

Nêhiyawêwin (Plains Cree) prosody meets the Bloomfieldian template

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Situating ourselves

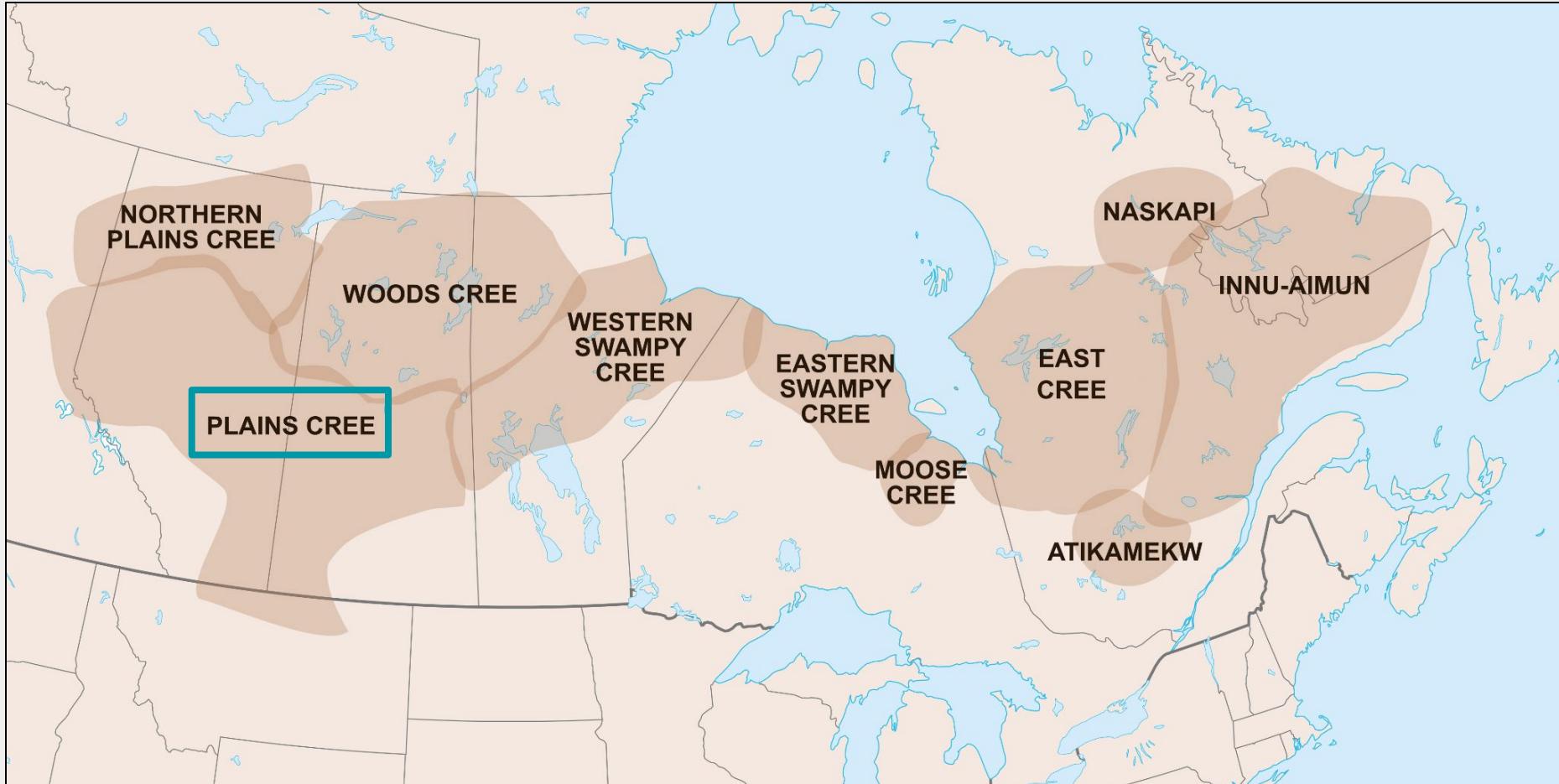


- **context:** language, methods, tools
- **question:** How does Bloomfieldian morphological template map onto prosodic structure?
hunch: preverb = prosodic word

- **juncture 1:** INITIAL-FINAL
 $(\text{pfx} - (\text{preverb} -)_{\text{wd}} (\text{initial} - \text{final} - \text{sfx})_{\text{Wd}})_{\text{PPh}}$
- **juncture 2:** PREVERB-INITIAL
 $(\text{pfx} - (\text{preverb} -)_{\text{wd}} (\text{initial} - \text{final} - \text{sfx})_{\text{Wd}})_{\text{PPh}}$

context

- the language
- methods
- tools



The language: Nêhiyawêwin (Plains Cree)

methods

METHOD

quantitative corpus methods

morphologically tagged corpus

- FST-based morphological model
- Constraint Grammar parser
- intelligent online dictionary (*itwêwina*; see tools)

corpus linguistics

- lexical semantics
- statistical methods
- multiple methods & sources of evidence

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qualitative formal methods

phonology

- morpho-phonology
- prosodic structure
- phonology-syntax interface

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syntax

- morpho-syntax
- discourse structure
- syntax-phonology interface

R.-M.
Déchaine
(UBC)

tools



- DICTIONARY (database)
nêhiyawêwin: itwêwina
[Cree: Words]
(Wolvengrey 2001, ...)

itwéwina		Plains Cree Dictionary	é-ki-nitawi-kâh-kîmôci-kotiskâwéyahk	Settings
<hr/>				
é-ki-nitawi-kâh-kîmôci-kotiskâwéyahk	i			
Preverb : é	i			
Preverb : kî	i			
Preverb : nitawi-	i			
Reduplication : kâh-	i			
Preverb : kîmôci-	i			
<i>form of kotiskâwéyahk</i>				
kotiskâwéyahk	i			
VAI-1				like: ni:paw
1.	s/he races,	s/he is in a race	ow	
2.	it gallops	ow		
<hr/>				
é-ki-nitawi-kâh-kîmôci-kotiskâwéyahk	i			
Preverb : é	i			
Preverb : kî	i			
Preverb : nitawi-	i			
Reduplication : kâh-	i			
Preverb : kîmôci-	i			
<i>form of kotiskâwéyahk</i>				

- CORPUS

Ahenakew-Wolfart texts

Modem | Parallel Log in Svenska | English |

WORP

Ahenakew-Wolffart Texts selected — 142.19K of 142.19K tokens

[mod = PVPim**]

Simple Extended Advanced Compare

KWIC Statistics Word picture

Results: 65 Go to page Show context

AHENAKEW-WOLFART TEXTS

«kítawit», **kí-pimi-kitsikospayán** miton ékwa cikhtawá éma wáksálá
ia, ásay máka mina óta níka pími-wicłóhuk, ahpónantí) óma
níkah-píni-páyakan », kí-étyáhtamán, »iwtew és áw iktew
wistá» **kí-étyáhtamán**, »iwtew, »tánis é-ídatapakéymoñ
éw és öhi wiččosaw; »évalaw étskaw áwá» ásay máka, mina
wiyáphak, »éwakoh, kíyápi
píni-»ér (tahli mihtéhánwina óm éwa wáksálá
hiwóskaw à mihap-mihičéyahk óma, mewák-é-, émekwá-é-pshkayáh
»nímáma óma híla é-papáyamáh-éyin, óta
níton è-kísíyahitahk, è-kísíyahitamán ékwa, »iwtew, »éta
»iwtew, »é-apt-pim-ántamáh, è-itisanmawak ice-cream,
mitosim Peter, »
oyáhk, konit ékwa mina máná éwakoyawí patéh | öki niskes
ta-wiyáhk étiwéh à-étiyáhk, sáhá wákpamáh patéh
wít ayá, kipalán », ramy mán-öh-pakotán, »é-iwtew,
(43) ékoní mina máná rínamáh wiččosaw

«kítawit», **kí-pimi-kitsikospayán** miton ékwa cikhtawá éma wáksálá
ia, ásay máka mina óta níka pími-wicłóhuk, ahpónantí) óma
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wistá» **kí-étyáhtamán**, »iwtew, »tánis é-ídatapakéymoñ
éw és öhi wiččosaw; »évalaw étskaw áwá» ásay máka, mina
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wít ayá, kipalán », ramy mán-öh-pakotán, »é-iwtew,
(43) ékoní mina máná rínamáh wiččosaw

Download hit page as...

Corpus

Ahenakew-Wolffart Texts

Text attributes

lang: crk
author: Cecilia Masakupare
title: piko Kiwyw-a-néakirtid; kéké
otacimowáh è-néhyawastot miton è-ah-
iwtew mána Cecilia Masakupare's
Autobiography published in Cree (Chapter
4)

Word attributes

baseform:
apiw
gloss:
{}(empty)
pos:
prt, wh, the, it, who, who is, who is there,
she is, she is situated, she is at home, she
stays at home
msd: Pv+PK+Vm+VAdj+Prs+Sg+En+Orh

- DICTIONARY (database) *Spoken Dictionary of Maskwacîs Cree*

Results for "miyo"		Search	Search	Advanced Search	Options		
miyo-tötamowin							
Translation: good deed							
Recording							Speaker
▶ 0:00 / 0:00	—	◀	●	⋮			MAR
▶ 0:00 / 0:00	—	◀	●	⋮			MAR
▶ 0:00 / 0:00	—	◀	●	⋮			ANN
▶ 0:00 / 0:00	—	◀	●	⋮			ANN
▶ 0:00 / 0:00	—	◀	●	⋮			HAR
▶ 0:00 / 0:00	—	◀	●	⋮			HAR

<https://speech-db.altlab.app/maskwacis/entries>



tools (continued)

- complex words modelled with **morphological template** (Bloomfield 1946)
- applied to Nêhiyawêwin by Wolfart (1973)

prefix- → preverb-

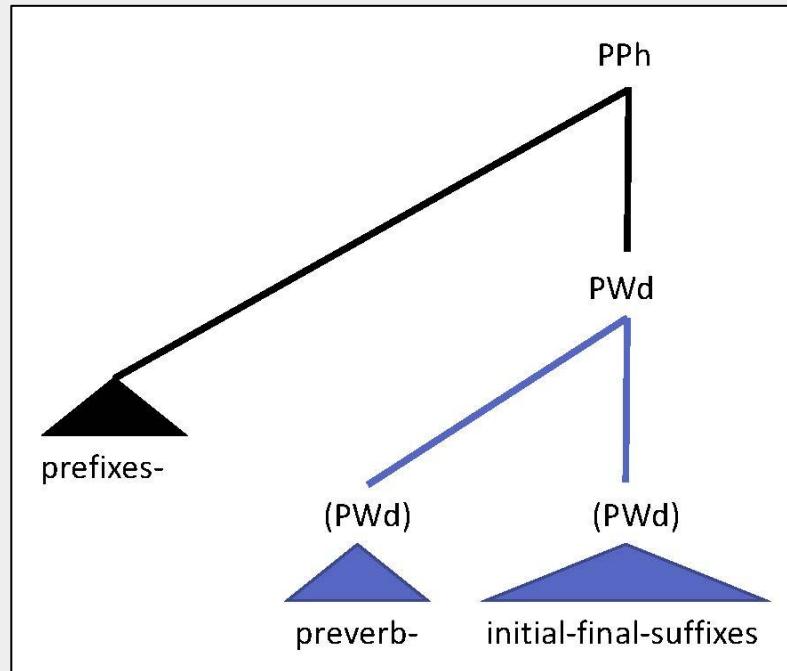
initial-(medial)-final-suffix

phonological domains modelled with **prosody hierarchy** (Selkirk 1986); applied to Blackfoot by Weber (2020)

u	utterance
	intonational phrase
	phonological phrase
Φ	prosodic word
	foot
F	syllable
σ	

question & hunch

- **question:** How does Bloomfieldian template map onto Nêhiyawêwin prosodic structure?
- **hunch:**
Nêhiyawêwin preverb = prosodic word



testing our hunch

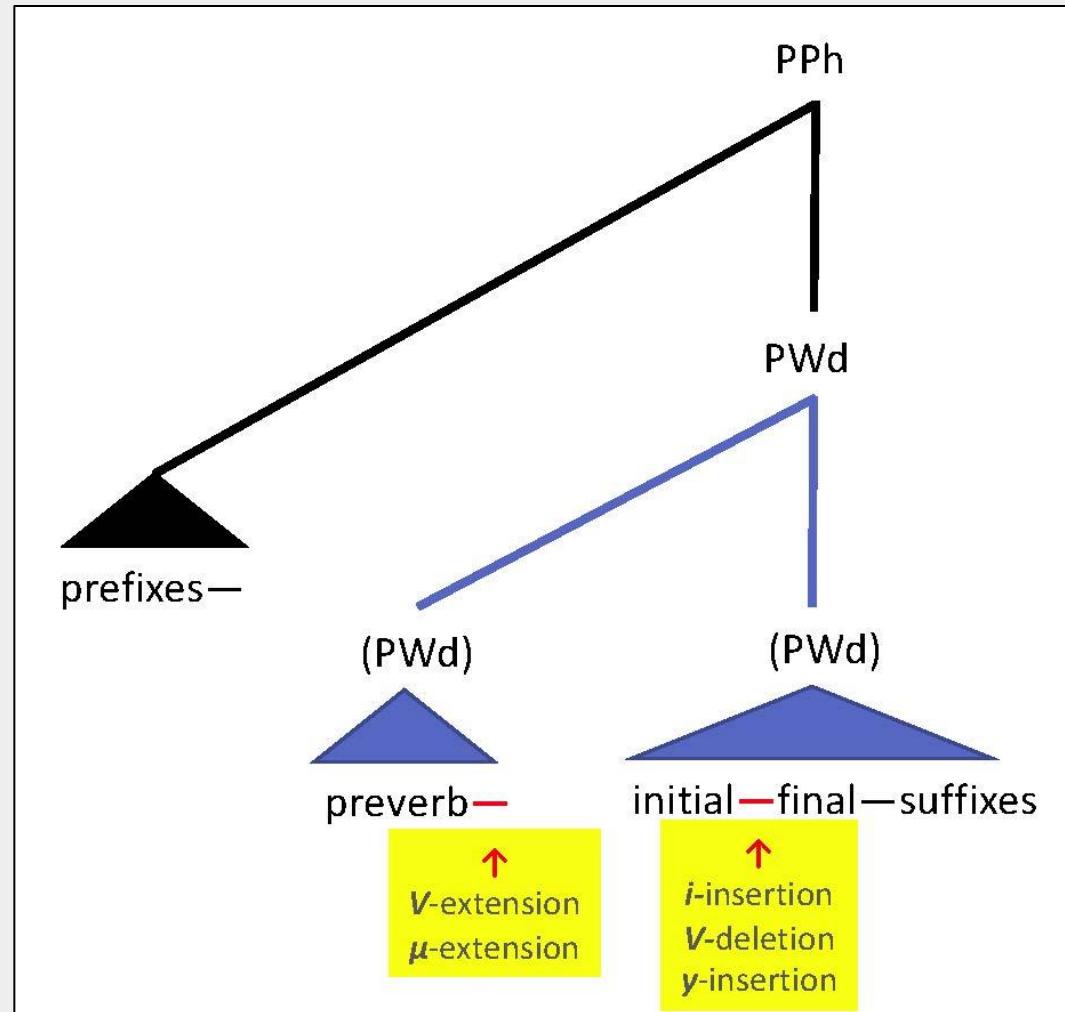
what the prosodic hierarchy predicts:

prosodic boundary =

locus of phonological processes

what this predicts for Nêhiyawêwin:

- **within-word processes**
...@INITIAL-FINAL juncture →
I-insertion
V-deletion
y-insertion
- **across-word processes**
...@PREVERB-INITIAL juncture →
V-extension
 μ -extension



clue 1: size gradation (i.e. “size matters”)

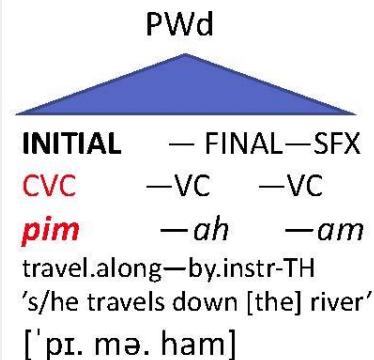
(1) SIZE MATTERS	INITIAL: minimally bimoraic (C)VV/(C)VC (*CV)	PREVERB: must end in V
		CV ta- ‘Irrealis, root CP’ ka- ‘Irrealis, compl CP’ RED CV- ‘event iteration’

(2) GRADATION VIA TRUNCATION	VhC	oht- ‘be from’	VV	ô- ‘from’, because, with’
	CVVC	pêt- ‘bring hither’ kîs- ‘finish’	CVV	pê- ‘hither’ kî- ‘past’
(3) GRADATION VIA EXTENSION	CVC	oht- ‘be from’	CVCV	ohci- ‘from’, because, with’
		pim- ‘extend horizontally’ mis- ‘large, big’ II		pimi- ‘along’ misi- ‘greatly, much, extremely’

clue 2: root occurs in INITIAL or PREVERB position

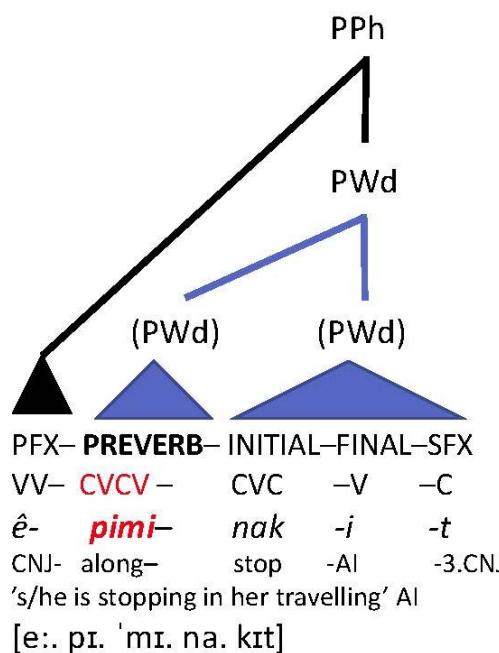
(1) INITIAL is bimoraic:

pim-... 'travel along'



(2) PREVB ends in V

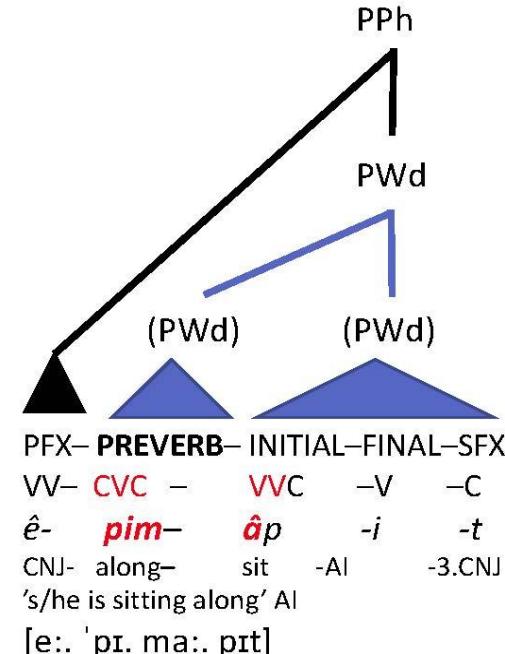
pimi-... 'along'



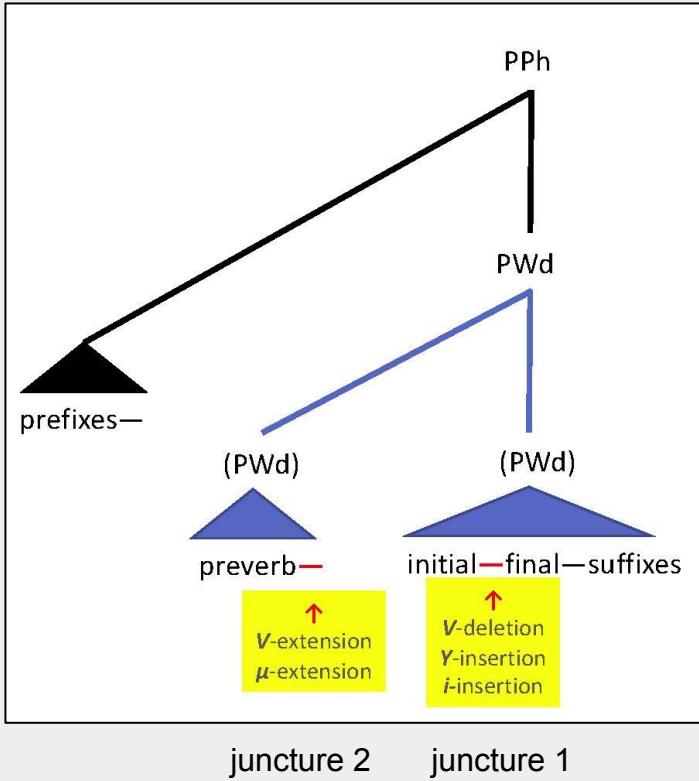
(3) PREVB conditions long VV

pim-â... 'along'

(cf. ê-**a**-pi-*t* 's/he is sitting')



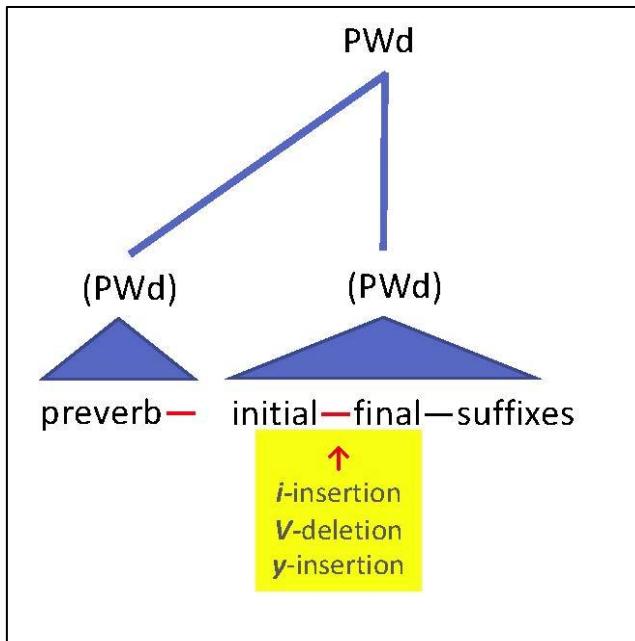
diagnostic: alternations @morphological junctures



juncture 1		-FINAL		
INITIAL	[C...]	[V...]	[VV...]	
[CVC]	1 ...C+iC...	4 ...C+V...	7 ...C+VV...	
	i-insertion			
	2 ...VV+C...	5 ...VV+V...	8 ...VV+yVV...	
[CVV]	V-deletion		y-insertion	
	3 n/a	6 n/a	9 n/a	
[CV]				

juncture 2		INITIAL		
PREVB—	[C...]	[V...]	[VV...]	
[...C]	1 n/a	4 n/a	7 n/a	
	2 ...VV+C...	5 ...VV+V...	8 ...VV+yVV...	
	V-extension	μ-extension	V-extension	
[...VV]	3 ...Cμ+V...	6 ...Cμ+V...	9 ...Cμ+VV...	
	μ-extension	V-extension	V-extension	
[...CV]				

juncture 1



juncture 1		—FINAL		
	INITIAL	[C...]	[V...]	[VV...]
[CVC]	1 ... C+iC ... <i>i</i> -insertion	4 ... C+V ...	7 ... C+VV ...	
[C ^{VV}]	2 ... VV+C ...	5 ... VV+V ... V-deletion	8 ... VV+yVV ... <i>y</i> -insertion	
[CV]	3 n/a	6 n/a	9 n/a	

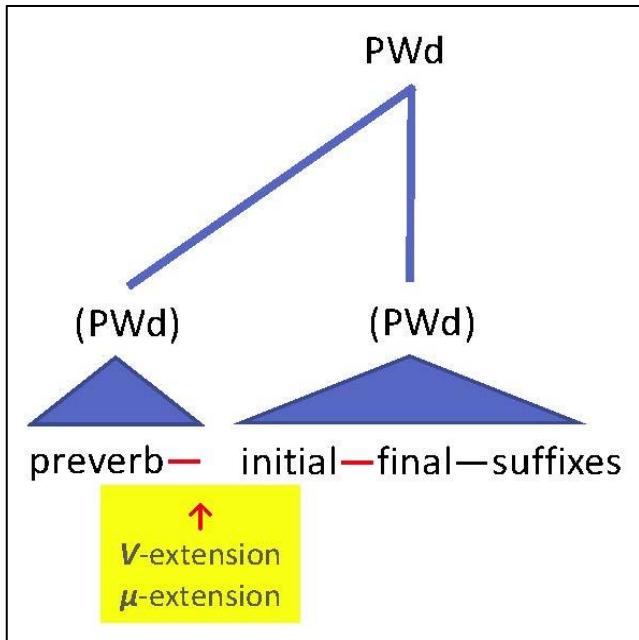
Table 1. initial-final juncture: (pfx– (preverb–)word(initial–final–sfx)word)phrase

1.	C	-C	→ <i>i</i> -insertion	2.	VV	-C	
	<i>kîp</i>	- <i>pâyi-</i>	'fall over' AI		<i>asê</i>	- <i>pâyi-</i>	'move back quickly' AI
	<i>ohp</i>	- <i>tot-</i>	'leap at' TI		<i>kiwê</i>	- <i>tot-</i>	'go back to' TI
	<i>isp</i>	- <i>kâpawi-</i>	'stand just so tall' AI		<i>asê</i>	- <i>kâpawi-</i>	'step backward' AI
	C	- <i>c...</i>	—		VV	- <i>c...</i>	—
	<i>ahp</i>	- <i>sw-</i>	'warm' TA		<i>pâ</i>	- <i>sw-</i>	'dry' TA
	<i>tâp</i>	- <i>h-</i>	'replace' TA		<i>astâ</i>	- <i>h-</i>	'frighten' TA
	<i>wêp-</i>	- <i>m-</i>	'urge' TA		<i>wisâ</i>	- <i>m-</i>	'invite' TA
	<i>wêp</i>	- <i>n-</i>	'throw away' TA		<i>nakâ</i>	- <i>n-</i>	'stop' TA
	<i>câstap</i>	- <i>wê-</i>	'speak rapidly' AI		<i>nihtâ</i>	- <i>wê-</i>	'speak well' AI
	<i>sîp</i>	- <i>yawêsi-</i>	'suffer long' AI		<i>wahkê</i>	- <i>yawêsi-</i>	'be temperamental' AI

Table 1 initial-final juncture: (pfx– (preverb–) _{word}(initial–final–sfx) _{word}) phrase

4.	C	-V		5.	VV	-V	→ V-deletion
	wâp	-isi-	'be white' AI		sawê	-si-	'have 4 sides' AI
	ohp	-ohtê-	'rise up' AI		asê	-htê-	'walk back' AI
	wêp	-ah-	'sweep' TI		matwê	-h-	'hammer' TI
7.	C	-VV		8.	VV	-VV	→ y-insertion
	ohp	-i-	'rise up' AI		wawê	y-i-	'get ready/dressed' AI
	wêp	-éyim-	'inclined to throw away' TA		tapwê	y-éyim-	'believe in' TA
	tip	-ôt-	'discuss with authority' TI		VV	y-ôt-	(example?)
	wêp	-âsi-	'be blown away' AI		nawê	y-âsi-	'lean into/against wind' AI

juncture 2



juncture 2	INITIAL		
PREVB—	[C...]	[V...]	[VV...]
[...C]	1 n/a	4 n/a	7 n/a
[...VV]	2 ... VV+C...	5 ... VV+V...	8 ... VV+VV...
[...CV]	3 ... Ci+C... V-extension	6 ... Cμ+V... μ-extension	9 ... Ci+VV... V-extension

Table 2. prestem-stem boundary: (prefixes– (preverb–) _{word}) (initial–final–suffixes) _{word}) phrase

4.	VV-	V		7.	C-	V	μ -extension
	pê-	it-ôht-	'come walking' AI		ati-	-it-oht-	'begin going along' AI
	pê-	ot-iht-	'come to' TA		mîy-	âti-n-	'take in' TA
	pê-	ap-i-	'come & sit' AI		wâsa k -	âp-i-	'sit in circle AI'
5.	VV-	VV		8.	C-	VV	<i>i</i> -extension
	VV-	i...-	—		C <i>i</i> -	i...-	—
	nihtâ-	êsk-ê-	'good at making icehole to hunt beaver' AI		C <i>i</i> -	ê...-	—
	nihtâ-	ôhô-simo-	'good at owl dance' AI		C <i>i</i> -	ô...-	—
	nihtâ-	âcim-o-	'tell good stories' AI		miyo-	âcim-o-	'tell good news' (AI)

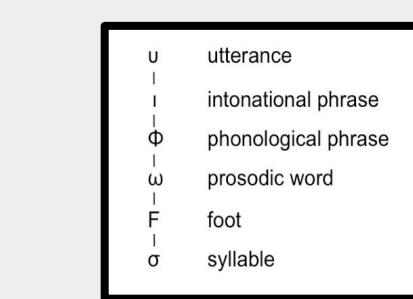
Table 2. prestem-stem boundary (pfx– (preverb–) _{word}(initial–final–sfx) _{word})_{phrase}

6.	VV-	C		9.	C-	C	→ i-extension
	pê-	pîkisk-wê-	'come & speak' AI		mêsc <i>i</i> -	pim-î-	'be out of gas' AI
	pê-	tako-sin-	'arrive' AI		têpi-	tô-t-	'do enough' TI
	pê-	kîw-ê	'come home' AI		nîhc <i>i</i> -	kwâskê-sin-	'be bounced out of' AI
	...VV-	c...	example?		nîmi-	cîkahikan-ê-	'carry axe along' AI
	pê-	sam-in-	'come & touch' TA		pisc <i>i</i> -	sik-in-	'spill accidentally' TI
	...VV-	h...	—		...Ci-	h...	—
	pê-	mîc-iso-	'come & eat' AI		pôni-	mîc-iso-	'stop eating' AI
	pê-	nôkw-an	'come in sight' II		pôni-	nô-h-	'stop nursing' TA
	asê-	wêp-in-	'throw onto' TI		nîhc <i>i</i> -	wêp-in-	'throw down' TA
	nîhtâ-	yâhyâ-n	'swim well' TI		pôni-	yêh-ê-	'stop breathing' AI

implications & future directions

pfx → preverb → initial-(medial)-final-sfx

u	utterance
-	intonational phrase
I	phonological phrase
Φ	prosodic word
ω	prosodic word
-	foot
F	foot
-	syllable



Itewinaw - é-ki-nitawi-kâh-kimôci-kotiskâwéyhâk

Preverb : kâh 1
Preverb : nitawi 1
Preverb : kimôci 1
Reduplication: kâh 1
Preverb : kimôci 1

Item of analysis

kotiskâwéh
VAT: 1. she races, she is in a race 2. 2. it trips =

1. she races, she is in a race 2.
2. it trips =

é-ki-nitawi-kâh-kimôci-kotiskâwéyhâk 1

Preverb : kâh 1
Preverb : nitawi 1
Preverb : kimôci 1
Reduplication: kâh 1
Preverb : kimôci 1

Item of analysis

Maskwacis Speech DB Search Advanced Search Options

Results for "miyo"

miyo-tôtamowin
Translation: good deed

Recording	Speaker
▶ 0:01:00 ————— <	MAR
▶ 0:01:00 ————— <	MAR
▶ 0:01:00 ————— <	ANN
▶ 0:01:00 ————— <	ANN
▶ 0:01:00 ————— <	HAR
▶ 0:01:00 ————— <	HAR

miyo-tôtawêw

Implications for Nêhiyawêwin

	root qua “initial”	root qua “preverb”
1. size/shape constraints	<ul style="list-style-type: none"> minimally bimoraic: *CV, (C)VV, (C)VC initial = prosodic domain? 	<ul style="list-style-type: none"> ends in short V: V:CV, CVV, *CVC, CVCV phonological or morphological constraint?
2. alternation	<ul style="list-style-type: none"> i-insertion, y-insertion, V-deletion how to model? 	<ul style="list-style-type: none"> V-extension, u-extension (V-coalescence) how to model?
<ul style="list-style-type: none"> Evidence from (1) and (2) consistent with parsing preverb as Prosodic Word (PWd). Further possible diagnostics include: (for future research) 		
3. reduplicable?	✓	✓
4. iterable?	✓	✓
5. prominent?	= pitch target?	= secondary stress?
6. stem-external?	✗	✓
7. particle inflection	✗	✓

Cross-Algonquian typology: Nêhiyawêwin & Cheyenne



- similar prosodic structure; preverb ends in short V
(*pxf-(preverb-)word(initial-final-sfx)word*)_{phrase}
- but resolution of preverb-initial juncture differs:
...Cheyenne V-V
...Nêhiyawêwin V-V or V-VV (w/ mora preserved)
- right-edge vowel/mora consistent with:
...appearance of vowel before C, (1)
...appearance of vowel before V, (2)
...V-lengthening & preservation of palatalization, (3)

(1) (<i>mâci</i> (k âpawiw)	→ (...i-k...) ' <u>s/he starts to stand</u> '
(2) (<i>mâci</i> (a toskêw)	→ (...i-a...) ' <u>s/he starts to work</u> '
(3) (<i>mâc-</i> (â toskêw)	→ (... -â ...) ' <u>s/he starts to work</u> '

References

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- Selkirk, Elisabeth O. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3: 371–405.
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Appendix 1: How the problem presents itself

How the problem presents itself: { *miyw*, *miyo* }

C-final root in initial position (<i>miyw</i> - ‘good’) [mi:w], CVVC		CVC root in preverb position must end in V (<i>miyo</i> -) [mi.yo] CV.CV	
<i>miy-osi-</i>	<u>‘good, nice, pretty, handsome’ AI</u>	<i>miyo-itât-isi-</i>	<u>‘be good naturally’ AI</u>
<i>miyw-o...</i>	example?	<i>miyo-ohpik-i-</i>	<u>‘be well-raised’ (AI)</u>
<i>miyw-akiso-</i>	<u>‘be well-priced’ AI</u>	<i>miyo-atosk-ê</i>	<u>‘work well’ AI</u>
<i>miyw-éyimo-</i>	<u>‘think well of self’ AI</u>	<i>miyo-ê...</i>	example?
<i>miy-ô-</i>	<u>‘be skillful’ AI</u>	<i>miyo-ô...</i>	example?
<i>miyw-âtisi-</i>	<u>‘be good’ AI</u>	<i>miyo-âc-imô-</i>	<u>‘speak well of s.o.’ AI</u>

How the problem presents itself: { *nak*, *naki* } ‘stop’

initial is CVC [na.k]		preverb is CV.CV[na.ki]	
<i>nak-in-</i>	‘stop (by hand)’ TI	<i>naki-i...</i>	
<i>nak-o...</i>	— [blocked by <i>nakw-</i>]	<i>naki-ohp-î-</i>	<u>‘stop jumping’ AI</u>
<i>nak-atê-</i>	<u>‘abandon’ TA</u>	<i>naki-atoskê-</i>	<u>‘stop working’ AI</u>
<i>nak-î-</i>	<u>‘stop, park’ AI</u>	<i>naki-î...</i>	
<i>nak-êsti...</i>	<u>‘stop’ AI</u>	<i>naki-ê...</i>	
<i>nak-ô-</i>	—	<i>naki-ô-</i>	
<i>nak-âsin</i>	<u>‘stop b/c of blockage’ AI</u>	<i>naki-âc-imô-</i>	<u>‘stop telling story’ AI</u>

How the problem presents itself: { *pim*, *pimi* }

C-final root in initial position (<i>pim-</i> 'along')		CVC root in preverb position	
<i>pim-isin-</i>	'lie (down/extended)' AI	<i>pimi-i...</i>	example?
<i>pim-ohtē-</i>	'walk (along), go along' AI	<i>pimi-o...</i>	example?
<i>pim-aham-</i>	'travel downriver' AI	<i>pimi-ap-i- ~ pim-âp-i- ~</i>	'sit along in place' AI
<i>pim-êyim-</i>	'keep in mind' TA	<i>pimi-ê...</i>	example?
<i>pim-ôsêw-</i>	'bear children regularly' TA	<i>pimi-ô...</i>	example?
<i>pim-âstan-</i>	'blown by wind, sail in wind' II	<i>pimi-â...</i>	example?

Appendix 2: Structural ambiguity