RETROFLEXION IN SOUTH ASIA
TYPOLOGICAL PATTERNS & AREAL DISTRIBUTIONS

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Ramanujan & Masica (1969): *Toward a Phonological Typology of the Indian Linguistic Area*

- Limited data; nothing later than 1965
  - 67 languages
  - Few Tibeto-Burman languages
- Qualitative, not quantitative (no statistics)
- Maps are hand-drawn & monochrome; areal patterns are not always clear
The Current Study

- Verify and revise R&M’s findings using a larger sample that incorporates more recent scholarship
  - 255 languages
  - Includes large sample of Tibeto-Burman
- Quantify data; provide basic statistics
- Create computer-generated colour maps using a Geographic Information System (GIS) software

This Presentation

- Focus only on one phonological attribute: retroflexion
- Typology of retroflex contrasts
- Genetic & geographic distribution of types
PRELIMINARIES: LANGUAGE FAMILIES

Languages of South Asia

INDO-IRANIAN
- Iranian
- Indo-Aryan

DRAVIDIAN
- Dravidian

AUSTRO-ASIATIC
- Munda
- Mon-Khmer

SINO-TIBETAN
- Tibeto-Burman

OTHER LANGUAGES
- Other languages
### Preliminaries: Language Samples

<table>
<thead>
<tr>
<th>Lang Family</th>
<th>Sub-Family</th>
<th>R&amp;M 1969</th>
<th>Current Stats&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Current Maps&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indo-Iranian</td>
<td>Iranian</td>
<td>4</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Indo-Aryan</td>
<td></td>
<td>29</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Dravidian</td>
<td>—</td>
<td>15</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Austro-Asiatic</td>
<td>Munda</td>
<td>7</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Mon-Khmer</td>
<td></td>
<td>3</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Tibeto-Burman</td>
<td>—</td>
<td>8</td>
<td>72</td>
<td>98</td>
</tr>
<tr>
<td>Other</td>
<td>—</td>
<td>1</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>67</strong></td>
<td><strong>205</strong></td>
<td><strong>255</strong></td>
</tr>
</tbody>
</table>

1 The sample used to calculate statistics is limited to those languages spoken within the countries of South Asia.
2 The sample used to generate maps includes additional languages spoken in the regions surrounding South Asia.
RETROFLEXION AS AN AREAL FEATURE

**UPSID**
- 80% retroflexion
- 20% none

**South Asia**
- 78% retroflexion
- 22% none
RETROFLEXION AS AN AREAL FEATURE

Percentage of languages with retroflexion in each family

- INDO-IRANIAN: 99%
- DRAVIDIAN: 100%
- AUSTRO-ASIATIC: 84%
- TIBETO-BURMAN: 47%
- OTHER: 50%
RETROFLEX OBSTRUENTS: OVERALL FREQUENCY

**UPSID**
- Retroflex Obstruents: 16%
- None: 84%

**South Asia**
- Retroflex Obstruents: 25%
- None: 75%
RETROFLEX OBSTRUENTS: FREQUENCY BY MANNER IN SOUTH ASIA

Indo-Iranian

- t: 94%
- tʂ: 17%
- s: 22%

Tibeto-Burman

- t: 44%
- tʂ: 1%
- s: 8%

Dravidian

- t: 100%
- tʂ: 0%
- s: 3%

Austro-Asiatic

- t: 79%
- tʂ: 0%
- s: 0%
RETROFLEX NASALS: FREQUENCY

### UPSID
- **m**: 95%
- **n**: 96%
- **ɳ**: 5%
- **ɲ**: 41%
- **ŋ**: 53%

### South Asia
- **m**: 100%
- **n**: 100%
- **ɳ**: 35%
- **ɲ**: 29%
- **ŋ**: 70%


**RETROFLEX NASALS**

<table>
<thead>
<tr>
<th>Language</th>
<th>ɳ</th>
<th>ɲ</th>
<th>ŋ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indo-Iranian</strong></td>
<td>52%</td>
<td>13%</td>
<td>43%</td>
</tr>
<tr>
<td><strong>Tibeto-Burman</strong></td>
<td>97%</td>
<td>3%</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Dravidian</strong></td>
<td>76%</td>
<td>24%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Austro-Asiatic</strong></td>
<td>26%</td>
<td>68%</td>
<td>95%</td>
</tr>
</tbody>
</table>
RETROFLEX NASALS
RETROFLEX LIQUIDS

UPSID

- Retroflex Liquids: 10%
- None: 90%

South Asia

- Retroflex Liquids: 45%
- None: 55%
RETROFLEX LIQUIDS

Indo-Iranian

Tibeto-Burman

Dravidian

Austro-Asiatic

48% 25%

3% 0%

43% 54%

58%

5%
The larger/updated language sample allows us to confirm and refine Ramanujan & Masica’s (1969) observations.

Retroflexion does appear to define an area that corresponds closely to "South Asia"; BUT it also extends well into China.

Retroflex obstruent, nasal, and liquid sub-systems define their own geographic sub-areas that also cut across genetic lines:

- Obstruents: include affricates and/or fricatives in the north, but limited to unaffricated stops elsewhere.
- Nasals: retroflex nasals in the south & west in near complementary distribution with velar nasals elsewhere.
- Liquids: Flaps in the north, in near complementary distribution with laterals in the south.
Thanks to Peter Gallagher at Electric Retina (electricretina.com) for technical assistance with the QGIS software used to generate maps for this study.