INTD0112 Introduction to Linguistics

Lecture #5
March 1st , 2007

Announcements

- Create an account on the textbook website.
- Homework #2 will be posted by tomorrow morning, right after you turn in homework #1.

How do we describe consonants?

- In terms of three parameters of articulation:
  a. place of articulation,
  b. manner of articulation, and
  c. voicing.
- We also used an acoustic feature [±strident] to distinguish between noisier and quieter fricatives.

Aspiration

- A few sounds (specifically the voiceless stops) are produced with an extra puff of air when occurring initially.
- Compare your pronunciation of the [p], [t], and [k] sounds in both words in each of the following pair:
  pit vs. *spit*
  tar vs. *star*
  cool vs. *school*

Aspiration

- You should be able to notice that in the first word of each pair, the voiceless stop is released with a strong puff of air, which is called aspiration, whereas in the second word of each pair no such aspiration is found. The voiceless stops in the first words are therefore characterized as "**aspirated**" sounds, which distinguish them from the **unaspirated** voiceless stops that do not occur initially.
- In phonetic transcription, we indicate this difference in aspiration by superscripting the aspirated sound with [ʰ], e.g. *pit* [pʰɪt]; *spit* [spɪt].

English consonant chart

- So, maybe now we can look at the English consonant chart (see your textbook, p. 31) and make sense of it.
- According to the chart, [p] is a bilabial, voiceless stop, whereas [z] is an alveolar, voiced fricative.
- Now, describe [f], [m], and [w].

Vowels

- Vowels are distinguished from consonants in that the passage through which the air travels is never so narrow as to obstruct the free flow of the airstream.
- It's hard, however, to characterize vowels according to the same features that we have used in characterizing consonants.

Parameters for vowel articulation

- Therefore, to distinguish between different vowels, we rely on four other features:
  (a) **tongue height**,
  (b) **tongue advancement,**
  (c) **lip rounding**, and
  (d) **tenseness or laxness of the vocal tract**.

Tongue height: High, Mid, or Low

- Tongue height refers to whether the vowel sound is produced with the tongue high in the mouth or low in the mouth.
- The difference between the two sounds [i] in *heat* and [æ] in *hat*, for example, is that the first is produced with the tongue high in the mouth, whereas the latter is produced with the tongue low in the mouth. We call [i] a **high** vowel, and [æ] a **low** vowel.
- If the tongue is raised to a height midway between high and low we get a **mid** vowel, e.g. the sound [eɪ] in *bait* and the sound [ɛ] in *bet.*

Tongue advancement: Front, Back, or Central

- Difference in tongue height is not enough, however, since two vowels may have the same height property, e.g. [i] as in *see* and [u] as in *who* are both high vowels.
- To distinguish between these two vowels we rely on a second property of the tongue: whether the tongue is advanced (i.e., pushed forward), retracted (i.e., pushed back), or neither, giving rise to ***front***, ***back*** or ***central*** vowels, respectively.

Tongue advancement : Front, Back, or Central

- When producing [i], you'll notice that it is the front part of the tongue that is raised in the mouth; for [u], it is the back part of the mouth. We call [i] a high **front** vowel, and [u] a high **back** vowel, therefore.
- If the highest point of the tongue in the mouth is somewhere between front and back, we get a **central** vowel, e.g. the sound *schwa* [ə], which occurs finally in words such as *sofa* or initially in words such as *about*.

Lip rounding

- Vowels are also distinguished according to the shape of the lips while producing them. For example, [u] as in *moon* is produced with **rounded** lips, whereas [æ] as in *man* is an **unrounded** vowel.

Tense vs. lax vowels

- Some vowels might share the same features for tongue height, tongue highest point, and lip rounding. For example [i] as in *heat* and [ɪ] as in *hit* are both front high unrounded vowels.
- Such pairs of vowels are usually distinguished by a **tense** vs. **lax** feature: [i] is produced with greater vocal tract constriction than [ɪ]. We say that [i] is a tense vowel, whereas [ɪ] is a lax vowel. Note that tense vowels are also longer.

Diphthongs

- Two sounds (often a vowel and a glide) may combine together to form a **diphthong** (that is, a compound vowel). Examples of diphthongs in English are given below:

  [ej] as in *bait* [ow] as in *boat*
  [aj] as in *die* [aw] as in *now*
  [ɔj] as in *toy*

English vowel chart

- A vowel chart for English vowels is given in your textbook in Figure 2.9, p. 34. Below is a similar (though not identical) version.

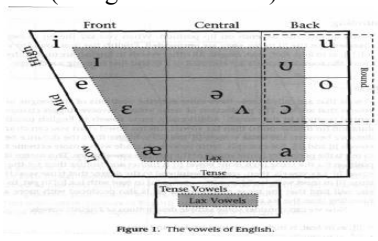

Figure 1. The vowels of English.

Nasalization of vowels

- Vowels, like consonants, can be produced with a raised velum that prevents the air from escaping through the nose, or with a lowered velum that permits air to pass through the nasal passage. When the nasal passage is blocked, oral vowels are produced; when the nasal passage is open, nasal or nasalized vowels are produced.

Nasalization of vowels

- In English, nasal vowels typically occur before nasal consonants. Compare for example the vowel in *bat* and *ban*. In transcription the diacritic [~] is placed over the vowel to indicate that it is a nasalized vowel, as in *bean* [bĩn] and *bone* [bõn].

Transcription

- **Phonetic transcription** is a representation of the pronunciation of a word using IPA symbols.
- Transcription could be **broad**, in which case a minimal amount of phonetic detail is given, or **narrow**, in which case more detailed phonetic differences are provided.
- For now, let's stick to broad transcription.

Transcription

Word	Transcription
raining	[ɹejnɪŋ]
lecture	[lɛktʃəɹ] or [lɛkʃəɹ]
sounds	[sawndz]
phonetics	[fənɛtɪks]

Charts

- Check the consonant and vowel charts given in your textbook on pages 31 and 34, respectively. They are also given on the inside of the cover page of the book.
- Also check the list of English consonants and English vowels with example words and transcriptions given in your textbook on pages 36 and 37, respectively.
- These should all help you answer transcription exercises.

Suprasegmental features

- So far we have looked at "segmental" features, e.g., place of articulation, voicing, tongue height, etc.
- Other phonetic features may "ride on top of" these segmental features, and that's why we call them "suprasegmentals."
- Four of these are: length, tone, intonation, and stress.

Length

- Not all speech sounds have the same duration. Some sounds are inherently longer than others, e.g.,
  - high vowels are shorter than low vowels,
  - voiceless consonants are longer than voiced consonants, and
  - voiceless fricatives are the longest consonants of all.

Length

- The duration of a sound may also be influenced by the sounds around it, e.g., compare your pronunciation of the two words in each pair below:
  seat vs. *seed*
  leak vs. *league*
- Now compare:
  seed vs. *sees*
- In phonetic transcription, length is typically marked by a colon ":" after the lengthened sound.

Vowel length in Finnish

- In some languages, the long-short contrast is crucial, since substituting a long segment for an otherwise identical short segment in a word can result in a change of meaning.
- Consider these data from Finnish:
  [muta] "mud"
  [mu:ta] "some other"
  [muta:] "but"

Consonant length (gemination) in Italian

- Italian shows the same length effect for consonants:

  fato [fatɔ] "fate" vs. fatto [fat:ɔ] "fact"

  casa [kasa] "house" vs. cassa [kas:a] "box"

Pitch

- Depending on the tenseness of the vocal folds and the amount of air passing through the glottis, we may get either a high or a low pitch.
- Pitch is an auditory property of a sound that allows us to put it on a scale that ranges from low to high.
- Two kinds of controlled pitch movement found in human language are tone and intonation.

Tone

- In many languages, the pitch at which the syllables in a word are pronounced can make a difference in the meaning of the word. These are called tone languages. We use the uppercase letters H, M, and L, to stand for high, mid, and low tones.
- Consider this example from Mandarin:

[ma]	H	"mother"
[ma]	MH	"hemp"
[ma]	MLH	"horse"
[ma]	HL	"scold"

Tone

- In some tone languages, a tone may be associated with more than one syllable. Consider these examples from Mende, a West African language:

  háwámá "banana"

  kpàkàli "tripod chair"
- Examples of other tone languages include Thai, Zulu, Igbo, and Navajo.

Intonation

- Intonation is the pattern of rises and falls in pitch across a stretch of speech such as a sentence.
- For example, the same string of speech could be interpreted either as a statement or as a question, depending on its intonation contour:

  Max is studying linguistics. (falling intonation)

  Max is studying linguistics? (rising intonation)

  Max is studying linguistics, ... (level intonation)

Stress

- Stress refers to the perceived prominence of a particular syllable relative to syllables around it.
- In essence, stress is the combined effect of pitch, loudness, and length.
- In some languages, stress placement is predictable, e.g., in Czech stress almost always falls on the first syllable, whereas in Welsh stress falls on the next to last syllable.

Stress

- In other languages, like English and Russian, stress is unpredictable and has to be learned for every word.
- In such languages stress placement may also create a difference in meaning:
  export could be [ɛ́kspɔɹt] or [ɛkspɔ́ɹt]
  present could [pɹɛ́znt] or [pɹəzɛ́nt]
- You may want to visit the textbook website for more examples.

Next class agenda

- Speech production and coarticulation: chapter 2 cont.
- Phonology: chapter 3.