Principles and Parameters in Natural Language
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Lecture - 06
How do we learn language?

Today we will look at language acquisition that is Learning Language. Like we have discussed about language and dialect, and remember I discussed those parameters with you throw which people would wants to believe the something is language and something is dialect. Remember those things? Remember? Why something is language and why something certain; why certain languages are considered language and certain languages are considered dialects? We discussed some of those parameters with you last time.

Similarly when, and those parameters do not make much of a sense in technical terms they are all very superficial they are all very trivial. Similarly when you when we talk about language acquisition there are so many things that people would want to tell you which do not really make much of a sense. However, we cannot denial of them right away. So, if I ask you again and which I have ask to earlier to think about, how do you learn language what happens to us what will you answer how will you answer this question should not be very difficult thing right it is like asking someone what happens when you get fever right.

Student: (Refer Time: 01:59).

You have higher temperature right you can realize that right you have higher temperature and others can feel that to. Not exactly in that sense, but when you learn a language you know you are learning a language or after you have already learnt to language, you speak others can see and you know. So, this question is about something not obscure. It could be little bit abstract I am not deny abstract nature of language leaning, but it something that that you have gone throw. So, have in giving that background can you tell me what happens when we learn language. While your thinking let me add 2 parameters to that, when we say language learning we do not make a distinction at this level between learning and acquisition what would be the difference between learning and acquisition?

Student: (Refer Time: 03:07).

Learning could be leave with little bit more effort right that is what you mean whereas, acquisition is automatic unavoidable learning is with effort, but at this time we are using the 2 terms inter changeably; when I say language learning I also mean language acquisition we are not making strict distinction between the 2 terms. So, when I am asking you how do you learn a language, I actually mean how do acquire language and when I am asking you we are not talking about learning English when you went to school when you are a grownup kid, we are talking about the language that you learnt as your natural language as your first language, what are the things that happen let me talk, let me let you talk. So, what happened when you are learning I have already ask you this question about number of languages that you speak and all of you grew up speaking a language, which language did you grow up speaking.

Student: Telugu.

Telugu (Refer Time: 04:28).

Sir.

Student: Malayalam.

Malayalam.

Student: Malayalam.

Malayalam.

Student: Malayalam.

Malayalam.

Student: Telugu.

Telugu.

Student: Telugu.

Telugu.

Student: Telugu Tamil.

Tamil.

Student: Hindi.

Hindi.

Student: Telugu.

Telugu.

Student: Telugu.

Everybody Telugu.

Student: (Refer Time: 04:43).

Telugu.

Student: Telugu Kannada.

Kannada good.

Student: Malayalam

Malayam; so this side.

Student: (Refer Time: 04:52).

We have Malayalam people right. So, what happened when you are learning Telugu or Malayalam.

Student: (Refer Time: 05:01).

Or Kannada or Tamil for that matter what happened, how did you do that? do you remember how did you learn it. If someone forces you to tell the story of how you learnt a language then you what would you say what happened.

Student: I do not remember, but I guess we put into memory the sounds which we heard and that face of our age and we started telling that properly.

So, you put

Student: Some.

You put sound similar memory.

Student: Sound then how to articulate them.

How to articulate them.

Student: (Refer Time: 05:50) memory and from the rules that make the sounds and started communicating with the people around us.

That is what happened. So, if I ask you ok for all right let me ask let me wait before I ask you another question what happen to you.

Student: (Refer Time: 06:05) people around me I just talking.

People around you were talking.

Student: So, it is like (Refer Time: 06:11).

What which language where they speaking around you.

Student: Like Telugu.

Telugu.

Student: So, then it is like when they speak like I get a direct co relationship between the verb and the object. So, I learn a quickly.

And fine.

Student: Hearing sounds and how to hearing those language.

Hearing.

Student: Language around.

Telugu other Telugu is speakers.

Student: (Refer Time: 06:37).

What happened?

Student: Acquiring how to how to articulate the sounds.

So, you when you heard others then you also acquired how to say those sounds.

Student: (Refer Time: 06:51) this sounds.

Right.

Student: What those sounds mean to which object

Wait what those sounds mean to which objects?

Student: For example, a book means like this object.

A book is not a sound.

Student: Mean right, book is what.

Student: Object.

No in terms of language book is what.

Student: A word a word very nice. So, first you learnt sounds right and what are the sounds in book?

Student: (Refer Time: 07:19).

Of course we are talking about a English word, but let us say what is the word for book in Telugu.

Student: [FL].

[FL]. So, what are the sounds in [FL].

Student: [FL].

[FL].

Student: [FL].

[FL].

Student: [FL].

[FL].

Student: [FL].

[FL].

Student: [FL].

[FL] and

Student: [FL].

[FL].

Student: [FL].

Right, these are the sounds of this one word [FL] right. So, you first learnt this sounds then did you learnt how to make a word yes or no; am I asking you too many questions are these questions not making any sense, did you learn how to make how to make words.

Student: Automatically.

Automatically; the auto automatically is true, but did you if I ask you now fine you learnt automatically, but if I ask you now tell me how to make a word can we tell me.

Student: There are some rules.

That is right that is exactly what I am asking you asking for. So, if I ask you tell me rules of words the way words are made and this question is not just for him this question is for everybody. Tell me the rules of the rules throw which we wake words can you tell me the rules no.

Student: It is a derivation from other language.

Derivation from other languages: now you are adding more complications, but that is. So, derivation from which language?

Student: (Refer Time: 09:06).

Tell me you learnt Malayalam right.

Student: Yes.

So, how did you learn Malayalam?

Student: (Refer Time: 09:14) they teach you to say of particular word at a particular situation, when that (Refer Time: 09:36) for example, if you are a kid and when you are reading of someone tenses reading (Refer Time: 09:31).

Right.

Student: And (Refer Time: 09:34) repeatedly the kid learns like that is what you have to do, that is what you have to say when you are leaving. So, that may be that way I.

Sure, but what where is the role of other derivation other language in that.

Student: (Refer Time: 09:51).

Oh that is for previous question sorry. So, and. So, thus these can I take it what you said as follows. That we learn when people teach us can we say that, that would eventually mean there we cannot learn if you are not taught is that true? I hope I am not asking you too difficult or too complicated questions right, but some of you look like I am asking some nuclear science or something I am not asking you how to make a nuclear bomb I am asking you how to make a word right.

So, you have taking it to little bit more fundamental level which is fine, but tell me the answer to this question and only tell me only what you think you do not have to be right or wrong. Can we learn only the things that we are taught or we can learn other things also we can learn other things, then do you not thing the role of teaching is negligible, do you see that the role of consist teaching to a child is negligible.

So, some people can teach you how to say- tata, I see some times I am I am sure you must have seen those things to say- hello right say thank you, but those things are

responsible in a very minimal way for learning language and I want you to see that and therefore, I am asking you this questions that, do you remember when you were learning Telugu how did that happen. So, you said we learnt first sounds to of you said that, if I ask you write down all the Telugu sounds in your note book can you do that.

No and then this is no surprise for me. I have talk to you about this thing even last in the last class that this is an example of something else which we come to in a moment, but your right your not wrong when you say I learnt sounds, but when I ask you to write all the sounds of Telugu you say no I cannot write why? Did we learn the rules to make words or did we learn by words themselves.

Student: (Refer Time: 12:40) words themselves.

Word themselves right if that is so, then what is the problem in writing all the words. If you learnt all the words then what is the problem in writing all the words.

Student: It could be some new (Refer Time: 12:58).

No there could that I can assure you there could not been new. The sounds that you learnt in Telugu when you are 4 year old or 5 year old, there is no extra sound that has been added in Telugu that I can assure you. I know nothing I do not speak Telugu, but I can assure you based on my understanding there is no sounds and this is not just for Telugu. This is for Tamil, Malayalam, Kannada, English, Hindi all for that matter all the languages of the world no new sounds. Any word may have come right for example, the word computer is not just a word in English, but this is the word in all the languages that we know right do you say a different word for computer in Telugu, in Tamil.

Student: (Refer Time: 13:56) called [FL].

You do?

Student: (Refer Time: 13:57).

Right do people use that word all the time?

Student: Tamil Nadu, yes.

Tamil Nadu yes; Malayalam what is the word for computer in Malayalam computer right, but apart from that word what was the word.

Student: [FL].

Apart from that word do people use computer also.

Student: Yes.

Right.

Student: Yes.

So, my point is computer is not just word for English it could be a word in many languages. So, a word may have been added, but no new sound has been added that I can assure you right still you cannot write all the sounds, and if you say we learnt just words then you should be able to write all the words and particularly if we learnt only the words that we were talked or we heard then all the more easier this exercise should be for you write them, but can you write all the words that you know the answer should be very emphatic no that we cannot write all the words that we know why not. So, the let me change the question little bit. When we say 2 2 plus 2 is 4 right do we learn the process involved in that or do we learn 2 plus 2 is 4 and then we need to learn 2 plus 3 is 5 separately, which one do we learn which part do we learn?

Student: (Refer Time: 15:44).

And that process is what.

Student: Addition, addition, addition.

Addition right; so there is a process of addition I do not want to take you into that you already know. So, we do not learn every single number that is generated through addition, what we learn is there is a process you put to different numerical values on 2 different sides and then a total of that you get as an aggregate for something and then there are other mathematical processes for that. So, when we learn that process, can we add any number after that or doing need to learn for bigger number for numbers in 2 digits are 3 digits and 5 digits we need to learn additional operations no additional operations I need it.

So, similarly there is evidence in language that we do not learn words; what we learn is the process of making word and that process is learn to way to early and here the differences when you learn the process of addition, you know that your learning that, when you learn the process of word formation you do not know that you are learning that. It is important for people I mean addition and subtraction are very simple they are not even you know at least for many people they are not even mathematical processes they are part of general knowledge, but then there are complicated mathematical calculations, you need to learn them is specifically right they do not come to you automatically. Where as all the process is involved in word formation they come to you automatically.

So, automatically so, effortless that you do not even realize that we do not even no to the extent that if someone ask me right them we cannot above; can we say this same thing about mathematics, but I know have to how to do three plus three, but I do not know how to tell you is you see my point that is the different between learning the 2 things, and I have already giving you examples of swimming and riding and flying a plane why these kinds of learning are different from learning language get the see. So, now, let me take a through how it really works how that happens we will come to word information in a couple of days, but then I want to show you how does it what.

(Refer Slide Time: 18:35)

So, we have already seen these things.

That there are lots of rules in language and those are right now what we a talking about is all those rules we learnt automatically. Before the age of 4 to 5 we have already learnt them without us knowing and realizing them. We have already learnt to all the sounds, but we can just cannot right them I have learnt the process to make any word or even the capable I have a through which I have a quid the capability to tell anyone whether this word belongs to my language are not. I want take more than 10 seconds or 10 second is also 2 long a time right.

So, we do not we do not take to long to tell whether a word belongs to our language or not. The competition the scanning or search in that the other us work that fast and we no that. So, see how it works, but be before that I want to tell you one more the story about this that like your friend was saying, we are someone tells us how to say something. For a long time people believed in the whole understanding of language acquisition, that we learn language is behavior. We learn language by imitating others, we listen to people in the society and then we whatever they say we repeat and we learn just now somebody said I forgot who said that then you said.

So, the process that your friend explained was someone tells us we hear that, we repeat that again and we say those thing several times and we learn that get it this process of learning was given a name it was called behaviorism.

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And people who gear this theory were called behaviorist and the simple rule of this theory was we get input, we and we produce output get this, but there are limitation of this principle limitation of these theory which is.

If you here if my learning is contingent upon listening to something or in a more precise way if my learning is restricted only to the terms that I here, then what follows form here is I want be able to learn the things that I have not hurt. See there us see their limitation of the is theory, I want be able to understand words that I may not have heard before. Now check yourselves a just speakers of Telugu, Tamil, Malayalam, Kannada, Hindi the have you heard all the words of Telugu, Malayalam, Kannada? At least you cannot say that with confidence that by now I have all heard all the words right, but just now I give you example if someone gives you a word.

Whether you have heard that word before or not you understanding the meaning of that then how did that happen? If it was contingent upon the if learning if a word was contingent upon mean listening to that word then how did that happen that I also no the words that I never heard before get my point. Because of this theory was rejected that no input equals to output there seems to be some problem in that. In fact, input is that it is limited and we by input we mean what we hear.

So, it definitely happens that we hear something, without hearing nothing happens true we hear something, but the output is not directly propose net to input. Output in fact, is

infinite input may be limited we do not know how much it is its difficult to quantify, but input is limited, but output is infinite for there are there are there must be something else happening some were. On the basis of that something came up something else came up and this is what is called innateness hypothesis for language learning. And in that in a innateness hypothesis what was this term is borrowed from philosophy poverty of a stimulus and a stimulus here refers to input.

So, this theory was built on the following that input is limited, but the output is unlimited output is numerous infinite and then people examined this hypothesis and proposed that learning capacity is innate. Do you understand the meaning of the word innate can you tell me what it means?

Student: (Refer Time: 24:27).

Inbuilt that is, right. So, it also refers to the learning capacity of humans that the learning capacity is in built. So, when we are born, we are born with the capability to learn a language or just to learn language making sense so for all right. I come to this last part of language computation is part of generative mechanism right I will introduce this generative mechanism in few minutes. But does language competition make sense to you, language competition simply refers to language processing that is an to be more precise it means learning or internalizing rules of the ones that we just figured out that we do not know ok.

So, this all those competition is part of generative mechanism which is already here, this is what this hypothesis is means that this is already here. So, the one more difference between behaviorism and innateness hypothesis is there was almost negligible role of human mind in behaviors hypothesis. Behaviors hypothesis was simply a repetition copying or just listening and speaking practice. These we are the key terms of behavior is hypothesis; how were as key terms of innateness hypothesis is the capacity itself is in built and the moment we say it is in built in human mind.

Therefore, the role of human mind in acquiring a language is already assumed, it does not even require further underline or highlighting. But between need to say the there is a huge role of huge role of human mind in language competition, language processing unpacking those a rules get it and I talk about generating mechanism in a few minutes.

Imperfect stimulus what does this mean to you? Imperfect is stimulus meaning imperfect input.

So, what does this refer to? An it is this is an, this is also an important part for us to understand. Input fact is stimulus means when a child is listening to things in society right nobody is speaks to children in the way that will be easier for them to learn the language. Have you seen a child growing up you may not remember yourself as a twos to young child, but have you seen a young child growing. All of you must have sense some over the some over the other child what do they do, what do people do to them, when they are talking to children what do they do to them do they talk to them as [FL].

So, that the learn the word [FL] or the just keep talking to them people just keep talking to them and definitely children do not like this they in. In fact, if you talk a lot to a child what does a child do if u talk a lot to them any idea.

Student: (Refer Time: 28:22).

That means you have not seen a child growing.

Student: (Refer Time: 28:26) cry.

Cry you, no why they cry.

Student: (Refer Time: 28:30).

No, they do not even realize about input they at that time, but your right so much input your right what happens to them is, everything that your tell them are you think your telling them sounds like noise and what happens if someone keeps talking to you in German, Spanish, French right sitting next to you for one hour. As a grown up person you can at least say that shut up man.

Student: [laughter].

Right whether other person understand shut up word or not (Refer Time: 28:59) say shut up what is this nonsense. The problem with the child if the child does not even no, how to say nonsense, shut up all that. So, the in response the just start cry which literally means look I do not understand these things, they these things to not make any sense to me, but trust me the acquisition of sounds begin through that and the fact that people are

not away are of what they are saying, they thing they are being nice to children without realizing that your becoming really new sense to them right.

This is what is called imperfect stimulus; that nobody is being nice to children in terms of they are learning, not that the need you to be nice the point is the capac in built capacity of human mind can work on the basis of imperfect in, imperfect the stimulus, imperfect input and I still you keep talking, you keep giving them words sounds you do not even need to worry whether I am giving all the sounds of Telugu or Tamil or not. In a matter of few months or few days or whatever the total number of period may be the child has figured out all the sounds of language is spoken around them.

I do want to draw your attention to one more point, that when children are learning language they are not learning either Tamil or Telugu or Malayalam or English or anything and this has a meaning; you may say what I am saying means the same thing, but what I am has a meaning they do not learn that these languages, what they learn is whatever is a spoken to them. They are to different things, they for you they may mean the same thing, but it has different implications.

They are not learning Telugu or Tamil Kannada Malayalam Hindi English, they are learning whatever is being a spoken to them. So, if you learn if a child is born in Thirupathi and the only reason why I am given with the name of this place Thirupathi is because it has it probably that places speaks both Telugu and Tamil equally well and probably that has emerge in to a new kind of different kind of Telugu or a different kind of Tamil.

So, what if you are speaking that language to that person, if someone is as speaking to a child growing up in Dehli in Hindi, Panjabi or Hindi Panjabi mixed or whatever the child is not learning Hindi or Panjabi or anything the child is learning the language is spoken in Dehli, the language is spoken in it is neighborhood and language is spoken to the child get it all that depending upon different children are imperfect is stimulus. They go here and the keep going to human mind all the time; however, the output is completely perfect when the child is speaks stats speaking, they do say the word [FL] without any difficulty. A child if u say the word scooter to a child school to a child, the child says school scooter anybody understands Panjabi here no little bit. Little bit of Hindi how many if you understand little bit of Hindi little bit many of you well that is (Refer Time: 32:49) that is

good how many if you have been to Dehli quite of you of you of you grate. Have you a herd some Hindi speakers in Dehli, which is an influence of Panjabi saying [FL] no you have probably you have not or maybe you have ant noticed or your have yes or no.

Student: Yes.

Yes instead of school they will say.

Student: School.

Other people say is school Panjabi people say.

Student: [FL].

[FL] very nice; in fact, you listen to our pry ministers speaking you will find some of these things.

Student: (Refer Time: 33:32).

Right they, I am not making fun of them fun of anything please do not get me wrong [FL] now what is it that is happening let me take you to that process. If you these are English words right [FL] and [FL]. When use when you learn these words as English word then the first 2 words first 2 sounds of these words are clusters first 2 sounds are clusters cluster is in the words station the cluster is between [FL].

Student: [FL].

[FL] in the word scooter the cluster is between 2 sounds.

Student: [FL] and [FL].

[FL] and [FL] get it English speakers use them as clusters probably Hindi is speakers also do and Tamil is speakers also do, but Panjabi is speaker do not like clusters. So, they just simplify the cluster that is the cluster is gone if you remove the cluster from they are and insert another vowel then it becomes [FL].

Student: (Refer Time: 34:42).

Get the see. So, that not doing anything wrong this, this kind of thing may appear funny to us by us I mean funny to people who do not speak that way, but keep in mind the process the process of Panjabi is limited number of clusters and trust me I will come back to clusters in a couple of days and then you will understand these clusters and sounds in more details. Right I am giving you these examples for just simple reason to see that if you talk to them with the language in the language that follows clusters, the child we learn cluster. If you talk to them without clusters day would not learn clusters and eventually when they say something they will use that word without cluster or for that matter if they use remember what I told you they do not learn words or we do not learn words what we learn is the process of words underline process of word for information.

So, if they learn any if they need a new word, and that word has a cluster they will just remove that cluster and use it get it. So, these is why these speak that way this is what I am saying the stimulus is very minimal lit little limited and all the way to imperfect; however, the output is complete no one learns incomplete words. When the child produced starts producing a word the words are complete they have learnt all the sounds and all the rules involved in word information get it specific examples are coming up I will give you those examples.

So, look at this.

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- One of the most powerful theories of language learning/acquisition assumes that all normal human children are biologically hardwired to learn language (Chomsky 1965). This requires INPUT from immediate surroundings.

- Input is fuzzy and inadequate in both quality and quantity.

- This theory has imprints of Plato's Problem of how given so little we know so much (also known as Poverty of stimulus).

This again a how it words every may many things that I have told you so for a returning these 2 three sentences. So, one of the most powerful theory is of language learning assumes that all normal human children are biologically hardwired to learn language, this is what is the meaning of what was the word innate. Human children are by birth guarantee it that they will learn language and here you can read this carefully we are talking about normal human children not children with disabilities, unfortunately there are some children who may have some kind of disabilities.

So, we have we this theory does not talk about them they are may be some kind of learning deficit are deficiencies those are unfortunate situations, but for normal children the capacity to learn is inbuilt alright input is fuzzy in perfect limited in adequate both in quantity and quality very limited in quantity quality may be very distorted right, but the child fixes all those things. And remain me about this thing I will give you more examples or even I mean these example will come up any way and any case, the word poverty of stimulus was first I was borrowed from a philosophy as I told you and this is platos idea. And in fact, that is known as platos problem in philosophy were you says how does it happen that given so little we learnt so much and is not really talking about language, but platos idea was borrowed and then applied to this kind of learning situation, this is why this ref this poverty of a stimulus is credited is platos problem.

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- With the help of inbuilt Language Acquisition Device (LAD), a complex system and generative capacity miraculously develops.

- This process is fast, effortless, and requires no instruction. It recognizes patterns, develops rule, and generates a perfect system called Language.

- Results into a body of knowledge – 'Knowledge of Language (KoL)'.

With the help of in; so now, now there is one more thing there I need to tell you. This in built capacity has a name and the name is called language acquisition device.

In sort it is called LAD this is a complex system I will elaborate that little later. We you will remember this thing language acquisition device now it is important for me to note here are at least for you that this is not a physical device this is a hypothetical device; right yesterday we have look that the fact that there is nothing in here.

So, when we say human mind has language acquisition device an it, we are not talking about a device like this or a device like this. These are physical devices language acquisition device is an idea it is a hypothetical device get this see. What it does and why it has been hypothesized is the following.

What it does is it has two parts in it, it is sorry it has just one thing inside the device just one thing which is called universal grammar Have you heard this term before? No let us look at this thing this will make more sense.

(Refer Slide Time: 40:46)
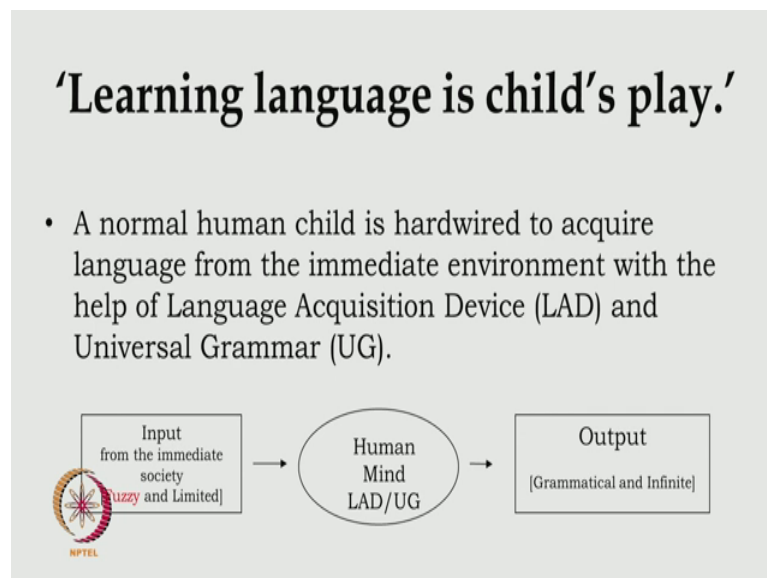
Is a in a middle the in the circle represents human mind, which has got language acquisition device any and that language acquisition device has something called universal grammar. The word grammar you may have must have heard before what is that mean what is that mean?

Student: That means, of (Refer Time: 41:12).

Set of rules right an I am asking these questions not to check your vocabulary you are anything. I am asking you these things just. So, that we have talking about a specifics set of rules or a book that descries rules most of the time when we hear the word grammar, idea of a book comes to mind right which as which is like a rule book, grammar of English or grammar of Hindi or Telulgu Kannada. This universal grammar is not grammar of any language as you can see the term it is says universal grammar if at all it is a grammar of anything it is grammar of all the languages of the world get this. See this grammar has two parts: one part is called principles and the other part is called parameters; there is just two parts in that principles and parameters principle dictates the rules that are.

Student: (Refer Time: 42:24).

Common to all the language is of the world and parameters talk about the rules that are different in different language is. If there is a rule that are different in too many languages right they become universal for those many languages get it. So, it is hard to put a finger on the rules of parameters, but it so easy to talk about principles.

And those principles are not really very complicated principles, they can be as simple as all the language is must have sounds and hear by language we refer to natural language spoken language. The moment we say we are talking about spoken language we cannot have a spoken language without sounds that is a universal principle. All the language is of the world must have verbs, these are this is also universal principle all the languages must have sentences, all the language as must have words be there universal principles and I have given you the example of parameters, the other details such as were the words occur in a sentence and more as specific details become part of parameters.

So, or a system that contains both principle rules and parametric variations is called universal grammar and that grammar now you can see that includes both differentness and similarities of all the languages all the rules of all the languages let us put it this way all the rules of all the languages is in bedded in universal grammar and that we have here. This is all hypothesis therefore, we talk about it has language acquisition device get this see if there is any confuse an about it any difficulty about it you can ask me this thing later has well.

So, this is how it works as we can see a normal human child is hardwired to acquire language form the immediate environment and this is an another key word that guaranty us that if your born in Chennai, you will learn Tamil effortlessly. If you are born in parries you will learn French effortlessly and again the word born is not important what is important is if you leave there. You could be born anywhere and if you at this located to another place then you learn the language of that place.

So, the word born is not important what is important is if you are in a particular place, while you are learning the language while your growing up then you learn the language up that place this is what it refers to when we are saying form the immediate environment. Get the see form the immediate environment part and we the way will learn it is through with the help of language acquisition device, which has got universal grammar in it. If you look at this is scheme then it is talks about input and output, the input goes in human mind and then it gives us output. Now if you compare both behaviorist hypothesis and innateness hypothesis, you can see that the whole roll of this circle was missing from that are was not at least hypothesized. With the hypothesis of these things this mechanism guarantees us that the fact that we know lot more than we have been exposed to is because of this.

And what also follows from this particularly with a hypotheses of universal grammar right with the term of universal grammar and universal grammar being in your mind, do not be confused that we will be able to we why did that we do not speak all the languages is a world, if we have rules of all the language is of the world in our mind right. If we are born with all the rules, then why do we not is speak all the rules all the all the language is the constraint is.

Student: (Refer Time: 47:40).

Sorry.

Student: (Refer Time: 47:41) input.

Do we input do we will know the memory of do we even know the capacity of human mind is? Hard to define it in terms of 32 GB your 500GB it is impossible we do not know therefore, we cannot say a memory could be a problem, you know all the languages of the all the sentences of your language. In fact, you know all the sentences

that you may not have ever heard before do you feel any lack of memory does you tell you the delete some files.

Student: (Refer Time: 48:20).

Does it never tells you delete some of some files otherwise you cannot keep anything else anything extra right. So, we are we are not looking at this aspect at this time, if time permits all show you some of the things. In fact, you should you should be aware of this thing that one of the goals of modern science, which includes modern engineering is to come up with a device which can function as human mind and the efforts are on to come up with a device in terms of computers scientist have come if long way you can see ten years behind and you can realize every next week devices change.

If you are talking about a phone, it is it get out dieted every next week right we did not have computers, we dint have super computers which will fitting this room with the memory 20 years ago as much as we have in a I phone now am I making sense. So, there has been a lot that are changed, but the efforts are one what has not happened is we do not have a device which works like human mind. In fact, lot of devices that we know can do multitasking now, is also the effort of replicating functioning of human mind there human mind can do multitasking.

So, we by saying anything we are not trivializing efforts that has gone in and the achievement that has been establish so far. But what we are saying is the we do not have we at do not have a device which functions like human mind which an we do not know simple things we do not you know the capacity of human mind right we do not know the processing ability of human mind, there is no way to measure how what I told you works that what happens in human mind that in a fraction of moment, you can tell this word does not belong to my language it is that fast. So, there are lots of things that we know we do not know. Now the reason I has starting talking about that device is study of language has a huge role to play in it. In fact, study of language gives us window to the functioning of human mind how does it really work.

And can that be translated into electrical signals inform of a machine, can we have an artificial language for a machine to understand which can make it work the way human mind works with respect to natural language, these are the new front years and challenge is of modern science of engineering. It is no new challenge it has been on for last half a

century, it will continue as long as it is a cheat and we do not know it hard to predict right now, but these things have huge roll to play in that.

So, coming back I only want to due to know before we stop, you have a different class at this time. So, we want to you a stop now that form behavior is hypothesis the role of human mind was missing. Innateness hypothesis incorporates that role and it takes care of the fact the why does it happen that we can; we also know the things that we have not heard before.

Why do we not speak all the languages of the world if we have all the rules in a our mind you your absolutely right. The role of natural environment is very important; the fact that we do not get input from all the languages of the world is what is responsible for ask not a speaking all the languages. In fact, the capacity and memory is so much that hypothetically is speaking if you can provide input to human mind form all the languages of the world it will a speak, all the languages of the world you will be able to a speak.

Now, this is too far too began hypothesis, because we know that there is no place on the on this earth which is speaks all the language is of the world at a time. A child growing up in any place in the matter of 5 years or 6 years will not be able to go through all the language is of the world will not be able to receive input in all the language of the world therefore, we do not speak all the languages of the world; however, hypothetically is speaking if provided those inputs we will be able to is a speak get this point.

So, these things may sound little bit to is stipulative little bit to hypothetical, nonetheless they take care of the claims that they are making.

Universal Grammar

- "UG consists of a set of innate, abstract, linguistic principles which govern what is possible in human language" (Larsen-Freeman & Long, p. 230).

- Principles cluster around "parameters" – sets of properties of a language that vary in certain restricted ways.

More, on the role of universal grammar.

Knowledge of Language

- Knowledge of Language grows in human mind.
- KoL consists of the underlying rules that we know but we do not know that we know them.
- These underlying rules help generative mechanism of a native speaker speak unheard of sentences and enable them separate grammatical sentences from ungrammatical ones.

What we mean by knowledge of language next time when we meat.

Thank you.