

Indian Institute of Technology Madras

Presents

NPTEL

NATIONAL PROGRAMME ON TECHNOLOGY LEARNING

Introduction to Modern Linguistics

Lecture- 21

Syllable

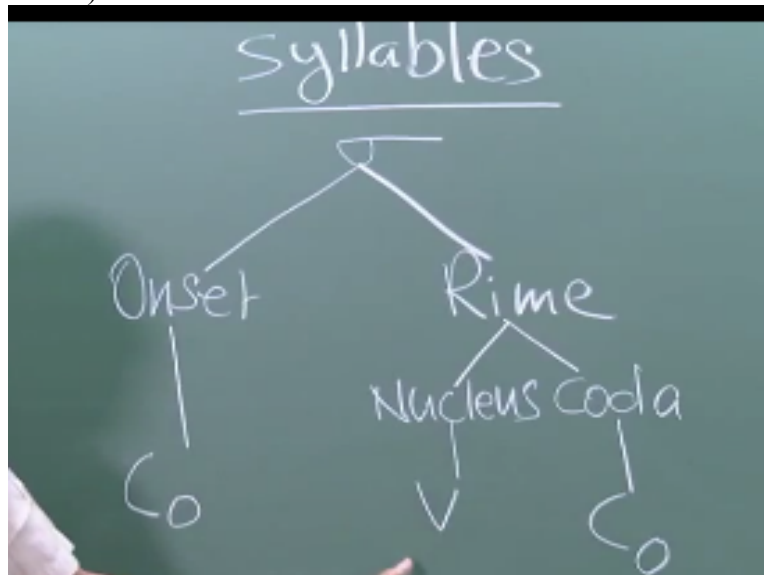
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Good morning we have been talking about organization of his speech songs and we said we saw yesterday that all speech sounds are organized in a structural unit called syllables.

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Many languages in India recognize a term called Akshar which is almost equivalent to the concept of syllable all speech sounds are gathered in terms of syllables in any language okay and we saw yesterday.

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Syllable

- A syllable has one or more sounds uttered in one breath pulse.
- It necessarily has at least one vowel sound, which is its nucleus.
- It may have none, one or more consonants before and after the nucleus.
- Syllable is equivalent to what is called *akshar* in many Indian languages.

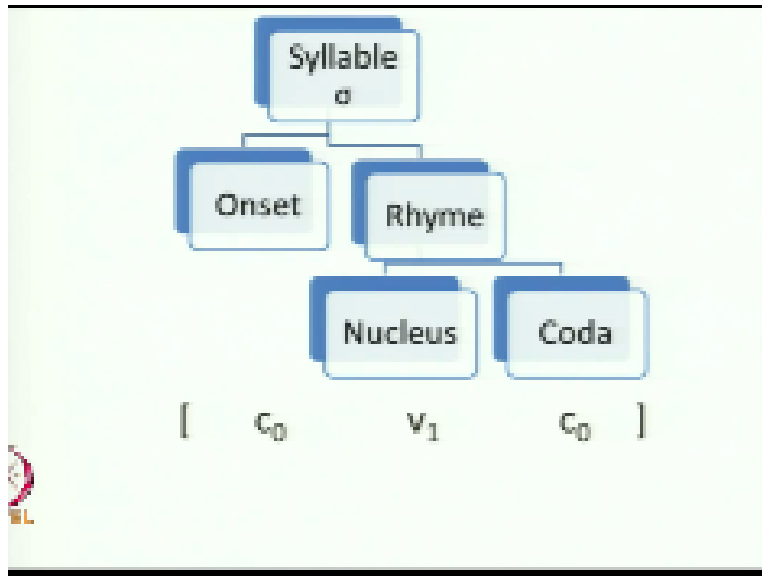


That a syllable is all the sounds that can be uttered together in one breath pulse one contraction and expansion of lungs no matter who you are no matter how strong or weak you are how rich or poor you are men or women whatever you are we do not utter two syllables in one breath pulse for two syllables we need two breath pulses okay, one two contractions of and expansions of lungs okay we also saw that a syllable necessarily has a vowel it may or may not have one or more consonants.

Before and after that vowel try and draw a syllable diagram please without anything just see if you remember it or your notebook drawn it do not look at the board as I am drawing in many books you will find lowercase Σ as a symbol for syllable or in dictionaries sometimes a dot a full-stop mark is used to indicate syllable so between syllables you will find them okay a syllable has onset and rhyme onset note can be occupied only by consonants rhyme again can have a coda but necessarily a nucleus node is occupied necessarily by a vowel coda by consonants okay compare your diagram.

If you have made a mistake please change it makes correction.

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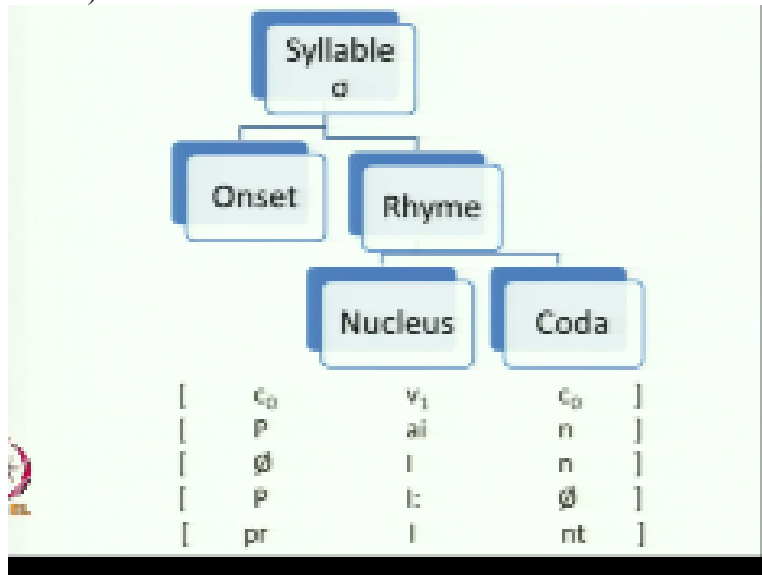


Okay a syllable has principally two branches onset and rhyme onset node is occupied by a consonant rime, I am sorry there is mistake in their spelling. I will change it please write as I have written on the board it is RIME not H Y M E okay, and rhyme node branches into nucleus and coda you may or may not have a code in a syllable you may or may not have an onset unassailable but if there is a vowel it is a syllable okay usually each vowel makes a syllable usually but sometimes you may have diphthongs they also make.

You know a combination of two vowels like I in kite life or au in now, how ,cow though they appear to be two vowels they make one syllable so monotonemes are big tongs okay you need vowels to make one syllable minimally, there can be no consonant maximally there can be any number you can have three four consonants in the onset similarly minimally there can be no consonants maximally there can be four five any number there are no restrictions or if there are restrictions they are language-specific restrictions.

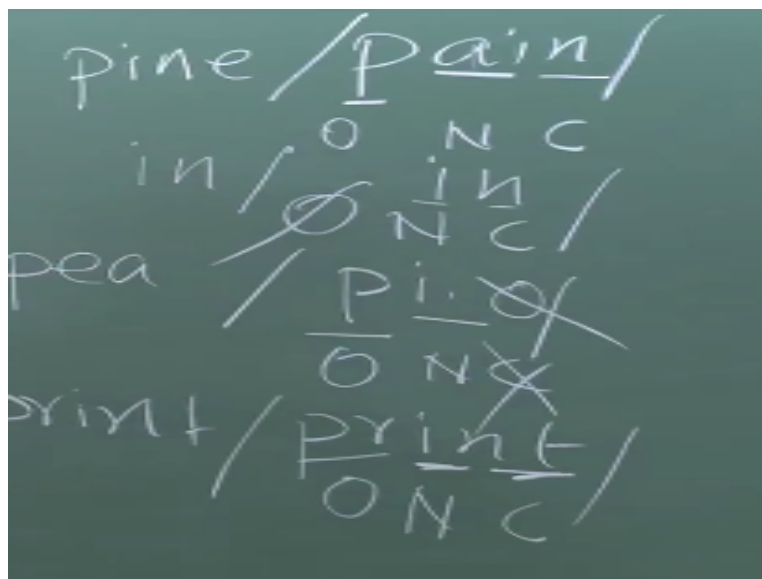
In my mother tongue Maithili which is spoken in Nepal and Bihar we can have only two consonants in the onset at the most but in Sanskrit in English you can have three consonants in the onset you can have words beginning with SA PA origin spread SA TA street in Sanskrit also you can sir as in three okay get surprised these are these constraints our language is specific what is universal is the following whether or not there is a consonant in the onset whether or not there is a consonant in the coda so long as there is a vowel it does make it syllable.

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Okay look at another example from English you have a word like you have a word like pine transcribing it.

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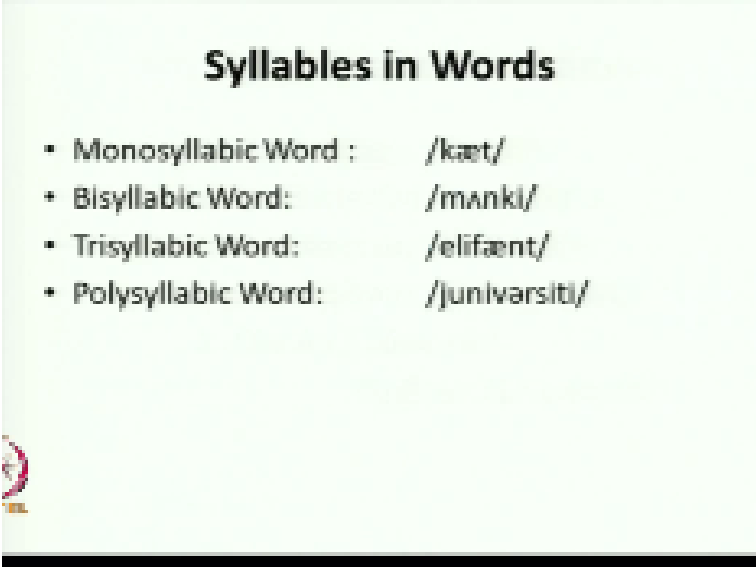
Okay, here you have one is this onset or Cora please try is this onset of coda and Susie concert is this onset nuclear or coda nucleus of coda it is the nucleus so onset nucleus and this is the coda let us take another word on this screen. I have in how do you transcribe it in this case do

we have an on-set no we do not have an on-set none nucleus yes this is the nucleus and this is coda take another word we have on the screen we have a word like P as in peanuts how do you transcribe it please transcribe it on a notebook do we have an on-set here yes or no we have an on-set here this is the onset do , we have a nucleus here we have a nucleus here do we have a coda here.

No we have no coda here nil okay let us take another word print okay let us transcribe it okay what are these things onset nucleus of coda onset you have more than one consonant in the onset what is this concept nucleus of coda that is the nucleus of the syllable what are these things these are the coda are two consonants you so we can we you know this template the syllable template can now be matched you can have either no onset you can have no coda you can have more than one consonant in the onset more than one consonant in the coda these are variables.

These can change from word toward speech to speech language to language what is universal is the following that if there is a vowel it makes the nucleus of a syllable and almost each vowel constitutes a syllable let us analyze their structure further.

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Syllables in Words

- Monosyllabic Word : /kæt/
- Bisyllabic Word: /mʌŋki/
- Trisyllabic Word: /elɪfænt/
- Polysyllabic Word: /juːnɪvɜːsɪti/

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Exercise in Syllabification

- /kæt/ = Onset : k, Rime : æt
Nucleus : æ, Coda : t
- /mʌŋki:/ = 1. Onset : m, Rime : ʌŋ
Nucleus : ʌ, Coda : ŋ
- 2. Onset : k, Rime : i:
Nucleus : i:, Coda : ∅

Okay there can be words there can, be there can be words with one syllable you know the question is R syllables and words coterminous are they the same thing okay, perhaps not okay you if word is a larger unit conceptually and structurally both you can have a word with only one syllable.

You can have a word with two syllables, you can have a word with five syllables, you can have a word with any number of syllables, there is no upper limit on how many syllables can there be in a word and every conceptually you know word is a higher unit look at the examples I have given you what is the first word cat what is the first word cat next monkey next elephant and next university can you draw tree diagram for these words on your notebook take a couple of minutes take a couple of minutes for each syllable for each syllable begin with cat draw.

The tree diagram this kind of diagram and then underneath write what is on set what is nucleus what is coda okay it does not matter if you make mistakes you know, I am going to give you the structure there but you will be able to learn only if you do it now throw this diagram first and then this is what is in this world onset correct so this is concert lovely can you try that did you get it do it for a bigger word did he wonderful God bless you okay ,pretty straight it is pretty mechanical have any computer can segment it into different syllables.

This noise would come here oh sorry divisions I made the first word cat look at the slide cat okay onset car rhyme has enter where nucleus is a and coda is monkey it has two syllables the first syllable is Hmong and the second syllable is key check compare your division syllable

division if you got it right ticket, in the first syllable you have onset ma rhyme has um which divides in are which is the nucleus and own which is the coda but in the second syllable key you have onset and nucleus but no coda is that correct yes or no please right look at the next word elephant the first syllable.

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Exercise in Syllabification

- /ɛlɪfənt/
- 1. Onset : ∅, Rime : e
Nucleus : e, Coda : ∅

- 2. Onset : l, Rime : i
Nucleus : l, Coda : ∅

- 3. Onset : f, Rime : ənt
Nucleus : ə, Coda : nt

What is the first syllable here a it has no onset no coda but look at the second syllable Li it has an onset it has a nucleus but does it have a coda once again please listen to me okay, look at the second syllable in elephant what are the syllables in it in elephant first is a second is come on please do not look scared leave and third is friend so in the first syllable a do we have an onset no do we have a coda no we only have a nucleus in the second syllable Li do we have an onset yeah do we have a nucleus yes do we have a coda no in the third syllable elephant.

Do you have an on-set yes do we have a nucleus yes do we have consonants in the coda yes one or more you know because there is nothing else to go back.

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Syllable Structure in Maithili

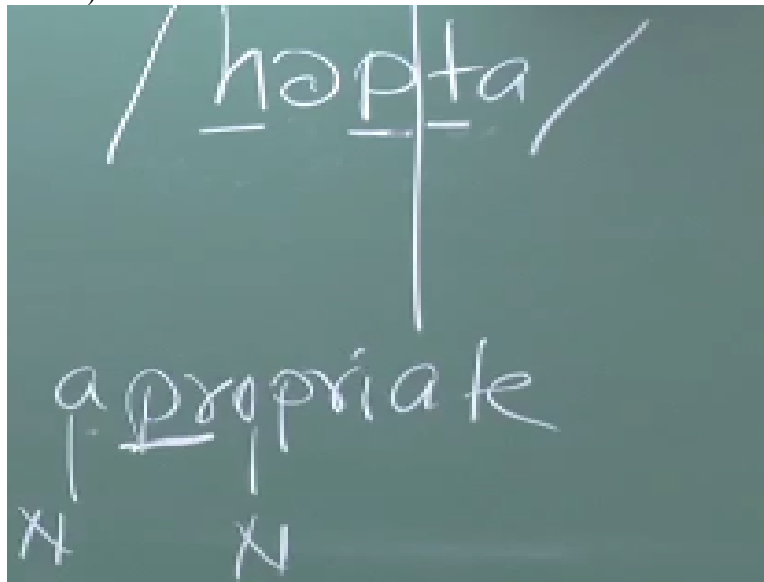
- /pal/ "moment"
 - /hapta/ "week"
 - /mahina/ "month"
 - /mahinbari/ "monthly"
- Usually, a single consonant between two vowels is the onset of the following syllable.

Okay this is true of any you know I have given you a words from Maithili you can still you know cut it in two syllables how many syllables are there in the first word one only how do you say that because it has only one Bhavan okay, how do you say that because it has only one model okay but look at the second word okay how many syllables are there in it - okay because there are two vowels we may not be sure only now. I am bringing a problem look at the second word Maithili word here you know there are two consonants next to each other in the middle of the world you know enter how top okay.

Now we do not know a Priory there is you know no principal across the board which will tell you that both and third becomes the coda or become the consonant or they cut into onset in coda okay look at the problem you know in Sciences in knowledge you know there is a science of knowledge do you know that subject do you know the name of that subject which is known as the science of knowledge this is called epistemology okay please write and in epistemology the it you know there is a very important concept of understanding.

The questions you know answers may change answers do change until yesterday we believed that the earth was static and the Sun goes round okay then we believed that the Sun is a static and the earth goes round now we believe that Sun also goes around earth also goes around okay there are all kinds of circular motions right so it is important for us to understand questions answers may change okay, so look at the question here the question here is take a world like this.

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From a language you do not know you do not know this language you have found out what it means it means weak the question now is this is onset or coda come on please make an object this is also okay this is the nucleus this is the nucleus does it have a coda no now we are left with two consonants here do these consonants make the nucleus of the following syllable or the coda of the following syllable or do they cut in between what is your guess okay this is language specific you will have to understand the very carefully. I am straight I am stating a very abstract concept.

It is you know they cannot both be the onset of the following syllable if they occur together at the beginning of the word ever in this language they do not say for example, if you have per and coming okay say for example, in a word like appropriate in English do these consonants part and what is your answer listen to the question carefully please we have two consonants in the middle of between two vowels.

These vowels will make syllables by themselves no problem what do we do with these consonants do we do they go as the coda of the first do they go as the onset of the second or do we cut them what is your guess what is your answer okay why do you say onset you are see these are these are matters of application these are what we in epistemology we call heuristic what gives you better mileage okay, what gives you better mileage so a lot of people say that if these two consonants can also occur at the beginning of the word then put them together as consonant okay but if they do not let us take another word harpic okay.

Now here again we have run and do we use it as the onset of the following or the coda of the following we have two consonants here two consonants here what is your answer for this here we will have to cut because there is no word in English who ever and begin the world okay so in this case Rho becomes the coda and Bob becomes the onset of the following syllable but if there is a single syllable look at the screen look at the slide if there is a single syllable one syllable between sorry.

I am extremely sorry if there is a single consonant if there is one consonant between two vowels then it is usually the onset of the following vowel okay, but if there is a cluster if there are two consonants between two vowels three consonants between two vowels then the principle is these consonants will form the onset of the following syllable if and only if there is a word in that language which begins with these consonants otherwise they will divide into once encoder you can work it out check with me and we will do that so you know syllable structure principles are by a large universal okay one vowel gives you one syllable.

In any language we saw English we saw Maithili you know we have words which give you bonuses which are mono syllabic word Paul moment after week two syllables Mahina how many syllables three because there are three models Mahina body four syllables why because how many vowels are there for vowels are there so they make clearly four syllables you know some of these principles can be very mechanically applied without any problem and those principles.

You know you can also apply to say for example in the fourth word machine vary no and birth or they both go as the onset of the following syllable or the coda of the previous or would they be split what is your answer they would be split because in this language there is no word that begins with no n-bomb okay let us continue please you know also look up some books.

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Syllable as Structural Unit

- Syllable is the highest unit in phonology.
- All speech sounds are gathered in syllables.
- /ɔlaɪwɒntɪzərʊːmsəmweər/
- /fərəweɪfrəmðəkəʊldnaɪtəər/
- /lətsəv tʃəkələtʃəmiːtʊl:t/
- /lətsəvkaʊlmekinlətsəvhi:t/



I have given you references you will be better able to understand do the exercise and if you do not understand me please come and talk to me. I am going to give you some problems at the end semester examination and I am going to ask you to divide these words into appropriate syllables there you will have to understand these applications quite carefully so it is a good idea if you look up some of those books. I have mentioned in the course outline handout I gave you at the beginning of this semester right okay.

So let us continue what is the use of the syllable is the highest unit in phonology all speech sounds, phonemes, allophones, silence because can also be phonological it separates silence often not always often separates one word from another so all speech sounds are organized in terms of syllables as words are organized in phrases are organized in sentences similarly speech sounds are organized in syllables okay, and syllable is the highest unit of a structure in the level of phonology look at the first sentence which language do you think it comes from.

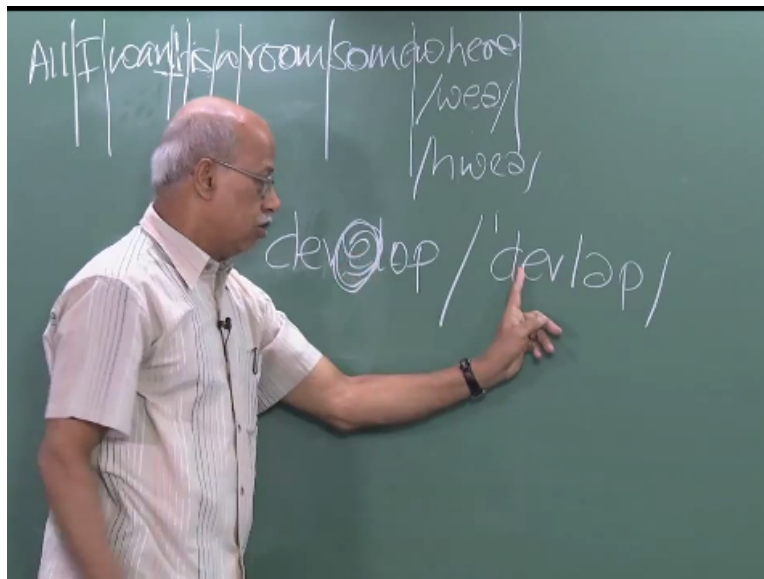
I have given you a sentence in transcription look at this screen look at the first line okay which language do you think this sentence comes from making this I got this lovely anybody else please German wow did you do a course in German it is English who said English please right Kiley say it loud and clear you were saying like you are going to commit a murder okay say English okay which language does it come from English look at this can you make a guess.

What that line is you may go wrong does not matter can you can you write it in normal orthography on your notebook what is the first line and, I promise you I am going to give you

these things at the end semester examination as question paper you will have a sentence in transcription please rewrite it in normal orthography okay what is the first line anyone please it does not matter if you make mistake even for trying.

I will give you know my good wishes what is it all I want is yes somewhere lovely the first sentence is all I want is room somewhere.

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All I want is this is the first line I have written them together without gap between words because this is how you and I speak if you look at the spectrogram of your speech you will find that there are no gaps between words okay ,how do you split them into syllables which is the first syllable in this utterance come on now please what is the first utterance what is the first syllable you all what is next I next is next, next ,next, next yeah actually this is in the standard English.

This is it in India we pronounce it as which is non-standard you know in English the right age but they do not pronounce age in standard English in non-standard English you know as we do in India we say we are what but in English it is were what okay once again see the point the point here is when we speak syllables margin to each other words margin to each other okay unless you know the language you do not know okay which word and swear but you still know syllables.

Because you go by the principle of one vowel makes one sometimes you may have confusions about you know whether these two actually if you take unless you are guided by the word if you are not guided by the word then the first boundary will come here and now will become the onset of is so it will be all I want T's that is how you pronounce that is how you speak you don't say all I want is when we speak it is like all I want T's okay , Couture tends to become the onset of the following syllable okay.

But look at the work of nature even when we do not know the language we can make the cuts look at the second sentence can you tell me it can you write it in normal orthography what that sentence is far away from the cold night air make the cuts now make the cuts please wherever you think it will make an individual syllable do it first on your own make a mistake it does not matter the sentence is what is the sentence far away from the cold night air okay.

So split the syllables next what is the next phrase can you tell me what the sentence is third lots of good chocolate then for me to eat lovely you see not nothing that you know absolutely nothing including eating cycling whatever you know you know because you have tried you have made mistakes and you have again tried and you have learned that is true also of learning phonetic transcription okay , please how do you split words here lots of chocolates for me to eat okay what is the final sentence last fourth okay.

It is a wonderful English song you know I took these four lines from an English song ,I can give you a link to that song and you know you can listen to the good music there okay what is the fourth line lots of code making lots of heat okay compare your syllable division have for your sake. I have given it on this screen look at.

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Syllable Organization

- /ɔləi.wɒntɪz.ər.uː.ms.ə.m.wear/
- /ɔləi.wɒnt.ɪz.ə.ruːm.s.ə.m.wear/

- /fɑr.əweɪ.frem.ðə.kəʊld.naɪt.ear/
- /fɑr.əweɪ.frem.ðə.kəʊld.naɪt.ear/

- /ləts.əv.tʃɒk.læt.fə.miː.tuː.ɪt/
- /ləts.əv.tʃɒk.læt.fə.miː.tuː.ɪt/

The screen compare your own in the division of words into syllables see if you got them right what, I want to achieve is for you to recognize syllables in a continuous utterance you know because in our trends when we speak we do not necessarily pause with words okay, words may merge sounds may get in to one another and the only principle that operates there is phonological principle tomorrow if you want to design a software to recognize you know your friends voice your enemy's voice these principles can be at the basic level of that engineering did you get it right those who got it right please raise your hands first flying.

The second line which means you know you need some practice okay do some practice pick up a sentence at random from anywhere from what you hear in the dining hall what you hear on the course is a conversation on phone take any actually occurring utterance at random put it to put it on your notebook and see how you can cut it will give you a very fine perception into natural language processes you will be able to see connections and disconnections which you may not have seen before okay.

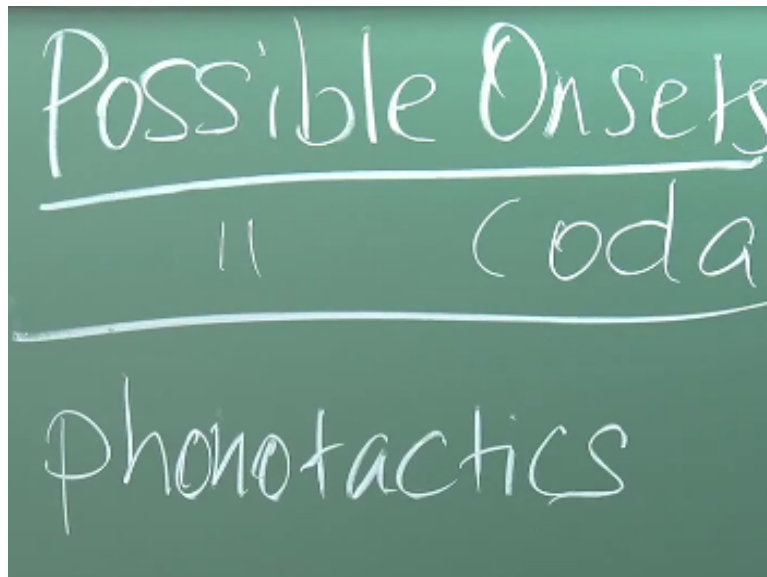
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Constraints on Syllable Structure

- Only some sounds can occur in some order at any position.
- In English, /spr-/, /spl-/, /spj-/ and some other consonants can occur together in a particular order in **Onset**, but not in coda.
- In English, /-sts/, /-sks/, /-sps/ and some other consonants can occur together in **Coda**, but not in onset.
- All languages have similar constraints.

Let us move on what are some generalizations only some sounds can occur in some order in any position are there any rules which sound can be on sets which sound can be a coda these are language specific possible.

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Onsets in English for instance sapa rah you know or saw in English saw for sapphire etcetera can make onset but not in my mother tongue we cannot have sir poem that is not the acceptable onset in many other languages as well in Arabic in English at the end of the world you can have sir - sir as in texts you can sir cursor as in asks or sir pasha as in wasps but it is not necessarily

the case in many South Indian languages, you cannot have three consonants at the end of the word you have only not even all consonants you have either the word ends in a vowel or na la ma etc want to two or three limited number of consonant.

So these things are possible on sets possible Coda these concepts are language specific and there are constants together these are you with me together these language specific concepts are known as please right phonotactics can you imagine a word in Telugu which begins with naka can you imagine a word in Telugu which begins with poora brahmaand 'm sopra is an acceptable onset in Telugu Manaka can you imagine a word in Telugu which begins with naka you can imagine lots of words in Telugu.

Which end in Newark or know Orca but there are languages in Africa so I Haley okay do you know where Swahili is spoken sorry lady spoken in eastern and central Africa and in Swahili you have lots of words that begin with naka muka rumen is a common name there was a very famous popular president of Kenya called chroma okay I am not too sure of the country now alright so these things are these concepts our language is specific and the branch that studies them is phonotactics.

You do not have to remember this I am not going to ask you to define further tactics what I am going to ask you to remember is these things that these our language is specific there are constraints what is true of them you can do actually a term paper you can do an assignment look at the possible code Ozzie until who or Hindi or Malayalam or whatever language you speak look at the possible on sets see what happens to the consonants in between do some engineering to recognize cannot computer recognize.

If you utter cannot computer split that utterance into specific words okay that will be great engineering if you can do that there are software's which some type which do that now but even in English where a lot has been done we do not get more than 80% correct results for Indian languages some work has happened even at our Institute and we get between 70 75 % correct results computers dunno have the kind of knowledge yet as you and I have okay these are some possible onset clusters in English.

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Constraints on Syllable Structure

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

You can have words begin with proper Pr Pl etc these are some possible coda in English you can have words ending in rapper you know quite often not always once again quite often it's a mirror image see possible onset you can have words beginning with Pro in English can you give me a word beginning with pride in English professor prayer promise okay they begin with Pro quite often you have words ending in quite often you have words ending in rope can you give me a word in English sharp harp war car ok or the dark heart okay quite often.

These things go in natural languages as mirror image if it is A B at the beginning of the word then at the end of the word what is it likely to be B A if it is A B if it is A B at the beginning of the word then at the end of the word what is it likely to be in a but there are no Universal rules these are possibilities likely that is why I said possible onset, you know if this is an empirical decision you look at the data and you decide that it is possible it is not possible but look at the patterns.

In natural languages quite often onsets and Coda's make mirror images of each other once again what I was doing I am trying to draw your attention to the systematic nature of language even in tiny things a single part of the word you can see there is such a lot of grammar there is such a lot of principles at work and you and I without being aware no mother no father no professor sat down with you and told you today I am going to teach you all the answers in English did they yes or no and yet we know we can recognize okay.

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Syllable-based Explanation

- Many speech phenomena can be explained only in terms of syllables.
- Short vowels can be lost after stressed syllable:
- /e/ → ∅ in some varieties of Indian English, as in "develop" spoken as /'devlop/, because the second /e/ comes after a stressed syllable.

What is the use of a you know a concept like syllables many phenomena many things elysian deletion you know we said there are four kinds of phonological phenomena do you remember what are those we said for the logical phenomena can be insertion of sound loss of sound gain of sound or loss of feature a gain of features all of these phenomena can be better described better explained in terms of syllable structures say for instance you can say short vowels can be lost look at the screen.

You can say short vowels can be lost after a stressed syllable for example, I give you the example the other day look at the word de l'épée in many Indian many non-standard varieties and you know linguistics and any part of linguistics does not have to do with prestige language non prestige languages we are talking about language in use and we can make generalizations right so if somebody asks you if somebody asks you what happened to the vowel here where did it go why is it not visible here this is a stress the rule is very simple.

In many languages a weak vowel a short vowel is lost after a stressed syllable this is a stress immediately here this has been lost this has been deleted so some of these phenomena some of these phonological concepts of the loss and gain of sounds of the loss and gain of features can be better explained in terms of syllables okay.

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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+nɛst/
- Film → /fi+lɪm/

Or when you want to say why SP RA Y is pronounced as separate in some languages this is the answer they have a difficult onset not permitted in that language when you bring a foreign word into that language with foreign kinds of onset then the language reorganizes itself okay.

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Syllable Hierarchy

- It is only through higher level knowledge that syllables are grouped as words:

English: /naitre:t/ = nitrate, night rate
/əneɪm/ = an aim, a name
/aɪskri:m/ = I scream, ice cream

/wi:lth'eɪkədʌzn/

We do not often and always know that a word and cellular coterminous you may hear nitrate can be either of the toy it can be either nitrate or it can be a chemical called nitrate similarly when in continuous speech it may be a name but in real words it can it can be a an aim or a

name the point is words margin continuous speech and it is only in you know through the higher-level knowledge.

A word that we recognize these things I will it strongly advise you to do some transcription of real-life utterance see how it works and gain some insight into the subject at the end semester examination. I am going to give you some exercises of this kind thank you have a good day

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