The role of word accent timing in a typology of Swedish intonation

Gösta Bruce
Linguistics & Phonetics
Lund
Prosodic timing in Swedish

• Word accent distinction:
  accent I (=early), accent II (= late)

• Regional identity:
  Intonational varieties (early < > late)
Bruce & Gårding prosodic typology (1978)

### Swedish intonation model: Linguistic components

#### Dialectal representations

<table>
<thead>
<tr>
<th></th>
<th>1A South e.g. Malmö</th>
<th>1B Central e.g. Dalarna</th>
<th>2A East e.g. Stockholm</th>
<th>2B West e.g. Göteborg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>L</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>A2</strong></td>
<td>H</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>L</strong></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- **Input string**:
  - 1A: V C V C: V C V
  - 1B: V C V C: V C V
  - 2A: V C V C: V C V
  - 2B: V C V C: V C V

- **Sentence prosody**:
  - **Wide interval at A**
  - **Wide interval after A**
  - **Lower L**
  - **Higher H**
  - **H after A**
  - **H late after A**

- **SI**: L at onset and L at offset (statement)
Swedish intonation model

- Timing characteristics of word accents
- Pitch realization of focus
- Pitch patterns of compound words
- Concatenation patterns
Simulation of intonational varieties – LPC-resynthesis

- Timing of pitch peaks only
  4 versions: early > late (steps of 100 ms)
  *man anámmade jòggandet*

- Timing of pitch peaks + pitch realization of focus
  4 versions: early > late + extra peak / wider range
  *man anámmar lùndamodellerna*
Questions of timing

• How many distinct timings are available?

• How small a timing difference is exploitable in speech communication?

• What determines word accent timing in varieties of Swedish?
# Representation of word accents

<table>
<thead>
<tr>
<th></th>
<th>Svea</th>
<th>Göta</th>
<th>South</th>
<th>Dala</th>
</tr>
</thead>
<tbody>
<tr>
<td>accent I</td>
<td>'0'</td>
<td>'0'</td>
<td>'0'</td>
<td>'0'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H L</td>
<td>H L</td>
<td>H L</td>
<td>L H</td>
</tr>
<tr>
<td>accent II</td>
<td>'00'</td>
<td>'00'</td>
<td>'00'</td>
<td>'00'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H L</td>
<td>H L</td>
<td>L H</td>
<td>L H</td>
</tr>
</tbody>
</table>
Single-peaked dialects
(south, gotland-dala, north)

Wide pitch range of (focal) accent gesture

• equal weighting of successive accents of a phrase (= no clear focus signaling)

• relatively LATE word accent timing (= tonal gesture in focus only RISE-FALL)
Double-peaked dialects (göta, svea)

*Extra pitch peak in focus*

- clear distinction focal / non-focal accent (= presence / absence of extra peak)

- relatively EARLY word accent timing (= tonal gesture in focus RISE-FALL-RISE)
Gårding: Scandinavian word accents (1977)

Figure 3.5: A. Geographical distribution of the accent types of Table 3.2. Data from various sources quoted in the text.
## Taxonomy of intonational varieties of Swedish

<table>
<thead>
<tr>
<th></th>
<th>Intonational variety</th>
<th>South</th>
<th>Göta</th>
<th>Dala</th>
<th>Svea</th>
<th>North</th>
<th>Finl</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prosodic feature</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timing characteristics of word accents</td>
<td>late</td>
<td>early</td>
<td>late</td>
<td>early</td>
<td>late</td>
<td>no dist</td>
<td></td>
</tr>
<tr>
<td>Pitch patterns of compound words</td>
<td>same</td>
<td>same</td>
<td>distinct</td>
<td>distinct</td>
<td>distinct</td>
<td>same</td>
<td></td>
</tr>
<tr>
<td>Intonational prominence levels</td>
<td>one</td>
<td>two</td>
<td>one</td>
<td>two</td>
<td>one</td>
<td>one</td>
<td></td>
</tr>
<tr>
<td>Concatenation patterns (phrase / compound)</td>
<td>low</td>
<td>up</td>
<td>down / high</td>
<td>high / low</td>
<td>down / low</td>
<td>low</td>
<td></td>
</tr>
</tbody>
</table>