

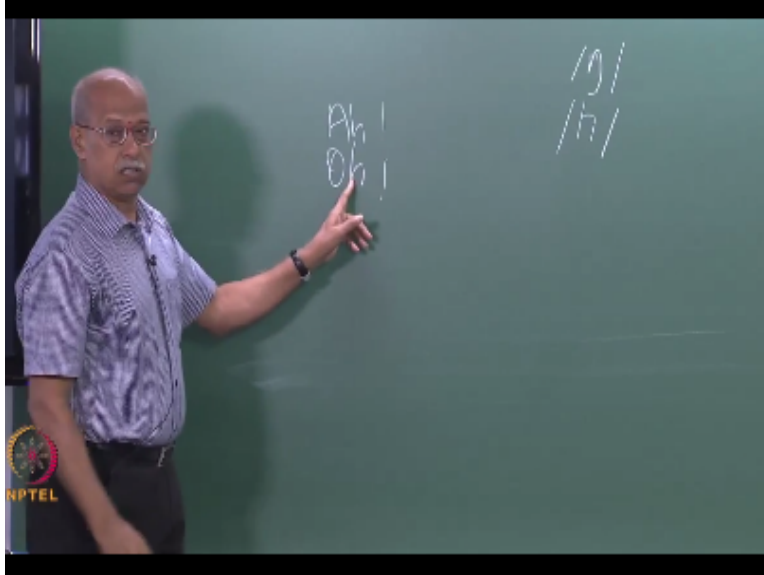
Indian Institute of Technology Madras
Presents
NPTEL
National Programme on Enhanced Learning
Introduction to Modern Linguistics
Lecture – 22
Syllable – based Generalization
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Good morning, I hope you are alright comfortable and for some time we have been talking about organization of speech sounds in natural languages. And we saw that syllable is the highest unit of organization of speech sounds whether a speech sound occurs at the beginning of the word or in the middle of the word or syllable or in the at the end of the syllable and at the end of the word are all decided by principles are all decided by constraints that go to make a syllable.

A syllable is the highest unit of organization of his speech sounds of course after that you know you have words phrases next week we will be or even early this even later this week we will begin talking about how speech sounds make syllables and sorry we have been talking about how speech sound sounds make syllables we will be talking about how syllables make words and phrases and sentences okay today we will continue with how syllable helps us understand what is the use of the concept of syllable.

How does it help us understand organization of his speech sounds better okay number one do you think any sound can occur anywhere and if you look at the data in natural languages any language look at tell who look at English look at him the look at French look at any language you like you will find that this is not the case that any speech sound can occur anywhere there are constraints even single consonants even single vowels it is not that all speech sounds can occur anywhere in English no word begins with this speech sound.

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What is this? What is this phonetic representation put sound that it represent Oh as in lung as in lung as in King as in wrong okay you will find that no word begins with this sound no syllable begins with this sound okay it always comes at the end okay similarly there is no English word that ends in this sound what is this nut tones aha see aah know oh then it vibrates let us see okay no word ends in this sound in English they write it in a spelling.

Of course you see ah you see oh but they are not pronounced it is just aa not ah not oh it is oh ah okay they are not pronounced no this does not occur at the end of the word okay there are other kinds of and in this is true of all languages not just English not just Sanskrit look at look at the screen and look at what kind of consonants can come together in English if it is two consonants you can have four you can have can you have words with proof such as prayer.

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Constraints on Syllable Structure

- Some **Onset clusters** in English : /pr-/ , /pl-/ , /pj-/ , /bl-/ , /br-/ , /bj-/ , /kr-/ , /kl-/ , /kj-/ , /kw-/ , /gl-/ , /gr-/ ...
- Some **Coda clusters** in English : /-rp/ , /-rb/ , /-rt/ , /-rd/ , /-rk/ , /-lt/ , /-ld/ , /-st/ , /-sp/ , /-sk/ ...
- What clusters are possible in your mother tongue?



Professor okay prize priest prove pray you have words with love can you give me words right can you give me words with parlor player please okay flight plumber okay can you give me can you give me words with pearl and here flavor okay can you give me words with Barilla look your blog lost bleed blood Brenna brick bogna by that is ball beauty you can give me words with Colonel crash creak crepe can you give me words with and love yeah close click okay climb Corrine here cure God and walk quite quiet Queen Quest question.

Can you give me words with Gorilla Glue glad yeah go Andrew but do you imagine we can have an English word we have an English word which has / enter at the beginning can you can take a minute to take out your notebook and look at words that are possible in Telugu what kind of words what kind of consonant sounds can begin a word you have words beginning with E do you have a word beginning with um in Telugu that is angam but who do you have a word beginning with this sound in Telugu.

Think hard close your eyes it has look this is an exercise in thinking this is an exercise in brainstorming can you think of a word in Telugu in Tamil in Malayalam in any Indian language in Sanskrit in portion in any other language can you think of can you find a word okay similarly do you find the Telugu word that begins with bow and are you there are think of onset clusters in Telugu what consonants can begin a word one or two or three give me some examples please not just tell you know Hindi Telugu Sanskrit Malayalam Tamil Kannada Marathi whatever you like no lots of worship okay.

Bridged they are talking up we had Andhra when Andhra is shrinking okay can you give me examples of words in Telugu beginning with Pro prakriiti pran Prasad impressed hannam-dong ammo okay can you think of like this year's prom but can you think of a word beginning with polenta tart ha Dada okay but can you think of a word ending in Patna good lift top hot huh okay can you think of a word in Telugu beginning with girl Anna come on Cooper chrishi Krishnam okay.

In Hindi you know I am not necessarily tell you if you know some other language this is your chance to test your knowledge of that language I am encouraging you to do that for the language other than English you know unfortunately or fortunately a good part of your life has been involved in learning English though you know a lot of other languages but we have never thought of them can you can you think of similar clusters in other language do you have a Telugu word beginning with walk Korea in Hindi.

Yeah q how that acquire charkie but Korea okay do you have a Hindi word beginning with ba la how many people know Hindi here okay goanna give me a word thinking with you but Allah okay can you give me a word ending in BA and LA ending in Lorin ball daddy well but yes you know how do you wait a minute how do you know bulb is not a Hindi word it has come from English but Hindi speakers.

Use it if you should leave words out like that then which words would you leave out of Hindi you know there will be lot of lots of words so I will ask except bulb okay that is you know that indicates it is possible in India it may not be there but it is possible okay similarly look at word endings in English can you think of a word ending in ranpur sharp harp okay carp warp ending in remember Ryan Bach barb okay curb blob okay right god rounder card curd no incur part learnt okay.

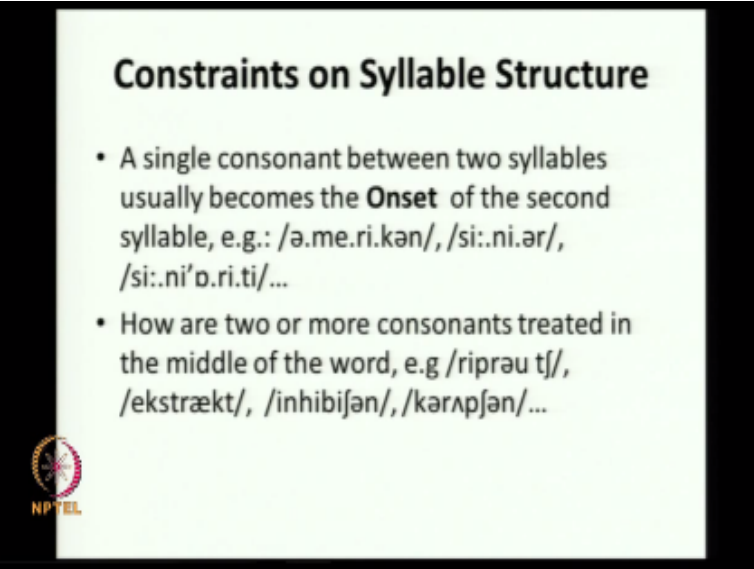
Similarly think of Hindi can you think of a word ending in Rouen / in Sanskrit in Hindi it's all possible or sharp okay Ryan ball yeah Ryan why you say God work but many people in my part of the country we do not pronounce what Bengal Bihar Orissa Assam Nepal Bangladesh Pinero's area we pronounce it as garbled so we do not have a Ravindran we have rebend okay so the point is you know you can if you like I will ask you to write a note at the end semester examination I am giving you the question four five marks.

Please write what I it will be either of the two I do not know which write a short note on what consonant clusters are possible at the beginning of the word in your mother tongue or what consonant clusters are possible at the end of a word in your mother tongue I mean any language other than English so you know these are syllable based constraints you explain and understand them better if you think in terms of onset coda because you suddenly find some words.

You know you say Roy and Pau is not possible at the beginning of the word but you sometimes see them in the middle of the word coming before the vowel you know heart you have Harper sharper now is this row in purl it comes before a vowel look at this look at this cluster how would you explain it without the concept of syllable but with the concept of syllable you can say that it cuts this way they do not go together they are separated rah is the coda of the previous syllable and poised the onset of the following syllable and this explanation is possible only if you assume that in natural languages.

There is a structure called syllable am i clear to you yes or no please I am also talking to people on the second wind last means am i clear to you sure okay please interrupt me if you think I am rushing through. I know it's a lot of new terms new concepts to you.

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Constraints on Syllable Structure

- A single consonant between two syllables usually becomes the **Onset** of the second syllable, e.g.: /ə.me.ri.kən/, /si:.ni.ər/, /si:.ni'ɒ.ri.ti/...
- How are two or more consonants treated in the middle of the word, e.g /riprəu tʃ/, /ekstrækt/, /inhibifən/, /kəɾɪfən/...

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In such a short time okay what do you do when you have a single consonant between vowels is it could have the following syllable onset of the preceding syllable what do you do look at a

word like for instance American write on your notebook now what is the status of mom do you say M A or do you see M L II can or do you see L may read come you know I mean these things are you know these things are empirical.

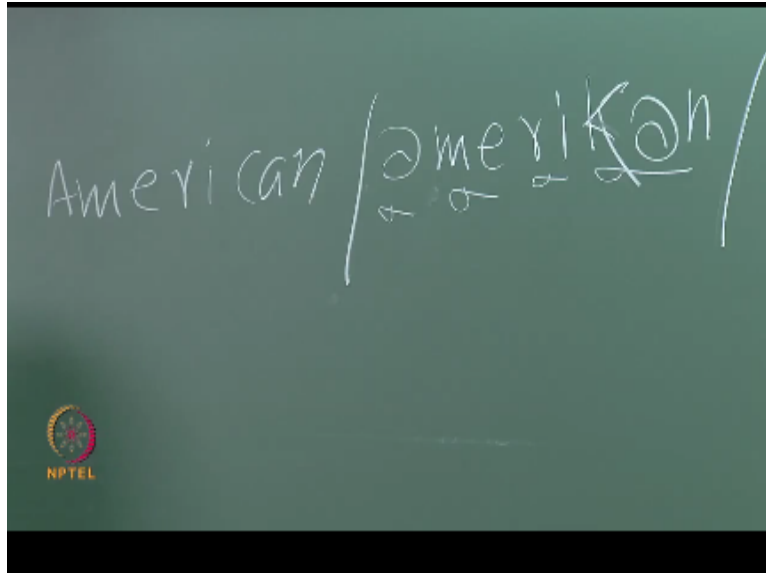
These decisions are you look at the data and you see what will give you better explanation so there are often questions asked say for example in a word like this transcribe it and by the way you have a question on transcription okay so please practice it transcribe it without looking at my transcription and then compare okay American okay now what is the status of this is it the onset of the following or are we together please are you with me yes right understand the question is more here the onset of the following syllable or is here the code of the previous syllable.

What is your answer I you know at this stage there is no please note this word in sciences you will find this Latin phrase used often what is it a priori a priori beforehand you know beforehand there is no principle based on which you can say this is X or Y is it on zero Koda but looking at the data that is why you know it is an empirical decision please note this world by which I mean what will give you best value what will give you best value look at the data and you feel lot of red shirts come on Tuesday.

Lot of white shirts come on Wednesday black shirts on Saturday so then you will say in India people prefer black shirt on Saturdays okay it is it but you know these are these are data based generalizations they may not be universally applied there may you may suddenly come across somebody on Saturday who is wearing white who is wearing red okay but a large number of people you go to a particular place and you find that they are wearing black okay as it happens so these are empirical decisions so empirically looking you find that though it can go either way but you get better results.

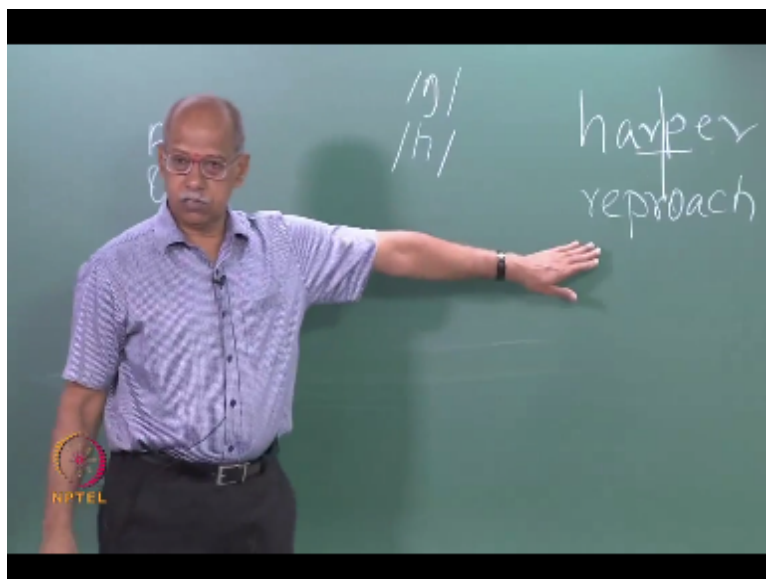
If you if you if you conclude that more is the onset of the following syllable rather than the coda of the previous syllable and if you apply that principle then you get you know this is one syllable this is another is another and this is another correct.

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So you make a principle saying that a single consonant between two syllables usually becomes the onset of the second syllable rather than the code of the first but if you have to how are two or more consonants treated in the middle of the word say for example you have as I have given you at this screen look at these words you have words like do you know the meaning of this word reproach.

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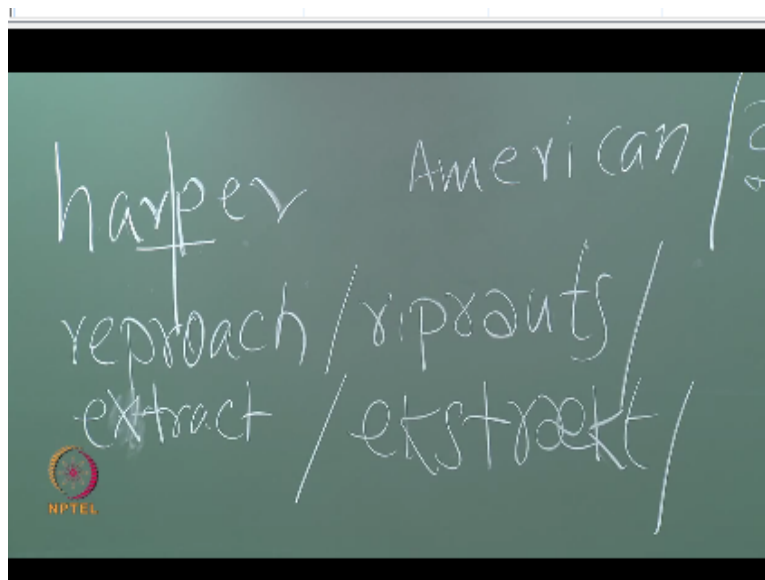


This is the you know what is the meaning of the word reproach look up your dictionary today when you go back to the you see looking a prediction original opportunity for learning if somebody dropped a five rupee coin in the hostile corridor as you pass would you pick it up or

would you leave it do not answer that question please I know how many people will leave it is almost a gentle yeah gentle look up the dictionary I did not want them to I did not want to give them meaning publicly.

because I want people to look up their dictionary you know these are learning opportunities do not miss them it does not matter if you do not pick up a five rupee coin anyway you do not buy anything these days in with a five rupee coin but you can buy a lot of things with the word okay so look at them look up the meaning and the pronunciation of okay let's take let's compare reproach with extract.

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X sorry X tract please transcribe it and then compare your transcription with mine but don't copy mine first do it on your notebook then compare with mine so this is reproach and this is extract okay now that the question arises when you have two consonants in the middle of the word and you have two consonants together here in the middle of the word you have two consonants or three consonants actually you have four here can you see are we together please.

Yes or no entire class please are you with me okay here we have two consonants in the middle of the word here we have one two three four do they make onset of the following syllable do they make the coda of the previous syllable or do they make both what is your answer okay once again you know there cannot be any a priori answer there cannot be any a priori answer right there is nothing in linguistic theory that stops them from becoming the coda of the

previous onset of the following but you look at the data and that is where you know your databases.

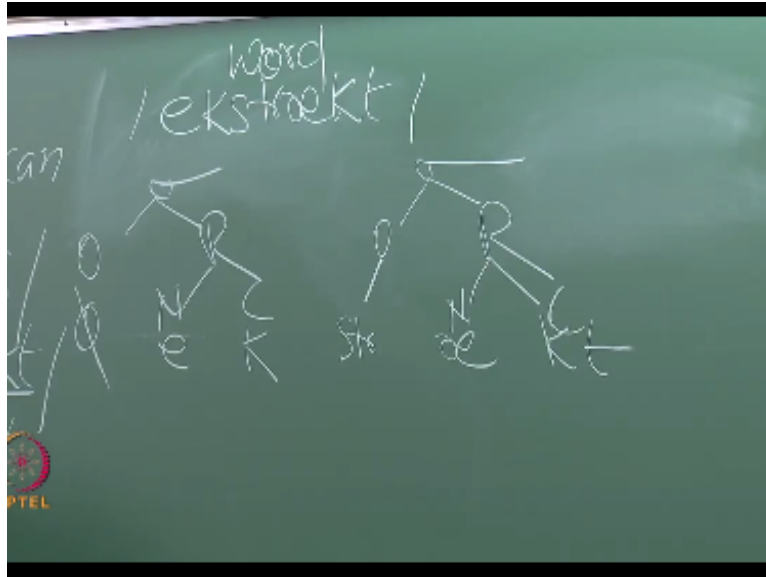
Come in an entire language engineering you need to have rules you need to have a look at the units the data okay so if you look at the data you find that there are words that begin with this cluster okay in English which is where this word comes from you have words beginning with this cluster can you give me a word straight strike streak strip strong strength okay lots of words lots of words with this cluster but is there a word that begins with this can you think of a word that begins with casa que yes no not in indo-Aryan languages not in okay Sanskrit has a cluster of consonants when you said Chitra but then it changes it no longer remains implosive okay so you then conclude that those consonants please give me your total attention those consonants you know and there are other words you come across you routinely come across clusters of consonant.

Transcribing it this is what is this inhibition you have two consonants here coming together you have words like corruption okay Pasha coming together do you have a word that begins with Pasha do you have a word that begins with no ha do you have a word that begins with Casa so a golden principle is a golden principle is that when you have two consonants okay coming it together in the middle of the word ask yourself if they make them if they ever occur at the beginning of the word if they do then they are the onset of the following word.

And if they do not then they go to the coda after previous syllable sorry if they occur together then you they can be the onset of the following syllable but if they do not then they can become the coda of the previous syllable or they can be split in between look at examples like reproach so what will you say does it go to onset or coda following this principle you will say this is the onset this is the onset and this is the nucleus this is the coda in this syllable.

In this case and for this level this form stir on sit look at this cluster can you draw a tree diagram for extract please on your notebook only extract only this and assign it to either you know onset coda or onset as you feel draw a tree diagram to show the relationship with both these syllables okay do it again compare with mine.

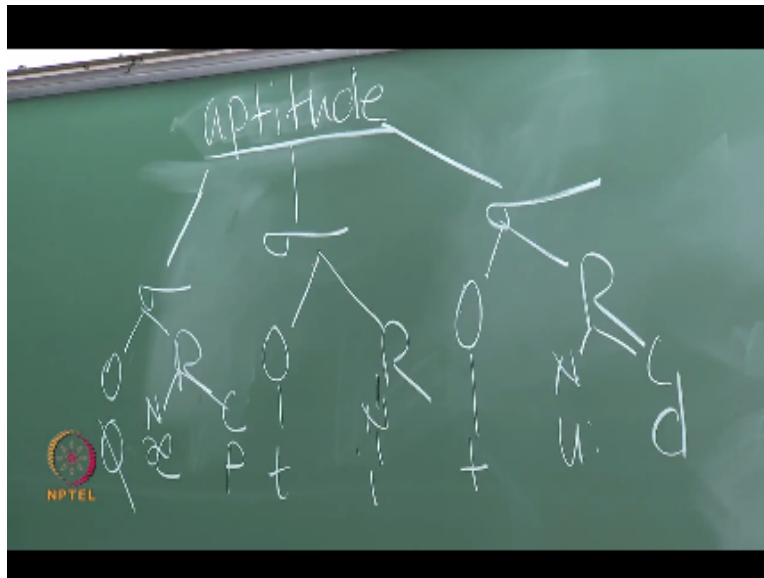
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Please compare your work with the derivation I have given on the board did you get it right how many people got it right not bad okay if you made any mistake please change these are mechanical. You know these can be predicted computers can do it you do not have a need an intelligent application you just need some expert systems databases and they will apply across the board okay without any difficulty but a golden principle is which works largely you know 99% all right in languages of the world saying that if you have two consonants in the middle of a word then assign them to onset if the beginner.

Word assign them to coda if they end the word otherwise you split them in between okay pretty simple you know can you do can you do another word a word like aptitude transcribe it and then do it they were like aptitudes quickly.

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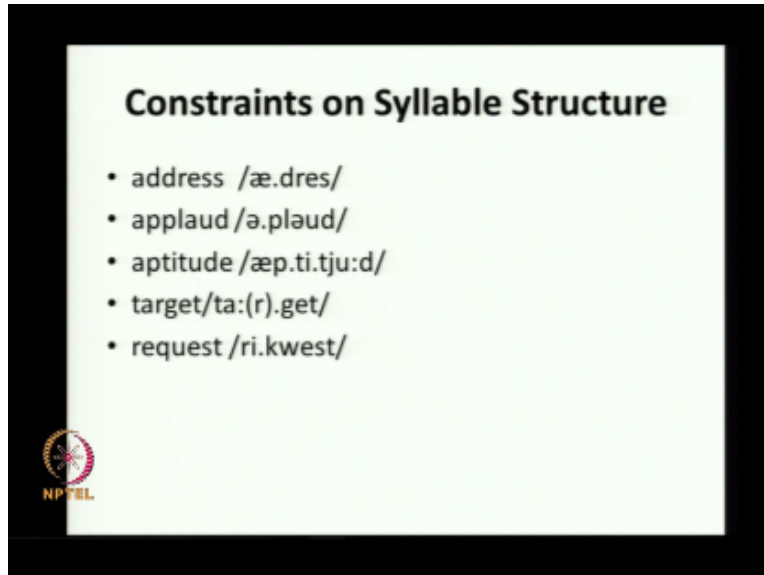
Please compare your work it has three syllables aptitude chewed or you can say the two on sets here dude you can have both aptitude aptitudes okay what we have done here is these two consonants come together in the middle of the word in continuous this page you know they follow each other but they may follow each other in a stream this is where the concept of syllable helps they do not belong to the same group can you see the point am I do I have your attention please.

Yes or no it says right they do not belong to the same group whereas Paul makes the code after Paul makes the code of the earlier syllable the preceding syllable term makes the onset of the following syllable okay and you can mechanically apply it to other words I will copy these slides to Mahesh and I will require I will expect you to look at these words and draw their T diagram cellular structure on a notebook at the end semester examination I may give you a word from Telugu okay I may give you a word from Tamil.

And I may ask you to or I may give you words from English okay and I may ask you to split them into different syllables showing which consonant goes where only together is it okay do you understand all I am trying to do is to tell you how sound speech sounds are organized together you see in the running speech as I am speaking now as you speak when you talk to your friends to give your presentation we do not even bother about these little things but because mind the powerful instrument. It has in the knowledge of language that it has comes

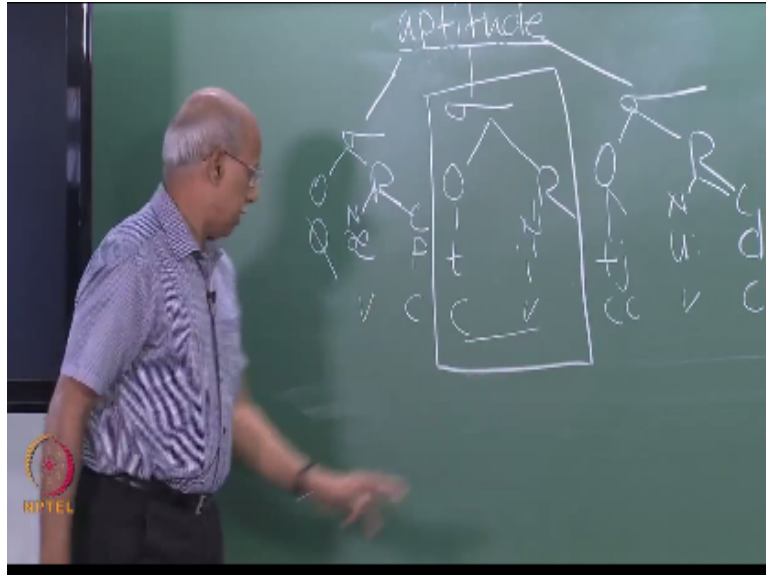
into application and this is how we organize our speech sounds okay look at some other concepts.

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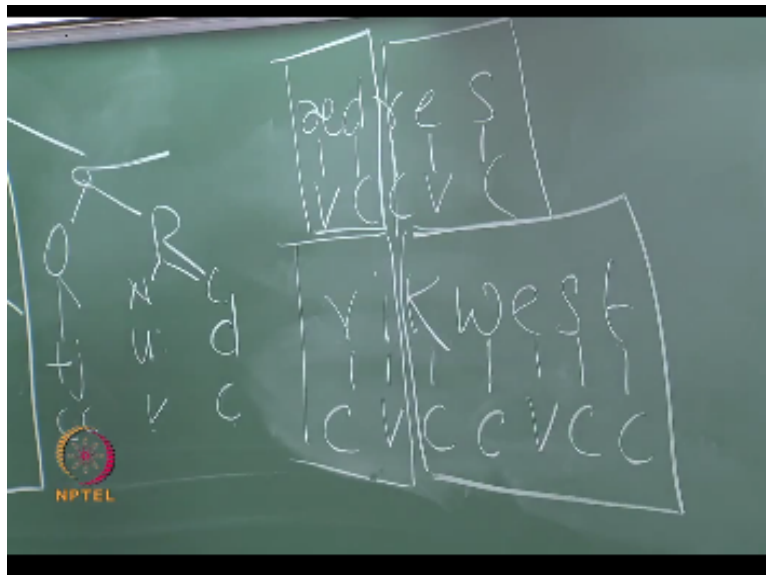
We have been talking about cellular structure and organization reorganization you can work out you can work out these examples which goes to where do you split them for a syllable when you have a word like address do you say add Andres following this principle what do you do you have a and dress but and you have similarly what do you do for applaud oh and then plot aptitude target okay request the same way we do not say Rick and then West okay you do not get as good results there right.

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How many different kinds of syllables can there be okay there is an old look at the look at this world look at this world and if you apply labels.

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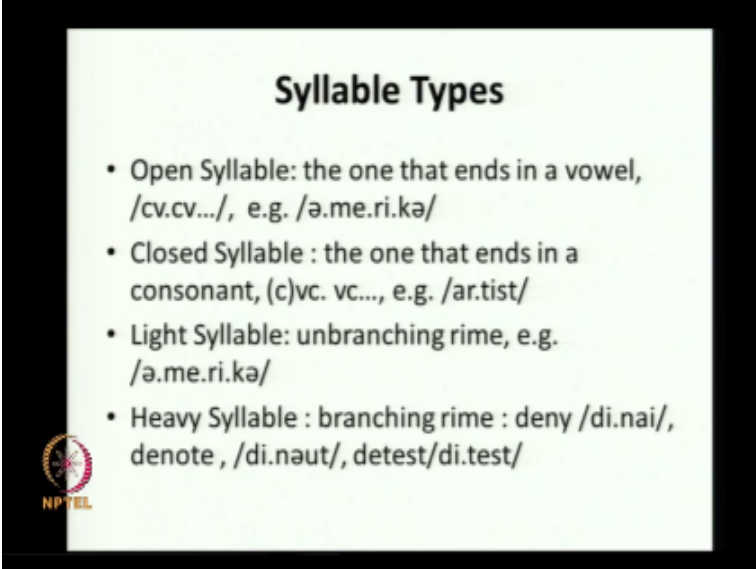


If you use a computer and say all consonants will be labeled see all vowels will be labeled V then you see this has no consonant you have V see what is this C or V see what is this V what is this C what is this C what is this V what is this C now you will see that some syllables are not some in some syllables V is not necessarily followed by SC in this case look at this syllable

okay this syllable this box okay is V followed by AC no but look at this case if he is followed by C look at this case if he is followed by C.


Can you look at can you take any other word you know from the previous take a word like address right Cv okay I will also do it here take another word applaud Lucy Vc or take another world request and do Cv okay you cannot compare with mine I have just done to address and request now look at the syllable structure here this syllable it does not end in C but the following syllable and senousy okay in the fourth syllable here and cinah see the second syllable ends in a C so all syllables that end in a C please write are known as closed syllable.

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Syllable Types

- Open Syllable: the one that ends in a vowel, /cv.cv.../, e.g. /ə.me.ri.kə/
- Closed Syllable : the one that ends in a consonant, (c)vc. vc..., e.g. /ar.tist/
- Light Syllable: unbranching rime, e.g. /ə.me.ri.kə/
- Heavy Syllable : branching rime : deny /di.nai/, denote , /di.nəut/, detest/di.test/

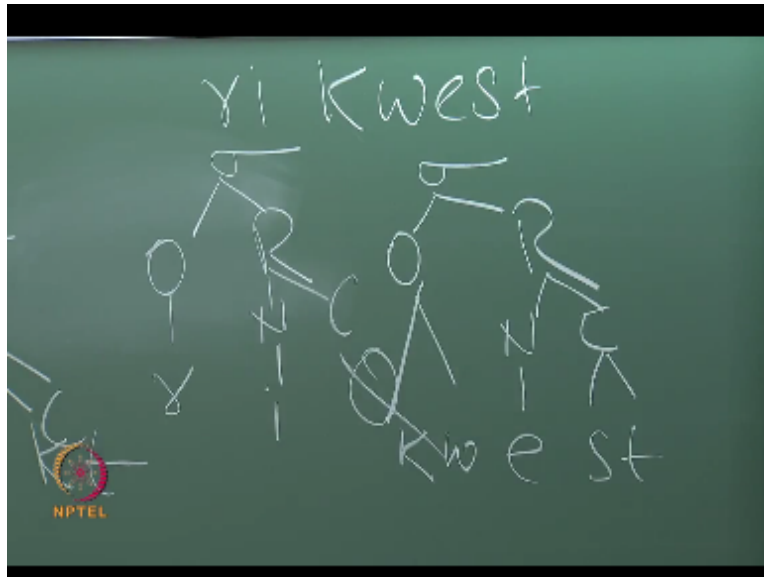


But all syllables that end in a V in a vowel are therefore open syllable okay in modern linguistics where we do a lot of algorithmic you know computer-generated circus computer-generated generalizations etcetera you can say the same thing slightly differently in computer-generated things you can say where rhyme is branching in this case look at the tree diagram for this syllable re-twist okay I am getting abstract are you with me am I speaking too rapidly do you understand me sorry I have please pardon me I know I am talking about a lot of new things new abstract concepts not directly relevant to you.

For your immediate need but you know we are trying to understand how nature organizes itself and in this case the examples are from language basic principles. Are the same whether you study molecular physics biology or language okay try and understand please we can look at the

same thing in a slightly different way and perhaps we can come up with better explanation rather than say what ends in V what and since E we can draw a tree diagram of the syllable.

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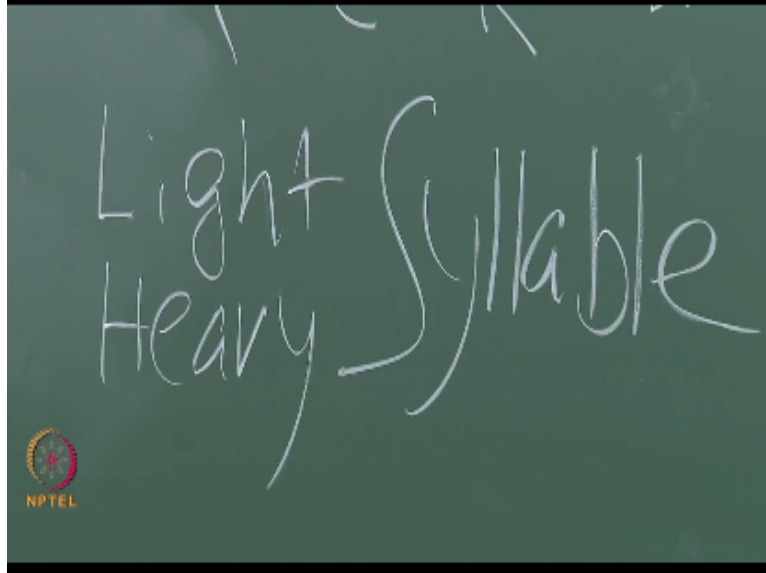
So for example this is one syllable it has an onset is real it has a rhyme has a nucleus is e it does not have a coda there is nothing here compared with this look at the other syllable we have a syllable here please draw it and then compare with mine it has an onset it has arrived on set has two consonants onset has cl and wah rhyme has a nucleus which is a and coda which again have two consonants sir enter did you draw it correctly.

Everybody please did you draw it correctly did you sorry please I am forcing you to see years I hate myself I am so sorry okay I wish we had more time you know I wish you were not forced to do this course okay I hope some of you have opted for it now look at the geometry of the tree okay in this case can I have your attention complete attention so if necessary close your eyes and then see you know see with closed eyes okay in this case there is no see following it correct in this case the rime does not branch rime is linear there is nothing here this is useless okay.

Do you see the difference now compare it with this syllable in this case if V is followed by a see you see V see sorry see V here see now look at the difference we said that a syllable that ends in V is an open syllable and syllable that ends in C is a closed syllable the same fact can be represented a lot better intuitively much more satisfyingly if you say that an open syllable not always but in this case here is a non branching syllable. The tree has no branch one line one line

one node but in this case you see the Rhine branches we are both nuclear and coda and again coda branches okay therefore please write we have the concept of light and heavy syllable.

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Light and heavy syllable Sanskrit eug terms like you may have our guru and lagu okay heavy syllable you know syllables with Sangha touch on some you culture with clusters of consonant with long vowels make heavy syllable and others syllables without a consonant. In the coda without a long vowel make light syllable I will copy these slides to you work out the syllable structure and you will very easily see that quite often an open syllable quite often not always there are other situations quite.

Often an open syllable is also a light syllable quite often a closed syllable is often heavy syllable but not always there are other things you know I come to but basically see the pattern how speech sounds organized themselves into a variety of groups you can for instance do this exercise. You can look at words like deny and draw a tree diagram do you think it branches. Do a tree diagram for deny so for onset here you have the rhyme there is nucleus II know coda in the first syllable in denial d 9 in D there is no coda but in the NOI.

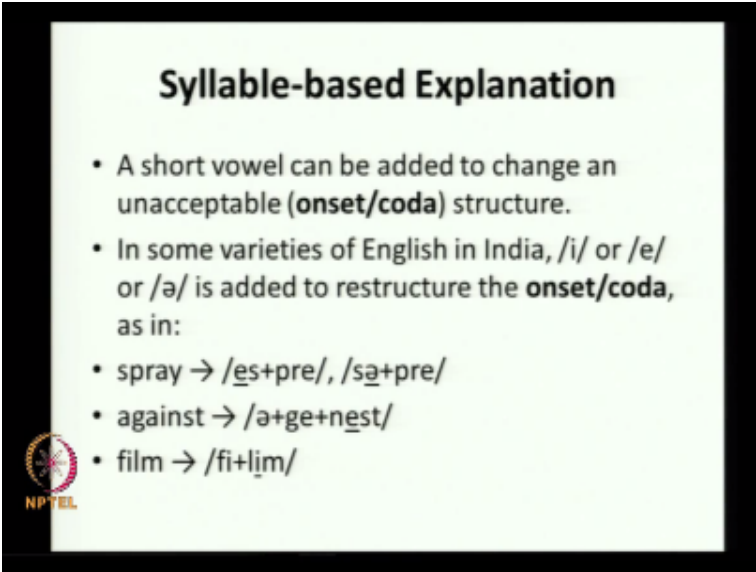
Let us see why all on set an and you have wrong which has a nucleus but no coda but nucleus is long you have a diphthong I deny so even when it does not end in a consonant it is a heavy syllable why is it a heavy syllable because the nucleus here the rhyme here branches. It had more than one node and because it has more than one node it is heavy had it if it had only one

node it would be light because it has two nodes or more it is heavy you know much more satisfying in geometry intuitively.

You can look at words like denote detest you if you draw the tree diagram you will find that they also answer this criterion eminently well you know you can say that some syllables are heavy syllables when they have a branching rhyme whether or not they have a coda there may be branching nucleus or they may be branching because of a nucleus and coda okay you can make syllable based generalizations if you want to ask yourself why is it that in some varieties of English in India in the world develop is pronounced at develop.

Why is e lost ii vowel lost the answer is explanation is pretty simple it is quite often the case that a light syllable after a stressed syllable is deleted in this case look at the word develop they speak in some varieties of India some varieties of English in India stress the initial syllable and then the light syllable following it is deleted you know so syllable structure helps you understand some of these generalize similarly.

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Syllable-based Explanation

- A short vowel can be added to change an unacceptable (**onset/coda**) structure.
- In some varieties of English in India, /i/ or /e/ or /ə/ is added to restructure the **onset/coda**, as in:
 - spray → /es+pre/, /sə+pre/
 - against → /ə+ge+nest/
 - film → /fi+lim/

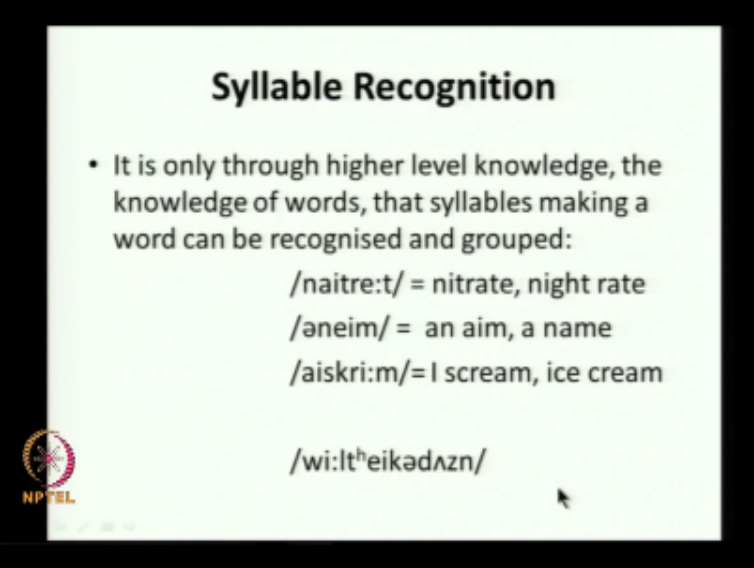
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You can ask yourself why is it that some people pronounce S P R A Y as supreme or some people Proust F L I M why do they do that and the answer again is very simple if you look at them in terms of syllables you can say in some of these languages you can say that in some of these varieties in some of these varieties you see here at the extra-added E you see extra added

a are extracted in some of these varieties Sur and pearl are not legitimate legal on sets and because they are not legitimate because they are not legal on suits.

So what happens is the speakers bring another vowel and turn the extra consonant into either an onset or a coda and get legitimate structure so it happens in film so it happens in agonist so it happens in a lot of other words it is better if you work out if it is better if you work out some of these examples on your own you will then understand this better why is it not moving.

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Syllable Recognition

- It is only through higher level knowledge, the knowledge of words, that syllables making a word can be recognised and grouped:
 - /naitre:t/ = nitrate, night rate
 - /əneim/ = an aim, a name
 - /aiskri:m/= I scream, ice cream
 - /wi:lt^heikərlz/

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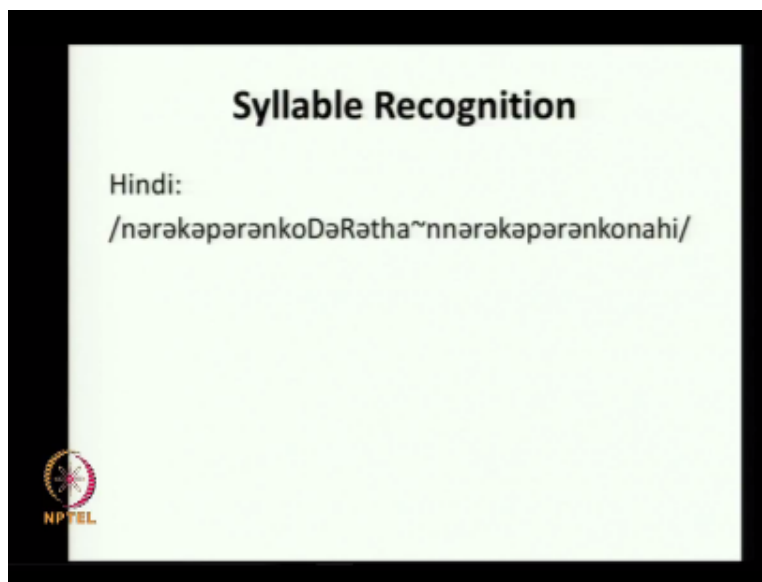
When you look at some syllables together in a language say for example look at this imagine I do not give you the word I just wrote nitrate in phonetic transcription because you know in a speech there is no pause now when you write nitrate as I have written on the screen what word does it make is it nitrate or is it a chemical called nitrate how do you know how do you know we do not the answer is we don't because syllable structure cannot take you beyond a certain point it has certain usage it has certain utility.

If you have a word like a name in a continuously speech now a name can mean anything it can be an M or a name okay which of the two is it can be inferred can be deciphered can be learnt only if you look at larger data what I am trying to tell you in other words is that syllable is a good stuff it is it is a good enough concept for us to understand the organization of sounds but

if you ask higher-level questions like what words they make on what they don't then that is a higher-level question which cannot be answered at this similarly.

You know you have a sentence called ice cream sorry an utterance called ice cream now is ice cream how do you split it is it ice and cream or is it I and scream okay can you split this the next group of songs let me see how many words you get out of them can you do it on your notebook can you take two minutes more okay what sentence do you get yeah the sentences will take a dozen but this conclusion can be reached only when you know when only where you have the higher-level knowledge in a sentence level knowledge world level knowledge speech sound level knowledge syllable level knowledge can only give you organization of the speech sounds in syllables similar thing you know in Hindi.

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Can you tell me how many words are involved here those who know Hindi? Please can you split them into Hindi words or syllables this is an 18th century I took the first two lines of an 18th century poem perhaps from Hindi can anyone please try and tell me can you stick your neck out it is not okay a good attempt this is the syllable division you know those cross double crosses indicate word boundaries can I have your attention please in the literature of linguistics this includes this indicates word boundary okay.

Now see neural copper on clothes go Dorothy you know when you go to the temple you do not like prostrate who my clothes will get as point but you do not fear falling in L nor copper on

men clothes fear not a copper and cloreda they knock hell pairen falling nine so you know syllable structure can be identical now see that now see that you know beauty and problem of language the problem language is the two parts of this line nor copper on and Nurik poem do I have your attention please.

On the one hand you have neural copper and men and clothes on the other hand you have Nurik poem hell and fall but their syllable structures are more or less alike now how do you know what is what you know because you have a higher level knowledge you can go beyond speech sounds you can see which speech sounds are organized which way that is the kind of knowledge if the computer you know if the computer acquired.

That kind of knowledge then the computer will be able to so far computer can work jolly when you give it syllable structure and the computer will split it okay but if you want it to process them into words break them into words what recognition then your computer will require higher level knowledge this kind of knowledge and it is true not just of in the not just of English I think I will stop here thank you very much Have a good day.

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