Language and Mind
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Module – 01
Lecture - 04
Learning Language

So far, we have been looking at some of the concepts of language learning. Before that, we talked about language and we saw that language is a sophisticated product of human mind. Human mind has a great role to play in language learning. We have seen this part when we were looking at language learning. We have seen that, findings of the study of language in the domains of linguistics, has contributed a lot to the understanding of both language and human mind.

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Some Concepts

- Language
- Linguistics
- Language Learning / Acquisition
- Behaviorism / Innateness Hypothesis
- Generative Mechanism
- Language computation

We looked at generative mechanism; we looked at innateness hypothesis; we have looked at acquisition and learning process so far. Just to repeat the last point about language computation – the uncovering of rules from the input that human mind receives is called language computation. Generative apparatus helps uncover rules from the input that it receives from immediate society and that is what is responsible for us learning language.

Foundation of Language Acquisition

- Language Acquisition Device (LAD)
- Universal Grammar
- Principles
- Parameters
- Knowledge of Language (KoL)
- Generative Capacity

Now, when we moved on, we saw language acquisition device; we have looked at universal grammar; and, we saw, we established that, language acquisition device is a hypothetical one and it is argued that, this device is an inbuilt capacity that every human child is born with. Universal grammar is a set of principles and parameters. Principles tell us what is possible in language. And, with the help of parameters, we understand how languages differ from one another. These things result in a body of knowledge, which is called knowledge of language. We have elaborated on this last time.

A knowledge of language is a special body of knowledge that we developed while uncovering rules through input; and this knowledge – this specific type of knowledge is special in the sense that, we know, but we do not know that we know those rules. We have taken several examples. For example, if we know all the words of our language, the evidence of this is what we have seen. If I am given a word, it takes me no time to make a judgment whether the word belongs to my language or not. This shows in a way that, I know all the words of my language; but, if I am asked to write all the words, I would not be able to do so; that means I know them, but I do not know that I know them all. In other words, it is hidden; it is dormant kind of knowledge.

And, generative capacity is what works underlying all these things. Now, I can assure you that, you have started to think about a role of human mind in language learning. So, take a note of two terms: generative capacity and linguistic computation. And, the terms

that we have seen so far in our discussions along with the foundation of language acquisition, these things are going to be helpful in understanding what we have to discuss further.

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Human and Non-Human Systems of Communication
- Human System (Natural Language)
  - Recursive
  - Creativity
  - Arbitrariness

- Non-Human System
  - Limited signals
  - Non-recursive

Let us move on to look at the system in a different way. We want to spend little bit time on what is called human and non-human systems of communications. To differentiate the two, human system of communication is language. And, this is what is called natural language; the language that people speak. The object of enquiry for linguists and the object of enquiry for cognitive scientists with respect to language is spoken language. This is called human system of communication as well.

Now, there are certain unique features of human communication. The first thing is recursiveness; human language is recursive. What does this mean? It simply means that, a sentence in a human language can be infinitely long. We can have several words on the basis of a limited set of symbols; that is, limited set of sounds can create – can help us create lot many words. And, once we have words, we start making a sentence; and, a sentence can be infinitely long. In short, in brief, this is what we mean by recursiveness.

The other feature of human communication is creativity; it means that, with the help of language, that is, human system of communication, we can be very creative; we can be – we have the capacity to talk about things, which do not exist in real; we can create situations; we can create hypothetical situations; we can talk about philosophical objects

and what not. The capacity to talk about things, which may not be present in the moment, is called creativity. This is also a unique feature of human system of communication.

And, one more to add for the time being is arbitrariness. Now, this term arbitrariness requires special attention. This is also one of the unique features of human system of communication. Arbitrariness is very very simple for us to understand. It means – take a word; think about a word that comes to your mind. For example, a pen, a computer, a book, a room, school, classroom – any word that comes to your mind. There is no reason why a pen is called a pen; there is no reason why a table is called a table. This needs your attention in a very careful way. The word table is shared among the speakers of English and anyone who knows the language that we speak. Therefore, it helps us communicate. What we are saying is why the object table is called table has got no rational justification. There is no reason for that. This is called arbitrariness.

Now, these things create… These things create a very special situation. These things make human system of communication, that is, language very unique. We will relate this once again when we talk about relationship between language and human mind in a day or so. Contrasting human system of communication with non-human systems of communication, which is… What would be an example of non-human system of communication? For example, traffic light, is an example of non-human system of communication. Animal sounds, bird sounds, bees –these could be examples of non-human systems of communications. Compared to language; that is, human system of communication, non-human systems of communication is very limited. It can only do limited things. Take for example… Take for example, traffic lights. What are the things that traffic lights can do? It has couple of symbols like red, yellow, green; if we like, we can add couple of more. But, that is all about it. When the traffic signal is red, it simply tells you one small thing; when the traffic signal is green, it simply tells you another; which is when it is red, stop; when it is green, go. It does not say anything else. It does not say more. This is what we mean by being limited – the symbols being limited in giving us meaning. Traffic signal is just one example.

If we take… Similarly, if we take more examples of animal communications… let us take the example of dogs barking; dogs would bark in couple of different ways and then we can also possibly interpret them in a couple of different ways. But, that is all about them. The barking of dogs, dancing of honey bees, traffic signals, do not have the

capacity of recursiveness, do not have arbitrariness involved in them, do not have creativity involved in them. On the basis of these three examples, we can categorically mention that, human system of communication is far more complex than non-human systems of communications. And, this is why we say non-human systems of communications are limited. Arbitrariness – to tell you something about arbitrariness once again, is possible in human system of communication, because with the limited system, limited sounds, we can have many many words; we can have… With limited words, we can have infinitely long sentences. And, this is possible… Because of recursiveness, this is possible; because of arbitrariness and together, they give us creativity. So, such is the complexity involved in human system of communication.

Now, we will come back to this also. I want to take you through a new topic today as well. We have talked about language learning; we have talked about what happens in language learning; we have talked about the role of language acquisition device; how a human child is born with language acquisition device; what language acquisition device has in it; what universal grammar does; what principles and parameters do; and, how we uncover rules with the help of generative apparatus and so on. Let us take example.

Take a moment and think – have you seen a child around you; have you seen a child growing around you; how closely have you observed a child? If you have, you will witness the following things. If you have not, think about them and next time you observe a child, see whether these things work or not. To a very young child, let us say a newly born baby, let us say a baby, which is couple of days old or a week or two old; anything that people talk around a baby – a too young baby; anything that you talk around a baby, sounds like noise to the baby. That is because, at this stage, babies have not started figuring out what is being spoken. And, this figuring out means uncovering rules on the basis of what is being spoken. At that time and the moment people start speaking in few seconds, in a few minutes, babies would probably start crying and they would cry a lot. One of the reasons for that is when things are being spoken around them, they do not make sense; they create discomfort and babies probably do not like them. Therefore, they cry. Crying may have many other reasons for that, but I am mentioning just one of them. That stage has been identified as crying.

I am going to be talking about couple of more stages. These things have been discussed in details by one of the famous linguists and cognitive scientists – Ray Jackendoff; in his

book, Patterns in human mind. Once babies get out of this stage, the second stage that begins is called babbling. At that time, probably babies have started moving lips; probably they are just looking at others; and, because when people around them speak, what they observe is the moment some kind of noise comes, they start observing people and they look at the source of the sound. And, one of the things that is quite obvious to them is probably movement of lips. So, what they start doing is they start moving their lips and they start getting some sounds like pa, paa, ba, ma, maa. Not necessarily they are saying these sounds, not necessarily they are saying words that might come out of combination of these sounds. But, they are just trying to do something. That stage is called babbling.

These two are very significant stages, because at that time too, language acquisition device gets activated. Slowly, around six months of their time, they start… So, six months of their time – until the six months, they will be babbling. Beyond that, seventh, eighth or ninth month, there are not hard and fast lines around these months; but, a general estimate shows that, around tenth month and beyond that, baby just start producing a word – one word. That is called one word stage. And, probably they do not know the meaning of these words. This is a very significant point, where one can claim that, association of meaning with the words that babies say, happens way later in the stages of language learning. And, at this stage between, when the babies are 10 months old, they do not know what the words mean; still they can say several words. Also, you can probably count the words babies would say; they are very very generic across cultures like pa-pa, ma-ma, ba-ba and little bit more complex words. Maybe some babies would produce bisyllabic words as well.

When the stages of learning is underway, around 2 years of their age, they will come to two words stage. And then, they will start saying things like mummy water, give ball and so on. This is also… We can find several other things on the basis of these examples. At the time of 24 months and two words stage, they have started uncovering rules of what would combine with one word. They do not produce just any two words when they make a phrase. They categorically know what is possible to combine and what is not possible. A baby may say mummy water; a baby may say clean ball; a baby may say nice doll. But, you would not find babies saying things like sweet doll, hot book. Babies would not say these things. Now, what this tells us that, babies have figured out rules at the stage of

two words, around twenty four months of their age, what are possibilities in combination of two words. At the same time, they have not advanced to a full sentence; that is, a 2 years old baby has not uncovered the rules and the components that are essential for combining words, combining a sentence, to create a sentence. So, that happens around the two.

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Stages in Learning (Jackendoff)

- CRYING
- BABLING   (6 Months)
- ONE WORD   (10-20 Months) 50-100 Words
- TWO WORDS   (24 Months)
- Phrases and Sentences   (Two and half to 4 years)
    - Grammatical complexity
    - Meaning making
    - Vocabulary around 10000 words

The moment we move further, let us say two and a half years old baby; and, when we go all the way to three years, to four years of age, then we see the stage of phrases and sentences. At this stage, they have found, they have developed to handle grammatical complexity. Probably around this stage, they also start making meaning. And, one of the most significant things that Ray Jackendoff notes that, babies develop around 10,000 words at this stage.

Notice – at one word stage, between 10 to 20 months of their age, they have around 50 to 100 words. And, at the age of let us say three and a half or four, they have 10,000 words. This happens in a miraculous way. This is a miraculous development. And, if you look at these stages of learning, they coincide very nicely with the generative apparatus that we have discussed; these stages work and they tell us that, learning of language is not really stimulus and response. The input is very limited and the output is massive. What we saw last time, take an example from here. It is difficult for people to keep track of the number of words that children know at the age of 4. It was very simple at the age of 20 months;

but, at the age of 24 months or at the age of 36 months, it is very difficult for us to keep track of the word. It is not possible for them to have heard all those words. It is definitely not possible that, they have gone through those words. The role of human mind is visible here. We will continue looking at this.

Thank you.