Exploring L2 pronunciation features in SENĆOŦEN and Hul’q’umi’num’

Sonya Bird\textsuperscript{1}, Donna Gerdts\textsuperscript{2}, and Janet Leonard\textsuperscript{1}

\textsuperscript{1} University of Victoria
\textsuperscript{2} Simon Fraser University
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Context

- Growing **language revitalization** movement in Canada
  - Growing number of second language learners FPCC (2014)
- Emphasis: **spoken language**
  - Mentor-apprentice, language nests, immersion camps and classes
- Small but growing body of work on **pronunciation** in the context of language revitalization

- Relevant bodies of literature
  - Community-level influences: Effects of dominant language on minority language (Babel 2009; Dorian 1994; King et al. 2009)
    - Dominant languages exert influences on minority languages, including on pronunciation
  - Individual-level influences: Effects of L1 on L2 learning (Flege et al. 2003)
    - Speakers’ L1 will influence their L2, including pronunciation
Goal and research questions

- **Goals**
  - Understand L2 pronunciation in the particular context of ILR
    - What factors influence pronunciation?
  - Determine how to focus pronunciation teaching to best help learners
    - How can we balance letting the language evolve and staying true to the elders’ way of speaking? (Bird & Kell, to appear)

- **Research questions:**
  - What are the challenges for Hul’q’umi’n̓um’ and SENĆOŦEN learners?
  - Do Hul’q’umi’n̓um’ and SENĆOŦEN learners exhibit the same kinds of patterns as language learners in other contexts?
  - If not, what is special about the Indigenous Language Revitalization context?

- **Focus:** “challenging sounds”
  - coronal obstruents, ejectives
Hul’q’umi’num’
- About 40 first-language speakers
- Nonetheless a strong language
  - Used in ceremonial life
  - Many adults speak it to some degree; many hundreds understand it
  - People of all generations are learning it, to teach it to the younger generations
- Current emphasis: helping teachers become fluent and deliver various kinds of immersion programs

SENĆOTEN
- Language of the WŞÁNEĆ people
- About 20 speakers
  - Very few L1 speaking elders (< 5)
  - L2 speakers of different generations and fluency levels (3 generations of apprentices + kids)
  - Vibrant language revitalization program; children being raised in SENĆOTEN
- Current emphasis: developing fluency and teaching capacity for the immersion programs

Critical role of pronunciation
# Hul’q’umi’nulwul’ and SENĆOŦEN sounds

<table>
<thead>
<tr>
<th></th>
<th>Labial</th>
<th>Dental</th>
<th>Alveolar</th>
<th>Lateral</th>
<th>Palatal</th>
<th>Velar</th>
<th>Uvular</th>
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<tbody>
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<td>Plosives</td>
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<td>k</td>
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<td>t</td>
<td>t’</td>
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<td>k</td>
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<td>q’</td>
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<td>p̓</td>
<td>p̓’</td>
<td>t̓</td>
<td>t̓’</td>
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<td>k̓</td>
<td>k’̓</td>
<td>q̓’</td>
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<td>Affricates</td>
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<td>tʃ</td>
<td>tʃ’</td>
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<tr>
<td></td>
<td>tθ</td>
<td>tθ’</td>
<td>ts</td>
<td>ts’</td>
<td>tɬ</td>
<td>tʃ̓</td>
<td>tʃ’̓</td>
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<tr>
<td>Fricatives</td>
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<td></td>
<td>f̓</td>
<td>f̓’</td>
<td>x̓</td>
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<tr>
<td></td>
<td>θ</td>
<td>s</td>
<td>l̊</td>
<td>j̊</td>
<td>x̓</td>
<td></td>
<td>x̓’</td>
<td>x̓’̊</td>
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<tr>
<td>Resonants</td>
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<td></td>
<td></td>
<td>j̊</td>
<td>j̊’</td>
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<td></td>
<td>m</td>
<td>m’</td>
<td>n</td>
<td>l̊</td>
<td>j̊’</td>
<td>w</td>
<td>w’</td>
<td>η̊</td>
</tr>
</tbody>
</table>

Blue: only SENĆOŦEN  
Green: only Hul’q’umi’nulwul’
Hul’q’umi’num’ study

**Context:** Hul’q’umi’num’ Practical Phonetics course (SFU)
- **Participants**
  - **Teachers:**
    - Donna Gerdts (author; linguist; second-language speaker; teacher)
    - Ruby Peter (fluent first-language speaker; linguist; teacher)
  - **Students:** 15 participants, aged 22 to 65, all with some prior training in sounds of the language
- **Structure of the course**
  - Four weeks (40 hours) in July 2016
    - Initial pronunciation assessment administered to students
    - Remainder of course: focus on challenging sounds as per the initial assessment

**Research Question:** Do L2 learners maintain the contrasts among coronal sounds (1/3 of consonantal phonemic inventory)?
- Stops: /t t’/
- Fricatives: /θ ʃ s ʃ/ & /θ’ ʃ’ tʃ’ ʃ’/
Hul’q’umi’num’ - Methods

- **Stimuli:** recordings of initial pronunciation assessment
  - 48 words
  - Designed to elicit coronals in various environments
  - Some words familiar to participants, some not
  - Read (modelled) by Ruby Peter

- **Procedure:**
  - Pronunciation assessment administered to 1–2 participants at a time
  - Ruby Peter pronounced each word once, and participant (student) attempted to repeat it
  - Assessments were recorded for analysis of L2 (pre-course) speech
    - (Assessments used to prioritize pronunciation instruction during the course)

- **Data analysis:** Auditory analysis of target coronal obstruents (first pass)
  - Goal: determine to what extent L2 speakers maintained contrasts among target sounds
SENĆOŦEN study

- **Context:** SENĆOŦEN pronunciation project (UVic)
  - Participants: 12 speakers of different generations and fluency levels
    - 3 fluent elders
    - 3 “super learners”
    - 3 senior teachers (long-time L2 speakers)
    - 3 junior teachers (more recent L2 speakers)
  - Pronunciation attitudes survey
    - Sounds of concern: ejectives, K sounds, glottal stop (where it goes)

- **Research Question** – ejectives: How does pronunciation vary across SENĆOŦEN speakers of different generations and fluency levels?
  - Ejective stop: /t̪/ (and ejective K sounds /kʰw qʰw/)
SENĆOTEN – Methods

- **Stimuli**: words extracted from wordlist created by community member RA to elicit ‘difficult’ sounds
  - /t’/: 2 words with word-initial (65 tokens) /t’/ + 2 words with word-final /t’/ (65 tokens) = 130 tokens analyzed

- **Procedure**: Translation; first pass without word list, second pass with

- **Data analysis**: Auditory + targeted acoustic analysis
  - Goal: determine how variable pronunciation is across speakers, including whether/how (younger)L2 speakers’ pronunciation differs from their elders’ pronunciation
Different languages and contexts  
Similar expectations

- Hul’q’umi’num’ and SENĆOŦEN sounds should be shifting towards English sounds
  - Community-level influences: Hul’q’umi’num’ and SENĆOŦEN sound systems are likely to be influenced by English (King et al. 2009)
  - Individual-level influences: Learners’ L1 (English) should affect their pronunciation in the language they are learning - Hul’q’umi’num’ or SENĆOŦEN (Flege et al. 2003)
Results - Hul’q’umi’num’

- Some sounds were not problematic: /t sʃ tʃ/ 
- Other sounds were more problematic, at least for some students: 
  - Stop: /t/ 
  - Fricatives: /t, θ/ 
  - Affricates: /tʰ tʃ tʃ'/ 
- Unexpected results 
  - Fewer errors with /ts'/ than /ts/ 
  - 8/15 students strengthened /ts/ to /ts'/ word-initially in at least one word 
  - Fewer errors with /t/ than /θ/ 
  - /t/ errors: 67% = [θ] substitutions 
  - /θ/ errors: 73% = [t] substitutions 

<table>
<thead>
<tr>
<th>sound</th>
<th>Errors/tokens</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>t'</td>
<td>13/150</td>
<td>8.6%</td>
</tr>
<tr>
<td>ts'</td>
<td>9/75</td>
<td>12%</td>
</tr>
<tr>
<td>ts</td>
<td>14/90</td>
<td>15.5%</td>
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<tr>
<td>ʃ</td>
<td>25/75</td>
<td>33.3%</td>
</tr>
<tr>
<td>tʃ</td>
<td>45/120</td>
<td>37.5%</td>
</tr>
<tr>
<td>tʃ'</td>
<td>25/75</td>
<td>33.3%</td>
</tr>
<tr>
<td>θ</td>
<td>28/105</td>
<td>26.6%</td>
</tr>
<tr>
<td>t</td>
<td>42/210</td>
<td>20%</td>
</tr>
</tbody>
</table>
Results - SENĆOŦEN /t'/

- Previous generations of speakers
  - “The obstruents are usually lenis but never voiced. The glottalized obstruents are ejective but weakly so. It is often difficult, especially in the anterior consonants, to perceive the contrast.” (Montler, 1986)
  - = [t' ~ d']

- In comparison, participants in this study:
  - Ejectives not always realized as ejective, in particular word-initially
    - Word-initial: 44/65 ejectives (21/65: plain stops)
    - Word-final: 65/65 ejectives
  - When ejectives were realized as such
    - strong (tense) ejectives (Kingston, 1985) = [t']: 88/109 tokens
    - weak (lax) ejectives (Kingston, 1985) = [t' ~ d' ~ d']: 21/109 tokens
### SENĆOŦEN – /t'/' results

#### Word-initial ejectives

<table>
<thead>
<tr>
<th>Speaker</th>
<th>[t']</th>
<th>[tʰ] ~ [t]</th>
<th>[t]</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>JT1</td>
<td>6</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>JT2</td>
<td>6</td>
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<td></td>
<td>6</td>
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<tr>
<td>JT3</td>
<td>3</td>
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<tr>
<td>SL1</td>
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<td></td>
<td>6</td>
</tr>
<tr>
<td>SL2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>SL3</td>
<td>7</td>
<td>1</td>
<td></td>
<td>8</td>
</tr>
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<td>ST1</td>
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<tr>
<td>ST2</td>
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<td>3</td>
</tr>
<tr>
<td>E1</td>
<td>5</td>
<td>1</td>
<td></td>
<td>6</td>
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<tr>
<td>E2</td>
<td>3</td>
<td>3</td>
<td></td>
<td>6</td>
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<tr>
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<tr>
<td>Total</td>
<td>41</td>
<td>21</td>
<td>3</td>
<td>65</td>
</tr>
</tbody>
</table>

#### Auditory analysis
- Most common realization: [t']
- Most consistent speakers: JT and ST
- Most variable speakers: SL
- Weak ejectives (21 total):
  - JT: 4
  - SL: 8
  - ST: 4
  - E: 5

#### Acoustic analysis
- [t'] distinguished by VOT
- [t] distinguished by jitter
- [d'] distinguished by voicing lag

#### Word-final ejectives

<table>
<thead>
<tr>
<th>Speaker</th>
<th>[t']</th>
<th>[d']</th>
<th>[d']</th>
<th>Total</th>
</tr>
</thead>
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<td>E2</td>
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<td>4</td>
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<tr>
<td>E3</td>
<td>3</td>
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<td>3</td>
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<tr>
<td>Total</td>
<td>47</td>
<td>17</td>
<td>1</td>
<td>65</td>
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</tbody>
</table>
Results
Types of ejective: initial position

Figure 1: Word-initial [t’] vs. [th], in two repetitions of /t’ájəm/ pronounced by speaker E2.
Results
Types of ejective: initial position

Figure 2: Word-initial [t’] vs. [t], in two repetitions of /t’i’ǝq/ pronounced by speaker E1.
Results

Types of ejective: final position

**Figure 3**: [t’] in /ŋiʔet’/ pronounced by E1 (oval indicates lack of voicing lag, present in Figure 4).
Results

Types of ejective: final position

**Figure 3:** [d’] in /kw’anet’/ pronounced by A1 (oval indicates voicing lag, absent in Figure 3).
Summary

- **Hul’q’umi’n̓um’**: phonological realization of multiple phonemes
  - Fewer errors with /ts/ than /ts/`
  - Fewer errors with /ɬ/ than /θ/

- **SENĆOTEN**: phonetic realization of a single phoneme
  - Ejectives are more distinct from their plain counterparts that they have been in past generations

- **General pattern**: emphasis on non-English sounds and sound patterns
  - [ɬ] instead of [θ], [ts’] instead of [ts], [t’] instead of [t]

- **Additional patterns**
  - SENĆOTEN velar and uvular ejectives
  - Glottal stop placement
Discussion

- **What we expected**: Hul’q’umi’n̓um’ and SENĆOŦEN sounds would be shifting towards English sounds
  - On a community level: dominant language would influence the minority language (King et al., 2009)
  - On an individual level: L1 would influence L2 (Flege et al. 2003)
- **What we heard**: the opposite (at least in some cases)

- **Why?**
  - **Sociolinguistic factors**: Over-emphasis of non-English pronunciation features as a marker of identity (Nance et al. 2016)
    - Phoneme substitutions, glottal stop placement, realization of ejectives
  - **L2 acquisition factors**: Hyper-correction in the context of language learning and teaching (Eckman et al. 2013; Saito & van Poeteren 2012; Uther et al. 2006)
    - Ejectives in particular
Conclusion

- Take home message
  - Factors influencing L2 pronunciation are complex
  - There is work to be done teasing these apart, and figuring out how to incorporate them in language teaching situations

- Unique features of the project
  - Unifying research and teaching (Hul’q’umi’num’)
  - Unifying findings on L2 pronunciation and attitudes towards pronunciation (SENĆOŦEN)
  - Groundwork for future phonetic research on L2 pronunciation, feeding directly back into pronunciation teaching and language revitalization

- Practical outcomes of the project:
  - Preliminary understanding of learners’ challenges allowed us to focus the course on those challenges
  - This understanding also allows us to think about developing effective strategies for facilitating pronunciation, e.g.
    - Raising awareness about /c/ vs. /c’/ and /ɬ/ vs. /θ/
References


