

Phonetics

- **Why phonetic terms, symbols?**
- **The vocal tract and place of articulation**

Background reading:

- *CL* Ch 2, sec 1 and sec 4

0. Course information — new students?

- Are you new to this course?
 - Welcome!
 - Please email your recitation TA **today** to introduce yourself and make a plan for turning in HW #1
 - Please visit the course web site (linked from the Canvas site main page), find the **Daily Syllabus** page, and review all the materials from last week

1. The science of speech sounds

- How can we investigate the sounds of language?
 - **Phonetics**: The physical articulation (and acoustics, and perception) of speech sounds
 - **Phonology**: How speech sounds are classified and modified by the mental grammar
- From the perspective of science:
 - Our **data** will be
 - *Phonetics* — physical aspects of sounds
 - *Phonology* — how sounds pattern
 - We will build a **model** of the mental grammar

2. We need terminology for speech sounds

- The first step is **phonetics**:
 - What **speech sounds** are used by humans?
 - How are they **produced** by the vocal organs?
- For this, we need some **specialized terminology**:
 - How can we **describe** language sounds?
 - How can we **compare** sounds from different languages?

2. We need terminology for speech sounds

Foreign-language teaching examples...

- There is a Spanish sound sometimes described as “halfway between a *b* sound and a *v* sound”
- There is a French sound sometimes described as “halfway between *ee* and *oo*”

What do descriptions like these actually mean?

- In the next few classes, you will learn:
 - new **terminology** for describing and comparing language sounds

3. We need phonetic symbols

- We need a way to **transcribe** (write down) the individual **speech sounds** used in languages
 - Ideally: **one symbol** ↔ **one speech sound**
 - *Other terms for 'speech sound' are **phone** or **segment***
- **Spelling**, in general, will **not work well** for this
 - Spelling → sound relationships vary by language
 - Some writing systems 'spell' larger units than single speech sounds

3. We need phonetic symbols

- **English spelling** in particular is **not a good way** to represent speech sounds
- How many **speech sounds** (NOT letters!) are there in these English words?
 - (a) *she*
 - (b) *six*
 - (c) *using*

3. We need phonetic symbols

- **English spelling** in particular is **not a good way** to represent speech sounds
- How many **speech sounds** (NOT letters!) are there in these English words?
 - (a) *she* 2
 - (b) *six* 4
 - (c) *using* 5...but maybe not the ones you thought?
- Don't be fooled by **spelling**—practice saying words out loud and **listening** to yourself

3. We need phonetic symbols

- **English spelling** in particular is **not a good way** to represent speech sounds
 - Do *thigh* / *thy* start with the same sound?
 - How many ways can we spell the sound [k] as in *kite*?
 - How many pronunciations can be spelled *ough*?

3. We need phonetic symbols

- **English spelling** in particular is **not a good way** to represent speech sounds
 - Do *thigh* / *thy* start with the same sound? **No!**
 - How many ways can we spell the sound [k] as in *kite*? **k, kk, ck, c, cc, ch, cque, +...**
 - How many pronunciations can be spelled *ough*? **dough, bough, through, cough, enough, +...**
- Multiple letters can spell a single sound (and vice versa)
The same letter(s) can spell different sounds
The same sounds can be spelled by different letters

3. We need phonetic symbols

- The **International Phonetic Alphabet (IPA)**
“attempts to represent each sound of human speech with a single symbol” (CL, p 18)
 - Note: Two sounds that are slightly different may be classified under the same symbol if they are not usually treated as distinct sounds within a single language
- Square brackets ‘[]’ show that a letter or symbol is being used as a **phonetic symbol**, which in turn represents a **speech sound**
 - So **[k]** is a sound, **NOT** a letter

3. We need phonetic symbols

- Using the IPA, we can transcribe the **speech sounds** in these English words:

- (a) *she* 2 [ʃi]
- (b) *six* 4 [sɪks]
- (c) *using* 5 [juziŋ]

- In the next few classes, you will learn:
 - the **IPA symbols** for these and other sounds of (“mainstream” American) English
 - the **phonetic properties** of these sounds
- We will start with some of this today

4. The vocal tract & place of articulation

- What is a **consonant**?

4. The vocal tract & place of articulation

- What is a **consonant**?
 - A speech sound with a significant **constriction** (obstruction) in the **vocal tract**
- Consonants can be classified according to about four properties
- The first consonant property we will examine is **place of articulation** — *where* in the vocal tract the consonant's constriction is made

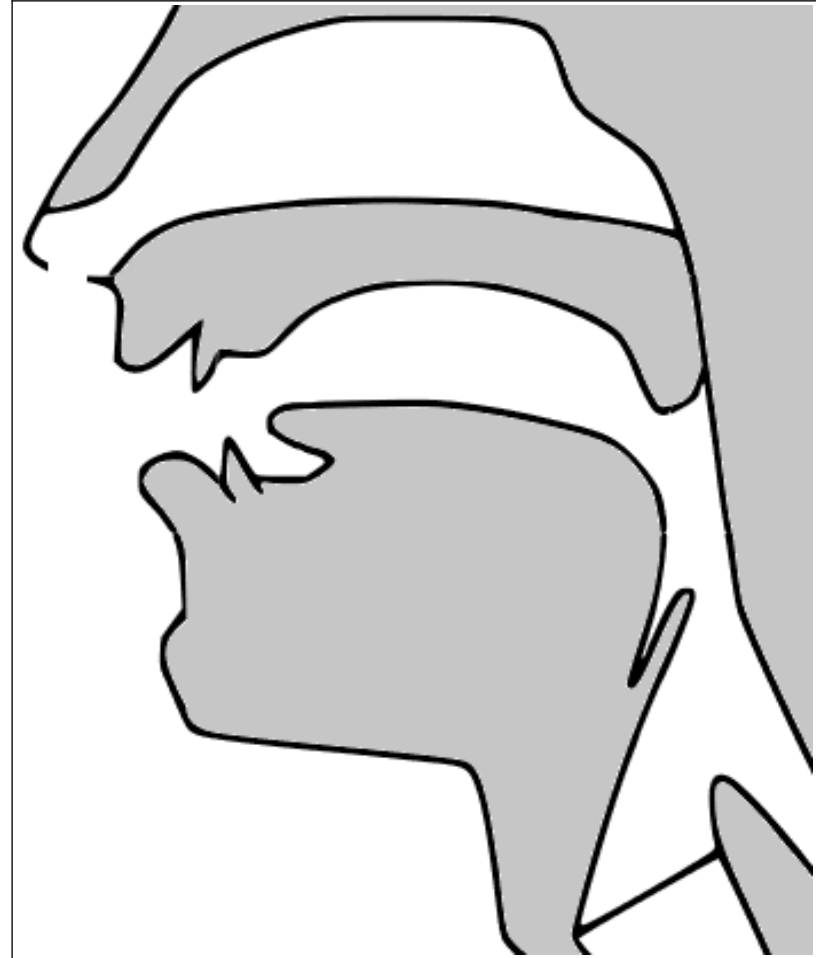
4. The vocal tract & place of articulation

- To discuss consonant place of articulation, we need to know the **parts of the vocal tract**
 - See *CL*, Figure 2.4 (p 26)
 - More practice: <http://smu-facweb.smu.ca/~s0949176/sammy/>
Daniel Currie Hall's interactive vocal-tract diagram

4. The vocal tract & place of articulation

Know these:

- lips
- teeth
- tongue tip
- tongue blade
- tongue body
- alveolar ridge
- (hard) palate
- velum (soft palate)
- glottis



Vocal tract drawing adapted from Daniel Currie Hall's [interactive web site](#)

4. The vocal tract & place of articulation

- Where in the vocal tract are these sounds made?
 - [m]
 - [f]
 - [θ] in *think*
 - [n]
 - [ʃ] in *she*
 - [j] in *yes*
 - [k]
 - [h]

4. The vocal tract & place of articulation

<i>Sound</i>	<i>Constriction in vocal tract</i>
[m]	lips
[f]	upper teeth + lower lip
[θ] in <i>think</i>	tongue tip or blade + upper teeth (or between teeth)
[n]	tongue tip + alveolar ridge
[ʃ] in <i>she</i>	tongue blade + post-alveolar region
[j] in <i>yes</i>	tongue body + hard palate
[k]	back of tongue body + velum
[h]	glottis (space between vocal folds)

4. The vocal tract & place of articulation

- Terms for **place of articulation**

- [m] **bilabial**
- [f] **labiodental**
- [θ] in *think* **dental** (or **interdental**)
- [n] **alveolar**
- [ʃ] in *she* **alveopalatal** (or **postalveolar**)
- [j] in *yes* **palatal**
- [k] **velar**
- [h] **glottal**

4. The vocal tract & place of articulation

- Summary: English consonant place of articulation

<i>PoA term</i>	<i>Constriction in vocal tract</i>	<i>Example</i>
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 (or postalveolar)	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]