LING 190 Module 3: Describing Speech Features 1

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This lecture will only be focused on IPA consonants.

1. Introduction to Phonetic Descriptions (IPA)

1.1. Why do we need phonetic descriptions?

- Most alphabets are *not good* at representing sounds.
  - Some languages don't even have a writing system
  - Some languages have an unclear writing system (e.g. English)
    Consider the Dr. Seuss book "The Tough Coughs As He Ploughs the Dough." All four of these words, despite being spelled with `ough`, have different vowels.
  - Phonetic descriptions give us a universal way of representing sound, regardless of writing system.

1.2. Principles of IPA

- The Alphabet is *unambiguous*, i.e. there is a different symbol for each speech sound
- The Alphabet is *universal*, i.e. **all** speech sounds can be described using the IPA.

1.3. Broad vs. Narrow Phonetic Transcriptions/Descriptions

Narrow transcriptions give more detail, but are unnecessary when describing English transcriptions.

- A broad transcription indicates only contrastive sounds

- Narrow transcriptions include descriptions of phonetic details to show how a sound was actually produced.

1.4. Airstream (How we produce speech, aerodynamically.)

	PULMONIC	**GLOTTALIC**	**VELARIC**
EGRESSIVE	most common in English	not used in English	physically impossible (to non-experts)
INGRESSIVE	not used *linguistically* in English	not used in English	not used linguistically in English

1.5. An unnecessarily precise description of 'p':

"A pulmonic egressive voiceless aspirated bilabial oral stop"

- with the narrow transcription: [pʰ]

A more typical description would be a "voiceless bilabial stop"

- with the broad transcription: [p]

We lost the other terms because:

- This is the minimal description needed for English
  - Every consonant in English is **pulmonoic egressive**
  - Not every consonant is aspirated, but aspiration is predictable in English.
  - We can drop the word *oral* because in English, only oral stops are voiceless.

I.e. by the speech patterns of the language, we can imply certain characteristics of the sound without explicitly writing them down. To write down the full narrow transcription would be incredibly redundant.

In Western Canadian English, we describe consonants with broad transcriptions as voicing + place of articulation + manner of articulation. I.e., /p/ is a "voiceless bilabial stop"

2. IPA Consonants (From the Perspective of English)

- We want to link the vocal tract with IPA consonants
- How to describe and transcribe all English consonants using broad transcription

English **only** uses **Pulmonic Egressive** sounds. This means that we only use sounds that are produced by pushing air **outwards** through the vocal tract using the lungs.

2.0.1. Levels of description needed for English IPA

- **Airstream** – not necessary, since English only uses pulmonic egressive
- **Larynx/Glottis (Voicing)** – the action of the vocal folds
- **Manner** – the amount of closure achieved by active and passive articulators

- **Place** – location of active and passive articulators

2.1. Larynx/Glottis (Voicing)

- **Voicing** – vibration of the vocal chords while making another superlaryngeal vocal tract closure.
  - Vibration of larynx indicates voicing, for example, the consonant /z/ is voiced and /s/ is unvoiced. (Voiced consonants vibrate the vocal folds).

2.2. Manner

- **Plosives (oral stops)** – complete oral obstruction
  - A plosive involes a brief explosion of air after a complete obstruction of air
  - Very short (on the order of 5ms) obstruction of air (can be even noisier with aspiration)
  - Compare /p/ and /t/
- **Fricatives** – partial obstruction; air turbulence creates noise
  - Sustained noise as air moves through a partial obstruction
  - Instead of stopping the air, you make a very very small hole, such that when the air escapes this opening, it creates a noise.
  - This sound is comparable to releasing air through a balloon, or other very small hole. Essentially, fricatives produce the noise air makes when rushing through a very small opening.
  - An example is /f/ and /v/ (voiced and voiceless respectively)
- **Affricates** – complete obstruction followed by partial obstruction
  - Affricates are treated as a single sound, but can be transcribed as a complex articulation. What it is, essentially, is a plosive followed by a fricative. However, this transition is very smooth, so we can think about it as a single consonant.
  - An example is tʃ (ch sound in English).
- **Nasals** – complete oral obstruction; airstream travels through the nasal cavity
  - The velum controls where the air flows in the vocal tract.
    - Raised/closed velum – no air flows through the nose (in a plosive)
    - For nasal stops, you allow air into the nasal cavity (velum is not raised)
    - You can feel the air flowing through the nasal cavity while pronouncing /n/ or /m/
    - The action of the tongue in /d/ and /n/ is basically the same, but for /n/, the velum is opened, and for /d/, the velum is closed.
- **Approximants** – very light obstruction; no turbulence and no noise
  - Glides – the tongue or lips move during the consonant: /w/, /j/
  - Liquids – the tongue does not move during the consonant: /l/, /ɹ/

2.3. Place of Articulation

Active Articulator	Passive Articulator	Place of Articulation	Examples
Lower Lip	Upper Lip	Bilabial	/p,b,m/
	Upper Teeth	Labiodental	/f/v

Active Articulator	Passive Articulator	Place of Articulation	Examples
Tongue Front	Upper Teeth	Dental	/θ,ð/
	Alveolar Ridge	Alveolar	/t,d,s,z,n,l/
	Post-Alveolar Region	Retroflex (Tip)	not in English
	Post-Alveolar Region	Post-Alveolar (Blade)	/ʃ,ʒ,j,ɹ/
Tongue Body	Hard Palate	Palatal	not in English
	Soft Palate	Velar	/k,g,ŋ/
Larynx		Laryngeal	/h/

3. IPA Consonants (Not from English)

- Other types of airstreams that don't exist in English
- Other types of phonation (voice qualities)

3.1. Airstream

	PULMONIC	**GLOTTALIC**	**VELARIC**
EGRESSIVE	very common in many languages	**Ejectives** (many First Nation languages)	physically impossible (to non-experts)
INGRESSIVE	Not really linguistic	**Implosives** (many South Asian Languages)	**Clicks** (many languages in Southern Africa)

Glotallic egresive syllables are written with an apostrophe, e.g. /p'/.

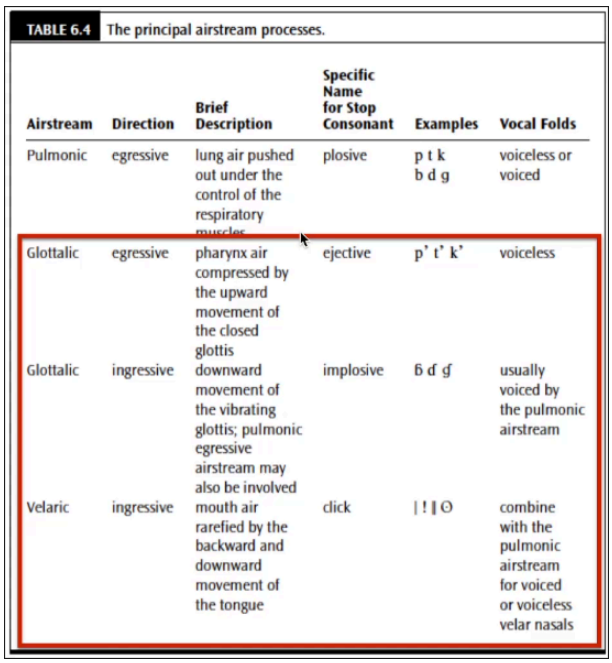

TABLE 6.4 The principal airstream processes.

Airstream	Direction	Brief Description	Specific Name for Stop Consonant	Examples	Vocal Folds
Pulmonic	egressive	lung air pushed out under the control of the respiratory muscles	plosive	p t k b d g	voiceless or voiced
Glottalic	egressive	pharynx air compressed by the upward movement of the closed glottis	ejective	p' t' k'	voiceless
Glottalic	ingressive	downward movement of the vibrating glottis; pulmonic egressive airstream may also be involved	implosive	ɓ ɗ ɠ	usually voiced by the pulmonic airstream
Velaric	ingressive	mouth air rarefied by the backward and downward movement of the tongue	click	ǀ ǃ ǁ ʘ	combine with the pulmonic airstream for voiced or voiceless velar nasals

3.2. Larynx/Glottis (Voicing, in English)

1. Creaky Voice
   - The vocal folds are held tightly together posteriorly, but vibrating (usually at a low rate) anteriorly.
2. Modal Voice
   - Regular vibrations of the vocal folds.
3. Breathy Voice (murmur)
   - Vocal folds vibrating without coming fully together. Often during a stop release.

- There are ways of using the larynx and glottis that are not linguistic in English, but do have some sociolinguistic patterns.
- These ways **can** be linguistic in other languages, such as Hindi and Vietnamese.

3.3. Manner

For consonant sounds that are not in English, we can talk about a few different places and manners of articulation. Some of these include:

- Trills
- Taps and Flaps

3.4. Place

- Palatls – tongue body moves to the palate
- Uvulars – tongue body moves to the uvula
- Pharyngals – tongue body moves to the pharynx

4. Extras

There are some differences within English that we don't talk about in broad transcriptions. When we are using IPA for narrow transcriptions, we can talk about different kinds of sounds, which includes the differences between what we call a clear l and dark l. What it is is the velarization of the /l/ sound.

1. /l/ – the tongue body is neutral
2. /ɬ/ – the tongue body is raised to touch the velum

Consider words like "lull," "flail" and "little." In these words, the first /l/ is a clear l and the second /ɬ/ is a dark l.