Introduction to Phonetics and Speech Sounds

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Speech sounds and Production of speech sounds

What we are going to be dealing with in this part is articulatory phonetics - this is the part where we observe how sounds are articulated or produced.

Air has to flow for the sound to be created. The air can flow directly from my lungs
It can come from pharynx and can come out from the mouth or it comes out from the nose (which gives nasal sound) - this is regulated by the uvula which is flexible and it can go up and down, blocking the nasal cavity or allowing sound to pass through the nasal cavity.

The kind of sound produced when

- **uvula raised** - sound from mouth because air passing through the oral cavit
- **uvula lowered** - sound from nose because of air passing through the nasal cavity as well

The source of the air flow can be glottis as well - because of the vocal chords (creating a glottal stop - something that can be observed in Yorkshire english)

There are three air stream mechanisms

- pulmonic, i.e., coming from lungs
- glottal, i.e., coming from glottis
- velaric, i.e., coming from the velum (click sounds that might be created which are non pulmonic sounds and not present in Indian languages but might be seen in other non Indian languages)

Articulators

- Alveolar ridge - ridge between the teeth and hard palate (uneven surface that can be observed)
- The articulators that move are called *active articulators* and the ones that don't move are called *passive articulators.*
- The passive articulators are usually the things on the upper jaw so the - upper lip, upper teeth, alveolar ridge and the hard palate.
- The velum (soft palatal region) can be manipulated to some extent and thus it's not considered passive.
- The tongue is the most versatile speech production unit in humans as it can move a lot and thus help create different categories of sounds as well.
- The air can be blocked at different places with the help of different articulators and that causes different manners of articulation (how the sound is blocked) and places of articulation (where the sound is blocked)

Ingressive and Egressive

Most of the speech sounds in languages are egressive, which means that air is flowing out of our mouth - eg implies that air is pushed out of the mouth or is going out of the mouth.

Ingressive sounds, on the other hand are usually the ones where air is sucked in. These types of sounds are not prevalent in Indian Languages while it might be observed in certain African languages at times.

Different kinds of sounds that can be produced

When upper lip meets lower lip - **bilabial** (plosive or stop)

Plosive sounds are the ones which are accompanied with a gust of air when we say those, which means there is a sort of explosion of air and that's why they are known as plosive sounds (from the fact that there is sort of an explosion of air). In bilabial we are actually closing our lips completely thereby causing a complete closure.

When lower teeth meets upper lip - **labio-dental** sound (fricative or non - plosive)

Over here we are leaving a small aperture for air to escape and thus there is a certain friction that we can also observe - this kind of sound is also known as fricatives → fricatives cause there is a friction in the flow of air through that small

region that allows air to pass (the air is escaping continuously and thus we can continue saying those sounds)

When the air is like not allowed to go on a proper continuous stream it's called a stop. We need to note that plosive sounds are stops.

Apart from **place of articulation**, there is also **manner of articulation** which means how much air we are allowing to pass while saying a word or sound. Thus, we can see how sound has two dimensions.

For the *front sounds* the front of the tongue goes up and meets the dental or alveolar region usually.
For the *middle sounds* the middle of the tongue goes up and meets the hard palate.
For the *back sounds* the back of the tongue goes up and meets the back of the mouth or the velum region.

In each of the kinds of above sounds, we can have stops or fricatives.

Stops/plosives - we are making a complete closure and then allowing the air to pass momentarily
Fricatives - we allow a continuous flow of air
Affricates - stop and then fricatives - like cha - we make a closure (stop) and then we allow the air to pass by slowing releasing our tongue and then we basically convert it into a fricative

Retroflex sound - things like [ʈ] and [ɖ] which not only hit the palate but there is also a sort of vibration that we can feel or a sort of movement that can be felt along with that are known as the retroflex sounds.

If the consonant following has a velar sound then the nasal n will also generally be a velar n (kangan). Similarly if we have a palatal consonant the nasal n will also be a palatal one (chanchal). This is something which we will deal with more in phonology as well.

Trill - there is an iterative vibration of the tongue like rrrrrr

What happens when we make the l sound like lllllllllll - We are allowing the air to pass from the sides, we can see that our sides are open so that is basically a lateral sound and thus we can see l in the category of laterals or lateral approximants.

International phonetic alphabet

This is a convention developed where there are symbols for each sound. It has symbols to represent the collection of all the sounds that can be used in human language or human speech. It is a huge set from which each language has a subset

of sounds that are used in that particular language (something that we'll study in phonology).

Helpful website where we can hear the different sounds and see their symbols as well → https://www.ipachart.com/

On the top of the chart we have the places of articulation and for each place of articulation, we can articulate the sound in different ways as well (which are like written on the side of the chart)

After looking at the sounds in the chart, we might have questions like **what is the difference between [p] and [b]** when both of then have the same place and manner of articulation? The answer lies in the fact that one of them is voiced while the other is unvoiced or voiceless.

When the vocal chords vibrate, we call them **voiced** sounds
While when the vocal chords don't vibrate, we call them **voiceless**

We can check that out by placing our hand on our Adam's apple (voiced sounds have a stronger vibration while voiceless ones might feel voiced due to the vowels that follow but they are not as strong)

So there are three dimensions to consonant sounds that we can see now

- place of articulation
- manner of articulation
- voiced or voiceless

When we are given any consonant sound, the way we describe sounds are in the following order

- voice/voiceless
- place of articulation
- manner of articulation

Books to refer to for phonetics

- Ladefoged, Peter
- Aberchrombie
- Malmberg
- Catford