Phonology III

FSEM CORE S119: Language as Human Nature
Fall 2025
Prof. Forrest Davis

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Warm-up

1. Discuss with the person next to you your favorite brand of chocolate
2. Identify the stressed syllables in the following English words

unfortunate	affricate
hatred	banana

Logistics

- I'm told that this Thursday, Sep 11, there will be a Brown commons group (gathering at 5.30PM in Burke Hall) going to see the show at Clifford Gallery ("Holes") and then to the opening reception of the Picker Gallery exhibition ("X: Gender, Identity, Presence")

Learning Objectives

- Motivate the distinction between allophones and phonemes
- Identify whether sounds are allophones of the same or different phonemes
- Give a phonological rule
- Describe the IPA representation of vowels in English

Summary: After refreshing the motivation for phonemes, we practice phoneme identification and writing phonological rules. Then we lay out the articulation of vowels in English.

Refresh Phonemes and Allophones

WE BEGIN WITH SOME SLIDES to ensure the main points are clear.

Gesturing at Natural Classes

WE DISCUSSED CLASSIFYING CONSONANTS based on four properties:

1. Manner of Articulation
2. Place of Articulation
3. Nasality
4. Voicing

While helpful for building a chart I confusingly threw at you, it is actually deeply connected to understanding the distribution of sounds and processes in language.

Question

1. Zoque is a Mixe-Zoquean language spoken by roughly 110,000 people. Based on the Zoque data below (from Kenstowicz and Kisseberth, 1979, pp. 35-37), are voiced and voiceless stops allophones of the same phonemes or different phonemes (e.g., are [b] and [p] allophones of the same or different phonemes)? If they are allophones of the same phoneme provide a phonological rule.

[ŋgjunu] "you fell"	[pata] "mat"
[tʲɨtʲɨj] "little"	[kenba] "he sees"
[mjaŋdamu] "you came"	[kama] "cornfield"
[tatah] "father"	[tsehtsu] "he cut it"
[ɲdʒehtsu] "you cut brush"	[liŋba] "he slashes"
[tsima] "calabash"	[kunu] "he fell"
[ʔɨŋdʲ oʔja] "he is sleepy"	

Question

2. O'odham ([ʔɔʔɔðam]) is an Uto-Aztecan language spoken by 15,000 people. Based on the O'odham data below (from Kenstowicz and Kisseberth, 1979, pp. 37-39), are [t] and [tʃ] allophones of the same or different phonemes? Similarly, are [d] and [dj] allophones of the same or different phonemes?

[tatai] "tendon"	[tʃinig] "to move the lips"
[tatal] "mother's younger brother"	[tʃikpan] "work"
[tamʃ] "gums"	[daswua] "to pile"
[tohnto] "degenerate"	[doadjida] "healing"
[tokih] "cotton"	[djɨwikon] "storm"
[todsid] "to frighten"	[djɨwikon] "to scrape"
[tʃuagia] "net bag"	[djuni] "dried cactus fruit"
[tʃutʃul] "chicken"	[dakpon] "to slip"
[tʃukma] "dark"	[doʔag] "mountain"
[tʃɨposid] "to brand"	[djusukal] "lizard sp."
[tʃɨlwin] "to rub"	[djuhki] "rain"
[tʃɨgitog] "to think"	[djiwhiadag] "arrival"

Articulatory Parameters for English Vowels

WE TURN TO THE REPRESENTATION of vowels in the International phonetic Alphabet (IPA) with an emphasis on English. Recall, the aims of the IPA are to associate with every sound one and only one symbol. We identify the sound corresponding to a symbol based on articulatory phonetics. For vowels, English makes use of four parameters:

The discussion of aspiration draws from Seth Cable's wonderful Introduction to Linguistic Theory materials taught at University of Massachusetts Amherst.

1. Tongue **Height** (how close to roof of the mouth)
2. Tongue **Backness** (how far back in mouth)
3. Lip **Rounding** (whether lips are 'puckered')
4. Tongue **Tenseness** (how 'tense' the tongue is)

Height

- High: very close to the roof of the mouth
  - [i] 'ee'-sound (heat)
  - [u] 'oo'-sound (hoot)
- Mid: mid-way between roof of mouth and jaw
  - [e] 'ay'-sound (hate)
  - [o] 'oh'-sound (hope)
- Low: lowered to the jaw
  - [ae] 'a'-sound (hat)
  - [ɑ] 'ah'-sound (hot)

Backness

- Back: close to the back of the mouth
  - [u] 'oo'-sound (hoot) high back
  - [o] 'oh'-sound (hope) mid back
  - [ɑ] 'ah'-sound (hot) low back
- Central: midway between back and front
  - [ʌ] 'uh'-sound (cut) low central
  - [ə] 'uh'-sound (sofas) mid central
  - [ɨ] 'uh'-sound (roses) high central
- Front: at the front of the mouth

  - [i] 'ee'-sound (heat) high front
  - [e] 'ay'-sound (hate) mid front
  - [æ] 'a'-sound (hat) low front

Rounding

- Rounded: lips are rounded when vowel is made
  - [u] 'oo'-sound (hoot) high back rounded
  - [o] 'oh'-sound (hope) mid back rounded
  - [ɔ] 'aw'-sound (caught) mid back rounded
- Unrounded: lips are not rounded when vowel is made
  - [i] 'ee'-sound (heat) high front unrounded
  - [e] 'ay'-sound (hate) mid front unrounded
  - [æ] 'a'-sound (hat) low front unrounded
  - [ɑ] 'ah'-sound (hot) low back unrounded

Tenseness

- Tense Vowels ('heat', 'sale')
  - Pronounced with greater 'tensing' of the tongue
  - Tongue is closer to roof of the mouth
  - Pronounced with greater duration (length)
- Lax Vowels ('hit', 'sell')
  - Pronounced with less 'tensing' of the tongue
  - Tongue is further from roof of the mouth
  - Pronounced with less duration (length)
- Tense Vowels
  - [i] 'ee'-sound (heat) high, front , unrounded, tense
  - [e] 'ay'-sound (hate) mid, front , unrounded, tense
  - [u] 'oo'-sound (hoot) high, back , rounded, tense
  - [o] 'oh'-sound (hope) mid, back, rounded, tense
  - [ɑ] 'ah'-sound (hot) low, back, unrounded, tense
- Lax Vowels
  - [ɪ] 'i'-sound (hit) high, front, unrounded, lax
  - [ɛ] 'e'-sound (sell) mid, front, unrounded, lax

- [æ] 'a'-sound (hat) low, front, unrounded, lax
- [ɨ] 'uh'-sound (roses) high, central, unrounded, lax
- [ə] 'uh'-sound (sofas) mid, central, unrounded lax
- [ʌ] 'uh'-sound (cut) low, central, unrounded, lax
- [ʊ] 'u'-sound (put) high, back, rounded, lax
- [ɔ] 'aw'-sound (caught) mid, back, rounded, lax

Dipthongs

ABOVE WE DISCUSSED **pure vowels**, where there is no change in vowel quality during the segment. English contains another type of vowel called a **dipthong**, which is a vowel which shows a noticeable change in quality. Compare 'bah', 'bee', 'boo' with 'buy', 'boy', 'bow' (of a ship).

Major Dipthongs

- [aj] 'eye'-sound eye, lie, buy, rye, etc.
- [aw] 'ow'-sound now, how, bow, loud etc.
- [ɔj] 'oy'-sound boy, toy, joy, Freud etc

Minor Dipthongs

There are two other dipthongs. The sounds [e] as in 'hate' and [o] as in 'hope' are actually dipthongs!

- [ej] 'ay'-sound lay, bay, etc.
- [oj] 'o'-sound low, bow (and arrow), know, etc.

IPA Practice

Practice Problems

1. What is the English equivalent of the following IPA symbols?

   [fənɑlədjɨsts mʌst kip ðejɹ iɹz spɛktækjuliɹli klin]

2. What is the English equivalent of the following IPA symbols?

   [ju majt fajnd ðə ɑn lajn klæs wɛbsajt hɛlpfʌl]

Practice Problems

3. What are the IPA symbols for the following English sentence?

   Sabrina Carpenter is a female pop singer

4. What are the IPA symbols for the following English sentence?

   Fall is the best season of the year

References

Kenstowicz, M. J. and Kisseberth, C. W. (1979). *Generative Phonology: Description and Theory*. Academic Press, Orlando, Fla. ; Tokyo, 1 edition.

Before Next Class

- Read and complete the pre-class quiz