

## LNGT0101 Introduction to Linguistics



Lecture #10  
Oct 8<sup>th</sup>, 2014

## Announcements

- Mark your calendar: **Oct 15 at 4:30 at Hillcrest 103.**
- A talk by Toni Cook, a postdoctoral scholar at the University of KwaZulu-Natal, South Africa, on:  
“Identifying a new sociolinguistic variable: The rural-urban divide in Zululand and the townships of Durban, South Africa”
- Extra credit for attendance.

## New words!



## Summary of last class

- Syntax is the study of sentence structure.
- The main unit of structure in human language is the **constituent**.
- Constituency can be determined by objective tests: **substitution** (by pronouns; *do/do so*; or adverbial *there*), **movement**, **clefting**, and the **stand-alone test**.

## Syntax is not linear; it's hierarchical

- A sentence is thus not a mere list of words arranged in sequence. Rather, it is a set of constituents, which, as we'll see today, are arranged in a hierarchical fashion.
- The next question to ask is: What are the types of constituents that exist in syntactic structures?
- Before we list the types, we need to introduce the terms '**head**' and '**complement**,' which combine to form '**phrases**.'

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## Phrase structure: Heads and complements

- The head of a phrase is the central word ---the one that requires other elements to be there.
- The complement is the part of the phrase that is there because of the head.
- The label of the whole phrase is that of the head. So, if the head is a noun, then the phrase is a noun phrase, for example.

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### Phrase structure: Heads and complements

- Remember from our discussion of morphology that there are four major **lexical categories** in human language (well, prepositions are iffy, but let's assume they are lexical for now):
  - Noun (**N**),
  - Verb (**V**),
  - Adjective (**A**), and
  - Preposition (**P**).
- As we should expect, each one of these categories can be the head of a phrase.

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### Phrase structure: Heads and complements

- So,
  - "picture of the boys" is a **noun phrase (NP)**, since the head of the string is the N "picture."
  - "ate the sandwich," by contrast, is a **verb phrase (VP)**, since the head of the string is the V "ate."

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### Phrase structure: Heads and complements

- "in the office" is a **prepositional phrase (PP)**, since the head of the string is the P "in."
- "fond of chocolate" is an **adjectival phrase (AP)**, since the head of the string is the A "fond."

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### Phrase structure rules

- We express this head-complement relationship by means of rewriting rules, which we call **phrase structure rules**, as in the following examples:
  - NP  $\rightarrow$  N PP
  - VP  $\rightarrow$  V NP
  - PP  $\rightarrow$  P NP
  - AP  $\rightarrow$  A PP

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### Selection (aka subcategorization)

- Notice that heads differ as to whether they select complements and how many they take. Technically, we say they have different **selection** properties.
- For example, transitive verbs select complements, but intransitive verbs do not:
  - John slept.
  - \*John slept the dog.
  - John bought a new car.
  - \*John bought.

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### Selection (aka subcategorization)

- Furthermore, transitive verbs differ in whether they select an NP complement like "buy" above, or a PP complement as "talk":
  - I talked [<sub>PP</sub> to his boss].
- Some transitive verbs obligatorily select two complements, such as "give" and "put":
  - She gave [<sub>NP</sub> me] [<sub>NP</sub> money].
  - Alice put [<sub>NP</sub> the car] [<sub>PP</sub> in the garage].

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## Selection (aka subcategorization)

- Other verbs such as 'say' select a whole clause as a complement:  
John said [<sub>CP</sub> that he'd stop by this evening].
- Words like 'that' which introduce clauses are called **complementizers**, and the whole bracketed string is referred to as a **Complementizer Phrase (CP)**.

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**Table 5.5** Some examples of verb complements

Complement option	Sample heads	Example
∅	vanish, arrive, die	The rabbit vanished ____.
NP	devour, cut, prove	The professor proved [ <sub>NP</sub> the theorem].
AP	be, become	The man became [ <sub>AP</sub> very angry].
PP <sub>to</sub>	dash, talk, refer	The dog dashed [ <sub>PP</sub> to the door].
NP NP	spare, hand, give	We handed [ <sub>NP</sub> the man] [ <sub>NP</sub> a map].
NP PP <sub>to</sub>	hand, give, send	She gave [ <sub>NP</sub> a diploma] [ <sub>PP</sub> to the student].
NP PP <sub>for</sub>	buy, cook, reserve	We bought [ <sub>NP</sub> a hat] [ <sub>PP</sub> for Andy].
NP PP <sub>loc</sub>	put, place, stand	She put [ <sub>NP</sub> the muffler] [ <sub>PP</sub> on the car].
PP <sub>to</sub> PP <sub>about</sub>	talk, speak	I talked [ <sub>PP</sub> to a doctor] [ <sub>PP</sub> about Sue].
NP PP <sub>for</sub> PP <sub>with</sub>	open, fix	We opened [ <sub>NP</sub> the door] [ <sub>PP</sub> for John] [ <sub>PP</sub> with a crowbar].

**Table 5.9** Some verbs permitting CP complements

Complement options	Sample heads	Example
CP	believe, know, think, remember	They believe [ <sub>CP</sub> that Mary left].
NP CP	persuade, tell, convince, promise	They told [ <sub>NP</sub> Eric] [ <sub>CP</sub> that Mary had left].
PP <sub>to</sub> CP	concede, admit	They admitted [ <sub>PP</sub> to Eric] [ <sub>CP</sub> that Mary had left].

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**Table 5.6** Some examples of noun complements

Complement option	Sample heads	Example
∅	car, boy, electricity	the car ____
PP <sub>of</sub>	memory, failure, death	the memory [ <sub>PP</sub> of a friend]
PP <sub>of</sub> PP <sub>to</sub>	presentation, gift, donation	the presentation [ <sub>PP</sub> of a medal] [ <sub>PP</sub> to the winner]
PP <sub>with</sub> PP <sub>about</sub>	argument, discussion, conversation	an argument [ <sub>PP</sub> with Stella] [ <sub>PP</sub> about politics]

**Table 5.7** Some examples of adjective complements

Complement option	Sample heads	Example
∅	tall, green, smart	very tall ____
PP <sub>about</sub>	curious, glad, angry	curious [ <sub>PP</sub> about China]
PP <sub>to</sub>	apparent, obvious	obvious [ <sub>PP</sub> to the student]
PP <sub>of</sub>	fond, full, tired	fond [ <sub>PP</sub> of chocolate]

**Table 5.8** Some examples of preposition complements

Complement option	Sample heads	Example
∅	near, away, down	(he got) down ____
NP	in, on, by, near	in [ <sub>NP</sub> the house]
PP	down, up, out	down [ <sub>PP</sub> into the cellar]

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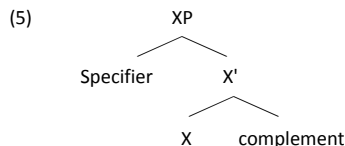
## Phrase structure: Specifiers

- While complements may be obligatory (depending on the selectional properties of the head), a head may also have nonobligatory "satellite" elements, called **specifiers**, e.g.,
  - an **adverb** (Adv) of a V: **sometimes rents a car.**
  - a **determiner** (Det) of an N: **the linguist**
  - a **degree** (Deg) word of an A or a P: **very nice/straight into the room**

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## X'-schema for phrase structure

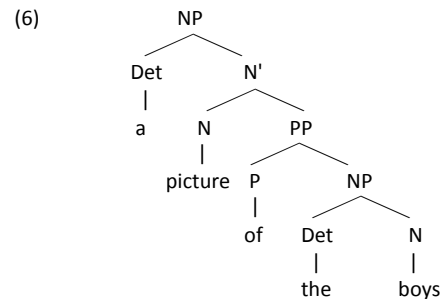
- To generalize, using X as a variable ranging over all heads, every phrase has the internal structure below:



- (Note:** The intermediate level between X and XP is pronounced X-bar.)
- We can then apply this X'-schema to all heads.

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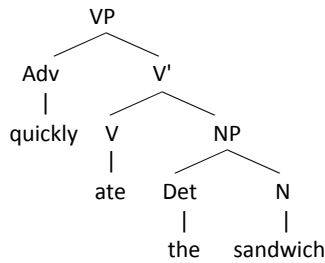
## NP: [a picture of the boys]



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VP: [quickly ate the sandwich]

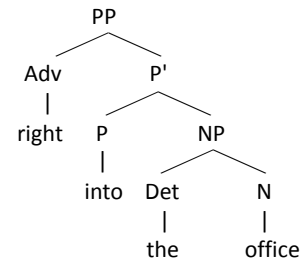
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PP: [right into the office]

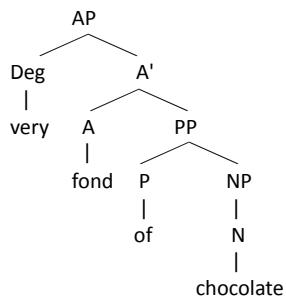
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AP: [very fond of chocolate]

(9)



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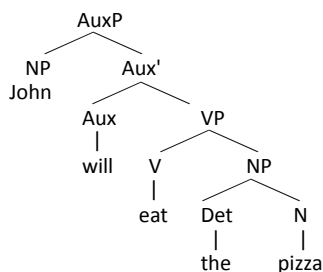
So, what's the head of a sentence?

- Consider now sentences such as  
John will eat the pizza.
- Since we know that "John" is a constituent, it must be that "will eat the pizza" is also a constituent.
- We, therefore, assume that the head here is the modal verb "will," whose complement is the VP "eat the pizza", and whose specifier is the subject "John", and that the whole string is an **Auxiliary Phrase (AuxP)** (or, a **Tense Phrase (TP)**), as mentioned in your textbook.
- This is shown in the tree diagram on the next slide:

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AuxP (aka TP)

(10)



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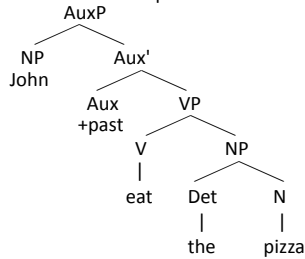
AuxP

- But now consider this sentence:  
(11) John ate the pizza.
- Since the subject "John" is still present, we have to assume that there is some "Aux" element in the sentence, since subjects are specifiers of Aux. But it does not look like there is a modal verb there.
- Syntacticians assume that the tense morpheme is actually a form of Aux (or that Aux is a form of tense, but this is a labeling issue and not really significant in any way).

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### AuxP

- The structure of "John ate the pizza" will look like that, then: (12)



- Question: How does "eat" and "past" become the word "ate"? We'll get back to that on Wednesday.

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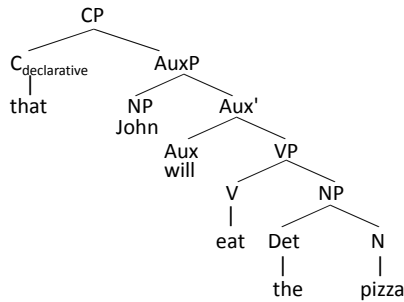
### CP

- Consider the *complement* (also called *embedded clause*) of the verb "says" in (13) Mary says [that John will eat the pizza].
- Remember that such verbs take a CP complement.
- The embedded clause looks identical to the AuxP in tree #10, except that it has the **complementizer that**.
- Complementizers mark a clause as declarative, interrogative, or imperative.
- Let's assume then that a complementizer (abbreviated C), which is the head of CP, takes AuxP as its complement, as shown on the next slide.

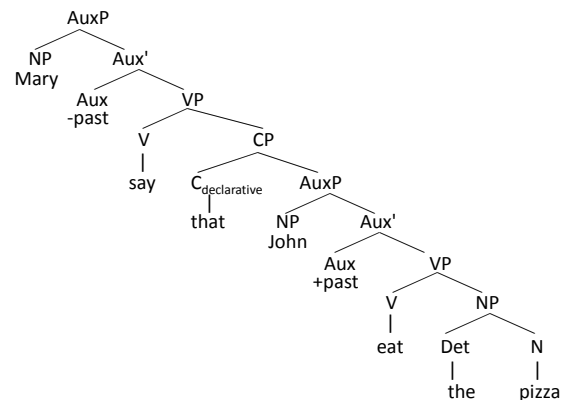
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### The structure of the embedded CP [that John will eat the pizza]

(14)



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Note: This tree is still incomplete. See why on the next slides.

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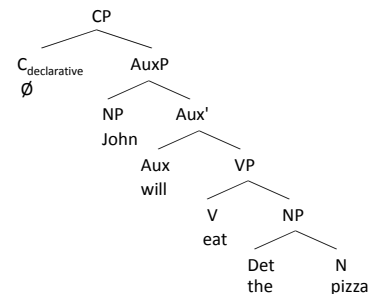
### CP

- But if C determines the type of a clause, then it must also be present in main (i.e., non-embedded) clauses, though not pronounced (in languages like English).
- In other words, the structure of "John will eat the pizza" is actually as on the next slide, with a null C heading the sentence and indicating that this is a declarative sentence.

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### CP: [John will eat the pizza]

(15)



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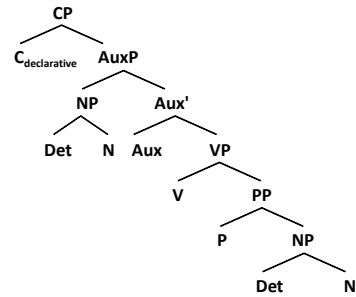
### A mini-grammar for English: Phrase structure rules

- So putting all of this together, here's a mini-grammar for English phrase structure, where parentheses indicate optionality: (**Note:** This is by no means an exhaustive list.)

CP → C AuxP  
 AuxP → NP Aux'  
 Aux' → Aux VP  
 VP → V (NP) (PP)  
 VP → V (CP)  
 VP → V (AP)  
 NP → (Det) N (PP)  
 PP → (Deg) P NP  
 AP → (Deg) A (PP)

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### An abstract tree generated by PSRs



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### A mini-grammar for English: Lexical rules

- In addition to PSRs, a grammar must also include a set of rules that insert words from the lexicon under "terminal" nodes in the tree, e.g.,

N → {man, dog, justice, ...}  
 V → {love, hit, leave, ...}  
 Aux → {will, must, Past, ...}  
 Det → {the, a, an, his, some, ...}  
 C → {that, whether, ∅, ...}  
 etc.

- As you should expect, these are called *lexical insertion* rules.

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Time for some tree-drawing fun.  
Let's draw trees for some sentences.

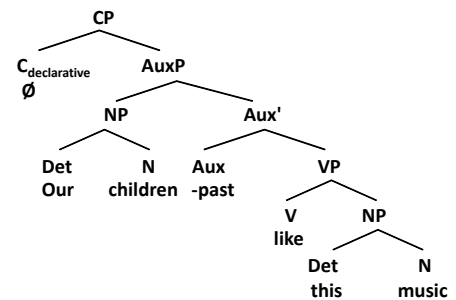
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### Sentences to draw trees for

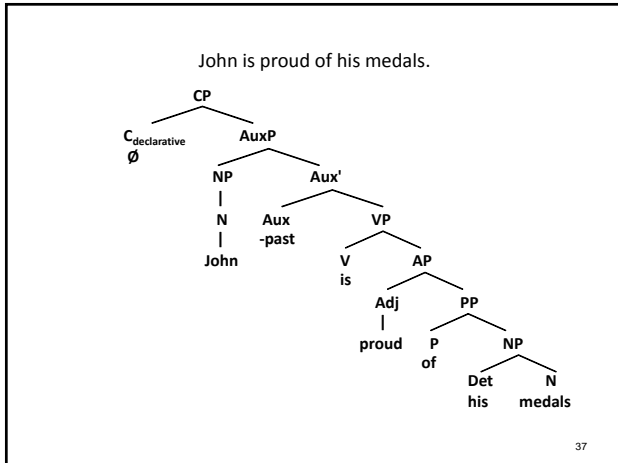
- Our children like this music.
- John is proud of his medals.
- The linguist knows that this language has become extinct.

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Our children like this music.

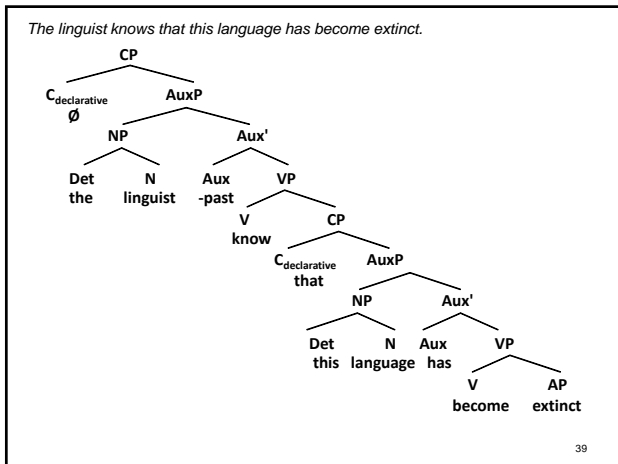


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*The linguist knows that this language has become extinct.*

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### What do trees tell us?

- Tree diagrams show three aspects of speakers' syntactic knowledge:
  - a. the **linear order** of the words in the sentence,
  - b. the **groupings** of words into particular syntactic constituents (e.g. NP, VP, etc.), and
  - c. the **hierarchical structure** of these constituents (that is, the fact that constituents contain constituents inside them, which in turn contain other constituents, and so on and so forth).

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### What do trees tell us?

- In addition, trees help us explain those aspects of syntactic knowledge that native speakers have about their language: grammaticality, recursiveness, ambiguity, sentence-relatedness.
- We'll do this next class.

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### Next class agenda

- Ambiguity and recursiveness revisited.
- Transformations.
- Why do languages differ in their sentence structures?
- Finish reading Chapter 3, pp. 109-129.

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