

When the optimal output isn't: Velar deletion in Tuvan

K. David Harrison
Yale University

Main points

- Velars (both singlet and geminate) are deleted in intervocalic environments.
- Deletion is blocked in a range of cases, most of which seem to relate to morphemic/lexemic recoverability.
- Minimal dialect differences in velar deletion and blocking provide strong empirical evidence for the relevant constraints.
- The attested constraint rankings yield well-formed outputs; but these do not necessarily surface. In one set of cases, speakers avoid the optimal output dictated by their constraint ranking.

I. Turkic velar deletion (with suffixation of possessive /-I/)

- | | | | |
|--------------------|--------|----------|------------|
| (1) <u>Turkish</u> | bebek | bebe.i | (*bebek-i) |
| | 'baby' | 'baby-3' | |
| (2) <u>Kazak</u> | qaraq | qaraa | (*qaraq-i) |
| | 'eye' | 'eye-3' | |

II. Tuvan velar deletion (Anderson & Harrison 1999)

Velar final noun plus suffix (Possessive /-I/)

- | | | | |
|-----|----------------|---------------|---------------------|
| (3) | u [⊙] | uu | (*u [⊙] u) |
| | 'direction' | 'direction-3' | |
| (4) | idik | idii | (*idiki) |
| | 'boot' | 'boot-3' | |

Velar final verb plus suffix (Negative /-BA/, Present/Future /-Ir/)

- | | | | |
|-----|------------|------------|-----------------------|
| (5) | sag-ba- | saar | (*sa [⊙] ar) |
| | 'milk-NEG' | 'milk-P/F' | |

Long suffixes: (Past /-GAN/, Unaccomplished /-GAIk/)

- | | | | |
|--------|---------|--------------|-------------------------|
| (6) a. | isĕ | isĕken | (*isĕen) |
| | 'drink' | 'drink-PAST' | |
| b. | bizĕ | bizĕ-en | (*bizĕ [⊙] en) |
| | 'write' | 'write-PAST' | |

- | | | | |
|--------|---------|------------------|-----------------------------|
| (7) a. | uñ | uñ-gelek- | (*uñ-elek) |
| | 'exit' | 'exit-UNACCOM' | |
| b. | egele- | egele-elek | (*egele- [⊙] elek) |
| | 'begin' | 'begin- UNACCOM' | |

III. Hiatus resolution

- Diphthongs never surface in Tuvan.
- Potential heterorganic sequences are resolved by assimilating the high vowel to the non-high vowel regardless of their relative order (cf. Casali 1996).

- | | | | | |
|--------|------------------------|---|---------|-----------------------|
| (8) a. | sakti + /-GAN/ | → | saktaan | (*sakti-an) |
| | 'miss-PAST' | | | |
| b. | da [⊙] + /-I/ | → | daa | (*da- [⊙] i) |
| | 'mountain-3' | | | |

IV. Blocking of velar deletion

Long -gVC suffix following a short CV- stem

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|--------|-------|--------------------|-----------------------|
| (9) a. | cĕ | cĕ [⊙] en | (*cĕĕen) |
| | 'eat' | 'eat-PAST' | |
| b. | de- | deen | (*de [⊙] en) |
| | 'say' | 'say-PAST' | |

Short CVg- stem (iff stem contains a high vowel)

- | | | | |
|---------|----------|--------------------|-----------------------|
| (10) a. | cĕg- | cĕ [⊙] an | (*cĕĕan) |
| | 'gather' | 'gather-PAST' | |
| b. | deg- | deen | (*de [⊙] en) |
| | 'touch' | 'touch-PAST' | |

Short -gV suffixes

- | | | |
|---------|--------------------------|---------------|
| (11) a. | xeme- [⊙] e | (*xemee) |
| | 'boat-DAT' | |
| b. | cĕ [⊙] a | (*cĕĕa) |
| | 'bow-DAT' | |
| (12) | uštun-de- [⊙] i | (*uštun-de-e) |
| | 'top-LOC-NOMLZR' | |
| (13) | irla- [⊙] i-zĕ | (*irlaa-zĕ) |
| | 'sing-MODAL' | |

Scenarios for blocking:

- when the sole vowel of a short stem would be exposed to assimilation (via hiatus resolution) (10).
- when the onset of a short suffix would be eliminated (11, 12, 13)

Recoverability is the motivating factor common to all blocking effects.

- Dialects exhibit varying thresholds of recoverability.
- Short stems & suffixes allow or block deletion accordingly.
- Long stems & suffixes undergo deletion in all dialects, never blocking it.

V. Minimal variation

Deletion and blocking effects differ minimally across several Tuvan dialects and closely-related, cognate languages.

(14) <u>Tuvan Dialects</u>	cĕ+ /GAn/ 'eat-PAST'	xeme+ /GA/ 'boat-DAT'
A. Standard	cĕ ^o en	xeme- ^o e
B. Milk Lake	cĕ-en	xeme- ^o e
C. Tere-Xol	cĕ ^o en	xeme-e
D. Tozã	cĕ-en	xeme-e

(15) <u>Related languages</u>		
Tofa (Rassadin 1983)	cĕ-en	xemee
Xakas (Anderson 1998)	cĕ-en	kimee

VI. Towards a formal model of velar deletion and blocking

The above variation provides excellent empirical evidence for the constraints needed in an OT model (Prince & Smolensky 1993).

Constraints

- | | |
|--|-----------------------|
| No Intervocalic velars ¹ | *VGV |
| Enhanced faithfulness to 1 st syllable vowel ² | F.V1 |
| Hiatus Resolution | HR |
| HR is a cover constraint for: | |
| No heterorganic vowel sequences ³ | NOHIATUS |
| Enhanced faithfulness to low vowels ⁴ | Faith.IO[+low] |

Factorial typology & outputs

		Output for /cĕ+ GAn/	Dialect, lang. where attested
(16) <u>Possible rankings</u>			
(i) *VGV, HR >> F.V1		cĕ-en	D, Tofa, Xakas
(ii) HR, F.V1 >> *VGV		cĕ ^o en	A, C
(iii) *VGV, F.V1 >> HR		<u>cĕen</u>	B

VII. When do speakers disprefer the optimal candidate?

- (17) For dialect B, optimal outputs are:
- | | |
|-----------|---------------------|
| a. [cĕen] | 'eat-PAST' |
| b. [cĕan] | 'gather-PAST' (9a.) |

- Speakers agree that [cĕen] is the only well-formed output for dialect B. If aware of forms like those of dialects A, C and D, they reject these.
- Speakers only produce forms like [cĕen] under experimental conditions (e.g. when forced to adhere to a single paradigm). They never spontaneously produce them, in fact, they strongly disprefer them.
- Instead, speakers of dialect B avoid paradigm 1 and skip to the semantically similar (but not identical) paradigms 2 or 3 instead.

Morphological avoidance

(18) Three verbal paradigms

	1.	2.	3.	
DIALECTS	VERB-PAST	VERB-CV-PAST	VERB-CV AUX-PAST	
A, B, C, D	isĕken	izĕp-ken	izĕp aldım	'drink'
DIALECTS				
A, C	cĕ ^o en	cĕp-ken	cĕp aldım	'eat'
D	cĕ-en	cĕp-ken	cĕp aldım	
B	<u>cĕen</u>	cĕp-ken	cĕp aldım	

- Speakers clearly know the relevant ranking of their constraints (16).
- Dialect B speakers can be induced to produce output(s) dictated by the constraint ranking they employ (17).
- However, they systematically avoid such outputs (18), employing morphological avoidance (i.e. skipping to an alternative paradigm)

Avoidance as a general phenomenon is not uncommon, it may be motivated by a variety of factors including sociolinguistic, stylistic, etc.

(19) English Everyone_i should eat their_i / ?his_i / ?her_i lunch.

(20) Turkish epenthesis *s_jkor* (**skor*) 'score'
epenthesis avoided *s_ki* (**s_jki*)⁵ 'ski'

In the Tuvan case, the constraint hierarchy dictates [**cĕĕn**] (17a, b).

Yet, this candidate is avoided for what appear to be purely phonological reasons (e.g. it may violate some other high-ranked constraint such as ONSET).

This is not the behavior we would expect in an OT model of grammar that predicts that the optimal output will always surface. Speakers should be content with the candidate that incurs the least number of violations, even if that candidate is not completely free of violations.

Instead, speakers skip to another paradigm to employ a form that may involve even fewer violations.

How do we model this dual behavior of experimental vs. spontaneous production? How do we model what amounts to a phonological opinion on the part of the speaker?

¹ See Orgun 1996, Inkelas 1998.

² For effects related to positional faithfulness, see Steriade 1993, Beckman 1998.

³ See Pulleyblank 1998

⁴ On “sonority sensitive faithfulness constraints” see Pulleyblank 1998.

⁵ Epenthesis calls for [s_jki] 'ski'. Speakers avoid this because it sounds like a vulgar word of Turkish.

Abbreviations

CAUS	Causative	PERF	Perfective Aspect
CV	Converb	P/F	Present/Future Tense
DAT	Dative	NOMLZR	Nominalizer
LOC	Locative case	UNACCOM	Unaccomplished

References

- Anderson, Gregory D.S. 1998. *Xakas*. Languages of the World/Materials, vol. 251. München: LINCOM Europa.
- Anderson, Gregory D.S. & K. David Harrison. 1999. *Tyvan*. Languages of the World/Materials, vol. 257. München: LINCOM Europa.
- Beckman, Jill. 1998. Positional Faithfulness. Ph.D. Dissertation. Amherst: Univ. of Mass.
- Casali, Roderic. 1996. Resolving Hiatus. Ph.D. Dissertation. Los Angeles: UCLA.
- Inkelas, Sharon. 1998. Phonotactic blocking through structural immunity. Handout, Lexicon in Focus.
- Orgun, Orhan. 1996. Sign-based morphology and phonology. Ph.D. Dissertation. Univ. of California, Berkeley
- Prince, Alan S. & Paul Smolensky. 1993. Optimality Theory: Constraint Interaction in Generative Grammar. ms. Rutgers University and University of Colorado, Boulder.
- Pulleyblank, Douglas. 1998. Yoruba vowel patterns: Deriving asymmetries by the tension between opposing constraints. ROA.
- Rassadin, V.I. 1983. *Morfologiya tofalarskogo yazyka v sravnitel'nom osveshchenie*. Moscow: Nauka.
- Steriade, Donca. 1993. Positional Neutralization. Paper delivered at NELS 24.

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kdh@pantheon.yale.edu