

- **Overview: Speech sounds, phonetic symbols, and sound waves**

Background reading:

- V&C Ch 1 (especially sec 1.4)
- V&C Ch 6 (especially Table 6.1)
- V&C Ch 3 (especially Table 3.1)

0. Today's plan

- Today's discussion will cover the following topics:
 - What are **speech sounds**? How are they different from **letters** used in spelling?
 - What **phonetic symbols** will we use to represent the pronunciation of spoken language?
 - What are the basic properties we will use to describe and distinguish **sound waves**?
- If you have prior background in linguistics or acoustics, some of these topics may be review for you
- If linguistics is new to you, this may represent a shift in your perspective on language!

1. Speech sounds

- People in literate societies tend to think of 'language' in terms of **written language**
 - Children spend a lot of time and effort learning to read and to write
 - Reading and writing are important and salient in everyday life
- *However!* —
- In this course, we are interested in the **phonetics** of language, so we will think of 'language' in terms of **spoken language**

1. Speech sounds

- In phonetics, we talk about the **speech sounds** in a word — **not** about the **letters** it is spelled with
 - Spelling is for writing, not speaking
 - In some languages (including English!), spelling is influenced by pronunciation, but this is an indirect connection
- Practice listening to the distinct **speech sounds** (**consonants** and **vowels**) in the **pronunciation** of a word
 - Don't let the spelling confuse you

1. Speech sounds

- How many **speech sounds** are there in these English words?

box

cute

through

- Speech sounds are also called **phones** or **segments**

1. Speech sounds

- How many **speech sounds** are there in these English words?

box 4, as in: **bee, odd, key, see**

cute 4, as in: **key, yes, ooze, tea**

through 3, as in: **thigh [this is one sound!], ray, ooze**

- We observe that, in English, ...
 - A single letter can spell a sequence of sounds
 - A sequence of letters can spell a single sound
 - One sound can be spelled in different ways
 - One spelling can represent different sounds

2. Phonetic symbols

- Even though we are interested in discussing speech sounds, not letters as used in spelling...
 - ...we still need a way to **write down** speech sounds so we can communicate about them in a written medium
- For this, we can use a set of **phonetic symbols**
 - Many dictionaries of US English have their own special sets of pronunciation symbols
 - In this course, we will use the **International Phonetic Alphabet (IPA)**

2. Phonetic symbols

- Here are IPA symbols to **phonetically transcribe** the words we saw above:

box [baks]

cute [kjut]

through [θɹu]

- Note: **one** IPA symbol per speech sound
- Always **use square brackets [...]** to indicate a phonetic transcription (even though V&C doesn't do this!)
 - Brackets indicate a sound, **not a letter**

2. Phonetic symbols

- Today's discussion will introduce IPA symbols for
 - The consonants of English
 - Five very common vowels across languages
- Be able to
 - Write the symbol, given the sound
 - Make the sound, given the symbol
- Some tips for success:
 - Make flash cards, etc., and practice every day
 - Use the *V&C* sound file links

3. English consonants and IPA symbols

- Table 6.1 in *V&C* Ch 6 (p 49) shows:
 - The **consonant sounds** that are found in English
 - The **phonetic symbols** that represent them
- *V&C* Ch 6 also provides an overview of the *acoustics* of English consonants
 - We will return to consonant acoustics later in the semester

3. English consonants and IPA symbols

- We can define a **consonant** as ...

3. English consonants and IPA symbols

- We can define a **consonant** as a speech sound that is articulated with a **constriction** or obstruction somewhere in the vocal tract (see *V&C*, Ch 3, p 26)
- (Later) we will classify consonants according to the **nature** and the **location** of this constriction
- But first, we need to know consonant **IPA symbols** so we can further discuss and describe them
 - We'll start with English consonants for now, but later in the course we will discuss many others

3. English consonants and IPA symbols

- Use V&C Table 6.1 (p 49) and Recording 6.1 (see the link below) to **memorize**:
 - which **consonants** occur in English
 - what **IPA symbols** are used to represent them
- “Recording 6.1” actually consists of two .aiff files:
 - Column 1 in Table 6.1 (word-initial examples)
 - Column 2 in Table 6.1 (non-initial examples)

Access them [here \(UCLA\)](#) or [here \(Wiley\)](#)

(the voice you hear is Peter Ladefoged himself)

3. English consonants and IPA symbols

- Consonant IPA 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]

3. English consonants and IPA symbols

- These consonants have an IPA symbol that doesn't (always) match its use as an English-alphabet letter

[g] [j]

- These sounds have IPA symbols that are not used as English-alphabet letters

[ŋ]

[θ] [ð]

[ʃ] [ʒ] [tʃ] [dʒ]

[ɹ]

4. Frequent vowels and IPA symbols

- Table 3.1 in *V&C* Ch 3 (p 27) shows:
 - Some of the most frequent **vowel sounds** in the world's languages
 - The **phonetic symbols** we use to represent them
- We won't discuss **English vowels** in detail yet, but if you're interested, you can also hear recordings and see IPA transcriptions of these in *V&C* Ch 3

4. Frequent vowels and IPA symbols

- We can define a **vowel** as ...

4. Frequent vowels and IPA symbols

- We can define a **vowel** as a speech sound that “occurs in the middle of a syllable,” and is articulated **without any constriction** or obstruction in the vocal tract (see *V&C*, Ch 3, p 26)
- In later classes, we will talk about how to classify vowels, mostly in terms of their **acoustics**
- But first, we need to know vowel **IPA symbols**
 - We'll start with five very frequent vowels

4. Frequent vowels and IPA symbols

- Use V&C Table 3.1 (p 27) and Recordings 3.1–3.4 (see links below) to **memorize**:
 - what these five frequent **vowels** sound like
 - what **IPA symbols** are used to represent them
- Access Recordings 3.1–3.4 [here \(UCLA\)](#) or [here \(Wiley\)](#)

4. Frequent vowels and IPA symbols

- Vowel IPA symbols: Easy to learn
 - These vowel symbols match the typical pronunciation of the corresponding alphabet letter in almost all languages that use the Roman alphabet other than English

[a] [e] [i] [o] [u]

5. English vowels and IPA symbols

- Varieties (dialects) of English vary quite a lot in their vowels, but most have **many** more than 5 distinct vowel sounds
- You're not responsible for memorizing these (yet), but if you are interested in examples of "standard" American and British vowel sounds and IPA symbols, see:
 - Tables 3.2 (p 28) and 3.3 (p 30) in *V&C* Ch 3
 - Recordings 3.5 and 3.6:
access them [here \(UCLA\)](#) or [here \(Wiley\)](#)

6. Our starting point: Sound waves

- *Today:* **Notate** speech sounds using IPA symbols to phonetically transcribe them: *through* [θɹuː]
- *Upcoming:* **Describe** speech sounds in various ways, including:
 - Their **articulation** — How do the **speech organs** function to produce each speech sound?
 - Their **acoustics** — What kinds of **sound waves** result when each speech sound is produced?
- This course will focus on **articulation, acoustics,** and their **relationship**

6. Our starting point: Sound waves

- We will build up our understanding of articulation and acoustics by starting with fundamental concepts in acoustics
 - Next week: **sound waves** and their properties

6. Our starting point: Sound waves

- To get started, we can use *V&C* Ch 1, sec 1.4, to learn some basic terminology about sound waves:
 - How does *V&C* define **sound wave**?
 - What physical property corresponds to...
 - the **pitch** of a sound wave?
 - the **loudness** of a sound wave?
 - the **quality (timbre)** of a sound wave?