Sufficient and insufficient contrast and nonuniformity

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aspects of uniformity

- **paradigm** uniformity (**ParU**) as **anti-allomorphy** within a paradigm (Kenstowicz 1997, Bat-El 2005) here applied to **suffix alternations**

  - uniform: no alternation within the paradigm
    e.g., *csapat-**a**(-i)*, *kabát-**ja**(-i)* 'group/coat-**POSS.3SG**(-PL)'

  - nonuniform: alternation within the paradigm,
    e.g., *barát-**ja***, *barát-**a**-i* 'friend-**POSS.3SG**(-PL)'

- **pattern** uniformity (**PatU**) requires **no lexical variation**

  any morpheme of a given shape should follow the same pattern when the conditioning of that pattern is met (contra lexical variation, e.g., *kar-**a*** 'faculty-POSS.3SG' vs. *kar-**ja*** 'arm-id.')

aspects of contrast-induced allomorphy

homophony avoidance (Kenstowicz 2005, Rebrus & Törkenczy 2005)
nonuniformity can occur in order to maintain **paradigmatic contrast**

- maintaining (partial) contrast between morphosyntactic values, limited by VH:

	(i) tense/mood:		(ii) person/number/definiteness:	
*lop-**j-a** ~ lep-**j-e***	'-**SBJV**-DEF.3SG'	*lop-**ná**-k* ~ *lep-**né**-k*	'-COND-**DEF.3PL**'
*lop-**ja** ~ lep-**i**/***je***	'-**INDV**.DEF.3SG'	*lop-**nék**/***ná**-k* ~ *lep-**né**-k*	'-COND-**NDF.1SG**'

- suspending definiteness contrast in order to maintain person/number contrast:

*kér-**em***	↔ *kér-**ek***	'-INDV.DEF.1SG'	↔ '-INDV.NDF.1SG'
*kér-j-**em***	↔ *kér-j-**ek***	'-SBJV-DEF.1SG'	↔ '-SBJV-NDF.1SG'
*kér-t-**em** =	*kér-t-**em**/***ek***	'-PAST-<u>DEF</u>.1SG	= '-PAST-<u>NDF</u>.**1SG**'
		↕		↕
cf.	*kér-t-**ek***		'-PAST.NDF.**3PL**'

red: nonuniform, **blue:** homophone to avoid

the past tense suffix: *-t* or *-Vtt*

phonological conditions on allomorphy: two environments: _# and _V
(Abondolo 1988, Siptár & Törkenczy 2000):

1. VC stems:
    a. after coronal sonorants: ***-t***   "**t-pattern**"
        e.g. *vár-**t**, vár-**t**-a* 'wait-PST(-DEF.3SG)'   (**ParU**)

    b. after other Cs: word-finally: ***-Vtt***, prevocalically: ***-t***   "**alternating pattern**"
        e.g. *kap-**o**tt, kap-**t**-am* 'get-PST(-1SG)'   (**non-ParU**)

2. CC-stems: often ***-Vtt*** (always after Ct-stems)   "**V-pattern**"
        e.g. *ajánl-**o**tt, ajánl-**o**tt-ak* 'suggest-PST(-NDF.3PL)'   (**ParU**)

the past suffix can be nonuniform in both senses:
within paradigms (contra ParU) & subject to lexical variation (contra PatU)

non-PatU: lexical variation (*d/t*-final stems)

systematic lexical variation is limited to *d/t*-final stems

- **Vd**-final stems: t-pattern (ParU) vs. alternating pattern (non-ParU):

  akad-t, *akad-t-unk* 'occur'   **tagad-<u>ott</u>**, *tagad-t-unk* 'deny'

- **Vt**-final stems: V-pattern (ParU) vs. alternating pattern (non-ParU):

  tát-ott, **tát-<u>ott</u>-unk** 'open'   *lát-ott,* **lát-t-unk** 'see'

- **Cd**-final stems: alternating pattern (non-ParU) vs. V-pattern (ParU):

  küld-ött, **küld-t-ünk** 'send'   *old-ott,* **old-<u>o</u>tt-unk** 'solve'

lexical variation (*d/t*-final stems)

systematic lexical variation typically occurs in forms, patterns and positions were paradigmatic contrast is difficult to maintain

- a single ParU V-pattern would maintain paradigmatic contrast for all stems in all positions: it is just a fact that there are three patterns (though the direction of historical change: ParU V-pattern > ParU *t*- and non-ParU alternating patterns)

- the -*t* allomorph in the ParU *t*-pattern and in the non-ParU alternating pattern can compromise paradigmatic contrast **in some positions for some stems** (*d/t*-final stems) but not for others (e.g. coronal sonorant final stems)

- *d/t*-final stems show lexical variation; some maximise contrast, others tolerate relative weakening of contrast within well-defined perceptual limitations

relevant general phonological processes

both voice and length are distinctive even word-finally

(e.g., *had* 'army' ~ *hat* 'six' ~ *matt* 'mate'; *mag* 'core' ~ *bak* 'buck' ~ *makk* 'acorn')

- regressive voicing assimilation

    e.g., *dob-t-a* [dopta] 'throw-PST-DEF.3SG'

- consonant adjacent degemination (in $C_iC_jC_j$ and $C_iC_iC_j$ clusters)

    e.g., *hord-t-a* [horta] 'carry-PST-DEF.3SG', *varr-t-a* [varta] 'sew-PST-DEF.3SG'

CC-final stems: Ct-final vs. others

- Ct(-final) stems: consistent **V-pattern (ParU)**

   tart-ott(-unk) (***tart-t(-unk)* [rt]) 'hold', **vest-ett(-em)** (***vest-t(-em)* [st]) 'lose'

- other CC(-final) stems are conditioned by phonotactics

   - **t-pattern (ParU) or alternating pattern (non-ParU):**

      varr-t(-ak) [rt] 'sew'; *leng-t-ek* [ŋkt] ~ *leng-ett* 'swing'

   - **V-pattern only (ParU)**:

      sikl-ott(-ak) (**sikl-t-ak*) 'glide', *jácc-ott(-ak)* (**jácc-t-ak* [ʦt]) 'play'

   why do Ct stems consistently follow the V-pattern?
   (and not the t- or the alternating pattern by degemination)

avoidance of full homophony in Ct-final stems (ParU)

t-pattern is always inhibited with Ct-final stems because it would create homo-phony in the paradigm between **past** and **present** forms (Trón & Rebrus 2005)

	actual PAST (**-Vtt**)	nonoccurring PAST (**-t**)		actual PRESENT (**-∅**)	
3SG	**ért-ett**	*ért-t* [eːr**t**]	**=**	**ért**	'understand'
1SG	**ért-ett-em**	*ért-t-em* [eːr**t**ɛm]	**=**	**ért-em**	
3SG	**ost-ott**	*ost-t* [os**t**]	**=**	**ost**	'divide'
1PL	**ost-ott-unk**	*ost-t-unk* [os**t**uŋk]	**=**	**os**t-unk	

- **PatU**: no lexical variation
- *****-t**: paradigmatic contrast is maintained by allomorph selection

avoidance of near homophony in Cd-final stems

the **-t** allomorph is possible after Cd-stems **only prevocalically** because the past vs. present **t~d** voicing contrast is phonetically better cued before vowels than word-finally (Steriade 1999b)

_V	PAST -**Vtt**-V	PAST C-**t**-V		PRESENT
1PL	*küld-ött-ünk	**küld-t-ünk** [kyl**t**yŋk]	~	**küld-ünk** 'send'

_#	PAST -**Vtt**#	PAST C-**t**#		PRESENT
3SG	**küld-ött**	*küld-t [kyl**t**]	≈	**küld**

- **non-PatU**: lexical variation: *küld-t-e* vs. *old-ott-a* (while *küld-ött = old-ott*)
- ***-t**#: Cd-final stems take *-Vtt* only if the phonetic cue (voicing) is not strong enough → **non-ParU** for certain stems (*küld-t-e* vs. *küld-ött*)

avoidance of near homophony in Vt-final stems

the **-t** allomorph is possible after *Vt*-stems **only prevocalically** because the past vs. present **t~tt** length contrast is phonetically better cued before vowels than word-finally (Steriade 1999b)

_V	PAST -*Vtt*-V	PAST -*t*-V		PRESENT	
1PL	*lát-o̲tt-unk	**lát-t-unk** [la:**t**:uŋk]	~	**lát-unk**	'see'

_#	PAST -*Vtt*#	PAST -*t*#		PRESENT	
3SG	**lát-o̲tt**	*lát-t [la:**t**:]	≈	**lát**	

- **non-PatU**: lexical variation: *lát-t-unk* vs. *tát-ott-unk* (while *lát-ott = tát-ott*)
- ***-t**#: Vt-final stems take -*Vtt* only if the phonetic cue (length) is not strong enough → **non-ParU** for certain stems (*lát-t-a* vs. *lát-ott*)

# avoidance of near homophony in Vd-final stems

the **-t** allomorph is possible after *Vd*-stems even word-finally because the past–present **tt↔d** contrast provides a greater phonetic cue: voice+length

	potential PAST (**-Vtt**)	potential PAST (**-t**)		actual PRESENT (**-∅**)
3SG	***tagad-<u>ott</u>***	**tagad-t* [tɑgɑ**t:**]	≈	***taga*d**
3SG	**ragad-ott*	***ragad-t*** [rɑgɑ**t:**]	≈	***raga*d**

- **non-PatU**: lexical variation
- some Vd-stems can take **-t**# since the phonetic cue (voicing+length) is strong enough→ **non-ParU** for certain stems (*tagad-ta* vs. *tagad-ott*)
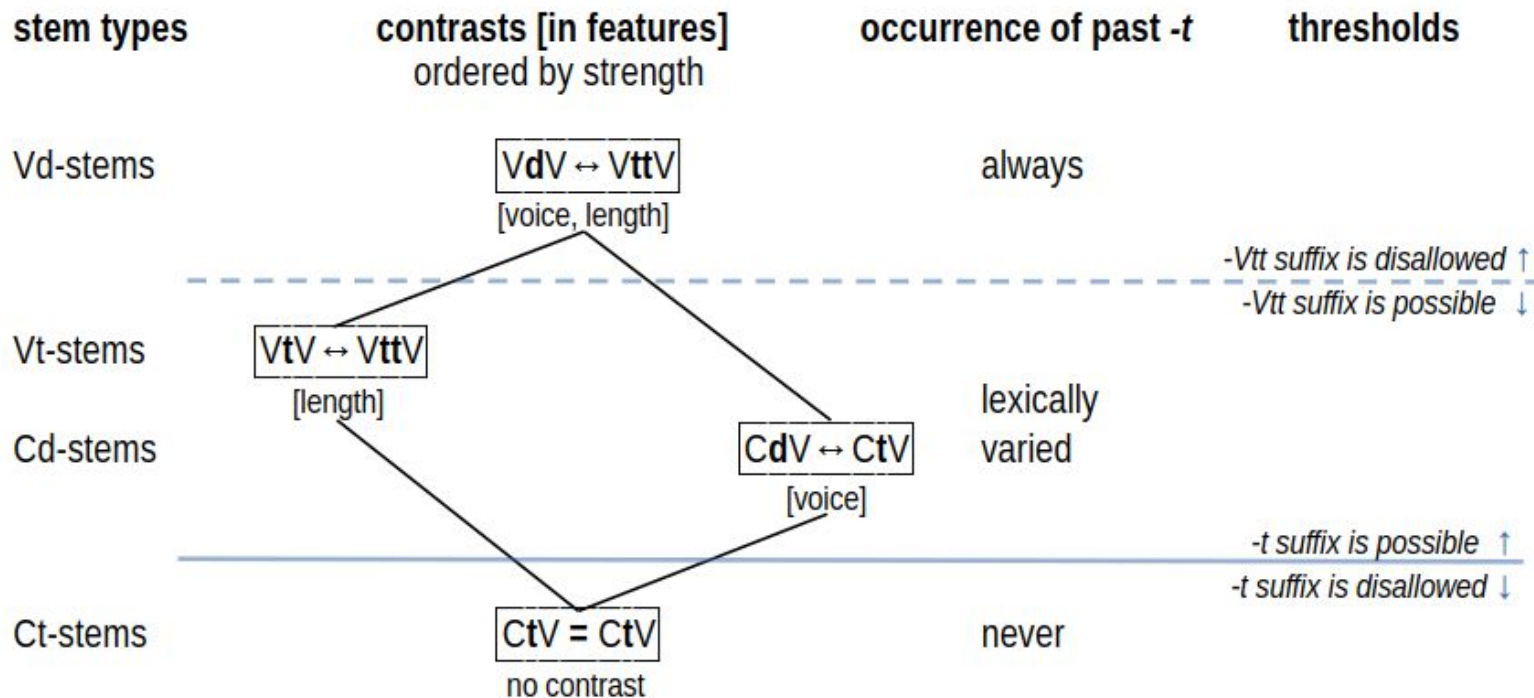
Hasse diagram of contrasts and the past allomorphs (_#)

Trón & Rebrus (2005)
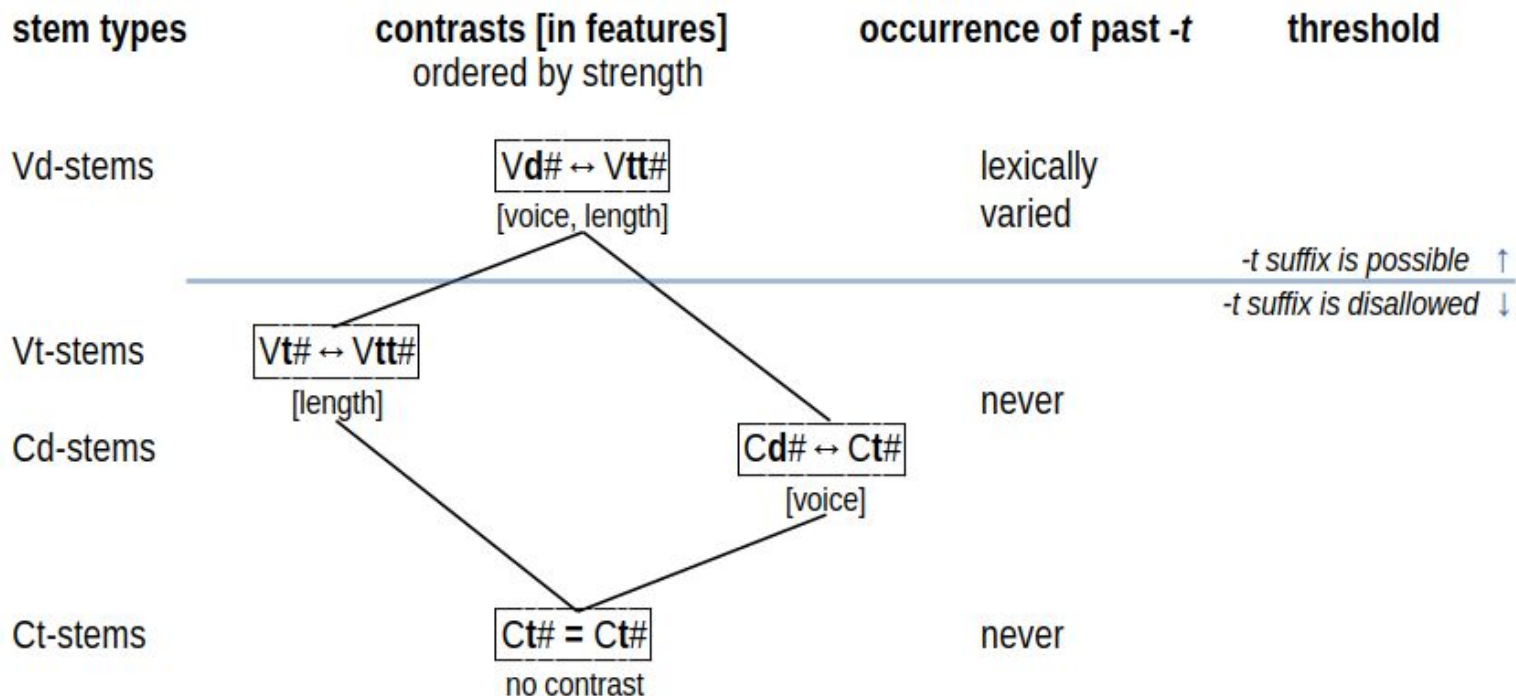
Hasse diagram of contrasts and the past allomorphs (_V)

Trón & Rebrus (2005)

nonuniformity in the past subparadigm of d/t-final stems

stem ending (PRES)	PAST		contrastive feature(s) PRES vs. PAST -t	past forms		uniformity	
				_ #	_V	**ParU** no allomorphy within par.	**PatU** no lexical variation
Ct	**=**	Ct	–	*tart-ott*	*tart-ott-a*	yes	yes
Cd	**≈**	Ct	[voice]	*hord-ott* *old-ott*	*hord-**t**-a* *old-**o**tt-a*	no yes	**no**
Vt	**≈**	Vtt	[length]	*lát-ott* *tát-ott*	*lát-**t**-a* *tát-**o**tt-a*	no yes	**no**
Vd	**≠**	Vtt	[voice] [length]	*ragad-**t*** *tagad-**o**tt*	*ragad-t-a* *tagad-t-a*	yes no	**no**

factors conditioning lexical variants

- **syllable count** ⇐ functional motivation: base identification (Simonović 2015), see appendices 1 & 2
  - monosyllabic stems: *-Vtt* vs. polysyllabic stems: ***variation*** (vacillation or lexical)
    - e.g. *old-<u>o</u>tt-ak* 'solve' vs. *ságuld-<u>o</u>tt/**t**-ak* 'run'
    - e.g. *ad-<u>o</u>tt* 'give' vs. *ragad-**t*** 'adhere' and *ragad-<u>o</u>tt* 'grab'
- **frequency** ⇐ listedness (Steriade 1999a), see appendices 1 & 2
  - frequent monosyllabic stems: ***-t,*** infrequent stems: ***-Vtt***
    - e.g. *kezd-**t**-ek* 'start' (**14069** tokens) vs. *küzd-<u>ö</u>tt-ek* 'struggle' (**1641** tokens)
    - e.g. *lát-**t**-ak* 'see' (**39931** tokens) vs. *hat-<u>o</u>tt-ak* 'affect' (**2103** tokens)
- **morphology** ⇐ affix-specific uniformity
  - patterns determined by specific stem internal derivational suffixes
    - transitive *-ít*: ***-Vtt***, e.g. *ford-<u>ít</u>-<u>o</u>tt-a* 'turn (tr.)' vs. *for-g-<u>at</u>-**t**-a* 'rotate (tr.)'
    - intransitive: *-ad~ed*: ***-t***, e.g. *rep-<u>ed</u>-**t*** 'split (intr.)' vs. *rep-<u>ked</u>-<u>e</u>tt* 'flutter'

summary of past suffix allomorphy

- paradigmatic contrast is always maintained within the subparadigm (past/present)
- in *d/t*-final stems paradigmatic contrast is perceptually enhanced by allomorph selection (potentially resulting in nonuniformity within the paradigm)
  - perceptually absurd pattern (-*Vtt-V*- and -*t*# in the same paradigm) does not exist
  - -*Vtt* allomorph is only *enforced* when -*t* allomorph endangers contrast (when enforced, it is uniformly selected even if the following suffix in itself would ensure contrast, see appendix 3)
  - -*t* allomorph is only *possible* when it does not yield total **or partial** homonymy
  - perceptually plausible thresholds are set for degree of contrast in different environments
- lexical variation is only possible in environments where both alternative allomorphs maintain contrast within the paradigm
  - it is generally unpredictable but subregularities (stochastic and categorical) exist: functional, usage-based or morphological factors

conclusions

- **the gradual character of maintaining paradigmatic contrast**
    - **morphologically** relative: a contrast can be neutralized to maintain another contrast
    - **lexically** variable: only certain stems repair weak contrasts
    - **phonologically** gradual: the less distinctive the contrast is, the more likely it is repaired, where the distinctiveness of the contrast means (i) the extension of the set of *features* involved and (ii) the perception *cues* available in the the position

- **nonuniformity** can be a tool to **repair** weak/zero **contrasts**
    - paradigmatic nonuniformity: affix allomorphies can occur within the paradigm in order to maintain the level of contrasts above a threshold
    - the gradual character of contrasts provides an intricate pattern of allomorphy involving different types of nonuniform behaviour: within paradigm (**non-ParU**) and/or unpredictability from phono/morphological pattern of the stem (**non-PatU**)

acknowledgements

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references

Abondolo, Daniel Mario. **1988**. Hungarian Inflectional Morphology. Budapest: Akadémiai Kiadó. ★ **Downing**, Laura J., Tracy A. Hall, and Renate Raffelsiefen (eds.). 2005. Paradigms in Phonological Theory, Oxford: Oxford University Press. ★ **Kenstowicz**, Michael. **1997**. "Base identity and uniform exponence: alternatives to cyclicity." In Jacques Durand and Bernard Laks, eds., Current Trends in Phonology: Models and Methods. Salford: University of Salford, 363–394. ★ **Kenstowicz**, Michael. **2005**. Paradigmatic Uniformity and Contrast. In: Downing & al. 2005: 145–169. ★ Péter **Rebrus &** Miklós **Törkenczy**. **2005**. Uniformity and Contrast in the Hungarian Verbal Paradigm. In: Downing & al. 2005: 262–295. ★ **Simonović**, Marko. **2015**. Lexicon immigration service: Prolegomena to a theory of loanword integration. PhD thesis, Universiteit Utrecht. ★ **Steriade**, Donca. **1999a**. Lexical Conservatism. In Linguistics in the Morning Calm, Selected Papers from SICOL 1997. Linguistic Society of Korea, Hanshin Publishing House. 157–179. ★ **Steriade**, Donca. **1999b**. Alternatives to syllable-based accounts of consonantal phonotactics. In O. Fujimura, B. D. Joseph and B. Palek (eds.) Proceedings of the 1998 linguistics and phonetics conference: Item order in language and speech. Prague: Karolinum Press. 205–245. ★ **Steriade**, Donca. **2009**. The Phonology of Perceptibility Effects: the P-map and its consequences for constraint organization. in Kristin Hanson and Sharon Inkelas (eds.) The Nature of the Word: Studies in Honor of Paul Kiparsky. 151–179. ★ **Trón**, Viktor and Péter **Rebrus**. **2005**. Re-presenting the Past: Contrast and Uniformity in Hungarian Past Tense Suffixation. In: Christopher Piñón and Péter Siptár (eds.), Papers from the Düsseldorf Conference Approaches to Hungarian 9. Budapest: Akadémiai Kiadó. 305–327.

appendix 1: factors conditioning lexical variants (Cd/Vt-stems)

stem ending	monosyllabic stems		polysyllabic stems
	"frequent" *-t* past	**"infrequent"** *-Vtt* past	variation
Cd	*mond-**t**-V* 'say' **388.1k** *kezd-**t**-V* 'start' **127.6k** *küld-**t**-V* 'send' **34.2k** *hord-**t**-V* 'wear' **6.0k**	*küzd-**ö**tt/?t-V* 'struggle' **3.1k**/39 *old-**o**tt/??t-V* 'solve' **1.0k**/70 *told-**o**tt/??t-V* 'tag' **0.2k**/22 *áld-**o**tt/??t-V* 'bless' **0.2k**/5	vacillation *örvend-**e**tt/-**t**-V* 'exult' 20/366 *ságuld-**o**tt/-**t**-V* 'rush' 355/20 *čikland-**o**tt/-**t**-V* 'tingle' 0/3
Vt **non -ít**	*lát-**t**-V* 'see' **173.9k**	*jut-**o**tt-V* 'come to' **38.2k** *köt-**ö**tt-V* 'bind' **23.9k** *fut-**o**tt-V* 'run' **8.9k** *hat-**o**tt-V* 'affect' **3.8k** etc. (*vet, ňit, šüt, üt*)	*mutat-**t**-V* 'show' *alkot-**t**-V* 'create' & several roots & several suffixed forms with *-hat~het* 'POS', *-(t)at~(t)et* 'FACT'
-ít *-Vtt*	X	*tát-**o**tt-V* *fűt-**ö**tt-V* etc. (*vét, sít*)	*sám-ít-**o**tt-V* 'count' *ép-ít-**e**tt-V* 'build' & several stems

appendix 2: factors conditioning lexical variants (Vd-stems)

stem ending	monosyllabic stems -*Vtt#*	polysyllabic stems lexical variation
Vd *non* **-*ad~ed*** -*Vtt#*	*tud-***o***tt* 'know' *ad-***o***tt* 'give' *véd-***e***tt* 'protect' etc. *(sed, fed, sid)*	*senved-***ett*** 'suffer' *imád-***ott*** 'adore' & several monomorphemic roots & several suffixed forms with *-kod~ked~köd-* 'REFL'
-*ad~ed* **'INTR'** -*t#*	X	*mar-ad-**t*** *hal-ad-**t*** 'build' & several suffix forms with *-ad~ed* 'INTR'

appendix 3: potential homophonies (shaded) between pres and past endings

	front stem				back stem			
	indefinite		definite		indefinite		definite	
	PRS	PST	PRS	PST	PRS	PST	PRS	PST
1SG	-ek	-em	-em		-ok	-am	-om	-am
2SG	-es	-él	-ed		-as	-ál	-od	-ad
3SG	-∅		-i	-e	-∅		-ja	-a
1PL	-ünk		-jük	-ük	-unk		-juk	-uk
2PL	-(e)tek		-itek	-étek	-(o)tok	-atok	-játok	-átok
3PL	-enek	-ek	-ik	-ék	-anak	-ak	-ják	-ák
2<1SG	-(e)lek				-(a)lak			