Unnatural Classes and Phonological Generalization in Dialect Formation

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The Northern Cities Shift begins with general tensing: /e/ raises, fronts, and diphthongs in all environments. Labov et al. (2006): “This general raising pattern appears to be the type of simplification that often occurs in situations of radical dialect mixture with rapid population growth: a koineization…. In such a situation, it is not unusual for different conditioning factors, sub-categories and sub-rules to disappear in favor of the simplest possible treatment.”

Dialect mixture?: Individuals from New York City and New England, with different short-a patterns, settling in the same area (western New York State).

New York’s “split” short-a system (diagram from Labov 2005):

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    p  t  æ  k
b d j g
 m n
r o s s
v ø z ɔ
 l r
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Tensing occurs: before voiceless fricatives, voiced stops, and nonvelar nasals, but:
- lax in morphologically simple function words (can, and)
- lax in open syllables without level-2 morphological boundary (animal, hammer)
- various lexical exceptions (tense avenue, lax alas)

New England’s nasal short-a system: tensing occurs before all nasals, regardless of syllabic or morphological status.

Nasal system is default American short-a pattern:
- It occurs in disjoint and unrelated regions (Labov et al. 2006):
  - dominant system in NE, northern N.J., W. Pa., Atlanta, Charleston SC, Fla.
  - also very frequent in Midland and West, along with “continuous” short a
- Communities that retreat from Phila. split system end up with nasal system (Ash 2002, Friesner & Dinkin 2006)

So if koineization is a retreat to the least marked system, why would the result be other than the nasal pattern?

Three categories of short-a words:
- Class 1: Tense in both nasal system and NY split system (plan, hamper)
- Class 2: Tense in split system and lax in nasal system (class) or vice versa (animal)
- Class 3: Lax in both systems (trap, cat)

Exemplar theory is disfavored by Labov et al.’s account:
- Bybee (1999): “Segment inventory can be derived” from “repeated sets of coordinated gestures”—i.e., phonemes aren’t stored as part of underlying phonological representation; they arise from distribution of lexical items.
- Exemplar theory predicts Class 3 words would remain lax in a dialect-contact situation: Each word’s evolution is determined by its own exemplars, and Class 3 has no tense exemplars to begin with.

Therefore: the koineization account of general tensing needs to assume abstract underlying phonemic representations.

Phonemic status of the split system and the nasal system

Split system:
- Conditioning rules are complicated—several interacting morph/phonological criteria
- But tense and lax short a are separate phonemes:
  - Late-learned words often disobey distributional constraints
  - Payne (1976): NY natives learning Phila. system ignore phonological regularities
  - Suggests: NY speakers don’t regard tense and lax a as synchronically related (contra Kiparsky 1995)
  - Complicated conditioning rules needn’t be part of grammatical knowledge.

Nasal system:
- Conditioning rule is very simple; only one phonetic criterion
- Single phoneme with easy-to-acquire allophonic rule (cf. Labov 2006)

What happens when they’re combined?
A child growing up with input from both split and nasal systems would hear tense and lax tokens of Class 2 words: variable tensing for these words.
If there’s only one word in Class 2, then the child could decide that Class 1 and Class 3 are separate phonemes, and that one word has variable representation. But:

How many Class 2 words are there?


<table>
<thead>
<tr>
<th>Class</th>
<th>Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>117</td>
</tr>
<tr>
<td>Class 2</td>
<td>139</td>
</tr>
<tr>
<td>Class 3</td>
<td>257</td>
</tr>
</tbody>
</table>
With a large number of words in Class 2 with apparent variable tensing, the learner can conclude that there is one phoneme with tensed and lax short /a/ as possible realizations, related by some variable rule (cf. Kroch et al. 2000 for a similar phenomenon in syntax).

But what is the rule relating the allophones?
- Tensing is obligatory in Class 1: before tautosyllabic nasals.
- Tensing is variable in Class 2:
  - before heterosyllabic nasals;
  - before tautosyllabic voiceless fricatives.
No natural class of environments!

Since the environments in which variable tensing occurs are heterogeneous and have few features in common, learners may overgeneralize and attribute variable tensing to a wider class of environments in order to simplify the rule (again cf. Kroch et al. 2000). The smallest phonological natural class that encompasses all the Class 2 environments is the class of all environments!

Summary: Learners in the mixed community are trying to:
- acquire a complicated and unnatural distribution of tensing (like NY speakers)
- interpret the distribution as a single phoneme (which NY speakers don’t have to do)
...and this leads them to simplify the rule and overgeneralize.

Caveats:
- This account of how koineization could have occurred is necessarily speculative.
- Labov et al. (2006)’s hypothesis of koineization is itself speculative:
  - More information is needed about 19th-C: New England and New York dialects.
  - Hanley records (ADS 1931–7)?

So what is the point?
This phonological account provides a model under which koineization is plausible as an explanation for general tensing, in the absence of direct evidence.

Potential contributions of dialectology research to phonological theory:
- Exemplar theory vs. traditional models of phonology
- Markedness of phonological rules: how unnatural can rules be and still be learnable?

References:

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