

**Basics of Language Science**  
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**Lecture 20**  
**Phrase Structure**

We want to look at phrase structure today. Soon after discussing components of sentences at two levels, first we looked at lexical level where we have seen words and then we looked at grammatical relations such as subject, objects and verbs. And then, we looked at the abstract part of sentences such as the components that are responsible for agreement namely, certain, certain lexical features like number, person and gender and then more functional features such as tenses and agreements and so on.


Then we looked at the nature of the verb in terms of its transitive nature and intransitive nature and ditransitive nature. And we have seen that the number of objects in a sentence depends on the verb. So, these are the things that we have seen. And then finally, when we were looking at some sentences yesterday, we tried to look at the fact that some words seem to be grouping together.

In other words, besides grammatical relations in a sentence, like subjects and objects, we have more to look at in the sense that each word in a sentence may belong to a particular category, but they do not have their independent status only, which is to say, they make a block. And we want to see, what is that block or that formed constituent mean. What is its status? How does it work in a sentence? Do they really form a block? Do they really form a unit? And then if they do, then how are they represented? And how do they interact with others? With other units, that is, other blocks and components within that unit itself.

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## Phrase structure

- Some words appear to belong together:
  - {The fat monkey} {was jumping {on the roof of this building}}
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So, such as when we, such as, look at this sentence, when we talked about this, the fat monkey was jumping on the roof of this building, we are saying the fat monkey is forming a constituent. What makes us think so that it is forming a constituent? If you just look at the chunk, what can you say? Why would anyone say that this chunk, the three parts of this phrase, making a group together and each one of the three parts are not in association with other units of this sentence?

Are you with me? Do you understand the question? Why do we say that, what is the first word in the sentence? Right, which category does it belong to? It is an article; we call it article. Why do we say that this word is part of this group? Not just because they are together, is there something else going on here?

Student: To be specific, this is helping in articulating, which among the fat monkeys we are talking about.

Professor: So, we can say the has something to do with monkey. To be specific, like you said, it is a specificity marker and it tells us among many monkeys, which or among many fat monkeys, which monkey are we talking about? So that is the function, but more important part for us to understand here is this word is somehow related to monkey.

How about the second one, fat?

Student: Adjective.

Professor: It is an adjective. What is it doing in the sentence? What is it talking about? We know that adjectives describe something and it gives us some additional information. So, what is it giving additional information about?

Student: The monkey.

Professor: The monkey. So, the simple answer to this question is that the words in a group are related, because the rest of the words are talking about one particular chunk. One particular thing in the whole chunk, right, and so which one is the most important part of this, this chunk?

Monkey, right? Because without rest, and the reason why we are saying it is important because without the rest of the two we can have monkey, but without the monkey we cannot have rest of the two. Rest of the two do not mean anything, therefore, that is an important chunk. So, let us hang in here, and we come back to the structure of a phrase in a moment to see how it works. Okay. And similarly, jumping on the roof of this building is one large chunk, which is predicate and all, but when we look at on the roof of this building, let us just look at this part of the chunk.

We see that there are two parts, on the roof, and off this building. If I give you the whole chunk together, which one is the most important part of this whole chunk? Anybody? Please look at the whole thing on the roof of this building, this is what we are saying is one chunk. Which one is the most important part? Like monkey was the important part of the first, first group of words.

Student: Building.

Professor: Building or a roof?

Student: Roof.

Professor: If you are saying roof, you need to say why, if you're saying building you need to say why. Go ahead.

Student: Because the monkey was jumping on the roof and we are specific to that, maybe.

Professor: Sure, it was jumping on the roof, the roof of what? Roof cannot be a hanging thing. In a way, I am trying to answer your part. So, why is building important in this whole phrase, because on the roof, right, in a way, it is talking about this building. All right? So, the

relationship between, see these two, these, there are two phrases in this bigger phrase, and one is related to the other one. So, now, if you are looking at the first one, on the roof, then roof is important because the is describing, the is talking about roof and on as a preposition is also telling us something about the roof.

If you look at another, the last chunk of this building, the same thing is happening. What is this as a category, anybody? This as a word, which category does it belong to? No idea. Let me ask you this thing again. You have heard this word before, which category does it belong to? Okay, forget about category, what does it do?

What does it do in a sentence? No. No, it doesn't specify anything.

Student: It is a pronoun.

Professor: It is a?

Student: Pronoun.

Professor: Pronoun. What do pronouns do?

Student: Substitute for each time specifying what the subject is; we use this as a substitute.

Professor: So, what is it substituting here?

Student: Instead of specifying what that building was, you replace it by this. I mean, you might have specified it earlier or something.

Professor: What you are saying is partly right, but not in this context. This, and you were also right that it is a pronoun, but among pronouns, and my expectation is not that you have a readymade answer to all these questions, the reason why I am asking you these questions is because you pay attention to these, these little things.

I mean, I do not need to tell you, I do not even need to ask you even sarcastically, what does this mean. So, all I am asking is that you look at these little things. It is definitely a pronoun, but it is a specific type of pronoun, which is called demonstrative pronoun, which is a demonstrative pronoun, which talks about, and you are also right, that pronouns usually replace nouns.

But in this case, it is a demonstrative pronoun, which is talking about, which helps us understand directionality. We are talking about this building, not that one. So, category wise it

is a pronoun, it is a demonstrative pronoun, it has a function, all that is fine, but it is related to the word building. Similarly, on the roof of this building, you see, it is a large phrase similar to two phrases of similar status, but one is related with the other one.

So, words grouped together to make a phrase. And phrases are related to one another, in one way or the other, they do not. In other words, phrases do not have their independent status. So, you will remember this thing that this is an important and crucial juncture for you to understand a sentence. Words group together to form a phrase. And then such phrases in a sentence are not independent of one another, they are related to one another, in one way or the other.

So now, before we move to the next slide, in the same sentence, if I say, if I tell you, let us look at the whole phrase again, on the roof of this building. We saw that on the roof is related to another phrase of this building. Now, we are talking about one whole chunk, on the roof of this building, what is this related to in this sentence? What is this related to in this building? Is the question clear? People this side understand the question? Yes, no?

Student: No.

Professor: No. You, you need to tell me. I can see that the question is not clear. You see, I am talking about this whole phrase, on the roof of this building. And just now I told you that phrases are not independent in sentences. So, if this is a sentence, isn't it, in this sentence, this phrase is related with which component of the sentence.


Student: The verb phrase.

Professor: Sorry.

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Professor: The verb phrase, the whole thing is part of the verb phrase, but it is also related to the verb phrase, and to be really precise, in the verb phrase, it is related to the verb, right, it is related to verb.

So, what is this related to? The fat monkey? Is also related to verb. And what is the nature of this verb jump? This is transitive or intransitive verb?

Student: Transitive.

Professor: Transitive or intransitive verb, transitive verb. How do you think it is a transitive verb?

Student: Jumping.

Professor: It is not, remember we cannot question jumping on what, we can only say jump. We can only question the word jump. We can only question the verb jump with what. Can we question the verb jumps with what? Jump what? Not jumping on what.


Get it. Stand and stand up are two different verbs. I will go to those things later. So, after looking at every single word, every single part of this sentence, how every single part is related to the rest of the part? Is this making sense to you?

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## Phrase

- A careful look at phrases reveals some patterns:

Det	N	
• the	student	= NP
Det	N	
• a	book	= NP
Det	N	
• some	papers	= NP
Det	N	
• two	pens	= NP



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Now, let us look at some more phrases and see how it works. So, this is what we have been looking at so far. When we look at the two words the student, we know that this is forming some kind of a group, because the words like the, a, some, two, when they proceed a noun in language like English, when they proceed the nouns like student, book, papers, pens, they seem to be forming a group and in that group, the, a, some and two are called determiners. The same thing you use, just now somebody said, articles means the same thing. Articles are determiners.


Together, when we have a determiner and a noun, together, they form the phrase, which is called a noun phrase. Why do we call it a noun phrase? Should be simple, remember when we were looking at the word, the fat monkey, the phrase fat monkey, what is the most important part of this phrase?

Monkey, the word that is the most important part will head the whole phrase. Because the rest of the components are related to it. The has nothing to do with fat. Fat has nothing to do with the, but both have something to do with monkey, it is a head of a noun, and therefore it is a noun phrase. Similar things you see, all the words are nouns, therefore, with the determiners the phrase that comes up is a noun phrase. Clear? I am going to show you the structure in a moment.

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some more patterns:

V	Det	N	
• call	the	student	= VP
V	Det	N	
• buy	a	book	= VP
V	Det	N	
• bring	some	papers	= VP
V	Det	N	
• give	two	pens	= VP



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Now, look at this one, what is this, we now see, call the doctor, I am sorry, call the student. You see the noun phrase is now in association with a verb, the focus changes. What is the important part of this phrase, verb, therefore, it becomes a verb phrase. So, a verb phrase can have a noun phrase in it. Remember, just no way I was telling you that phrases are not independent entities, phrases in a sentence are related to another one, and this is how the whole combinatorial process in a sentence works.


This is how we build a sentence. So, a noun phrase is now part of a verb phrase, and the whole thing is called the word phrase. Buy a book, bring some papers, give two pens.



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and yet more patterns:

•	Prep	Det	N	
	with	the	students	= PP
•	Prep	Det	N	
	from	a	book	= PP
•	Prep	Det	N	
	with	some	papers	= PP
•	Prep	Det	N	
	by	two	pens	= PP



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Now, look at this one. You have just seen on the roof, you have just seen on the building of this building. Now see, again, we still have those noun phrases that we started with like the students, a book, some papers, two pens, but instead of verbs we have something else now, which is with, from, again with and by, these words are prepositions. We have, we have talked about prepositions and postpositions. Remember or not remember?

Prepositions and postpositions. Prepositions are some functional words, in a language like English, which precedes nouns. If the similar type of element follows the noun, they are called postpositions. In a language like Hindi, Tamil, Telugu, Kannada, Malayalam words like with, from, by, they will be following nouns. Am I right?

What is the word for from in Telugu? How do we save from the book, from a book? What? No Telugu speaker here. Loudly, loudly.

Student: I didn't know that.

Professor: So how do you say the whole phrase from a book?

Professor: Vastakam Randi

Student: Rundi.

Professor: Runi.

Student: Rundi.

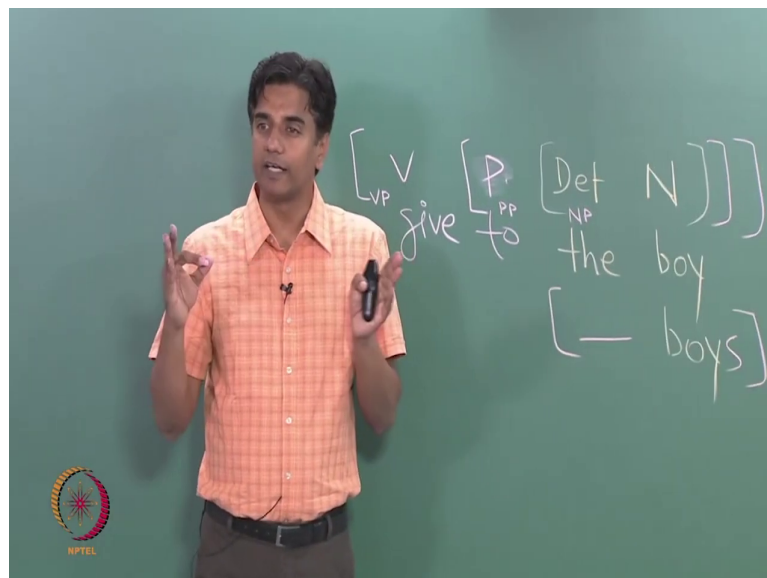
Professor: Okay, so do you see that, that word is following the word pustakam, it is never going to proceed the noun, therefore, our languages are postpositional languages. Does not change anything, it is just the position of the functional element is different. So now it becomes the fact that the whole NP is a part of a preposition, so, as long as we have, we are only talking about NP, that is noun phrase, the head of that NP is now right, but in a prepositional phrase, the head of the whole thing is a preposition.

So, when we say with the students, in this phrase, what is important, what becomes important and what becomes the head of the phrase is a preposition. And then we will see what is the relationship between preposition and rest of the phrase in a moment.

So, you have seen three phrases. Noun phrase, verb phrase and prepositional phrase. Likewise, we could have more, more phrases depending on the category right. You also saw that what is important part of a phrase is what is it that the whole thing is revolving around. Such as the fat monkey, the monkey is important because everything else is talking about money.

So, the way it works is the following. Now let me show you something on the board. So, we see, we have a noun, this is called a lexical item, a lexical category.

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And then the moment it is, it comes with a determiner, the two things make a phrase, all right, which is to say, and the phrase is a noun phrase, which is to say if noun heads the phrase it is

okay that it has a determiner, but a noun phrase could be formed even in the absence of a determiner.

That is, so, if we have to say, the boy is a noun phrase. And if we do not have this, if you simply say, boys, with no determiner it is still a noun phrase. And I am going to show you more of this stuff. So, let us look at, since we are talking about phrases, let us first talk about phrase structure rules.

Then, you saw that we have, we get a preposition here and then it becomes a prepositional phrase. So, we can say to the boy and it becomes a prepositional phrase. Now, when you put another it gets a verb, and it becomes a verb phrase. So far, so, here you have a noun phrase, here you have a prepositional phrase, and now you have a verb phrase.

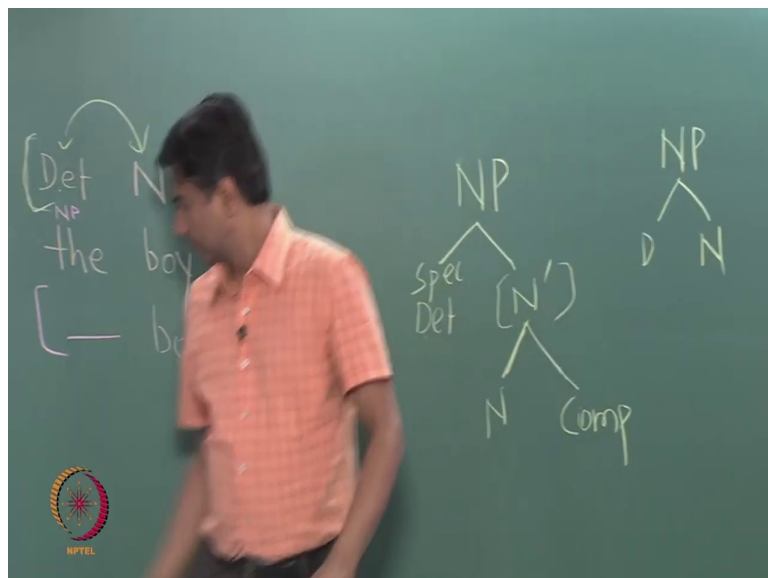
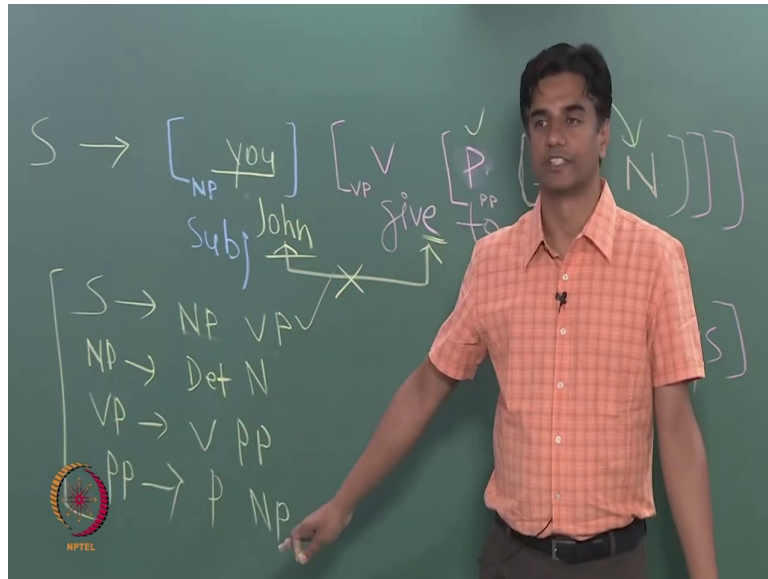
So, how do I close this thing? Should it not be difficult so far? Now, when we are talking about a verb phrase, it could have only a noun phrase, it could have more than a noun phrase, that is, it may have more than one noun phrase, it could also have a prepositional phrase or maybe two prepositional phrases.

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On the roof of this building, it may have two prepositional phrases in it, jumping on the roof of this building the whole verb phrase has a verb phrase and two prepositional phrases. Within the prepositional phrase you see a preposition. A preposition phrase on this building, on the roof, the roof is a noun phrase and on the roof becomes a preposition phrase. We are talking about the same thing so far, but this is not a sentence yet.

Why is this not a sentence so far? Can we say this is a sentence now? Even if we know some sentences like imperative ones, we can say give the book to the boy. Is this a sentence now? No, it still has something missing from here, which is another NP, which is called subject, which is now, this is a sentence. Are you with me? Understand this? Without this thing, it is not a sentence.

Now, we can pick what kind of an NP comes here, but there has to be something here for this to get a sentence status, and these are the things that we have been talking about without this configuration. So, even when we do not say you, and we just say give the book, we mean, that this is here. We have, we have a different sentence then something else happens.

So far now let me draw your attention to something else. You may have seen that the noun phrase becomes part of a prepositional phrase, the whole prepositional phrase combines with the word when becomes part of a verb phrase, but there is not anything that we refer to as agreement. That takes place only between these two.

So, if I say John, give a book to the boy, is that a good sentence? John, give a book to the boy, is that a good sentence? Yes. John, give a book to the boy, is this a good sentence? Some of you are saying, yes.

Student: Punctuation is correct in queering them.

Professor: Sorry?

Student: The punctuation is going then you can say it is a good sentence.

Professor: Right. I mean, so basically what you are saying is that your punctuation is correct. We are saying, John, you give the book to the boy. That is not what I am asking. I am asking, if I want to say John give a book to the boy, is that a good sentence? That is not. How will that become a good sentence?

Student: In case of.

Professor: We need to do something here, so what is it missing actually? The agreement is not correct. That is singular noun, singular subject, there is singular marker here, or at least this does not reflect agreement properties taken care of. So, in the combinations of phrases how phrases are combined with another phrase is one part, agreement is another part, which takes place between these two.

I do not think I am talking about anything new. We have already discussed this thing. Have not we? Yes or no? So, this is how we get a full sentence. And this thing that you see sentence NP, VP. So, now we can simply say a sentence is basically a noun phrase and a verb phrase, is that true? Can we say this thing?

Then, if I have to expand this, I can say a noun phrase is determiner and a noun. A verb phrase is, if I have to give a description for this sentence, a verb phrase is what.

Student: Verb plus.

Professor: Verb plus.

Student: Preposition.

Professor: Preposition phrase. And a prepositional phrase is what?

Student: Preposition and noun.

Professor: Preposition and noun phrase, you do not need to specify this again, because it has already been specified. This is called what you have, what you have seen so far is components of a phrase. And this is, if you put a sentence this way, this is called phrase structure rules. And it will vary depending upon a sentence. For example, for this sentence or this structure that you see, this rule takes care of everything.

It will vary, but what is not going to vary is what makes a noun phrase, what makes a word phrase, what makes a prepositional phrase. So, a prepositional phrase is always going to have a preposition and a noun phrase or it depends, it may have something else also. But looking at the preposition phrase, you can give a phrase structure rule.

That is how I just wanted you to understand phrases and phrase structure rules. Is it? Is there any difficulty here for anyone? No. This does not solve everything. In the sense that, I will talk about what it does not solve a little later. These are rules describing a sentence describing a noun phrase, describing a verb phrase, and a prepositional phrase, but this does not give you structure.

In other words, it does not tell us how different components of a sentence are hierarchically related in a sentence. Everything in a sentence does not have same status. That is on a flat line, we do see some hierarchical stuff here, but not every hierarchy is clear that is not every kind of relationship between object and the verb and subject and the verb is clear from this.

So, for that we will talk about, we will look at a structure. And the reason why we are looking at a structure is because structure tells us the hierarchical relations. So, what I am saying is, look at this. We have a determiner in a noun phrase, and we have a noun. If you are looking at

the linear structure, linear representation, linear order, then it looks like there are two components that is all, it does not tell you.

And we know because determiners talk about the noun, so now hints the phrase, and it is more important than the determiner, because determiner alone may not make a noun phrase, these things, these, these generic descriptions are okay, but this does not tell us the status of components within the phrase, or when they combine with another phrase, what is the status of this thing and then what becomes what, what becomes the status of this noun phrase within this prepositional phrase, and why does it need to combine with this, combined with that. So, these things are not clear from phrase structure rules. Are you with me?

What phrase structure rule simply tells us is, it gives us a description. It looks fancier, what we are looking at. If you look at this sentence, sorry, these rules, these rules are mere descriptions of this sentence, that is what I am telling. Do you follow this thing? These rules are mere descriptions of this sentence. What it does not do is, how is it, why is it that these two things need to combine? And once they combine what becomes their status of a noun phrase, the whole noun phrase within this prepositional phrase is not clear.

Student: But once you say it is a prepositional phrase here the preposition is more important than the noun phrase.

Professor: Of course. Once we.

Student: there is an implicit hierarchy there.

Professor: Two, absolutely right, there is an implicit hierarchy that preposition is more important and noun phrase is not important, not that important. But then what is the relationship between the two? We can still, what you are saying is, we can capture the significance of something of a noun phrase within the verb, within a prepositional phrase. We can capture the significance of a prepositional phrase within a verb phrase, or a noun phrase within the word phrase, but it does not tell us what.

Let me put it this way right now, it does not tell us more with what other kinds of (descripts) other kinds of explanation could tell you, and I am going to show you what are the things, what are other things that are more important to explain a sentence, that is, what I am talking about. Probably it is hard to talk about what it does not do without describing what, what we

get to do with other, other kinds of explanation. So please keep these phrase structure rules in mind, so that we can compare what are the things that this does not do.

Now, before we dismiss this thing, we have just seen that and we are not going to dismiss in the sense that it has no meaning. No, we are not saying that it has no meaning, it nicely describes a sentence. And what it also does is, it gives you the framework for generating lots of sentences. For example, this is a phrase structure for a sentence. So, all the sentences are going to have the same, same phrase structure. As far as we are concerned here, all the sentences are going to have this.

Then we, when all the noun phrases are going to have this, all the prepositional phrases are going to have this and all the word phrases are going to have these. Whether all of them are needed in a sentence or not, is not a restriction. A sentence may have simply a noun phrase and a verb phrase, and it may end here with or it just may end here. A sentence may not have a prepositional phrase at all.

Now, the point is phrase structure rules help us generate a lot of more and new sentences, phrase structure rules are also part or are part of generative framework. So, once in the earlier days of this study, this was very prominent. When people have not figured out more by now a lot more, a lot more things have been figured out, and we are going to talk about other stuff.

So, see instead of representing these things in terms of rules later on what happened was these things were represented in terms of structural configuration. So, look at how it works. So, the structure of a phrase is this way, and then we will stop. Each further structure, the branching is always going to be binary, the branching is always going to be binary. So here is your determiner and bear with me because we want to keep the structure only binary, so there was an intermediate category created, and then we have, let me put it this way for a moment.

Are you with me? Do you see this structure? We are almost doing the same thing here, we are almost trying to do the same thing, but we are putting this thing in terms of structural configuration. For that structure, the branching is only and always binary. So, we can say, we can see, we could have also said that look determiner and noun here, end of the story.

But if we do that, then let us put it here. If we do this, then there is no other way for expanding this phrase, no other way to expand this phrase, this becomes a closed phrase. What this kind of, in order to expand this phrase an intermediate category was created, this is called, N prime or N bar. It helps us branch further. And this becomes the head position in a



phrase. So, this position is called, where we get a specifier, sorry, where we get a determiner, this position is called a specifier position, in which we get a determiner. This position is called head position, in which we get the main component of the phrase and this position is called the complement position.

So, the idea is in retaining the head of the phrase we need to have these two things. Give me couple of more minutes to show you why and how. Now, this is going to be the blueprint of structure of phrases. We talk about any phrase, whether we are talking about a prepositional phrase, we are talking about a verb phrase, we are talking about the entire sentence, this is going to be the structure of a phrase.

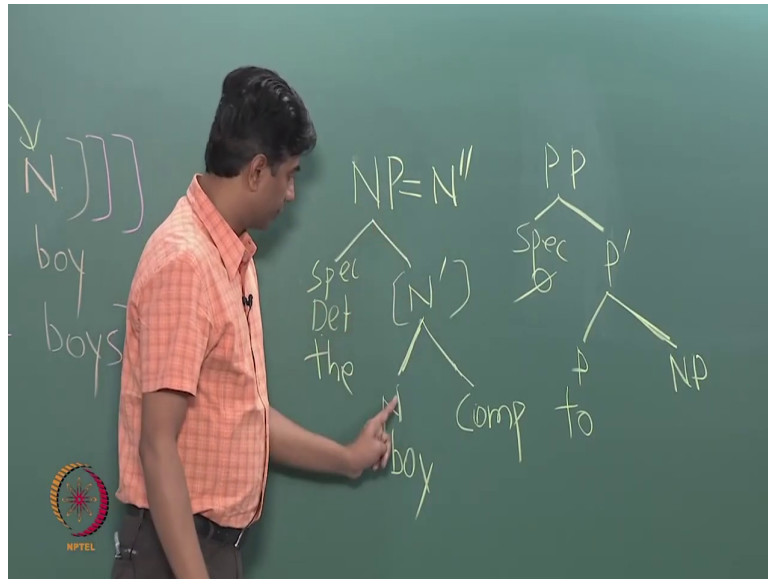
In every phrase, we are going to have a specifier, a head, and a complement. In every phrase, we are going to have a specifier, a head, and a complement. Now, if we want to look at, now we want to look at a prepositional phrase, a prepositional phrase. How do we represent a prepositional phrase in this structure?

Student: ((??)) (44:23)

Professor: But how, okay, first, let us, you are right, that we will add here two, but we will see that addition in a moment. Just give me, give it to me here.

I have a. Okay, is this clear, that binary branching in this term is not giving us expanding freedom, therefore, an intermediate category so that we can branch further. Let me show you a prepositional phrase.

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So, this is how a prepositional phrase works. Remember this is a blueprint of a phrase, so we are going to have specifier, and here we are going to have what, P prime, and then P and this place is going to be for complement.

So, what is the preposition, in this phrase to the boy, what is the preposition to, so that comes here heading the phrase. In the boy, we have the and boy. We had a determiner that is a specifier. In the prepositional phrase, you do not have a specifier, so this position stays empty. We have a head, preposition comes here and then in the complement position, we have an NP, which is the boy, the boy.

Now this NP position is going to be expanded again this way. I think, Pawan, this is what you were talking about it will add. So, if you bring this NP position here, then you see the structure of a prepositional phrase. See this thing? Now, this kind of addition or expansion will not be possible if we did not have this intermediate category, so I am purposely emphasizing on this intermediate category.

Since, the sole reason for this intermediate category is to bring in hypothetically a space for retaining binary branching and creating a space for further addition. I will talk about the nature and the relationship between head and the complement and head and the specifier in a day or so, but right now, I only want you to see the structure (configuration), in a structure the structural representation is always binary.

The branching is always binary, we retain it by introducing an intermediate category, we have a phrase and we have a category, do you see this. We have a category, preposition and then we have a phrase, prepositional phrase. This thing is not really needed, this does not mean anything, but we created this thing just to retain binary branching. And then what is more important is the relationship between specifier and head, and head and complement. This gives you; this kind of hierarchy and relationship comes becomes clearer and the discussion becomes more relevant when we look at these relations.

Final thing, which we will, and this is where we will start from tomorrow, the blueprint is always like this. Phrase, intermediate category and head, complement and sorry, specifier and the complement. And whether we are talking about a noun phrase or a prepositional phrase, since it is going to retain this way a verb phrase will work exactly like this way, so this whole phrase, whole structural representation of phrase is called X-bar theory.

X-bar theory. Since it is a one prime, so sometimes this thing is equated as two primes, okay. So, when you put two primes it means NP. So, the idea is zero, one, two. Whether we say NP or N double bar, it is the same thing. So, this whole structural notion, this whole notion of a structural representation is called X-bar theory because in that X you can put any category and get this structure. More on this tomorrow.

We have a class waiting. Please look at this thing. Please look at this thing, it is in the first chapter of the book now. Now we have moved or we have moved from introduction, the whole thing is described in that book too.