Documenting Consonantal Variation in Ganluo Ersu

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CNRS-Paris, Dartmouth College, Xichang College
• How can a variationist approach help in language documentation and description? (Nagy 2009)

• How can underrepresented languages help variationist research?
Small Tibetan village in rural Sichuan, China
...a long way from New York City (Labov 1966)
• Ganluo Ersu project: Exemplify a variationist approach to an endangered language

• Envision an era of increasing collaboration: variationist sociolinguists + field linguists working on language description + cultural insiders
Background on Ganluo Ersu

- Tibetan language
  - Qiang subgroup of Tibeto-Burman
    (Bradley 1997:36-7)
Background on Ganluo Ersu

Map 1. Distribution of the Ersu, Lizu, and Duoxu languages
• Endangered and underdocumented
  • Approx. 16,800 speakers

• Most speakers are bilingual
  – Southwest Mandarin Chinese

• Schools: monolingual Mandarin
• Endangered and underdocumented
• Most speakers are bilingual
  – Southwest Mandarin Chinese
• Schools: monolingual Mandarin

Crops:
Corn, potatoes, soybeans

Livestock:
Goats, pigs, cattle, poultry, yaks, horses, mules

Sharp contrast with China’s large, modern, Han cities
Background on Ganlou Ersu

### Consonants

<table>
<thead>
<tr>
<th>Plosive</th>
<th>Bilabial</th>
<th>Labiodental</th>
<th>Dental</th>
<th>Alveolar</th>
<th>Alveolo-palatal</th>
<th>Retroflex</th>
<th>Velar</th>
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<tbody>
<tr>
<td>p pʰ b</td>
<td>t tʰ d</td>
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<td></td>
<td>k kʰ g</td>
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<tr>
<td>Affricate</td>
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<td>ts tsʰ dz</td>
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<td>tc tcʰ dz</td>
<td>tɛ tɛʰ dz</td>
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<tr>
<td>Nasal</td>
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Syllable: (C)(C)(G)V
### Background on Ganluo Ersu

**Consonants**

Chirkova et al. (2015)

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Syllable: (C)(C)(G)V
Background on Ganluo Ersu

• Unlike many English variationist studies, Ersu variation centers on consonants
  – Only four simple vowels /i ɛ a o/
  – Two rhotacized vowels /ə a/
  – Syllabic fricatives /ɣ ż/
• Recent modern description:
  – Chirkova et al. 2015, *Journal of the IPA*
    Detailed phonetic description
    Data: one woman (early 40s), two men (early 60s)

• Field observations suggest a change in progress
  – Increasing contact with Mandarin
Overall Hypothesis

• Ersu consonants are undergoing a major change in progress
Overall Hypothesis

• Ersu consonants are undergoing a major change in progress
  – Consonant simplification toward local Chinese phonology?
  – Correlated with age, sex, social class?
  – Correlated with language choice? Chinese vs. Ersu
The Ersu study

• The first variationist study of any Tibeto-Burman language in Sichuan province
The Ersu study

- The first variationist study of any Tibeto-Burman language in Sichuan province

- Other related work: Jermay Jamsu Reynolds (2012): Variation in Amdo Tibetan in Qinghai Province
  - Age, sex, and literacy/educational level
The Ersu study

• Social categories of Western social science: How well do they fit into Ganluo Ersu society?

• Language shift, loss of language vitality, endangerment
  – Di Paolo; Jeff Good; Drager; Ravindranath & Quinn; Nagy (this symposium)
The Ersu study

• More generally: Sociolinguistics of small rural minority communities
  – Hildebrandt (p.c.), Skilton & Farmer, and others in this conference, also Nick Evans’ group in PNG, inter alia
The Ersu study

• Sui villages in Guizhou province:
  – Clan is the key factor, not social class, etc
  – Less relevant: Labovian notions of prestige and social stratification
The Ersu study

• Sui villages in Guizhou province:
  – Clan is the key factor, not social class, etc
  – Less relevant: Labovian notions of prestige and social stratification

• What about Ersu villages in Sichuan?
  – Intense contact with Chinese
  – Will traditional social science categories be more meaningful in a contact situation?
  – What about the role of language vitality?
• 98 speakers (52 women, 46 men)
• Interviewer: Dehe Wang
  Native speaker/community member
• Word list (3 times, Chinese characters)
  – 116 words, including distractor words
  – Consonants in syllable-onset position
• Question & Answer/ethnographic interview
Hypotheses of Change in Progress

1. Loss of trills
   - Including a merger of trilled and non-trilled affricates
2. Delateralization of lateral fricative: \( l \) to \( x \)
3. Devoicing of stops and affricates
4. Simplification of onsets
5. Rhotacized vowels: \( r\theta \) → \( C\theta \)
Factors

• Age
• Sex
• Education
• Occupation
• Village
• Q&A Interview Language Choice
• Phonetic Environment (following vowel)

Are we missing any important local constructs like kinship? (Mitchell; Skilton & Farmer, this conference)
Occupational Scale
(adapted from Labov, in Ash 2002)

1 = unemployed (not applicable in a rural village)
2 = farmer or manual temporary labor
3 = local shopkeeper, etc.
4 = current tech school student
5 = school teacher, Communist Party cadre
6 = professionals
Hypothesis 1: Loss of trills

- Example words

<table>
<thead>
<tr>
<th></th>
<th>‘chicken’</th>
</tr>
</thead>
<tbody>
<tr>
<td>tá</td>
<td></td>
</tr>
<tr>
<td>trê</td>
<td>‘star’</td>
</tr>
<tr>
<td>Ḟró</td>
<td>‘pot/pan’</td>
</tr>
<tr>
<td>Ḟhú-phaltú</td>
<td>‘scratch’</td>
</tr>
</tbody>
</table>
Percent “trill-ful” for 98 speakers

Multiple Regression:  
$R^2 = 0.341$  
Speaker averages from 12,630 tokens

- Trills increase 0.7% per year of age $(p<0.0001)$
- Decrease 7.6% for each step on the occupation scale $(p<0.001)$
- Decrease 1.5% for Village=Yuexi
- Decrease 12.5% for Village=Liaoping
Percent “trill-ful” for 98 speakers

Sharp contrast around age 40 reflects speakers raised after Deng Xiaoping’s reform policies in the 1970s, also matching our ethnographic interviews.
Occupation versus percent realized as trill (jitter added to show individuals)

Higher status = Fewer trills = Less Ersu phonology
$R^2 = 0.13$
$p < 0.0005$
Logistic regression on trills

- Logistic regression (Tagliamonte 2006)
- Rbrul (Johnson 2009), linear mixed effects (Drager & Hay 2012)
- 12,630 tokens
- Factors: Age, Sex, Education, Occupation, Village, Language Choice, Speaker, Following Vowel
Logistic regression on trills

Step-up/step-down procedure (Rbrul)

Fixed effects:

Age***  log-odds 0.133
(14.2% higher odds of trill per year of age)

LanguageChoice=Ersu**
log-odds 1.027, factor weight 0.736

Village≠Liaoping/Yuexi*
log-odds 2.318, factor weight 0.910

Not significant: Education, Occupation, Sex

Random: Speaker, FollowingVowel

R² fixed = 0.361
Language choice during Q&A as a factor in producing trills in the word list (%)

Average percent realized as trill

Ersu

Chinese
Language Choice for Q&A interview:

Logistic regression result:

Education***
log-odds -0.349 (Ersu)
$R^2=0.452$

Chinese=Red
Ersu=Blue
• “Those who had a chance to go to school speak Chinese better than Ersu. Those who did not go to school speak Ersu better.

• “Nowadays, children around 10-11 years of age only speak Chinese to each other. You address them in Ersu, but they reply in Chinese, can't say it in Ersu.”

-78 year-old woman, farmer, no formal education
Merger of two affricates

merging /tʃ/ + /tʃ/ to become /tʃ/
Age***
Decreases 0.6% for each year younger

Occupation**
Decreases 5.3% for each step

Village*
Yuexi: 3.5% lower
Liaoping: 8.7% lower

$R^2=0.336$
(3237 tokens)

n.s.: Sex, Education, LanguageChoice
Hypothesis 1: Loss of trills
Hypothesis 1: Loss of trills

- Summary: Hypothesis confirmed
Hypothesis 1: Loss of trills

• **Summary:** *Hypothesis confirmed*

1. **Strongest effect:** Age
   - Trills decreasing in apparent time → more like Chinese
Hypothesis 1: Loss of trills

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1. **Strongest effect: Age**
   - Trills decreasing in apparent time $\rightarrow$ more like Chinese

2. **Choosing Ersu for the Q&A = more trills in word list**
   (logistic regression on individual tokens)
Hypothesis 1: Loss of trills

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1. Strongest effect: Age
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2. Choosing Ersu for the Q&A = more trills in word list
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3. Higher occupation = fewer trills
   (multiple regression on % for each speaker)
Hypothesis 1: Loss of trills

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2. Choosing Ersu for the Q&A = more trills in word list
   (logistic regression on individual tokens)

3. Higher occupation = fewer trills
   (multiple regression on % for each speaker)

4. Merger of trilled affricate with non-trilled
   (age + occupation)
Hypothesis 2: Delateralization of lateral fricative

• Delateralization: \( l \) to \( x \)

Example:

\( \text{ţá} \) ‘month’

• [x] is shared with Chinese
Average percent realized as [x]
Logistic regression: \( \{ \text{to} \} x \)

Step-up/step-down procedure on [x]

Fixed effects:

Age*** log-odds -0.055
(5.7% lower odds of [x] per year of age)

Sex* Female log-odds 0.783, factor weight 0.686
    Male log odds -0.783, factor weight 0.314

Not significant: Education, Occupation, FollowingVowel, Village, LanguageChoice

Random: Speaker

R\(^2\) fixed = 0.199
Hypothesis 2: Delateralization of lateral fricative

• Summary: *Hypothesis confirmed*

[x] is replacing the lateral fricative in younger, female speakers

-Becoming more like Chinese phonology
Hypothesis 3: Devoicing of stops and affricates

• Examples

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>dzà</td>
<td>‘paddy rice’</td>
</tr>
<tr>
<td>bé</td>
<td>‘insect’</td>
</tr>
<tr>
<td>ndzótsá</td>
<td>‘belt’</td>
</tr>
<tr>
<td>dʒú</td>
<td>‘be dry’</td>
</tr>
<tr>
<td>dzó</td>
<td>‘push’</td>
</tr>
<tr>
<td>dà-trá</td>
<td>‘naughty’</td>
</tr>
<tr>
<td>dzó</td>
<td>‘water’</td>
</tr>
<tr>
<td>ndzí-ndzí</td>
<td>‘quarrel’</td>
</tr>
<tr>
<td>vá</td>
<td>‘net’</td>
</tr>
</tbody>
</table>
Hypothesis 3: Devoicing of stops and affricates

Logistic regression:
Age* log-odds -0.12
R²=0.128, p<0.02
6756 tokens

Fixed:
Age, Sex, Occupation, Education, LanguageChoice

Random: Speaker FollowingVowel
Hypothesis 3: Devoicing of stops and affricates

- Summary: *Hypothesis confirmed*
  Younger speakers more likely to devoice stops and affricates, like Chinese phonology
Hypothesis 4: Simplification of onsets

<table>
<thead>
<tr>
<th>Older Speakers</th>
<th>Younger Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>soldier</td>
<td>ṣamé</td>
</tr>
<tr>
<td>steal</td>
<td>Npʰó</td>
</tr>
<tr>
<td>heavy</td>
<td>ənɛ́</td>
</tr>
<tr>
<td>horse</td>
<td>Nbò</td>
</tr>
<tr>
<td>raise (chicken)</td>
<td>əzú</td>
</tr>
<tr>
<td>ride</td>
<td>Ndżè</td>
</tr>
</tbody>
</table>
Age versus simplified onsets:
Percent for each speaker

Multiple regression:
Age***
Onset simplification increases 0.7% for each year younger
$R^2=0.376$

n.s.:
Sex, Education, Occupation, LanguageChoice
Hypothesis 4: Simplification of onsets

• Summary: *Hypothesis confirmed*
Younger speakers are more likely to simplify consonant onsets, reducing non-Chinese onsets.
Hypothesis 5: Rhotacized vowels

- Example:

\[ \text{rə} \rightarrow \text{Cə} \]
Percent rhotacized vowels in words that can have retroflex trills

Multiple Regression:
Age***
The percent of rhotacized vowels increases 0.2% for each year younger

n.s.: Sex, Education, Occupation, LanguageChoice, Village

$R^2=0.312$ (3237 tokens)
Hypothesis 5: Rhotacized vowels .initializeApp

• Summary: *Hypothesis confirmed*

Younger speakers are more likely to use rhotacized vowels, i.e., replacing the retroflex trill consonant
Overall Hypothesis

• Ersu consonants are undergoing a major change in progress – Yes
Overall Hypothesis

- Ersu consonants are undergoing a major change in progress - Yes
  - Consonant simplification in the direction of local Chinese phonology? • Yes
  - Correlated with age, sex, social class? • Age: Yes
    • Social class and sex: Yes for some variables
  - Correlated with language choice? Chinese vs. Ersu • Yes for trills, no for other variables
Why?
Why?

• Speakers discussed generational increases in Chinese contact through intermarriage, education, and migrant labor
Why?

• Speakers discussed generational increases in Chinese contact through intermarriage, education, and migrant labor
  • Especially for people born after Deng Xiaoping’s reforms in the 1970s
Overall loss of language vitality
Overall loss of language vitality

• “Good Ersu is spoken by people around the age of 50-60. Their language is the best...
• “Young people nowadays mostly study away from their home villages where they mostly speak Chinese.”
  – 46 year-old man with elementary school education
Overall loss of language vitality

“Older people speak better Ersu. The younger the speaker, the poorer the language they speak”

- 46 year-old Ersu woman, college education
• How can a variationist approach help in language documentation and description?
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  – Richer description, sociophonetic variation
  – Provides a clear window into change in progress
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• How can a variationist approach help in language documentation and description?
  – Richer description, sociophonetic variation
  – Provides a clear window into change in progress

• How can underrepresented, endangered languages help variationist research?
  – Diverse linguistic and social settings
  – Understanding contact, language shift, loss of vitality
Acknowledgments

• Thank you to the Ersu communities who participated in the study
• This project is supported by the Endangered Languages Documentation Programme (ELDP, SOAS, Major Documentation Project 0257)