

The paradigm in Hungarian Vowel Harmony

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Plan

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- The underdeterminedness of HVH
- What determines HVH?
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 - Paradigm Uniformity within the possessive paradigm
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 - Paradigm classes
- Summary
- (Some further details)

Morphologisation of Vowel Harmony (VH) systems

- **Morphologisation** is the degree of morphological conditioning (gradient)
 - “Baseline” = domain of harmony: all VH systems circumscribe VH domains (partially or completely) morphologically: root, stem, phonological word, etc. – sometimes (also) syntactically: phrase, e.g. Kinande, Akan (Downing 2018)
- Morphologisation above the baseline-
 - **lower end of the scale:** in “simple” dominant-recessive systems VH trigger is purely phonologically identified, e.g. Karajá, Kalenjin
 - intermediate: various kinds and mixtures of morphological conditioning, stem/root control (e.g. Finnish, Chichewa) but also some dominant-recessive systems (e.g. Kinande, Maasai)
 - **higher end of the scale:** harmonic classes are paradigm classes (~inflectional classes) e.g. Hungarian (this talk), Uyghur (Mayer 2021)

What makes VH morphologised?

- **inconsistency** of VH within the domain: morphologically simplex and complex forms behave differently harmonically
 - root-stem asymmetries (*kanül* ‘canula’ vs. **baszk-ül* ‘in Basque’)
 - other effects overriding VH (*martini-nak/nek* ‘martini-DAT’ vs. *martin-i-nak/*nek* ‘Martin-ADJZ-DAT’)
- **lexical conditioning**
 - roots: *kéj-ről* ‘lust-DEL’ vs. *héj-ról* ‘peel-DEL’
 - affixes POSR: *ősz-é* ‘autumn-POSR’, *nyár-é* ‘summer-POSR’ vs. TRA: *több-é* ‘more’, *jobb-á* ‘better’
 - whole word-forms (root+affix): *haver-ok/*ek* ‘pal-PL’ vs. *haver-nak/nek* ‘pal-DAT’
- **paradigm-based restrictions**
 - paradigmatic **uniformity** effects (overriding front/back harmony)
 - paradigmatic **contrast** effects (overriding front/back harmony) – not discussed in this talk
 - paradigm **classes** (overriding rounding harmony)

Hungarian vowel harmony (HVH): the traditional myths

- Front/back
 - *int-ünk* 'wave-1PL', *önt-ünk* 'pour-1PL', *ont-unk* 'shed-1PL'
- Rounding (parasitic on front)
 - *int-ek* 'wave-1SG', *önt-ök* 'pour-1SG', *ont-ok* 'shed-1SG'
- Categorical neutrality: neutral vowels are always transparent
 - *papír-ok* 'paper-PL', *tányér-ok* 'plate-PL' (*haver-ok* 'pal-PL'/*kompjűter-ek* 'computer-PL'?)
- No harmony–morphology interaction: morphologically simplex and complex forms behave in the same way harmonically within the domain of harmony
 - *papír-ok* 'paper-PL', *vak-ít-ok* 'blind-VRBZ-1SG'

“Exceptions”

- Antiharmonic roots (lexical variation)
 - *irt-unk* ‘eradicate-1PL’, *cél-unk* ‘goal-1PL.POSS’, *spejz-unk* ‘pantry-1PL.POSS’
 - *szirt-ünk* ‘cliff-1PL.POSS’, *él-ünk* ‘live-1PL’, *spejz-ünk* ‘pantry-1PL.POSS’
- Vacillation and lexical variation in transparency/opaqueness
 - **[Be:]** vacillating: both F and B (*norvég-ünk/unk* ‘Norwegian-1PL.POSS’) transparent: only B (*tányér-*ünk/unk* ‘plate-1PL.POSS’)
 - **[Bɛ]** vacillating: both F and B (*sóder-ünk/unk* ‘gravel-1PL.POSS’) transparent: only B (*haver-*ünk/unk* ‘pal-1PL.POSS’) opaque: only F (*kompjüter-ünk/*unk* ‘computer-1PL.POSS’)
- “Lowering” wrt rounding harmony
 - *fül-ek* ‘ear-PL’, *öt-öd-et* ‘five-2SG.POSS-ACC’
 - *sül-ök* ‘porcupine-PL’, *öt-öd-öt* ‘five-FRAC-ACC’

Traditional analyses of “exceptions”

- Antiharmony/lowering can be encoded in the representation (phonologised)
 - abstract vowels + absolute neutralisation,
 - floating features + licensing conventions, etc.
- For vacillating roots *several* different “underlying” vowels/representations would be needed, e.g. three(!) for /ɛ/
 - transparent (in *haver*)
 - vacillating (in *sóder*)
 - opaque (in *kompjúter*)
- Domain-internal morphological complexity cannot be phonologised
 - monomorphemic *martini-nak/nek*
 - polymorphemic *martin-i-nak/*nek*

Harmonic classes are phonologically highly underdetermined

- no variation: phonology determines harmonicity (a)
- lexical variation & vacillation (transparency): highly underdetermined (b)
- only lexical variation (antiharmony): underdetermined but no vacillation (c)

Paradigmatic classes (front-back harmony)	B-class	F-class	B/F-class
a. 'homogeneous'	[...B]	[...F], [...FN]	
b. BN BNN	[...Bi], [...Bi:], [...Be:] _{FAM} [BNi(:)] _{FAM} , [BNe:] _{FAM}	[...Bε] _{CULT} [BNε]	[...Be:] _{PLAIN} , [...Bε] _{PLAIN} [BNi(:)] _{PLAIN} , [BNe:] _{PLAIN}
c. N NN	[i], [i:], [e:]	[i], [i:], [e:], [ε] [NN], [NNN]	

Harmonic classes are co-determined by ...

1. phonological shape of the stem (vocalic pattern)
2. word class of the stem (*hűs-ek* ‘cool(adj)-PL’ vs. *hős-ök* ‘hero(noun)-PL’)
3. meaning of the stem (“familiar”: *haver-*ünk/unk*, “plain”: *sóder-ünk/unk*, “cultural”: *kompjűter-ünk/*unk*)
4. degree of nativization of the stem (“native”: *tányér-ok/*ek* ‘plate-PL’, recent loan: *norvég-ok/ek*)
5. token frequency of the stem (native (=not recent loan) but rare: *gácsér-nak / %nek* ‘drake-DAT’, not familiar loan but frequent: *konkrét-ak / %ek* ‘specific-PL’)

Paradigmatic view

- Class membership co-determined by properties like the above is characteristic of paradigm classes → paradigmatic view of HVH
- Advantages of the paradigmatic view
 - phonologically underdetermined classes (see above)
 - harmonic uniformity of paradigmatically related forms (Harmonic Uniformity)
 - other paradigmatic effects
 - Paradigm Uniformity within POSS
 - (paradigmatic contrast: not discussed in this talk)
 - thematic vowels (“lowering”)

Harmonic Uniformity (HarUni)

(Rebrus & Szigetvári 2016, Rebrus & Törkenczy 2017; 2019, 2021, Rebrus et al. 2017)

- HarUni: All the harmonic suffixes have identical harmonic values (F, B or B/F) within the extended paradigm of a root.
- Inhibition of phonologically conditioned variation by HarUni
 - Phonological conditioning of variation due to the limitation of transparency (Hayes & Cziráky Londe 2006)
 - Height Effect: $i(:) > e > \varepsilon$ *Martin-nak/*nek* vs. *norvég-nak/nek*, *sóder-nak/nek*
 - Count Effect: BN > BNN *Martin-nak/*nek* vs. *Martini[k]-nak/nek*, *protézis-nak/nek*
 - HarUni: *martini[k]-i-nak/nek* {←*martini[k]-nak/nek ...*} vs. *martin-i-nak/*nek* {←*Martin-nak/*nek ...*}
- Maintenance of lexical variation by HarUni despite phonological inhibition
 - Phonological constraint on lexical variation (antiharmony)
 - Polysyllabic Split: *ind-ul* 'start-VRBZ', *cél-unk* 'goal-1PL.POSS' but *[NN⁺]B
 - HarUni: *ind-ít-hat* 'start-VRBZ-POT' {←*ind-ul ...*}, *cél-é-ra* 'goal-POSR-SUBL' {←*cél-unk ...*}

Uniformity within the possessive paradigm (loan roots)

(Rebrus et al. 2017)

1. **Paradigm Uniformity within POSS (PUPOSS)**: the yodless alternant of 3SG/PL.POSS is available only if its vowel appears as a linking vowel in the paradigm:

- a. 1/2SG vs. 3SG: sztár-om/-od ↗ sztár-*(j)a gejzír-em/-ed ~ gejzír-(j)e
- b. 1PL vs. 3PL: sztár-unk ~ sztár-(j)uk gejzír-ünk ~ gejzír-(j)ük
- c. vacillating roots: sóder-om/-od ↗ **sóder-*(j)a** sóder-em/-ed ~ sóder-(j)e **3/4**
- d. vacillating roots: sóder-unk ~ sóder-(j)uk sóder-ünk ~ sóder-(j)ük 4/4

2. Familiar roots: only back linking vowels:

- a. 1/2SG vs. 3SG: haver-om/-od ↗ **haver-*(j)a** *haver-em/-ed **haver-*(j)e 2/4**
- b. 1PL vs. 3PL: haver-unk ~ haver-(j)uk *haver-ünk **haver-*(j)ük 3/4**

3. PUPOSS is dominated by the phonological constraint *Sib+j but Harmonic Uniformity operates actively

- a. stable roots: fax-om/-od ↗ fax-a
- b. vacillating roots: notesz-om/-od ↗ notesz-a notesz-em/-ed ~ notesz-e **2/4**

glosses of new words: *sztár* 'star', *gejzír* 'geyser', *fax* 'id.', *notesz* 'notebook'

Asymmetries in vacillation

Attested allomorphs of 3SG.POSS (-ja~je~a~e), 3PL.POSS (-juk~jük~uk~ük) after vacillating Bε-roots: HarUni actively enforces vacillation (harmonic class)

	Plain loan roots	Familiar roots	Sibilant-final roots
	a.	c. (*-ük)	e. (*-j-)
3PL.POSS	sóder-uk sóder-ük sóder-juk sóder-jük	haver-uk *haver-ük haver-juk haver-jük	notesz-uk notesz-ük *notesz-juk *notesz-jük
	b. (*-a)	d. (*-a/e)	f. (*-j-)
3SG.POSS	*sóder-a sóder-e sóder-ja sóder-je	*haver-a *haver-e haver-ja haver-je	notesz-a notesz-e *notesz-ja *notesz-je

Thematic vowels: non bi-uniqueness

The mapping between harmonic class and the quality of the thematic vowel is not bi-unique

- The harmonic class does not uniquely determine the thematic vowel
 - **B** & **-o-**: *dal-ok* vs. **B** & **-a-**: *fal-ak*
 - **F_R** & **-ö-**: *sül-höz, sül-ök* vs. **F_R** & **-e-**: *fül-höz, fül-ek*
 - **B/F_U** & **-ole-**: *sóder-hoz/hez, sóder-ok/ek* vs. **B/F_U** & **-o-**: *haver-hoz/hez* vs. *haver-ok/*ek*
- The thematic vowel does not uniquely determine the harmonic class
 - **-o-** & **B**: *dal-ok, dal-hoz* vs. **-o-** & **B/F_U**: *haver-ok, haver-hoz/hez*
 - **-e-** & **F_U**: *jel-ek, jel-hez* vs. **-e-** & **F_R**: *fül-ek, fül-höz*

“Lowering”: paradigmatic classes of stems by the thematic vowel

Paradigmatic classes (thematic vowel):	-o- class	-a- class	-e- class	-ö- class	-o/e- class
Thematic vowel:	mid	low	low	mid	mid/low
Harmonic classes:	B or B/F _U	B	F _U or F _R	F _R	B/F _U
Vs of the root:	[B], [N'], [BN], [BNN']	[B], [N']	[FN], [N], [F] [Bε], [BNε]	[F]	[BN], [BNN']
Examples (PL):	dal- ok sír- ok , cél- ok haver- ok	fal- ak nyil- ak , héj- ak	fül- ek , jel- ek hír- ek , bér- ek	sül- ök , kör- ök	karél- ok/ek hotel- ok/ek , aszpirin- ok/ek

legend: F_U = front unrounded V, F_R = front rounded V, N = {i, i:, e:, ε}, N' = {i, i:, e:}

Summary

Because of the high degree of phonological underdeterminedness of the harmony patterns an account of

- HVH including variation (lexical & vacillation)
- its interaction with other morphophonological phenomena
- the distribution of thematic vowels

must make reference to **paradigms**.

Paradigmatic classes by different morphological alternations

Paradigmatic classes by the thematic vowel:	-o- class		-a- class	-e- class			-ö- class	
Harmony (front-back & Labial)	o			e			ö	
Thematic V in PL, 1/2.POSS etc	o		a	e			ö	
Thematic V in ACC ⁶⁶	–		a	–	e		–	
Yodless alternant in 3SG.POSS ⁶⁷	–	a		e				
Examples:	ALL	cél- hoz	dal- hoz	fal- hoz	cse l -hez	je l -hez	fü l -höz	kör- höz
	PL	cél- ok	dal- ok	fal- ak	cse l -ek	je l -ek	fü l -ek	kör- ök
	ACC 3SG.POSS	cél- t cél- ja	dal- t dal- a	fal- at fal- a	cse l - t cse l - e	je l - et je l - e	fü l - et fü l - e	kör- t kör- e
Principal parts: (ALL PL ACC 3SG)	(oo —)	(oo a)	(oa aa)	(ee e)	(ee ee)	(öe ee)	(öö e)	

Paradigmatic patterns of BN(N) loanwords

a. Harmonically stable roots:

[Bi(:)], [Be:] _{FAM}	(o o - -)	papír-hoz	papír-ok	papír-t	papír-ja
	(o o o -)	butik-hoz	butik-ok	butik-ot	butik-ja
[Bε] _{CULT} , [BNε]	(e e - e/-)	partner-hez	partner- <u>ek</u>	partner-t	partner- <u>e</u> /je
	(e e e e/-)	modem-hez	modem- <u>ek</u>	modem-et	modem- <u>e</u> /je

b. Harmonically variable roots:

[Be:/ε] _{PLAIN} , [BNN']	(o/e o/e - e/-)	sóder-hoz/hez	sóder-ok/ <u>ek</u>	sóder-t	sóder- <u>e</u> /ja/je
	(o/e o/e o/e e/-)	sólet-hoz/hez	sólet-ok/ <u>ek</u>	sólet-ot/et	sólet- <u>e</u> /ja/je
[Bε] _{FAM}	(o/e o - -)	haver-hoz/hez	haver-ok	haver-t	haver-ja/je
	(o/e o o -)	maszek-hoz/hez	maszek-ok	maszek-ot	maszek-ja/je

Thank you

and NKFI #119863 (<http://delg0.elte.hu/harmony>)

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