From Sound Change to Grammar Change: Words, Lexicons, and Learners

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The Basic Model

Source: Velar Palatalization

0. Phonetic Palatalization
   Articulatory Ease
   - Birth of a (Partial) Contrast
   - Independent Sound Change:
     Deletion of final jers

1. Expansion of New Phone
   Dependance Sound Change:
   Re-categorization/re-analysis

2. Expansion of New Contrast
   Dependance Sound Change:
   Contrast Maintenance + Re-analysis

Lexicon

Inventory
   - Words: 6,000 (roughly following CEOX/1995 percentages)
   - Constraints: 1,150 (some of which are context-based)
   - Syllables: 70 OV, 70 CV

Segments
   - Selected at random until entire set of syllables created

6,000 words (roughly following CEOX/1995 percentages)

- 1-syll words: 1,080
- 2-syll words: 2,160
- 3-syll words: 2,160

Results: Grammars

Simulations
   - Iteration: New randomly generated lexicon
   - Generations: Evolution of one lexicon

Each stage computes over entire lexicon (word-by-word)

For iteration 1:
   1. Create new lexicon
   2. Re-categorization
   3. Disarticulation: p = 0.3
   4. Vowel shift: p = 0.7

For iteration 2 G 2:
   1. Re-categorization
   2. Update lexicon

Loop

Conclusions

- Natural Allophony
  - No gradient violations
- Partial Contrast
  - Re-categorization
- Full Contrast
  - erosion of allophony over time
- Unnatural Phonotactics
  - Always co-exist with natural phonotactics

Selected References:


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