Basics of Language Science
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Lecture No. 09
Learning and Acquisition

So far, we have seen what is language and what we do in the whole field of linguistics. So, to answer that question based on what you know by now with all kinds of discussions that we have gone through, language is really fascinating human capacity and it is a system in itself, it is not an arbitrary thing, it is natural to us and humans have the specific capacity to speak, that capacity is rule-governed and it happens to us.

All aspects of language, all kinds of rules operating under language and all aspects, meaning, whether it is a phenomenon of the human mind or whether it is a social phenomenon, whether we are looking at rules of sentences, words and sounds or the rules of language use in society, broadly speaking E-language and I-language, that is external language or internal language, all kinds of aspects related to language that we study is going to be the domain of the discipline called linguistics.

This is what we have, we have seen so far, we started looking at what is it that happens to us when we end up internalizing this whole phenomenon without realizing much about it. What is it that when we say language in a way develops in us, it happens to us, it is just like a child grows incrementally language develops, this is exactly what we are looking at, we will look at it in little bit more details and continue looking at some more aspects of it.

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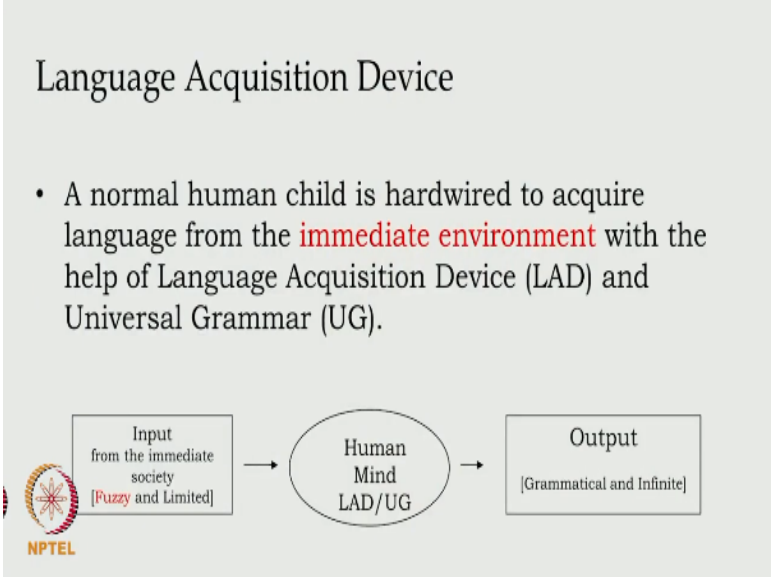

So, this is the particular scheme of language acquisition, in which every human child is born with this capacity to acquire language. There are lots of questions related to it, why do other species not have language, do they really not have language, do they not communicate with one another? There could be lots of questions related to this aspect, the moment we start saying every normal human child is born with this capacity to learn a language.

To put everything aside right now, so all we can say is, A we are not talking about other species, and B we do not know much about other species and we cannot blame anyone for that because we do not know much about the human language. Remember some of the questions that we raised when we were talking about connections between language and the human mind, we really do not know which part of the human mind actually functions for language.

Neuroscientists with lots of effort know that set of, a specialized set of neurons are responsible for different kinds of activities, but we do not know which set of neurons are responsible for language, we do not know whether there is a set of neurons that is responsible for language or not. So, we do not, the point is we do not know much about human language.

So, if we do not know much about the language or communication system of other species this is not a big surprise, we should but if we do not what can we do about it, so all we can say is we do not know much about other species, therefore, we are not talking about them, we are not saying that they do not have conclusively. However, some linguists, some people studying language can tell you conclusively that either they do not have, you understand the meaning of they, either other species do not have language or if they do, that system is very limited in its functioning.

That is like when dogs bark, that has a very limited function, that could be interpreted in a couple of ways, it is like traffic signals when we have the red light it has a particular interpretation and when you have a yellow light it has a particular interpretation and when you have red light it has a particular interpretation, so that is also a language in a way but those are limited in their function, their similar communication system of other species are probably limited in their function but I would like to take a point, to take a position that we do not know much about that.

Therefore, let us not even worry about them, what we know or what researchers have tried to understand, what happens to humans and in that we say this is the beginning point which is, of course, hypothetical as I have told you last time, that human children are born with this capacity, that is point number 1, point number 2 that capacity is called language acquisition device which is not a physical device, it is a hypothetical thing and this is what we mean when we say we are born with the capacity to acquire language. So, we are born with this language acquisition device.

This device happens to have two things, two parts of it, one is principles and the other is parameters and languages are structured around these principles and parameters which we are going to unfold and see very soon with various different examples. What else happens to this is the set of principles and parameters together is known as universal grammar and that universal grammar refers to knowledge of all aspects of the language of humans, that is all languages of the world could be hypothetically part of those universal principles of language, which is embedded in language acquisition device.

Making sense so far, and then when a child is born, it operates, it functions in a society and by society here we do not mean a much larger society, whatever the child interacts with and that child acquires the language of only that society. We have empirical evidence that a child acquires the language of that society. Based on this empirical fact what again has been proposed that the input the child receives from that immediate society, functions as a trigger to language acquisition device, which eventually triggers universal grammar and triggers when we say trigger, we mean triggers the rules of that language, that unfolds such rules and that unfolding is called acquisition and then the output is the same language.

A child is based on this hypothesis, based on this functioning of, based on this idea of language acquisition, we can say probably a child will be able to acquire all the languages of the world, can we say that? However, there has to be a condition for that and that condition is if I speak Telugu only because I grew up in a Telugu speaking area, my immediate society was speaking Telugu. So, if I grew up in a society and my society was speaking all the languages of the world then I will be speaking all the languages of the world.

Only on the basis of that point, it can hypothetically be said that a child will be able to speak all the languages of the world and this is not a small claim that this hypothesis, this acquisition principle is making, this is a very tall claim, the strength of this tall claim is it is not empirically falsifiable, we cannot falsify this claim, why, why can we not falsify this claim?

Student: Because no one has experimented with it and there is no such area also where it happens.

Professor: It is not possible for anyone to show a particular area, that looks this area speaks all the languages of the world but children living in that area do not speak all the languages of the world, get this. Therefore, this will not be falsifiable and however, on the other hand, we do see that if a child is growing up in areas like Delhi, the child easily speaks Hindi, Punjabi and let us say if you look at more specific areas of Delhi, certain places like green park speaks Bangla. So, a child growing up in green park will easily

acquire Hindi, Punjabi, Bangla and if the child also interacts with English, they will acquire English.

So, whatever language is around, the child has absolutely no difficulty in acquiring such languages. Therefore, the role of immediate society is very significant for what the child acquires and again I want to underline and draw your attention to the fact that children do not acquire Tamil, Telugu, Hindi, Punjabi, or at least they do not know that they are acquiring Tamil, Telugu, Hindi, Punjabi they are acquiring the language that is spoken to them. And therefore, they speak whatever they speak, all right, good.

Another important aspect of that acquisition is, I think we briefly underlined this thing last time when we were discussing this that the input is not very sophisticated, you understand this when we say the input is not sophisticated, that is input is not really very clear, input is not sufficient, which is, this is what we mean when we say the input is fuzzy and limited in its quality and quantity both, it is really not clear. However, when the child starts speaking something it is perfectly grammatical and infinite.

I am going to send you a paper on this particular aspect and I would like you to take a look at it, it is an easy reading by Ray Jackendoff which takes you through several steps of language acquisition and how a child incrementally starts developing language. There is a claim in that paper it is part of a book which is about the biological foundation of language. In the time frame of 18 months to 24, the total strength of vocabulary among children grows from 70 to 100 words to 10000, 70 to 100 at the age of let us say 17 or 18 months. By the end of 24 or there is no hard and fast line of 24, 25, 26 the amount is approximately 10,000. Does this not sound surprising?

So, and that he brings as a piece of evidence that the output through different stages and when we move to a particular stage really becomes infinite and then it keeps growing and growing to the extent that we do not even know how much we know, how many things we know about language and then when a child starts speaking, we continue, and never stop, that is the meaning of infinite. Grammatical simply means, what is the meaning of grammatical here, can someone say, can someone tell, what is the meaning of the word grammatical that you in general understand? Anybody?

Student: Proper structure for sentences.

Professor: Proper structure for sentences, good words. Yes. Grammatical here also refers to, you are right, proper structure but then we need to know what is that proper structure, grammatical here also means acceptable, that is an acceptable is commonly agreed between people. So, when a child says something, after a certain point we do not say that we do not understand, and that is also grammatical in the sense that at the level of sound what happens is.

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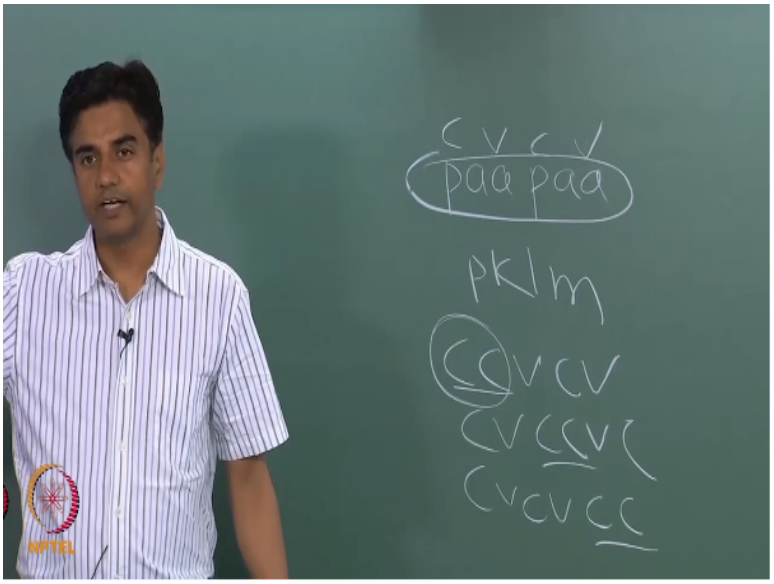

See, if there is a word which is like, okay, see this thing, this is like, this is a word like ‘Paapaa’, through these kinds of things what children figure out and this is what refers to underlying patterns, is this pattern that a word requires a consonant, a vowel, a consonant, and a vowel, you will not find any child saying things like, what is this word? Anybody, you do not know, can you say this word at least, no, do you know why you cannot say this word?

Student: Does not have a vowel.

Professor: Does not have a vowel, this word does not have a vowel, now what I want to tell you is children do not learn, I mean of course they learn ‘Paapaa’ but what they are

learning is not individual words, what they are figuring out is the underlying pattern of word formation, that is and again this happens on the basis of this limited input. As I have told you just now, that until the age of 18 months whatever a child goes through, has only limited vocabulary of, let us say 15 to 20 to 30 to 70 words, it jumps exponentially at a particular stage during a particular time frame.

Now, that gymnastics is not that important, what is important is, what happens is this, this is cleared, that you cannot have a word which does not have a vowel. What the child also figures out is that not every word is going to be consonant, vowel, consonant, vowel, consonant, vowel that is, what a child figures out is that they are going to be words which are going to be like this, where you may have two consonants as a cluster in the beginning, the child also figures out that at times you may have two consonants of, two consonants as a cluster, somewhere in the middle of a sentence and then probably we may have a cluster at the end of it too.

However, again based on the same input, which is for every child, of every language, of every place on this planet input remains fuzzy and limited but on the basis of the same thing, a child figures out that probably the language that is being spoken around me does not allow a cluster, the example that I was trying to give you last time was from Punjabi that Punjabi speaking children who acquire Punjabi or are growing up in Punjabi speaking areas try to simplify clusters even from the languages which may have clusters and therefore, words like school becomes ‘sakool’ for them or they end up saying ‘sakool’, words like scooter becomes ‘sakooter’, get it.

So, they have figured it out, get this point, that is what I am trying to say. That the input is limited, fuzzy, the output is grammatical, so, when a child says a word like ‘paapaa’ it is a perfectly grammatical, grammatically acceptable pattern of the word that the child is producing. Right now, we are talking about patterns of grammaticality at the level of words, but similar kinds of patterns are visible at every stage. Grammatical also means ‘sakooter’ and this is important for me to underline to you here, that when a Punjabi speaking child says ‘sakooter’ this is a grammatical pattern for them, is this making sense to you? Why is this a grammatical pattern for them? Because.

Student: Because it is an acceptable pattern.

Professor: Because it is an acceptable pattern for them, get it. Therefore, grammatical does not refer to what I think is right, grammatical also refers to acceptable patterns and then there are overlaps between grammaticality and acceptability which we will get to some other time, okay, along with the paper from Ray Jackenduff which you should read, which is a nice reading, it should be done, it is very interesting reading as well you would not stop reading it if you are interested in looking at how development takes place.

I will also send you the book that has these things in it, Liliane Haegeman's book on government and binding theory which is about principles and parameters. I did not find it on the library website and if it is available it was showing one copy but it must be somewhere and I will send you the electronic copy, please keep that copy and not only just keep that, keep reading that as well.

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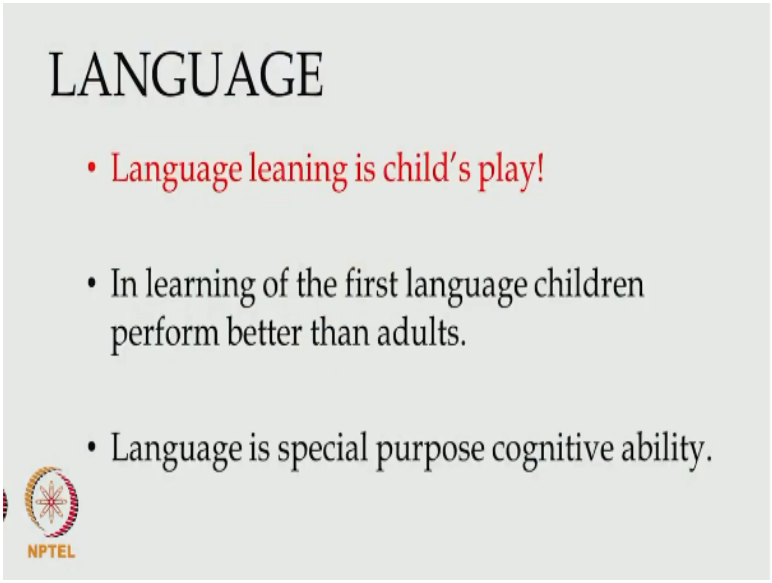

Now, so moving ahead from here, we have seen these things in the sense that language learning is really not very complicated for children, it happens normally, it happens on its own, it does not take much effort, that is exactly what we mean by language learning is a child's play and what I do want you to understand is that there are some keywords that are

important here, key word is effortless, there is no effort that is being put in it, it happens without specific instruction. These are the two key points in language learning.

When a child is learning a language effortlessly without any instruction based on limited input from the environment, the output is infinite and grammatical, the role of the human mind, that is language acquisition device, that is universal grammar, and its components as principles and parameters are responsible for this, before this theory, before this principles came into existence, people did not pay proper attention to the role of the human mind in understanding the language, in acquiring the language.

This is why we say language learning is a special type of cognitive ability, the things that we have discussed, that we learn other kinds of things like singing, swimming, dancing, flying, and various other things when we are grown up. Therefore, those, there is a clear distinction between language, and everything else, and on the basis of that, we say language is a special purpose cognitive ability.

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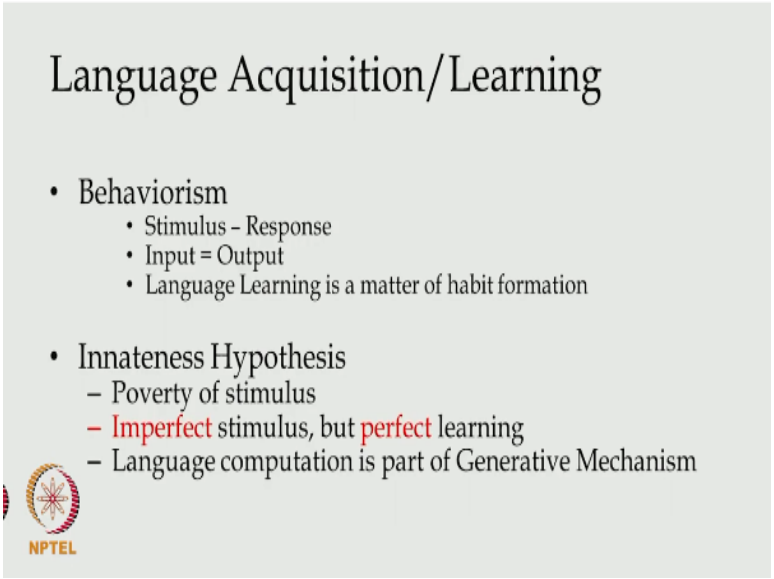

Just now, what I told you people did not pay attention, pay much attention in the acquisition of language and particularly the role of the human mind in it, so they simply have believed that we learn through practice and this is referred to as stimulus and response. So, you hear something that is called stimulus and when you respond to that

learning takes place. So, a child listens to the word ‘paapaa’ and it says ‘paapaa’, it finds out ‘kaka’ says ‘kaka’, ‘mama’ says ‘mama’, keep saying these things you learn this.

Now, we are not trying to laugh at this thing, we are only saying that this was based on limited observations, this was based on, not much effort was put into understanding the language and the simple thing which was not looked at was how is this that output is not equivalent to input, where the proposal from the theory would say the output will be equivalent to input, which is not true, at the age of 5 and 6 you see the output is infinite, probably a child would not have gone through that much of input in 5 years of age, 4 years of age, so, how is that possible this was not paid much attention to.

And they believe that it is a matter of habit formation that you keep repeating things you hear things and therefore you learn it. Even now when you ask people a lot of, not a lot but in a simple way how do you think we learn the language, lot of things people would say without knowing the term behaviorism or stimulus and response, whatever people are going to tell you is are going to be around these things that we listen to things, we repeat things, we learn from our parents, we learn from people around us.

See huge part of that is true, it is not that everything that they are saying is not true, the only thing that we are not, people who are not paying attention in this with the role of the human mind in it and therefore, this when people started looking at the role of the human mind, that is called innateness hypothesis where you have seen how it works and then it becomes really a critical thing and therefore, you must have, I can say but you must have studied that human mind is different from minds of other species, one of the ways in which it is very different is language, that we do not know much about, that is the part of the human mind responsible for the language learning, that is which part of it is responsible for language learning is something that we do not know.

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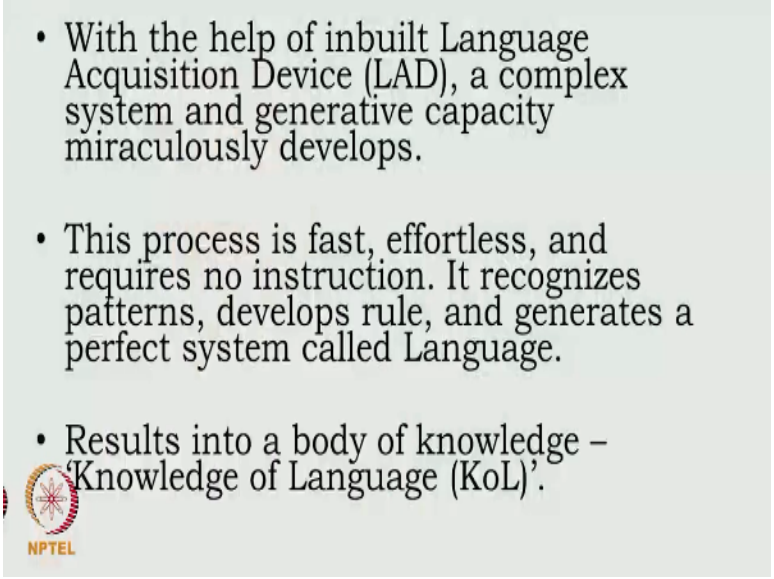

Now, I want to come to this last part we have already covered most of it. So, see deducting the rules, that is deducting abstract patterns from the available input is actually what we mean by language acquisition, that is I am listening to words and of course, I am producing physical words like 'papa', 'mama' and 'chacha' and all other words. However, what my mind is actually doing is deducing abstract principles of words, word formation, the capacity to do so is called generative capacity, get this thing?

So, you are going to hear this word, you are going to read these words in many chapters that you, when you look at the book, you are going to find this word generative and it is important to understand generative simply means the capacity to deduce, to deduct rules and then the ability to produce new things on the basis of those rules.

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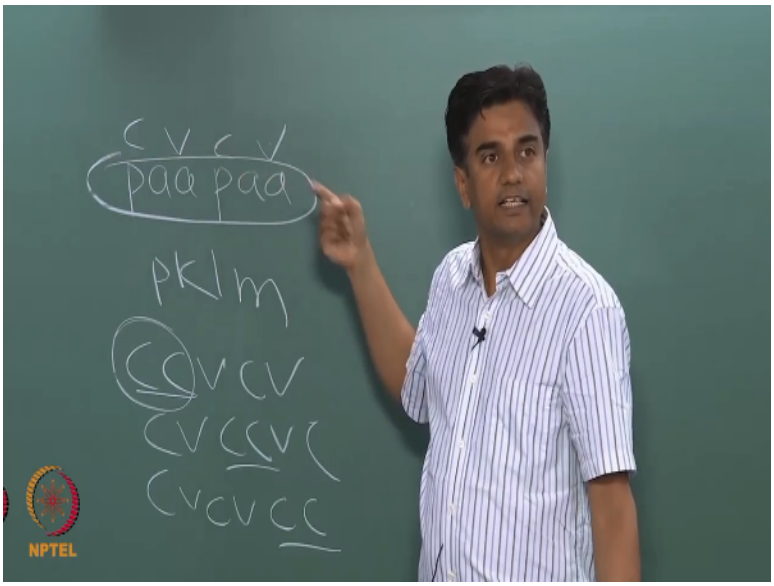

So, if we have other words like this pattern, so what we know is this pattern, that is, it is an acceptable pattern of word formation, which is cv, cv that is very regular and productive pattern, once we have, once we have acquired that then we can come up with n number of words through this thing, every word, every sound that you are going to fit into this, every set of sounds that are going to fit here are going to be the grammatical and acceptable pattern, may not be in one language but definitely in some other language.

So, can you come up with a word on the pattern of this which you may not have heard so far? You are smart engineers, do you understand my question? So, on the basis of this pattern can you come up with a word which you think you may not have heard so far?

Student: Xa Xa.

Professor: So, that will be? Say it loudly, I did not hear it.

Student: Xa Xa.

Professor: So, remember we are not talking about how we write it, we are talking about how we say it, so the word will be?

Student: Xa Xa.

Professor: Xa xa, have you not heard this word before xa xa, we may not be writing it with xa xa but the word xa means?

Student: Go.

Professor: Go, and xa xa means?

Student: Go go.

Professor: Something of that sort, we have heard that word, you can do much better than that, try it. Something you think we may not have heard. Now, let me keep telling you while you are working on this and when the moment you come up with that raise your hands and I want to get that word, so all I am trying to say is that even though you have not heard that word, even though that word does not mean anything, that is an acceptable word. And it is likely that that word will acquire some meaning someday, not necessarily it will acquire, but it is a possibility that that will acquire some meaning someday.

Also so that part of word-formation tells you that association between the meaning and a word is also not really that important, it is just a coincidence that the rest of the words that we know have an association between the word, that is a product of this pattern or this pattern or this pattern or any other pattern and what it refers to, I am talking about something where I need your attention, I hope you understand this thing, that it is a coincidence that connection exists in a lot of them, at the same time it is also possible that for a lot of such words, this connection does not exist, that is there is no object associated with those words.

However, they are possible words simply because they follow a particular pattern however, some sounds that you may be familiar with if they come out of the unacceptable pattern that is neither going to be acceptable as a word and therefore, it is almost negligible as a possibility that that will acquire any kind of association with any object or that as a word, I hope this is making sense to you.

Now, I am giving you this example to indicate what I mean by generative, what I mean by the word generative. The word generative simply means the capacity to deduce, to

deduct rules, the capacity to understand patterns, and the ability to use that pattern for new words, and this is the capacity that is responsible for infiniteness of what we do as linguists, and that is the capacity which makes a distinction between the innateness hypothesis and behaviorism, that in behaviorism that capacity was missing, that link was missing.

I mean not that people would not learn a language the way that we are learning, people were learning the language the same way, it is just that we did not understand, we did not have things to say that we are saying about now. People were learning the language the same way, it really did not, people did not care whether you call it behaviorism or innateness, they were learning the same way ever since.

It is just that we did not know that how does this happen, that we have this infinite capacity to come up with words, the only thing that the innateness hypothesis has done is it helps us understand that it is our generative capacity that is responsible for any word, any sentence that we may be speaking. In fact, we can also come up with words that may not have any meaning but maybe acceptable patterns, maybe be acceptable words.

I hope this generative capacity is clear to you, we will be giving lots of examples of such things, you did not come up with a word of that sort? It is okay if you did not come up with that word, work on that, work on that word, okay, which you may not have heard and that does not have to be from English or Hindi that could be from any language. And this capacity develops miraculously, I have just given you an example of 18 months to 24 months, I am going to send you a paper, you can see that.

So, the important claim is this generative capacity miraculously develops, this is what we mean when we say language happens to us, language develops in us, that is the capacity to deduct rules is the meaning of language learning and this is the capacity which is responsible for infiniteness. I have told you about the words like effortless and other things you can see in the second point, this process, that is, this process of deducting rules is so fast, so effortless, that it requires no instruction.

This generative capacity recognizing patterns develops rules and generates a perfect system called language. This is exactly what I have been underlining so far and I will be giving you more, and more examples of these things and these things. I am going to come to this pattern very soon when we have looked at sounds, so maybe tomorrow we will look at sound systems.

Now, this whole body of rules that this whole capacity that we know at generative capacity results into the bulk of things which is called the knowledge of language and knowledge of language is under inverted quotes which means knowledge of when we say knowledge of language, in the field of study of language we do not mean the knowledge of Tamil, Malayalam, English or French, we mean the knowledge of these rules, the knowledge of rules that are responsible for infiniteness, get it.

And that rule refers, that rule also means that see we know all those rules, that is when you were learning words as a child, you had also figured out this thing, I had figured out these things, every child, everybody figures out these things but if someone tells us how did we start learning words, it will not be possible for us to tell them, the first I figured out cv, cv pattern. In fact, we cannot even list all the sounds, forget about abstract rules.

So, the knowledge of language has this specific thing which is it is, of course, it is an outcome of universal grammar, universal principles, parameters, and all those things but this is the specific thing that we need to know about, it is a specific set of rules that we have internalized long time ago, that is we know all such rules but we do not know that we know that.

If we did not know those rules then we would not be able, we would not be speaking, get it, but I do not know all those rules, I mean, I do not know that I know all of them, it is impossible for any human being to list them, that is also part of generative capacity, that is exactly what we mean by generative capacity.

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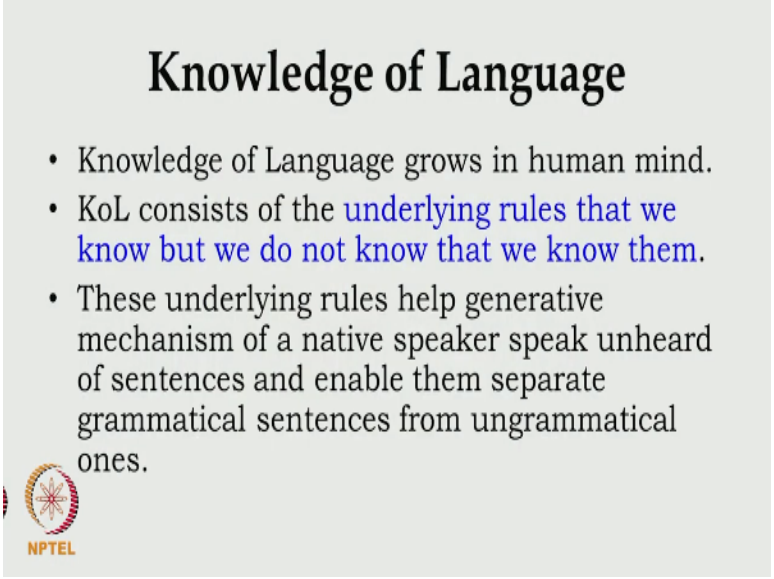

Look at the second point, the third point rather, here does this sound okay to you? Do you agree with this that these underlying rules help the generative mechanism of a native speaker to speak unheard sentences and enable them to separate grammatical sentences from ungrammatical ones? So, if someone makes an error anywhere and I am not giving you an example because I want to keep it open for all the languages, so check with your language, someone makes an error, how long does it take for you to figure out that an error has taken place.

So, Sandeep, and as I have asked you, many of you understand Hindi and I am giving you a Hindi example because I speak and I understand Hindi, so if I say 'Sandeep jati hai', is that a good sentence? No, an error has occurred, how long did it take you to figure this out? Instantaneously we do that. Now it will be unfair to a lot of people, if I ask this question to a lot of people, you know what is this error about, so what is wrong with this sentence?

That could be an unfair question because I do not expect every speaker of language to understand the significance of grammatical agreement in terms of gender, that is not important but the fact that an error has occurred, takes no time, that is a result of generative capacity, that is to separate grammatical ones from ungrammatical sentences, within no time. And even if someone is speaking very fast, you keep paying attention to

that if that person keeps making if there are patterns that are not acceptable and someone is saying you immediately figure out that this person is not a speaker of the language that he is speaking, that is at least not a native speaker of that language.

I will talk to you about native speakers and what we mean by non-native speakers and native speakers some other time, right now, I want you to understand these points that I have highlighted for you and also, I will come to that in a moment

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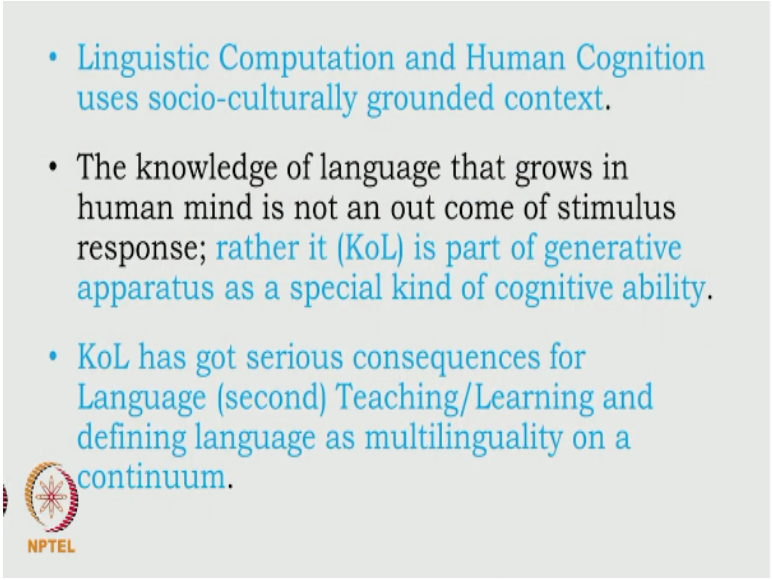

So, look at the first point here, I know we are running out of time, I will stop in a couple of minutes, linguistic computation and human cognition use socio-culturally grounded context. Now there are three phrases here, linguistic computation, human cognition, and socio-culturally grounded context, these are not complicated things, I just want you to understand, linguistic computation simply means activating generative mechanism, that is how we come up with sentences, how we speak something that is linguistic computation, which is part of human cognition.

That is all that computation takes place here and we are not even aware of that computation when it is going on because at every single point nobody knows what you are going to say next, that is I do not have a sentence for the next moment, I come up with this sentence instantaneously. So, these two things have great coordination between

them human cognition and linguistic computation. However, what is important for someone to be able to speak properly and to function in society with the explicit knowledge of E-language is not just these things but also socio-culturally grounded contexts, that is what is appropriate and what is not appropriate.

Remember the other day I gave you, I asked you the example of how do we say when someone dies, there are different ways of saying things, one is acceptable, the other may not be okay, one may be appropriate, the other may not be appropriate. So, what is appropriate is acceptable, what is not appropriate is not acceptable, now not necessarily what is not appropriate is ungrammatical, get it? What may not be appropriate may not be acceptable but maybe grammatical.

So, grammaticality is not the only condition for acceptability and appropriateness, when we put the coordination between grammaticality, acceptability, and appropriateness that is part of what we know as socio-culturally grounded context. My point here is, first 2 parts linguistic computation, and human cognition refers to I-language, socio-culturally grounded context refers to E-language.

Now, my point here is both are part of the generative mechanism, that is we do not learn about the appropriateness and the connection between grammaticality, acceptability and appropriateness separately, they come together, get this point, should not be very difficult. Therefore, all of them are part of the generative mechanism. And the knowledge of language that grows in the human mind is not an outcome of stimulus-response, that I just told you that is not part of behaviorism rather it is part of generative apparatus as a special kind of cognitive ability.

And the third point is not really that important for us, I mean it is an important part, that the knowledge of language has got serious consequences for learning and teaching where we need to understand what knowledge of language actually guarantees is that continuum, that why it is difficult to name a language, which is part of the external language.

Remember the continuum that we have talked about, the knowledge of language in that continuum is embedded in the knowledge of language, so names of languages as external manifestations are our creations, what we know is just language, I stop here and we begin talking about sounds tomorrow.