English consonants:

- **Symbols to know**
- **Consonant properties**

Background reading:

- *CL* Ch 2, sec 2.3 and sec 3–5 (sec 4 is review)
- *CL* Ch 2, Table 2.16 (pp 43-44)

1. Consonants: Overview and learning guide

- The reading you have done in *CL* Ch 2, sec 1-5, contains a lot of information and detail
- Here is what you **need to learn** from this reading
  → *These slides and links will help you!*
  - The **consonant symbols** in Table 2.12, *CL* p 38 (but not [ʍ] or [ʔ])
  - The **phonetic properties** of these sounds that we can use to describe them
- Other details and charts in the reading are there to help you understand this central information

2. Consonant phonetic symbols

- **Phonetic symbols** represent speech sounds
- This slide set introduces the phonetic symbols we need for the **consonants** of American English
  - We focus here on the “mainstream” or “standard” or “classroom” variety of American English
  - However, most varieties of American (and British) English do not differ very much in their consonants
- Many of these consonants are also found in many other languages—but a few are rare!
- See **Table 2.12** in *CL* (p 38) for a summary

2. Consonant phonetic symbols

- **Easy to learn**
  - These **match** the typical pronunciation of the corresponding English-alphabet letter

    [p] [b] [t] [d] [k]
    [f] [v] [s] [z] [h]
    [m] [n] [l] [w]

- What do these consonants **sound like**?
  - **See example words** in *CL* Table 2.16 (pp 43-44)
  - **Click to listen**: IPA charts with audio examples
    - For [p b t d f v s z m n l] | For [k h w]

    Note: You do *not* need to let the web site access your microphone

2. Consonant phonetic symbols

- **Be a little careful** with these

  [g] [j]

  - These symbols **do not always match** the pronunciation of their corresponding English-alphabet letters

- What do these consonants **sound like**?
  - **See example words** in *CL* Table 2.16 (pp 43-44)
  - **Click to listen**: IPA charts with audio examples
    - For [g j]

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2. Consonant phonetic symbols

- These sounds have phonetic symbols that are **not used as alphabet letters** in English

  [θ] [ð] [ʃ] [ʒ]
  [ʧ] [ʤ]
  [ɹ] [ŋ]

- What do these consonants **sound like**?
  - **See example words** in *CL* Table 2.16 (pp 43-44)
  - **Click to listen**: IPA charts with audio examples
    - For [θ ð ʃ ʒ ɹ] | For [ŋ]
    - The sounds [ʧ ʤ] are not on the IPA chart; they sound like combinations of [t]+[ʃ] and [d]+[ʒ] respectively

  Note: You do *not* need to let the web site access your microphone

2. Consonant phonetic symbols

- Two consonants in **Table 2.12** (*CL* p 38) that you do *not* need to memorize
  - [ʍ] is not used by most speakers of American English these days
    - If you say *witch* and *which* differently, then *witch* has [w] and *which* has [ʍ]
  - [ʔ] is a variant form (*allophone*—see *CL* Ch 3) of [t]
    - If you say *mitten* without a "real" [t], then you probably use [ʔ]
    - [ʔ] is also found in the middle of "*uh-oh!*"

2. Consonant phonetic symbols

- There are additional consonants illustrated in **Table 2.16** (*CL* pp 43-44) that you do *not* need to memorize
  - We will talk more about the difference between the *(plain) stops* [p t k] and the *aspirated stops* [p^h t^h k^h] when we read *CL* Ch 3; for now, just **use the plain stops** for words like *pie, tie, key*
  - We will learn about the *flap* [ɾ] in Ch 3 also
  - In this class, we will not worry about *syllabic* nasals and liquids; just use plain nasals and liquids

3. How to describe a consonant

- Goal: Be able to describe all the consonants in **Table 2.12** (*CL* p 38) | except for [ʍ] and [ʔ]
- We will **describe** consonants using the following four (in special cases, five) **phonetic properties**:
  - **voicing**
  - **place of articulation**
  - **oral/nasal**
  - (addtional descriptor for **liquids** only)
  - **constriction type** | note: this term is not used in *CL*

(The properties *other than place of articulation* are sometimes grouped together as "manner of articulation")

4. Voicing: Voiced or voiceless?

- **Voicing**
  - **<u>voiced</u>** = vocal folds are vibrating
  - **<u>voiceless</u>** = vocal folds are not vibrating

- *Diagnose it for yourself:*
  For most consonants, you can rest your fingers on your **larynx** and feel whether there is **vibration**
  - Try it:
    These are **voiceless** [f] [s] [θ] [ʧ]
    These are **voiced** [m] [z] [ð] [ɹ]

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- *Exception:* These six consonants are difficult to articulate in isolation, without a vowel — and vowels are voiced — so these are hard to diagnose by feel
  - **Memorize** these:

    [p] [t] [k] **voiceless**

    [b] [d] [g] **voiced**

    (After section 7 below, you will know what properties this class of six sounds has in common!)

5. Place of articulation

- **Place of articulation** was introduced on Monday
  - **<u>Where in the vocal tract</u>** is the consonant's constriction?
- *Diagnose it for yourself:*
  Try to feel the **constriction** in the vocal tract
  - If the articulators are touching, wiggle them around to feel where the constriction is
  - If the articulators are not touching, form the sound and breathe in — you will feel colder air at the point of closest constriction

5. Place of articulation

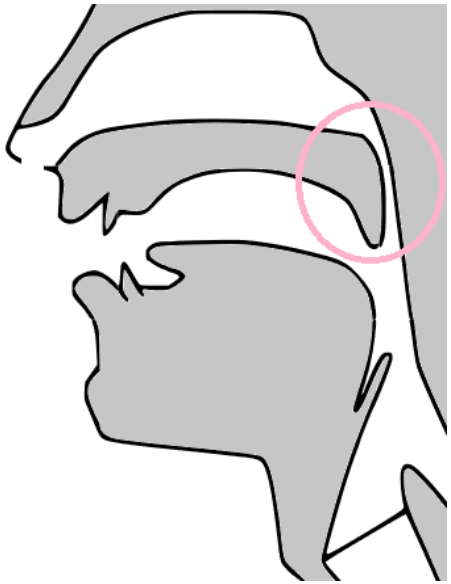
- See *place of articulation in action:*
  Click the IPA symbols to see an MRI video of each sound
  (from USC Speech Production and Articulation Knowledge Group)

PoA term	***Constriction in vocal tract***	***Example***
bilabial	lips	[m]
labiodental	upper teeth + lower lip	[f]
(inter)dental	tongue tip or blade + upper teeth (or between teeth)	[θ]
alveolar	tongue tip + alveolar ridge	[n]
alveopalatal	tongue blade + post-alveolar region	[ʃ]
palatal	tongue body + hard palate	[j]
velar	back of tongue body + velum	[k]
glottal	glottis (space between vocal folds)	[h]

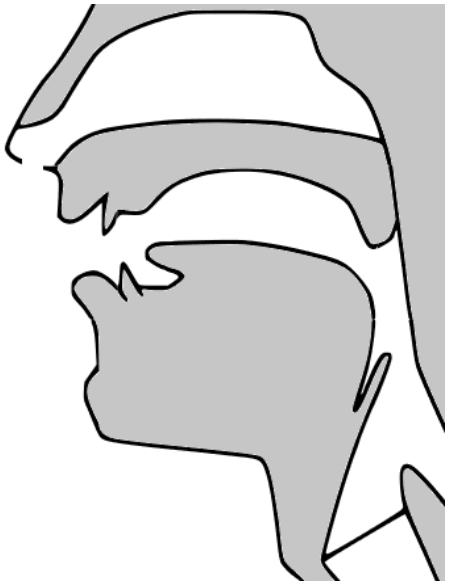
6. Nasality: Oral or nasal?

- **Oral/nasal**
  - **nasal** = airflow in nasal cavity (velum is **open**)
  - **oral** = no airflow in nasal cavity (velum is **closed**)

Nasal:



Oral:



Drawings adapted from Daniel Currie Hall's interactive web site

6. Nasality: Oral or nasal?

- The **velum** (soft palate) is itself a place of articulation
  - But it can also **open and close** to allow or block air from entering the nasal cavity

- *See oral/nasal in action:*
  Watch this MRI video of *vowel* + [m] + *vowel*
  (from USC Speech Production and Articulation Knowledge Group)
  - Before/after speech (ordinary breathing) — velum is **open** for breathing through the nose
  - The two vowels are **oral** — velum is **closed**
  - The [m] is **nasal** — velum is **open**

6. Nasality: Oral or nasal?

- *Diagnose it for yourself:*
  Use your fingers to **pinch your nose closed** while you articulate a sound
  - If the sound changes when the nose is closed, it is **nasal** — try [m]
  - If not, it is **oral** — try [b] or [f]

- Memory aid: The *only* nasal sounds in English are [m] [n] [ŋ]

7. Constriction type

- **Constriction type** has to do with the degree or type of constriction in the **oral** cavity (i.e., disregarding *nasal* airflow)

7. Constriction type

- Which consonants can’t be audibly prolonged, because the air in the vocal tract is **completely obstructed**?
  - These sounds are **stops** (that are **oral**) (often just called “stops”)

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    [p] [t] [k] **voiceless**
    [b] [d] [g] **voiced**

  - Because oral stops *can't be prolonged*, they are difficult to test for voicing using the larynx-vibration test — just memorize their voicing

7. Constriction type

- Which consonants have a complete closure in the **oral cavity**, but airflow in the **nasal cavity**?
  - These sounds are **stops** that are **nasal** (often just called “nasals”)

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    [m] [n] [ŋ]

  - All nasal stops in English have the same voicing status. Are they voiceless or voiced?

7. Constriction type

- Which consonants have a **hissing or buzzing sound**, caused by forcing air through a very narrow opening in the oral cavity?
  - These sounds are **<u>fricatives</u>**

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  - These sounds are **fricatives**

[f]	[θ]	[s]	[ʃ]	[h]
[v]	[ð]	[z]	[ʒ]	

  - All fricatives in English have the same status for oral/nasal. Which are they?
  - The noisier fricatives (and affricates; see below) are called **stridents** or **sibilants** — highlighted

7. Constriction type

- Which consonants are **combinations of oral stop + fricative** (at the same place of articulation)?

  (*CL* describes these as like a stop, but with a slow or gradual release (p 32))

  - These sounds are **affricates**

    (note: NOT "affricatives")

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  (*CL* describes these as like a stop, but with a slow or gradual release (p 32))

  - These sounds are **affricates**

    (note: NOT "affricatives")

    [ʧ] [ʤ]

  - Are affricates in English oral or nasal?

7. Constriction type

- The remaining consonants of English are the **liquids** and **glides**

  [l] [ɹ] [w] [j]

  - Liquids and glides in English are oral
  - Liquids and glides in English are usually voiced, but can sometimes be voiceless
    - You can add a small circle beneath the phonetic symbol to indicate voicelessness

7. Constriction type

- **Liquids** need an **extra descriptor**, since most liquids are voiced, alveolar, and oral
  - A **lateral** liquid has air moving along the sides of the tongue but blocked in the center of the oral tract — [l]
  - A **retroflex** liquid has the tongue tip curled back behind the alveolar ridge — [ɹ]

    (Note: Many American English speakers use an *alternative* way of producing the same sound, where the tongue body is bunched up but the tongue tip is not actually curled back)

7. Constriction type

- **Glides:** A glide is essentially the same as a very rapidly articulated vowel
  - [j] is a glide that is **palatal**
  - [w] is a glide that is **labial** AND **velar**, i.e., **labiovelar**

8. Mastering the phonetics of consonants

- **Get physical!**
  - Learn these new terms while paying attention to your own articulations: what does *voiced* or *alveolar* or *fricative* or *stop* **feel** like?
- **Use the links!**
  - This lecture outline has multiple links to **media examples** of sounds for you to listen to or watch
- **Practice, practice, practice!**
  - Use the LING 101 Quizlet flash cards, or make **flash cards** and **charts** of your own