finally, /r/ also refuses to undergo palatalization. Hence, the scope of the rule includes /t d n l/ and, vacuously, /tʲ dʲ nʲ/. Examples: *látja* [-tʲ:-] 'he sees it', *hidjuk* [-dʲ:-] 'their bridge', *bánja* [-nʲ:-] 'he regrets it', *vallja* [-j:-] 'he professes it', *bátyja* [-tʲ:-] 'his brother', *hagyja* [-dʲ:-] 'he allows it', *hányja* [-nʲ:-] 'he tosses it'. Lexical palatalization results in coalescence, i.e. mutual assimilation: the /j/ palatalizes the preceding segment and then gets fully assimilated to it (alternatively, palatality spreads leftwards and the rest of the features of the first consonant spread onto the /j/).

A minor asymmetry is introduced by the behaviour of /l/: instead of the expected long palatal lateral [-ʎ:-], we get [-j:-]. One way of accounting for this is to assume that palatalization produces intermediate *lʲ*, which is then phonetically interpreted by a rule *lʲ* → [j], e.g. /vallja/ → valʲʲa → [vɔj:ɔ]. Alternatively, /l/ → [j] can be directly built into the rule of palatalization.

## 6.2. Postlexical palatalization

This process, too, affects /t d n l/, this time before any palatal consonant, but there are several complications. Before turning to these, let us point out the most important difference between lexical and postlexical palatalization: the latter does not (in general) result in coalescence: *mit jelent* \*[mit<sup>y</sup>:ɛ-] 'wh does it mean', *van joga* \*[vɔn<sup>y</sup>:o-] 'he has the right to', *védjegy* \*[ve:d<sup>y</sup>:a-] 'trade mark'.

The simplest case involves noncontinuants both as target and as trigger: the (branch of the) rule that turns /t d n/ into [t<sup>y</sup> d<sup>y</sup> n<sup>y</sup>] before /t<sup>y</sup> d<sup>y</sup> n<sup>y</sup>/ is obligatory (automatic, exceptionless). Examples: *van gyufa* [vɔn<sup>y</sup> d<sup>y</sup> -] 'there are matches', *két nyúl* [ke:t<sup>y</sup> n<sup>y</sup> -] 'two rabbits'. (It is unclear, however, whether the cluster-initial consonants in words like *rongy* 'rag', *satnya* 'stunted' are underlyingly palatal, i.e. /ron<sup>y</sup> d<sup>y</sup>/, /šat<sup>y</sup> n<sup>y</sup> a/; or derived via this postlexical rule, i.e. /rond<sup>y</sup>/ → [ron<sup>y</sup> d<sup>y</sup>].) Cases like *hat tyúk* [hɔt<sup>y</sup>: -] 'six hens', *mi gyártanak* [mid<sup>y</sup>: -] 'what do they produce' appear to be counter-examples to our claim that postlexical palatalization does not result in coalescence. In fact, however, they are simply cases where LCF (Long Consonant Formation, see 2.4 above) applies to the output of Palatalization either directly (*hat tyúk*) or after Voice Assimilation (*mi gyártanak*).

It is before /j/ that the picture becomes somewhat blurred. For /t d/ it appears that the rule applies optionally: *mit jelent* [mit<sup>y</sup>jɛlɛnt] ~ [mitjɛlɛnt] 'what does it mean', *védjegy* [ve:d<sup>y</sup>jɛd<sup>y</sup>] ~ [ve:djɛd<sup>y</sup>] 'trade mark'. Similarly, /l/ remains unaffected in formal speech; in colloquial styles, however, full coalescence appears as in word-internal environments:

<i>hol jelent meg</i>	[holje-]~[hoj:ɛ-]	'where did it appear'
<i>hiteljuttatás</i>	[-ɛlju-]~[-ɛj:u-]	'granting of credit'
<i>fölgjön</i>	[följön]~[föj:ön]	'come up'

Even more colloquially, the /l/ can be simply dropped (with or without compensatory lengthening of the preceding vowel) before palatalization could apply. Before palatal noncontinuants, /l/ has the first and third options, but not the second:

<i>sült tyúk</i>	[šült <sup>y</sup> u:k]~[šü:t <sup>y</sup> :uk]	'roast hen'
<i>fél győzelem</i>	[fe:ld <sup>y</sup> ö:-]~[fe:d <sup>y</sup> ö:-]	'half-victory'
<i>elnyúlik</i>	[ɛln <sup>y</sup> : -]~[ɛ:n <sup>y</sup> u:-]	'lie prostrate'

It has been suggested in the literature that whether /lj/ coalesce postlexically or not depends on syntactic structure, stress, and the like. Whether cases like *angol játék* [-golja:-]~[-goj:a:-] 'English game' differ significantly from case

like *Az angol játszik* 'The Englishman is playing' remains to be explored. (We do not think they do.)

The behaviour of /n/ differs from that of /l/ in an interesting way. For instance: *argentín játék* [-tinja:-]~[-tī:ja:-] but \*[-tin<sup>y</sup>:a:-] 'Argentinian game'. Thus, /n/ behaves in dissimilar ways before /j/ within and across words. Postlexically, no palatalization takes place; in formal speech /n/ remains unaffected, whereas in colloquial speech something quite different happens: the rule of *n*-vocalization turns /n/ into nasalization before continuants (i.e. fricatives, *r*, *l*, *j*, and *h*, bleeding palatalization: cf. *bánja* [ba:n<sup>y</sup>:ɔ] 'he regrets it' vs. *Bán Jani* [bā:ɟni] (proper name).

## 7. How many affricates?

The number of affricates in Hungarian is somewhere between two and six. /tʃ/ and /č/ are definitely affricates in terms of their phonetic makeup, and phonologically they are obviously independent (= monophonematic) members of the inventory of phonemes. Their voiced equivalents, [dʒ] and [dž] are also undoubtedly affricates but their monophonematicity is less obvious. Finally, /tʃ<sup>y</sup>/ and /dʒ<sup>y</sup>/ represent the opposite case: there is no doubt as to their phonemic status, but what is questionable is whether they are affricates or not. Let us start with the latter issue.

7.1. The first question, then, is whether the two palatal obstruents are stops or affricates. Their surface realization may be affricate-like to a variable extent, depending on phonetic context. Before stressed vowels (*tyúk* 'hen', *gyár* 'factory') and word finally (*fütty* 'whistle', *vágy* 'desire') they are quite strongly affricated; before an unstressed vowel—especially for /dʒ<sup>y</sup>/ as in *magyar* 'Hungarian'—much less, and before an oral stop (*ágyba* 'to bed') not at all. The fricative component is usually absent before /r/ (*bugyrok* 'bundles'); before /l/ lateral release can be observed as with stops (compare *fátylak* 'veils' with *hátlap* 'reverse side'), and only under strong emphasis do we find a fricative component as with true affricates (cf. *vicclap* 'comic journal'). Of the nasals, /m/ may be preceded by slight affrication (*hagyma* 'onion'), but /n/ and /n<sup>y</sup>/ may not (*hagyna* 'he would leave some', *hegynyi* 'as large as a hill'). The degree of affricatendness depends further on style and rate of speech: in slow, deliberate speech it is much stronger than in fast or casual styles. This wide range of variables and varieties should raise our suspicion that we have basically stops here which, under the appropriate circumstances, get more or less affricated due to well-known physiological factors; notice that true af-

fricatives do not exhibit such extensive variability. Consider English /t/ as an analogous case: in some dialects and in some environments it is affricated into [tʃ]—but this obviously does not affect its place in the consonant system of English.

Yet, other facts seem to indicate that the affricate analysis has something to recommend it, too. In initial consonant clusters, /tʃ/ and /dʃ/ never occur as first members: /pr, pl, tr, kr, kl; \*tʃr, \*tʃl/; /br, bl, dr, gr, gl; \*dʃr, \*dʃl/; and very rarely as second members: /šp, sp, etc; \*štʃ/; but /stʃ/ as in *sztyeppe* 'heath'. The obvious explanation would be that they do not occur in initial clusters because they are not stops. However, it is more likely that this is an 'accidental gap' (except presumably \*/tʃl, dʃl/: cf. \*/tl, dl/) since almost all cluster-initial words are loanwords, they will not include segments/combinations that do not occur in the languages they are borrowed from. The existence of words like *sztyeppe* (as well as the fact that names like *Sztyepan* are not difficult for Hungarians to pronounce) seems to indicate that among sibilant + stop clusters, /stʃ/ is possible (though infrequent). (\* /sdʃ/ is of course impossible, just like \*/sb, sd, sg/.)

Returning to word internal /tʃ dʃ/, the pre-stop position offers another argument (beyond the fact that affrication is not generally found here, except in a very emphatic style). In such position, stops can be realized by their non-released allophones, e.g. *kapta* [kɒpˠtɒ] 'he got it', *rakta* [rɒkˠtɒ] 'he put it', whereas affricates obviously cannot, since they do not have such allophones: *bocskor* [boʃkor] (\*[boʃˠkor]) 'moccasin' *barack* [bɒrɒʃk] (\*[bɒrɒʃˠk]) 'peach'. Now, /tʃ dʃ/ are usually unreleased in this position: *hegytől* [hɛtʃˠtöl] (\*[hɛtʃˠtöl]) 'from the hill', *hagyd* [hɒdʃˠd] (\*[hɒdʃˠd]) 'leave it -IMP'; in some cases (before velars?) there is vacillation: *hetyke* [hɛtʃˠke] (~[hɛtʃˠke]) 'pert'. This property shows clearly that they pattern with stops. As a corroboration, consider a fact mentioned in 2.5 above: affricates are less prone to LCF (Long Consonant Formation) across word boundary than stops are, recall *Gács Csaba* vs. *Tóth Tamás*. Now if we look at phrases like *ramaty tyúk* 'decrepit wench', *nagy gyár* 'big factory', we find that LCF applies automatically and obligatorily—as it is expected for stops, as opposed to true affricates. This should not come as a surprise, given that a geminate stop is nothing else but a sequence of an unreleased and a 'normal' allophone of the same stop consonant.

In sum: /tʃ dʃ/ are palatal stops in Hungarian; in the appropriate phonetic contexts, under appropriate conditions in terms of stress, speech rate, and speech style, they get affricated, as is to be expected for physiological reasons and can be observed in other languages that have palatal stops. Their

defective distribution (\*#\_r, \*#\_l, \*#\_s\_ ) is not sufficient to disconfirm that they are stops.

7.2. Turning now to [d̂z], [d̂z̃]: here we have to consider if these are monophonemic affricates like [t̂s], [t̂s̃], or stop + fricative clusters. In terms of the transcription system proposed earlier in this paper, where the number of (non-superscript) symbols is meant to reflect directly the number of phonemes in a form, hence [t̂s] and [t̂s̃] are represented as /t̂s̃/, /t̂s̃̃/ respectively, our problem can be reformulated as follows: Does the consonant inventory of Hungarian include /d̂z̃/ and /j/ or are there /d-z/, /d-ž/ clusters in the words concerned?

7.2.1. The speech sound [d̂z̃] can come from three sources in Hungarian. It can be a voiced allophone of the phoneme /t̂s̃/ (*lécből* [le: d̂z̃böl] 'out of lath', *táncba* [ta: nd̂z̃ba] 'into the dance'), where obviously no underlying /d̂z̃/ is involved. It can occur in words like *pénz* [pe: nd̂z̃] 'money', *benzin* [bend̂z̃in] 'petrol'; here, however, we have /nz/ clusters where [d] is an inorganic, epenthetic segment like [p] in *szomszéd* 'neighbour', [b] in *oromzat* 'gable', [tʷ] in *München* 'Munich', etc. Finally, in words like *madzag* 'string', *bodza* 'elder', *pedz* 'nibble', [d̂z̃] can be analyzed in one of two ways (accepting the geminate analysis of 'long consonants'): either as geminate /d̂z̃d̂z̃/ → [d̂z̃:], cf. *vicces* 'funny' /t̂s̃t̂s̃/ → /t̂s̃/, or as /d-z/ → [d̂z̃:], cf. *játszik* 'he plays' /t-s/ → [t̂s̃:]. The first solution would involve positing a phoneme /d̂z̃/.

But this phoneme would have a rather skewed distribution: it would not occur word initially or postconsonantly at all; preconsonantly it would occur in a handful of suffixed forms; whereas intervocalically and finally (between vowel and word boundary) it would only occur doubled (long). This peculiar distribution, not found for any other member of the Hungarian consonant inventory, would be automatically explained by the cluster analysis (assuming an independently motivated realization rule converting a cluster of stop + sibilant into a long affricate). Let us consider what can be brought up against such an analysis.

7.2.2. Three types of possible counter-arguments come to mind. (a) The surface contrast between long affricates as in *madzag* 'string' and [d]+[z] clusters as in *vadzag* 'wild oats' shows that the former cannot be derived from an underlying cluster. (b) C<sub>i</sub>C<sub>j</sub>C<sub>k</sub> clusters (e.g. *kardvirág* 'cornflag') do not generally get simplified, whereas C<sub>i</sub>C<sub>i</sub>C<sub>j</sub> clusters (e.g. *keddre* 'by Tuesday') do. Given that a stem-final (long) *dz* is shortened before a consonant-initial suffix, it follows that it cannot be a cluster. (c) Words like *vakaródzik* 'scratch oneself' can have short

intervocalic [d̂z]; this makes the distribution less skewed and the 'independent phoneme' analysis more plausible.—Are these three counter-arguments valid?

(a) The phonetic difference between *madzag* 'string' and *vadzab* 'wild oats' ([d-z]) is totally parallel to that between *metszi* 'he cuts it', ([ts:]) and *hátszél* 'tail-wind' ([t-s]): in *vadzab/hátszél* internal word boundary (compound boundary) occurs between stop and fricative, and it is that boundary that blocks their coalescence into a single long affricate. Hence, any counter-argument based on surface contrast of the *madzag/vadzab* type is unfounded.

(b) Next to another consonant, all Hungarian long consonants get shortened (*sakktól* [šɔktol] 'from chess', *érvvel* [e:rve] 'with argument'); this applies to [d̂z:] as well (*edzve* [eđzve] 'being trained'). This, however, only proves that the immediate input to degemination is [d̂z:] (rather than a cluster); what it does not prove is that that [d̂z:] should go back to /d<sup>2</sup>d<sup>2</sup>/ and not /d-z/. Hence, this counter-argument fails, too.

(c) In words like *vakarószik* 'scratch oneself', there is free variation (for some speakers) between short [d̂z] and long [d̂z:] (as well as simple [z]). This seems to refute our claim above, i.e. that there are no intervocalic short [d̂z]'s. But free variation proves exactly that length is irrelevant in this position: in other words, no short:long opposition is possible here. Since in non-vacillating cases (*madzag*) it is always long [d̂z:] that occurs, it is quite easy to see that in words like *vakarószik* the segment in question is not short /d<sup>2</sup>/ but a long [d̂z:] whose actual length varies (tends to get reduced in long words like this) this [d̂z:], in turn, may just as well go back to a /d-z/ cluster. Hence, all three potential counter-arguments have turned out to be cases that can be easily accounted for in terms of the cluster analysis, too.

The existence of /d<sup>2</sup>/ as a phoneme, therefore, is not supported by any valid argument at all.

**7.2.3.** The case of [d̂ž], however, is different in that arguments for /j/ are more or less balanced by arguments for /d-ž/. Word initial occurrence (as in *dzsáma* 'a type of mosque', *dzsóker* 'Jolly Joker') points toward /j/, whereas the behaviour of word internal [d̂ž]'s is practically identical with that of [d̂z], thus supporting a /d-ž/ analysis. This ambiguity could be resolved, in principle, in three different ways.

1. We could assume that—obviously with the exception of assimilation cases like *rácsban* [ra:d̂žbɔn] 'in grating'—[d̂ž] always goes back to a /d-ž/ cluster. In this case, the scope of degemination should be extended to include word initial position. Since word initial geminates are impossible anyway, such

a redundancy rule (morpheme structure condition or surface phonetic constraint) is needed in any case—it should simply be allowed to operate during a derivation in which an offending representation is created by the coalescence of /d-ž/ into [d̥ž:].

2. Another possibility would be to claim that *dzsámi* 'jami' is /ja:mi/ but *hodzsa* 'hodja' is /hodža/; this would explain the ambiguity referred to above but would give /j/ a rather skewed distribution (and it would be impossible to decide whether *lemberdzsek* 'anorak' is /lemberjek/ or /lemberdžek/ (→ *lemberd̥žek* → [lɛmbɛrd̥žɛk]).

3. Finally, we could accept the view that [d̥ž] is /j/ everywhere; but then it is to be explained why its intervocalic (*menedzser* 'manager') and final (*bridzs* 'bridge (card game)') occurrences are invariably long (with a few exceptions like *fridzsider* [-id̥ži-] 'refrigerator' or *Roger Moore* [-od̥žɛ-]). It might be suggested that a kind of loanword gemination is at work here (cf. *dopping* /-pp-/ 'doping', *szvettler* /-tt-/ 'sweater', *sakk* /-kk/ 'chess', *meccs* /-čč/ 'football match'). This looks quite feasible for items like *menedzser* and *bridzs*; the trouble is that the layer of vocabulary including e.g. *hodzsa* 'hodja' does not exhibit this process, cf. *mecset* (\**mecset*, \**mecsett*) 'mosque', etc.

The first solution is technically neat and logically coherent; unfortunately, it does not conform to speakers' intuition and is rather abstract. What is more serious, /dž/ as an initial cluster does not fit the overall pattern of permissible initial clusters. Although the second and third solutions are less elegant (and open to the objections raised above), it appears that either of them—or, most probably, some kind of combination, e.g. the gradual diffusion of /j/ through the lexicon, to the detriment of earlier /dž/—is more realistic. Hence, although with certain misgivings, the interpretation of /j/ as an independent phoneme can be accepted.

**7.3.** In sum, the question in the title of this section can be answered as follows. The inventory of Hungarian phonemes includes three affricates: /tʰ/ as in *cica* 'kitten', /č/ as in *csúcs* 'peak', and /j/ as in *dzsem* 'jam'. Hungarian speech sounds further include three more affricates: [tʰç] as one of the allophones of the voiceless palatal stop /tʰ/ (*tyű!* 'phew!'), [d̥ç] as one of the allophones of the voiced palatal stop /d̥/ (*gyere!* 'come!'), as well as [d̥ž] as the coalesced (and then degeminated) realization of the cluster /d-z/ (*edzve* 'being trained'), as the voice-assimilated version of /tʰ/ (*kócból* 'out of hurds'), or as the result of the 'affrication' of /z/, i.e. the insertion of [d] before it in casual speech (*pénz* [-nd̥ž] 'money'). Just like any Hungarian consonant, these six speech sounds can also occur long (either as phonemic geminates or as coalesced clusters):

[t̃s:]	- /t <sup>a</sup> t <sup>a</sup> /	- <i>moccan</i> 'budge', <i>vicc</i> 'joke';
	/ts/	- <i>látszik</i> 'can be seen';
[t̃s̃:]	- /čč/	- <i>loccsan</i> 'splash', <i>reccs</i> 'crack';
	/tš/	- <i>szítsa</i> 'let him stir it up';
[d̃ž]	- /j̃j/~/d̃ž/	- <i>menedzser</i> 'manager', <i>bridzs</i> 'bridge';
[t̃ <sup>y</sup> ç:]	- /t <sup>y</sup> t <sup>y</sup> /	- <i>pottyán</i> 'plop', <i>füttty</i> 'whistle';
	/t <sup>y</sup> j/	- <i>bátyja</i> 'his brother';
	/tj/	- <i>látja</i> 'he sees it';
[d̃ <sup>y</sup> j:]	- /d <sup>y</sup> d <sup>y</sup> /	- <i>buggyan</i> 'spout up', <i>meggy</i> 'sour cherry';
	/d <sup>y</sup> j/	- <i>hagyja</i> 'he allows it';
	/dj/	- <i>védje</i> 'let him defend it';
[d̃z:]	- /dz/	- <i>bodza</i> 'elder', <i>edz</i> 'train (verb)' (since /d <sup>z</sup> / does not exist, geminate /d <sup>z</sup> d <sup>z</sup> / is also impossible; [d̃z:] can only arise through coalescence).

## 8. Linking vowels

The term 'linking vowels' seems to be overused (i.e. it refers to too many different things). We do not want to suggest that it should be avoided; rather we would like to restrict its scope to cases where the occurrence and quality of the inserted vowel is phonologically predictable (regular), e.g.

*partot* 'shore-ACC' *kertek* 'gardens' *fürtös* 'curly'

The vowels in bold face are 'default vowels' in the sense that they need not be fully specified, their quality follows from independent principles; hence v could have written

*partVt*                      *kertVk*                      *fürtVs*

or even

*part+t*                      *kert+k*                      *fürt+s*

since the mere presence of linking vowels is also predictable in such cases.

### 8.1. Lowering stems

The problem exemplified by words like *házat* 'house-ACC', *füles* 'long-eared' is that their 'linking vowel' is not the fully predictable (mid) default vowel as above (*\*házot*, *\*fülös*); rather, stems like *ház* 'house', *fül* 'ear' require

low vowel (*a*, *e*) before certain consonant-initial suffixes. (Notice that this distinction is another reason to assume mid, as well as low, *e*'s.) Another property that such 'lowering stems' have in common is that they always require epenthetic vowels, even if this is phonotactically not motivated (*házat*, not \**házt*; cf. *gázt* 'gas-ACC'). Although certain subregularities can be detected (e.g. 'shortening stems' like *nyár* 'summer', *kéz* 'hand' are always 'lowering' as well: *nyarat* 'summer-ACC', *kezet* 'hand-ACC'), the class of 'lowering stems' as a whole appears to be an arbitrary class; consequently, each of its members has to be lexically marked (it is a matter of technical detail whether this is done by 'rule features', 'floating autosegments', 'empty V slots', or some other device).

### 8.2. Multiple suffixes or multiple stems?

In an agglutinating language like Hungarian each suffix is a new stem in that it does not know what happened left of it. That is, when (say) the fourth morpheme is added to a complex word form, the properties of the immediately preceding (= third) morpheme are sufficient to determine what type of 'linking vowel' is required: the leftmost stem (the root) has nothing to do with it. For instance, *utasokat* 'passengers-ACC' is not the plural accusative of *utas* 'passenger'; it is the accusative of *-k* (the plural morpheme): ...-*kat*. Whatever went before is irrelevant. Similarly, *utasok* is not the plural of *utas* but that of *-s* (nominalizing suffix): ...-*sok*. This is, in fact, what agglutination is all about: it is always the immediately preceding item that a new suffix is attached to: there are no fused or synthetically inflected word forms.

Is this really true? Is it always the case that the left-hand environment is irrelevant for adding suffixation to a particular morpheme? Vowel harmony is an obvious counter-example—but then VH is a (lexical) phonological issue, not a morphological one. On the other hand, as far as the presence and height of 'linking vowels' is concerned morphemes are fairly independent in this sense. In *utasokat*, for instance, *ut-* 'road' is a lowering stem (cf. nominative *út* and 8.1 above on the correlation between shortening and lowering), *-s-* is a normal (non-lowering) stem, *-k-* is lowering again, and *-t* is not a stem since it cannot be further suffixed (it is an 'ending'). Hence *utAsVkAt*; similarly *fülAsVkAt* = /fülešeket/ 'ear+ADJ+PL+ACC'.

### 8.3. Linking vowels vs. vowel-initial suffixes

So far we assumed without discussion that linking vowels are epenthetic. Notice, however, that it is also possible to analyse them as part of the appropriate suffixes. For example, the accusative ending could be *-at/et/ot/öt*, with vowel

truncation after vowel-final stems (cf. *ház-at* 'house-ACC', *kert-et* 'garden ACC', *part-ot* 'shore-ACC', *füst-öt* 'smoke-ACC', *kapu-t* 'gate-ACC'). The quaternary vowel alternation could be accounted for by an appropriate extension of vowel harmony; vowel truncation, however, is a much less clear-cut matter than it might appear to be.

In particular, there seems to be a 'strength' continuum of linking vowels/suffix-initial vowels. At the weakest end, we find linking vowels of the 'classical' type: the vowels of the accusative, the plural, etc. never occur after vowel-final stems (hence it is possible—actually, preferable—to analyse them as epenthetic). The vowel of the superessive suffix is next on the strength scale: it looks like a linking vowel since it never appears after vowel-final stems: *karalábé-n* 'on kohlrabi', *kapu-n* 'on a gate', *fá-n* 'on a tree'—yet it cannot be epenthetic as it is always a mid vowel (i.e. it is 'strong' enough to override the lowering effect of 'lowering stems' cf. *ház-on* 'on a house', ...-*k-on* 'on ... plural'). Hence, the underlying form of the superessive suffix must be *-On* with a vowel that is truncated after all vowel-final stems, rather than *-n* with a linking vowel where necessary.

The adverbial ending *-An* is an example of the next degree of strength: the appearance of its vowel depends on the height of the stem-final vowel. The probability of truncation increases as we move from high to low stem vowels:

- |                  |                                                   |                                                                  |
|------------------|---------------------------------------------------|------------------------------------------------------------------|
| (a) high stem V: | <i>szomorú-an</i><br>'sadly'                      | <i>keserű-en</i> ~ <i>keserű-n</i><br>'bitterly'/'bitter' (adv.) |
| (b) mid stem V:  | <i>bántó-n</i> ~ <i>bántó-an</i><br>'offensively' | <i>kérdő-n</i> ~ <i>kérdő-en</i><br>'questioningly'              |
|                  | <i>forró-n</i><br>'hot' (adv.)                    | <i>kett-en</i> (cf. <i>kettő</i> 'two')<br>'two of them'         |
| (c) low stem V:  | <i>sántá-n</i><br>'limpingly'                     | <i>hülyé-n</i><br>'crazily'                                      |

The next higher degree of strength is represented by the adverbial ending *-Ul*; its vowel is never truncated, but the stem-final vowel is always retained as well: *urdu-ul* 'in Urdu' *csacsi-ul* 'foolishly', *kutyá-ul* 'as (sick as) a dog'.

Finally, the verbalizing suffixes *-Ul*, *-ít* begin with the strongest type of vowel; here, it is the stem-final vowel that is dropped (if it is weak enough, i.e. low): *béna* 'paralysed' – *bén-ít* 'paralyse' – *bén-ul* 'get paralysed', *hülye* 'crazy' – *hüly-ít* 'make crazy' – *hüly-ül* 'get crazy'. If, however, the stem final vowel is also too 'strong' (?) to be truncated an epenthetic *-s-* helps resolve the problem: *forró* 'hot' – *forró-s-ít* 'make hot' – *forró-s-ul* 'get hot', *minő* 'what quality' – *minő-s-ít* 'qualify (sg)' – *minő-s-ül* 'qualify (as)'.

#### 8.4. Possessive -j-

The presence vs. lack of possessive -j- in 3sg is somewhat analogous to the linking vowel issue. After palatals and sibilants there is no -j-: *ágya* 'his bed', *kénye* 'his pleasure', *gáza* 'his gas', *háza* 'his house', *húsa* 'his meat', *cucca* 'his clobber'. This is an overriding regularity. Elsewhere, however, lowering stems appear to correlate with non-j-stems:

	Lowering stems			Normal stems	
	ACC	3sg poss		ACC	3sg poss
'foot'	<i>lábat</i>	- <i>lába</i>	'marsh'	<i>lápót</i>	- <i>lápja</i>
'ear'	<i>fület</i>	- <i>füle</i>	'net'	<i>tüllt</i>	- <i>tüllje</i>
'picture'	<i>képet</i>	- <i>képe</i>	'garden'	<i>kertet</i>	- <i>kertje</i>
'coal'	<i>szenet</i>	- <i>szene</i>	'gene'	<i>gént</i>	- <i>génje</i>

It might be suggested that -jA is productive and the -A class is closed/archaic; this would make a nice correlation with the archaic/non-productive character of the A-declension (lowering stems). Unfortunately, a number of counter-examples exist:

	Lowering but -j-			Normal but non-j-	
'dish'	<i>tálat</i>	- <i>tálja</i>	'damage'	<i>kárt</i>	- <i>kára</i>
'tub'	<i>kádat</i>	- <i>kádja</i>	'number'	<i>számot</i>	- <i>száma</i>
			'beer'	<i>sört</i>	- <i>söre</i>
			'root'	<i>gyököt</i>	- <i>gyöke</i>

Couldn't we save the system somehow?

#### 8.5. Summary

The term 'linking vowel' should be restricted to default vowels; a general rule can be formulated to account for the occurrence of these. The rest of the phenomena mentioned in this section deserve further study since they represent a substantial portion of Hungarian morphophonology.

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