Labial spreading in Tlingit[*]

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Abstract

Tlingit has constrastively rounded velar and uvular (dorsal) consonants. This contrast is neutralized next to a round segment, where only the rounded consonant is possible. I present evidence that this neutralization is part of a broader spreading phenomenon. Three novel generalizations have come out of this research. First, rounded and unrounded dorsals only contrast within roots, although affixes are allophonically rounded next to other round segments. Second, the spread of rounding is asymmetrical. Rounding spreads right onto not only dorsal consonants, but also high vowels. However, while rounding may spread left onto a dorsal consonant, high vowels to the left of a rounded segment are unaffected in the Transitional and Southern dialects. Third, I have found no root which contains two rounded consonants, which may reflect a local disharmony effect. Finally, I analyze the first two points using ranked constraints in the framework of Optimality Theory.

1   Language introduction

Tlingit is in the Na-Dene (Athabaskan-Eyak-Tlingit) family, and is most closely related to Eyak, which is now extinct. The three main dialects (Tongass[†], Northern, and Southern) exhibit some phonological differences but are mutually intelligible. There is also a Transitional dialect, which is historically related to the Northern dialect but which synchronically exhibits many features of the Southern dialect. This squib focuses on the Transitional and Southern dialects and treats them equivalently with respect to rounding. Most examples were found in Crippen (2012), a manuscript which is in progress. Other major sources include the joint masters theses, Story (1966) and Naish (1966), as well as Leer's (1991) dissertation.

1

Tlingit has an elaborate phoneme inventory with 42 consonants, which I have shown for reference in Table (1). Phonemic rounding only occurs for dorsal consonants. Conservative dialects (like Tongass, no longer spoken) also have a contrast in rounding for /ʔʷ/ and /hʷ/, but this distinction has been collapsed in Transitional Tlingit and the other dialects.

Table 1: Tlingit consonant inventory

		alveolar	post-alv.	lateral	palatal	velar	lab.-velar	uvular	lab.-uvular	glottal
Stops	plain	t				k	kʷ	q	qʷ	ʔ
	asp.	tʰ				kʰ	kʰʷ	qʰ	qʰʷ	
	ejec.	t'				k'	k'ʷ	q'	q'ʷ	
Fric.	plain	s	ʃ	ɬ		x	xʷ	χ	χʷ	h
	ejec.	s'		ɬ'		x'	x'ʷ	χ'	χ'ʷ	
Aff.	plain	t͡s	t͡ʃ	t͡ɬ						
	asp.	t͡sʰ	t͡ʃʰ	t͡ɬʰ						
	ejec.	t͡s'	t͡ʃ'	t͡ɬ'						
Sonorants		n			j	w				

Additionally, there are four contrastive vowel qualities in Tlingit, shown in table (2), which also contrast for length. There is also a binary high/low tonal distinction, which does not interact with the alternations discussed here.

Table 2: Tlingit vowel inventory

	Front	Back
High	i	u
Mid	e	
Low		a

2 Contrastive rounding in roots

Dorsal consonants are contrastively rounded within roots. A selection of minimal pairs from Maddieson, Smith & Bessell (2001) is shown below in (1) in IPA transcription. Only plain consonants are shown, but the contrast holds for aspirated and

glottalized manners of articulation as well. (C) = James Crippen, pers. comm., (E) = Edwards (2009), (M) = Maddieson et al. (2001).

(1)   k   **k**aːw   'drum, bell, hour' (M)   ɬ'aː**k**   'dress' (M)
      kʷ   **kʷ**éːɬ   'sack, bag' (M)   náː**kʷ**   'medicine' (M)

      x   **x**aːk   'empty seashell' (M)   s'á**x**   'starfish' (M)
      xʷ   **xʷ**átʃaː   'skin scraper' (M)   káː**xʷ**   'duck' (M)

      q   **q**áːkʷ   'tree spine' (M)   tɬ'áː**q**   'arrowhead' (M)
      qʷ   **qʷ**áːɬ'   'fart' (E)   náː**qʷ**   'octopus' (M)

      χ   **χ**aːkʷ   'fingernail' (M)   s'áː**χ**   'groundhog' (M)
      χʷ   **χʷ**ːɬ   'trembling' (rare) (C)   ʃaʔaː**χʷ**   'bundle tied at ends' (C)

This contrast is neutralized adjacent to other round segments, shown in (2), where only the rounded dorsal consonants are possible next to round vowels or other rounded consonants (see Naish 1966:4; Story 1966:13; Leer 1991:11; De Wolf 1977:53). No such restriction is made on other places of articulation, demonstrated here with coronal consonants, which are prohibited from being round.

(2)   a.   [kʰʷúːxʷ]   /kʰúːx/   'rice'   (Story & Naish 1973:100)
         [kʷuːχʷxʷ]   /kuːχ-x/   'slave-PL'   (De Wolf 1977:87)

     b.   [túʃ]   /túʃ/   'tadpole'   (Edwards 2009:73)

3   Allophonic rounding of suffixes

Dorsal consonants in affixes never contrast for rounding, although they are allophonically rounded next to another round segment. Dorsals in suffixes are unrounded after a non-round vowel or a coronal, shown in (3), but must surface as round following a round vowel or a rounded consonant, shown in (4). No examples found of these suffixes following an unrounded dorsal consonant, where they would presumably remain unround.

(3)   a.   [tʰéː**x**']   /tʰé-x'/[1]   'stone-PL'   (Crippen 2012:74)
         [haː**χ**]   /haː-χ/   'here-PERT'   (Naish 1966:67)

     b.   [x'áːt'**x**']   /x'át'-x'/   'island-PL'   (Swanton 1911:169)

         [híːn**χ**]   /híːn-χ/   'water-PERT'   (Swanton 1909:274)

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[1]This form exhibits irregular lengthening of the vowel when suffixed, which I ignore.

(4) a. [tʰúːχʷ] /tʰú-χ/ 'inside-PERT' (Edwards 2009:70)

   b. [ʔáːwkʼʷ] /áːw-kʼ/ 'strap-DIM' (De Wolf 1977:87)
      [náːkʷχʷ] /náːkʷ-χ/ 'medicine-PERT' (Leer 1978:52.58)

4 Spread of rounding

Rounding does not only spread to adjacent dorsal consonants, but also onto high vowels, shown by the allomorphy of the possessive and relative suffixes, as well as the decessive suffix [-i(ː)n] ~ [-u(ː)n]. The trigger for rounding is underlined.

(5) [yá.ti] /yát-i/ 'child-PSS' (Crippen 2012:76)
    [yéːn.qʷa.tʰiː.yín] /yéː=nqʷatʰiː-iːn/ 'it would be so' (Story 1966:184)

(6) [ʃákʷu] /ʃákʷ-i/ 'strawberry-PSS' (Crippen 2012:26)
    [katuʔuxʷχʷu] /katuʔux-χ-i/ 'balloon' (Crippen 2012:302)
    [xʷasakʰʷúːwuːn] /xʷasakʰú-iːn/ 'I used to know it' (Leer 1991:212)

However, the spread of rounding is blocked by non-dorsal places of articulation, illustrated with a coronal consonant in (7), and also by [-high] vowel, illustrated here with the adessive suffix [-qáː].

(7) [tuʃʔútɬχ] /tuʃʔútɬ-χ/ 'they.boil-REP' (Crippen 2012:198)
    [kawtutɬitʰuli] /kawtutɬitul-i/ 'sushi roll' (Crippen 2012:300)
    [naqʷakʷuːtín] /naqʷakuːt-iːn/ 'he would've gone' (Story 1966:184)
    [kʷuːχʷqʷáː] /kuːχ-qáː/ 'slave-ADES' (Swanton 1909:266.1)

Finally, the targets of rounding spreading are asymmetrical. Section (2) shows that dorsal consonants on either side of a rounded segment must be rounded. Spreading thus spreads both right and left onto dorsals. However, sequences of high front vowels before rounded segments are preserved in the Transitional and Southern dialects. This asymmetry may not be true of the Northern dialect.

(8) [níːkʷ] /níːkʷ/ 'pain, sickness' (Crippen 2012:15)
    [iχʷsitiːn] /i-ÿu-χa-si-tin-h/ 'I saw you' (Crippen 2012:155)
    [ikʷuːtíːq] /i-[kuːt]-íːq/ 'don't go there' (Story 1966:105)

I have not found roots in the native vocabulary which contain a rounded dorsal followed by a high front vowel. However, some loan words like [kʷít] 'dime (from Eng. bit)' do contain these sequences (James Crippen, pers. comm.). In Northern dialect these words are more likely to contain a round vowel ([kʷít] > [kʷút]). However, in the Transitional and Southern dialects the high front vowel is usually maintained.

5 Co-occurrence restrictions

In earlier versions of this squib, I argued that the first of two dorsal consonants in a root may not be round, except in the case where it is allophonically rounded next to another round segment. Counter-examples have been found after a more thorough search of the sources, and this positional constraint against rounded dorsal consonants no longer seems to be true. Interestingly, there are no roots with a [-high] vowel which contain two rounded dorsal consonants; two rounded dorsal consonants occur *only* when they occur next to a rounded vowel. Schematically, there are roots like KʷuKʷ (such as [kʰʷúːxʷ] 'rice'), but no roots like *KʷaKʷ.

For now I leave this observation unaddressed in my analysis, as there is no evidence of faithfulness violations that could be captured in ranked constraints. However, it would be interesting to test this observation against a larger wordlist.

6 Analysis

Dorsals are contrastively rounded within roots and allophonically rounded outside of roots. A positional faithfulness constraint which demands faithfulness to rounding in roots more strongly than elsewhere can capture this:

(9)   IDENT_RT[+rnd] ≫ *ROUND ≫ IDENT[+rnd]

Given the fact that there are no constraints on the input (Richness of the Base), this ranking will correctly predict a neutralization of contrast outside of roots. A non-optimal input [-xʼʷ] is given for the plural of [téː] 'stone' in the tableaux below.

(10)

/[téː]-xʼʷ/	*ROUND	ID[+rnd]
a. [téː]-xʼʷ	*!	
b. ☞ [téː]-xʼ		*

The following argument ranking tableau shows that the other half of the ranking given in (9) holds true. Rounding is preserved in roots like [kʷéːɬ] 'sack, bag':

(11)

/[kʷéːɬ]/	ID_RT[+rnd]	*ROUND	ID[+rnd]
a. ☞ [kʷéːɬ]		*	
b. [kéːɬ]	*!		*

Some segments are never rounded in Tlingit, even in roots, including coronals, glottals, and front vowels. I use the constraint *RNDFAM to stand for a family of

markedness constraints which prohibit those types of segments, such as *[y], *[ø], *[œ], *[+cor,+rnd] and *[+glot,+rnd]. It is ranked above IDENT$_{RT}$[+rnd], demonstrated below by [téː] 'stone'. Again, because there are no constraints on the input, the constraint ranking must favor a candidate with an unrounded coronal over a faithful candidate.

(12) ***RNDFAM**
Rounded [-back] vowels are prohibited. Rounded coronals are prohibited. Rounded glottal consonants are prohibited.

(13)

/tʷéː/	*RNDFAM	ID$_{RT}$[+rnd]	*ROUND	ID[+rnd]
a. tʷéː	*!		*	
b. ☞ téː		*		*

Rounding spreads in both directions onto dorsal consonants. This can be captured with two alignment constraints, which require that the edges of a [+round] feature span be aligned to the edges of the prosodic word. *Violations are counted by segment.*

(14) **Align([+round],L,PrWd,L) (ALIGN-L)**: The left edge of every [+round] feature span must align to the left edge of a prosodic word.

(15) **Align([+round],R,PrWd,R) (ALIGN-R)**: The right edge of every [+round] feature span must align to the right edge of a prosodic word.

These must be ranked above IDENT[+rnd], as shown by the tableau for [kʷúːχʷxʼʷ] 'slaves'. Candidates (b) and (c) show that it is not sufficient to satisfy spreading in only one direction. Candidate (d) shows that rounding must spread as far as possible toward the edge of the word.

(16) { ALIGN-L, ALIGN-R } ≫ IDENT[+rnd]

(17)

/[kúːχ]-xʼ/	ALIGN-R	ALIGN-L	ID[+rnd]
a. kúːχxʼ	*!	*	
b. kúːχʷxʼʷ		*!	**
c. kʷúːχxʼ	*!		*
d. kʷúːχʷxʼ	*!		**
e. ☞ kʷúːχʷxʼʷ			***

Spreading is blocked by non-dorsal places of articulation (coronals, glottals) and by [-high] vowels. The *RNDFAM family of markedness constraints must be ranked above both alignment constraints, demonstrated below with [túʃ] 'tadpole'.

(18)

/tʷúʃʷ/	*RNDFAM	ALIGN-L	ALIGN-R	ID[+rnd]
a. ☞ túʃ		*	*	**
b. túʃʷ	*!	*		*
c. tʷúʃ	*!		*	*

High front vowels before rounded consonants are preserved, but high front vowels following rounded consonants become rounded. Notice that a change of /i/ to [u] requires *two* faithfulness violations: one of IDENT[+round] and another of IDENT[+back]. IDENT[+back] must be interleaved between the two alignment constraints in order to capture the asymmetrical nature of roundedness spreading onto vowels.

(19) ALIGN-[+rnd]-R ≫ IDENT[+back] ≫ ALIGN-[+rnd]-L ≫ IDENT[+rnd]

The ranking ALIGN-[+rnd]-R ≫ IDENT[+back] is demonstrated by [ʃákʷ-i] 'strawberry-PSS' below. (ALIGN-[+rnd]-L is left off of this tableau since both candidates incur the same number of violations of ALIGN-[+rnd]-L.)

(20)

/[ʃákʷ]-i/	ALIGN-R	ID[+bk]	ID[+rnd]
a. ʃá.kʷi	*!		
b. ☞ ʃá.kʷu		*	*

And the crucial ranking of IDENT[+back] ≫ ALIGN-[+rnd]-L is shown by [iχʷsiːtin] 'I saw you'. (ALIGN-[+rnd]-R is left off of this tableau since both candidates incur the same number of violations of ALIGN-[+rnd]-R.)

(21)

/iχʷsitiːn/	ID[+bk]	ALIGN-L	ID[+rnd]
a. ☞ iχʷ.si.tiːn		*	
b. uχʷ.si.tiːn	*!		*

In the Transitional dialect, high front vowels are preserved in roots, even when they follow a rounded segment, as in [kʷít] 'bit'. The positional faithfulness constraint, IDENT_RT[+back], must be ranked above ALIGN-[+rnd]-R.

(22)

/kʷít/	ID$_{RT}$[+bk]	ALIGN-R	ID[+bk]	ALIGN-L	ID[+rnd]
a. ☞ kʷít		**			
b. kʷút	*!	*	*		*

Finally, while high vowels are allophonically rounded next to rounded segments by becoming [+back], [-high] vowels never exhibit this strategy. For instance, [e] does not become *[o], and [a] does not become some back round vowel like *[ɒ]. I adopt the constraint *RoLo (do not be a non-high round vowel) from Beckman (1997) and Kaun (1995) to explain the marked occurrence of [o] and [ɒ].

(23) ***RoLo**
Segments which are both [-high] and [+round] are prohibited.

This markedness constraint must be ranked above ALIGN-R, as shown by /kuːχ-qáː/ 'slave-ADES' below. The optimal candidate is one that incurs more violations of ALIGN-[+rnd]-R.

(24)

/kuːχ-qáː/	*RoLo	ALIGN-R	ID[+bk]	ALIGN-L	ID[+rnd]
a. kuːχqáː		**!*		*	
b. ☞ kʷuːχʷqʷáː		*			***
c. kʷuːχʷqʷɒ́ː	*!		*		****

A summary of the partial rankings argued for in this squib are given below. The first captures the fact that rounded segments are contrastive within roots, but not elsewhere. The second describes the asymmetrical spread of rounding onto adjacent segments.

(25)   a.   *RNDFAM ≫ { IDENT$_{RT}$[+rnd], IDENT$_{RT}$[+back] } ≫ *ROUND≫ IDENT[+rnd]

  b.   *RNDFAM, *RoLo, IDENT$_{RT}$[+back]
      ≫ ALIGN-[+rnd]-R
      ≫ IDENT[+back]
      ≫ ALIGN-[+rnd]-L
      ≫ IDENT[+rnd]

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