Day 4: Phonetics

Ling 200: Introduction to Linguistic Thought

Jonathan North Washington

21 June 2007

1. *Announcements*

2. *Review*
   - Major articulatory structures
   - Articulatory Description

3. *IPA*

4. *Vowels*
   - Articulation
   - Articulatory description
   - Diphthongs

Announcements

- Quiz 2 (Phonetics) tomorrow
- Homework 1 due Monday
- IPA flashcards

Review

Structures used for articulation

Structure (noun)	Descriptor (adjective)
lips	labial
teeth	dental
alveolar ridge	alveolar
hard palate	palatal
velum (soft palate)	velar
nasal cavity (nose)	nasal
glottis	glottal

Definition (Active articulator)

Active articulator — Moves during articulation

Definition (Passive articulator)

Passive articulator — Remains stationary during articulation

Articulatory Description

Consonants

For consonants, three-part classification system:

- voicing
- place (of articulation)
- manner (of articulation)

Example

voiced labiodental fricative = [v]

Articulatory Description

Voicing

Definition (Voicing)

What's going on at the larynx—vocal folds vibrating or not

- Vocal folds spread = not vibrating = voiceless
- Vocal folds together = vibrating = voiced

Articulatory Description

Voicing

Voicing pairs

Voiceless	Voiced
[p] p̲at	[b] b̲at
[t] t̲ie	[d] d̲ie
[k] k̲ill	[g] g̲ill
[f] f̲at	[v] v̲at
[s] s̲ip	[z] z̲ip
[θ] th̲igh	[ð] th̲y
[ʃ] dilu̲tion	[ʒ] delu̲sion
[tʃ] e̲tch	[dʒ] e̲dge

Articulatory Description

Place

Definition (Place of articulation)

Where in the vocal tract constriction is made

- Bilabial — both lips
  - [b], [p], [m], [w](, [ʍ])
- Labiodental — lower lip and upper teeth
  - [f], [v]
- Interdental — tip of tongue between the teeth
  - [θ], [ð]
- Alveolar — tip or blade of tongue on near alveolar ridge
  - [t], [d], [n], [l], [ɹ], [s], [z]
- (Alveo-)Palatal — blade of tongue at or near hard palate
  - [ʃ], [ʒ], [tʃ], [dʒ], [j]
- Velar — back of tongue at or near soft palate
  - [k], [g], [ŋ]
- Glottal — vocal fold approximation

Articulatory Description

Manner

Definition (Manner of articulation)

How the air is being modified as it moves through the vocal tract

- Stops — full obstruction in the oral cavity
  - [p], [b], [t], [d], [k], [g], [ʔ]
- Fricatives — partial obstruction, with turbulence
  - [f], [v], [θ], [ð], [s], [z], [ʃ], [ʒ]
- Affricates — stop followed by fricative
  - [tʃ], [dʒ]
- Nasal — full obstruction in the oral cavity, velum lowered
  - [m], [n], [ŋ]
- Liquid — partial obstruction, but no turbulence
  - [l] (lateral), [ɹ] (retroflex)
- Glide — some constriction
  - [w], [j]

Phonetic Alphabets

Why use a phonetic alphabet

Why?

- Some languages have no writing system
- There's no one-to-one correspondence between letters and sounds:
  - Same letter, different sounds:
    dad, father, about, many
  - Same sound, different letters:
    believe, people, amoeba, tree
  - Single sound, multiple letters:
    shoot, nation, chord, chip
  - Multiple sounds, single letter:
    box, use
  - Letters without sound:
    gnaw, sword, debt, damn, bomb

Phonetic Alphabets

IPA

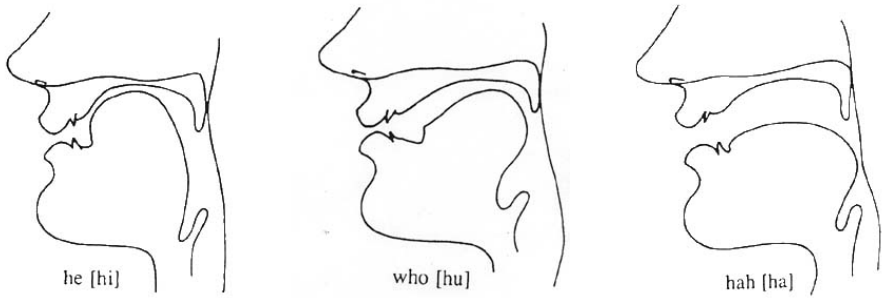
The IPA

Definition (IPA)

The International Phonetic Alphabet

Vowels
Articulation

- Four chambers in mouth
  - Oral cavity
  - Pharynx
  - Area between lips
  - (Nasal cavity)
- Length and shape of each chamber affects the ‘resonance’ of vowel sound



- `http://www.exploratorium.edu/exhibits/vocal_vowels/vocal_vowels.html`

Vowels
Articulatory description

4-part classification system for vowels:

- Tongue height
- Frontness vs. backness of tongue
- Tenseness
- Lip rounding
- (Nasality)

Vowels
Height

Vowel Height

- High vowels — tongue body is raised
  - [i], [ɪ], [u], [ʊ]
- Mid vowels — tongue body is intermediate
  - [e], [ɛ], [o], [ɔ], [ə], [ʌ]
- Low vowels — tongue body is lowered
  - [æ], [a]

Vowels

Frontness/Backness

Vowel Frontness/Backness

- Front vowels — tongue body is pushed forward
  - [i], [ɪ], [e], [ɛ], [æ]
- Central vowels — tongue body is neutral
  - [ə], [ʌ]
- Back vowels — tongue body is pulled back
  - [u], [ʊ], [o], [ɔ], [a]

Vowels
Tenseness

Vowel Tenseness

- Tense vowels — more extreme / peripheral tongue position, slightly longer (English)
  - [i], [e], [u], [o]
- Lax vowels — more neutral / less peripheral tongue position
  - [ɪ], [ɛ], [ʊ], [ɔ], [æ], [a], [ʌ], [ə]

Vowels
Roundness

Vowel Roundness

- Rounded — produced with rounded lips
  - [u], [o], [ʊ], [ɔ]
- Unrounded — produced with unrounded lips
  - [i], [ɪ], [e], [ɛ], [æ], [ʌ], [ə]

Diphthongs

Definition (Diphthong)

A two-part vowel sound consisting of transition from one vowel to another in same syllable

Diphthongs of English

- [aɪ] = [ai] = [aj]
- [oɪ] = [oi] = [oj] = [ɔɪ]
- [aʊ] = [au] = [aw]
- [e] = [ei] = [eɪ] = [ej]
- [o] = [ou] = [oʊ] = [ow]