

## **Basic of Language Science**

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### **Lecture 25**

#### **Categories and Selectional Restrictions on Verbs**

We are going to look at a new topic today. So far, we have been looking at X-bar theory, ok. An X-bar theory is a representation of elements and categories within a phrase and then that tells us how one phrase is connected with the other or how one phrase is part of the other phrase and the relationships among them.

We are going to come back to X-bar theory once again with new topics, with new stuff that we want to build on, ok. And this is why we have discussed the X-bar theory first. Now we are going to look at what is called theta theory. It has very little to do with theta as you may know but then I will show you what it means.

Theta refers to the theme, in the sense that the whole theory talks about how different categories are related to one another in a thematic sense and this is largely about meaning that is semantics of elements in a sentence. It has a huge role in syntax but largely it is related to semantics.

So to look at this thing, this aspect of the study of sentence we need to answer these two questions. What is a theta role and how does theta role assignment actually work, ok. We come back to these two questions or we are going to build our approach to these two questions in the following sense. I want you to know about these terms now and what these terms refer to. The term endocentricity simply means the following, in the sense that an XP can only have X as its head, ok.

I have mentioned this thing before but an XP endocentricity stops and Y becoming head of an XP, ok, and vice versa. When we were looking at a phrase, we discussed how it happens, how we decide what all is part of a phrase, how many elements are part of one phrase. This is also somehow related to the concept of endocentricity that everything related to a phrase, in other words every part of a phrase is contained within that phrase ok.

So, in a phrase, we will have a specifier, head and its complement. If there is additional stuff, we have seen an XP. What I mean by additional stuff is the following. We have seen an NP right which has a specifier, which has a head and a which has its complement. That kind of NP is a student of physics, a student of physics or the student of physics.

Then you saw yesterday we have a phrase which is an NP and it has an adjunct to a student of physics with long hair. Following endocentricity we know that with long hair this phrase belongs to the whole NP right that is to say with long hair is talking about the head of this phrase which is a student right.

Endocentricity guarantees that but according to the spaces available in the phrase, there is no space for it, ok. Still we need to accommodate it only in this phrase. We have discussed these things. I am just putting a name for this. This is called endocentricity, clear. Is the example that I gave you making sense to you? Yes? Yes? Ok.

Next, I remember mentioning selectional restriction to you. I just want to make it a little bit broader and then bring selectional restriction inside that. Selectional restriction is part of what we know as categorical selection, ok. And that in short is called C-selection. In simple terms it simply means certain heads specifically require only certain things.

In totally non-technical terms it means a certain head requires only certain things and they do not want anything else. I want to show you some examples of that and that is called sub-categorization. The requirement that a particular head will need only something, a certain type of thing is called sub-categorization. For example when we say that we have a let us say, let me put it in a systematic way.

We have been looking at these things that we need a subject and a predicate for a sentence, ok. Then we know that in a predicate we have VP, NP or a PP. This could be a potential predicate right. Now, we know that this NP could be required right, that is it could be the object of this word right.

And then we also know that in the same sense this PP may not be required, ok. So what we are saying here with the idea of sub-categorization is this NP is a sub-categorized element whereas this PP is not a sub-categorized element not a difficult thing. We have talked about this thing, again without the name of this thing. This and if I tell you this is an object and this is a required element. In other words this is a sub categorized NP of this VP right.

I assume you understand that inside the VP what sub-categorizes inside a VP, what sub-categorizes this NP is the head V, still with me? No issues so far? Can I really make sure that you it is ok, right. If there is any question, if there is any difficulty you can still raise your hands, talk about this and then we can move together, sure? Ok.

The sub-categorized NP, the NP that we are referring to as sub-categorized element is actually done by the head that is the point I am trying to make. When we say this NP is a required thing inside predicate, what we mean is this VP needs this NP. When we say this VP needs an NP in its precise way we are saying the head of this VP that is V sub categorizes this NP.

Why do we need to be that specific? Because we want to make sure that other parts of the predicate or other parts of the sentence should not have anything to do with this sub-categorization that is all. Why do we need to be really specific about it? And if these things are true then what is the nature of this V, this head?

Transitive, this is a transitive verb right, all right. That is all is the meaning of sub-categorization and then we say that this V has a C-selects this NP, ok. This V, C-selects this NP that is all. We can say these things. I do want you to keep this thing also in mind. We can also say these things without these terms and we are still good right.

I am only telling you these terms so that when you are looking at books or if you happen to interact with someone else they should get an idea or you should know what these terms mean. Basically they should get an idea that you not only know, sorry?

Student: Can you give an example of sub-categorization?

Professor: This is an example of sub-categorization.

Student: (())(11:59) sentence.

Professor: The good old sentences that we have been looking at, what was the sentence, like as a verb, like as the head of this VP sub-categorizes for an NP pizza. So this is an object of this verb, this is an NP of this head V. This is a complement of this head V and this head V sub-categorizes for an NP which is its object that is all. Go ahead speak loudly.

Student: Ok it is bound to have an object right then?

Professor: That is right.

Student: Then what is the point of defining something like sub-categorization?

Professor: If we want, this is called it is bound to have an object which is true. So, this is what I am saying. We can say the same thing that this verb has an NP pizza which is the object of this verb. Same thing can be said that the head V sub-categorizes for an NP. And sometimes this sub-categorization is a little bit too rigid, ok.

And I am going to give you more examples of that rigidity. Also we are saying this V sub-categorizes for an NP, that is this head sub categorizes for an NP. There could be some other heads which can sub-categorize for other kinds of element and as a whole that is called C-selection that is certain heads specifically selects certain types of category and the whole process is called categorical selection or C-selection.

And I am sure you are familiar that we can do many complicated things with simple terms, right. Anyway let me move ahead with this. Look at I want you to spend a couple of minutes on this, this thing that is on your screen.

Look at the verbs. Now you know about predicates, objects, verbs, transitive, intransitive and all that. When we have a verb like know, what are the things that it looks for? It can only have these three things right. If you look at it carefully it is not really scary. What it needs is that as its complement it can sub-categorize for an NP, right. And in that case the sentence will be something like John knows the time, ok. It is like a question: what time is it? Do you know what time it is?

It is that kind of a question we can say John knows the time. In this sentence the verb know is looking for an NP and that NP is the time, clear? It can also take a full sentence as its complement. It can take a full complement, full sentence as its complement that is it can have an IP as its object. Are you still with me?

And the IP is you can see John knows that the world is full of noises. I changed this sentence earlier. It was nonsense. John knows the world is full of nonsense but I have changed the sentence that is not important. What is important is that the world is full of noises.

Student: It is not a sentence.

Professor: Why is that? Why is this not a sentence? Ok, remove that part, remove that part then it becomes a sentence. So, if without that it is a sentence with that it can only be a sentence plus something. No no, I want you to understand this part, with that if without that the whole thing is a sentence mathematically speaking with that it can only be a sentence plus something. It can never be a sentence minus something, get my point? The reason why I am talking about sentence plus something or sentence minus something is simply because I have not discussed that so far with you.

That is what I have discussed with you so far is NP, ok. I have not given you examples but I can take it for granted adjectival phrases, PP and VP. In addition, I have discussed with you what is called IP right and then I have discussed with you some of the things that are part of IP like AGR, AGRP and stuff like that, right. Am I right? What I and while discussing these things what I have told you is all of them are going to retain a structure something like this where you have a specifier, head and a complement. Allow me to repeat one more sentence.

Each one of them may not necessarily have a specifier, each one of them may not necessarily have a complement but each one of them will definitely have its head, only then you have a phrase otherwise you do not have a phrase. And this is what we just now discussed that we call it endocentricity, all right. Now what I have not discussed with you is there are more stuff like this, right.

Such as this one, that the world is full of noises, ok. Sometimes we can drop that part, right. So, allow me a few more sentences here which is probably required is the following. Do you know that there are two types of that in English? If I ask you what is that? How will you answer?

Student: One is demonstrative.

Professor: Demonstrative pronoun right. So, we can say that is a pronoun, is a type of a pronoun. Everybody, that is true, that is a type of a pronoun. Pronouns are used for things for referring to things. So I can say that, this right those, these. In that sense it is a pronoun and more specifically it is a demonstrative pronoun. Everybody this, that in this sentence is not that one. This is not a demonstrative pronoun. Do you see that?

This, the element that you see is not a demonstrative pronoun because it is not demonstrating anything right. There are several elements in a language, as a language specific case in English there are several such types of elements. In other languages too we have such things right. So, if it is not a demonstrative pronoun then what is it?

Conjunction right, conjunction, we can say conjunction but it is more than conjunction. You see conjunction is an element which is needed. For example, if I want to say John and Mary I cannot say John Mary I need to say John and Mary. But this kind of thing sometimes can be dropped right.

And I am not focusing too much on the grammatical aspect of it but we can also say John knows here we, here that is needed. John knows that the world is flat right but in some kind of sentences we can drop that also and still the sentence will be ok. So, my argument is this element is something more than conjunction.

Now I am not telling you that, right now no I am sorry I am not going into the details of that right now. However since we are talking about several terms it will be nice for us to talk about that term at least.

That term is called, can you read this? Complementizer, you have heard the word complement and this is a new term called complementizer, ok. Now there is a huge difference between a complement and a complementizer. Complements you know by now and complementizer the word refers to this kind of element which is at that right.

Everybody agrees that this is not a demonstrative pronoun? So, this has got to be something, right. In a description of a language, we cannot leave something undescribed. So this has got to be something and this is called complementizer. Again, a big name, a heavy term just bear with me. Even if you know, I am repeating this thing on record, if you do not remember this term sky does not fall ok.

What I want you to know for sure though that there are two types of that and one is like a pronoun. The other is not like a pronoun which has some additional function, some other function even this much is good enough. If you can remember this term and if you can describe the same phenomena with these terms then you are a great linguist, ok.

Now, so, with this kind of thing what happens is some there is something else which is called what is that? If I just put this thing, complementizer phrase ok, complementizer phrase and I do want to move on with this thing I do not have liberty for digression right now, cannot take a detour but I do want to give it a conclusive shape. So, that at least you know what this means, CP is more than IP. CP is more than IP because for a CP how do we get the structure of a CP? How do we get the structure of a CP? Help me.

What do we get here and here? C, no problem for anyone so far and this is going to be specifier right and this is the head and the complement of a complementizer, complement of a complementizer is can anyone guess? IP, this is the reason why I am saying a CP is more than an IP ok. CP is more than an IP.

You have seen what an IP is, right, a specifier, I bar I and VP, like VP is the complement of I, the bundle of features IP itself at times not all the time, at times, complement of complementizer like that. This is what I meant when I said it is more than an IP, ok. It is bigger than an IP. It is IP plus something which is a sentence plus something not sentence minus something. I, we are going to use this thing little later also by little later some other time.

And we need to describe some other stuff with the help of this thing. So, I think that will be handy at that point in time. For the time being this makes sense that the object of a, object or the object of a verb like know ok could be an entire sentence which is a sentence and more than a sentence.

So, objects need not to be need not be just an NP ok that is one point, the second point is while discussing categorical selection we are saying that a category like know, what category know belongs to? Verb, verb right, a head like know could need at times a CP as its complement, get this thing? And I am positive you can appreciate it at this time that what we mean by recursiveness is, ok.

We are saying the whole CP could be a complement of a V right. A whole CP could be a complement of a V as you can see on the screen and then I am also saying a C can take an IP as a complement. Do you see what we know as in real life chicken and egg stories? And this is what takes you to infinity. With these things, with these mechanisms, we can capture the notion that a sentence could be infinitely long.

That is there is no restriction that we have to begin a sentence with CP only and above CP there is nothing so there is nothing like a god structure, ok. Everything could be attached to anything else I mean depending upon the need right. And that is what I am trying to show you here that in order to understand categorical selection a head like know at times take an NP as its complement at times it could take an entire CP as its complement, ok.

And then also, it can take an entire interrogative sentence as its complement. I have not discussed interrogative sentences with you so far. Let me not spend more time on this thing. For the time being I can simply say an interrogative sentence is not an IP, however, I can also say with this help with the help of this CP now an interrogative sentence is a CP, ok. An interrogative sentence is a CP, trust me I am not simply throwing words and I am not simply trying to avoid such discussions, hang on to these things. When we discuss, when we come back to IP, CP and interrogative sentences more, we will talk about that.

Right now moving ahead a verb like, a head like ask necessarily requires these kinds of elements, these kinds of complements. What are those complements? It could also need a, it needs an NP. Sometimes it needs an NP but it is never going to need a CP, ok. A verb like ask is never going to need a CP or an IP. However it may need, I am sorry, I am sorry let me revise myself.

When I say it is never going to take a CP I had been in mind ok but when it is going to allow for a question sentence, but the question sentences are CP. So let me revise myself. What I am saying is a head like ask is not going to take that the world was full of noises type of sentence ok which is to say it is not going to take as its complement a CP with where C sub-categorizes for an IP, that kind of sentence it is not going to take. However it needs interrogative sentences sometimes.

And likewise a head like wonder this is also a verb right, heard this word before? Where before wonder, I wonder whatever follows wonder can only be an interrogative sentence. We cannot say I wonder you. I wonder about the time. These are not grammatical strings for English speakers. It has to be I wonder what time that was, what time it is. I wonder where we are headed to.

These are the grammatical strings which if we describe or we try to explain simply means that a head like wonder can only take interrogative compliments. It is not going to take an empty NP complement and it is not going to take a CP like that the world is full of noises. I wonder if the world is full of noises and is not a grammatical string.

Now the idea for us is not to learn again English. The point that I am trying to make through this is very simple. If we take 3 examples like know, ask and wonder. These could be three different heads in a language like English and they have certain restrictions on what kind of complement they could select or they may not select.

These are just three examples. We can take another complement as well. We can take a compliment like eat or read and we can say eat can only select an NP. Eat is not going to select as a CP or eat is not going to select an interrogative sentence. We cannot say I ate what time, what chapatti that was. We can say these kinds of sentences right. The point is we are discussing restrictions on a particular head that could sub-categorize the types of elements.

Adjectives, it is going to require. It may not, an adjective may not need something. It may not need anything. I can say this computer is black. The adjective black does not need anything else but if it needs something it may need a PP as its complement and the examples are given to you. Look at that.

We can say fond of tall students ok but we can never say fond the tall student, understand, right? I can say I am fond of sweets, right. I can never say I am fond sweets, what does that mean? This kind of grammaticality and ungrammaticality can be stated in the following terms. An adjective needs a PP as its complement and not NP as its complement. Is this thing clear? Making sense at least?

Yes? That is all is the meaning of A. In B nouns require PP complements right. Some certain when we are saying nouns require PP complements we are not trying to say all nouns will require. We are saying certain nominal elements have a requirement that they are going to need a PP. So, if we need to describe let us say queen or king or student that we have been describing, such things, such nouns can only take a PP as its complement.

I need to describe a student, it can only be described with PP which I can say queen of blue, of the blue isles, student of physics, we can never say queen the blue isles. We can never say student physics. You can argue, we can say physics is student but that is a different string, ok. We can never say physics student, I am sorry student physics, we need to say student of physics, ok. So if at all it is going to require a compliment it can only need a PP as its complement.

This is being discussed with you as a sort of requirement that sometimes, certain nouns may need a particular type of complement alone, nothing else works. Yeah?

Student: Sentence like this is a black computer.

Professor: This is a black computer, sure.

Student: Black is an adjective which has a complement noun.

Professor: Black compliment as a noun. Black is an adjective which has a complement as a noun. So your question is what is that?

Student: The adjective if required they have PP as compliments, oh.

Professor: You need to look at that more carefully. I am glad you are looking at this thing but and this is why I said I may not have discussed AP with you. That is an adjectival phrase right without discussing it on the board. I can tell you black computer could be an adjectival phrase, ok. When we say it is an adjectival phrase what we mean is black is the head that is adjective and it has an NP as a complement which is computer right.

But it could also be an NP where black becomes the specifier of this NP that this head noun is. This, is this making sense to you? Not, not making sense.

Student: Tall is (())(37:49) PP sir.

Professor: Sorry?

Student: Of the tall student.

Professor: Fond of the tall student.

Student: Sir tall is the adjective here?

Professor: No, tall is the adjective. Yes, see look at this example. We are talking about the same thing, of the tall student. What type of phrase is that, PP right? And in that PP of is the head and what is the complement of this head?

Student: The tall student.

Professor: The tall student right. Now what is the tallest student, NP right? In this NP.

Student: Fond is...

Professor: No no no no no, fond is an adjective here, fond clearly adjective. Now the tallest student is an NP, right? The tall student is an, is this an NP? Tell me now.

Student: Because the student is the head of the tall student.

Professor: That is what I am asking you, how? Why is it not an adjectival phrase? No, no the head is not a noun.

Student: The tall student, the is (())(39:15) what is head, tall...

Professor: If it is an adjectival phrase then tall is the head of that and noun is the complement of that head tall. This is how it works let me show you.

See, we are saying, of the tall student. You know so far this was PP, from here the question is what is that right? You would want to believe this is an NP right because this is what you have



seen and that, this is what I was trying to answer you. And this is what it meant when I said I have not discussed AP with you.

If we did not have this one right then the story was different. Here we categorically know that this is not an NP. This is an adjective phrase where we have a specifier A bar, A and NP as the complement. The is the specifier, tall is the head and again student is the head. Sorry?

Student: (())(40:51)

Professor: Yeah that is because this is the PP, of the tallest student becomes PP. So in this PP, P does not have NP as a complement. In this PP, P has AP as its complement. Lost? Confused? What is the confusion?

Student: The tall has the NP as a compliment.

Professor: The tall as the head of this phrase has NP as a compliment.

Student: That is (())(41:22)

Professor: No no no no, hold on you are mixing two three things together. First of all, let me reduce their confusion.

When the first thing says adjectives require PP as compliments where do you see that there is no PP as complement? No, no no hold on, I mean see tall taking NP as a complement what I am trying to tell you is this does not contradict this one because we are talking about certain types of adjectives required so only certain types of complement. We are not saying all adjectives are going to take only PP as complements and therefore I am giving you some selective examples like fond like in this case you just have fond ok.

We are saying, we are talking I do not think I need to take you back, we are talking about categorical selection. In that discussion I am talking about certain categories that need only certain types of complements and this is called a restriction on them. Categorical selection is a restriction, ok. Some categories need only certain types of things like I gave you examples of nouns, sorry know, ask and wonder.

Similarly, I am giving you an example of fond. With this example please do not confuse that it means all adjectives are going to take only PP as complements and probably that is what creating confusion with you that here is a PP, here is an adjective which is taking NP as a complement, true, there is no problem here and this is not in contradiction with that either as long as you are you can see that the complement of that adjective is a PP. Do you see that? The complement of that adjective is a PP.

What we are trying to say if you have an adjective as fond. If you have formed as an adjective, it is not going to take NP like this one. It can only take a PP that is an example of categorical selection. And look at the third one. Should not be a problem there, that preposition will require NP complements right. On the brown table.

I have talked to you about selectional restriction just give me another moment which we can, the way I discussed with you so far I want to conclude it with the following remark. I have discussed with you know, ask and wonder. The description that I gave you for, this description that I gave you and I called that, what did I call that categorical selection, that is a syntactic restriction ok that is a syntactic restriction. If I say the same thing with the following words then it becomes a semantic restriction.

What is the word, come, know. For know compliments must be a question or a proposition then it is a semantic statement, ok. I realize that I need to discuss with you a proposition, right. Proposition simply means a statement, ok.

So, examples like that the world is full of noise, ok. The B, the example of know is a proposition, ok. So if I am saying a verb like know, a head like know needs a C could take a CP as its complement. This statement is syntactically charged. If I say know could take a proposition as its complement ok that is a semantic statement. The distinction is very subtle, very subtle C categorical selection is syntactic notion.

Categorical selection is a syntactic notion. Semantic selection or S-selection is semantic notion by definition. Similarly for questions like for the heads like ask and wonder we can say compliments must be a question. This is a syntactic statement. If we say they need CP as its complement then it is going to be a syntactic statement.

We need to discuss a couple of more things in terms of restriction and then I will discuss with you thematic relations.