A phonetic study of the tongue root contrast in Buriat and Ewen

Hijo Kang (Stony Brook, hikang@ic.sunysb.edu) & Seongyeon Ko (Cornell, sk484@cornell.edu)

**Languages**

<table>
<thead>
<tr>
<th>Language group</th>
<th>Buriat</th>
<th>Ewen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spoken in</td>
<td>Buryatia, Russia</td>
<td>Eastern Siberia</td>
</tr>
<tr>
<td>Vowel harmony</td>
<td>/u o o/ vs /o a ɔ/</td>
<td>/i o o/ vs /i o a ɔ/</td>
</tr>
</tbody>
</table>

**Goals**

As a part of larger study of the phonetics of vowel systems in endangered Altaic languages, this study aims to:
- confirm acoustically that Buriat and Ewen have a vowel system based on tongue root (TR) contrast
- compare the acoustic correlates of Altaic TR contrast with those of West-African languages

**Motivations**

- Endangered status of most Altaic languages
- No consensus on the nature of vowel harmony in Altaic
- Lack of acoustic/typological study of TR harmony in Altaic

**Previous Studies**

Acoustic cues of TR contrast in West-African:
- F1: ATR < non-ATR
- normalized A1-A2: ATR > non-ATR
- Center of gravity: ATR < non-ATR

**Data**

- Collected by the Altaic Society of Korea REAL project team
  - West Buriat (WB): 1 male (1,271 tokens)
  - Tsongol Buriat (TB): 1 female (1,233 tokens)
  - Ewen: 1 female (899 tokens)

**Measurement and Results**

- Measured at the middle of each vowel (only short Vs in initial syllables)
- Each pair of vowels was compared (One-way ANOVA)
  - Note: +: ATR greater, -: non-ATR greater, ?: no consistent pattern, x/y: significant difference in x pair(s) out of y pairs

<table>
<thead>
<tr>
<th></th>
<th>WB</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>H1</th>
<th>H2</th>
<th>H1-H2</th>
<th>H1-A2</th>
<th>H1-A3</th>
<th>NA1A2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F0</td>
<td>F1</td>
<td>F2</td>
<td>F3</td>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>B1</td>
<td>B2</td>
<td>B3</td>
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</tbody>
</table>

**Discussion**

- Formant charts → Buriat & Ewen are TR languages supports the X-ray studies: Buriat (Buraeva 1959) & Ewen (Novikova 1960)
- Ongoing merger /o/ > /u/ in TB vs. retention of /o/ in WB:
  - TB, a Mongolian dialect indeed (Svantesson et al. 2005), may have been affected by Eastern Buriat

**Future Study**

- More speakers, more languages, more control over the data
- Other possible acoustic cues:
  - e.g., ΔB1 & Center of Gravity (Starwalt 2008)
  - Articulation
  - MRI (Tiede 1996)
  - Laryngoscopic study (Edmondson & Esling 2006)
  - Effect of prosody (stress, length, position)

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References


