Advanced Cognitive Processes
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Lecture – 15
Language Acquisition – II

Hello and welcome to the course Introduction to Advanced Cognitive Processes I am Dr. Aark Verma from IIT Kanpur and we have been talking about acquisition of language in the last lecture. We talked about how a child acquires the ability to distinguish between speech sounds and non speech sounds and so many other that so many other sounds that are there and gradually and that basically is happening even before the child is born.

So, at minus 3 months of age in the last trimester of pregnancy you also saw that children are born with an ability to do phonemic contrast to do categorical perception in the sense that they can identify and differentiate between particular phonemes. If you might remember that experiment I was talking about a child was exposed to a series of phonemes ba and then a different phoneme is inserted da and the child can really you know make that difference out.

These were some of the building blocks for the child to start appreciating linguistic stimuli to appreciating what language is all about. And you see children use these kind of cues you know in order to start understanding a start making sense of human language, one of the other challenges was to start understanding what words are and you saw that there were at least 2 or 3 mechanisms that the child probably is using things like, using stress patterns which is the metric segmental symmetric segmentation strategy things like using you know heightened prosodic features which was basically there in isolated word reading or infant directed speech.

And also a very important aspect was proposed later which was about children using the statistical information in speech things like how do they use information about translational probabilities of syllables and phonemes and how do they make you know sense of words using that, so this is what we have done till.

Now, we know that a child can distinguish between speech sounds that is human speech and every other sounds that are there we know that children can start segmenting words.

And now we have to actually you know begin talking a little about other kinds of knowledge that are required for a child to acquire language. So, let us move to it that is the today is this second lecture on acquisition of language.

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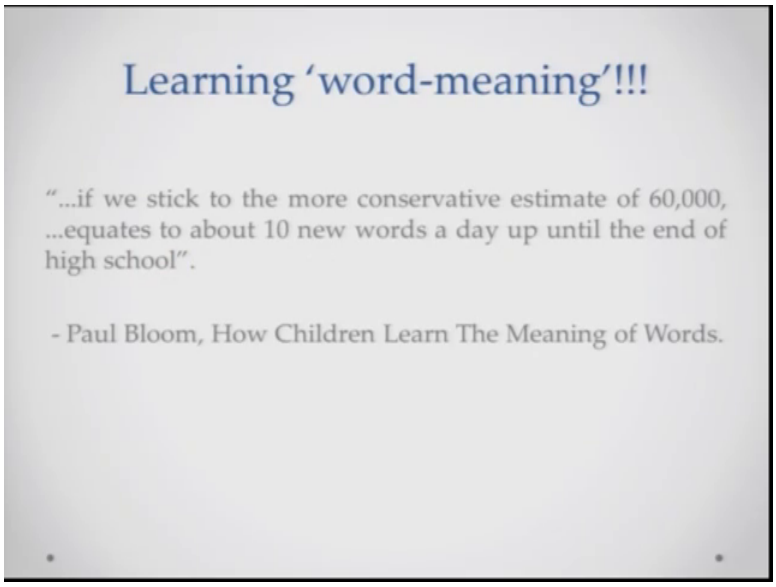

And let us begin talking a little bit about how does this child start making meaning? You know language is not about only you know the kind of sounds there are it is not really only about the firm it is basically or it is not only about just segmenting and understanding that out of this particular speech stream this is the word or these are the different words. It is more emphatically about the fact that the child has to make a connection between the form of the word that is the sound or how it looks.

We are talking basically about very ancient and so we talking mostly about speech. So, the child has to make a connection between the sound of a particular thing and what it stands for? So if I am saying Apple, the sound of apple should be connected with this object called apple and how is the child going to do that?.

To give you a bit of an estimate of how fascinating this ability of making word meaning is Paul bloom said in his book or you know called how children learn the meaning of words? And it says that if we stick to the more conservative estimate of around 6000, it equals about 10 new words that the child is learning up every day until the end of high school.

Now, if the child is learning so many words in the child is you know making so many words and if you see initially there are no words till 10 months, 1 1 and half years, there are 1 years there are very few words of the child knows. But after this you know 18 months there is something called a vocabulary spurt and this is this vocabulary spurt basically is the indication that after this the vocabulary of the child increases exponentially.

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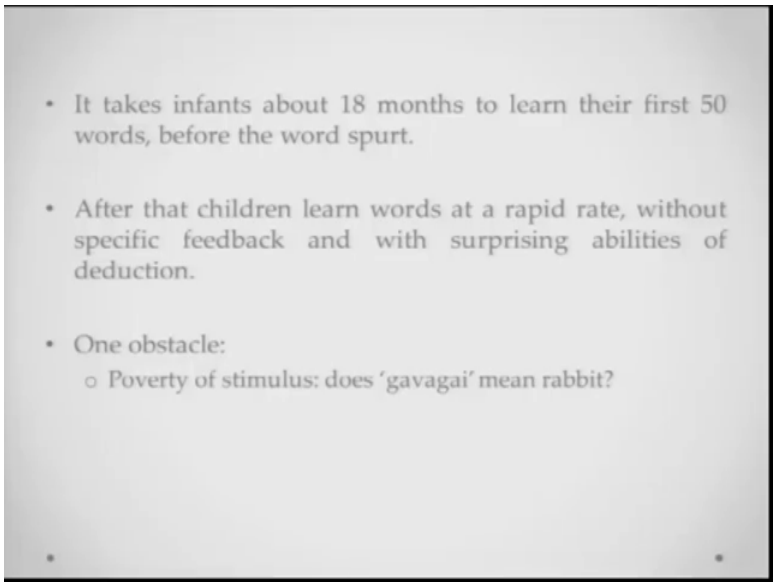

So, it takes this infant around up to 18 months to learn their first fifty words which is just around the spurt. But after that after they have passed this age of 18 months their knowledge of words increases rapidly, it increases almost exponentially and remember that this is not with any specific feedback or it is not with you know any particular training or reinforcement of punishment that the child is being awarded.

You know you cannot really teach children each and every specific word that they are going to speak they sometimes come up newer word they construct their own words they do a lot of hidden trial you know trying this word out and looking at you know whether this is correct or not and those kind of things.

So, one of the things that we have to do is we have to understand that how is this happening and obviously, you know the whole learning account or the behaviourist account might be falling short. We will discuss that in much more detail you know even

in word acquisition we there are two views there is the nativist view and there is a behaviourist we will shortly come to that.

But just let me point out to what Chomsky was saying if you remember in one of the last lectures he was talking about the poverty of stimulus argument. Now what is poverty of stimulus argument mean? Suppose and I give this examples often times in class suppose there are you know 2 tribal people going with a foreign guest somewhere and they are kind of you know walking across a jungle and a rabbit passes by you know and this 2 tribal people actually you know look at the rabbit and point or point outwards the rabbit and say [FL] or they say some random syllable ok.

Now the fact is that this you know tourist foreigner gentleman who does not know their language how is he supposed to make sense of whatever these people have said [FL] could mean that it is a rabbit [FL] could mean that it has fur it has ears it has you know a small tail or something. It would mean that the rabbit is learning or you know it could it could possibly just mean that you know that is food you know that that is what we are going to eat in the evening or something like that oh that is such a beautiful rabbit.

So, it is very difficult for children to be able to you know point to I into deduct from this pointing out kind of mechanism we will talk about this in a little bit more detail now.

Now, the thing is that if children are learning these words at such a rapid rate and in such a you know high degree of sophistication you have to give them this aspect of that there are there they have these surprising abilities of deduction. They are kind of you know looking at the patterns deducing something looking at the patterns coming up with more information that is something that these people are doing.

So, you have to kind of keep you know be mindful of that so they just point in say solution does not really work you know it probably might for nouns and objects again if you consistently point towards the apple and say apple and you kind of you know do it all the time.

Obviously, the child will make that connection that you know this sound stands for this apple and you know grasp it or the way we teach children you know this is a cow, this is a bird, this is a dog, or cat or something like this. So, it might work for these concrete things as well, but you say but you would know that children start talking in abstracts

also very quickly by 3, 4 years of phase. They again start talking more things like abstract, nouns thought I feel like this, I want this or you know this is good this is bad those kind of things.

How do children make up these meanings there is no concrete object right in front of them they are not being able to make they are not really given a you know physical index to make this connection from. So, this is something that one has to wonder about this is something which one really has to reason that how is this happening.

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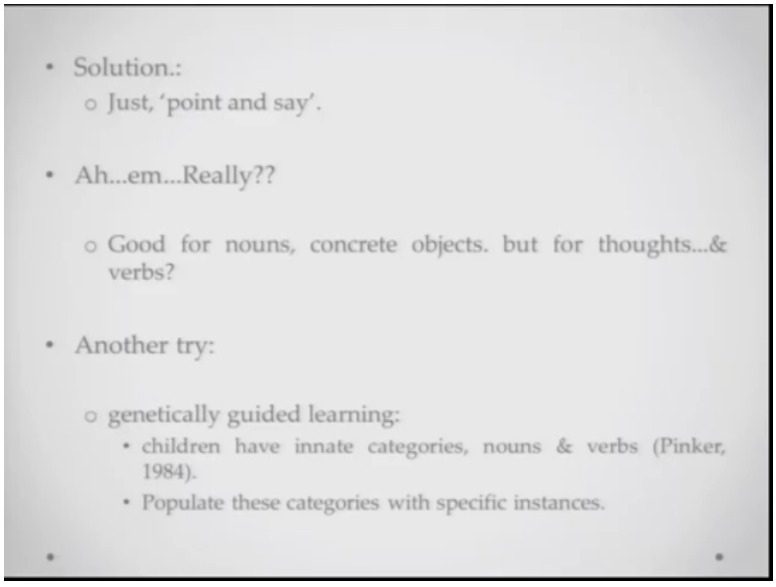

So, another hypothesis or another kind of proposal again was given and this proposal is referred to as the genetically guided learning again Pinker is the one who is proposing it, it again comes from the nativist stream of thought about language acquisition.

So, Pinker says that children when they are born they already are born with these innate categories. So, they have a sense of what is it a noun? They have a sense of what are words? And what they have to do is just kind of populate these categories with specific instances.

So, child knows that what are all nouns and gradually with the experience he start realizing this is also noun, this is also noun, this is also noun you start populating this category. Similarly that the child knows what is the verb it is an action it is something that is happening and then he will kind of you know pick up that this is a word, this is a

sorry this is running is a verb, or sleeping is a verb and those kind of things. So, this is one hypothesis that has been offered to explain this.

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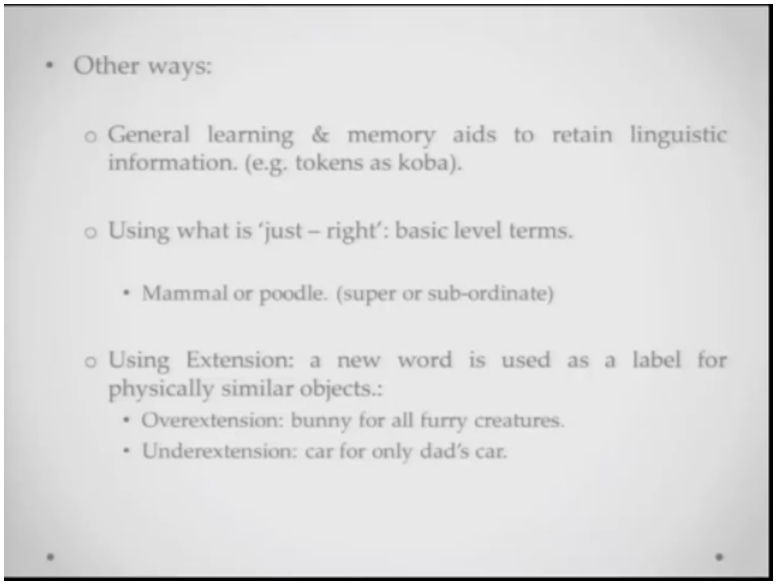

But there could be other ways results. There are other things like you know people have offered general learning mechanisms as a candidate. So, the idea is that you will have tokens you can have things like you know if I if you hear of a normal word and if you hear of that word being used in a particular context.

You can just retain information about that were you retain what this particular would suppose the word is Cobra. So, you retain cobra standing for a particular object in this world and you kind of make this connection again and again use your memory you go back at the last time cobra use it was used for this specific object you know so that is that is something which the children might be using.

And so this is again something that you know children might be referring to our children might be utilizing to be able to make this connection between words and objects also if you wonder you know a lot of times children might be just using a kind of a hit and trial or an approximation kind of a method to make a word meanings.

So, what they might be doing is they are just kind of coming up with what is called a basic level term. So, for example, if you tell them and if you remember the lectures on

knowledge that I gave in this course if you kind of go back and refer to them I was talking about basic level terms super dot and ordinate terms and subordinate terms.

So, a lot of times children might just be using a basic level term such as an animal and not really going towards either the super ordinate category that is a normal or the subordinate category that is just a token which is poodle.

So, children are kind of you know approximately all the time using these things, but again because this is a kind of a learning thing, and this is a kind of a hit, and run thing a lot of times you will see that children do make certain kinds of errors and those errors can be rather funny errors things like you know children could use what is called over extension.

Say for example, if you show a rabbit to a child and you know the child realizes the this is this animal, it has fur, it has ears, and stuff like that at some point any animal that the child will come across having fur maybe the child will refer to it as bunny, you know the cat is also bunny, the dog is also bunny you know different other monkeys also bunny because all of them have for at least this is the common aspect that the child has deduced.

This is again something that happens very commonly with children and they need to be corrected and they kind of pick it up and you know discern the rule and they do it. Another way another source of error that might be you know coming up with the children's you know learning of words is that sometimes they would also under exchange.

So, what could happen is suppose there is a child and the child you know looks out of the window and see is that you know my daddy comes out of a particular vehicle and sometimes maybe the child is told that you know this is a car, and this is what daddy uses to go to office.

What are the things is sometimes children can actually make really short and strong connection. So, what they would do is they would refer to Daddy's car as car, but other vehicles as you know as something else you will say this is the car because this my Daddy's car and I know this. But all the other things could be something else.

So, this is also something you know which children are probably utilizing and again it because I am talking of this as a very general kind of a learning mechanism slightly memory aided kind of a learning mechanism. So, this could be something that the children are using to grasp the sense of words ok.

So, you saw that there is this nativist approach the genetically guided learning idea and then there is this you know behaviourist kind of an approach which is the approach, which says that you know it is a little bit about. How people are how children are acquiring words gradually from their environment.

Let us move on to some other kind of strategies as well. So, there have to be if even if the child is following a learning mechanism there has to be strategy about this learning ok. So, let us talk a little bit about these strategies.

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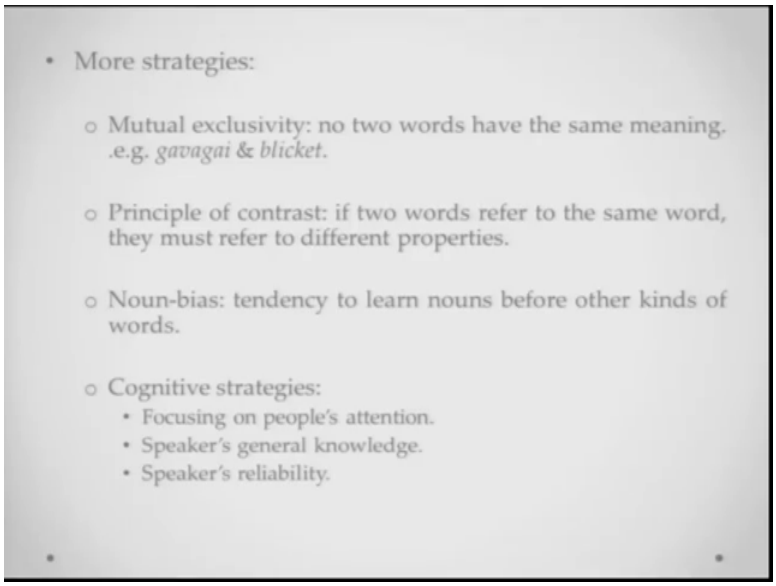

One of the very important strategies that the child will need to follow is the strategy of mutual exclusivity. Now exclusivity is basically that if there are 2 words, they might not have the same meaning or say for example, because you start assuming a very simple world you will kind of think that no 2 words will have the same meaning.

Obviously, the child grows up learns more language and realizes that 2 words can have the same meaning as well you know children take some time to start appreciating things like synonyms. So, if there are 2 words [FL] and blicket or cobra or something like that

and 2 or 3 words are spoken children will make the sense that you know [FL] means something else.

Let us say [FL] refers to a, blicket refers to b, and cobra refers to c. They will know be able to appreciate at a very early age or they will probably not use it as a strategy because otherwise the child will not never be sure of how you know words are connected to a reference so that is one.

The other thing is that children also kind of you know have these kinds of strategies you say there is this thing of a principle of contrast if again and again the 2 words are being used for the same object. If 2 words are referring to the same kind of object they must be referring to different properties of this object suppose I am using [FL] and blicket again for the rabbit on and off on and off on and off and the child kind of is noticing that then the child would make a sense that maybe [FL] stands for the head and you know the implicit stands for something else.

So, if 2 words are referring to the same object again and again they must refer to different properties of an object one should one could be probably that it is an animal there could be it is a very beautiful animal order dangerous animal or something like that. So, these are some of the strategies that the children might be using.

Another thing that is again post talk you know you can see that that there is there tends to be a noun bias towards you know a learning of words we will see that most junior nouns much earlier than other kinds of words and if you really you know sleep take a step back and look at it it is logical as well.

Because nouns are really easy to acquire because more often than not the nouns are or the concrete nouns are the things that their child is seeing around him or her you know so he sees that is the brother is a sister is a mother is a father or it is an apple it is a banana it is a mango those things are there to see and that mapping is there to be made. So, this is easier as compared to you know starting to talk about you know imaginary things starting to talk about abstract concepts and stuff.

So, again this is this is something that the child is making a connection of also true use a lot of cognitive strategies to filter the kind of input they are receiving all the time and what input could be things like you know they focus on you know children do focus on

people's attention if I am pointing out to an object the child will actually be very mindful the fact that if I am speaking something and if I am pointing out to a particular object all of these things because the child has to look at my attention and see what is exactly.

There might be many things in the room and even if I am pointing in a particular direction there may be 2 or 3 objects there, what is the object that is actually that the one I am referring to. So, this is something that the child learns because he learns to gauge your attention and gauge you know what you are talking to this is something very important.

Also interestingly children have a very good estimate of the speakers general knowledge we will see a lot of times children do not really you know believe or children do not really blindly follow what their siblings would say you know say for example, they they will have a sense of the reliability of the speaker they will have a sense of this person knows this much.

So, I should kind of take this one on face value or this person you know he is generally reliable, suppose you know if kids have a lot of make bli make believe plays a lot of trained children will be able to younger children who are acquiring language they will have a sense of this is just make believe, this is what you have to believe this is what you do not have to believe and this person is very reliable every time is told me something it has been correct. So, I believe it every time this younger guy has told me something it is being correct sometimes incorrect sometimes I will not believe it.

So, all of these strategies you know put together are in some sense helping the child to make sense of the world to make sense of how you know the child is going to acquire these things. So, this is this is a little bit about you know how children are acquiring nouns. Now nouns are not really the only classes of words that the children need to acquire there are very slightly more complex categories like verbs.

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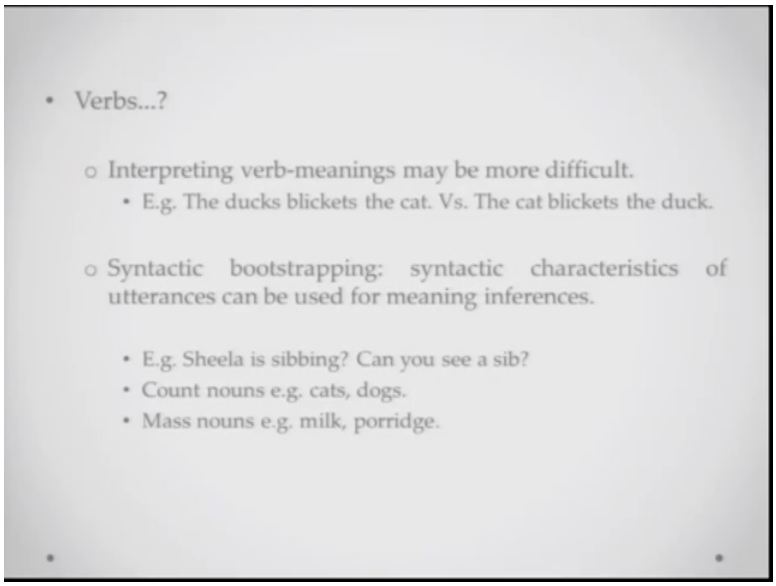

How would the child again if we refer back to [FL] [FL] could also have meant that the rabbit is running or it could have also meant that the rabbit is going somewhere those kind how does the child make those connections ok.

So, interpreting verb meanings is slightly more difficult as compared to interpreting just known associations and there is also the concept of agent and patient when you are talking about word.

So, if I might say the duck blickets the cat or I may say the cat blickets the duck now the idea is the same word as the blickets and agent and patient are interchange in the 2 sentences. So, for a child who is just you know beginning to learn this might be slightly of a you know slightly difficult puzzle to solve people have offered different you know strategies that the children might be using. One of them could be referred to as syntactic bootstrapping.

now what is syntactic bootstrapping; syntactic bootstrapping is basically that the syntactic characteristics of the utterances can be used for inference of meaning.

Now what is syntactic characteristics? What is the you know the structure of the sentence is it subject verb object or is it subject object verb so that you will know that the first thing is a subject the second thing is an object in beach way there is the verb.

These kind of things children will you know they obviously, they pay a lot of attention to whatever language is spoken around them and these are the things they can actually use to infer these detail and if they have the sense of the structure of a sentence again the natives would believe that children do have the sense of the structure of a sentence and they will use that sense to parse you know the sentence into that these are nouns; obviously, agent and patient are generally nouns and middle of them is a verb. So, that is something that the child will you know kind of work out gradually and eventually.

There could be examples like you know you show the child an action happening. So, say for example, you can say Sheela is sibbing? Can you see a sib? So, the thing is let us say Sheela is knitting or something and you see you later or something like that.

So, child has to really make out you know sibbingis happening. So, cutting is happening cutting is what is the noun that does cutting can you take a see a scissor these are the connections that the child has to make. So, this is a scissors, scissor used for cutting.

Again hidden trial a lot of experience goes in and then the child starts making these connections also when you talk about verbs and nouns there are things like you know there are some nouns that are countable nouns cats and dogs and pencils and erasers and there are some nouns that are mass nouns like porridge and milk and I want some milk I do not you do not say I want one milk or two milk.

These are also the things these are also syntactical features of our language that the child gradually learns to understand gradually acquires, but again you will see that there are various processes that are really happening again this is still we are talking about words.

Another important aspect in verbs is the fact that you have to you have you must understand that the fact is that there are different kinds of verbs or different ways in which words are used. Suppose I am talking about sleeping so you know she slept on the bed is a transitive verb, slept is being used as a transitive verb, slept is coming with an object or I could just say she slept I am not really using the object here. So, then this is an intransitive use of it.

So, similarly the child will need to figure these things out. So, sometimes as a parent or as a guardian I could say she blinked and then I have to say she blinked her. So, then you

blinked comes with an object all the time and then when the child is you know discerning such pattern.

So, the child will expect such patterns to persist and whenever such patterns are kind of violated; obviously, there is a good chance that the child might commit a mistake in understanding.

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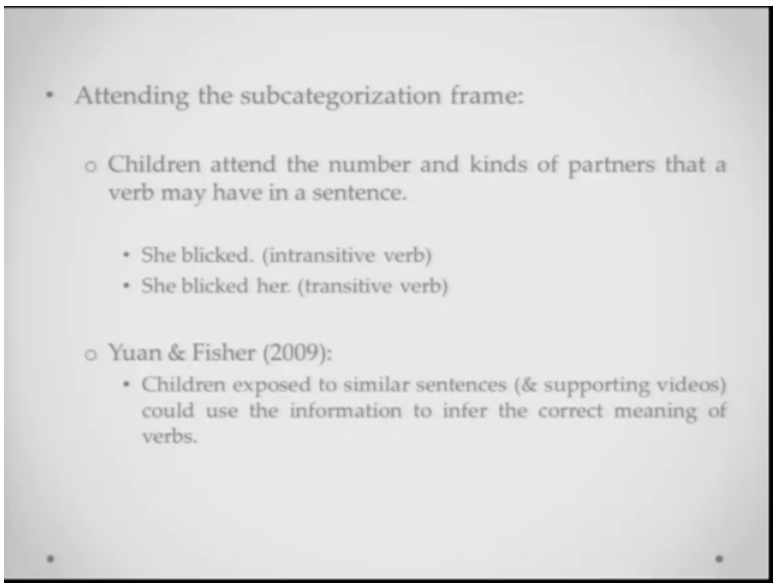

So, Yuan and Fisher they did this experiment in around 2009. And they exposed children to similar sentences, she blinked, she blinked her. These kind of things and they were showing accompanying videos with these sentences and they show that children you know and they found out that children could use the information in the video to infer the correct meaning of verbs.

So, what do you get out of this you kind of get that children are in some sense mapping the linguistic stimulus whatever is being said to the event that is happening. So, if I am saying she Ram is kicking Sham and the child is saying that x is kicking somebody x. So, the child is kind of also denoting that a chat this is Ram, this is Sham, and this act that happened is called kicking.

So, the child is you know paying attention to this and grasping is so this is one. Also so this act of this act that I just described it is basically referred to as alignment. And what is alignment?

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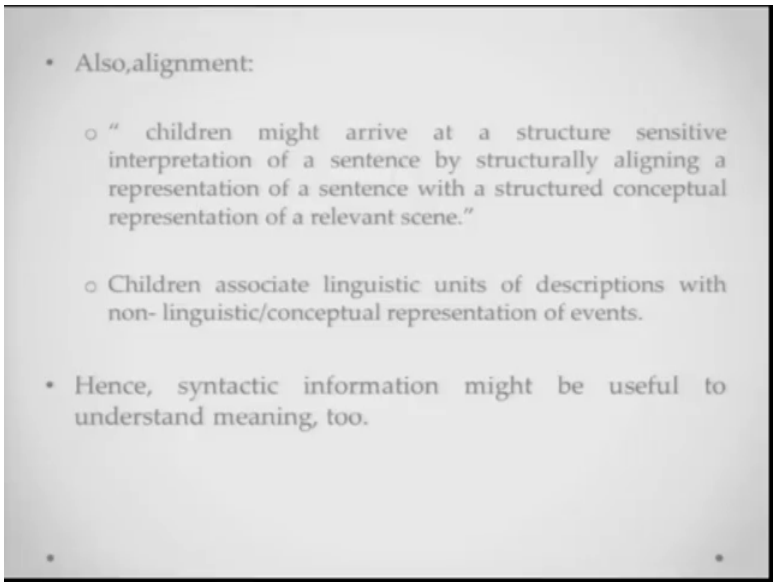

I will just describe it I will just read the readout a slightly more complex definition. But it is basically just this children are arriving at a structure send sensitive interpretation. So, Ram is kicking Sham, Ram is the actor; kicking is the verb and Sham is the patient. So, they have arrived at such a representation by structurally aligning whatever sentence has been said with whatever event that is happening.

So, they are having a conceptual representation alignment I am seeing x is beating of y and I am hearing that x is beating of y. So, I am kind of mapping these two things the linguistic and the real thing and that is what I am using to make this sense ok.

So, this is one of the very important features of children understanding verbs or children making this knowledge ok. So, children are typically again more similar terms they are associating linguistic units of description to non linguistic conceptual representation of events. So, this is something that children are obviously, doing.

Also syntactic information if they have a sense of as I was saying the structure of the sentence they might that that thing might also help children acquire the appreciation of verbs and stuff ok. So, this is this is what we can talk about verbs.

Now what have we talked about we have talked about prosodic you talked about segmentation of words using stress patterns and you know statistical information transition probabilities. We were trying to make sense of how children were making

word meanings you know nouns and verbs and other things now we have all the symbols.

Now the child knows what a word means and stuff what our noun means on what a verb means and those things are there what is the next thing. If you remember the way I had described language in the beginning of the week I said language is symbols and rules. So, symbols are there let us now start talking about the rules. How is the child acquiring grammar, How is the child making sense of grammar. Some of the observations I like to share.

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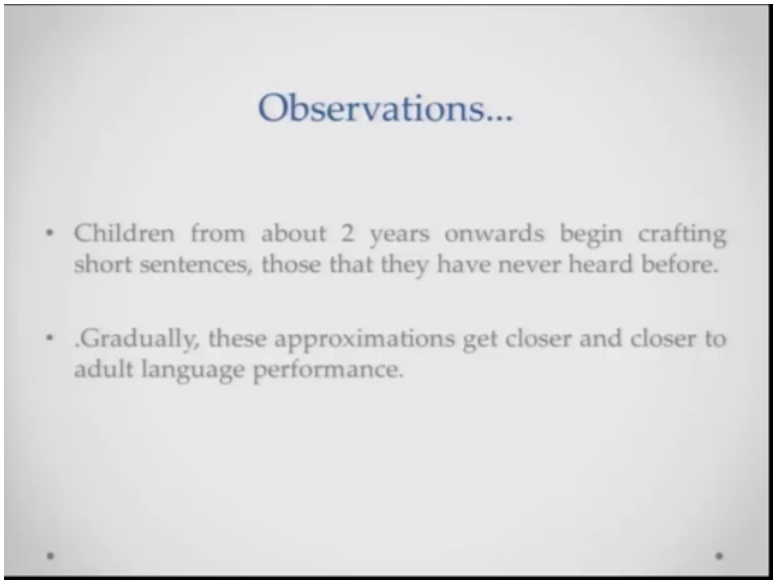

So, children about 2 years on words begin crafting shorter sentences those that have never been heard before. So, they start coming up with telegraphic speech you know I want apple something like that you know telegraphic speech and gradually these approximations again because the children you will see 2, 3, 4 year old children are most talkative because they are actually practicing they are not really you know really interested in talking so much or probably they are.

But the idea is this talking so much this repeating of the sentences again and again it is kind of leading to some approximation that is happening and this approximation is getting closer and closer to adult a language performance which will in are kind of interact learning while doing you know that that is common phrase nowadays.

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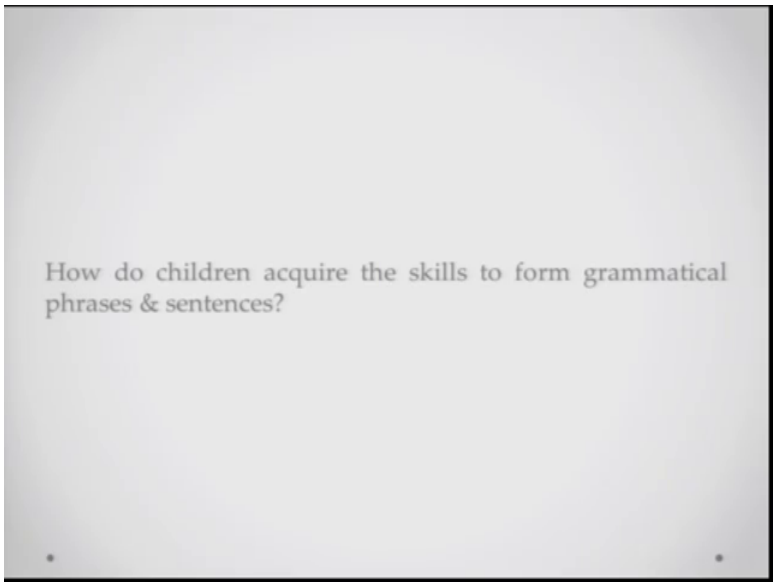

Now, how are children's acquiring these skills to form grammatical phrases and sentences? How is that really happening?

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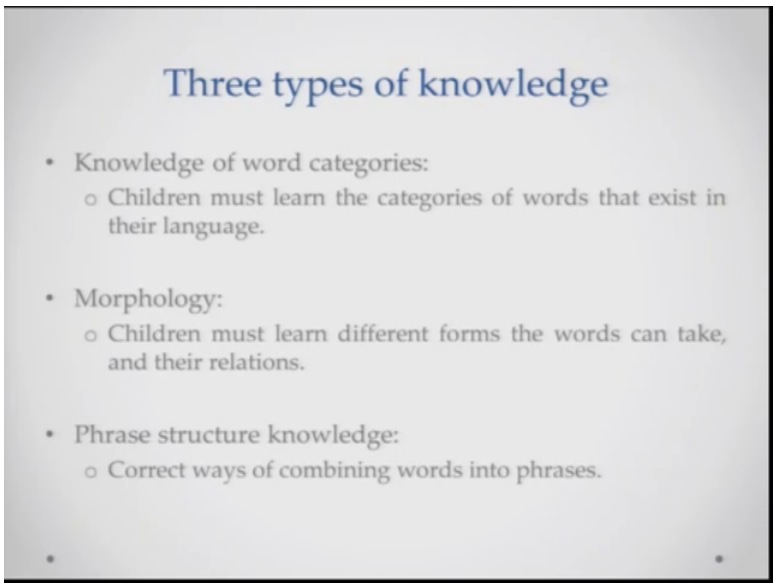

So, if you have to acquire grammar you at least have to have 3 things; you have to have knowledge of word categories whether it is a noun or a verb or an adjective, you also have to have some idea about morphology how things how words are constructed? Is it singular? It is the plural or the past tense is the present is those kind of things. Also the children have to have some sense of free structure. What is the correct structure? How

are sentences you know arranged in phrases? What words come together? What words do not those kind of things.

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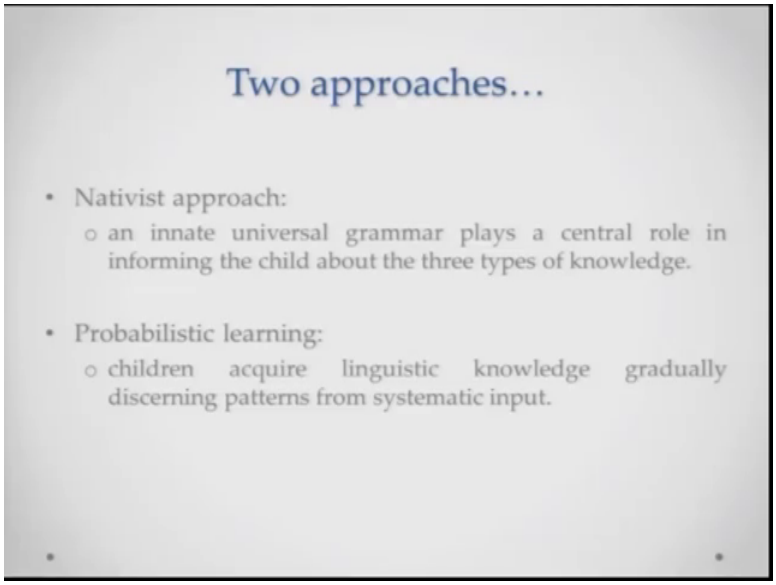

So, again there are 2 approaches. As I have been saying throughout there is a Nativist approach which says there is a innate universal grammar that plays a central role in informing children about the 3 types of knowledge.

And then there is the learning approach which says children are acquiring this linguistic knowledge gradually discerning patterns from semantic input you know so from systematic input whatever they are hearing they are trying to detect patterns, in there may be statistical patterns, may be prosodic patterns, may be structure sensitive patterns and what they are doing is they are using this knowledge to make sense of the word to make sense of the rules that are operating in their language. So, let us try and see how these rules apply in these different scenarios so talking about word category knowledge now.

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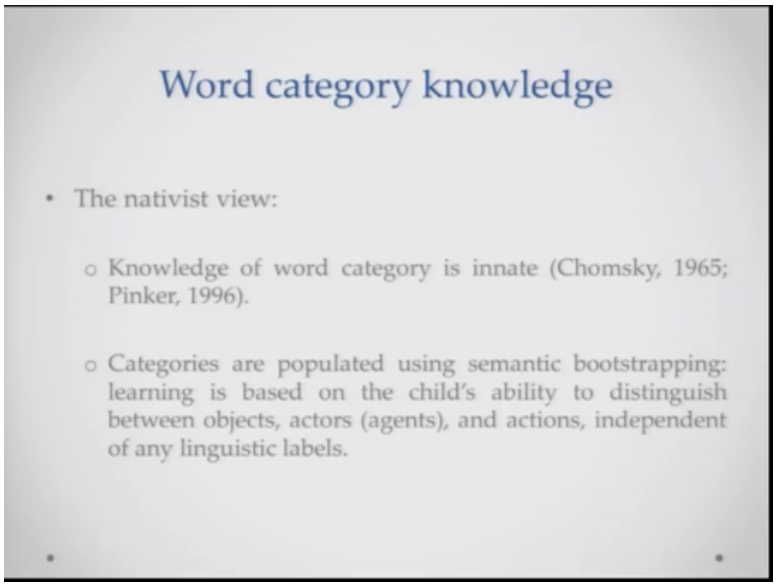

Now, the nativist view toward to acquiring cat word category knowledge is such. So, Chomsky and Pinker and these other people say that knowledge of word category is innate, children know what are nouns whatever verbs etcetera and they just have to you know populate these things using things like semantic bootstrapping.

What is semantic bootstrapping? The child gradually figures out that there are things like objects and actions and actors and patients and those kind of things independent of any linguistic labels. They have the semantic thing and they gradually kind of understand each other this is an actor, this is generally in the front of the sentence, this is a patient, this is generally in the end of the sentence, this is what is happening from the actor to the patient this is the event, this is coming in the middle. So, gradually the child is kind of getting to this knowledge.

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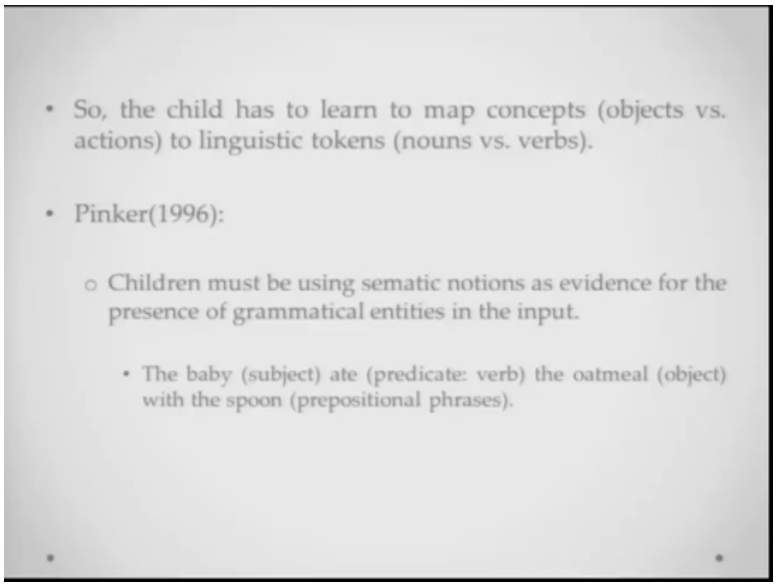

So, the child has to basically do it has to map the concepts of the person who is doing something the person who is getting receiving that thing and the action to linguistic tokens. These are the one who does is an actor, the one who receives it is a patient, and whatever happens is the verbs. So, the nouns and verbs this mapping has to happen Pinker says that these semantic notions you know are can be taken as evidence of the presence of grammatical entities in input ok.

So, because they have this innate sense of how language is? It might be that this is the sense that is helping them you know graphed out nouns and verbs from sentences and eventually learn and master them. So, if I am writing the sentence the baby ate the oatmeal. So, it is very easy you know I am talking about the baby which is a subject, ate is the verb, and oatmeal is the object.

This is at an I can an you know I have a longer sentence maybe ate the would mean with spoon and on a Friday or something like that, but the idea is there are these very simple structures you can get a conceptual representation of it as you are seeing it and then you try and map with the linguistic input and that is pretty much what the children might be using. But wait for a second there is another view to this.

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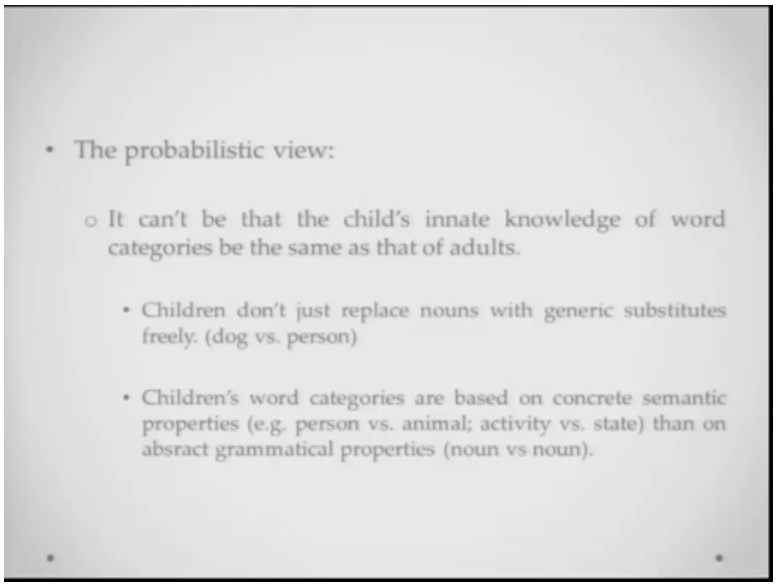

The another view says there are probabilistic learning uses that it it is very difficult to imagine that the child's innate knowledge of word categories will be same as that of adults you know we have this concept of nouns and verbs etcetera. But it is very difficult in some sense probably from you know means foolhardy to even imagine that the children might be doing it.

So, the probabilistic view kind of says that you know and there are evidence for the fact that they are not using it like that because they know they do not really use you know an nouns with generic substitute.

Say for example, they do not use dog and person in the same way or they do not use fruit and banana in much the same way these are types and tokens and those kind of things. Also children's word categories or their word knowledge what they are doing is based on concrete semantic properties things that they are observing and seeing. So, you know a person does this or an animal behaves in that manner rather than on abstract grammatical properties.

They do not really deal with that this is a noun and it has to be used as such or this is a verb it has to be used as such they will probably at one time just master one verb or one noun and then kind of move away a move ahead from that.

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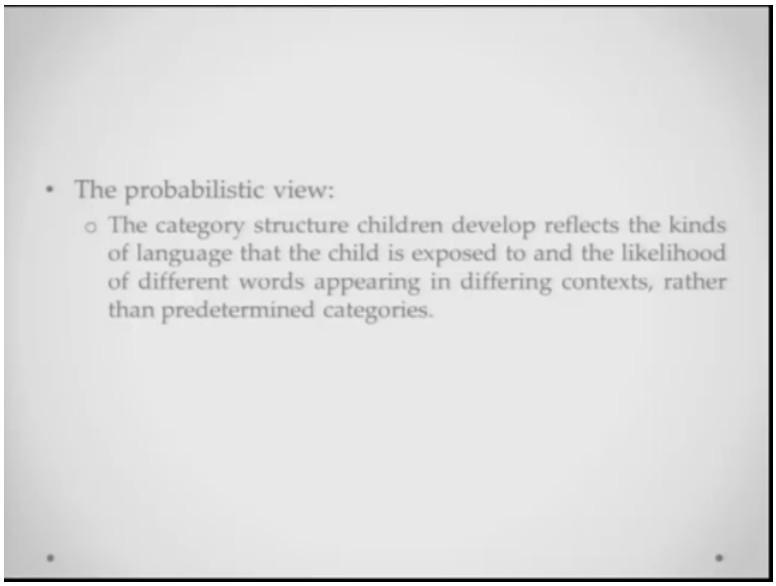

So, the probabilistic view in a natural ways says that the category structures that children's children develop reflect the kinds of language that the child is exposed to see the child is you know being exposed to a particular kind of language. Wherein there are more nouns less verbs and the child will learn more nouns and less verbs if the language is such that it has more verbs less nouns then the child will learn more verb sand less noun.

So, the idea is again then you can rule out the whole concept of innate test because if it were innate it would be general to all species all circumstances etcetera, but a lot of literature a lot of research shows that it is not like that. Children has learning of language is very closely tied to the exposure they are getting even though it is not you know very clear reinforcement punishment paradigm, but there is some learning happening something that the child is gaining from this environment.

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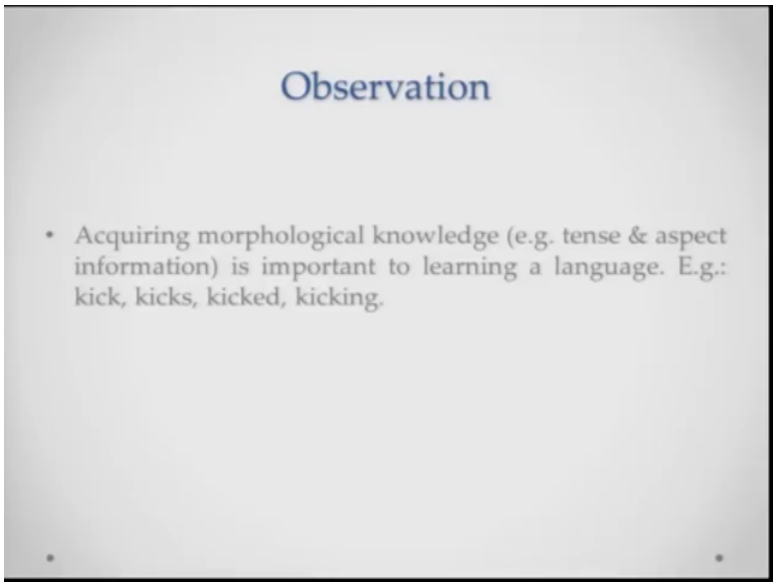

Another observation if I share that with you so acquiring morphological knowledge is is a very important aspect to learning and knowledge. So, the child has to start appreciating different forms of the same word things like kick, kicks, kicked, kicking the child has to know how these things have to be used. You know I talked about some time back this arguing the children sometime come up with incorrect constructions. There is say I dranked water today or I drinked the water today those kind of things. So, children gradually we need to figure these things out as well.

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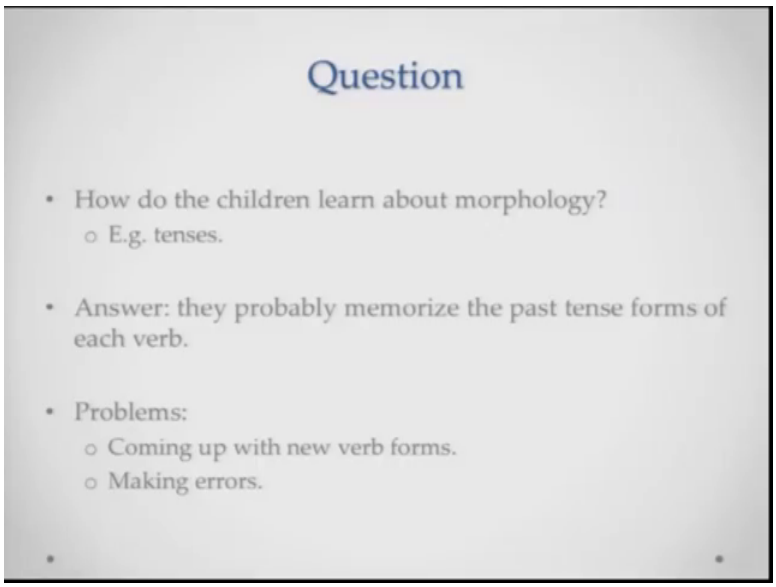

Now, I am kind of moving in different direction how are children learning about morphology? How are they learning about singulars and plurals and past tense and present sense and actives and passive?

One of the things that you know one of the observations that I would like to share you share with you is that there for example, a children will need to acquire some kind of morphological knowledge in order to start appreciating that there are different kinds different forms of the same kind of verbs.

Say for example, kicks, kicked, kicking are different forms of the same word and children will need to you know start using this in some sense start appreciating that you know a particular word can be used in a singular way in a plural way or in a past tense way or in a present tense way. So, that is something that the child has to really learn.

Now, how is that the child is acquiring this you know how is that the child is starting to acquire this tense knowledge or the past tense knowledge or you know things like singulars and plurals and those kind of things.

One of the one of the solutions to this is that you know maybe children are just memorizing all the forms of all the verbs say for example, they are memorizing that what is the past tense form? What is the singular form? What is the plural form? Those kinds of things.

But the idea is if they are actually and they are you know just memorizing this stuff the problem could be that you know it does not really explain that they come up with new verb forms new word forms quite often. If they were just memorizing something then either they will come up with a correct form or they will not be able to come up with anything at all. So, the fact that they make errors in the fact that they spontaneously create different kind of word forms tells us there is more to this than just memorizing.

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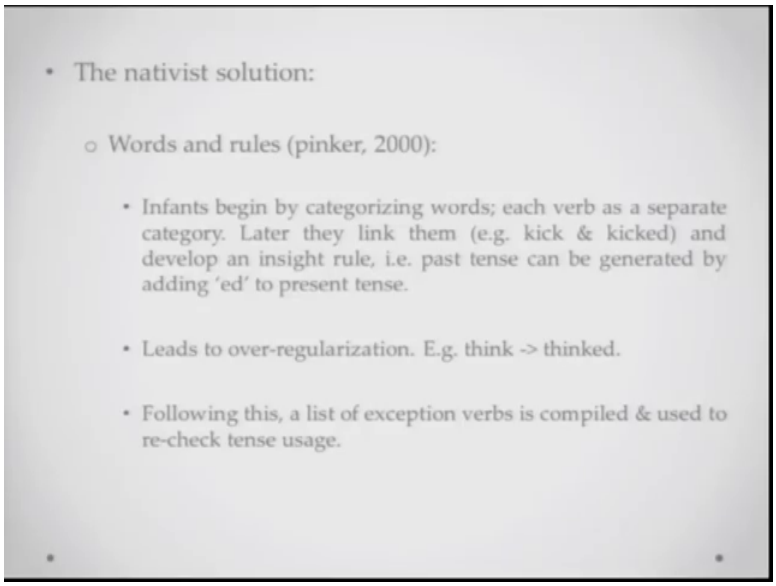

So, what is that extra thing the native solution to that extra thing is this concept of word in rules which Pinker gave in around 2000. So, he says that infants basically begin by categorizing words. So, what they do is they take each verb as a separate category and later they start link them.

So, first they would learn kick and kicking and kicked as three different words. And again with time they will start a try and link them together because they are talking about the same thing.

So, later what they are doing is they are developing an insight rule to link them which is the common rule which says if you add ed to the present sense it present tense it becomes the past tense.

So, then the child is coming up with the rules suddenly you know they are having this insight rule and they are kind of using it; however, this kind of an approach might lead to certain kinds of error calls over regularization. So, they might also start using these wrongly so things like drink, drinked or drink or think thinked.

So, again these kinds of errors can come up following this when they start making errors in addition to whatever the insight rule was saying they might start coming up with a list of exception verbs. So, what they say is the rule is you add e d it makes a past tense, but these are exceptions.

So, think that think is a thinks past tense is thought, drinks past tense is drank, slept as sleeps past tense slept. So, they will kind of use these or store these different words as exception categories and that is something that you know they might be using.

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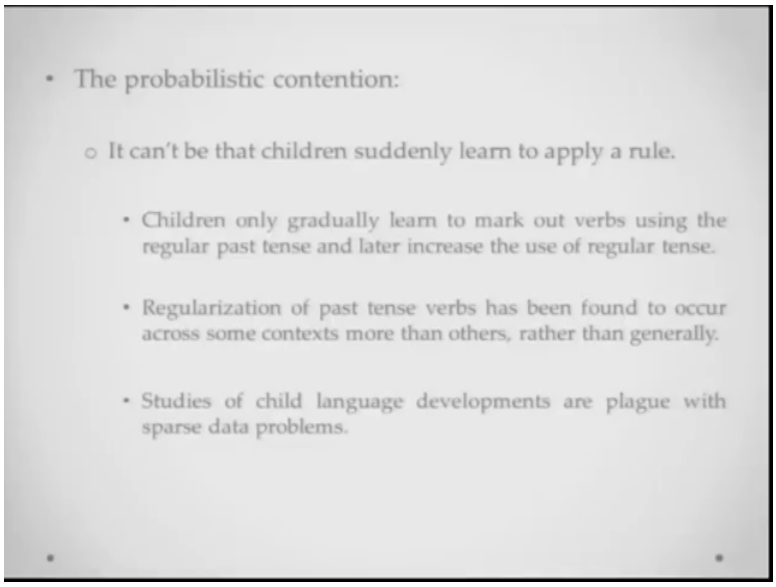

The probabilistic contention to this solution is that you know it cannot be that children suddenly develop an insight rule. They they must be doing a lot of hit and trial a lot of you know data mining to actually be able to you know come up with these rules. So, they say that children are only very gradually learning to mark out words using the regular past tense and later they increase the use of regular tense ok. So, regularization of past tense.

So, the regularization just means adding e d regularization of past tense verbs has been found to occur across some context more than some others you know it does not occur across the board. Children get that some words you add e d makes past tense and then they do not really apply it to all the words it is not being seen.

So, the idea is they are gradually using new rules designing new patterns and then using and applying them as compared to the insight rule that pinker was talking about that you know suddenly they start getting that rule and they start using that. Studies of child language developments are completely plagued with sparse data problem.

So, one of the factors that kind of you know acts as an impediment in this kind of researches that there is not a lot of child language data available and in that sense you know those kind of patterns are not reliably discernible, but again that is logistical problem.

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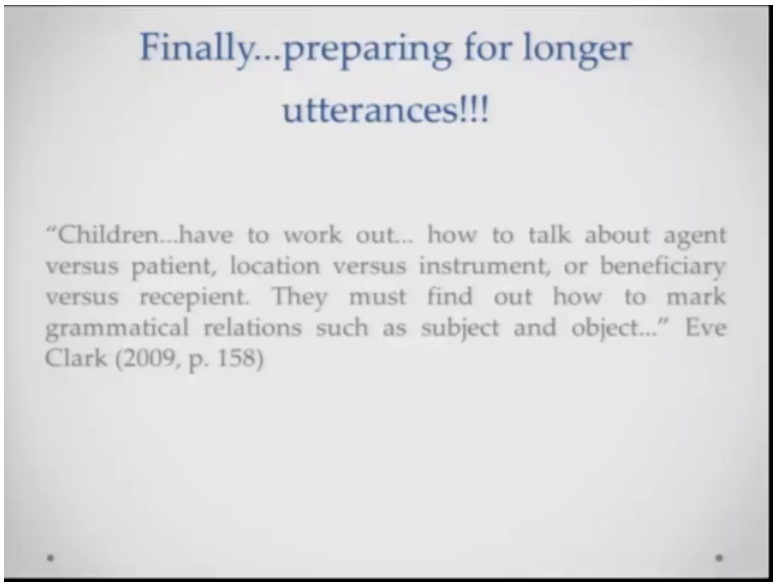

But so now we know that you know children have some sense of what the rules are? What the verbs are? and those kind of things. Children also now till this point they know words they know words mean something they know nouns and verbs and basic syntactic rules. But the main thing is still left the main thing is to start speaking like an adult, how is that going to happen ?.

I will just give you a bit of a quote from Eve Clark and this quote will probably help you appreciate that how fascinating or how complicated this is? If the child has to speak like adults they will have to work out how to talk about agent versus patient, location versus instrument, beneficiary versus recipient and they might also have to talk about you know a marking grammatical relation subject, object and you know plural singular those kind of things. And in that sense it is very difficult we are talking about them acquiring these rules.

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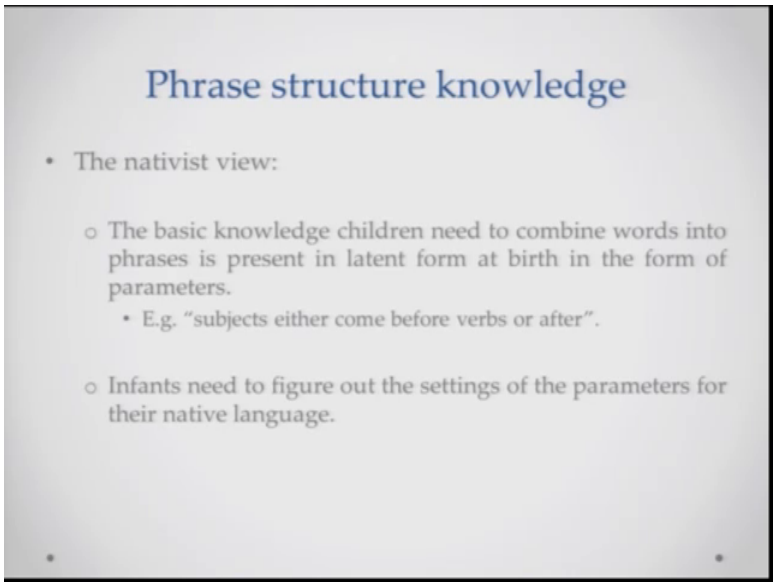

So, in this sense something that is very important to gain is the knowledge of phrase structure. How our particular words put together as phrases and which will later be combined to form sentences, longer sentences, paragraphs and those kind of things. So, again there is a nativist view about this. So, the nativist view says that the basic knowledge that children needs to start combining words into phrases and later sentences is present in latent form at the birth.

Children know that subjects will either come before the verbs or after. So, they have this basic sense infants will need to figure out the settings of the parameters because you do not know which language your family you are born into. So, gradually with experience they are going to figure this out I am born into this language family and this is how I am going to use. Now this is the nativist view.

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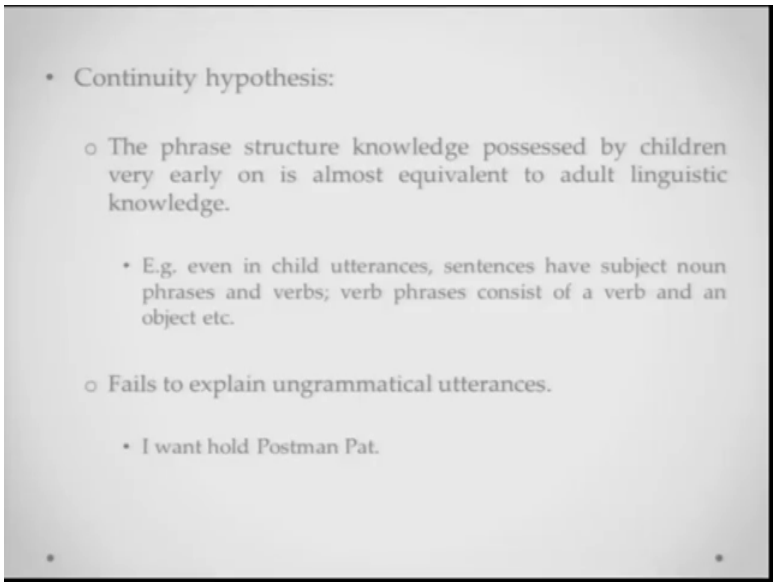

And the nativist view kind of again puts forward and the hypothesis which is the continuity hypothesis. The continuity hypothesis following from what I was just saying says that phrase structure knowledge possessed by children very early on is almost equivalent to the phrase structure knowledge that adults possess or that adults manifest.

Even in childhood and the logic behind this is that you know even if you look in child utterances there is utterances also have a subject they also have a noun and they also have verb phrases and noun phrases and those kind of things you know I want to eat apple. So, there is a subject there is a you know a verb and there is a you know object there.

So, typically they are saying that you know it is happening in such a manner because this is exactly like what the adult language is and to a sense you can say that you know maybe it is true, but then you are forced to see at errors children are if this were true how are the children kind of using you know making errors.

Because if it is, if something is in it if it is generally applicable across the board you will not expect the children to make errors. So, that also happens to children so also sometimes utter sentences like a phrases like you know I want hold postman postman pat they are not.

So, the correct thing would be I want to hold postman pat or something like so they are kind of missing these links and here. So, it does not it in that sense it is a case against the fact that they might be you know such a continuity that we are talking about. So, if if not continuity if not the native solution what else? So, there is a learning theory based solution.

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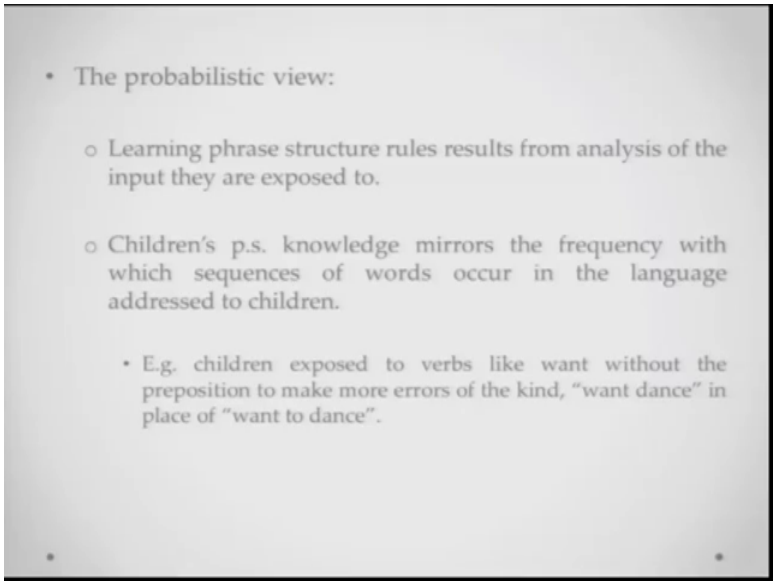

What is a learning theory based solution it is? That learning phrase structure results from the analysis of the input they are exposed to. So, whatever they are hearing you know and we talked about innately guided learning you can assume more attention more processing.

So, they are probably attending to whatever input that is there and their phrase structure knowledge basically just mirrors the frequency with which sequences of words occur in their language environment.

So, if you see a particular parent is talking to the child in a particular manner if children are living in a particular locality this is what you know the this is the kind of language they are exposed to and their initial language or their initial knowledge about phrase structures will basically come from that aspect itself.

So, again you do not really need an insight rule or you do not really need a lot of money and latent native native or innate knowledge you just need to be good at processing

whatever is coming on your you know is coming in your ears then that is what you will use to discern rules and work categories and so on and so forth.

So and also there is evidence which shows that children exposed to verbs like want without the preposition to, make more errors of the kind want dance or want hold somebody as compared to if they were exposed to things like wants to dance they would probably pick up that in a better way than you know then not. So, this is and this is this approach basically this kind of explanation lends itself to a slightly different concept of grammars that exists to the current one and this set of grammars are referred to as usage based grammars.

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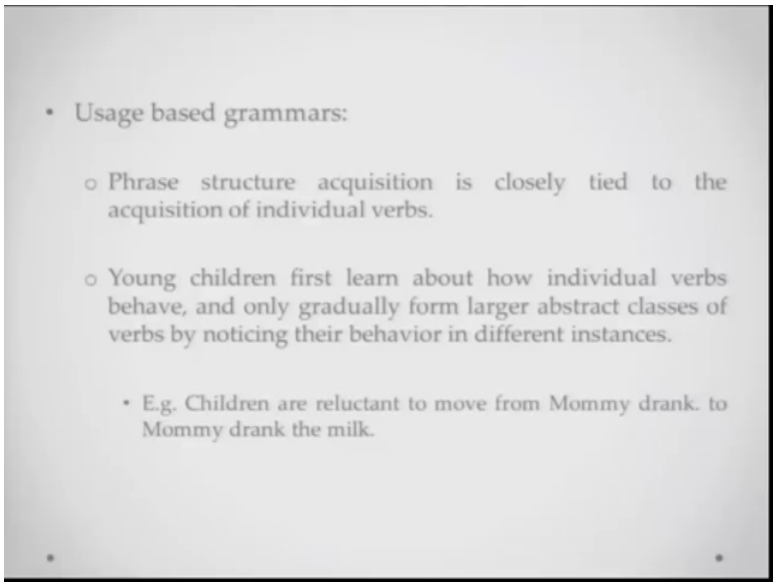

What are these usage based grammars? They are basically see Chomskys Chomskys concept of grammar is of a universal grammar is a is a concept of a grammar that is largely innate it consists of a grammar that is biologically specified all of that is good all of that is really very functional and has been around for some time.

But an alternative approach could be that children are basically you know acquiring what is called a usage based grammar you know they learn to use individual words how individual verbs or individual words behave and only gradually they kind of start making larger abstract classes they know that this is a this is a critical you know concrete object. So, this must be noun this is an abstract action happening, this must be a verb, this is happening gradually slowly and at a much later stage not like that there is an in you

know innate aspect and that kind of dawns on children to give them insight rule and stuff.

And an example in support of what I am saying is is present in say for example, children are very reluctant to change the structure of their utterances from what they begin learning with.

So, for example, if the child is into a habit of saying mommy drank as compared to mommy drank the milk. The child will find it very difficult to start using mommy drank the milk, the child will just say mommy drank it will be milk, water I mean that that is not the question.

So, again it seems slightly more logical at this point to say that the children might be learning a lot of this; obviously, learning is definitely aided by better memory, better attention and those kind of things, but that is pretty much what it looks like.

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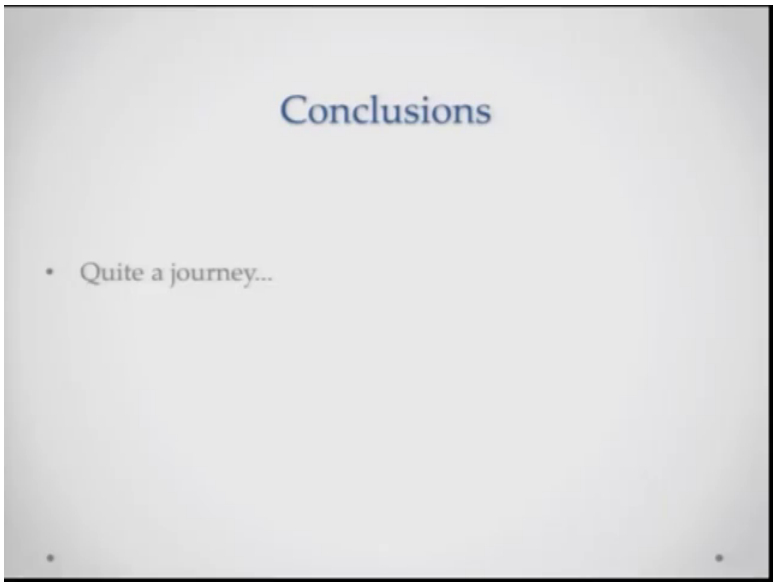

So, you know coming to the end of this language acquisition part it seems to be quite a journey it seems we started from the fact that you know from minus 3 months of age children are being able to distinguish speech, sounds. They are able to do phonemic contrast categorical perception, then they learn what how to segment words, then they learn how to acquire meanings nouns and verbs and so on and so forth. Then they have to have category knowledge tree structure knowledge and so many other things.

So, this is pretty much what the journey of acquisition of language is about.

I hope in the 2 lectures, you kind of could make sense of all of this and that is all from me about language acquisition. We will meet in the next class to talk about something else.

Thank you.