Head-Dependent Asymmetries in Central Salish Prosody

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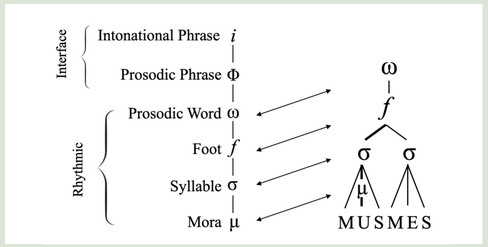
01. Introduction

- The **Central Salish languages** are the Indigenous languages spoken on and around the Salish Sea. This group includes the languages of the Lekwungen, Songhees, Esquimalt, and W̱SÁNEĆ peoples on whose traditional territories we are currently standing.
- One way these languages might be different to ones that you speak is their system of **rhythm** and **prominence**. In linguistics, the technical term for this system is **prosody**.
- Prosodic units are arranged by potential size in a **prosodic hierarchy** (Selkirk, 2000):

(1) *The Prosodic Hierarchy*



- One of the most important aspects of the prosodic hierarchy is **headedness**.
- The **head** is the most "important" element at each level of the prosodic hierarchy and the other elements are called the **dependents**. Heads in the example are in bold.
- Being more prominent, heads can have a complex structure than can their dependents. This is called a **Head-Dependent Asymmetry (HDA)** (Dresher & van der Hulst, 1998).

02. Proposal

Building on previous analyses of prosody in Central Salish languages[1], I use an Optimality Theory analysis which embraces the concept of Head-Dependant Asymmetries to provides a unified account of a range of processes and derives variation by re-ranking constraints.

[1] (Shaw et. al, 1999) on Həńq̓əmińəńˇ, (Bianco, 1998) on Hul'q'umi'num', (Blake, 2000) on ʔayʔaǰuθəm, (Leonard, 2007; 2019) on SENĆOŦEN, (Bianco, 1995; Hess, 1977) on Lushootseed (Galloway, 1984) on Nooksack, (Crawford, 2016) on Klallam, (Dyck, 2004; Bar-el & Watt, 1998) on Sḵwx̱wú7mesh, (Nolan, 2017) on Lukwungen, (Drachman, 1969) on Twana.

The Mora (μ)

The mora is the smallest prosodic unit. It is a unit of phonological "weight" which relates roughly to the duration of segments.

The Syllable (σ)

A syllable is a common way that languages group sounds together. Syllables are usually formed around **sonorous** segments like vowels.

The Foot (f)

A foot can be most easily thought of as a rhythmic unit. A foot contains one or more syllables, one of which (the head) is stressed.

English speakers will almost always "clap out" words by syllables, but many Elders who speak languages like ʔayaǰuθəm clap out words by moras (Blake, 2000). This is just one indicator of the important role which moras play in Central Salish prosody.

03. Example Sets

The patterns below are some examples of phenomena which can be accounted for by looking at HDAs in foot structure.

Hul'q'umi'num' stress placement: (FPCC, 2022)
a. sesq'uc [sésə́qəc] 'sasquatch' — hesum [hésəm] 'sneeze'
b. hum'u [həmə́] 'pigeon' — kwun'et [kʷənét] 'hold'

SENĆOŦEN vowel reduction: (Leonard, 2007)
a. WṮEḴTNEĆ [xʷʔə́q.tnəč] ← /xʷ-ʔə́qt=nəč/ 'cougar'
b. W̱NÁJES [xʷnə́.čəs] ← /xʷ-nə́č=əs/ 'he looks different'

Sḵwx̱wú7mesh stress placement: (Dyck, 2004)
a. qénaxw [qə́nəxʷ] 'throat' — kwélash [kʷə́ləš] 'shoot'
b. hew7ít [həwʔít] 'rat' — hem7í [həmʔí] 'come'

ʔayʔajuθəm compensatory lengthening: (Blake, 2000)
a. gaṫᶿəp [gə́.ṫᶿʌpʰ] 'drive' — gaʔgaʔṫᶿəp [gəʔ.gaa̱ʔ.ṫᶿʌpʰ] 'gone driving'
b. χʷʊɪ̯ᶿqʷanoǰɛ [x̆ʷʌ́ṫᶿ.qʷə̀.jɛ] 'wrist' — χʷaṫᶿɛq̓ʷanən [x̆ʷʌ́.ṫᶿɛ.q̓ʷə̀ʔ.jɛn] 'joint'

Nooksack intervocalic resonant lengthening: (Galloway, 1984)
a. sqel:áw7 [sqəlǽwʔ] 'beaver' — qen:úxw [qənúxʷ] mouth
b. qel:ó7th [qəlʊ́ʔθ] 'dull ' — mín:e7 [mínɛʔ] offspring

04. Generalizations

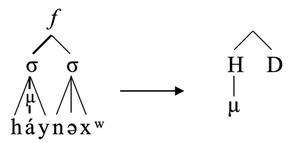
- Central-Salish languages all have default **left-headed** feet (Trochees). But, in languages like Hul'q'umi'num, **right headed** feet are established when the first syllable is headed by **schwa**.
- Dependent (unstressed) syllables never licence more moraic content than their head syllable.
- Schwa is resistant to stress (analyzed as non-moraic (Shaw et, al, 1999))
- In many Central Salish languages, the vowel in a dependant syllable lacks a mora. This is expressed as either:
  - reduction /V/ -> [ə] (SENĆOŦEN) (Leonard, 2007)
  - deletion /V/ -> [∅] (Klallam) (Montler, 1998)
  - laxing /V/ -> [v] (ʔayʔajuθəm) (Blake, 2000)
- Central Salish languages vary in which segments count as moraic for stress. (Shaw et, al, 1999; Dyck, 2004; Blake, 2000)

	V (Full Vowels)	R (Resonants)	T (Obstruents)	ə (Schwa)
ʔayajuθəm	✓	✓	✓	X
Sḵwx̱wú7mesh	✓	✓	X	X
SENĆOŦEN	✓	X	X	X

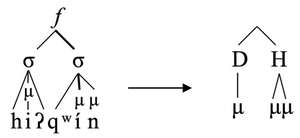
05. Analysis

(1) *Two Kind of moraic HDAs*

a. *Dependents do not license (moraic) content*
HÍNEW̱ 'to finally finish something' (SENĆOŦEN)



b. *Dependents do not license (moraic) complexity*
Hi7ḵwín 'light, torch' (Sḵwx̱wú7mesh)



- Heads can have anywhere between three (ʔayʔajuθəm) and zero (Klallam) moras, but dependants are restricted to having either one or zero.
- To formalize this observation I assume the methodology and theoretical assumptions of **Optimality Theory (OT)** (Prince & Smolensky, 1993)**.**
- OT posits that: a) surface forms are evaluated by constraints, which are ranked and violable, and b) variation between languages arises out of re-ranking. The evaluation and selection of optimal surface forms is shown using tableaux like those in (3).

(2) *Proposed constraint*

a. *HeadDependentAsymetry(μ)*
The Optimality Theory constraint proposed in this paper which captures the observations in (1) is:

> HeadDependentAsymetry(μ): Assign one violation to every dependent with a moraic content equal to its head, and two to every dependant with a moraic content greater than its head.

(3) *Enforcing HDAs*

a. *Mora deletion*
HDAs often enforced in Central Salish by the deletion of a mora. This is captured in OT by a **crucial ranking** of a constraint on Head-Dependent Asymmetries over the **faithfulness constraint** which penalizes deletion.

> Max(μ): Assign one violation to every mora present in the input not present in the output.
> HDA >> Max(μ)

As seen in the tableaux in (3), this ranking is observed in SENĆOŦEN and ʔayaǰuθəm but not in Sḵwx̱wú7mesh.

b. *FootForm=Trochee*
The default foot shape in Central Salish is **trochaic**. The right-headed (iambic) feet found in many languages are established in order to preserve HDAs.

> Trochee: Assign one violation to every foot who's head is not initial.
> HDA >> Trochee

This ranking is found in SENĆOŦEN and Sḵwx̱wú7mesh but not in ʔayʔajuθəm where the inverse ranking means that all feet in this language are trochaic. See tableaux (3c).

(3) *Optimality Theory Tableaux*

a. SENĆOŦEN: *TI,TOS*

/CəCVμC/ /təy'tas/ → [tiʔtás] 'bucking tide'

CəCVμC		*(μ)K	HDA (μ)	Max (μ)	*μ	Trochee	WbyP
a.	H.Dμ		*!		*		*
b.	H.D		*!	*			*
c.	DH		*!	*		*	*
d. ☞	DHμ				*	*	*

b. Sḵwx̱wú7mesh: *kwélash*

/CəRVμC/ /kʷəlaʃ/ → [kʷólaʃ] 'shoot'

CəRVμC		*(μ)K	WbyP	Max(μ)	HDA (μ)	Trochee	*μ
a. ☞	Hμ.Dμ		*		*		**
b.	Hμ.D		*	*!			*
c.	H.Dμ		**!		**		*
d.	H.D		**!	*	*		
e.	DH		**!	*	*	*	
f.	DHμ		**!			*	*
g.	DμH		*	*!	**	*	*
h.	DμHμ		*		*	*!	**

c. ʔayaǰuθəm: *łaʔgət*

/CVμCCVμC/ /łag'at'/ → [łaʔgət'] 'herring'

CVμCCVμC		Trochee	WbyP	HDA (μ)	Max(μ)	*(μ)K	*μ
a.	H$\mu\mu$.D$\mu\mu$			*!		**	****
b. ☞	H$\mu\mu$.Dμ				*	**	***
c.	H$\mu\mu$.D		*!		*	*	**
d.	Hμ.Dμ			*!	**	**	**
e.	Hμ.D		*!		**	*	*
f.	H.D		*!*	*	**		
g.	H.Dμ		*!	**	**	*	*
h.	Hμ.D$\mu\mu$			*!	*	**	***

06. Predictions

1. The HDA constraint proposed here accounts for various pattern of mora assignment in Central Salish. The cross-linguistics relevance of this constraint is evidenced by Dresher & van der Hulst's (1999) proposal that HDAs are to be found in all languages-- although not all reference moraic content as seen here.
2. The mechanics of OT predict that the moraic structure of all the Central Salish languages can be derived from rereanking the constraints used in (4*a-c*).

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