Hungarian Glide Rules and Consonant System

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1. INTRODUCTION
Firstly, in section 2, I give the Hungarian glide rules, i.e. rules describing the
rises, changes and specifications of glide allophones. The only exception is a
palatalization rule that has, however, a certain importance for the alternation
h ~ x. The scrutiny of allophones and allophony creating rules continues in
section 3 with nasal assimilations, after which the Hungarian consonant system
is presented.

2. THE HUNGARIAN GLIDE RULES
2.1 Glide rules involving voice
If the imperative-conjunctive suffix j in word-final position directly appends
to a verbal stem with final consonant p, f or k, it is devoiced, as in e.g. lopj
[bpj] ‘steal!’, döfj [dcefj] ‘stab!’ and csukj [tfukj] ‘shut!’. As the three
consonants are the only voiceless segments occurring before the suffix at this
point in the derivation, Vago 1980:34 offers the following natural rule to
account for the alternation:

(1) \( j \)-voicing assimilation

\[
\begin{array}{c}
\text{-syll} \\
\text{-cons} \\
+\text{high} \\
\text{-back}
\end{array} \rightarrow [\text{-voice}] / [\text{-voice}]
\]

(Word-final \( j \) is devoiced following a voiceless segment.)
Vago’s next rule describes the voicing of another glide:

(2) /z-voicing assimilation

\[
\begin{array}{c}
-\text{voc} \\
-\text{cons} \\
+\text{high}
\end{array} \rightarrow [+\text{voice}] / [+\text{voice}] \quad [-\text{voice}]
\]

(/h/ becomes voiced between voiced segments.)

The glide /h/ becomes voiced /h/ intervocally – as in fehér [fehːɐɾ] ‘white’ – and following a sonorant – as in konyha [kɒnˈja] ‘kitchen’. Between a voiceless consonant and a vowel, /h/ is voiceless /h/ – as in göthős ‘weak-chested’ – and likewise in word-initial position – három had [həɾ mɒ] ‘three armies’ – and after an obstruent – Nagyhind [nɒːgɨhɪnd] ‘<place in Czechoslovakia>’. Voicing assimilation – where /h/ devoices the obstruent – ought to precede (2). It would be possible to write a simpler devoicing rule for /h/ instead:

(3) /h-devoicing

\[
\begin{array}{c}
-\text{voc} \\
-\text{cons} \\
+\text{ler}
\end{array} \rightarrow [-\text{voice}] / [-\text{voice}] 
\]

(/h/ becomes devoiced after a voiceless segment or a pause.)

In this rule, I make use of the non-segmental view of distinctive features earlier advocated in e.g. Olsson 1987c. The specification [-voice] before the context dash therefore embraces both pauses and segments. It is evident that rules (1) and (3) may be combined into a more general devoicing rule:

(4) Glide devoicing

\[
\begin{array}{c}
-\text{voc} \\
-\text{cons} \\
-\text{ent} \\
+\text{hi}\text{gh}
\end{array} \rightarrow [-\text{voice}] / [-\text{voice}] \quad [-\text{voice}]
\]

(/h/ is devoiced after voicelessness and /j/ is devoiced surrounded by voicelessness.)

The phoneme /j/ occurs, except in the imperative-conjunctive suffix, only with at least one neighbouring vowel. As I (Olsson 1989) specify prevocalic

/\ as a glide and /\ is voiced in all positions – even e.g. initially: váll ‘shoulder’ – it must be stated that the anterior glide is not affected.

The analysis / \rightarrow /h/ should be rejected since rules (1) and (2) can be combined in a much more satisfying way than (1) and (3). The rule can be stated as follows:

(5) Glide voicing assimilation

\[
\begin{array}{c}
-\text{cons} \\
-\text{voc}
\end{array} \rightarrow [+\text{voice}] / [+\text{voice}] \quad [-\text{voice}]
\]

(Glides assimilate in voicing to a directly surrounding, voice homogenous context.)

The phoneme /h/ does not occur within a voiceless context and the changing segment thus must not be specified as [-ant]. The problem with this rule is that Hungarian glides – /j/, /v/ and /h/ – behave in a certain way when being next to a consonant. Before a true consonant they cause epenthesis and, similarly, /v/ is liable to voicing assimilation before an obstruent. On the other hand, there is no epenthesis before a glide and /v/ does not cause a preceding obstruent to assimilate. I explain these facts in Olsson 1989 with the following rule:

(6) Glide strengthening

\[
\begin{array}{c}
-\text{cons} \\
-\text{voc}
\end{array} \rightarrow [<-\text{son}>] / [<-\text{son}>]
\]

(Glides become consonantic before non-syllabic segments and, similarly, /v/ becomes an obstruent before an obstruent.)

As (6) stands, it becomes troublesome to state (5). The /h/ in e.g. sahok [saˈhoːk] (</sah+k/ ‘shahs’) must be consonantic in order for epenthesis to take place – before it is voiced by (5). It would be quite simple to change the input in (5) – (for the sake of simplicity the /j/ in kapj ‘get!’ should then be consonantic and (6) also admits this specification), but the rule is more general as it is due to the basic features in the input. With the help of the following rule, replacing (6), one may keep (5):
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\[
\begin{align*}
\text{[\text{-cons} & \rightarrow \text{[\text{+epenthesis}} \text{]} / \text{[\text{-syll}} \text{]}]} \\
\text{[\text{-voc} & \rightarrow \text{[\text{voicing assim}} \text{]} / \text{[\text{son}} \text{]}]} \\
\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\t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(9) $h$-deletion

$h \to \beta / -[\text{syl}]$

With features not bound to segments, the following rule will work:

(10) $h$-deletion II

$h \to \beta / -[\text{syl}]$

($h$ is deleted before consonant and pause.)

The nouns *doh* 'must' and *potroh* 'insect’s abdomen' is according to Vago not liable to undergo $h$-deletion: *[dɔx(ɔnɔk)], [dɔʃɔk)], [pɔtrox(ɔnɔk)], [pɔtroʃɔk]. Word-finally and before a consonant, /h/ is realized as /x/ after a back vowel and as /g/ after a front vowel, e.g: *jacht* [joxt] 'yacht' and *ihlet* [iʃlɛt] 'idea, inspiration'. Vago posits the following rule for the alternation:

(11) $h$-fricative assimilation

\[
\begin{array}{c}
\text{[[-syl]]} \\
\text{[[-cons]]} \\
\text{[[-high]]}
\end{array} \quad \begin{array}{c}
\text{[[+cons]]} \\
\text{[[-high]]}
\end{array}
\]

(Before # or C, /h/ becomes the velar fricative /x/ after a back vowel, and the palatal fricative /g/ after a front vowel.)

The consonantic character of the phoneme is strengthened before consonant or pause, as in (7). The difference is that (11) works at morpheme level and (7) over the morpheme boundary. Vago thinks that a special rule is needed, where the fricative assimilates the $h$-sound in (/doh+vel/ $\to$ doxhal $\to$ doxxal ‘with must’ (an earlier rule assimilates the initial v in suffixes to the preceding consonant):

(12) $h$-assimilation

\[
\begin{array}{c}
\text{[[-syl]]} \\
\text{[[+cont]]} \\
\text{[[+high]]} \\
\text{[[-cons]]} \\
\end{array} \quad \begin{array}{c}
\text{[[-syl]]} \\
\text{[[-high]]}
\end{array}
\]

(/h/ becomes /x/ or /g/ after resp. /x/ or /g/, respectively.)

Actually, the generation /doh+vel/ $\to$ doxval $\to$ doxxal is just as possible and the rule will then only be needed to generate *pęch* [pęcː] 'bad luck' from /pehh/. Otherwise, Vago must assume in his analysis an ach-phoneme besides the $h$-phoneme. Sticking to the rules, /pehh/ must, finally, get the marking [-h-deletion].

Abondolo 1985 assumes that the ach-variety is an underlying voiceless geminate, which is shortened by the general degemination rule when next to a consonant. E.g.: *krach* [krɔxː] ‘financial collapse’, *krachnak* [krɔmɔnk]. A voiced obstruent voices it according to the voicing assimilation rule: *krachba* [krɔxbɔ], *pęchbe* [pęxbɛ]. To mark voice, I use stung symbols (x (= IPA y), q; as in certain runic alphabets), since IPA at this point is difficult to follow (for reasons of legibility).

It appears that there are a number of stems with a final long ach-sound. The consonant is always preserved prevocally: *almanack* [olmɔnɔxː] ‘(literary etc.) year-book’ and in the accusative *almanachot* [olmɔnɔxɔt]. They would feed (12), but having two rules changing $h$-sounds into ach-sounds is not especially neat. A combination of the two rules would look as follows:

(13) $h$-consonantization

\[
\begin{array}{c}
\text{[[-voc]]} \\
\text{[[-cons]]} \\
\text{[[-high]]}
\end{array} \quad \begin{array}{c}
\text{[[+cons]]} \\
\text{[[-syl]]}
\end{array}
\]

(Before [-syl], /h/ becomes a velar fricative.)

Rule (13) applies iteratively, making derivations like *[olmɔnbɔh] $\to$ [olmɔnbɔhɔ] $\to$ [olmɔnɔxɔt]. An alternative rule would produce $h$-sounds from underlying /x/ (since *doh* and *potroh* have ach-sounds before pause – and thus block the deletion rule – we can not replace [+syl] in the context with [-cons]):
The rule, that applies also over a morpheme boundary, is comparable in simplicity to (13). On the other hand, the ach-sounds occur in very few stems and the /;-deletion (10) would, besides, have to be restated as a less natural deletion:

(15) x-deletion

\[ x \rightarrow \emptyset / [-\text{syll}] \]

(x is deleted before a consonant and a pause.)

The rule does not work intra-morphemically and therefore does not affect e.g. jacht. I have taken from (11) the assimilation to the preceding vowel which also affects the back stops k and g: they turn into k' and g', respectively, in contact with a front vowel (Vago 1980:45 says that the palatalization in stops is a trivial fact, but the same would then be the case for the fricatives). The rule may be written as follows:

(16) Palatalization of back consonants

\[ [+\text{cons}] / [-\text{back}] / [-\text{back}] / [+\text{syll}] \]

(Back consonants get fronted next to a front vowel.)

3. THE HUNGARIAN NASAL ASSIMILATIONS

The only remaining allophones all emanate out of the nasal assimilations. Underlying m and n change into a labiodental before f and v, e.g. szenvedély [semvœdj] ‘passion’, nyáron volt [najronvolt] ‘it was in summer’, hamvas [hœmva] ‘ashy; down-soft’, nem veszélyes [nœmveseje] ‘not dangerous’, nem fagyott [nœmfajût] ‘not freezing’. Vago 1980:33 gives the following rule:
At least some of the assimilation rules apparently have to do with the same process. Rules (17) and (19) can be united in a simple way:

\[(21)\]  
\[
\begin{array}{c}
\text{\ [+nasal]} \\
\text{\ [-high]}
\end{array} \rightarrow [\text{\ [place]}]/\begin{array}{c}
\text{\ [+lab]} \\
\text{\ [-cont]}
\end{array}
\]

\(/m/ \text{ and } /n/ \text{ become } /ny/ \text{ before } /f/ \text{v/ and } /m/ \text{ before } /p\ b\ m/.

The reason why Vago does not perform this combination is surely that he regards (17) as an allophonic rule and (19) as something completely different — a phonemic rule. I have, however, no need for this distinction. The new rule can straightforwardly be combined with (18):

\[(22)\]  
\[
\begin{array}{c}
\text{\ [+nasal]} \\
\text{\ [-high]}
\end{array} \rightarrow [\text{\ [place]}]/\begin{array}{c}
\text{\ [+lab]} \\
\text{\ [+high]}
\end{array}
\]

\(/m/ \text{ and } /n/ \text{ become } /ny/ \text{ before } /f\ v/ \text{ and } /m/ \text{ before } /p\ b\ m/.

It may be noted that (21) covers, in addition, the assimilation of \(n\) in (20), which thus might be questioned (vid. Olsson 1987a:36). The clear cases of nasal assimilations are thus described by a rule (cf. Abondolo 1985:54 for less general processes).

3. THE HUNGARIAN CONSONANT SYSTEM

It is now possible to describe the Hungarian consonant system. Below is a chart of the allophones. I have (as usual) given place and manner of construction on one axis each and the values for the more basic features are explicitly given:
It is evident that the second chart gives a simpler and neater configuration. The number of rows is only 10 and underlying glides are voiced sonorants. The stops, moreover, each correspond to one voiceless fricative, the voiceless fricative row is complete and a greater symmetry arises between the labial and back columns. The simplicity criterion thus speaks in favour of underlying x and I therefore assume the fricative to be the underlying form. A simplification would be to reduce the liquid rows to one — where r ends up one step behind l (cf. Olsson 1987b:48). The liquid row could be united with the glide row, as these segments each occupy positions in different columns and the glides and liquids share the property of having the same value for [consonantic] as for [vocalic]. Another possibility would be to put the glides in the same row as the voiced fricatives, which they also resemble. However, the presented system is simple, agreeable and fruitful.

A merger between palatal and palatoalveolar affricates would mean a certain simplification in the phoneme system. Until quite recently (Lazar 1982:1), these sounds actually merged in Felsőr (Oberwarten). In the csángó dialect, the place of articulation for coronal affricates and fricatives has merged (Lazar 1982:11), which reduces the number of columns in the chart.

I have not given the long consonants, as it is uncertain to what extent length is phonematic (Olsson 1987b:48). A number of generalizations can be made, though. Initially and next to a consonant, geminates do not occur. The allophones of x show as we have seen characteristic traits as regards length. Two consonants only occur as long in those positions where length distinction in general is possible — the rare dɛ and ɸ. Abondolo 1985:69ff. gives edz 'train (verb)', pedz 'bite (itr. verb)', bodza 'elder' and madzag 'twine' as the only cases of dɛ in postvocalic position. In the same context, ɸ is only represented in bridzs 'bridge', hodza 'Mohammedan priest' and maharadza 'maharajah'.

Using Papp 1969 and Kiefer 1984, I looked for long intramorphemic consonants. (In principle, all consonant allophones which do not depend on an adjacent consonant occur long intermorphemically as the glide in the instrumental-comitative suffix vel goes through complete assimilation after consonant final nouns (but see Lavotha & Lavotha 1973:48 and Vago 1980:130 for ɸ). Lotz 1939:20 gives e.g. rizzsel [ɾʲɨz̠əl] (ɾʲɪz̠ːs̠əl−vel) 'with rice'. Following is one example of each long consonant occurring underlyingly, if possible in final position (except the already mentioned x, dɛ and ɸ): ujj ‘finger; toe; sleeve’, gramm ‘gram’, finn ‘Finn(ish)’, könny ‘tear’, csépp ‘drop’, mulatt ‘matto’, sakk ‘chess’, több ‘more’, kedd ‘Tuesday’, segg ‘arse’, třeff ‘club (in card-playing)’, rossz ‘bad’, friss ‘fresh; cool; brisk’, hozzd ‘towards x (the basic form of the allative — x = 3psg.)’, hécc ‘joke; noise; hurry’, puccs ‘coup d’état’, füüty ‘whistle’, mėggy ‘morello (cherry)’, forr ‘boil’, hali ‘hear; hall’. ɸ does not occur (at least in word-final position) but, like dɛ and ɸ, ʒ is an unusual consonant — Kálmán 1972:77ff. says that they have a limited distribution in texts. The phonemes n and m have a high occurrence, but their geminates occur exclusively or mostly in loan words or spatial adverbs. Of the phonemes with medium occurrence, ʒ appears rarely and v not at all. (We may note that v is short in all positions also in Swedish.)

In Nyitra (situated in the Palóc area), h does not assimilate — e.g. mėghal [gh] 'perfective particle + die' (Kálmán 1974:64). It is assumed that the voiceless h should be considered a sonorant in this dialect.

In different parts of Western Hungary, Dunántúl and in the vicinity of Dés in Mezőség, v assimilates. As a tourist, one may thus hear spontaneous examples like ott vannak repülők! [dv] ‘there are aeroplanes!’. Classifying v as an obstruent in the Western dialects solves the problem of how to describe the behaviour of the phoneme. In this case, the angled bracketed parentheses may be removed from (7):

(26)  [-cons] [-voc] → [+epenthesis] / [−syll]

(Glides cause epenthesis before non-syllabic segments.)

If v were consonantic in the western dialects a gap would be filled in the allophone system — but (25) would get out of balance. Lazar 1982:2 says that epenthesis at times shows up in Göcsej before the suffix vA, e.g. mǒndova ‘saying’, tilova ‘forbidding’. He notices on the other hand the forms sándóva ‘into (a) redoubt’ and partora ‘to (a) beach’ — having epenthetic vowels contrary to Standard Hungarian. It is possible, then, that the epenthesis rule is more general than in the standard dialect, but if the mǒndova type can be shown to occur systematically together with assimilating v, one may regard v as a true consonant in Göcsej. In another variant of West Hungarian, (27)
seems to be in effect too. There, v is devoiced after voiceless obstruents. The voicing assimilation rule is then complicated, which might seem counter-intuitive. It is obvious that the glides vacillate between different underlying features and the relation to phonetics may be questionable.

4. CONCLUSION
I showed in section 2 how two voicing assimilation rules for glides may be combined and how the rest of the many allophones of /hj/ can be derived from two glide rules, degemination and voicing assimilation. A special palatalization rule for back consonants closes this section. I also combined Vago’s three nasal assimilation rules, hinting that the palatalization of the nasal might be derived from the nasal assimilation rule. A chart of the Hungarian consonant allophones follows. I furthermore present and choose among two phoneme sets with underlying /hj/ and /x/, respectively – giving structural reasons for choosing x as the underlying form. Finally, some dialects with interesting phonemic sets were also examined.

REFERENCES