
Morphology causing nonuniformity in Hungarian backness harmony

———— Péter Rebrus^{1,2} & Péter Szigetvári² & Miklós Törkenczy^{2,1} ————

¹HUN-REN Hungarian Research Centre for Linguistics, ²Eötvös Loránd University

❖ OCP22 workshop on vowel harmony, Leiden, 4 February 2025 ❖

plan and claims

- simplified overview of backness harmony in Hungarian
- traditional assumption: affixal consistency (uniformity) in harmony
- the problem: systematic counterexample to consistency: V-initial and C-initial alternating suffixes after vacillating stems
- a parallel case: vowel height in V-initial alternating suffixes

claims:

- suffix-initial vowels act like thematic vowels, they mark lexical classes
- *morphological* restrictions on them cannot contradict harmony but impose further limitations stem-specifically
- the interaction of this morphological subsystem and the phonological subsystem (harmony) is the source of the violation of consistency

backness harmony in Hungarian

stem-controlled harmony: the suffix vowel typically agrees in backness with the last vowel of the stem (modulo neutral vowels), e.g.

a [a] ~ e [ɛ] DAT	á [a:] ~ é [e:] ADE	o ~ e /ö* ALL	ó [o:] ~ ő [ø:] ABL	u ~ ü POSR.1PL
------------------------------------	--------------------------------------	--------------------------------	--------------------------------------	---------------------------------

BACK: *orság-nak* *orság-nál* *orság-hoz* *orság-tól* *orság-unk*

FRONT: *üveg-nek* *üveg-nél* *üveg-hez* *üveg-től* *üveg-ünk*

VARIABLE: *fotel-na/ek* *fotel-ná/él* *fotel-ho/ez* *fotel-tó/ől* *fotel-u/ünk*
aspirin-na/ek *aspirin-ná/él* *aspirin-ho/ez* *aspirin-tó/ől* *aspirin-u/ünk*

* depending on rounding harmony

consistency in harmony

traditional assumption about harmonic behaviour under stem control (e.g. Vago 1980, Siptár & Törkenczy 2000, Hayes & Cziráky Londe 2006, Archangeli & Pulleyblank 2007, van der Hulst 2018, etc); implicitly assumed by representational analyses because it follows from a representational view:

any given suffix (type) is systematically **consistent** (uniform) in its harmonic behaviour:

- **within paradigms**: if a stem selects a given harmonic alternant of one alternating suffix, it will consistently select the same harmonic alternant of another alternating suffix (*ház-nak* ⇒ *ház-ban*, *ház-hoz*, *ház-unk*, ...)
- **across paradigms**: if a stem S selects a harmonic alternant of an alternating suffix, the same alternant will consistently be selected by other stems of the same harmonic class as S (*ház-nak* ⇒ *úr-nak*, *bot-nak*, ...)

violation of consistency within and across paradigms

- the harmonic alternation of **vowel-initial suffixes** may be limited after harmonically vacillating stems
- conditioned by non-phonological (**lexical**) properties of the stem
- three subclasses by the harmonic behaviour of the suffix-initial vowel:

#1 “FAMILIAR” STEMS, e.g. *haver-**o**k/***e**k*, cf. *haver-**h**e**z**/**h**o**z*** ‘pal-PL/ALL’

#2 “CULTURAL” STEMS, e.g. *partner-**e**k/***o**k*, cf. *partner-**h**e**z**/**h**o**z*** ‘id.-PL/ALL’

#3 PLAIN STEMS, e.g. *šóder-**e**k/**o**k*, cf. *šóder-**h**e**z**/**h**o**z*** ‘gravel-PL/ALL’

the three harmonic subclasses of vacillating stems

vaguely defined by semanto-pragmatic/usage-based properties of the stem (cf. Szarvas 1893, Szépe 1958, Forró 2013, Rebrus et al. 2023)

- #1 FAMILIAR STEMS are **informal**/casual and/or highly frequent,
e.g. *haver* 'pal', *fater* 'dad', *mut(t)er* 'mom', *masek* 'self-employed', *matek* 'maths',
koles 'dorm', *balek* 'dupe', *konkrét* 'specific', *pozitív*, etc.
- #2 CULTURAL STEMS are **formal**/educated/technical,
e.g. *partner*, *hardver*, *kódex*, *balett*, *projekt*, *modell*, *mágnes*, *azbest*, *komplex*, *bakelit* etc.
- #3 PLAIN STEMS: all others,
e.g. *hotel*, *fotel* 'arm-chair', *šóder* 'gravel', *kábel* 'cable', *notes* 'notebook', *aspirin*, *protéziš*
'prosthesis' etc.

the scope of the phenomenon

violation of consistency equally occurs with **all** vowel-initial suffixes independently of their harmonic vowels or morphemic status, e.g.

	PL <i>o~e/ö</i>	POSSR.1SG <i>o~e/ö</i>	SUPE <i>o~e/ö</i>	POSSR.1PL <i>u~ü</i>	ACC <i>o~e/ö</i>	CMPR <i>a~e</i>
#1	haver- ok	haver- om	haver- on	haver- unk	matek- ot	konkrét- abb
#2	partner- ek	partner- em	partner- en	partner- ünk	sólet- et	modern- ebb
#3	hotel- e/ok	hotel- e/om	hotel- e/on	hotel- ü/unk	kadét- e/ot	agiliš- e/abb

further evidence from C/V-initial suffixes

for suffixes that have *both* consonant-initial and vowel-initial **allomorphs**, the distribution of harmonic alternants mirrors that of C- and V-initial suffixes, e.g. POSSR.3PL

V-initial allomorphs

-uk~ük

- #1 *haver-uk* / **haver-ük* {9k / 1}
- #2 **partner-uk* / *partner-ük* {0 / 190k}
- #3 *fotel-uk* / *fotel-ük* {660 / 205}

C-initial allomorphs

-juk~jük

- haver-juk* / *haver-jük* {23k / 118}
- partner-juk* / *partner-jük* {45 / 194}
- fotel-juk* / *fotel-jük* {403 / 827}

token frequencies from Google searches

a parallel case: “lowering” and “non-lowering” stems

- in some suffixes the **height** of the **initial** vowel is determined by the stem
- this is a **lexical** property of the stem, determined by its syntactic (sub)category or idiosyncratic properties
- 3 subclasses of stems by the height of the suffix-initial vowel:
 - #**MID**, e.g. *tag-ot* ‘member-ACC’, *vak-ok* ‘blind-PL’
 - #**LOW**, e.g. *ág-at* ‘branch-ACC’, *tág-ak* ‘wide-PL’
 - #**VARIABLE** (rare), e.g. *öröm-ö/et* ‘joy-ACC’, *boldog-o/ak* ‘happy-PL’

factors determining the height of the thematic vowels

the quality of the thematic vowels is essentially lexical, there are weak correlations and tendencies with respect to *morphosyntactic* properties of the stem

- monomorphemic verbal roots are always #MID
- noun roots are mainly #MID with a large set of idiosyncratic exceptions (Papp 1975)
- adjectival roots are mainly #LOW with individual/systematic exceptions and variability (Rebrus & Szigetvári 2022)
- inflected stems are mainly #LOW with controversial cases and counterexamples (Rebrus et al. 2023)
- derived noun stems can be either, depending on the derivational suffix

distributional parallelism

HARMONY (vacillating stems)			LOWERING		
“semanto-pragmatic” classes	backness		“morpho-syntactic” classes	height	
	initial V	medial V		initial V	medial V
#1 FAMILIAR	back	back/front	#MID	mid	any height
#2 CULTURAL	front		#LOW	low	
#3 PLAIN	back/front		#VARIABLE	mid/low	

parallelism between harmonic and lowering stem subclasses

subclasses of stems determining the backness of the suffix-initial vowel (FAMILIAR, CULTURAL, PLAIN) and the height of the thematic vowel (#MID, #LOW, #VARIABLE)

- can only specify *suffix-initial* vowels in both cases
- are defined by *non-phonological* properties of the stem in both cases
- vaguely circumscribed by functional (semantic or morphosyntactic) properties of the stem in both cases

harmonically invariable stem classes by height and backness of thematic Vs

thematic vowels: 4 classes
(height & backness by stem)

suffix-internal vowels: 2 classes
(height by suffix, backness by stem)

		PL	ACC	2SG	etc.	DAT	ADE	ALL	ABL	etc.
MID BACK	oB	tag- o -k	tag- o -t	tag- o -d		tag- na k	tag- na l	tag- ho z	tag- to l	
LOW BACK	aB	ág- a -k	ág- a -t	ág- a -d		ág- na k	ág- na l	ág- ho z	ág- to l	
MID FRONT	öF	rög- ö -k	rög- ö -t	rög- ö -d		rög- ne k	rög- ne l	rög- hö z	rög- tö l	
LOW FRONT	eF	sög- e -k	sög- e -t	sög- e -d		sög- ne k	sög- ne l	sög- hö z	sög- tö l	
		vég- e -k	vég- e -t	vég- e -d		vég- ne k	vég- ne l	vég- hez	vég- tö l	

and the rare additional variable #MID-LOW types **oaB** and **öeF**

stem classes of harmonically variable stems (BF)

thematic vowels: 5 classes

(height & backness by stem)

suffix-internal vowels: 1 class

(height by suffix, backness by stem)

		PL	ACC	etc.	DAT	ALL	etc.
FAMILIAR MID	oBF	matek- o -k	matek- o -t		matek-na/ ek	matek-ho/ ez	
FAMILIAR LOW	aBF	konkrét- a -k	konkrét- a -t		konkrét-na/ ek	konkrét-ho/ ez	
CULTURAL	eBF	komplex- e -k	komplex- e -t		komplex-na/ ek	komplex-ho/ ez	
PLAIN MID	oeBF	šóher- o/e -k	kadét- o/e -t		šóher-na/ ek	šóher-ho/ ez	
PLAIN LOW	aeBF	pozitív- a/e -k	pozitív- a/e -t		pozitív-na/ ek	pozitív-ho/ ez	

and the additional rare PLAIN MID-LOW type **oaeBF** (e.g. *labiliš* 'unstable') and **oöBF**, **eöBF**

a proposal for the problem: two subsystems

- ❖ **PHONOLOGICAL SYSTEM:** harmonising suffix vowels are subject to a general **vowel harmony** constraint (transparency, anti-harmony etc.)
- ❖ **MORPHOLOGICAL SYSTEM:** thematic vowels are also controlled by **lexical** constraints: stem/paradigm classes assign vowel qualities to thematic vowels

these systems are in a **subsumptive** relation: morphology never contradicts phonology, but paradigm classes impose more specific requirements on the

- backness: back or front, and
- height (and rounding): **-o-** vs. **-a-** and **-ö-** vs. **-e-**

of the thematic vowel

potential combinations of the two subsystems

the interaction of the two subsystems produces (almost) all potential combinations of stem specifications:

- the thematic vowel cannot contradict the front/back value dictated by the harmonic class: no stem type exists with specifications ***eB**, ***öB**, ***aF**, ***oF**
- variation: combinations of values occur in *both* subsystems
 - harmonically variable: **BF**
 - thematically variable in height: **oa**, **öe**; or in backness: **oe** (marginally **öö**)

where the potential combinations must satisfy subsumptivity:

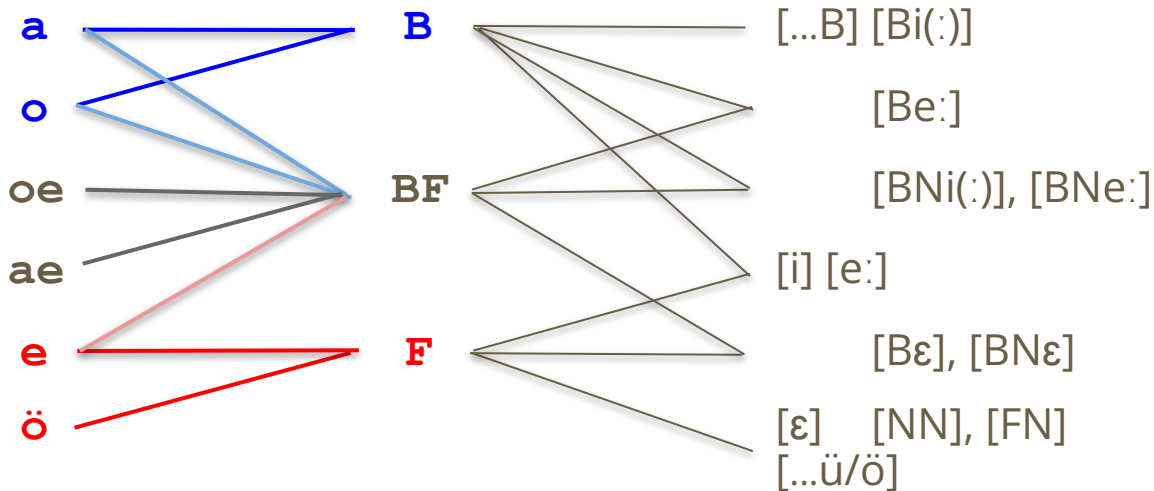
oBF, **aBF**, **eBF**, **oeBF**, **aeBF** (rarely: **oaB**, **öeF**, **oaeBF**; **ööBF**)

mappings between the subsystems (without rare types)

MORPHOLOGY
stem classes
by thematic V

PHONOLOGY
harmonic classes
by C-initial suffixes

PHONOLOGY
root vocalism
(F, B, Neutral={i, e:, ε})



possible stratal view?

what if “V-initial suffixes are attached at an earlier stratum than C-initial ones”?

- encouraging properties
 - “V-initial stratum” is more morphologically determined than “C-initial” one
 - “V-initial stratum” is more lexical/idiosyncratic than “C-initial” one
- discouraging properties
 - lexical/“UR” properties of roots in “V-initial” stratum are not inherited in “C-initial” one
 - harmonically invariable stems (including exceptional ones: anti-harmony) are unaffected by the distinction
 - sequence of suffixes: no level ordering effect (except within inflection system)
 - the domain difference between “V-initial” and “C-initial” stratum does not line up with those required by other alternations (Rebrus et al. 2023)

residual issues

- non-thematic suffix-initial vowels (invariable height): height is defined by the suffix, backness is defined by the stem class (thematic vowel)
 - high $u \sim \ddot{u}$, e.g. POSSR.1PL *haver-**u**/* \ddot{u} nk* \Leftarrow *haver-**o**/* e -k* (**oBF**)
 - mid $o \sim e/\ddot{o}$, e.g. SUPE *konkrét-**o**/* e n* \Leftarrow *konkrét-**a**/* e -k* (**aBF**)
 - low $a \sim e$, e.g. CMPR *gazdag-**a**bb* \Leftarrow *gazdag-**o**-k* (**oB**)
- rare variable stem classes (oa, öe, oae): separate or mixed class?
- interaction with rounding harmony
 - rounding “antiharmony”: *sög-**e**-k*, *sög-**e**-t* but *sög-**ön***, *sög-**höz***
 - optional transparency of rounding (Blaskovics & Ittész 2022):
*Google-**o**/ön*, *Google-**hoz**/höz*; *Lidl-**e**/ön*, *Lidl-**he**/öz*

acknowledgements

Our work is sponsored by NKFIH grant #139271, *The role of paradigm structure in Hungarian morphology and phonology with typological comparisons.*

references

Archangeli, Diana, and Douglas Pulleyblank. 2007. 'Harmony'. In *The Cambridge Handbook of Phonology*, edited by Paul de Lacy, 353–378. Cambridge: Cambridge University Press.

Blaskovics, Ákos, and Ittész, Ambrus 2022. Ybl a Google-ön. A szillabikus / és a magyar magánhangzó-harmónia esete. *Beszédtudomány / Speech Science* 3(1), 225–272.

Forró, Orsolya. 2013. Ingadozás a magyar előlségi harmóniában: Szempontok a variabilitás szinkroniájának és diakroniájának feltárásához és értelmezéséhez. Doctoral dissertation. Pázmány Péter Catholic University, Budapest.

Hayes, Bruce, and Zsuzsa Cziráky Londe. 2006. 'Stochastic Phonological Knowledge: The Case of Hungarian Vowel Harmony'. *Phonology*, 23: 59–104.

Hulst, Harry van der. 2018. *Asymmetries in Vowel Harmony: A Representational Account*. Oxford: Oxford University Press.

Papp, Ferenc. 1975. *A magyar főnév paradigmatis rendszere*. Budapest: Akadémiai Kiadó.

Rebrus, Péter and Péter Szigetvári. 2022. Between adjective and noun. *Acta Linguistica Academica* 69: 188–205.

Rebrus, Péter, Péter Szigetvári, and Miklós Törkenczy. 2023. Morphological restrictions on vowel harmony: The case of Hungarian.' In *The Wiley Blackwell Companion to Morphology*, edited by Peter Ackema, Sabrina Bendjaballah, Eulàlia Bonet and Antonio Fábregas, Malden, MA: Wiley-Blackwell.

Rebrus, Péter, Péter Szigetvári, and Miklós Törkenczy. 2024. No lowering, only paradigms: A paradigm-based account of linking vowels in Hungarian. *Acta Linguistica Academica* 71: 137–170.

Siptár, Péter and Miklós Törkenczy. 2000. *The Phonology of Hungarian*. Oxford University Press.

Szarvas, Gábor. 1893. A magyar hangrendhez. *Magyar Nyelvőr* 22: 392–398.

Szépe, György. 1958. Vegyes magánhangzójú szavaink illeszkedésének kérdéséhez. *Nyelvtudományi Értekezések* 17: 105–129.

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

further evidence from C/V-initial suffixes

for those suffixes that have *both* consonant-initial and vowel-initial allomorphs, the behaviour of stem subclasses mirrors the distinction between the two kinds of allomorphs, e.g. POSSR.3PL; POSSR.3SG

V-initial allomorphs

-uk~ük; -e

#1	<i>haver-uk / *haver-ük</i>	{9k / 1 }
	<i>*haver-e</i>	{ 3 }
#2	<i>partner-ük / *partner-uk</i>	{190k / 0 }
	<i>partner-e</i>	{1180k}
#3	<i>fotel-uk / fotel-ük</i>	{660 / 205}
	<i>fotel-e</i>	{19k}

C-initial allomorphs

-juk~jük; -ja~je

	<i>haver-juk / haver-jük</i>	{23k / 118}
	<i>haver-ja / haver-je</i>	{169k / 876}
	<i>partner-juk / partner-jük</i>	{45 / 194}
	<i>partner-ja / partner-je</i>	{1k / 5k}
	<i>fotel-juk / fotel-jük</i>	{403 / 827}
	<i>fotel-ja / -je</i>	{~4k / 13k}

token frequencies from Google-search