LING 450/550
9-Place

Spectrogram Reading

http://corpus.linguistics.berkeley.edu/acip/course/chapter8/hw/exercise8K.html

Consonants: Place of Articulation

LOCATION OF VOCAL TRACT CONSTRICTION

READ LADEFOGED & JOHNSON, CHAPTER 7

adapted from slides by Richard Wright, Dan McCloy, and Valerie Freeman

Place of Articulation, Revisited

We've already talked to some degree about place of articulation, but mostly in the context of English.

Now that we're comfortable with the consonants of English and the basics of articulation, we'll focus more on consonant sounds from other languages.

We'll also listen to examples produced by actual speakers of other languages, rather than (only) trained phoneticians.

- This means that we'll get to hear sounds that are actually contrastive within a language, which is information that the IPA chart doesn't tell us at all.

Place of Articulation, Revisited

Sometimes you might have difficulty hearing the difference between two places of articulation.

- Blame the way your mental sound system has been influenced by the languages you speak. Speakers of the language in question can tell the sounds apart! Listen as carefully as possible.

Place of Articulation, Revisited

Sometimes you'll be tempted to interpret a sound as a different consonant sound you know, or as a sequence of consonant sounds you know.

- These are your language-specific ears misleading you! It's natural to want to match new sounds that you encounter to sounds you already know, but this isn't a phonetician's approach.
- Try to listen as a phonetician. Note details, and don't limit your mental categories to sounds you already encounter regularly.
  - Admittedly, at times, even phoneticians need articulatory or acoustic information to distinguish two sounds.

Describing Consonants

All consonants involve a constriction made by an *active articulator* toward a target region (the *passive articulator*).

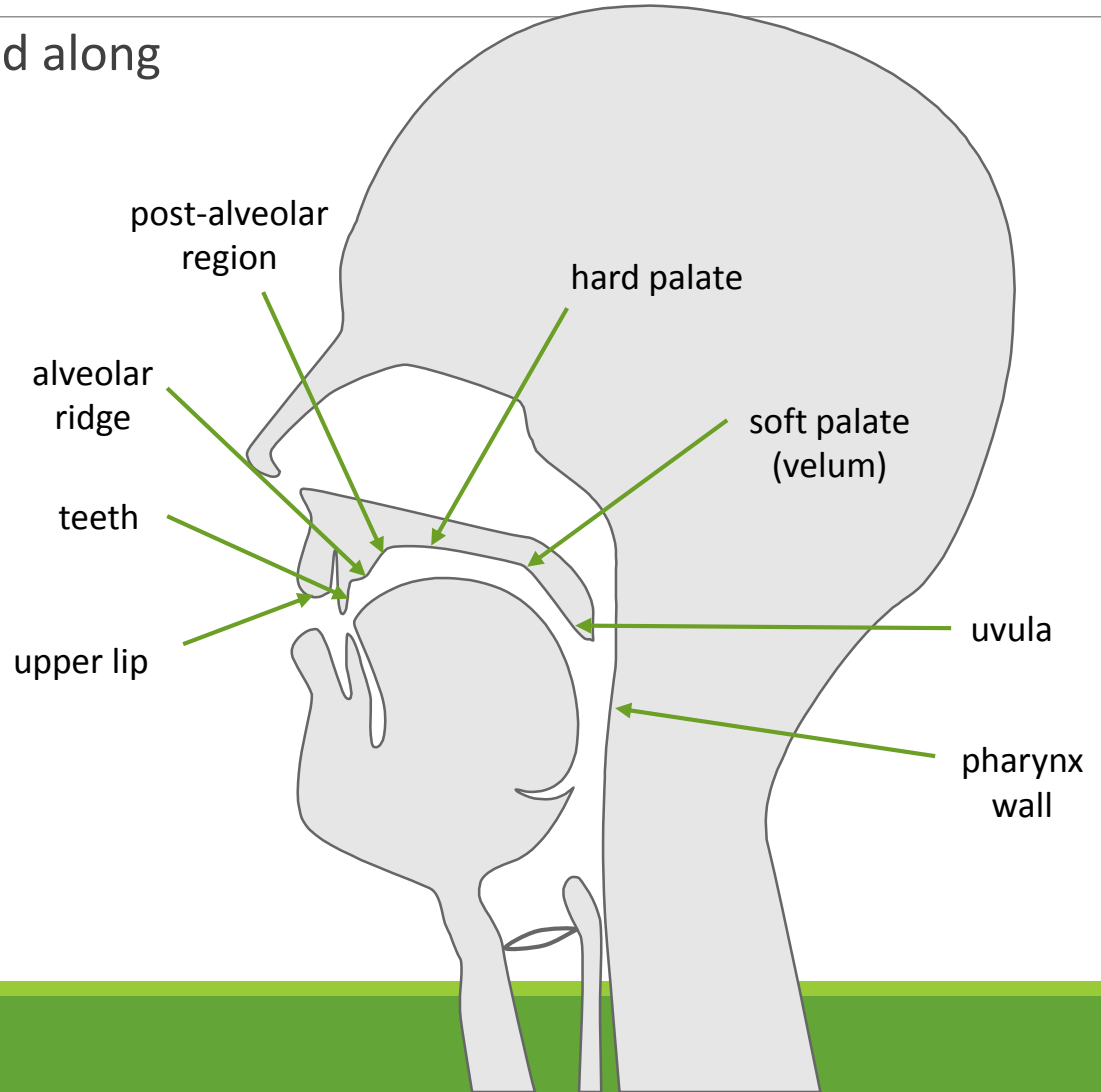
Consonants are usually described with two main terms:

- *Place of articulation* describes which active and passive articulators are making the constriction.
- *Manner of articulation* describes the way in which the articulators interact (i.e., how close together they are).
- *Voicing* is often left unstated for approximants, nasals, and trills, since they are (almost) always voiced.

As discussed in previous classes, there are a variety of airstream mechanisms and states of the glottis that may be contrastive on consonants as well.

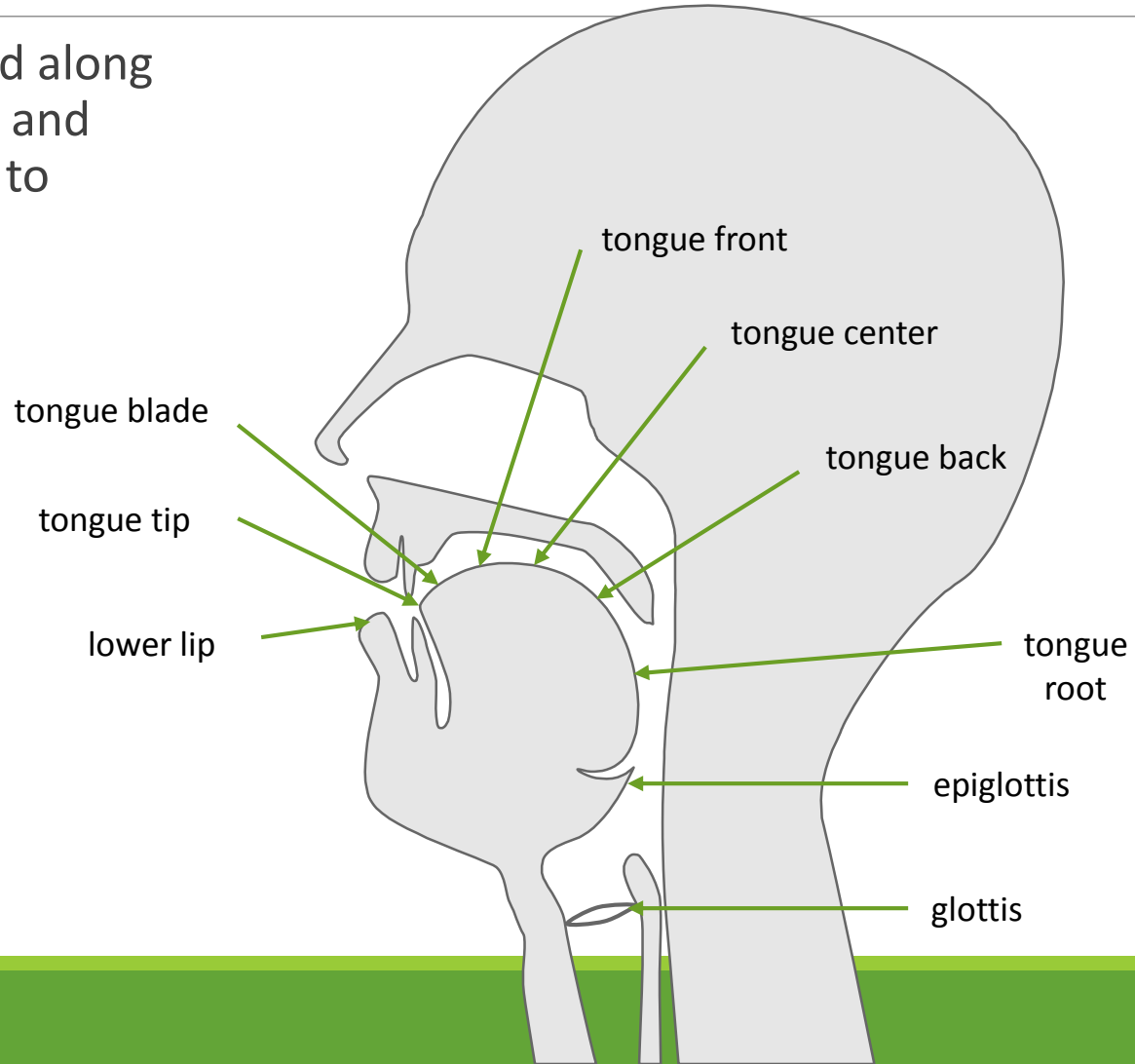
Passive Articulators

Most *passive articulators* are located along the upper surface of the oral tract.



Active Articulators

Most *active articulators* are located along the lower surface of the oral tract, and move toward their passive targets to create a constriction.



Terminological Conventions

Descriptions of place of articulation usually refer to the passive articulator (e.g., an *alveolar* stop).

Other times, both the active and passive articulators are mentioned (e.g., a *labiodental* fricative). This occurs most frequently at the front of the mouth, where a target may be shared by several active articulators.

Epiglottal and *glottal* sounds are the only sounds described with their active articulators only.

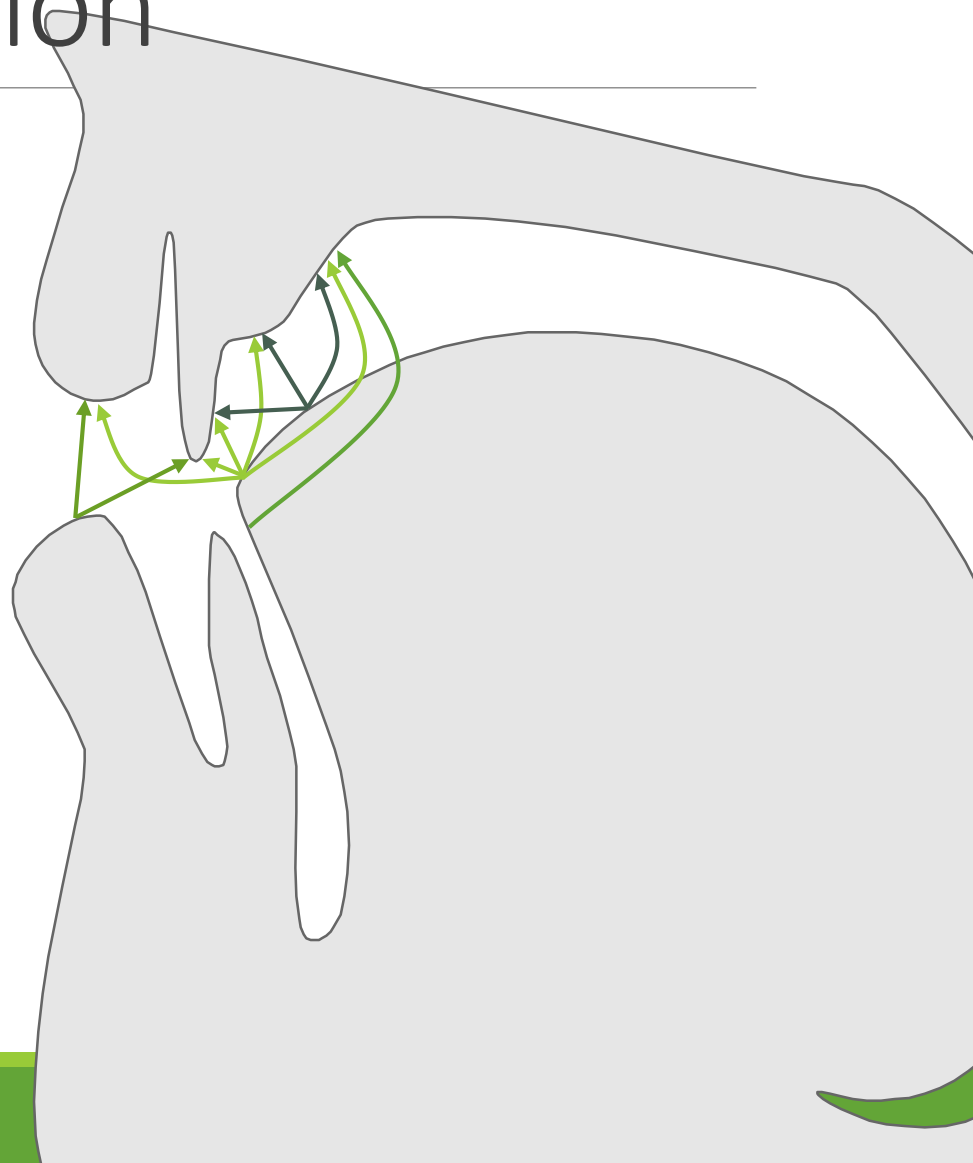
Anterior Places of Articulation

In the anterior (front) region of the mouth, the primary active articulators are: the lower lip (*labial articulations*), tongue tip (*apical articulations*), and tongue blade (*laminal articulations*).

- In *retroflex* articulations, the underside of the tongue is an active articulator.

There are four main anterior targets: the upper lip, upper incisors, alveolar ridge, and the post-alveolar region.

These definitions contain the necessary detail for describing subtle differences between languages, but not all of the definitions are contrastive (or even attested) in any one language. Thus, phonological analyses often use a less detailed set of definitions for within-language descriptions.



Reference Chart: Anterior Places of Articulation

	Passive Articulator	Active Articulator	IPA Examples
Bilabial	upper lip	lower lip	[p b m ɸ β]
Linguolabial		tongue tip	[t̼ d̼ n̼]
Labiodental	lower edge of upper incisors	lower lip	[ɱ f v]
Interdental		tongue tip/blade	[t̪ d̪ n̪ θ ð]
Apical Dental	back side of upper incisors	tongue tip	[t̪ d̪ n̪]
Laminal Dental		tongue blade	[t̪ d̪ n̪]
Apical Alveolar	alveolar ridge	tongue tip	[t d n s z]
Laminal Alveolar		tongue blade	[t̺ d̺ n̺]
Apical Retroflex	post-alveolar region	tongue tip	[ʈ ɖ ɳ ʂ ʐ]
Palato-Alveolar		tongue blade	[t̻ d̻ n̻ ʃ ʒ]
Sub-Apical Retroflex		tongue underblade	[ʈ ɖ ɳ ʂ ʐ]

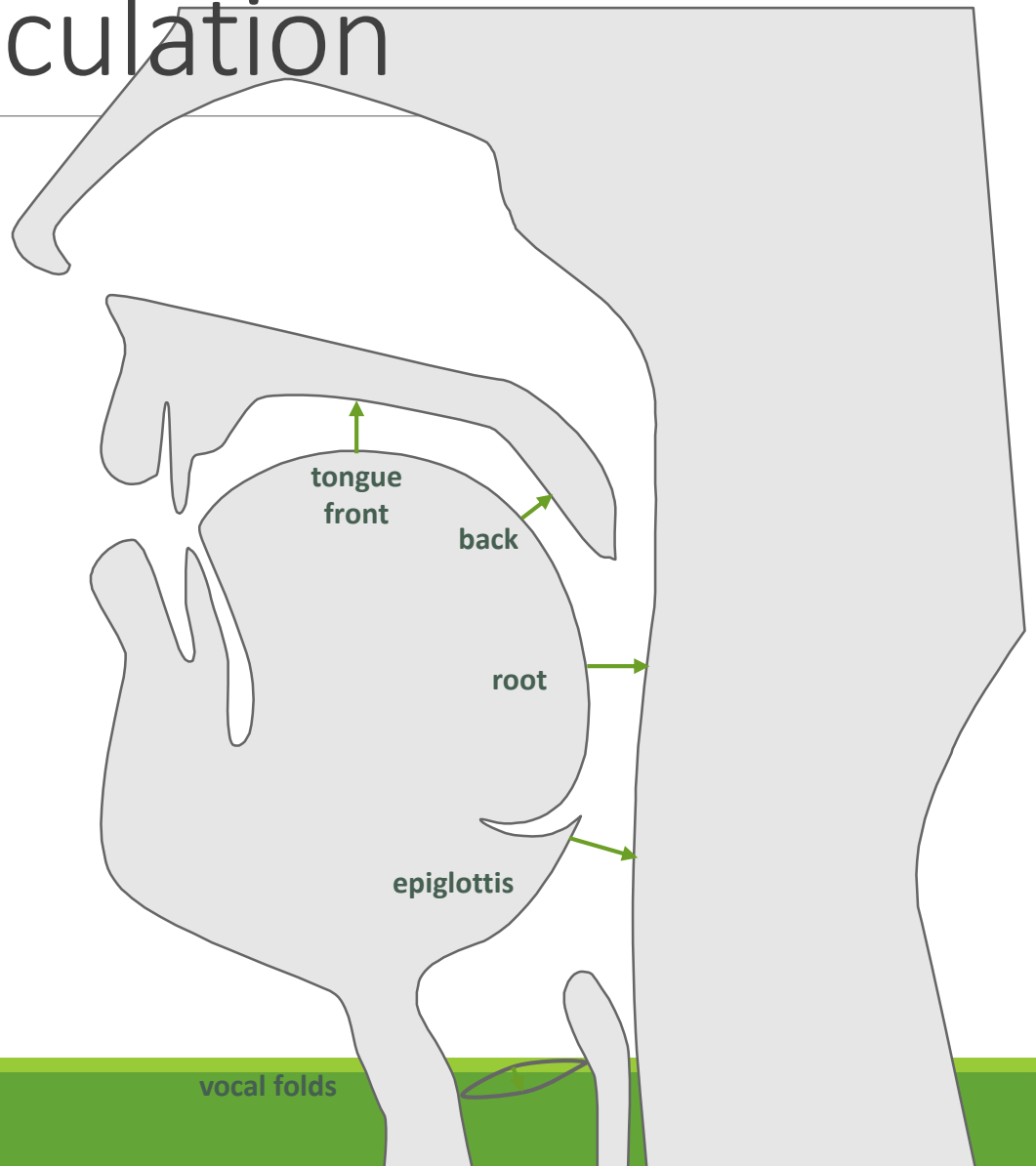
chart based on Ladefoged & Maddieson (1996), p. 15

Posterior Places of Articulation

In the posterior (back) region of the mouth, the active articulators are the tongue front, back, and root, the epiglottis, and the vocal folds.

The main posterior targets are the hard palate, velum, uvula, and the pharyngeal wall.

Note that a glottal stop does not really involve any passive articulators, as the vocal folds close against each other.



Reference Chart: Posterior Places of Articulation

	Passive Articulator	Active Articulator	IPA Examples
Palatal	hard palate	tongue front	[c ɟ ɲ ç ʝ]
Velar	velum	tongue back	[k g ŋ x ɣ]
Uvular	uvula	tongue back	[q ɢ ɴ χ ʁ ʀ]
Pharyngeal	(upper) pharynx	tongue root	[ħ ʕ]
Epiglottal	(lower) pharynx	epiglottis	[ʡ ʢ ʜ]
Glottal	—	vocal folds	[ʔ h ɦ]

chart based on Ladefoged & Maddieson (1996), p. 15

Specific Language Examples

Ewe (bilabial vs. labiodental)

- http://corpus.linguistics.berkeley.edu/acip/course/chapter7/ewe/ewe.html

Malayalam (dental vs. alveolar)

- http://corpus.linguistics.berkeley.edu/acip/course/chapter7/malayalam/malayalam.html

French (uvular)

- http://corpus.linguistics.berkeley.edu/acip/course/chapter7/french/french.html

Agul (pharyngeal vs. epiglottal)

- http://corpus.linguistics.berkeley.edu/acip/appendix/languages/agul/agul.html

Doubly Articulated Consonants

Many sounds involve simultaneous constriction at more than one place of articulation. For example, we've mentioned that the approximant [w] involves a velar constriction as well as a labial constriction. Other examples:

- voiceless labio-velar fricative [ʍ] (a.k.a. [w̥])
- voiceless postalveolar-velar fricative [ɧ]
- voiced labio-palatal approximant [ɥ] (a.k.a. [jʷ])
- voiced/voiceless alveolo-palatal fricatives [ɕ ʑ]
  - http://corpus.linguistics.berkeley.edu/acip/course/chapter7/polish/polish.html

Doubly Articulated Consonants

If a pre-made symbol does not exist, double articulations can be indicated by a tie bar

- Example: [k͡p]
- http://corpus.linguistics.berkeley.edu/acip/appendix/languages/idoma/idoma.html

Vowel Measuring Applications

SOCIOLINGUISTICS

The Pacific Northwest English Study

- Research at UW with Professor Alicia Wassink
- Sociolinguistic research → regional dialect, change over time, language contact

https://zeos.ling.washington.edu/~PNWEnglish/index.php

Pacific Northwest English English: Exploration

Go to the PNWE Website: https://zeos.ling.washington.edu/~PNWEnglish/index.php

Click on “Interactive materials”:

1. Take the “Online Audio Quiz”. Read about the phenomenon it investigates, how would this manifest on a speaker’s vowel chart?

2. Go to “The Vowels of the Pacific Northwest”
   a) Note the scale of the axes on the Fig 1 to the right of text. Why is this scale used?
   b) Click to see the vowel space of the younger speakers. Listen to the pronunciations.
   c) Click to the vowel space of the older speakers.. Listen to the pronunciations.
   d) Display the older and younger speakers vowel spaces at the same time. Describe the phenomenon being shown here in terms of change over time and vowel space.

Other applications include:

- Research on Perception in L1 and L2
- Automatic Speech Recognition (ASR)
- Synthetic Speech
- Hearing Aid Technology
- Etc.

Reminders

Manner

Read L&J Ch 7

HW 7 Due Monday