

# **Fundamentals of language Acquisition**

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**Lecture 027**

Lec 27: Nativist and constructivist cont.

Hello and welcome back. This is Lecture 2 of Module 6. In module 6, we are looking at the syntax acquisition by children. The beginning we had in the last lecture discussed some fundamental notions, and we ended that lecture with behaviorism. So, the major theories of syntactic acquisition are the same as they are for the major theories of language acquisition.

So, we went back to our behaviorism, nativism, and constructivism. These are the three most important theories, and we looked at how behaviorism does not quite provide the fundamental ideas as to why syntax acquisition happens the way it does. So, this trajectory includes the developmental stages and the kinds of mistakes that happen, and so on and so forth, we discussed. The most important criticism of behaviorism with respect to syntactic acquisition is the poverty of the stimulus, which is something we have looked at already.

So, poverty of stimulus refers to the lack of an adequate amount of input that could be subsequently used as an output. So, children are capable of generating millions of sentences that they have never heard. So, how is it? There is a very important disparity between input and output. Hence, behaviorism will not be very useful; that is what we ended with in the last lecture. So, today we will move on with two more theories that are already there.

So, this is what we will be focusing on mainly because behaviorism is not really helpful. So, here we are talking about two major theories that we are left with: the generativist approach, which has many names. So, that is why I have put all of them together: the generativist approach, the nativist approach, and universal grammar; they all are part of the same thing, essentially. So, from now on we will call it the generativist approach. The second major theoretical approach that we are looking at is the constructivist approach.

Again, this also has many names. They may not be exactly replicas of one another. There are slight amounts of differences among them, but roughly they come under the same umbrella. So, the constructivist approach, the emergentist approach, the sociopragmatic approach, the functionalist approach, and the usage-based approach. So, we will not be able to go through all of them due to the paucity of time.

But roughly, we will discuss the major tenets of these two theories, and this constructivist approach is how we will talk about the entire group of theories that fall under this umbrella term. Let us start with nativism, which is the most important theoretical construct as far as syntax is concerned. Of course, this itself warrants a full course, but we will not be able to go into so much detail; however, we will try to cover the most important notions and give you some idea about where they stand with respect to the explanations of syntactic knowledge acquisition among children. So, we will start with nativism, and the key components of nativism—innate knowledge, semantic bootstrapping, and principles and parameters—are what we will be discussing one by one. So, the primary driving force of this theory is that learning from input is not tenable.

Simply because input is not adequate for children to get the relevant information from and then create their own sentences or understand the sentences, adequate input is never there for both production and comprehension. Hence, it is not possible. So, what do we do, then? This theory states that we have some basic knowledge of the syntactic rules and categories built into the human genetic code. So, we are bioprogrammed to learn language, and that bioprogramming involves some sort of universal grammar, a universal basic grammar that includes the syntactic rules, the primary basic syntactic rules that are applicable to all languages. So, that is something that is already coded into our genetic system, and hence we do not learn from the environment; it is already there.

So, what is the role of the environment, then? So, they basically map the language they hear onto the innate grammar. So, there is already a grammar that you are born with, and then the ambient language in the environment provides you with some sort of input. So,

children basically map one onto another, and they do so to identify which set of rules they need to apply. Because there is a set of universal rules and there are also language-specific parameters that exist as far as this theory goes. So, they need to figure out which set of rules is applicable here; only that is the only impact of the environment as far as this theory goes.

But for all practical purposes, we are already in the pre-fitted factory setting, which already has the basic syntactic rule that is the idea. So the question that this theory asks is not how they learn; the question, rather, is what innate knowledge they already have. They learn because they have an innate knowledge that is the idea behind it. But then what is the nature of that innate knowledge, how much is innate and how much is, you know, dependent on outside input? That is the point of departure for this thesis. So, in order to answer this, the universal generative approach proposes a number of influential ideas, some of which we will discuss now.

We will not be able to discuss all of them, as I just said. So, the universal rules that this theory talks about are basically called universal grammar. It is called universal because it applies to all languages. Theoretically, it applies to all the languages of the world. So, there is a set of rules that can be applied to every possible language.

So, this is a sort of underlying grammatical system. This involves a set of innate universals which constrain the children's hypothesis space. This is a very important idea because we should not have already discussed a little bit about the generalization pattern that the children typically show. So, they should not go completely haywire; their hypothesis space will be constrained by this set of innate rules that we already have. So, as a result, these innate grammatical rules have a few types; one of them is called substantive universal, and then we have formal universal.

Substantive universal basically talks about the predispositions for grammatical categorization and certain grammatical features that are universal and found in all languages of the world; that is substantive universal. Formal universal, on the other hand, deals with the well-formedness constraints for syntactic representation that apply to all human languages. So, substantive universal talks about the contents and the categories, while formal universal talks about how those categories and contents combine with each other and what rules apply for forming sentences. So, together, these two make up the majority of what we call universal grammar. Let us look at some examples, as in, let us unpack it a little bit.

Substantive universals refer to fundamental categories of language that are present in all languages. So, when we talk about fundamental categories, we primarily refer to three different classes of three different types of possibilities. So one is the word classes. So, word classes refer to the different kinds of words, such as nouns, verbs, adjectives, and so on. So that is the word class.

Then we have the second category, which is the phrasal category. Phrasal categories are then noun phrases and verb phrases. So, these are understood to be universal across all languages. Then we have syntactic relations. So, regarding nouns, we have already seen a little bit of how nouns will finally get into the position of the agent; they take up the syntactic role of the subject.

Sometimes they also take on the role of object and so on. So, the syntactic relations of subject, object, and some other grammatical relations are also universal. Some of them may not be, but the majority of them are. So, together they make up what we call the substantive universal. And then we have a formal universal.

Formal universals refer to the grammatical forms or rules of the language. There are many, but I have just mentioned the transformational rules here. This was, of course, proposed by Chomsky. So, substantive and formal universals make up the content and structure. So, the what and how of both of these things are that they combine and create what is called universal grammar.

Out of those various formal universals, one is also called the structure dependency principle. The structure dependency principle is nothing but the idea that syntactic operations are dependent on syntactic structure. So, what kind of operation, how do you change one kind of sentence structure to another kind of sentence structure, depends on the syntactic structure itself, not on linear order or non-structural aspects of language. So, this is one of the primary aspects of the structure dependency principle, which in turn is a part of formal universals. Then comes semantic bootstrapping theory; this is also part of the same umbrella term.

So, the semantic bootstrapping theory talks about how the system of combining words helps children go from identifying words to understanding and producing syntax. What is the route that they take? So, this theory says that it takes the form of semantic bootstrapping. How does it happen? First, they will have the syntactic categories identified, then syntactic phrases and the syntactic roles need to be identified. So, the syntactic categories we have already seen, like noun and verb, the syntactic phrases will be noun phrase and verb phrase, and the syntactic roles will be subject and object. So, the noun can have both the role of subject and, in some cases, it can be an object like that.

Then come the things like thematic roles, thematic roles as in agent, patient, recipient of the action. So, the boy is playing with the toy, so the boy is an agent. What you know is that whatever is the receiver of the action is the patient and the action itself. So, these are the thematic roles depending on whether it is a transitive, intransitive, or ditransitive verb; the number of objects, or direct object and indirect object, will change, and so on.

So, these are the thematic roles. Then there is another aspect of the entire bootstrapping theory, which is called innate linking. Innate linking of rules tells children how to map one of these onto another, how to map the syntactic category onto the thematic role, and so on. So, how does it work? Thematic roles refer to the roles that people, agents, and objects play in any action. So, the "eagle caught the mouse" is an action. Eagle is the subject, mouse is the object, and caught is the verb; that is the sentence.

Now, in this, the noun "eagle" is the agent, so that is the mapping that is happening, and then you have the mouse, which is the patient, and the action of catching the mouse is there. Now this is something that the child needs to map: that this is a noun and has the role of an agent in a sentence in the syntactic structure. The role of the noun is that of an agent, the doer, who is doing the action, on whom the action is carried out, and what the action is. So these are the things. Understanding this role is often easy because when children are growing up, the actions that the parents or other caregivers talk about will be happening right in front of their eyes.

So, when that happens, it is very easy for the child to map the noun to the role. So, the syntactic category on the thematic role mapping is easy because the action sometimes happens in front of their eyes. So they can observe what is happening. So, they are thus able to identify the doer and the receiver of the action. So, for example, the boy threw the toy car.

Now this is one; this is the other, and this is the action. So when this kind of action is very common in a child's environment, the boy throwing the toy car is easily understood as the boy is the doer and the car is the patient that is the recipient of the action. So this kind of mapping happens in childhood. Once that happens, linking rules help them connect the thematic roles to the syntactic roles. So, identifying the agent will lead to an understanding of the subject role, and identifying the patient will lead them to link it to the object role.

Finally, the action itself will be linked to the verb category. This way, the child will learn the syntactic roles of the subject and object. So, this is how the entire understanding goes. So, step by step, it goes. But sentences are not always in action in front of our eyes; for example, the end justified the means.

So, here there is no way of linking the subject and object because all of these are abstract notions. So, they can only see concrete things; abstract ideas cannot be seen. But still, children do learn the syntactic rules as well. So, the subject-object-verb rule will probably help them assign these roles eventually. So, after starting from the concrete objects, once they have figured out how a sentence goes, they will be able to map and link it to the abstract concepts as well; thereby, even when the action is not happening in front of their eyes, they will still be able to link the subject role and the object role, even in cases when the nouns refer to something abstract.

So, is it just a theory, or do we have any evidence? There have been studies carried out to examine how tenable these theories are. We will look at a couple of examples. So, children's first utterances are typically simple and predictable. The mapping between thematic and syntactic roles is generally canonical. So, their first nouns refer to physical objects, and their first verbs refer to actual actions.

So, evidence suggests that children find it easy to learn verbs with canonical mapping between thematic and syntactic roles, so the most important thing happening here is the mapping between thematic and syntactic roles. So, the verb, the object, and the doer, you know, that kind. So, agent, patient role, verb, noun, and verb—all of that. So, this is the

mapping that they need to make. So, it is easy in the initial stages because it all happens in concrete space, and the actions are observable; from there, they go to the abstract level.

So, this was tested by Marantz in 1982. So, the experiment had 3-, 4-, and 5-year-old children take part. The goal was to see how easily children are able to interpret sentences with novel verbs. Now, the verbs that were used in the experiment do not exist. They are nonsense words, and they are calling them novel verbs. So, these are the words that have been created and positioned in the sentence in such a way that they will be taken as the verb.

Now the sentences were created alongside some canonical or non-canonical mapping. So, "John is mocking the table" that is the sentence given to him while John pounded the table with his elbow. So, there is an action happening right in front of him. So, there is a person named John. There is a table, and he is doing some action; there is some action happening, which is the pounding of the table with his elbow.

So, while children are listening to this sentence: "John is mocking the table". So, in this case, "mock" does not have the actual meaning of the word; this is for the children. This is a new word; it is a novel word, and it means, sort of, hitting the table with one's elbow. Now there are other sentences as well; "the table is mocking John" while the same action is being carried out, so this is where the situation is kind of reversed. So when you say John is mocking the table and John is actually carrying out some action, it is easy to map the syntactic role onto the thematic role because it is happening right there.

But in the second sentence, this is not happening; what is happening is actually the reverse. So, the idea was to see if children are able to understand and interpret the second sentence or not, as opposed to the first sentence. So, what was the result? The result showed that 3- and 4-year-old children found it easy to learn the meaning of the new verbs in the sentences with the canonical condition. So this provides proof that if the mapping is canonical, if the action is happening right in front of them, and the mapping is as it is expected to be, then children learn it faster, and that is what we find out. Now this seems to be a very simplistic story, and many scholars have pointed out that the reason why it happens, it turns out, is very easy in the case of English because English is a nominative-accusative language.

So, what does it mean? Nominative-accusative languages have case marking for the nominative. So, the agent gets a nominative marker, the accusative marker is given to the object, and so on. So, that case marking makes the story very easy to understand. It makes it very obvious; it kind of gives it away. So, now if you have figured out the

nominative marker and accusative marker, you do not really need to do a lot of mental gymnastics; you will be easily able to find out who is the doer and who is the receiver of the action.

For example, in the subject position, the third person pronoun "he" will be used and not "him." "He gave the book to her", so it is in this case in the subject position. When the third-person pronoun is used, you have to use "he"; it will never be "him." So that is how you will know that this is the subject; this is the agent of the case. The same nominative will also apply to transitive sentences as well as intransitive sentences.

So this is how they are in the subject in transitive sentences, which is called A argument; in intransitive sentences, this is called S argument. So, in the case of object role or argument, the marking will be different, so it will be "him". So, when the third person pronoun is in a subject position, whether it is a transitive or intransitive verb, in both cases the 'he' form will be used; when it is in the object position, the 'him' form will be used. So, it is kind of clear if you see that he is the agent; if it is him, he is the object in that particular sentence.

So, that is how it is. So, the S argument and A argument follow the same pattern, while the O argument follows a different pattern. So, if you have been able to figure this out, it will be very easy for the child to map. However, not all languages have this kind of structure. There are languages that have an ergative-absolutive marking system. In these languages, the A argument and the S argument are not marked the same way.

So, 'A argument' is what? 'A argument' is the subject in a transitive construction and the S argument is the subject in the non-transitive intransitive context. So, in these languages, ergative-absolutive marking languages, these two cases will be different. Also, the O argument in transitive sentences and the A argument of intransitive sentences require absolute case marking in these cases. So, in these languages, there is something called ergativity and split ergativity, and this kind of construction will make the situation tricky for the children because there are a lot of things happening at the same time, and children should be making mistakes. So, as per the innateness hypothesis, children speaking the language that has these properties should make mistakes, but data suggest that this is not true.

For example, Hindi is one such example. In Hindi, you have different markers for transitive and intransitive constructions. So, "Ram-ne khaya" aur "Ram gaya". "Ram soya"; "Ram ne soya" does not happen. So, at the same time, if you change the tense, things will change again.

So, "Ram jayega" then it will not be "Ram ne jayega". So, this is what we are talking about. So, this kind of complex structure should be difficult for children to acquire, but that is not how it works. Similar examples also exist in K'iche' Mayan, Georgian, and other languages alongside Hindi. So this is, on the one hand. On the other hand, there are some scholars who do not really agree that the linking principle would lead subjects to treat S arguments and A arguments similarly just because they look similar; in this kind of sentence, the two kinds of sentence structures may look similar, but it does not mean that the linking principle will make them see them similarly.

Pinker, for example, says that children just need to notice if the case markings for intransitive and transitive agents are identical. They just have to notice it. There is no need to be confused. They will simply be required to notice this much. Languages such as Hindi and Georgian behave like nominative-accusative in the present tense but like ergative-absolutive in the past tense.

So, this is the kind of complexity we are talking about, but children do not seem to have any problem. So, that is what we leave linking there, and now let us move on to principles and parameters, which are another very important aspect of universal grammar. So, the principles and parameters model has two formal universals. So, this contains two different kinds of formal universals. So, universal principles that capture universal properties of human language are principles, and then we have parameters.

Parameters that provide a finite set of options from which learners can choose. So, principles are universal; parameters are somewhat language-specific. So, you can choose which parameters to use for which language. So, this framework was aimed at explaining why syntactic rules differ in different languages. Because if we go by universal grammar theory, then every language should have the same kind of structure.

But that is not the case. There are languages that are vastly different from one another. We just saw the example of Hindi and English. So, Hindi has ergativity and split ergativity, while English does not have that. So, how do those problems and how universal grammar takes care of those differences is what principles and parameters try to explain.

So, in this framework, the child has two types of innate rules. The first is a set of grammatical principles that refers to what is often called the secret skeleton of languages. So, this is the baseline basic structural principle, and this is applicable to all languages, as

all words are assigned a syntactic category, such as noun, verb, etc. So, this is the principle that all words in a language will obligatorily fall in some syntactic category.

So, that is a principle. Secondly, we have the parameters. There is a set of parameters that is language-specific. So, for example, the property of a null subject. Some languages allow this; some languages do not. Hindi allows it, but English does not. So, if there is a null subject parameter, the child needs to set it according to whether her language allows the null subject construction.

So, in English, it is not possible to simply say "is raining". It cannot be; this is not a very nice structure in the English language. The correct way is: it is raining. Thus, they need to obligate and set the parameters for obligatory subject marking, which is the opposite of null subject. So, null subject parameter versus the obligatory subject parameter. The child will need to figure out which applies to this particular language that she is born into.

In English, it will not apply; it will not work, so they have to switch on and off, switching on the obligatory subject setting in this case. But in the case of Bangla, for example, it is fine to simply say "khachi"; "khachi" means eating. The first person is the subject that is omitted here. So, only the verb is mentioned, which encodes the first-person information, and this is fine.

This is perfectly fine to say, khachi. If you need to figure out whether it is a singular number or a plural number, then you have to depend on context; otherwise, this is fine. So, this is a grammatical construct. Hence, the null subject parameter will be switched on in the case of Bangla. That is the idea. So, the process goes like this: first she slots the words into innate syntactic categories; then she sets the parameters.

So, once she identifies which words and nouns she can slot as subjects. So, we have already seen that they do figure out the nouns. So, nouns will become subjects or, if required, objects. Then, using trigger phrases, she can figure out whether her language allows null subjects or obligatory subjects; then she sets the parameters to the appropriate setting. So, the principles take care of the baseline, and then the parameters take care of the language-specific properties, and that is how children will be able to comprehend and produce language, I mean syntactic structure, in the relevant language. Some other parameters of word order acquisition that have been proposed are the complement head parameter, the specifier head parameter, and the V2 parameter; this was proposed in 1994.

So, these are some of the well-known parameters that have been proposed. So, in the complement head or head direction parameter, this determines the position of the head relative to the position of its complement in maximal projections. The specifier head parameter, which determines the position of the specifier relative to the position of the head, and then you have the V2 parameter, which determines whether a finite verb of a declarative main clause always appears as the second constituent. So, these are some of the parameters, and depending on what language you speak, you will either need this or you will not need this, and all that. Support for this theory; of course, there is ample literature available on these, and you may look up any of those references.

So, there are many studies that have found support. So, children's knowledge is far more sophisticated than we expect. And there has to be some sort of mechanism that is kind of innate in order for them to achieve that without much overt teaching or adequate environmental input and so on. So, there is a lot of support; some of the studies, for example, are also experimental in nature. So, one well-known study is by Valian (1986).

So, what they wanted to figure out is at what age children can use determiners and nouns. They wanted to see when it would appear. So, the criteria for the study were that children needed to use determiners, using them randomly would not work. So, the correct usage will be only when the determiner is used in the correct position before adjectives or nouns, or both. So, in the case of English, it will be like 'a book': 'the book'. And then it will be 'the red book', or even not; this will be a grammatically correct sentence because the "a" is appearing here in the middle of "red a book," which is an ungrammatical construction.

So it has to be 'a red book'. So, they need to know that the determiner will come before the adjective if there is an adjective before the noun. So, then in crux they need to use the determiner in the correct position. Then they should also not use the determiner as a standalone. So, you cannot just simply say "a" and "the"; that will not be counted.

Similarly, could not be sequenced in a wrong way: "there is a the dog" . So, these were the objective criteria for seeing when they learn. So, what do the results say? The findings showed that children produce the syntactic categories and use them correctly in most cases. There were few omissions of determiners in some cases; few, not all of them, failed. This was explained as uncertainty about which nouns require a determiner. Now in English, there is a small problem: not all nouns require a determiner; for example, milk does not require a determiner like "a" and "an".

" The "the" may be used when you want to specify it, but biscuit does. So, you can always say "a biscuit" like that. So, they might be confused between the nouns as to when it needs to be used and when it does not; that is how they had explained some of the omissions that they found. Now, theories always have criticisms, so critics have pointed out that if children do figure out parameters and they have the principles in place, and parameters are figured out, then why do they have omissions at all? Even if there are few, why do they have them? Because we have already seen that telegraphic speech is marked by the omission of determiners, prepositions, and other such words, only content words are typically present. Sometimes, they also have very odd constructions. For example "I don't sure I don't like it", then "why the tape recorder don't lie?", " No, I no like it" and so on.

So, if the principles and parameters are already there for children to figure out very early, these things should not be there at all. So, these are some of the criticisms, and there have been some explanations for them as well. The primary idea is that they take time. They do have the parameters there; they do have the principles also in place, but children take some time. So, for example, English children start with the null subject parameter and then eventually figure out that it will not work.

Some aspects of innate knowledge are not present at birth; some mature over time. This has also been proposed as another possible explanation. Similarly, you have children who do have all the principles and parameters in place but have performance limits. So, one is they do not have all of them; they have them, but they need time to set it, you know, set the parameters. The other group says that some of the innate principles are not present but mature over time.

The third one says that it is all there. But the problem is the performance problem, performance limitations which are not dependent on linguistic capability per se but are non-linguistic in nature. For example, limitations of working memory, limitations of attention span, and so on. Of course, small children have very short attention spans.

So, that could be one reason why they make these mistakes. So, this is where we will complete this lecture. In the next lecture, we will continue with the theories. Thank you.