A Quick Introduction to Features for Vowels

• We can describe any PHONE (speech sound) in terms of FEATURES. There are two major types of features:
  o MANNER OF ARTICULATION: features that describe how the phone is made in the vocal tract (pharynx, oral cavity, and nasal cavity).
  o PLACE OF ARTICULATION: features that describe where the phone is made in the oral cavity, using which part of the tongue

• This handout deals only with features relevant to vowels. Vowels can be described as a set by two characteristics:
  o They are produced with relatively little obstruction in the vocal tract.
  o They are more sonorous than consonants (i.e., they have more of a “singing” quality to them).

  Place of Articulation (PoA)

• There are two place of articulation features for every vowel. One feature describes the HORIZONTAL position of the tongue in the mouth, while the other feature describes the VERTICAL position of the tongue in the mouth.

• Horizontal (front – to – back) position in the mouth:
  o Front vowels: Produced with the tongue in the front of the mouth.
    ▪ [i, ɪ, e, ɛ, æ] have the PoA feature [+front]
  o Central vowels: Produced with the tongue in the center of the mouth.
    ▪ [ə, a, ɑ, ɒ] have the PoA feature [+central]
  o Back vowels: Produced with the tongue in the back of the mouth.
    ▪ [ʌ, ɑ, o, ɔ, u, ʊ, ɔɪ] have the PoA feature [+back]

• Vertical (high – to – low) position in the mouth:
  o High vowels: Produced with the tongue high in the mouth.
    ▪ [i, ɪ, u, ʊ] have the PoA feature [+high]
  o Mid vowels: Produced with the tongue in the middle of the mouth.
    ▪ [ɛ, ɛ, ə, ʌ, ɔ, ɔɪ] have the PoA feature [+mid]
  o Low vowels: Produced with the tongue low in the mouth.
    ▪ [æ, a, ɑ, ɑɪ, ɒ] have the PoA feature [+low]

• We can describe each vowel in terms of these two Place of Articulation features. For example… [i] is [+front, +high] [u] is [+back, +high] [ɛ] is [+front, +mid] [ɑɪ] is [+central, +low]
Manner of Articulation (MoA)

Simple vowels vs. Diphthongs

- Vowels can be [+diphthong] or [-diphthong].
  - [+diphthong] vowels are phones that start out in one position in the mouth and involve motion of the tongue to another position.
    - [+diphthong] vowels are written using a combination of two IPA symbols. However, we will treat diphthongs like single phones.
    - e.g., [ai, ao, ot] have the MoA feature [+diphthong]
  - [-diphthong] vowels are phones made in one place in the mouth.
    - [-diphthong] vowels are written using one IPA symbol.
    - [i, i, e, e, æ, æ, a, ʌ, ɒ, o, ʊ, ʌ] have the MoA feature [-diphthong]

Rounding

- Vowels can be [+rounded] or [-rounded].

  - [+rounded] vowels are made with the lips rounded (forming an ‘o’ shape).
    - [+rounded] vowels are made with the lips not rounded.
      - [-rounded] vowels are made with the lips not rounded.
        - [-rounded] vowels are made with the lips not rounded.
          - [i, i, e, e, æ, æ, a, ʌ, ɑ, o, ʊ, ʌ] have the MoA feature [-rounded]

Tenseness

- Vowels can be [+tense] or [-tense].

  - [+tense] vowels are produced with more tension in the facial muscles (i.e., they feel tighter).
    - [+tense] simple vowels: [i, e, a, o, u, ʌ, ʊ, ʌ]
      - Note: all diphthongs are [+tense]
  - [-tense] vowels are produced with less tension in the facial muscles (i.e., they feel looser).
    - [-tense] vowels are produced with less tension in the facial muscles (i.e., they feel looser).