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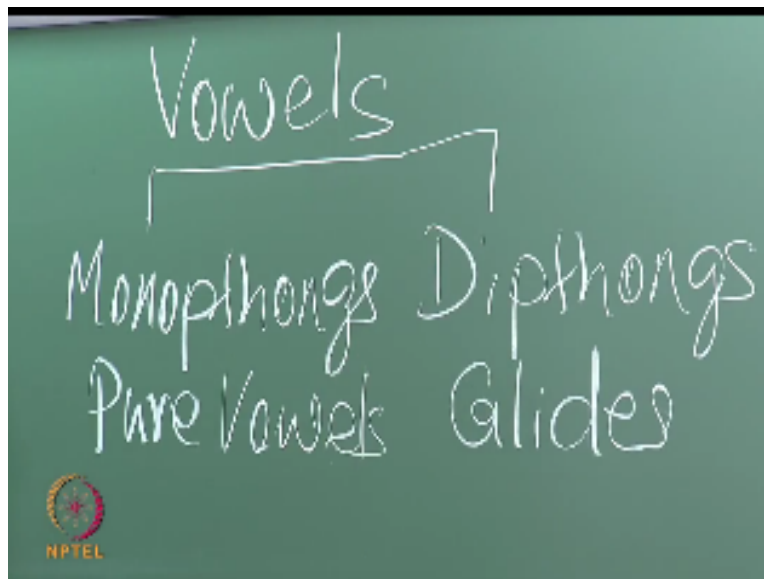
**NPTEL
National Programme on Technology Enhanced Learning**

Introduction to modern linguistics

**Lecture-13
Production of Consonants
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Good morning are you alright comfortable lovely so let us continue talking about the vowel sounds in natural languages and yesterday we saw that all vowel sounds can be broadly classified into two categories.

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Some are pure vowels or monophthongs and the others are diphthongs or glides please right either they are monophthongs or they are diphthongs in other words either they are produced with one explosion or they are produced with two explosions some people described these valve these sounds differently and they say either they are pure oil okay by which they mean that there is no change no obstruction okay or there are glides.

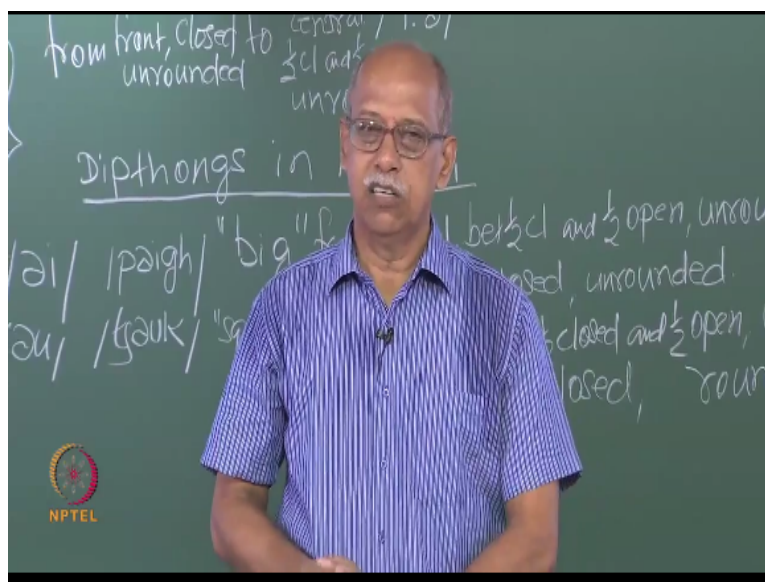
In other words these bubbles are produced by tongue moving from one position to another position in the case of pure hovels tongue does not change position it continues to have only

one position okay call it by whatever name you like there are different approaches but a large number of languages have both kinds of vowels you know more of tongs or diphthongs are pure vowels and glides we also saw yesterday that glides or diphthongs are also described nearly the same way you describe the position from where they move.

So you say from and then you see - you can say from front closed unrounded - central between open and half open sorry this between half closed and half open unrelated say for instance evolving like this as in year how shall we describe it come on please let me hear you can help me please from front or back front closed or open closed rounded or unrounded it unrounded to front or back centrally okay, open or closed between half closed in half open rounded or unrounded around it that is right we can say from front okay closed unrounded - we can say central between half closed and half open unrounded this is how we describe the ponds or glides as well okay we can apply you know yesterday.

We looked at some examples from English but you know any scientific terminology is scientific only because it is designed for a universal phenomenon not just for particular you know in that case it is art in that case it is empirical but if it is truly scientific your concepts your theory is your definition your parameters would apply across the board would apply to everyone so for example using this parameter you can describe vowels or diphthongs in you know in any language you can describe it for Telugu you can describe it for English I will give you an example from my mother tongue lightly. Let us draw the vowel trapeze.

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I am first here this is the vowel trapezium and in lately we have only two diphthongs maybe there are more but I know of only two so we have for example a diphthong like let us see

diphthongs in my TV okay ,so we have a different like what is this can you know can be pronounced is not I what is it I this is a and this is it actually it should be long by definition it is I what is it I so invite Lee we have a word with this sound this is what is it can you can you read it along by what is it by it means big okay, you can you can follow the same method.

In describing the diphthongs in Telugu ,Tamil in any language of the world that you love and like okay how do we describe it very simple it starts somewhere here you know it starts somewhere here and comes up to here this is the movement okay this is the symbol right can you help me write the description .I want to say from please come help me front or back central from central closed are open between please go systematically between half closed and half open rounded or unrounded lovely too let us write two here.

To filter back front clothes are open no other half clothes will say half clothes half closed okay rounded or unrounded rounded or unrounded unrolled it great okay we have another diphthong in my mother tongue in lightly and this will be represented somehow in this manner this is this moves from here to here can you give me the symbol for this can give me the symbol for this please can you give me if the diphthong moves from here to here .

What will be the symbol okay pronunciation everybody please try make a mistake at least on your notebook you can correct you see learning occurs only when you create a slot for it in your mind so when you try when you risk okay even if you are wrong you learn okay please come what is the sound Oh what is the signal this is the symbol okay we will see as in what sound is this I gave you a handout chit ,chit now what word is this joke okay.

It means the square it means in my mother tongue crossroads you know Junction could be the crossing of the roads a lot of things okay how shall we describe it please come help me from front back clothes what front or back from front or back from central lovely from central ok close or open between half close and half open between half closed and half open rounded or unrounded rate give me the description.

Please front of back from two that close all open half closed lovely rounded or and rounded politicians no I think I should be right fairly simple isn't it straightforward you can apply it to you know mechanically you can give you algorithms to computer give them the sound and they generate description if you require description or give them the description and they generate symbols and sounds ok fairly simple you know lot in nature.

Let us take a pause and take an overview a lot of what we see in nature it is systematic its scientific has a method behind the madness it is only because of our limited understanding we think they are an ordered or disordered or chaotic all the sages you know one word for sages in Sanskrit is Rishi and the word meaning of the word she is one who can see one who can see beyond eyes one who can see underlying patterns.

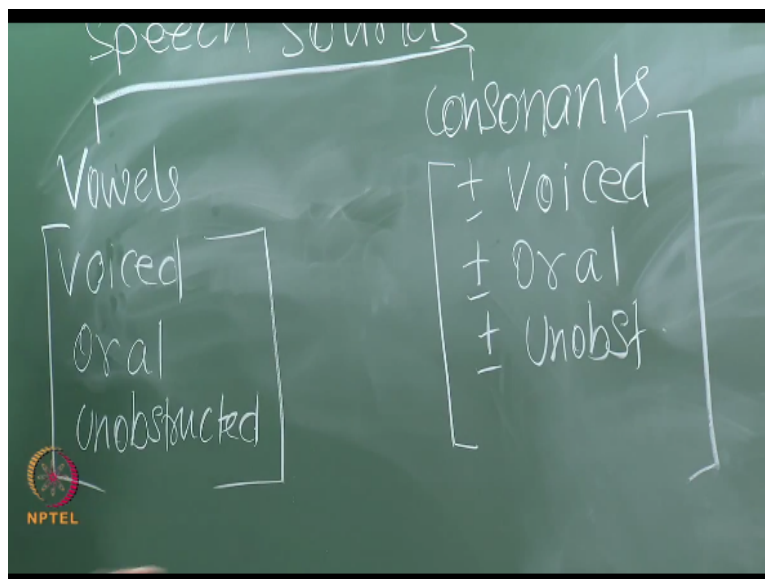
In visible patterns and when those seers started looking at the language and saw the parent they found lots of system very systematic structure in it you can I am sure at least some of you in this class will take this knowledge and the advantages of knowledge to many more and to further Heights okay, any problem understanding how vowel sounds are produced what is the definition of vowels how many kinds of vowels how do we describe them four things I have told you in the last three days number one.

What are vowels any problem say yes or no okay how do we describe them we describe vowels with respect to three parameters what are those three parameters know that the definition of the vowel the vowels are voiced or a lot of structure yes how do we describe them whether they are front or back closed or open round it off and unrounded then third thing we said how many kinds of vowels are there and we looked at two broad currents what are those times yeah monophthongs and diphthongs or pure vowels and glides.

How do we describe them we describe them with reference to three term levels any problem say yes or no please say no okay great you are you are very generous right let us move to the other kind what happens to those sounds which are either please give me your attention for a few minutes okay total attention and then you know these things are very easy to understand if you cannot concentrate what happens to those sounds.

Which are not voiced they are voiceless where vocal cords do not vibrate or they are not oral or they are obstructed these sounds are consonant sounds we are the all a very major classification of all his beats ounces that all his speech sounds are either vowels or consonants please write okay let me take this off.

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Now all speech sounds of all natural languages can be described in two major categories one is vowels and we saw that vowels are voiced oral unobstructed therefore can you give the definition of consonants may or may not be voiced okay they are necessarily voiced they are necessarily oral and they are necessarily unobstructed these three things make vowel you break any of these things you need not break all the three do you see the point say yes or no please yeah.

It is not that you must have it is not that only voiceless only nasal only obstructed no if you break even one of these it may be plus or minus voice okay, it may be plus or minus oral and it may be plus or minus unobstructed even if you break one of these parameters the speech sound becomes hear consonant sound try and understand it very it is extremely simple you know we know what a vowel sound is you can close your eyes and you can tell me vocal sounds are voiced oral unobstructed correct.

But if you break any of these things if you violate any of these three parameters if everything is there you know the speech some of these oral and unobstructed but it is voiceless then it becomes consonant it speech sound is voiced unobstructed but it is lazily then it becomes please tell me consonant the speech sound is voiced and oral but obstructed then it becomes consonant you break any of these parameters it becomes a consonant right.

I will give you a quiz oral quiz please tell me the speech sound is produced through nasal passage it is voiced it is continuous is it vowel or con or consonant why because it is not because you know it is nation it is not only and one condition for vowels is it must be oral okay let us take another situation speech sound is produced through oral passage it is unobstructed but in the production of this speech sound vocal cords do not vibrate is it vowel or consonant its consonant of course.

You know so this is how we define a consonant a consonant may or may not be voiced a consonant may or may not be oral a consonant.

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Definition of Consonants

- Not necessarily voiced
- Not necessarily oral
- Not totally unobstructed

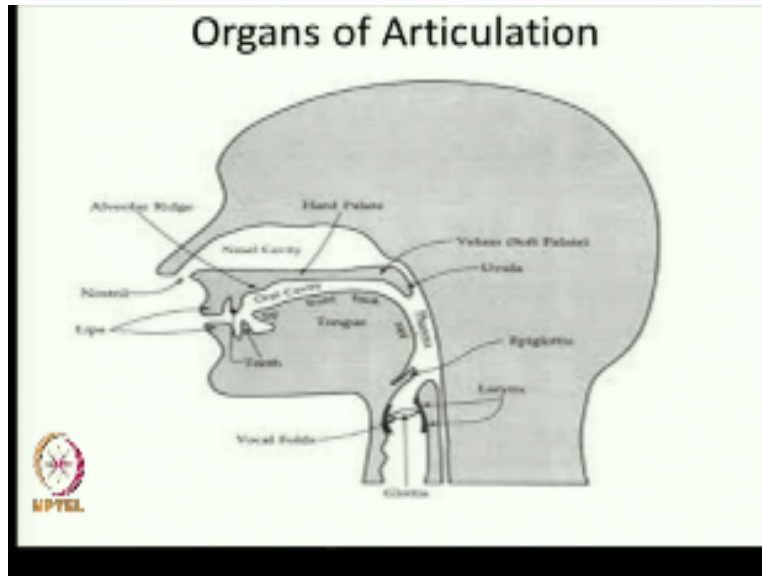


May or may not be unobstructed if even one of these parameters apply if one of the parameters of vowels de speech sound is a consonant sound you can write it on your notebook in any way you like okay a consonant sound is that which has which may or may not be which may or may not be okay right anyway you like I am going to give you a quiz for the second quiz.

You will have some questions pertaining to definition and identification of consonants okay how do we describe the consonants for description of vowels we have three term levels okay what was the three term level for the description of vowels for the description of vowels you know this is this is the definition of oval for description of vowels for description of vowel we said either they are front or back or they are closed or open or they are rounded or unrounded we said they are front or back they are closed or open or we said rounded are unrounded.

Okay what kind of parameter do we use to describe consonant.

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Let us see consonants unlike vowels are not produced from a limited area you know all vowels are produced from within this area this provision you know between alveolar Ridge and the blade of the tongue back of the tongue and soft palate it is if in this area without contact between active and passive articulate parts that all vowel sounds are produced all horrible sounds of all languages of the world are produced from within that narrow area but consonants have a larger God.

The production of consonants can happen from production of consonants can happen from here pharynx we have a sound like in many languages of the world have that sound.

We have a sound like say it as in him/her house here okay, right that is where is where does this sound come from this sound comes from pharynx here right from the back of the throat or it can go to the other extreme we have speech sounds produced from the lips like pop, pop but orbit or through interaction between lower lip and upper teeth such as when we say as in fan as in Van a very a fairy okay is the lower lip which touches the upper teeth so you know speech sounds can consonant sounds can come from extremes of the vocal apparatus.

They can also you know open or close much more there can be obstruction there can be different kinds of obstruction there can be full closure say for example when you produce puff you close your mouth both lips coming together okay, only then can you produce both lips are closed cheeks are puffed and you suddenly explode the air that has the air pressure that has built up behind your lips is suddenly released and you get a sound call pop but do it feel your cheek keep your fingers here and say but do not you see do not you feel that your cheek swells and shrinks puffs in you know without that pressure the sound will not come and the pressure is built by obstructing but completely obstructing the passage of air.

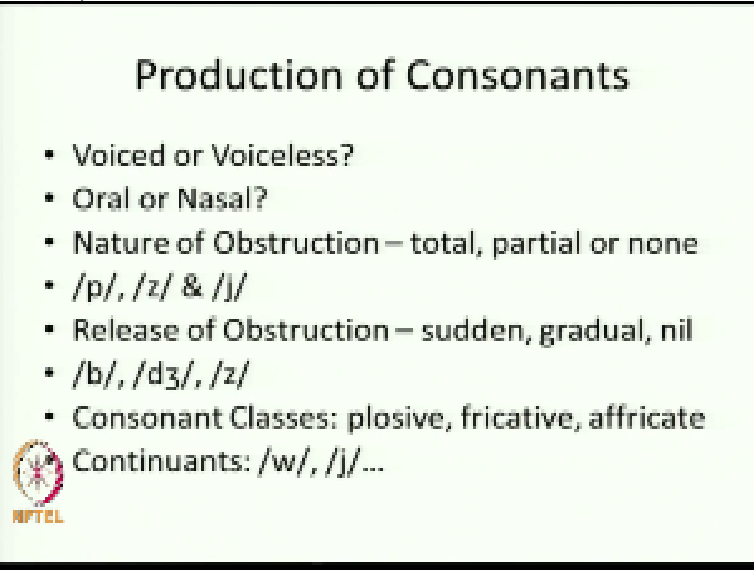
There can be partial obstruction say for example when you produce a sound like produce it the passage is made so narrow the tongue and the closure of the mouth you know the teeth almost touching but not touching you know this almost is important teeth almost touching one another lower teeth and upper teeth but not touching slight narrow passage for the passage of air is there air does pass through that passage.

But the passage is so narrow that there is friction and you hear that friction and then you get do it or there may be complete closure but gradual release not sudden like not like but not like Bach but it can be sudden it can be gradual release complete closure blade of the tongue goes and touches the hard palate do it let the blade of your tongue touch hard palate up above in the roof of your mouth you see this is the blade of the tongue this is the blade of the tongue it touches the hard palate okay complete contact keep it.

There keep it there do not release it and then suck then slowly release it say as in church adding bench as in rich as in cheer okay so come back to it the point is that nature always makes optimum use of this is a very important scientific truth in their study of if you have a studied physics and you know and if you go into the higher deeper as laws of the fig you will find that all of the big mountains and deep oceans are nothing but combination of some limited chemical and physical elements okay.


Some limited elements the same thing happens here nature makes optimum use of limited parameters through combinations okay this is how we can get a consonant a consonant may or may not be voiceless.

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Production of Consonants

- Voiced or Voiceless?
- Oral or Nasal?
- Nature of Obstruction – total, partial or none
- /p/, /t/ & /k/
- Release of Obstruction – sudden, gradual, nil
- /b/, /d/, /g/
- Consonant Classes: plosive, fricative, affricate
- Continuants: /w/, /j/...



A consonant may be oral or nasal or the nature of obstruction may differ it can be either total or partial or none not at all no obstruction there are consonants like say for example when you say

E S Oh , what as in wet you know there is there is no it flows freely it goes freely or when you have sounds like as in roads a little as in load they are all you know freely produced there is no obstruction anywhere they are almost like vowels except.

That they do not work like vowels I can tell you later when you get into the phonology part I will tell you why they are called semi vowels you know yeah were okay why are why they are grouped together separately in another group even in our languages you know we have yeah in another group together okay ,and they are known as semi vowels but that is because you know we can have three kinds of obstruction and within those three kinds again there can be lots of sub varieties they can be total as in Papa.

They can be partial as in sirs or there can be none such as when you produce no obstruction at all just the pharynx constricts becomes a bit narrow you know when you laugh and when you give hearty laughter then it expands and contracts a lot but ordinarily speaking when you produce his pitch sound like as in house as in him okay , then slightly constricts but after that in the oral passage there is no obstruction so consonant sounds can be described depending on whether they are voiced or voiceless whether they are oral or nasal whether what is the nature of obstruction close your eyes and tell me.

How many different kinds of obstruction can there be either the obstruction is either total or none let us repeat the obstruction can be either so how many different kinds of obstruction can we have in the production of his pitch consonant sounds they can be yeah at least three major kinds what are these number one they are either total obstruction or partial obstruction or not at all can you give me an example for total obstruction ba, ba can you give me an example for partial obstruction and can you give me an example for no obstruction at all okay so you know then again you know then again if it is total obstruction how is the obstruction released is it sudden as in the production of ba bar the entire we call them oas in our languages in telugu alphabet in Hindi alphabet in Tamil alphabet.

We call them Oh a beer label produced from lips so they are Papa bah-bah what is v sound MA hedonism but you know labial closure is important to the production of ma okay so you know again if it is complete closure we cannot we again have a choice either it is a certain release okay or it is a gradual release or the question of release does not arise okay, you can have total silence there are sometimes speech sounds where you do not release and you imagine that you have got power look at this sound at the end of the word.

How do you pronounce it cop do you let your do you say cup pop do you open your mouth come again do you understand the question I am asking a very subtle question your computer will have to recognize the difference we have said that this sound is produced this sound is produced when there is complete closure and sudden release are you with me are you with me okay I have told you and you have agreed that this sound is produced when there is complete closure and sudden release right.

But there may be words there may be contexts for neurological contexts sounds coming after one another where complete closure happens but release does not happen produce this word pronounce this word did you release your mouth did you release the lips yes or no, no yet we recognize you see this is the power of the mind the day computer acquires this power computer will displace you okay computer will become an engineer and engineering scientist as well okay at the moment.

It is only an engineer not an engineering scientist computer cannot create algorithms by itself the day it acquires that intelligence okay it will the contextual intelligence is not there yet and that is the challenge for some of you guys okay, so you know there can be three different kinds of obstruction it can be either sorry release of obstruction it can be sudden release close your eyes and tell me sudden release next gradual release all in rare cases in extremely rare cases no release at all even.

Then we get a speech sounds okay, or in taking all of these things together taking all of these things into account people you know phoneticians classify consonant sounds into many categories there are there are closing sounds plosive sounds are produced with complete closure sudden release bursts your top the complete closure sudden release you have you know in our languages you have thought da, da you know complete closure you know tongue tip of the tongue touches that upper teeth the okay tip of the tongue touches.

The upper teeth blocks the oral passage okay just see how toy is produced here the tip of the tongue touches the upper teeth blocks the oral passage and you suddenly release the air pressure and you get da , da ,da no but when you come to let us go to tar you know tar comes from here blade of the tongue touching the alveolar Ridge okay, complete closure sudden release and you get produce da where is your tongue on the teeth or above the teeth but produce note is it on the teeth or above the teeth.

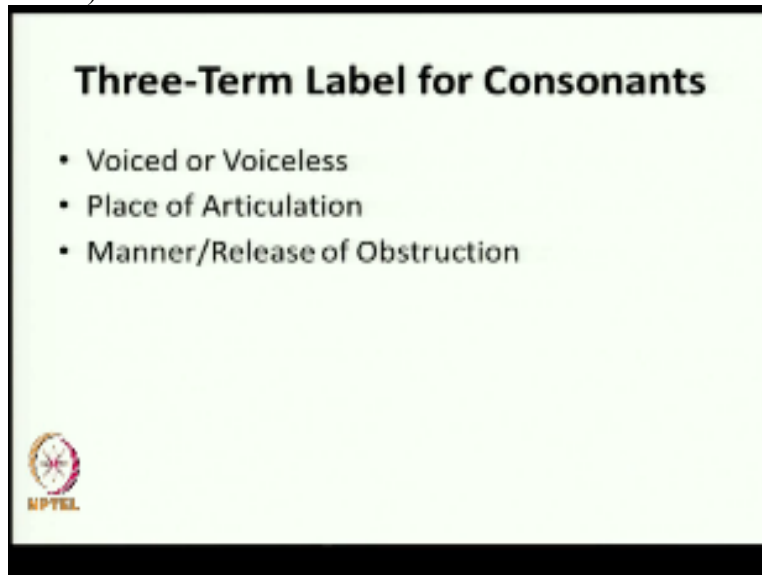
These minute differences produce different kinds of sounds that is why you no, no to speech sounds are exactly alike but then there are similarities consonants there are there may be plosives which are produced with total closure and sudden release there may be fricatives which are produced with friction think sound sounds like these are all produced with friction there is complete flow of the speech air but the flow is through the narrow passage and then there is friction and then these sounds are produced and because these sounds are produced through friction sounds like you know sounds like or all of these sounds have nearly you know a nearly a free flow not a free flow.

There is some obstruction the obstruction happens because the passage is very narrow air flows but it flows through friction there is constant obstruction imagine yourself going into your room through the door and imagine yourself going through the window you know between the rods you can possibly get inside but there will be a lot of friction you can have cuts bruises

difficulties so you know a speech sound speech it does come out but it comes out through friction so some speech sounds please look at the classification.

In the last line they are called fricative similarly there can be friction like when you gradually release okay, there is total closure but gradual release so in English they are called affricates which means friction like or there others are continuance where there is no obstruction okay so you have what yeah etcetera.

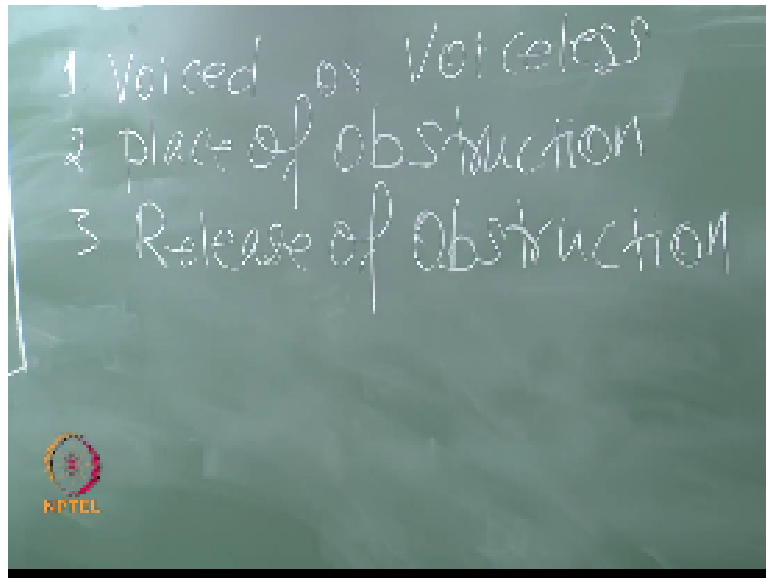
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How do we describe them we have three term level four consonants as well we have three term level four consonants as well what are those three term levels consonants are either voiced or voiceless. So first we say voiced or voiceless eked where point of articulation because consonants come from a large area relatively speaking you know relatively speaking consonants come from a large area they can also come this way they can come through the oral passage they can come from pharynx they can come from lips.

They can come from a large number of different points so what we do is in the description this is important is it voiced or voiceless where does it come from and where is sorry what kind of obstruction and release of obstruction is there in other words the three-term level for consonants three term level four consonants.

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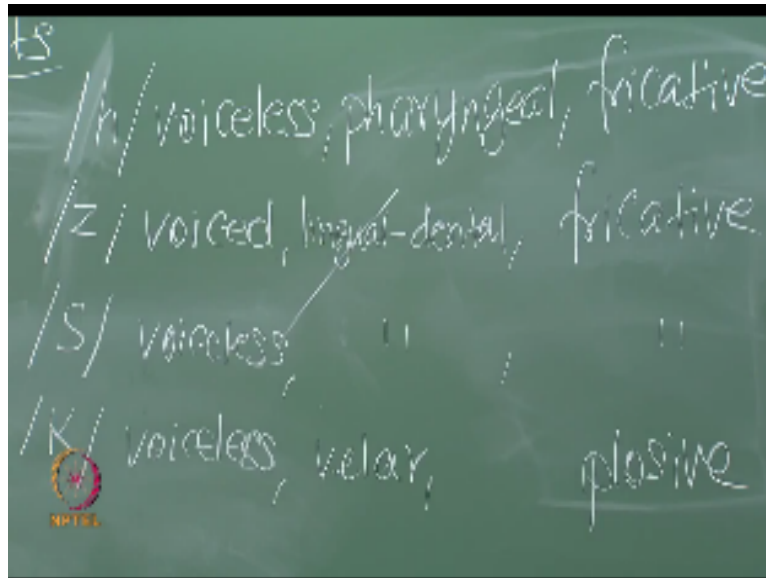


Asks these questions number one is it voiced or voiceless correct okay where the place of obstruction is if there is obstruction so we say place of obstruction and if there is obstruction the manner of release of obstruction.

What are the three term level four the description of consonants is it voiced or voiceless where is the place of articulation of a short sorry where is the place of obstruction and what is the manner of release of obstruction close your eyes and repeat after me how do we describe a consonant a consonant is either voiced or voiceless it calls you know where is the place of obstruction and how is the obstruction released.

So three things are voiced or voiceless manner place of obstruction manner of Liege of obstruction what are the three terms please give it to me boy stur violet voiceless place of or struction and manner of release of obstruction once again what are the three term parameters three term level voiced or voiceless place of obstruction may not of release of all structure let us apply it let us take this song okay let us take this H okay.

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You will have to say this is the symbol and can I by the way draw your attention to the handout I gave you with phonetic signals you are expected to learn how to use that symbol at the examination in the assignments you will have to use that okay so better start using them you know better start writing letters and SMS messages to friends let them worry you know they will ask you have you gone crazy or are you learning a class in Turkish okay but do acquire it will help you also look up dictionaries of pronunciation of strange words in a strange languages etcetera but do acquire that ability okay.

Come to it so this is what is this is it H or is it what is this it is not H the moment you enclose it between slanted brackets then according to the convention of International Phonetic Association this is no longer a letter in a particular alphabet its symbol for a universal sound what is that sound okay how do you describe it what are the parameter what is the first question voiced or voiceless what is it is it voiced or voiceless it is voiceless does not vibrate. When you say low vibration no vibration but you say ish so in this case is it voiced or voiceless it is voiceless.

Okay where is the place of obstruction if any when you say where the place of obstruction okay is the little constriction that is there is where is it is in the pharynx it is in the throat so you call it voiceless pharyngeal okay. What is the closure like is it total partial or none partial there is some narrowing otherwise you do not get the moment you say you know your throat your pharynx constricts say it can you swell your chicken Shere Khan can you cannot okay so this is friction voiceless pharyngeal fricative let us take another sound let us take this time produce it is it voiced or voiceless voiced lovely.

Where is the place of obstruction place of obstruction is near the tip of the tongue you see this is where it comes from the tip of the tongue moves towards the upper teeth but does not touch

it okay does not totally block it there is narrowing but no blocking so what are the two organs involved here lick sorry the tip of the tongue end teeth upper teeth so you know the Latin word for that will be okay lingua sorry or lingual is tongue and dental lingual and dental for the sake of convenience you can call it dental if you like but it is strictly speaking lingual and dental does it come with or without friction does it come with or without friction with friction.

So this is fricative okay let us take one more and then we will stop what is this song voiced or voiceless voice we see voiced or voiceless white voiceless where is the place of obstruction where is the place of obstruction come on dental same place the only difference is it is not okay fricative one more I want you to do it on your own and you know then we will stop for the day good as in King do not say or do not add other justice do not say car then you know eyes there it is voiced.

You will be misled just sick without the are okay now tell me is it voiced or voiceless lovely where is the place of obstruction where is the place of obstruction middle of the tongue or back of the tongue yeah for the sake of description we will say is back of the tongue but it could be middle of the tongue okay so we said voiceless back of the tongue back of the tongue is this place and it goes opposite the velum this is the back of the tongue.

It goes opposite to the soft palate so you know the feel the adjective we use in Latin is voiceless velar what is the nature of obstruction and release of obstruction feel it tell me what is the nature of obstruction and is a partial closure complete closure no closure complete closure is it gradual release or sudden release suddenly so it is closing voiceless velar losing what I will do is we do not have enough time in the class here .

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Description of English Consonants

• Plosive

/p/ as in	p in	voiceless bilabial plosive
/b/	b in	voiced bilabial plosive
/t/	t in	voiceless alveolar plosive
/d/	d in	voiced alveolar plosive
/k/	k in	voiceless velar plosive
/g/	g ive	voiced velar plosive



I have described for you English sounds I will mail it to you through my eyes and please look at them and do it for your mother tongue okay thank you have a good day.

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