

Language and Mind
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Module – 01
Lecture - 05
Language Evolution

We have been looking at language; that is, what is language about? And we have looked at language learning. We have looked at language learning from the perspective of generative linguistics; through the generative perspective of language learning, we have looked at generative apparatus, we have looked at language acquisition device, we have talked about universal grammar, we have talked about knowledge of language. We have seen how they work and how we reach, what we call body of knowledge.

Today, we are going to talk about evolution of language. Many a times, when we talk about language and human mind, this question comes up. And the question is rooted in the distinction in the area which is very big. Is language a part of human mind or is language a social phenomenon? We are not getting into this discussion right now. We are only looking at language as a phenomena of human mind. And when we talk about human mind, we wanted to see how evolution worked and what is the role of evolution in language, what happened when humans started speaking. Now, first of all, we will need to look at it in a historical perspective. Let us look at a couple of things and then we will talk about it.

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When did human language begin?

(Ray Jackendoff)

- Amazing capacity! We can talk about --
 - Past and Future
 - Mathematic and Philosophy
 - Gossips to Techniques
- Human language has vocabulary of thousands of words out of a few dozen of sounds.
- This would not have been a planned phenomenon.
- We do not have sufficient evidence for the evolution of language.

Last time, we saw a distinction between human and non-human communication systems. By human communications, we meant language and by non-human communication system, we meant stuff like animal language, we meant traffic signals and so on. We saw how language, that is human capacity, is different from non-human system of communication in response to the question, when did human language begin. In other words, when did humans start speaking; really the language that we speak, of course, in a primitive form, that when did it happen that language came in existence? It is a very nice question.

But, unfortunately we do not have a very conclusive answer to this question. One of the comprehensive discussions that comes about this question is from Ray Jackendoff. Ray Jackendoff puts this in a very nice perspective and gives it a cognitive turn in the sense that we do not gain much, because we do not have enough of evidence about evolution of language.

So, what is important for cognitive scientists and linguists studying language and studying human mind is to find out what happened in human mind that people started speaking. We have just seen the role of language acquisition device and universal grammar which have hypothetical capacity of humans and we have seen how they create a whole body of knowledge called language. Such a language is an amazing capacity of humans. We can talk about past, we can talk about future, we can talk about

mathematics, we can talk about philosophy, we can even gossip and we can talk about techniques like how to start a computer or how to fix a tap, how to make a camera work and many, many, many things; all of that happens with language.

Many people say different things about the same thing, many people say this is what, this is the unique capacity, this is the unique feature of language in the sense that language defines us; we are defined by language. It is language that makes us distinct from all other species and this is particularly what they mean that anything that we do, anything that we talk about, we need a language for that and this is an amazing human capacity.

The other interesting part of human language is human language is or human language in particular has a very few sounds in it. We will be talking about sounds very soon and then, we will see the details of them. But at this moment I can mention to you that human languages do not have more than a few dozens of sounds. We have not talked about the distinction between language and languages, we will talk about them as well.

But, let us stick to the term language. In short that means, all the languages of the world and do not be surprised, human languages of the world definitely do not have more than a few dozen sounds. Now, we do not know the total number of words in the languages that we speak. A Tamil speaker does not know the total number of words of Tamil; a Hindi speaker does not know the total number of words of Hindi; or for that matter, an English speaker is not sure about the total number of words in English.

In other words, human language has a vocabulary of thousands of words and those words come out of a few dozens of sounds. This is another unique thing that happens in human language. Now, all these things must not have been planned. Humans did not start speaking after a proper planning. That is, it is not that a few cavemen sat together and decided that we should invent words. It is not that they decided, what is the structure of a sentence is going to be, how words are going to be made up.

And we do not need to look at too many evidence to establish this. As you can see, we can have multiple words, thousands of words out of a few dozens of sounds. We have looked at recursiveness yesterday, we have looked at arbitrariness. These things have roles to play in how a few dozens of sounds make thousands of words and this is also an amazing thing about human language. Yet, unfortunately we do not have sufficient evidence for the evolution of language; we do not say much, we do not have much to say

in a conclusive way how it really started; that is the bottom line of it. Many things that have been said about evolution of language is hypothetical in nature, a lot of them are based on assumptions. I will give an example or two about that.

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- FOXP₂ “Language Gene”
- Achieved present shape around 100000 to 200000 years ago.
- Rational
 - A mutation in this gene leads to language deficit and problems in the control of face and mouth.
- Critique
 - Does this really lead to language impairment or only creates speaking difficulties.

After long discussions about how old do we think is the history of human language, we do not know much about that either; but let us talk about the FOXP 2 gene. This will tell us something about the debate on evolution of language. According to an estimate around hundred, thousand to two hundred thousand years ago, we find the present shape of FOXP 2 genes came into existence. It is easy and very tempting to call this language gene for a very particular reason.

The rational is a mutation in this gene leads to language impairment and it causes problems and control of face and mouth movements. Now, that is a big discovery; that is a big deal; this will easily make us conclude that probably this is language gene and probably this is. However, before we conclude in such a manner, we need to make sure that this is not really some sort of language impairment. In other words, this mutation of FOXP 2 genes is not causing speaking difficulties. It is possible that language impairment is different from speaking difficulties and on the basis of speaking difficulties, we conclude that this causes language impairment.

Now, as of now, until today, we do not have evidence in favor of this question; this is like I said, it is a big deal, it was a big discovery. But, that should not stop us from asking

serious questions, particularly when it is about language and the biological foundation of language; that is languages encoded in genes. Now, even such a thing is not conclusive; that is the basis for me to say many things that have been said about evolution of language seems to be highly inconclusive.

In fact, there was a time as Jackendoff claims, such a field of research was not given much significance. Because, most of the things that were said in that field were hypothetical in nature. What do we do then? We will have to continue working on it; this FOXP 2 gene seem to be very promising.

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Acknowledgment!

"Despite great advances in neuroscience, we currently know very little about how genes determine the growth and structure of brains or how the structure of the brain determines the ability to use language."

"Nevertheless, if we are ever going to learn more about how the human language ability evolved, the most promising evidence will probably come from the human genome."

And an honest acknowledgement has also been made by Jackendoff that despite great advances in neuroscience, we currently know very little about the gene; we know very little about how genes determine the growth and a structure of brains or how the structure of brain determines the ability to use language; that might be limitation of the science that study genes. However, he also tries to make a forecast that if we are ever going to learn more about how the human language ability evolved, the most promising evidence will probably come from human genome.

Therefore, it seems to be a very promising field. Nonetheless we do not have much to say about this at this time. Then look at this discussion. We brought you to this discussion not to tell you that we do not have much to say; we brought you to this discussion to see the actual picture of the developments in science, actual picture of what

we know and what we do not know about language. And on the basis of this, it was said that we need to know more about this capacity that is called human language.

We need to know what happens - that a child in a matter of few months, that is 10 to 15 months, can develop vocabulary from 100 words to 10,000. Now, it is not possible to memorize, it is not possible that a child has heard all those 10,000 words, but it has been observed that many of those 10,000 words have been uttered by children. This must be something phenomenal, something unique. That is the interesting part of human interactions; that is an interesting part of interaction between human language and human mind.

The idea is we can look at human mind and we can look at the functioning of human mind more through the structure of language. And from this point on we want to look at structure of language at a little bit more details for us to say, how human mind decodes underlying rules at different levels of sounds, words and sentences. We will begin with sounds and as you have seen that there are probably thousands of words; I mean, we do not know the total number of words in any language.

So, how thousands of words are made of few dozens of sounds, what are the rules underlying formation of words and sounds. This will tell us about how these things are organized in human mind. These things will tell us how human mind plays a role in learning language.

Thank you.