

# THE MORPHOLOGICAL BASIS OF DEFAULT-TO-OPPOSITE STRESS IN NEZ PERCE

Bronwyn M. Bjorkman, MIT  
bmbjork@mit.edu

## 1 Introduction

Nez Perce is a Sahaptian language spoken in parts of Idaho, Washington, and Oregon.

This talk is about the interaction between word-level stress and morphological constituency in Nez Perce, based on the description in Crook (1999), with additional data drawn from a collection of Nez Perce oral narratives (Aoki and Walker, 1989) and the Nez Perce dictionary (Aoki, 1994).

- (1) Nez Perce segmental inventory (Aoki, 1970, p. 10):

*Consonants:*

p, p'	t, t'	k, k'	q, q'	ʔ	
	c, c'				
	ʈ	s	x	χ	h
m, m'	n, n'				
w		y			
	l, l'				

*Vowels:* (an underlying contrast in length is preserved only under stress)

i	u
e	o
a	

- (2) Nez Perce vowel harmony (Aoki, 1966, et seq.)

All vowels in a word come from one of the following two sets:

<i>Dominant</i>	<i>Recessive</i>
i	i u
	o e
a	

**Stress in Nez Perce** depends on the interaction of **default preferences** with the location of underlying **accents** (syllables lexically specified to bear stress).

- Stress in Nez Perce is usually **rightmost** in some domain...

- (3) Primary stress is on the **penultimate** (rightmost non-final) syllable in words with no accents:<sup>1</sup>

a. pískis	pìskis-ne	b. hàní-sa	hàni-sáaqa
<b>pískis</b>	<b>pískis</b> -ne	<b>hanii</b> -see	<b>hanii</b> -seeqa
'door'	'door-OBJ'	'I am making'	'I was making'

(Crook, 1999, pp. 294, 300)

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<sup>1</sup>Abbreviation key: 3=3rd person (subject or object), -NOM=nominative, -OBJ=objective, -ERG=ergative, -INC=incompletive aspect, -INST=instrumental, -IRR=irrealis -LOC=locative, -PFTV=perfective aspect, PL=plural agreement, -PLOB=plural object, -REC=recent past tense, -SF=stem formative

(4) Primary stress is on the **rightmost** (non-final) accented syllable in words with lexical accents:

- |                    |                               |                             |
|--------------------|-------------------------------|-----------------------------|
| a. sèpínèwiy-ù’    | b. pày-nóo-sàqa               | c. k’òmày-náapìi-k-sa       |
| <b>sepínewi-ú’</b> | <b>páay-núu-saaqa</b>         | <b>k’óomay-náapii-k-see</b> |
| meaure-IRR         | arrive-toward-REC             | sick-away-SF-INC            |
| ‘I will measure’   | ‘I recently arrived to-wards’ | ‘I being sick am kept away’ |

(Crook, 1999, pp. 352, 456, 458)

- **A puzzling exception:** accented prefixes causes stress to becomes **leftmost** in verbs (in the absence of non-final accented suffixes):

(5) Stress surfaces on a **leftmost** accented prefix:

- |                                    |                                      |
|------------------------------------|--------------------------------------|
| a. cúukwe-ce                       | b. siléew-cùukwe-ce                  |
| <b>cúukwe-cee</b>                  | siléew- <b>cúukwe-cee</b>            |
| know-INC                           | by.seeing-know-INC                   |
| “I know.”                          | “I know by seeing.”                  |
| c. sepée-silèew-cùukwe-ce          | d. née-sepèe-silèew-cùukwe-ce        |
| sepée-siléew- <b>cúukwe-cee</b>    | nées-sepée-siléew- <b>cúukwe-cee</b> |
| CAUS-by.seeing-know-INC            | PLOB-CAUS-by.seeing-know-INC         |
| “I make you (sg.) know by seeing.” | “I make you (pl.) know by seeing.”   |

(Crook, 1999, p. 462)

- This alignment reversal is sensitive to both morphological constituency and to abstract morphological prominence (accent), rather than to a surface phonological property such as weight.

## Preview of the Analysis:

- The leftmost pattern observed with prefixes will be analyzed as the result of a conflict between a constraint aligning primary stress with the right edge of a word, and a higher-ranked constraint preferring that accentual stresses be preserved on morphological constituents on the outer edges of a word (PRESERVE-EDGEMOST).
- In most cases these constraints can both be satisfied, but when their demands diverge, it is PRESERVE-EDGEMOST that is satisfied.

## 2 Background: Stress in Nez Perce

### 2.1 Default stress

In the absence of accent, primary stress is **penultimate** and **shifts** rightwards under suffixation:

- |                 |                    |                      |                     |
|-----------------|--------------------|----------------------|---------------------|
| (6) a. wééptes  | wèptéesne          | b. càpátna           | càpatíca            |
| <b>weeptees</b> | <b>weeptees-ne</b> | <b>capat-ne</b>      | <b>capat-cee</b>    |
| eagle           | eagle-OBJ          | move.lengthwise-PFTV | move.lengthwise-INC |

(Crook, 1999, pp. 295, 300)

**Secondary stresses** occur on initial syllables that does not bear primary stress. <sup>2</sup>

<sup>2</sup>Crook (1999) reports that this stress is sometimes optional, particularly when it results in stress clash. Rhythmic secondary stresses also occur to prevent two-syllable lapses, and there is interaction between underlying vowel length and secondary stress assignment.





- When there are multiple accents in a word, NON-FINALITY requires that primary stress be assigned to a non-final accent; primary stress still must surface on some accent, however, and the final accent receives secondary stress:

(17) MAX (x<sub>1</sub>), CULMINATIVITY ≫ MAX (x<sub>2</sub>) ≫ NON-FINALITY ≫ ALIGN(x<sub>2</sub>, R) ≫ ALIGN(x<sub>2</sub>, L)

	MAX (x <sub>1</sub> )	CULMIN.	MAX (x <sub>2</sub> )	NON-FINALITY	ALIGN(x <sub>2</sub> R)	ALIGN(x <sub>2</sub> L)
a. ☞ sèpíinèwiyù'			*	*	**	*
b. sèpíinewíyu'	*!		**			**
c. sèpíinèwiyù'			*	**!		***
d. sèpíinèwiyù'		*!		**		*

### An aside on gradient Align:

the ALIGN constraints in these tableaux are evaluated **gradiently**, contra the claims of McCarthy (2003). Alternative constraint rankings for achieving penultimate stress (i.e. absolute right alignment of a trochaic foot), will not work for Nez Perce: a penultimate stress can be immediately followed by an accent-determined final secondary stress:

- (18) a. kíwyèksìx                      b. híitèmyèkù'                      c. híitàmýàksìx  
       kíwyek-síix                      híitemyek-ú'                      híitemyek-síix  
       feed-INC.PL                      sweat-IRR                      sweat-INC.PL  
       “we are feeding”                “I will sweat”                    “we are sweating”

(Crook, 1999, pp. 446-7)

## 2.3 Alignment reversal with accented prefixes

In verbs with accented prefixes (there are no accented nominal prefixes) stress is unexpectedly **leftmost** (19), unless there is a accented suffix (20b):

(19) **Leftmost** stress with accented prefixes:

- a. cúukwe-ce                                      b. siléew-cùukwe-ce  
       **cúukwe**-cee                                      siléew-**cúukwe**-cee  
       know-INC                                      by.seeing-know-INC  
       “I know.”                                      “I know by seeing.”
- c. sepée-silèew-cùukwe-ce                      d. née-sepèe-silèew-cùukwe-ce  
       sepée-siléew-**cúukwe**-cee                      nées-sepée-siléew-**cúukwe**-cee  
       CAUS-by.seeing-know-INC                      PLOB-CAUS-by.seeing-know-INC  
       “I make you (sg.) know by seeing.”                      “I make you (pl.) know by seeing.”

(Crook, 1999, p. 462)

(20) Rightmost stress **reasserted** by accented suffix:

- a. hì-nées-wèyik-se                                      b. hì-nès-wèyik-úu-se  
       hii-nées-**wéeyik**-see                                      hii-nées-**wéeyik**-úu-see  
       3-PLOB-cross-INC                                      3-PLOB-cross-toward-INC  
       ‘He is crossing them.’                                      ‘He is crossing toward them.’

(Crook, 1999, pp. 463, 480)

**This is *not* a cyclic effect:**

- If it were cyclic, stress would be attracted onto an affix whenever it is structurally **highest/outermost**.
- (21) shows that accented prefixes attract stress leftward from the accented root *páay* ‘arrive’:

(21) Stress falls on leftmost accented prefix. . .

a. hì-sapáa-pà-y-ca	b. hì-náa-sapàa-pà-y-ca
hii-sepée- <b>páay</b> -cee	hii-nées-sepée- <b>páay</b> -cee
3-CAUS -arrive-INC	3-PLOB-CAUS-arrive-INC
‘He makes arrive (someone).’	‘He makes them arrive.’

- The derivational suffix *núu* ‘towards’ transitivizes the intransitive root *páay* ‘arrive’ (Crook, 1999, p. 481), adding an object argument. In (22), the plural object agreement marker *nées* agrees with the object introduced by *núu*, suggesting that the prefix is *outside* the root-suffix constituent (see, for example, the work of Pytkänen 2008):
- Despite this, the accented suffix reasserts rightmost stress:

(22) An inner accented suffix reasserts rightmost-ness:

hì-nàs-pà-y-nóo-ca  
 hii-[nées-[**páay**-núu]]-cee  
 3-[PLOB-[arrive-toward]]-INC  
 ‘He arrives toward (someone).’

- If this is not a cyclic effect, what is going on?

**The observation:** Prefixes *only* attract stress iteratively leftwards when the only alternative is to place primary stress on the verb root: as soon as the rightmost accent is not on the root, the default rightmost pattern reasserts itself ((22d)).

## 2.4 Analysis of default-to-opposite stress on prefixes

**Proposal:** the alignment reversal results from conflicting requirements on the alignment of stress: the pressure for rightmost alignment (from ALIGN( $x_2$ , R)) competes with a constraint privileging the preservation of accent on morphological constituents further towards each edge.

(23) PRESERVE EDGEMOST ( $x_2$ ) [PRES-EDGES]

Assign a violation if a level-2 gridmark that is outermost from the root on one edge in the input is not present in the output.

- Differential faithfulness: necessary because all potential stress positions are indistinguishable in the output. Accents are only distinguishable in the input.
- Consider the following underlying morphological bracketing:

$$[ \acute{\alpha} - [ \acute{\beta} - [ [ \text{ROOT} ] - \acute{\gamma} ] ] ]$$

All the affixes bear accents, and  $\gamma$  is the innermost affix.

PRESERVE EDGEMOST ( $x_2$ ) would be violated by the deletion of an accent on  $\alpha$  or on  $\gamma$ , because those accents are furthest from the root on the left and right edges, respectively.

- PRESERVE EDGEMOST ( $x_2$ ) must be outranked by CULMINATIVITY, as *both* edgemost accents are never preserved, and it must outrank the ALIGN( $x_2$ , R) constraint in order to force leftward stress assignment:

(24) PRESERVE EDGEMOST ( $x_2$ ) , MAX ( $x_2$ )  $\gg$  ALIGN( $x_2$ , R)  $\gg$  ALIGN( $x_2$ , L)

nées-sepée-sléew- <b>cúukwe</b> -cee	PRES-EDGES	MAX ( $x_2$ )	ALIGN( $x_2$ , R)	ALIGN( $x_2$ , L)
a. ☞ née-sepè-slèw-cùkwè-ce		***	****	
b. nèe-sepè-slèw-cùkwé-ce	*!	****!		****
c. nèe-sepè-slèw-cùkwè-ce	*!	***	*	**
d. nèe-sepè-sléw-cùkwè-ce	*!	***	**	**

- When an accented suffix is present, the same ranking predicts the reassertion of right-aligned primary stress: note that the prefix-stressing and suffix-stressing candidates incur equal violations of PRESERVE EDGEMOST ( $x_2$ ):

(25) PRESERVE EDGEMOST ( $x_2$ ) , MAX ( $x_2$ )  $\gg$  ALIGN( $x_2$ , R)  $\gg$  ALIGN( $x_2$ , L)

hii-nées- <b>wéeyik</b> -úu-see	PRES-EDGES	MAX ( $x_2$ )	ALIGN( $x_2$ , R)	ALIGN( $x_2$ , L)
a. ☞ hì-nès-wèyik-úu-se	*	**		***
b. hì-nès-wèyik-ùu-se	*	**	*!*	*
c. hì-nès-wéyik-ùu-se	**!	**	*	**

### Contrast with Chamorro (Chung, 1983)

- Chamorro default primary stress is penultimate, though a root can be lexically determined to have stress fall on any of its three final syllables.
- A subset of prefixes attract stress onto themselves **as long as there is no morphologically exterior suffix**:

(26) Chamorro stress-attracting prefixes

a. púgas	mípugas	‘uncooked rice’ / ‘abounding in uncooked rice.’
b. mantika	mímantika	‘fat’ / ‘abounding in fat’
c. paníti	ápaniti	‘to strike’ / ‘to strike one another’
d. agradési	sénagradesi	‘to give thanks’ / ‘to give many thanks’

(Chung, 1983, p. 40)

- What distinguishes this pattern from Nez Perce is that this process is sensitive to bracketed constituency: a prefix **outside** the scope of a suffix attracts stress, while a prefix **within** the scope of a suffix does not:

- (27) Bracketing-sensitive stress
- a. [á[[kwentus]i]] ‘to speak to one another’  
(cf. *kwéntus* ‘to speak’, *kwentús + i* ‘to speak to’)
  - b. [[mi[mantiká]]]ña ‘more abounding in fat’  
(cf. *mantíka* ‘fat’, *mí+mantíka* ‘abounding in fat’)
  - c. [[ma[faʔtínas]]]ña ‘its being made’  
(cf. *faʔtínas* ‘to make’, *ma +faʔtínas* ‘being made’)
  - d. [man[á[[tügiʔ]i]]] ‘to write to one another (pl.)’  
(cf. *tügiʔ* ‘to write’, *tügiʔ+ i* ‘to write to’, ‘*ä + tügiʔ+ i* ‘to write to one another’)

(Chung, 1983, p. 41)

- While Nez Perce accented prefixes lose out to *any* suffix, regardless of morphological scope, Chamorro accented prefixes present a real *cyclic* effect, where the outermost affix always regularly asserts its influence on word-level stress.

### 3 Alternative analysis

- Crook (1999) presents a partially cyclic analysis of prefix-attracted stress, proposing that there is **constraint re-ranking** triggered by the presence of an accented verbal prefix.
- Reranking promotes a \*STRESSED LEXICAL HEAD constraint, defined in (28):

- (28) \*STRESSED LEXICAL HEAD  
“Main stress must not be assigned to the lexical head.” (Crook, 1999, p. 454)

- In order to get stress on a **leftmost** prefix (rather than on any non-root morpheme) Crook proposes a process of **partial bracket erasure**, also triggered by the presence of an accented prefix:

- (29) Original bracketing: *sepéslèwçùkwèce*

[sepée [sléew [çúukwe]]] -cee  
[CAUS [by.seeing [know]]] -INC

After bracket erasure:

[sepée [sléew çúukwe]] -cee  
[CAUS [by.seeing know]] -INC

- Applied to the structure in (29), \*STRESSED LEXICAL HEAD will be violated by placing primary stress on anything other than the leftmost prefix.<sup>3</sup>
- Accented suffixes present a problem for the bracket-erasure approach: in (30) if the accented prefix *nées* triggered total bracket erasure, the suffix *úu* would no longer be morphologically distinguishable from the verb root:

- (30) Original bracketing with prefixes and suffixes: *hìnèswèyikúuse* ‘he is crossing towards them.’

[hii [nées [[wéeyik] úu]]] -see  
[3 [PLOB [[cross] toward]]] -INC

After bracket erasure:

[hii [nées [wéeyik úu]]] -see  
[3 [PLOB [cross toward]]] -INC

<sup>3</sup>Crook does not address the point that it must be a property only of *accented* morphemes that they erase brackets within their constituents. Otherwise an outermost *unaccented* prefix would erase all brackets further in, and stress would default again to the rightmost accent.

- A solution: protect the bracketing of suffixes from the process of bracket erasure: but this loses the appeal of a cyclic account.

The same problem would apply to an analysis in terms of accent deletion / Affix Controlled Accent (Alderete, 2001).

NP prefixes aren't dominant (in the sense of Alderete (2001)) – they don't erase accentual contrasts in the constituent to which they

## 4 Conclusion: implications for default-to-opposite typology

The Nez Perce stress pattern reviewed here bears a resemblance to the classic *default-to-opposite* phenomenon: the analogous case is one in which stress falls on a leftmost heavy syllable, otherwise on the penult.

The analysis of Nez Perce proposed here bears a similarity to Zoll's (2002) approach to default-to-opposite phenomena.

- Zoll: Default-to-opposite systems emerge when marked structures are limited in their distribution (i.e. can only occur initially), while unmarked structures are aligned at an opposite edge.  
If marked stressed syllables (e.g. stressed light syllables) can only occur initially, but a general stress alignment constraint aligns stress at the right edge, a default-to-opposite pattern will emerge if the constraint specific to light-syllable-stresses outranks the general alignment constraint.
- Nez Perce is similar but shows a *different* interaction between constraints enforcing the alignment of stress: instead of positional **licensing**, positional **faithfulness**.
- This is an expected elaboration of the default-to-opposite stress typology, on Zoll's analysis.

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