LNGT0101
Introduction to Linguistics

Lecture #5
Sept 26th, 2011

Any questions?

Any questions on homework 1, or otherwise?

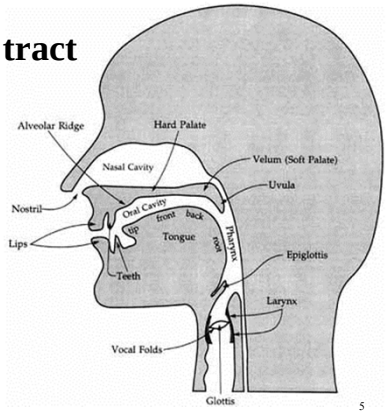
Today's agenda

- Describe consonants.
- Describe vowels.
- Use the IPA symbols to do some phonetic transcription exercises.

Consonants vs. Vowels

- There are two major types of sounds in human language: **consonants** and **vowels**. How do they differ?
- In terms of articulation, consonants are produced when the airflow is obstructed in the vocal tract, while vowels are produced with relative free flow of the airstream in the vocal tract.
- Both consonants and vowels can be described in terms of a number of individual articulatory features.
- We start with consonants. But let's look at the human vocal tract first.

The vocal tract



Articulation of consonants

- Consonant sounds can be characterized according to three main phonetic properties:
  a) **place of articulation**,
  b) **manner of articulation**, and
  c) **voicing**.

Places of articulation

- **Labial**, e.g., *bilabial* [p] and *labiodental* [f].
- **Dental**, e.g., French [d] in *dire*. English has *interdental* [θ] as in *thorn* and [ð] as in *there*.
- **Alveolar**, e.g., [t], [s], [n], and [ɹ].
- **Alveopalatal**, e.g., [ʃ] as in *shoe*, [ʒ] as in *vision*, [tʃ] as in *choose*, and [dʒ] as in *jam*.
- **Palatal**, e.g., [j] in *yes*.

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Places of articulation

- **Velar**, e.g., [k], [g], and [ŋ], the last one is the final sound in *king*.
- **Uvular** consonants: These are produced by raising the back of the tongue to the uvula, e.g., French [ʁ] and Arabic [q].
- **Pharyngeal** consonants: These are produced at the pharynx, e.g., Arabic [ħ] and [ʕ].
- **Glottal** consonants: These are produced at the glottis, e.g., [h] in *hill* and [ʔ] in *uh-oh*.

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Manner of articulation

- Speech sounds are also differentiated by the way the airflow is affected as it travels from the lungs up and out of the mouth and nose. This is referred to as the manner of articulation for the sound.

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Stops, Fricatives, and affricates

- **Stops**, e.g., [b], [p], [t], [d], [k], [g], and [ʔ].
- When the air escapes through the nasal, rather than the oral, cavity, ***nasal stops*** are produced, e.g., [m], [n], and [ŋ].
- **Fricatives**, e.g. [f], [v], [s], [z], [θ], [ð], [ʃ], [ʒ], and [h].
- **Affricates**, e.g. [tʃ] as in *church*, and [dʒ] as in *jump*.

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Fricatives and affricates

- Acoustically, fricatives and affricates can be divided into two types based on their relative loudness. The noisier ones are called ***stridents*** (aka as ***sibilants)***: [s], [z], [ʃ], [ʒ], [tʃ], and [dʒ]), whereas the quieter ones are called ([θ] and [ð]) are ***nonstridents***.

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Liquids (aka Approximants)

- **Liquids**: In the production of these sounds, there is some obstruction of the airflow in the mouth, but not enough to cause any real constriction or friction, e.g. [l] and [r].
- [l] is called a **lateral** sound, because the air escapes through the sides of the tongue.

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Liquids (aka Approximants)

- There are several varieties of "r" in the world's languages. The "r" could be a **trill**, as in Spanish *perro* (='dog'), in which case it is transcribed as [r].
- The "r" could also be a **retroflex**, as the case is in American and Canadian English, and is transcribed as [ɹ].
- Another sound commonly identified with "r" is the **flap**, which occurs in North American English in words like *wri<u>t</u>er* and *ri<u>d</u>er*. This sound is transcribed as [ɾ].

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Glides (aka Semi-vowels)

- **Glides**, e.g., [j] as in *yes* and [w] as in *wood*.
- Some English speakers produce a voiceless glide at the beginning of words like *when*, *which*, and *where*. It is transcribed as [ʍ].

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Voicing

- Consonant sounds are also divided into two types, **voiced** and **voiceless**, based on whether they are produced with or without vibration of vocal cords.

  [b], [d], and [z] are voiced.

  [p], [t], and [s] are voiceless.

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Describing consonants

- A consonant can thus be described in terms of these three parameters: place of articulation, manner of articulation, and voicing.
- For example, [p] is a bilabial, voiceless stop, whereas [z] is an alveolar, voiced fricative.
- Now, describe [f], [m], and [w].

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English consonant chart (from O'Grady *et al 2005*)

Table 2.12 English consonants: places and manners of articulation

		Place of articulation							
Manner of articulation		*Labial*	*Labiodental*	*Interdental*	*Alveolar*	*Alveopalatal*	*Palatal*	*Velar*	*Glottal*
Stop	voiceless	p			t			k	ʔ
	voiced	b			d			g	
Fricative	voiceless		f	θ	s	ʃ			h
	voiced		v	ð	z	ʒ			
Affricate	voiceless					tʃ			
	voiced					dʒ			
Nasal	voiced	m			n			ŋ	
Liquid	voiced lateral				l				
	voiced retroflex				ɹ				
Glide	voiced	w					j	w	
	voiceless	ʍ						ʍ	

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<u>http://www.uiowa.edu/~acadtech/phonetics/#</u>

- Visit this link for the articulation of the consonants of American English (German and Spanish are also available if you like to check out these).
- Notice that there may be some slight differences between this link and your textbook concerning phonetic symbols, but it is a very useful link, particularly the animated diagrams.

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Aspiration of voiceless stops

- In English, 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:

  pan vs. *span*

  tar vs. *star*

  cool vs. *school*

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Aspiration

- The voiceless stops in the first words are 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].

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Nonpulmonic consonants

- The consonants we talked about so far are all produced by egressive pulmonic airstream.
- Ingressive pulmonic consonants are typically used for emotional effects. Examples.
- Human languages also have consonants that are produced by nonpulmonic airstream, either glottalically or velarically.
- Glottalic airstream gives us ejectives and implosives, whereas velaric airstream gives us clicks.

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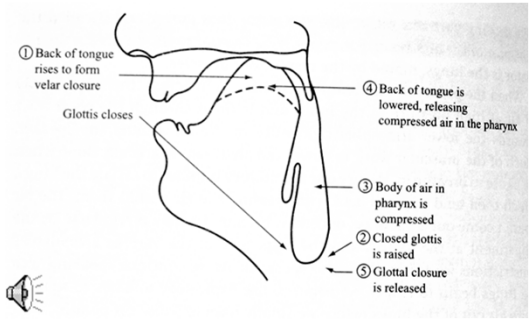
Articulatory sequence for an Ejective Velar Stop [k']



Adapted from Asbey & Maidment. 2005

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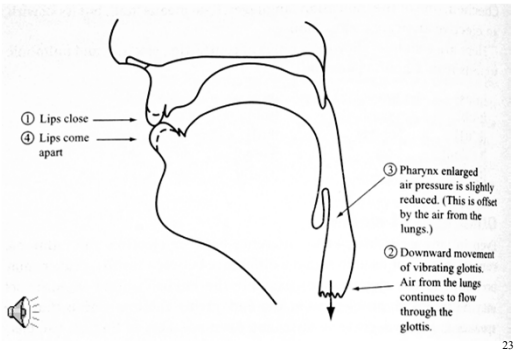
Articulatory sequence for a Bilabial Implosive [ɓ]



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Articulatory sequence of an Alveolar click [!]

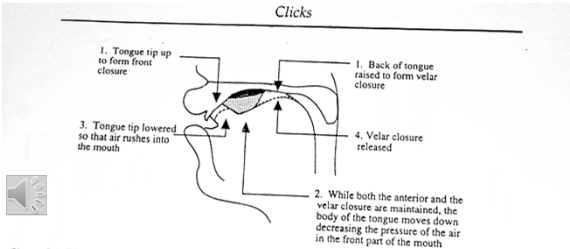

Figure 8.1 The articulatory sequence involved in production of an alveolar click in !Xóõ. The dark shaded area shows the cavity enclosed when the closures are formed. The light shaded area shows the cavity just before the release of the anterior closure. The dashed lines show the lowered tongue positions corresponding to steps 3 and 4.

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Peter Ladefoged's sound files

- Ejectives in Lakhota.
- Implosives in Sindhi.
- Clicks in !Xóõ.

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Vowels

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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. Why?

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Parameters for vowel articulation

- Therefore, to distinguish between different vowels, we rely on four other features:
  - (a) **Tongue height: High, Mid, and Low**
  - (b) **Which part of the tongue is involved: Front, Central, and Back**
  - (c) **Lip rounding: Rounded and Unrounded**
  - (d) **Tenseness or laxness of the vocal tract: Tense and Lax**

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American English Vowel Chart

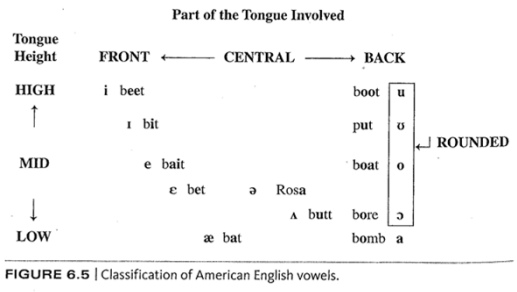

FIGURE 6.5 | Classification of American English vowels.

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American English Vowel Chart

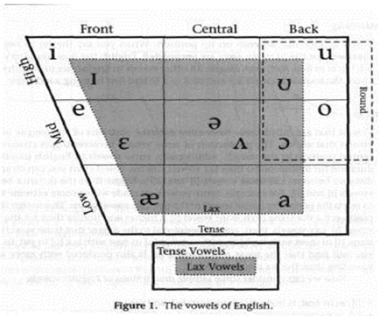

Figure 1. The vowels of English.

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Diphthongs

- Two vowels may combine together to form a **diphthong**. Examples of diphthongs in American English are given below:
  [aɪ] as in *die* [aʊ] as in *now*
  [ɔɪ] as in *toy*
- Note that the vowels in *bait* and *boat* are also typically pronounced as diphthongs, and are therefore frequently transcribed as [eɪ] and [oʊ], respectively.
- In many books, the second vowel of an English diphthong is frequently represented as a glide: [ej] or [ow].

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Nasalization of vowels

- Vowels can be either **oral** or **nasal**.
- 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 *ban* [bæ̃n] and *boom* [bũm].

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Next class agenda

- Transcription. Have a look at the following exercises from the textbook (pp. 261-262): Exercises 1, 2, 3, and 5.
- Prosodic features (Chapter 6, pp. 252-255).
- Introduction to Phonology (Start reading Chapter 7, pp. 272-282).

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