Mapudungun dental fricatives: contrast, variation & preservation

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ESHP4
Overview

- Dental fricatives: typology and diachrony
- Mapudungun: dental-alveolar contrasts gone wild?
  - How real is the contrast?
    - Phonetics reality
    - Lexical and morphological distribution
  - Where does it come from?
    - Language contact and the origins of the contrast
    - The historical record
  - Where is it going?
    - Language vitality and the maintenance of contrast
    - Voicing and the diatopy of dental/alveolar fricative contrast
- Conclusions: the maintenance of a rare contrast
Dental fricatives: typology and diachrony

- Dental fricatives are relatively rare phonemes, crosslinguistically
  - /ð/: 5% of inventories in Phoible (Moran & McCloy 2019)
  - /θ/: 4% of inventories

- Most languages have only one anterior coronal place of articulation
  - typically: alveolar

- Only 7.6% of languages have a dental/alveolar contrast in any manner of articulation (Maddieson, 1984)

- The implication is that the dental/alveolar contrast is difficult to develop or maintain

- Many European dental fricatives undergo mergers
  - cf. English *TH-stopping*, *TH-fronting*
Mapudungun

- A.K.A. Araucanian, Mapuche is the ancestral tongue of the Mapuche people
- ±200,000 speakers (Chile/Argentina)
- Considered “definitely endangered” (UNESCO, 2010), mostly due to poor transmission
- Presumed to be a language isolate
Dental-alveolar contrast in Mapudungun

- Present-Day Central Mapudungun (PDCM) is reported as having an (inter)dental/alveolar contrast in stops, nasals, laterals and fricatives.
- The only language in Phoible containing all these contrasts.

<table>
<thead>
<tr>
<th></th>
<th>Labial</th>
<th>Dental</th>
<th>Alveolar</th>
<th>(Alveolo-) Palatal</th>
<th>Retroflex</th>
<th>Velar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop/Afficate</td>
<td>p</td>
<td>t</td>
<td>t</td>
<td>z̞</td>
<td>t̺̞</td>
<td>k</td>
</tr>
<tr>
<td>Fricative</td>
<td>f</td>
<td>θ</td>
<td>s</td>
<td>(ʃ)</td>
<td>z̺̞</td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>ñ</td>
<td>n</td>
<td>ñ</td>
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<tr>
<td>Liquid</td>
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<td>l̬̬</td>
<td>l̬̬</td>
<td>l̬̬</td>
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<tr>
<td>Approxim</td>
<td>w̮̮</td>
<td></td>
<td></td>
<td>j̮̮</td>
<td></td>
<td>w̮̮</td>
</tr>
</tbody>
</table>

Based on Sadowsky et al. 2013
Dental-alveolar contrast in Mapudungun

- This is backed up by a number of more recent phonetic studies, both articulatory and acoustic:
  - Sadowsky et al. 2013, Figueroa et al. 2019

/miña/

‘male cousin on father’s side of the family’

Fasola et al. 2014: dentals significantly lower F2 of following vowel as compared to alveolars
Lexical and morphological distribution

- Lexical contrasts are rare for dental/alveolar pairs (Painequeo et al. 2018)
  - /tìn/ ‘head louse’
    /tìn/ ‘high-pitched noise’
  - /miña/ ‘male cousin on father’s side’
    /miña/ ‘enough’
  - /kǐla/ ‘bamboo’
    /kǐla/ ‘three’
  - /θakel/ ‘pact/agreement’
    /saku/ ‘sack’ < Spanish ‘saco’

- No closed-category word classes make use of dental segments
- None of the language’s 100+ suffixes makes use of dental segments

/piñana-tuku-lel-ñe-ke-rke-j-m-i/
place-ASP-APPL-PASS-HABIT-REP-IND-2-SG
‘they say you are usually placed directly onto it’
(Salas 2006: 74)
Lexical and morphological distribution

- In general, the dental/alveolar pairs are skewed towards alveolar

Proportions of dictionary* entries with alveolars vs. dentals

- Fricatives are clearly the exception, with dentals being far more common

*Augusta (1916)
Total: 5,125 entries
Lexical incidence of Mapudungun phonemes vs. their attestation in languages of the world
Where do these patterns come from?
No contact support for emergence of dentals

- Among the local Southern Cone languages, dental-alveolar contrasts were absent (as far as we can tell).
- The only languages described as having dentals in the region are **Chonan languages**: Tehuelche (Aonikenk), Selk’nam (Ona).
- As far as we can tell, however, Mapudungun shows no other contact features from Chonan (lexical or otherwise).
- The languages we do know influenced Mapudungun are **Aymara** and, most of all, **Quechuan** varieties.
- Neither of these had dental segments that may have been borrowed into Mapudungun.

Adelar & Muysken 2004:503
Dental/alveolar contrasts in the earliest grammar:
Luys de Valdivia: Arte y Gramática (1606)

“… it should be noted that these three letters <l, n, t>, aside from the pronunciation they have in our Spanish syllables ‘la, na, ta’, have in this tongue another pronunciation which should be known in order to avoid mistakes, since the meaning of many words depends on this pronunciation, which is thus: that nearing the tip of the tongue to the teeth, they pronounce la, le, li etc. and na, ne, ni etc., which is different from our first pronunciation” (p.9.r)

[[l] <L’an> ‘die’
[l] <lanta> ‘testicle’
[n] <n’oyn> ‘eat too much’
[n] <non> ‘win’
Historical evidence for Mapudungun dentals

- Coronal stops in Valdivia’s Arte y Gramática (1606):
  - When spelled as <t’> ‘they move the tip of the tongue towards the high palate’
  - Stops spelled as <t> are pronounced ‘like we pronounce them’

- It is unclear whether there is a dental-alveolar contrast here
  - Spanish stops were dento-alveolar
  - The contrast is still marginal today
What about the fricatives?

In Valdivia’s grammar, PDCM words with /θ/ are spelled with <d>

‘testicle’
‘old woman’

Spanish /d/ had the allophones [ɗ] ([ɗ]ios, ‘god’) and [ð] (ca[ð]a ‘each’)

The implication would be that the dental fricative was voiced

Indeed, Valdivia (1606) represents all fricatives with voiced spellings

<\/o>=[β/ν]
‘root’
‘sea’

<r>=[z]
‘house’
‘stone’

<z>=[z]
‘honey’
‘yeast’

The few instances of words containing <z> are either Quechua or Spanish borrowings containing [s] in the donor language (7 entries in the 3,100-entry Vocabulary)
Dental fricatives in historical Mapudungun

- Valdivia (1606), Havestadt (1777), Febrés (1764) provide similar descriptions for northern dialects.
- Independently, Thomas Falkner’s ‘Description of Patagonia’ (1774) covers 18c central varieties further south.
- PDCM /θ/ = <z>; /f/ = <f>

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<tbody>
<tr>
<td>p</td>
<td></td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>f/φ</td>
<td></td>
<td>θ</td>
<td>(s)</td>
<td>ş</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>n</td>
<td>l</td>
<td></td>
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- Use of <hu> for /w/ (cf. <huenuy> [wenuj] ‘friend’) suggests Spanish spelling practices. Hence <z> is not [z] but voiceless [θ] for the transcriber.
- The key point is that fricatives appear to be voiceless in this area. This even applies to the retroflex (elsewhere <r>.)

- PDCM ko[f]ke ‘bread’
- PDCM ku[z]a ‘stone’
Dialectal distribution:

- Historical transcriptions line up, overall, with one of the clearest isoglosses in Mapudungun dialectology:
  - Fricative voicing

Valdivia (1606)  
Febrés (1764)  
Havestadt (1777)

\(<d\> = [\text{o}]\)
\(<b/v\> = [v/\beta]\)

Falkner (1774)  
Lenz (1897)

\(<z\> = [\theta]\)
\(<f\> = [f/\phi]\)
Loss of dental/alveolar contrast

- Dialects of Mapudungun are in the process of losing the contrast
  - This is in line with loss of fluency and reduced transmission
  - Where vitality is lost, the contrast goes, in favour of the alveolar

- Central Mapudungun:
  - Interior dialects (Salamanca & Quintrileo 2009a), laterals, nasals and stops are in free variation with mostly alveolar realisations
  - The fricatives alternate: the dentals are often realised as alveolars (not vice-versa in Spanish/Quechua borrowings)
Loss of dental/alveolar contrast

- Southern Varieties (Huilliche)
  - These varieties are mostly moribund
  - Contrast is usually lost in favour of the alveolar (except /t/)
  - Central Mapudungun /l/ is sometimes realised as the sequence /ld/
  - Dental fricatives are often realised as alveolars (not so alveolars)
Loss of dental/alveolar contrast

- Northern Varieties (Picunche – Pehuenche)
  - Costal (Salamanca & Quintrileo 2009b); Mountain (Sánchez 1989)
  - These varieties are less robustly preserved than Central ones
- Contrast is lost for non-fricatives (though some variation remains)
- The dental/alveolar distinction appears to remain robust in fricatives
- Fricatives are mostly voiced: [v-ð], [ð], [z]
- Alveolar fricatives – mostly borrowings from Spanish and Quechua – are voiceless [s]
- The contrast in fricatives is supported by voicing
Conclusions: Emergence of a rare contrast

- No evidence for the dental/alveolar contrast being the result of recent contact: it can be traced to the earliest written record
- In fricatives, however, the contrast is clearly the result of contact
- The borrowing of alveolars is facilitated by the presence of the contrast elsewhere
  - The number of features in the system remained the same (it is economic)
  - Early borrowings were incorporated into the default voicing pattern of the dialect

<table>
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<th>Dental</th>
<th>Alveolar</th>
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<tbody>
<tr>
<td>/t/</td>
<td>/ɾ/</td>
</tr>
<tr>
<td>/s/</td>
<td>/z/</td>
</tr>
<tr>
<td>/n/</td>
<td>/n/</td>
</tr>
<tr>
<td>/l/</td>
<td>/l/</td>
</tr>
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Spanish/Quechua  
[s]  
[−DISTRIBUTED]  
[−VOICE]  

Northern Mapudungun  
[z]  
[−DISTRIBUTED]  
[+VOICE]
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  - The number of features in the system remained the same (it is economic).
  - Early borrowings were incorporated into the default voicing pattern of the dialect.
  - Later borrowings incorporate the sources voicing pattern.

<table>
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<th>Spanish</th>
<th>Northern Mapudungun</th>
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<tr>
<td>[s] [-DISTRIBUTED] [-VOICE]</td>
<td>[s] [-DISTRIBUTED] [-VOICE]</td>
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</table>
Conclusions: Maintenance of a rare contrast

- Dental/alveolar contrast are rare, cross linguistically
- They are also rare in Mapudungun, lexically and morphologically
- Nevertheless, vital varieties preserve all contrasts (laterals, nasals, stops & fricatives)
- Non-vital, voiceless varieties are losing the contrast throughout
- Non-vital, historically voiced varieties preserve the fricative contrast (northern dialects) despite the loss of all other dentals
- The salience of the voicing contrast among increasingly Spanish-dominant speakers is likely to facilitate the maintenance of the dental contrast in fricatives
¡Chaltu may!
Lack of voicing contrasts

- A common feature of languages of the Southern Cone of the Americas is their lack of contrastive voicing.

<table>
<thead>
<tr>
<th>Values</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No voicing contrast</td>
<td>182</td>
</tr>
<tr>
<td>In plosives alone</td>
<td>189</td>
</tr>
<tr>
<td>In fricatives alone</td>
<td>38</td>
</tr>
<tr>
<td>In both plosives and fricatives</td>
<td>158</td>
</tr>
</tbody>
</table>

Map showing distribution of languages with various voicing contrasts, adapted from Maddieson 2013 (WALS).
Dialectal distribution:

- This distribution holds, roughly into the present day, as can be seen in a separate project: Sounds of Mapudungun (Sadowsky et al X)

https://soundcomparisons.com/#Mapudungun