

**Principles and Parameters in Natural Language**  
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**Lecture - 24**  
**Categorial Selections, Selectional Restrictions on verbs**

We are going to look at a new topic today we have. So, far we have been looking at X-bar theory. The x 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 and this is why we have discussed 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 and, but then I will show you what it means theta refers to 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 huge role in syntax, but largely it is related to semantics.

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## Questions

- What is a theta role?
- How does theta role assignment work?



So, to look at this thing this aspect of this study of sentence, we need to answer these two questions what is a theta role and how does theta role assignment actually work ok.

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### Endocentricity:

- X can be a head of XP and not YP.
- The head of YP will be Y.
- Everything related to a phrase/every part of a phrase XP is contained within the XP.



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 can only have x as it is head I have mentioned this thing before, but an XP endocentricity stops than y becoming head of an XP and vice versa. We have also when we were looking at a phrase, we discussed how does it happen how do 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, I mean in a phrase we will have specifier head and it is complement. If there are all additional stuff we have seen in XP what I mean by additional stuff is the following we have seen in NP right which has an specifier, which has a head and which has it is complement that kind of NP is 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 it has an adjunct too. The student of physics with long hair; following endocentricity we know that with long hair in 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; still we


need to accommodate it only in this space, we have discussed these things I am just putting a name for this is called endocentricity clear.

Is the example that I gave you making sense to you, yes.

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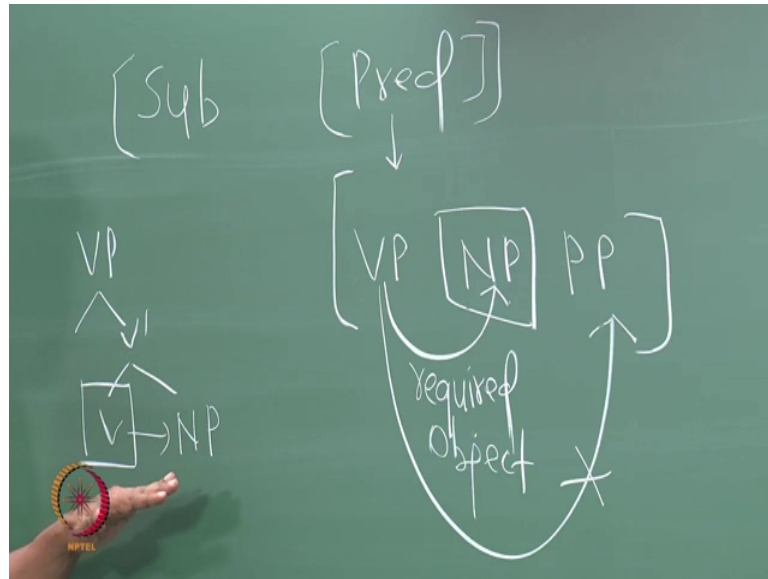
## Categorial Selection

- C-selection (categorial selection): certain heads impose particular demands on the category of the XP they combine with. These demands are referred to as **c-selection**.

 This is also referred to as Subcategorization.

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 categorial selection, and that in short is called see selection. In simple terms it simply means certain heads specifically require only certain things, in totally non technical term 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, certain type of thing it is called sub categorization.

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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.

Then we know that if any predicate we have VP, NP or a PP. This could be a potential predicate right now then we know that this NP could be required right that is it could be object of this verb right and then we also know that in the same sense this PP may not be required. So, what we are saying here with the idea of sub categorization is this NP is a subcategorized element whereas, this PP is not a subcategorized 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 a object and this is a required element. In other words this is a subcategorized NP of this VP right I assume you to understand that inside the VP what subcategorizes inside a VP what subcategorizes this NP is the head V still with me no issues so far. Can I really make sure that you it is 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.

The subcategorized NP, the NP that we are referring to as subcategorized element is actually done by the head that is the point I am trying to make. When we say this 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 a precise way we are saying the head of this VP that is V subcategorizes this NP. Why do we need to be that specific? Because we want to make

sure that other parts of the of predicate or other parts of sentence should not have anything to do with this sub categorization that is all why we need to be really as 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 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, this this should get an idea or you should know what these terms mean basically. They should get an idea that you not only know.

Student: Sir, can you give an example.

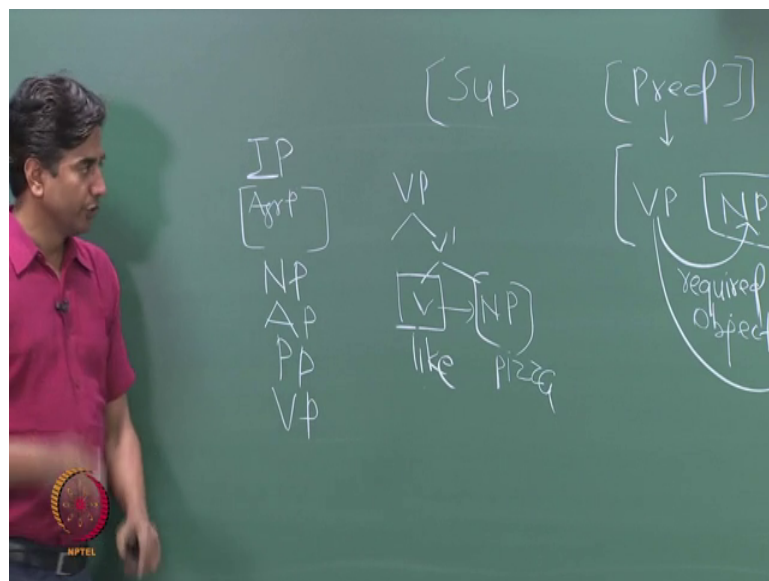
Sorry.

Student: Sir, can you give an example of sub categorization.

This is the example of sub categorization.

Student: (Refer Time: 12:01).

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The good old sentences that we have been looking at; what were the sentence? Like has a verb like at 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 subcategorizes for an NP which is its object that is all. Go ahead speak up loudly.

Student: Sir, it is bound to have an object right (Refer Time: 12:51).

That is right.

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

If we want this is call it is bound to have a 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 this head v subcategorizes for an NP and sometimes this sub categorization is little bit too rigid and I am going to give you more examples of that rigidity.

Also we are saying this v subcategorizes for an NP that is this head subcategorizes for an NP there could be some other heads which can subcategorized for other kinds of element and in as a whole that is called c selection, that is certain heads specifically selects certain types of category and a whole process is called Categorical selection or c selection. These are just names I am again repeating myself that we can say this these things with simpler terms also, we do not need to really know sub categorization it sounds like a big name and when you say these names when you know these names you sound a little bit fancy you can scare other people that I know something called sub categorization right.

You ask somebody anyone who could be a great English teacher, great language teacher asking do you know about sub categorization it to that person it sounds like name of a disease. The person can tell you look wow what how do I know what that is right, but the reason why I am telling you this thing is not that you should know some big heavy terms, you should not be deprived of these terms. And therefore, I am adding the rider also then we can do these things without these terms also 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 thing that is that is on your screen.

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(1) *know* can take NPs, indicatives S's, and interrogative S's.


- a. John knows [NP the time].
- b. John knows [S that the world is full of noises].
- c. John knows [S what the time is].

(2) *ask* can take NPs and interrogative S's, but not indicative S's.

- a. John asked me [NP the time].
- b. \*John asked me [S that the world was full of noises].
- c. John asked me [S what the time was].

(3) *wonder* can only take interrogative S's, not NPs or indicative S's.

- a. \*Paul wonders [NP the time].
- b. \*Paul wonders [S that the world is full of noises].
- c. Paul wonders [S what the time is].



Look at the verbs now you know about predicate 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 this it carefully it is not really a scary, what it needs is that is as it is complement it can subcategorize for an NP right and in that case the sentence will be something like john knows the time. 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 it is complement it can take a full complement, full sentence as it is complement that is. It can have an IP as it is object are you 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 (Refer Time: 17:22).

Why is that?

Student: That the world is full of noise (Refer Time: 17:25).

What is why is this not a sentence?

Student: That (Refer Time: 17:30).

Remove that part.

Student: That then it becomes a sentence.

Then it becomes a sentence. So, if without that it is a sentence, with that it can only be sentence plus something.

Student: So, it is (Refer Time: 17:5).

No, hold on 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 sentence plus something it can never be 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. I can I have not given you examples, but I can take it for granted adjectival phrase PP and VP and 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 Agrp and a 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 it is 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 an specifier ,each one of them may not necessarily have a complement, but each one of them will definitely have it is 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 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 pronoun.

Demonstrative pronoun right; so we can say that is a pronoun is type of a pronoun everybody the true that is type of a pronoun, pronouns are used for things for referring to

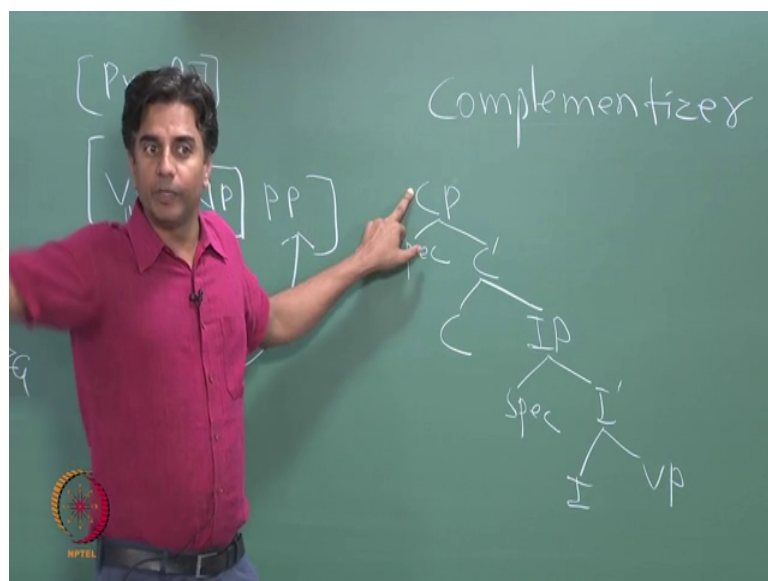


things. So, I can say that this right those, these in that sense it is a pronoun and more specifically it is a demonstrative pronoun everybody this that in this sentence is not that one this is not a demonstrative pronoun. Do you see that this element that you see is not a demonstrative pronoun because it is not demonstrating anything right. There are several elements in a line 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?

Student: Conjunction (Refer Time: 21:42).

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 things sometimes can be dropped right and I am not focusing too much on the grammatical aspect of it, but some 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 that also and still the sentence will be. 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.

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That term at least that term is called; can you read this.

Student: Complementizer.

Complementizer you have heard the word complement and this is a new term it is called complementizer. 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 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 is got to be something and this is called complementizer.

Again a big name a heavy term just bare with me, even if you know if I am repeating this thing on record, if you do not remember this term sky does not fall. 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 functions some other function even this much is good enough; if you can remember this term and if you can describe the same phenomenon with these terms then you are a great linguistic.

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 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 because for a CP how do we get the structure of a CP, how do we get this structure of a CP help me.

Student: (Refer Time: 25:34).

What do we get here and here see 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 is can anyone guess IP. This is the reason why I am saying a CP is more than an IP you have seen what an IP is right 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, it is bigger than an IP, it is IP plus something which is a sentence plus something not sentence minus something. We are going to use this thing little later also no 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 is this making sense that the object of fifth object or the object of a verb like know could be an entire sentence, which is a sentence and more than a sentence. So, object need not be just an NP that is one point the second point is while discussing categorial selection, we are saying that a category like know what category know belongs to.

Student: Verb.

Verb right.

A head like know could need at times a CP and it is complement get this thing? And I am positive you can appreciate it at this time, that what we mean by recursiveness. We are saying the whole CP could be complement of a v right as you can see on this screen and then I am saying also saying a c can take an IP as a complement, do you see the what we know as in real life chicken and egg story and this is what takes you takes us to infinity. That with these things with this mechanism 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 we above CP there is nothing.

So, there is nothing like a god structure 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 categorial selection a head like know at times taken NP as it is complement at times could take an entire CP as it is complement and then also it can take an entire interrogative sentence as it is complement. I have not discussed with you interrogative sentences 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 the CP. Now 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 areas 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 a verb like

ask is never going to need a CP or an IP. However, it may need I am sorry let me let me revise myself when I say it is never going to take a CP I had b in mind, 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, which is to say it is not going to take as it is complement a CP with where C subcategorizes 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 verb before wonder. I wonder whatever follows wonder can only be an interrogative sentence. I cannot say I wonder you, I wonder 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 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 complements it is not going to take an NP complement and it is not going to take a CP like that the world is full of noises, I wonder that the world is full of noises 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 three 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 complement like eat or read and we can say eat can only select an NP, eat is not going to select a CP or eat is not going to select an interrogative sentence. We cannot say I ate what I what chapatti that was right we can say these kinds of sentences right. The point is we are discussing restrictions on a particular head good; subcategorize the types of elements adjectives.

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(4) a. A: adjectives require PP complements.

– PP: *fond of the tall student*, NP: \**fond the tall student*, N': \**fond tall student*, AP: \**fond tall*

• b. N: nouns require PP complements.

– PP: *queen of the blue isle*, NP: \**queen the blue isle*, N': \**queen blue isle*, AP: \**queen blue*

• c. P: prepositions typically require NP complements.



NP: *on the brown table*, N': \**on brown table*, AP: \**on brown*, PP: \**on below the brown table*

It is going to require it may not 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 it is complement and the examples are given to you.

Look at that we can say fond of tall students, but we can never say fond the taller 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 this grammaticality and ungrammaticality can be stated in following terms, an adjective needs a PP as it is complement and not NP as it is complement is this thing clear making sense at least yes that 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 it is complement. I need to describe a student it can only be described with PP. We I can say queen of blue of the blue eyes student of physics we can never say queen the blue eyes we can never say student physics.

You can argue we can say physics student, but that is a different string we can never say physics student I am sorry student physics we need to say student of physics. So, if at all

it is going to require a complement it can only need a PP as it is complement, this is discussed and 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.

Student: Sir.

Yeah.

Student: A sentence like this is a black computer

This is a black computer sure

Student: Black is adjective which has a complement as a noun

Black complement as a noun; so black is an adjective which has a complement as.

Student: Noun.

Noun; so your question is what is that

Student: The adjectives simply require they have (Refer Time: 37:48) complements.

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 adjectival phrase right without discussing it on the board I can tell you black computer could be an adjectival phrase. 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 their specifier of this NP let this head now is this.

Student: Sir.

Is this making sense to you?

Student: (Refer Time: 38:49) not making sense.

Not making sense.

Student: Tall is like a PP, sir.

Sorry.

Student: Of the tallest student.

On of the tallest student.

Student: Sir tall is the adjective here.

No tall is the adjective yes see look at this example we are we are talking about the same thing off the tallest student what type of phrase is that.

Student: PP.

Pp right and in that PP off is the head and what is the complement of this head.

Student: The tallest student.

The tallest student right now what is that tallest student.

Student: NP.

NP, right

In this NP.

Student: (Refer Time: 39:30) fond is (Refer Time: 39:31) fond is (Refer Time: 39:32).

No fond is fond is adjective here

Student: Fond is adjective.

Fond clearly adjective now the tallest student is an NP right is.

Student: (Refer Time: 39:45) the tall student.

The tall student this is an NP tell me now.

Student: (Refer Time: 39:54) the tallest student. (Refer Time: 39:57).

How?

Student: (Refer Time: 39:58).the tallest student is an NP because the student is the head and the tallest student.

That is what I am asking you how.

Student: (Refer Time: 40:04).

Why is it not an adjectival phrase?

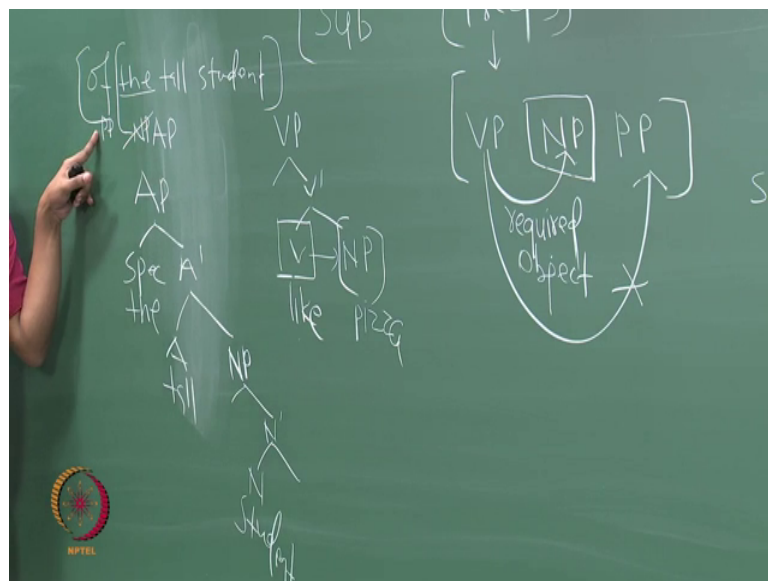
Student: The head is not noun.

No the head is not noun.

Student: Tall the tall student is the specifier what is head tall.

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.

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See we are saying off 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, that this is what I was trying to answer you and this is what it meant when I said 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 this specifier tall is the head and again student is the head.

Student: That means, required (Refer Time: 41:50).



Sorry.

Student: Head is required PP complements.

That is because this is the PP off the tallest student becomes PP.

Student: (Refer Time: 41:58).

So, in this PP, P does not have NP as a complement in this PP, P has AP as it is complement lost confused what is the confusion.

Student: That tall as a NP as complements.

The tall as the head of this phrase.

Student: Has NP as a complement.

Has NP as a complement

Student: That is the (Refer Time: 42:24).

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 complements, where do you see that there is no PP as complement at the.

Student: (Refer Time: 42:41) PP as complement.

No, hold on I mean see by 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 require 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. We are saying we are talking I do not think I need to take you back, we are talking about categorial selection in that discussion I was talking about certain categories needs only certain type of complements and this is called a restriction on them. Categorial selection is a restriction some categories need only certain types of things like I gave you examples of noun sorry no ask and wonder.

Similarly, I am giving you 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 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 fond as an adjective it is not going to take NP like this one, it can only take a PP that is an example of categorial 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 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 call that what did we call that categorial selection, that is a syntactic restriction that is a syntactic restriction.

If I say the same thing with the following words, then it becomes semantic restriction. What is the word comp no for no complements must be a question or a proposition then it is a semantic statement. I realize that I need to discuss with you proposition right proposition simply means an statement. So, the examples like that the world is full of noise the b example of no is a proposition.

So, if I am saying a verb like no a head like no needs a c could take a CP as it is complement, this statement is syntactically charged. If I say no could take a proposition and it is complement that is a semantic statement the distinction is very subtle very subtle see categorial selection is syntactic notion say max categorial selection is a syntactic notion, semantic selection or s selection is semantic notion by the by definition.

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## Semantic Selection

- Semantic selection (S-Selections) attempts to derive certain aspects of c-selection from semantic properties of the relevant head.

Let's look at the following examples:

a. *know*: complement must be a question or a proposition

b. *ask, wonder*: complement must be a question



Similarly, for questions like for the heads like ask and wonder, we can say complements must be a question this is a syntactic statement. If we say they need CP as it is complement then it is going to be syntactic statement.

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

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## Thematic Relations

- Every argument must have one and only one thematic roles assigned in a sentence.
- X' generates sentences and theta theory is a checking conding
- **Agent**: initiator of the action, capable of volition

Brad hit Andrew

