

Phonological alternations at morphological edges

Microparametric variation in prosodic structure: case studies
from Algonquian

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Hypotheses (repeated)

H1 ((prefixes– preverb– initial –final –suffixes)_{PStem})^{PWd}

H2 (prefixes– preverb– (initial –final –suffixes)_{PStem})^{PWd}

H3 (prefixes– (preverb–)_{PStem} (initial –final –suffixes)_{PStem})^{PWd}

- Current focus on preverb-initial boundary because it distinguishes between the three hypotheses

Probe for prosodic structure using lexical roots [Cheyenne]

- Roots like *ame-* ‘along’ may occur in initial and preverb positions
- Test whether roots pattern alike or differently in each position

<u>prefix-</u>	<u>preverbs-</u>	<u>[initial</u>	<u>-final]</u> _{stem}	<u>-suffixes</u>	<u>Translation</u>
É-		[ame	-méohe]		‘He’s running.’
É-		[sóhp	-a'xe]		‘He took off.’
É-	amè-	[sóhp	-a'xe]		‘He ran by.’

(Cheyenne dictionary: Fisher et al. 2006)
(Preverbs: Bloomfield 1946: 103; Goddard 1990: 478)

What kinds of evidence do we search for?

1. Morphophonological alternations
2. Generalizations *across domains*
3. Generalizations *at morpheme edges and junctures*

Domain: subset of the morphological template

Edge: () conditioning environment is an edge segment

Juncture: # conditioning environment relies on presence of two morphemes (and also sometimes on properties of edge segments)

Bottom-up methodology: look for data observations, then fit the theory.

(Hall 1999; Nespov & Vogel 2007 [1986])

Example: Cheyenne

Cheyenne


[Home](#)[Lexicon](#)[English - Cheyenne](#)[Categories](#)[a](#)[e](#)[h](#)[k](#)['](#)[m](#)[n](#)[o](#)[p](#)[s](#)[š](#)[t](#)[v](#)[x](#)

Dictionary

Fisher, Lemán,
Pine, and
Sanchez
(2006)

and regularly
updated online


-ame *vai.* shoot. **É-ame.** He shot. *vta:* **-am.** *See:* **ho'amé;** **vóheame.** *Category:* **shoot.**

 **ame** *ni.* pemmican. *Simplified Spelling um.* *See:* **aměške.** *Etym:* *pemi 'grease'. *Category:* **meat.**


ame- *pv.* along, by, continue. 'along' as in 'while going along'; 'by' as in 'while going by'. **É-aměsóhpa'xe.** He ran by. **É-amevonehne.** He is crawling. **É-ametó'hóna.** He is swimming. **É-ametáhoo'e.** He's riding along (for example, on horseback). **Étaome-ametāno.** He has his own thing going; nobody can tell him anything different. **É-aměhesematónéóhtse.** He (especially a dog) is going around sniffing here and there. **É-aměho'ěhāhtse.** He keeps feeding the fire. **É-aměhóxovéstáva.** He traveled along. **ame-'xóvéva** as time goes along. *See:* **něše-;** **ameto.**

-ame *sfx.* possessive noun suffix. **namótšěšk-ame** my knife. **naka'ěškóněh-ame** my (non-biological) child. **hevéhon-amo** his chief(s). **nama'háhkéséhame** my old man. *Ques:* semantics of this suffix?? inalienable possession?? *Category:* **check.**

-ameeh *vta.* help s.o. move **É-ameehóho.** He helped him move. *Category:* **move.**

-ameehe *vai.* move one's belongings to another residence.  **É-ameehe.** He is moving. **tsé-ameehese** the travelers. [1987:18] **Éne'-ameehéstove.** There is moving of camp (towards speaker); it is the "second coming" (an elder says this term is used to speak of a second coming which Cheyennes have believed in. *fai:* **-eehe.** *See:* **-aseehe;** **-heséehe.** *Category:* **camp, motion.**

-amee'e *vai.* grow up. **É-amee'e.** He's growing up. *Synonym* **-ameěsee'e.** *Phon:* vs

-ameěsee'e *vai.* grow.  **É-ameěsee'e.** He is growing. *Phon:* vs *See:* **-ěsee'e.** *Category:* **body function.**

-améetó *vii.* snow go by, snow continually. **É-améeto.** The snow is going by / it keeps on snowing. *Category:* **snow.**

Annotated spreadsheet

Surface analysis	Example Gloss	Initial Form	Initial Gloss	Final Form	Final gloss	Category
É-am-axe.	He fled, he took off.	am-	along; by (position)	-a'xe	hurried motion	fai
É-am-évone.	The sound went by.	am-	along; by (position)	-évone	sound	fii
É-am-o'xe.	He's carrying (it) on his back.	am-	along; by (position)	-o'xe	carry load (especially game) on back	fai(+o)
É-ame-méohe.	He ran along.	am-	along; by (position)	-méohe	run, strain, thrust	fai
E-ame-tāno.	He's patiently waiting.	am-	along; by (position)	-tanó (-átanó-'t)	want; feel; mind; think; desire; mental state; urge; mood	fai

Root *ame-* ‘along’ in initial position [Cheyenne]

<u>pre</u> – <u>preverb</u> – <u>[initial</u>	<u>–final]</u> _{stem}	<u>–suf</u>	<u>Translation</u>
É–	[am	–a'éno'hāme]	He is driving along.
É–	[ame	–méohe]	He’s running.

Alternation: [am-] ~ [ame-] ‘along’

Generalization: Avoid CC and VV sequences in derived environments.

Root *ame-* ‘along’ in preverb position [Cheyenne]

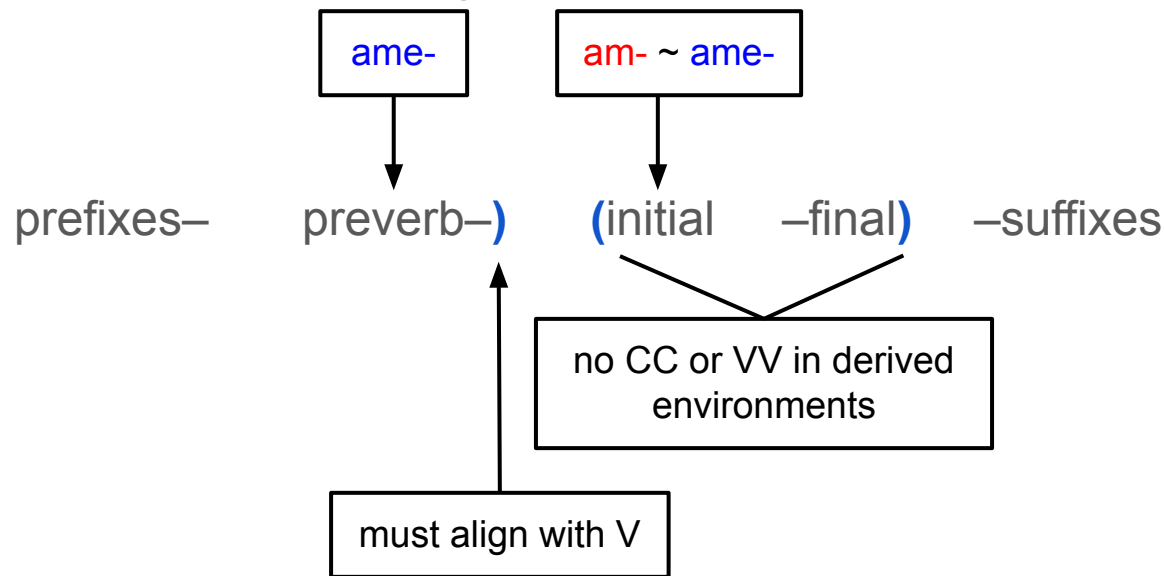
<u>pre</u> – <u>preverb</u> – <u>[initial</u>	<u>–final]</u> _{stem}	<u>–suf</u>	<u>Translation</u>
É– <i>ame</i> –	[é'kots –en]	–óho	He walks along with his arm around her.
É– <i>amè</i> –	[sóhp –a'xe]		He ran by.

No alternation: [ame-] ‘along’

Generalizations: Preverb must end in a vowel

Summarizing generalizations [Cheyenne]

- Different generalizations hold for preverb versus initial position
- Evidence for prosodic edges and domains (via indirect reference theory)



Subset of findings

Overview of findings

Three types of processes are evident from alternations:

	Oj	PC	Ch	Ar	BI
Process at right edge of preverbs	✓	✓	✓	✓	✗
Process at left edge of initial+preverbs	✗	✗	✗	✓	✓
Process blocked at preverb-initial juncture	✓	✗	✗	✓	✗

(perhaps an ✗ will change to ✓ with more research!)

Processes at right edge of preverbs

- [i]-epenthesis after consonants
 - yes = Cheyenne, Ojibwe, Plains Cree, Arapaho
 - no = Blackfoot
- creates preverbs which end in a vowel

Cheyenne preverbs restricted to vowels or glottals

- Vowel inventory = {e, o, a}
- Glottal inventory = {' , h}

Final vowels

- éva- 'back, return'
sóhpe- 'through'
màsó- 'suddenly, in a group'

Final glottals

- tšěške'- 'little'
méh- 'could have, would have'

Blackfoot preverbs have no edge restrictions

- No preverb alternations before vowels vs. consonants
- Right edge can end in **V** or **C** or **CC** (clusters, geminates)

V	sa-	'out'	C	ikkam-	'fast'	CC	ipo't-	'reciprocal'
	isimi-	'secretly'		paahtsik-	'barely'		pi ss t-	'inside'
	ka'to-	'assist'		miistap-	'away'		ikkah s -	'humorous, funny'
				sska'-	'extremely'			
							iss-	'young, in front'
							kip p -	'might' (please)
							matt-	'again'

Processes at left edge of initial + preverbs

- [i]-epenthesis before an obstruent at a morphological juncture
 - yes = **Blackfoot**
 - no = Cheyenne, Ojibwe, Plains Cree, Arapaho
- nasal deletion at a morphological juncture
 - yes = **Blackfoot**
 - no = Cheyenne, Ojibwe, Plains Cree, Arapaho

- conspiracy of processes avoids [+cons] segments at junctures

(Arapaho has [h] epenthesis at the left edge of initial + preverbs beginning in a vowel)

Obstruents avoided at the left edge of roots after a prefix

Left edge

pon-ihtáá-t

cease-AI-IMP.SG

‘pay!’

After prefix

áaks-ipon-ihtaa-wa

FUT-cease-AI-3

‘she will pay’

After C

áká-ipon-ihtsi-wa

PRF-cease-fall.AI-3

‘he is dead’

After V

Note: root is underlined; only considering patterns for roots with an initial light syllable.

(Frantz & Russell 2017: 91)

Nasals avoided at the left edge of roots after a prefix

Left edge

mokáki-t!

wise.AI-IMP.SG

‘be smart!’

After prefix

áak-okaki-3wa

FUT-wise.AI-3

‘she will be smart’

After C

n-iká-ókaki-ssko-a-wa *After V*

1-PRF-wise-by.body.TA-3OBJ-3

‘I have “wised him up”’

Note: root is underlined; only considering patterns for roots with an initial light syllable.

(Frantz & Russell 2017: 182–183)

Synchronic analysis: two groups of roots

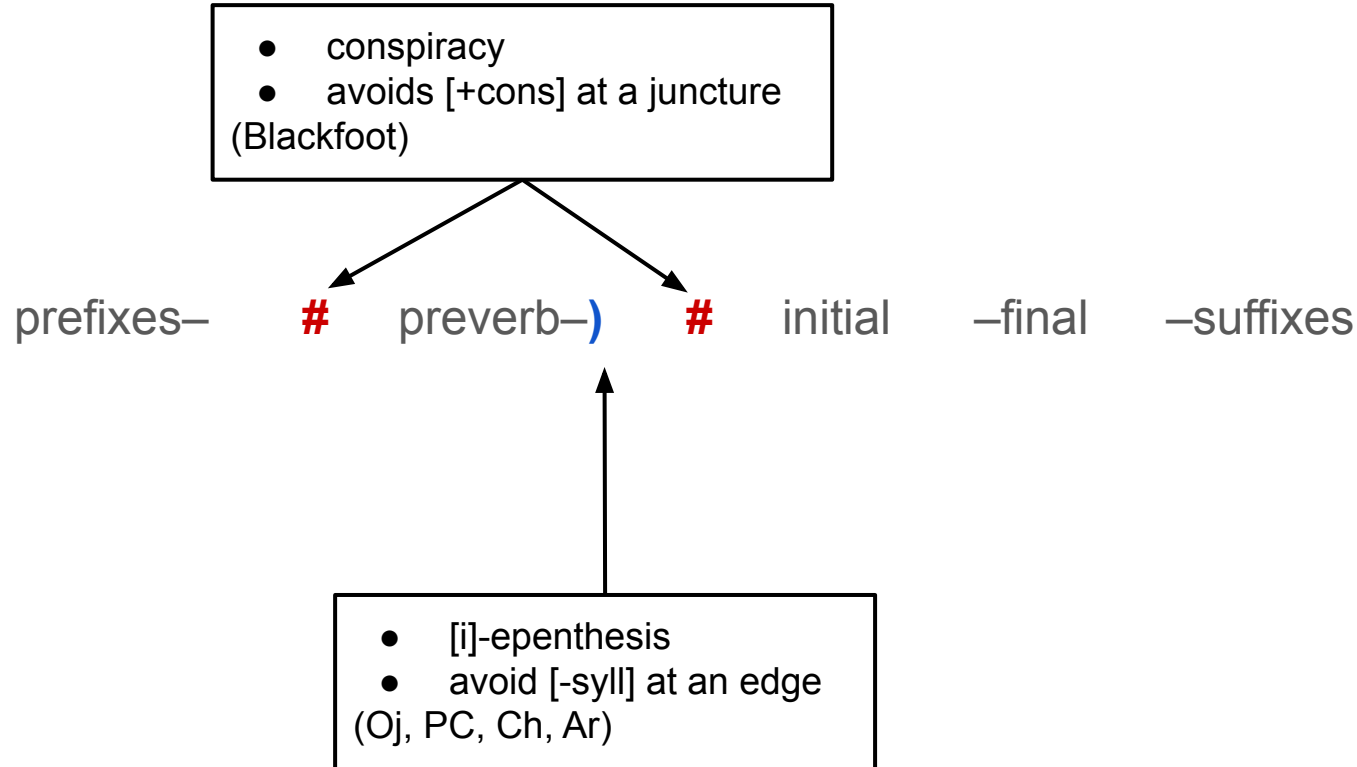
<u>UR</u>	<u>Left edge</u>	<u>After C</u>	=	<u>After V</u>	<u>Gloss</u>
/pon-/	pon-	ipon-		ipon-	'cease' (root)
/m ^{ok} aki-/	m ^{ok} aki-	okaki-		okaki-	'bring' (root)
/ipotsim-/	ipotsim-	ipotsim-		ipotsim-	'poison' (root)
/ok-/	ok-	ok-		ok-	'rope' (root)
	*p, *m	*p, *m		*p, *m	

Generalization: Avoid [+cons] after a juncture.

Also occurs at every juncture to the left (Weber 2022)

(Weber 2020: 260ff, 350ff; in press)

Summary: Processes at edges



Interim summary

- By examining alternations, we gain insight into phonological generalizations.
 - Subset shown here at right and left morphological edges and junctures.
 - Variation across languages!
 - some processes shared across languages, but others differ.
 - different edges are targeted in different languages.
 - Phonological generalizations reveal aspects of the prosodic structure
-
- P.S. We are highlighting our methods because...
 - ...anyone can do this! (even non-phonologists)

References

- Bloomfield, Leonard. 1946. Algonquian. In *Linguistic structures of Native America*, Osgood, Cornelius (ed.), 85–129. (Publications in Anthropology 6). New York: Viking Fund.
- Fisher, Louise, Wayne Leman, Leroy Pine Sr., and Marie Sanchez. 2006. *Cheyenne Dictionary*. Lame Deer, MT: Chief Dull Knife College. Also online at: <http://www.cdkc.edu/cheyennedictionary/index.html>
- Frantz, Donald G. & Norma Jean Russell. 2017. *Blackfoot dictionary of stems, roots, and affixes*. 3rd edn. Toronto: University of Toronto Press.
- Goddard, Ives. 1990. Primary and secondary stem derivation in Algonquian. *International Journal of American Linguistics* 56(4): 449–483.
- Hall, T. Alan. 1999. The phonological word: a review. In *Studies on the phonological word*, Hall, T. Alan and Kleinhenz, Ursula (eds.), 1–22. John Benjamins Publishing
- Nespor, Marina and Irene Vogel. 1986/2007. *Prosodic phonology: with a new foreword*. 2nd edn. Walter de Gruyters.