

# INTD0112

## Introduction to Linguistics

Lecture #4  
Feb 27<sup>th</sup>, 2007

## Questions?

Any questions on homework 1?

## Goals of linguistic theory

- Linguists are primarily concerned with two main questions:
  - a. What is it that we know when we know a language?
  - b. How does this knowledge arise in the mind?

## Grammar is a “mental” entity

- The answer to the first question is to study language as a system of knowledge, or to use a familiar term though in a rather different way, a *grammar*.
- Linguists typically break down a grammar into subcomponents and work on each:

## Components of a mental grammar

- **Phonetics**: The study of the articulation and perception of speech sounds.
- **Phonology**: The study of the sound system in a language.
- **Morphology**: The study of word structure.
- **Syntax**: The study of sentence structure.
- **Semantics**: The study of meaning of words and sentences.

## Other subfields within linguistics

- The answer to the second question is the study of **first language acquisition**.
- But linguists also raise questions for the mutability of linguistic knowledge, i.e., the fact that language changes over time. This is the domain for **historical linguistics**.
- Linguists also raise questions for how we come to use language in social contexts and how people’s forms of speech vary (the so-called *dialects*). This is the domain for **sociolinguistics**.

## Other subfields within linguistics

- **Psycholinguistics**, on the other hand, studies the cognitive processes that we engage in the production and perception of language.
- We have already spent some time last week talking about **neurolinguistics**.
- **Computational linguistics** is concerned with ways to model natural languages so they can be used by machines.

## Course plan

- We will cover most of these (check your syllabus), though you have to remember this is a course on the “formal” study of language, so all of the first half of the semester and maybe the early sessions of the second half will be devoted to the study of the first five main components of linguistic knowledge. Importantly, though, understanding these is crucial to understanding other areas of linguistics as well.

## Phonetics

- Phonetics is the study of speech sounds in human language, which are technically known as phones.
- The study of the physiological mechanisms of speech production is called **articulatory phonetics**.
- The study of how speech sounds are perceived by listeners is called **auditory phonetics**.
- The study of the physical properties of speech sounds is called **acoustic phonetics**.
- In this class we’ll be mainly concerned with articulatory phonetics.

## Spelling and speech

The one-l lama,  
He’s a priest.  
The two-l llama,  
He’s a beast.

And I will bet  
A silk pajama  
There isn’t any  
Three-l llama.

*Ogden Nash*

## Spelling and speech

- Even though alphabetic spelling is meant to represent the pronunciation of words, it is not always reliable in figuring out how a word is pronounced for the following reasons:
- Different letters may represent the same sound:  
to oo two through threw clue shoe

## Spelling and speech

- A single letter may represent different sounds:  
dame dad father call village many.
- A combination of letters may represent a single sound:  
shoot character physics rough plain
- Some letters have no sound at all in certain words:  
knot resign lamb sword

## Spelling and speech

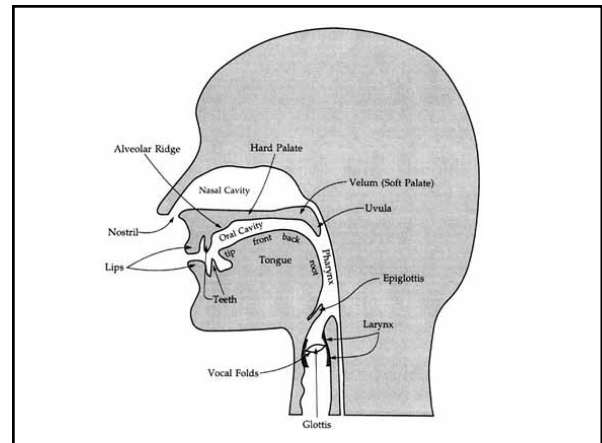
- Spelling may also fail to represent sounds that occur:  
cute futility university
- Also, one letter may represent two sounds:  
box Xerox
- Remember also that the majority of human languages do not have a writing system, which makes spelling completely irrelevant for pronunciation in these languages.

## Spelling and speech

- Because we cannot rely on spelling, linguists rely instead on a special alphabet to represent speech sounds in human language. This is the so-called *International Phonetic Alphabet* (IPA), see pp. 48-9 in your textbook for the IPA charts. [Link](#) and [a fun website](#).
- The IPA represents speech in the form of **segments**, i.e., individual phones like [p], [s], [a], etc.

## The vocal tract

- There are two major types of segments in human language: consonants and vowels.
- As it turns out, a segment can be described in terms of a number of individual articulatory features. We do this for both consonants and vowels today.
- Before we do that, however, let's look at the human vocal tract first:



## Consonants and vowels

- The vocal tract produces both consonants and vowels, but how are these different?
- 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.
- Acoustically, vowels are more powerful (or *sonorant*, to use a technical term) than consonants.

## Articulation of consonants

- Consonant sounds can be characterized according to three main phonetic properties:
  - a) **place of articulation**, which refers to where in the vocal tract the sound is produced;
  - b) **manner of articulation**, which refers to the way the air is obstructed in the vocal tract while producing the sound; and
  - c) **voicing**, which refers to whether or not there is a vibration of the vocal cords as the sound is produced.

### Places of articulation

- **Labial** consonants: These are produced with closure or near-closure of the lips.
- If both lips are involved, the consonant is said to be “bilabial”, e.g., [p], [b], and [m].
- If the upper teeth and lower lip are involved, the consonant is said to be “labiodental”, e.g., [f] and [v].

### Places of articulation

- **Dental** consonants: These are produced with the tongue placed against or near the teeth, e.g., the initial sounds in French words temps, dire, and zizi.
- English has **interdental** consonants, though. These are the initial sounds in words like thorn and there. They are phonetically represented as [θ] and [ð].

### Places of articulation

- **Alveolar** consonants: These are produced by raising the front part of the tongue to the alveolar ridge, e.g. [t], [d], [n], [s], [z], [l], and [r].
- **Alveopalatal** consonants: These are produced when the front part of the tongue touches the alveolar ridge and then the hard palate (that part of the mouth which is just behind the alveolar ridge), e.g. [ʃ] as in “shoe”, [ʒ] as in “vision”, [tʃ] as in “choose”, and [dʒ] as in “jam”.
- If the consonant is produced at the palate, then it is a palatal sound, e.g., [j] as the initial sound in yes.

### Places of articulation

- **Velar** consonants: These are produced by raising the back part of the tongue to the soft palate or the velum, e.g. [k], [g], and [ŋ], which is the final sound in “king”.
- **Uvular** consonants: These are produced by raising the back of the tongue to the uvula, e.g. French [ʀ] and Arabic [q].
- **Pharyngeal** consonants: These are produced at the pharynx, e.g. Arabic [ħ] and [ʕ].

### Manners 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.

### Stops

- **Stops**: These are produced by a complete obstruction of the airflow in the mouth, e.g. [b], [p], [t], [d], [k], and [g]. English also has a glottal stop, transcribed as [ʔ] as in *uh-oh*.
- When the air escapes through the nasal, rather than the oral, cavity, *nasal stops* are produced, e.g., [m], [n], and [ŋ]. Recall the last symbol stands for the final sound in words like *king*.

## Fricatives and affricates

- **Fricatives:** These are produced by a partial obstruction of the airflow, where the passage in the mouth through which the air escapes is very narrow, causing friction, e.g. [f], [v], [s], [z], [θ], [ð], [ʃ], [ʒ], and [h].
- **Affricates:** These are produced by a stop closure followed immediately by a slow release of the closure characteristic of the fricative, e.g. [tʃ] as in *church*, and [dʒ] as in *jump*.

## Fricatives and affricates

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

## Liquids

- **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.

## Liquids

- 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 [ɻ].
- Another sound commonly identified with “r” is the flap, which occurs in North American English in words like *butter* and *better*. This sound is transcribed as [ɾ].

## Glides

- **Glides:** These are produced with little or no obstruction of the air in the mouth, e.g. [j] as in *yes* and [w] as in *wood*. When occurring in a word, they must always be either followed or preceded by a vowel, and in their articulation the tongue moves rapidly in a gliding fashion either toward or away from a neighboring vowel.
- Some English speakers produce a voiceless glide at the beginning of words like *when*, *which*, and *where*. It is transcribed as [ʍ].

## Voicing

- Consonant sounds may be produced either with or without a vibration of vocal cords. If the vocal cords are apart when the airstream is pushed from the lungs, the air is not obstructed at the glottis and it passes freely into the supraglottal cavities. The sounds produced this way are characterized as **voiceless**, e.g. [p], [t], and [s]. By contrast, if the vocal cords are together, the airstream forces its way through and causes them to vibrate. Such sounds are **voiced** sounds, e.g. [b], [d], and [z].

## **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].

## **Next class agenda**

- Phonetics cont.: Section on Vowels.
- Suprasegmentals and speech production, pp. 37-51.