Language and Mind
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Module – 05
Lecture - 24
Sentence
X-bar and IP

We have been discussing sentences and in our discussions, we have moved quite ahead in understanding construction of a sentence and what makes a possible sentence. We still need to look at the question of - what makes a sentence - in greater details. However, what we have seen so far is parts of sentences and some of the abstract aspects of a sentence which connect the two parts namely, two parts of a sentence: subject, predicate, and what connects the two, in rather abstract way - agreement.

And we also tried to see the nature of agreement and the aspects of the agreement or the contingent of agreements, which are known as functional categories in language, such as: number, person, gender; and then we saw some bit of discussion on tense and aspect. We have only seen their markers; we have only tried to underline that these are important parts in agreement. And then, we tried to understand agreement in terms of a notion, which connects parts of words. This much we have seen so far.

We will be looking at these things in little bit more details as well. Also to understand, we have seen two types of categories like lexical categories such as: nouns, verbs, prepositions and adjectives; and functional categories like number, person, gender, tense, etcetera; the ones that I have just mentioned. We moved ahead and then, we started looking at parts of sentence in a different way with different terms called phrase. And then, when we have started looking at phrases, we defined it in a very generic way - that a phrase is more than a word; it is going to be bigger than a word.

Sometimes, a word can also be projected as a phrase. However, a phrase in general is a component which is bigger than a word; but it is always going to be smaller than a sentence. Now, at this discussion, at this point, please keep in mind also that we have talked about an infinitely long sentence possible. Now, this is something we need to understand.

Theoretically, it is possible for us to say, theoretically it is possible for us to produce, an infinitely long sentence. But given the infinite nature of an infinitely long sentence, it is not possible for us to come up with an example. Even though a sentence can be infinitely long, the components of sentence help us understand that it is still a sentence and it is combination of several phrases; but a phrase is not a sentence. And then, we have started looking at the structure of a phrase.

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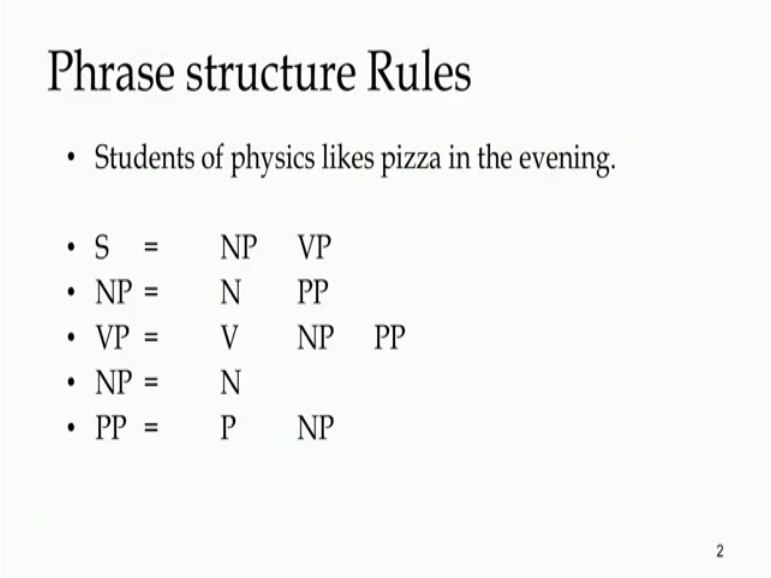

We first looked at some of the rules which were offered as description and explanation as combinatorial roles for construction of a sentence and then we moved to understand what we mean by the structure of a phrase. In our understanding of a sentence like - students of physics like pizza in the evening, we have seen phrase structure rule.

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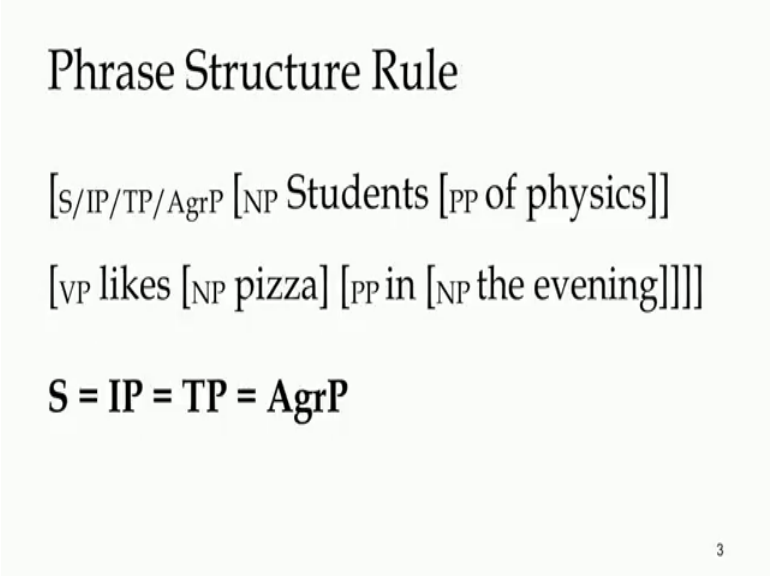

And then, we have seen the representation of a phrase structural role with its components like phrases in terms of NP, PP, VP, etcetera, as this.

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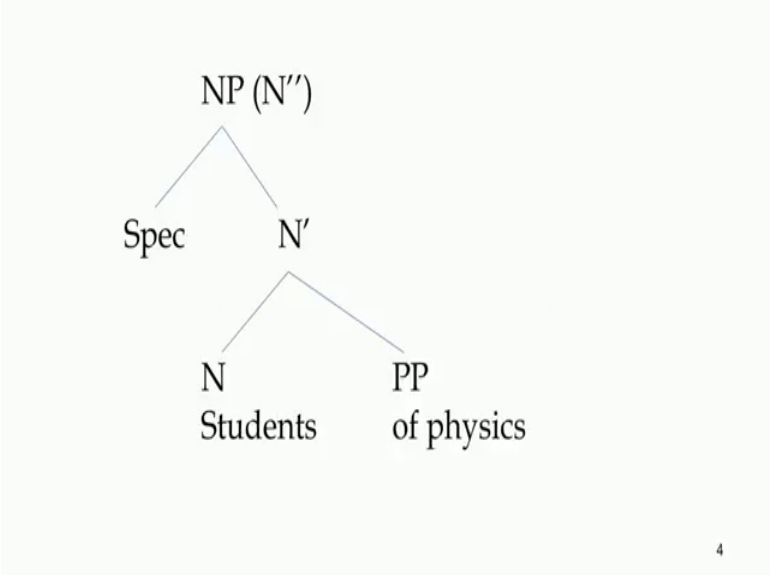

And then, at this stage we started looking at branching and hierarchical ordering of parts of a phrase. And then, we also discussed three layers of phrases - like a maximal layer, which is called a phrasal layer, and the example is an NP or N double bar; intermediate level, where it is N single bar or N bar; and third layer, which is a terminal node as N, which is where we see lexical item.

Each of the lexical item, each of the lexical category can have their phrases projected; and as the head of every phrase, we will have a lexical item, and the phrase is known by that category, by that element. So, for example, if the head of a phrase is a noun, then the phrase is a noun phrase. The head of a phrase is a verb, then the phrase is a verb phrase. So, this is how we understand the notion of head and the terminal node in a phrase.

We have also seen the notion of intermediate category; we have tried to understand that it was introduced to maintain binary branching. And also, binary branching was important for us to see hierarchical ordering of constituents in a phrase. We have seen some of it last time. Let us see at this moment… the example that we have seen where the first part is - students of physics. And we suggested last time; we described the example that sometimes, a whole phrase is also a subject of a sentence.

So, in the sentence - students of physics like pizza in the evening - the whole thing, whole phrase ‘students of physics’ - is a phrase, and this is how it is represented. Within a phrase, ‘students’ - is the nominal category and ‘of physics’ is a PP, which is a prepositional phrase, because the head of that phrase is a preposition in English. And in this phrase, in the specifier position, we do not see anything.

So now, besides looking at some of the examples, I would want you to pay attention to the relationship between ‘students’ and of ‘physics’; that is, the head N and PP. This relationship is known as compliment. So, the PP in this configuration of a phrase is known as the compliment of the head. There are three important parts of a phrase: specifier, a head and a compliment, where head is the most important part; it is the nucleus of a phrase. However, depending upon the type of the phrase and the type of example, we will need to examine whether or not it has a specifier; whether or not it has a compliment.

However, please pay attention to the notion of compliment. We have seen most… sometimes we have numerical; sometimes we have determiners, as specifiers. There are other categories which can be specifiers in a phrase; but we are not getting into the details at this point.

Rather, I want your attention at the compliment position, where whatever comes directly after the head is a compliment; and here I mean, when I say directly after the compliment, they are two parts and they are two nodes, two immediate branches of a

particular node. So, N and PP are the two nodes and they are two branches of N bar; that is the configuration which gives us compliment.

And compliments are…usually heads get compliments; you see, a similar configuration exists between specifier and N bar, but N bar is not a real category. Therefore, we are not saying that there exists a relationship between, relationship of the type of head and the compliment, between spec and N bar. Rather, we are saying that compliments are defined in terms of heads, in the context of head. So, N being the terminal node, being the lexical category, will have its compliment; and in this example, we have - of physics - as the compliment of N.

Let us look at some more examples. So, what was a prepositional phrase which was the compliment of N? Now, look at the construction of that prepositional phrase itself.

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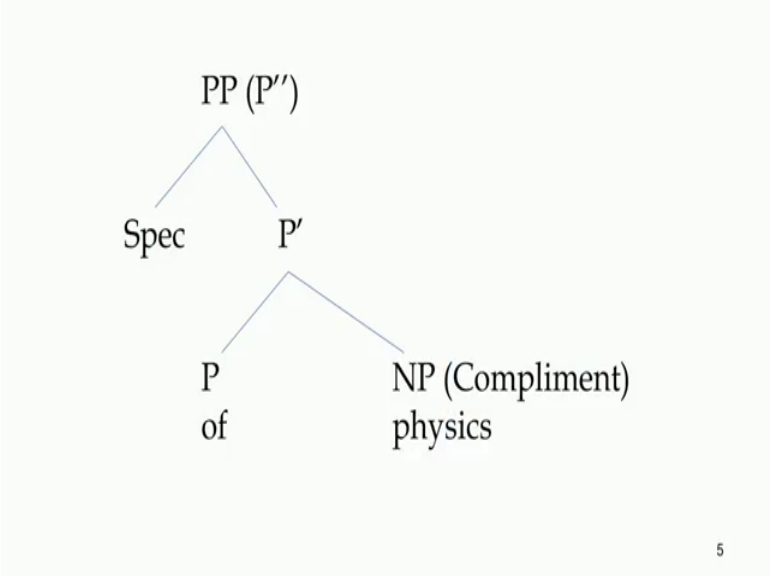

And please also keep in mind that, what you are looking at is a blueprint of a phrasal structure. All the phrases are going to have similar structures. Not every position is going to be filled; every position is going to be projected in a phrase. But this is a template of a phrase. So, when we say a PP, a prepositional phrase, we say the head of this phrase is a preposition, which in this case is ‘of’ and again this will not have any specifier. However, it will have a position; but then you have P bar, and P bar again branches into two: head P, which is ‘of’ in this case and then, its compliment, which is an NP, which happens to be ‘physics’.

Now, the NP ‘physics’ is the compliment of the head, which is a preposition in this context. Now, I want you to see how phrases combine together. Still I invite you to keep paying attention to the term - compliment.

You have seen an example of the term compliment in the previous phrase - students of physics. Here, the head is ‘student’ and the compliment is a PP, which is ‘of physics’. When we start looking at the whole prepositional phrase ‘of physics’, we see ‘of’ is the head and then ‘physics’ is the compliment. Now, see how they build together. So, the whole NP is built this way; the whole NP ‘students of physics’ is built this way, where it is the same thing. We have only expanded PP and we are saying that in the PP, we have ‘of’ as a head and ‘physics’ as an NP.

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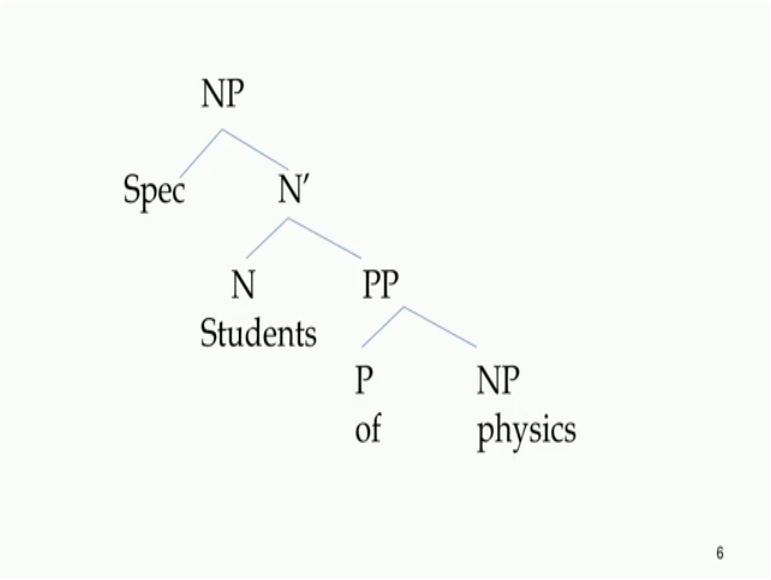

Now, the hierarchical relationship of these elements in this phrase structure is pretty significant for us to understand mental representation of phrases and sentences. Remember, we are trying to project, we are trying to understand, the structural representation of a sentence, possible present representation of a sentence in human mind; and the way underlying computation of a sentence works in a communitorial order.

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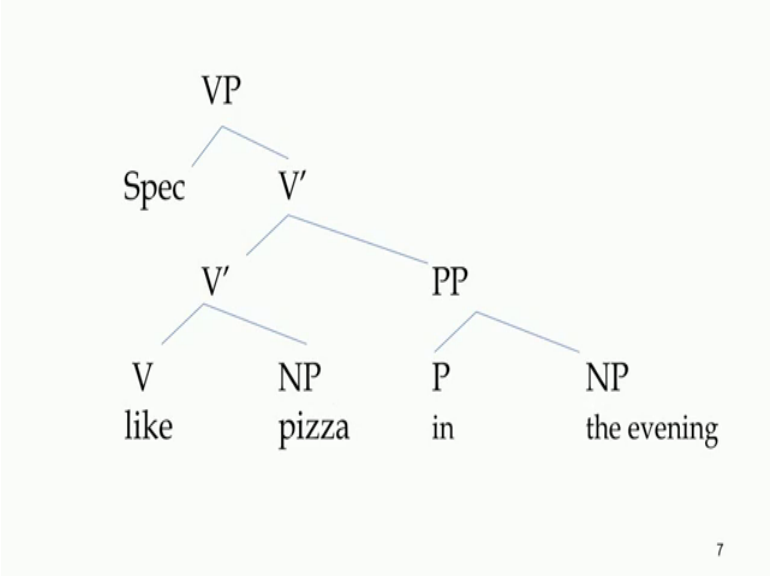

Now we want to look at an example of a verb phrase. Look at this. This is again a blueprint. The structure of a verb phrase is following the blueprint of a phrase. So, I want you to look at the structure of a verb phrase in the following way; see whether or not a verb phrase is following the same order.

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So, look at the board. We have a VP. We are first talking about an XP. We are saying that this X is a variable, where we are going to have X bar and then, we are going to have an X. So, we are talking about three levels: X double bar, and then X bar, and then X.

These are the three levels that we are talking about and this happens to be a blueprint for a phrase. And this is what we call the structure of a phrase, where this relationship with this thing here is a compliment and this thing here is going to be a specifier.

Now having said that, and what you have been looking at, we want to see the possible structure of a VP. Again, here we will have specifier, here we are going to have a head and here we are going to have a compliment. So, in a sentence like - John likes pizza - or - students of physics like pizza, 'like pizza' which is predicate is be going to be represented as VP and we see the verb 'like' in the head position and 'pizza', which is going to be an NP, is going to be in a compliment position.

So, the relationship between a verb and an object is under the relationship of a head and a compliment and this notion is captured by the phrasal structure. And finally…so this is still maintaining the structure of a…the blueprint that the underlying structure of a phrase is still being maintained by a verb phrase. And finally, when we try to combine a sentence together in terms of its subject and a verb phrase, we will see that such a combination is also allowed and that becomes the structure of a sentence and with that, it is called - the sentence is also a phrase.

To sum it up, I want you to look at two parts, two important parts: the blueprint of a phrase in terms of its structure, and the relationship between head and its compliment; and finally, the combination of one phrase into the other. These three things are going to lead us to understand the final structure of a sentence.

Every time these two branches…the relationship between a head and a compliment is going to be defined by immediate branch, immediate branching condition, immediate branching thing, for us. Immediate branching is important for the configuration of a head and a compliment. So, please pay attention to these three things and next time, we are going to see the entire structure of a sentence.

Thank you.