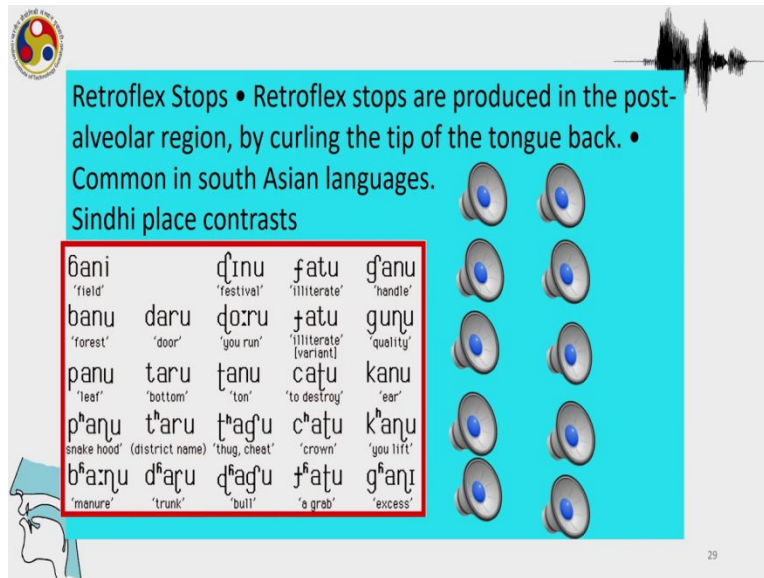


Phonetics and Phonology: A Broad Overview
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Lecture 05

Linguistic Diversity- Consonants in the Language of the World

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Retroflex Stops • Retroflex stops are produced in the post-alveolar region, by curling the tip of the tongue back. • Common in south Asian languages.

Sindhi place contrasts

ḍani 'field'		ḍīnu 'festival'	fatu 'illiterate'	ḡanu 'handle'	
banu 'forest'	daru 'door'	ḍoru 'you run'	ḡatu 'illiterate' [variant]	ḡuṇu 'quality'	
panu 'leaf'	taru 'bottom'	ṭanu 'ton'	caṭu 'to destroy'	kanu 'ear'	
pʰaṇu 'snake hood'	tʰaru (district name)	ṭʰaḡu 'thug, cheat'	cʰaṭu 'crown'	kʰaṇu 'you lift'	
bʱa:ṇu 'manure'	dʱaru 'trunk'	ḍʱaḡu 'bull'	ḡʱaṭu 'to grab'	ḡʱaṇu 'excess'	

So, these are the retroflex stops produced by a Sindhi speaker and first I will produce the set of sounds. First is a retroflex and then other non retroflex sounds and then the other five sounds are the retroflex sounds. So, please listen carefully (pronouncing Sindhi). The second set of sounds were the retroflex sounds and the initial word da, the initial sound (pronouncing Sindhi) yes and same here (pronouncing Sindhi), ta; (pronouncing Sindhi), tha; (pronouncing Sindhi), dha. So, those are retroflex sounds produced by curling the tip of the tongue and such a way that the back of the tip touches the alveolar region, the post alveolar region.

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Bilabials

	Bilabial	Labiodental
Plosive	p b	
Nasal	m	ɱ
Fricative	ɸ β	f v

Linguo-labials - tongue + lip

Linguolabial	t̟	d̟
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So, let us now review the places of articulation that we have looked at till now. So, and look at the corresponding symbols again, so now we can see that the bilabial plosives that we have talked about for English and which are very common in languages. So, these are the bilabial plosives. Then there is a bilabial nasal and then the labiodental nasal followed by the fricatives and then bilabial fricatives and labiodental fricative. The uncommon sound here is the linguo-labials that we saw before and there are two diacritics, this diacritic is used as a symbol for linguo-labials.

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Labials

Bilabial	Labiodental
p b	
m	ɱ
ɸ	
β	v
	v̟
	ɸ
	β
	ɱ
	ɸ
	β
	ɱ
	ɸ
	β
	ɱ
	ɸ
	β
	ɱ

So, these are the labials. There are some trills, bilabial trills are there, there are approximants and in total we have stops, we have nasals, we have trills, we have fricatives and we also have approximants which could be produced in the labial region.

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The slide is titled "CORONAL Interdental/Dental". It features a diagram with three levels of articulation points. The top level is labeled "Dental" and contains the symbols θ and ð. The middle level is labeled "Fricative" and contains the symbols t and d. The bottom level is labeled "Dental" and contains the symbols t and d. A waveform is shown in the top right corner, and a profile of a human head is shown in the bottom left corner.

Now after labial, the place of articulation that we talked about is that of coronals. So, first in the coronal series we talked about interdental and dental sounds and these are the symbols the fricatives that are used for sa and za and this, the system, the stops use a symbol beneath the ta and beneath da, these are called diacritics which is used to show the dental place of articulation.

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CORONAL

Alveolar

Alveolar	
Plosive	t d
Nasal	ɳ
Fricative	s z

The slide features a logo in the top left, a waveform in the top right, and a profile of a human head with a blue tongue in the bottom left. A large cyan rectangle is positioned behind the classification table.

And for alveolar we have the very commonly used Roman tha, da symbols and so also the alveolar nasal and the fricatives sa, za.

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CORONAL

Retroflex

Retroflex - tongue tip curled, articulation with the surface beneath the tongue

Retroflex	
Plosive	ʈ ɖ
Nasal	ɳ̠
Fricative	ʂ ʐ

The slide features a logo in the top left, a waveform in the top right, and a profile of a human head with a blue tongue in the bottom left. A cyan box contains the definition of retroflex.

And we also just talked about retroflex and a retroflex is produced with the tongue tip curled and articulation with the surface where the surface beneath the tongue is curled up and the target area is that of the postalveolar region. These are symbols used to show retroflexes, ta, da, na, sha, zha.

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Part of Tongue Used

- Apical - Tongue Tip
- Laminal - Tongue Blade
- Dorsal - Back of Tongue

Apical	t	d
Laminal	t̪	d̪

So, part of the tongue used depending on whether it is the apical or laminal these two diacritics are used to show apical versus laminal. So, this is the symbol for apical, this is a symbol for laminal.

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**Sounds of the world's languages:
Consonants around the world**

Table 1. the relationship between the major place features and individual places of articulation

Labial	1. Bilabial 2. Labiodental
Coronal	1. Laminal 3. lingo-labial 4. Interdental 5. Laminal dental 6. Laminal alveolar 7. Laminal post-alveolar (palato-alveolar) 2. Apical 8. Apical dental 9. Apical alveolar 10. Apical post-alveolar 3. Sub-apical 11. sub-apical palatal (retroflex)
Dorsal	12. Palatal 13. Velar 14. Uvular
Radical	15. Pharyngeal 16. Epiglottal
Laryngeal	17. Glottal

For labials, we have looked at bilabial, labiodental, lingo-labials, interdental, laminal dental, laminal alveolar and laminal postalveolar. In the coronal region we have seen apical dentals, apical alveolars, apical postalveolar and in the subapical region, we have seen subapical palatals which are retroflexes. So, these are the two places of articulation and we have seen now that

there are more variations possible inside the big categories of labial and coronal, we can see that the many more places of articulations which are possible and which may not be shown in the IPA chart, but which may be shown with the use of diacritics.

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Diacritics

DIACRITICS Diacritics may be placed above a symbol with a descender, e.g. ɪ̃

Voicless	ɱ ɳ	Breathily voiced	ɸ ɶ	Dental	̪ ̫
Voiced	ʒ ʒ̥	Creaky voiced	̰ ̱	Apical	̠ ̡
Aspirated	tʰ dʰ	Linguolabial	̍ ̎	Laminal	̪ ̫
More rounded	ɔ̞	Labialized	tʷ dʷ	Nasalized	̃
Less rounded	ɔ̟	Palatalized	tʲ dʲ	Nasal release	̚
Advanced	ɹ	Velarized	tˠ dˠ	Lateral release	̜
Retracted	ɘ	Pharyngealized	tˤ dˤ	No audible release	̚
Centralized	ɘ̞	Velarized or pharyngealized	̠		
Mid-centralized	ɘ̝	Raised	ɛ̝ (ɟ̝ = voiced alveolar fricative)		
Syllabic	ɱ	Lowered	ɛ̞ (β̞ = voiced bilabial approximant)		
Non-syllabic	ɛ̥	Advanced Tongue Root	̠		
Retraction	ɘ̠ ɘ̡	Retracted Tongue Root	̡		

So, these are the diacritics that we just talked about that we have for voiceless sounds which can be produced as voiced we have diacritics for that. For voiced sound which can be devoiced also have a symbol for that, symbols for aspiration, symbol for more rounding, less rounding, symbol for advanced, retracted, centralized and these are all vowels diacritics for vowels and mid-centralized and also syllabic and non-syllabic etcetera.

So, for consonants here, we have breathily voiced, creaky voice and linguolabials, which we just showed and then labialized, palatalized, velarized, pharyngealized and these are the secondary articulations which we will see shortly and also these are the symbols for dental, apical, laminal, nasalized and nasal release, lateral release and no audible release. So, this is the symbol for no audible release and lateral with a la and nasal release with a na.

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Place of Articulation

Bilabial, Alveolar, Velar

UPSID Database (in Maddieson's Patterns of Sounds, 1984) surveys 317 languages

314 have bilabial stops

316 have alveolar/dental stops

315 have velar stops

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So, among all these categories distinctions that you saw among the sounds, the ones which are most common in languages are the bilabial, alveolar and velar place of articulation. In Maddieson's patterns of sounds we have of surveys 317 languages; there are 314 bilabial stops, 316 alveolar dental stops and 315 velar stops.

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Place of Articulation

Bilabial Labio-dental dental

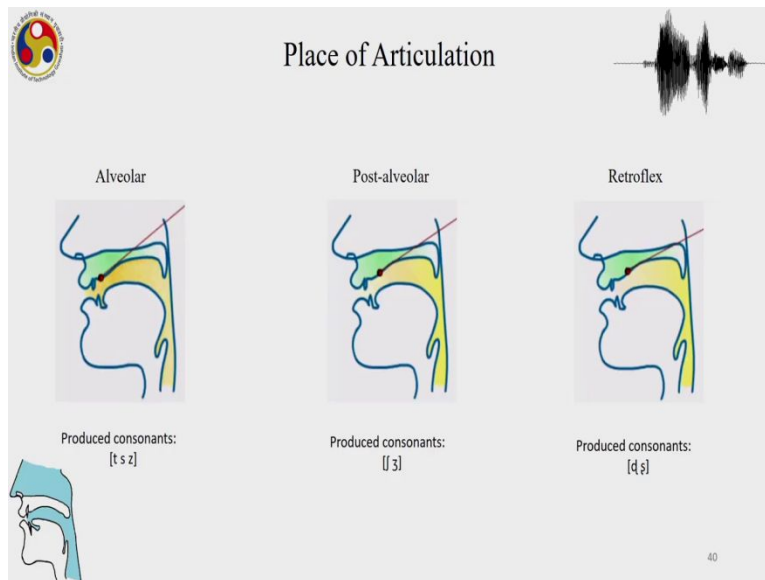
Produced consonants:
[p b] Produced consonants:
[f v] Produced consonants:
[θ ð]

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So, let us play these short videos of places of articulation so that we again see the basic differences between the place of articulation. So, this is a bilabial sound the lips coming together

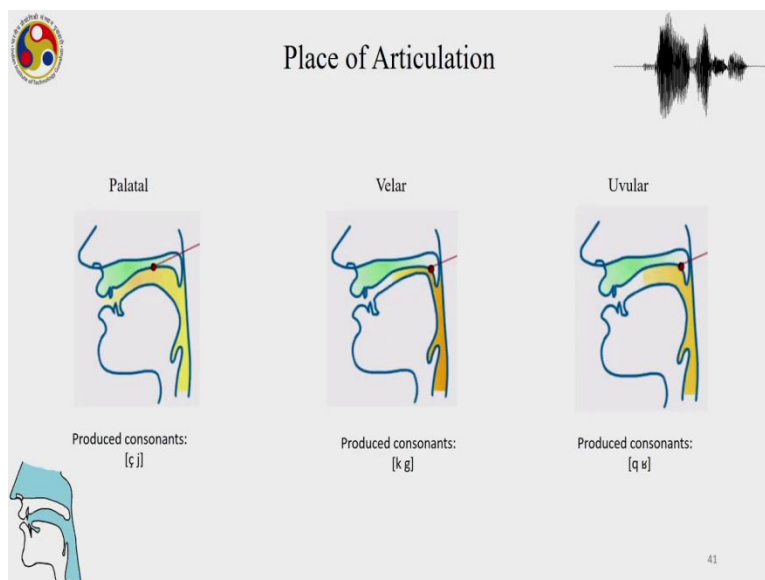
this is a labiodental with the lower lip touching the upper teeth dental sound where the tip of the tongue or the tongue blade touches the teeth the dental region.

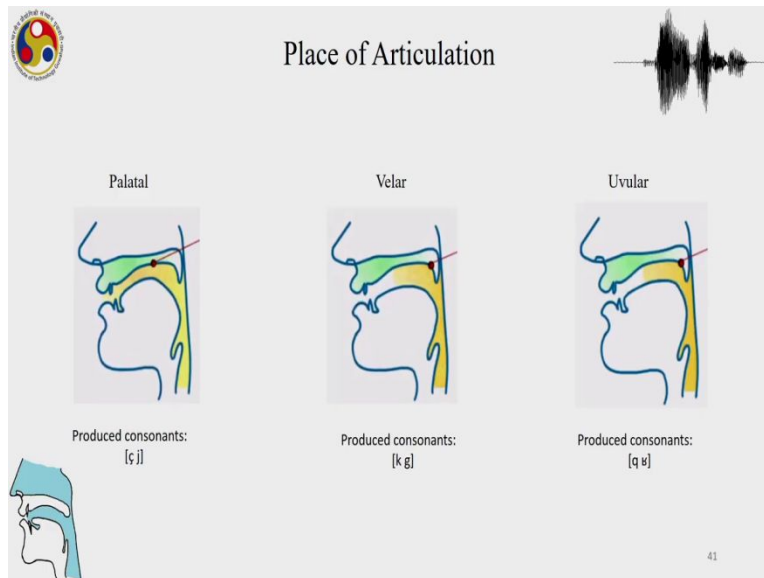
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The alveolar where we have the tongue tip or tongue blade touching the alveolar region. So, this is the target, the alveolar region and here the target is a postalveolar region and the retroflex where we see the curling very clearly here. So, these are your alveolar, post-alveolar, retroflex.

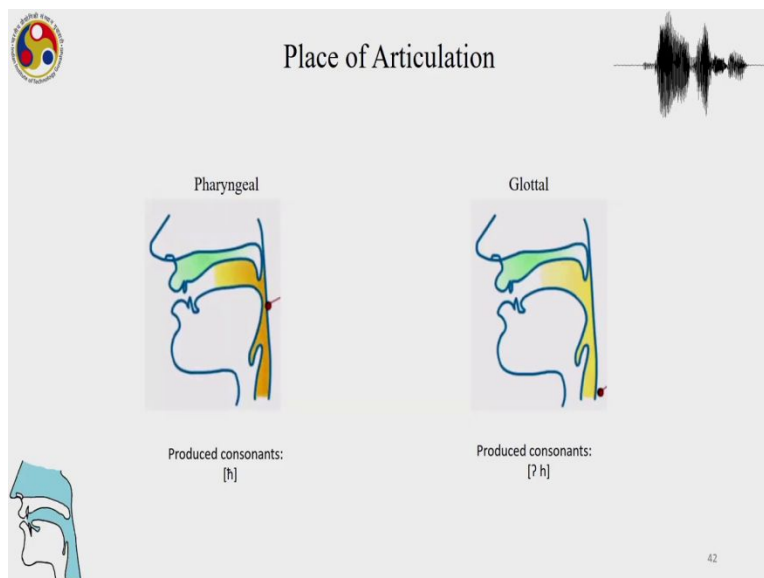
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And then we are talking about the dorsal region. We have the palatal sound where the back of the tongue goes towards the roof of the palatal region. So, we can see the back of the tongue going up towards the palatal region and then here the gesture is the back of the tongue targeting the velar region and here we have the uvular region targeted by the back wall after tongue.

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And then these are the radicals which we have not seen as yet or discussed as yet the pharyngeal and then we can have a glottal sound where the glottis is the place where we have a constriction.

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Voicing

Vocal folds (cords)

voiced voiceless

- We can also classify consonants in terms of the state of the larynx (phonation) during their pronunciation.

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And of course in all these things voicing is always there as we discussed previously sounds may be voiced or voiceless where the vocal cords are neutral state versus this the vocal cords are vibrating.

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Palatals

- Plosives, Nasals, Fricatives and approximants
- Root of tongue to wall of palatal region

Palatal	
c	ç
ɟ	
	ɲ
ç	ʝ
j	
ɰ	

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So, these are the dorsal sounds that we have not talked about the dorsal and the radicals which we will talk about now and so the palatal sounds which you just saw the root of the tongue makes targets the wall of the palatal region and these are the sounds that we can produce stops, nasals and fricatives and approximants can be produced in the palatal region.

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Palatals

- Palatal Stops
- 59 languages in UPSID database have palatal stops
- Palatals vs. Velars in Ngwo (spoken in Cameroon)

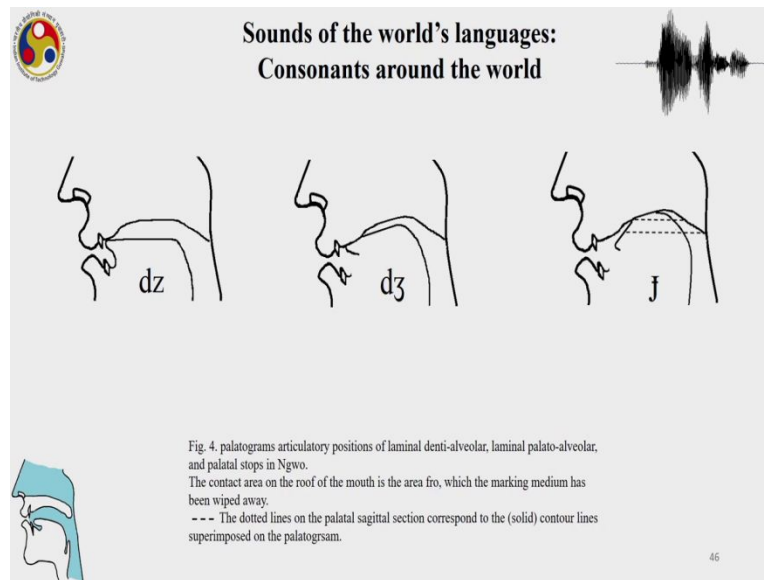
Ngwo			
Laminal dentalalveolar	Laminal palatoalveolar	Palatal	Velar
èdzè (dance)	dzè (fruit)	éjè 'postpone'	ēgè 'grass' [pl.]

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So, palatal stops are common and possible in languages of world, of the 317 languages 59 languages have palatal stops. So, we will play the sounds from Ngwo spoken in Cameroon and Ngwo we have distinction between laminal dental alveolar, laminal palato-alveolar, palatal and velar, so these are the four places of articulation which we will play now (pronouncing Ngwo).

So, distinctions between these four palatable, four regions, which are the laminal, dental alveolar the coronal sounds, the laminal palato-alveolar, palatal and velar. So, it is possible to make these distinctions to have all the places of articulation, the four places alveolar, palatal alveolar, palatal and velar in a language.

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So, Ngwo which we just heard these are the articulatory positions of laminal denti-alveolar. So for the denti-alveolar sound, laminal the blade of the tongue makes an occlusion there in the alveolar region between the dental and the alveolar region and then we have the palato-alveolar and then we have the palatal sound and these are the three palatal stops in Ngwo. So, here the dotted lines on the palatal sagittal section correspond to the contour lines that were superimposed in the palatogram.

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	VOICELESS STOP	VOICED STOP	NASAL
INITIAL	tyúk 'hen'	gyújt 'he ignites'	nyújt 'he reaches'
BETWEEN VOWELS	atya 'gather'	agya 'his brain'	anya 'mother'

So, languages can also have palatal nasals (pronouncing Hungarian). So, these are the palatal nasals that occur in Hungarian so the stop, the voiceless stop the voiced stop and nasal (pronouncing Hungarian), these three occur between vowels and the nasal has a glide before the production of the vowel.

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Uvulars

47 languages in UPSID database have uvular stops

Uvular nasal: Japanese

mi 'fruit, nut'	mu 'nothing'
me 'eye'	mo 'algae'
ma 'interval'	

So, a lot of languages have uvulars and we will play the uvular nasals in Japanese before we wrap up today's session, (pronouncing Japanese). So, these are uvular nasals from Japanese. So, in this session, we have seen that languages can have very many places of articulation which we

do not see when we looked only at English. So, we do not understand, we did not look at the distinction between apical and laminal in the discussion of coronals.

In dentals we saw here in this lecture that there are many places of articulation which could be employed when we look at dentals, when we look at labials or when we look at coronals and there are other places of articulation like palatal, like uvular and velar where the back of the tongue is used and as against the sounds the coronal sounds where the tip or the blade of the tongue is used for making any occlusion and the production of stops and fricatives or in the production of approximate and nasals etcetera. So in the next class again, we will see more of place of articulation and manner of articulation and also see how phonation etcetera lend more characteristics to sounds in different languages of the world. Thank you for watching.