Intonation

January 21, 2016
The Plan for Today

- Also: I have posted a couple of readings on TOBI (an intonation transcription system) to the course website.
- I also have posted some old 341 notes on suprasegmental features in language to the course website.
- Let’s get into it by reminding ourselves a little bit about how F0 can be meaningfully manipulated in language.
- Does anybody remember what the following things are?
  1. Lexical tones
  2. Pitch accents
  3. Stress
Intonation

• Languages superimpose pitch contours on top of word-based stress or tone distinctions.
  • This is called intonation.

• It turns out that English:
  • has word-based stress
  • and phrase-based pitch accents (intonation)

• The pitch accents are pragmatically specified, rather than lexically specified.
  • = they change according to discourse context.
English Intonation

• We’ll analyze English intonation with a framework called TOBI
  • Tones and Break Indices
• Note: intonational patterns vary across dialects
  • The patterns and examples presented today might not match up with your own intonational system
• Also: this framework has only been applied to a few (primarily western) languages
• There’s more info at
  • http://www.ling.ohio-state.edu/~tobi/
  • Course in Phonetics, pp. 124-128
Levels of Prominence

- In English, pitch accents **align** with stressed syllables.

- Example: [ɪˈk.əlˈpɔr.ɪ.ˈθi.ən] “exploitation”

<table>
<thead>
<tr>
<th></th>
<th>ɪˈk</th>
<th>əlˈpɔr</th>
<th>ɪ.ˈθi.ən</th>
</tr>
</thead>
<tbody>
<tr>
<td>vowel</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>full vowel</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>stress</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>pitch accent</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

- Normally, the accent falls on the **last** stressed syllable.
  - (This is called the **nuclear** accent.)
Pitch Accent Types

- In English, pitch accents can be either high or low
  - $H^*$ or $L^*$
- Examples: **High** ($H^*$)  **Low** ($L^*$)
  - Yes.  Yes?
  - $H^*$  $L^*$
  - Magnification.  Magnification?
- As with tones in tone languages, “high” and “low” pitch accents are defined relative to a speaker’s pitch range.
  - My pitch range: $H^* = 155$ Hz  $L^* = 100$ Hz
  - Mary Beckman: $H^* = 260$ Hz  $L^* = 130$ Hz
Whole Utterances

• The same pitch pattern can apply to an entire sentence:

H*: Manny came with Anna.

L*: Manny came with Anna?

H*: Marianna made the marmalade.

L*: Marianna made the marmalade?
Information

• Note that there’s a tendency to accent **new** information in the discourse.

• 4 different patterns for 4 different contexts:

  \[H^*\]

  \[H^*:\] Manny came with Anna.

  \[H^*\]

  \[H^*:\] Manny came with Anna.

  \[L^*\]

  \[L^*:\] Manny came with Anna?

  \[L^*\]

  \[L^*:\] Manny came with Anna?
Pitch Tracking

- H* is usually associated with a peak in F0;
  - L* is usually associated with a valley (trough) in F0
- Pitch tracking can help with the identification of pitch peaks and valleys.
  - Note: it’s easier to analyze utterances with lots of sonorants.
- Check out both productions of “Manny came with Anna” in Praat.
  - Note that there is more to the intonation contour than just pitch peaks and valleys
    - The H* is followed by a falling pitch pattern
    - The L* is followed by a rising pitch pattern
Tone Types

There are actually three types of tones at play, but we’ll start with just two:

1. Pitch Accents
   - associated with a stressed syllable
   - may be either High (H) or Low (L)
   - marked with a *

2. Boundary Tones
   - appear at the end of a phrase
   - not associated with a particular syllable
   - may be either High (H) or Low (L)
   - marked with a %
Tone Transcription

[m æ n i k h æ i m w i θ æ n θ]
Phrases

• Intonation organizes utterances into phrases
  • “chunks”
• Boundary tones mark the end of intonational phrases
  • Intonational phrases are the largest phrases
• In the transcription of intonation, phrase boundaries are marked with **Break Indices**
  • Hence, TOBI: **Tones** and **Break Indices**
• Break Indices are denoted by numbers
  • 1 = break between words
  • 4 = break between intonational phrases
Break Index Transcription

Tones: $L^*$ $H\%$

Breaks: 1 1 1 1 4