Phonology Has an Early Influence on Sound Change

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Which comes first?

Does gradient phonetic change feed subsequent categorical phonological change? Is apparent phonological change the accumulation of gradient phonetic errors in production or perception?

Test Case: /ay/ Raising

/ay/ raises in Philadelphia before voiceless consonants only, and exhibits opacity in contemporary speech.

Data and Model

/ay/ nucleus measurements taken from the Philadelphia Neighborhood Corpus.

<table>
<thead>
<tr>
<th>surface</th>
<th>flap</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>/t/</td>
<td>2157</td>
<td>320</td>
</tr>
<tr>
<td>/d/</td>
<td>757</td>
<td>354</td>
</tr>
<tr>
<td></td>
<td>3474</td>
<td>674</td>
</tr>
<tr>
<td></td>
<td>2477</td>
<td>1111</td>
</tr>
<tr>
<td></td>
<td>3588</td>
<td></td>
</tr>
</tbody>
</table>

301 speakers born between 1888 and 1991.

References


It does not appear that /ay/ before flaps has ever patterned differently from /ay/ before surface /t/ and /d/. To the extent differences are observed, they run counter to predictions based on phonetic bias.

At all times in the change, /ay/ raising has occurred to a degree proportionate to the underlying voicing of the following segment, not proportionate to the phonetic properties of its context.

A model where /ay/ raising began due to phonetic biases, then generalized along phonological lines is not supported. Rather, the phonological generalization appears to be concurrent with the phonetic shift.