Sibilants in Gujarati Phonology
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ISSUE

Do Gujarati have three different fricative systems synchronically with individual speakers acquiring different ones?

Three distinct fricative systems in Gujarati

(i) $s$ (ii) $ʃ$ (iii) $h$

Traditional models of phonological relationships, based on a binary distinction between stably distributable (allophones) and stably non-distributable (contrastive), cannot predict two of the three possible fricative systems.

However, they don’t easily capture a possible third system—voice with quasi-phonemic allophones between the two sibilants.

A probabilistic model of phonological representation, based on a binary distinction between stably distributable (allophones) and stably non-distributable (contrastive), can predict one of the three possible fricative systems.

Hypotheses

-ARCHETYPE DISTRIBUTIONS: Single sibilant and allophonic $ʃ$.
-Quasi-phonetic patterns (Phoneme $s$ and quasi-phonemes $ʃ$).
-Perfect contrast: Phoneme $s$ and allophonic $ʃ$.

Data Analysis

- Probabilistic simulations and empirical data for each Gujarati speaker.
- Probabilistic simulations (i.e., likelihood estimates) for each of the three environments.
- Hypotheses tested, including (i) evidence for contrastive or allophonic, (ii) evidence for quasi-phonemic, and (iii) evidence for a combination of all three.

RESULTS

- Experiment 1: $s$ and $ʃ$ in all given environments (they showed a slight $s$-bias in certain environments). 0.012 > $s$-bias > 0.009, which is treated as noise in the data.
- Experiment 2: $s$-contrast in all given environments (they showed a strong $s$-bias in all given environments). $s$-bias = 0.787, limiting possibilities to one of three environments.

Interests Observing Phonetic conditioning

- Speaker 1: strong [ʃ] bias when followed by front vowel, [ʃ] = 0.813, indicating this is an environment for palatalization.
- Speaker 1: strong [ʃ] bias when followed by retroflex /r/, [ʃ] = 0.722, indicating this is an environment for palatalization.

DISCUSSION AND CONCLUSION

- The production study tests the implications of the factorial structure.
- Evidence was found for at least two possible dichotomous structures in Gujarati: a quasi-phonemic and a quasi-phonemic system, and a quasi-phonemic and a perfect contrast system.
- The study provides evidence for a future study should also include a perceptual experiment, with a discrimination task.

REFERENCES