YORKSHIRE ASSIMILATION AT THE INTERFACE

Tim Zee
Radboud University

Koen Sebregts
Utrecht University

NEW7
14.04.2016, Edinburgh
YORKSHIRE ASSIMILATION

Devoicing of word-final obstruents before voiceless obstruents

bed-time /bɛd taɪm/ [bɛt taɪm]
a big piece /ə bɪɡ piːs/ [ə bɪk piːs]
live performance /laɪv pəfɔːməns/ [laɪf pəfɔːməns]
Bradford /brædfəd/ [bræ?fəd]

(Wells 1982:366-367)
Yorkshire Assimilation

- Wells (1982)’s data often repeated, form the basis of phonological arguments (e.g. Wetzels & Mascaró 2001, Iverson & Salmons 2003 on binary vs. privative features)
- Hinge on the data being correct: the assimilation is categorical / phonological.
CONFLICTING DATA

- Wells’ data are in accordance with that of some others, e.g. Hughes & Trudgill 1987
- But there is potentially conflicting data from an older source (Wright 1892)

\begin{itemize}
\item \textit{bedstead} \quad [bɛdstɛd]
\item \textit{red-faced} \quad [rɛdfɛːst]
\item \textit{goes to} \quad [ɡʊəz tə] \quad ~ \quad \textit{clothes to} \quad [tloʊəs tə]
\item \textit{is peace} \quad [ɪs pɪəs]
\end{itemize}

- Final stops don’t appear to show assimilation
- Variable in fricatives?
PHONOLOGY OR PHONETICS?

- If the data are actually more variable / gradient, the process may be phonetic instead of phonological.
- Many processes recently reanalysed as fundamentally phonetic (Zsiga 1995), or showing variation between phonetic and phonological (Ellis & Hardcastle 2002).
- These are based on the idea that gradient = phonetic / categorical = phonological.
- But the gradient / categorical distinction is not uncontroversially equated with phonetic / phonological (Pierrehumbert et al. 2000; Scobbie 2007).
DEFINING THE TERMS

• If voicing assimilation is complete: likely categorical
• If voicing assimilation is incomplete: gradient
• If elements of the process are phonetically unmotivated: phonological

• Assumption: what is complete / incomplete and phonetically unmotivated can be expressed in phonetic term
RESEARCH QUESTIONS

• Is Yorkshire Assimilation *categorical*?

• Is Yorkshire Assimilation *phonological*?

• Both questions addressed via C/V ratio:
  
  can tell us about incompleteness and phonetic naturalness
METHOD - PARTICIPANTS

- Pilot at University of York (N=3)
- Experiment in Windhill (N=14)
- All subjects native to West Yorkshire or long-term residents
- Mean age: 48.7
WINDHILL, BRADFORD

Data come from Windhill
- Northern suburb of Bradford
- Wright (1892)'s data came from here
- Hughes & Trudgill (1987): also Bradford
METHOD - MATERIAL

- Production experiment
- Participants read out sentences presented on a laptop

*How do you spell __________ again?*

- food fight
- maize plant
- bed post
- ...

•
Sets of similar compounds that differed in voicing at adjacent word boundaries

<table>
<thead>
<tr>
<th>Condition</th>
<th>Combination $C_1 + C_2$</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation</td>
<td>voiced obstruent + voiceless obstruent</td>
<td>food poisoning</td>
</tr>
<tr>
<td>Voiced</td>
<td>voiced obstruent + voiced obstruent</td>
<td>food bank</td>
</tr>
<tr>
<td>Voiceless</td>
<td>voiceless obstruent + voiceless obstruent</td>
<td>boot polish</td>
</tr>
<tr>
<td>Sonorant</td>
<td>voiced obstruent + sonorant consonant</td>
<td>food waste</td>
</tr>
</tbody>
</table>
### Method - Material

- **Manner of Articulation**

<table>
<thead>
<tr>
<th>Condition</th>
<th>C1</th>
<th>C2</th>
<th>Possible Combinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation</td>
<td>[d, z]</td>
<td>[p, f]</td>
<td>{[d#p], [d#f], [z#p], [z#f]}</td>
</tr>
<tr>
<td>Voiced</td>
<td>[d, z]</td>
<td>[b, v]</td>
<td>{[d#b], [d#v], [z#b], [z#v]}</td>
</tr>
<tr>
<td>Voiceless</td>
<td>[t, s]</td>
<td>[p, f]</td>
<td>{[t#p], [t#f], [s#p], [s#f]}</td>
</tr>
<tr>
<td>Sonorant</td>
<td>[d, z]</td>
<td>[Son]</td>
<td>2x [d#Son], 2x [z#Son]</td>
</tr>
</tbody>
</table>
Expectations:

C/V ratio (high is voiceless; low is voiced):

- Voiceless > Voiced  
  - boot polish > food bank
- Assimilation > Voiced  
  - food poisoning > food bank
- Assimilation ??? Voiceless  
  - food poisoning ??? boot polish
- Voiced = Sonorant  
  - food bank = food waste
METHOD - MATERIAL

• 80 compounds (20 sets)
• 40 distractor items (e.g. rhyme scheme)

• Bradford /brædfəd/ [bræ?fəd]
  • Most stereotypical example
  • Mentioned separately (Ward, 1945)
RESULTS – C/V RATIO

- Linear mixed-effects model
- Random variables: items, speakers
- Fixed variables: Vowel length, Item condition, C₁ Manner of Articulation
# RESULTS C/V RATIO

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>Log Lik.</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>No predictors</td>
<td>4</td>
<td>117.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Vowel length</td>
<td>5</td>
<td>189.45</td>
<td>144.49</td>
<td>1</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>+ Item condition</td>
<td>8</td>
<td>227.58</td>
<td>76.27</td>
<td>3</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>+ C₁ Manner of Articulation</td>
<td>9</td>
<td>227.62</td>
<td>0.09</td>
<td>1</td>
<td>0.767</td>
</tr>
<tr>
<td>+ C₁ Manner of articulation $\times$ item condition</td>
<td>12</td>
<td>229.65</td>
<td>4.05</td>
<td>3</td>
<td>0.255</td>
</tr>
</tbody>
</table>
### THE FINAL MODEL

<table>
<thead>
<tr>
<th>Random effects</th>
<th>Variance</th>
<th>Std. Dev.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker</td>
<td>0.007</td>
<td>0.081</td>
<td>14</td>
</tr>
<tr>
<td>Item</td>
<td>0.001</td>
<td>0.034</td>
<td>80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.61</td>
<td>0.024</td>
<td>25.55</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Vowel type (short)</td>
<td>0.85</td>
<td>0.027</td>
<td>31.380</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Item condition (sonorant)</td>
<td>-0.10</td>
<td>0.030</td>
<td>-3.428</td>
<td>.001</td>
</tr>
<tr>
<td>Item condition (voiced)</td>
<td>-0.09</td>
<td>0.030</td>
<td>-2.81</td>
<td>.006</td>
</tr>
<tr>
<td>Item condition (voiceless)</td>
<td>0.20</td>
<td>0.031</td>
<td>6.359</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
## The Final Model

<table>
<thead>
<tr>
<th>Random effects</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker</td>
<td>0.007</td>
</tr>
<tr>
<td>Item</td>
<td>0.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.61</td>
</tr>
<tr>
<td><strong>Vowel type (short)</strong></td>
<td><strong>0.85</strong></td>
</tr>
<tr>
<td>Item condition</td>
<td></td>
</tr>
<tr>
<td>(sonorant)</td>
<td>−0.10</td>
</tr>
<tr>
<td>Item condition</td>
<td></td>
</tr>
<tr>
<td>(voiced)</td>
<td>−0.09</td>
</tr>
<tr>
<td>Item condition</td>
<td></td>
</tr>
<tr>
<td>(voiceless)</td>
<td>0.20</td>
</tr>
</tbody>
</table>

---

![vowel_type effect plot](image)
THE FINAL MODEL

<table>
<thead>
<tr>
<th>Random effects</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker</td>
<td>0.007</td>
</tr>
<tr>
<td>Item</td>
<td>0.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.61</td>
</tr>
<tr>
<td>Vowel type (short)</td>
<td>0.85</td>
</tr>
<tr>
<td>Item condition (sonorant)</td>
<td>-0.10</td>
</tr>
<tr>
<td>Item condition (voiced)</td>
<td>-0.09</td>
</tr>
<tr>
<td>Item condition (voiceless)</td>
<td>0.20</td>
</tr>
</tbody>
</table>
INDIVIDUAL DIFFERENCES

C/V ratios for speaker W19

C/V ratios for speaker W15
EXAMPLES

- cheese vat
- cheese fingers
GLOTTALISATION

- Only 2 tokens with clear glottalisation
- Both for Bradford
LESSONS FROM EXPERIMENT

- Yorkshire Assimilation does manifest itself in durational cues (cf. Jansen 2007)
- Gradient! (cf. Wells 1982)
- No clear difference between final obstruents and final fricatives (cf. Wright 1892)
- Glottalisation seems limited to certain lexical items (cf. Akamatsu 2009)
PHONOLOGICAL IMPLICATIONS

- Overall the assimilation context shows an intermediate C/V ratio between those of the voiced and voiceless contexts.
- This demonstrates at least some form of phonological assimilation.
- But also that the assimilation is incomplete, i.e. gradient.
- Alternative: third category is created.
- But note difficulties in most phonological theories.
PHONOLOGICAL IMPLICATIONS

- There is individual variation
- Some speakers do not assimilate
- One participant appeared to show optional complete assimilation
- Speakers vary in degrees of overlap between contexts
CAVEATS / OPEN QUESTIONS

- Small number of participants
- Low ecological validity; artificial task
- Only looked at compounds
- Role of other cues to voicing → trading relations
REFERENCES