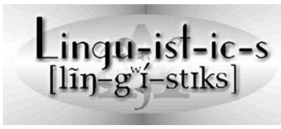
LNGT0101
Introduction to Linguistics



Lecture #12
Oct 19th, 2011

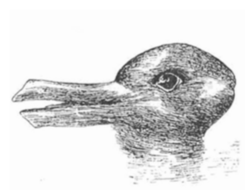
Announcements

- I added links to resources on unfamiliar and endangered languages that should help you as you search for a LAP language. LINK
- I also activated the link to a list of LAP guideline questions. This should help you as you write your LAP report.
- LAP languages are assigned on a first-come first-served basis. No two students can choose the same language.

Wanna-contraction?

- **Who do you wanna kiss Mary?*
- Any thoughts on the *wanna*-contraction puzzle?

Another visual illusion (just for fun)



- http://www.youtube.com/watch?v=hPCoe-6RRks&feature=player_embedded#!

What's syntax?

SYNTAX

is the study of sentence structure in human language.

Syntax

- There are several aspects of syntactic knowledge that native speakers have about their language.
- We have already seen that in the puzzles about copula contraction and question-formation.
- Let's look at some more examples.

Syntactic knowledge: Grammaticality

- Native speakers know what is grammatical and what is ungrammatical in their language, e.g.,
  - *The silly man hit the nice woman.*
  - **Silly hit man the nice the woman.*

Syntactic knowledge: Grammaticality

- Remember too from Assignemnt#1 that **grammaticality does not depend on meaning**. A sentence can be grammatical even if it is meaningless, e.g.
  - *Colorless green ideas sleep furiously*.
- Similarly, we can figure out the meaning of an ungrammatical sentence, e.g.
  - **I will in the office for you wait*.
- These two facts seem to suggest that ***syntax is an autonomous system***, that is, it has its own rules independent of meaning.

Syntactic knowledge: Ambiguity

- Our syntactic knowledge also enables us to understand cases of **ambiguity**. Remember these sentences?
  - *Anne hit the man with an umbrella.*
  - *Visiting relatives can be a nuisance.*
  - *We need more honest politicians.*
  - *This is a large man's hat.*

Syntactic knowledge: Sentence relatedness

- Our knowledge of the syntax of our language also enables us to know cases of **synonymy** or **near**-**synonymy** between sentences, as the case is with active and passive senesces:
  - *John broke the window.*
  - *The window was broken by John*.
- The same also applies to pairs of sentences like this one, where again two different structures have the same meaning:
  - *John gave a book to Mary.*
  - *John gave Mary a book*.

Syntactic knowledge: Sentence relatedness

- Another case of sentence relatedness is that between statements and questions:
  - *They will be in London tomorrow.*
  - *Will they be in London tomorrow?*

Syntactic knowledge: Recursiveness

- Recall also that our use of language is **creative**, that is, we are able to produce and understand an **infinite** number of sentences, even though our linguistic resources are finite: Wilhelm von Humboldt's famous phrase "***infinite use of finite means***."
- Remember also that a sentence in human language could in principle be **recursively infinite** as in the following example:
  - *This is the dog that chased the cat that killed the rat that ate the cheese that was on the table that was in the room that …*

Cross-linguistic variation (e.g., in word order)

- And as we have seen with phonology and morphology, languages can also differ dramatically in their syntax.
- **English**:
  The child might think that she will show Mary's picture of John to Chris.
- **Japanese**:
  Taroo-ga Hiro-ga Hanako-ni zibun-no
  Taroo-SU Hiro-SU Hanako-to self-POSS
  syasin-o miseta to omette iru
  picture-OB showed that thinking be
  "Taro thinks (literally, is thinking) that Hiro showed a picture of himself to Hanako."

Syntax

- For our theory of grammar to be adequate, it has to account for the different aspects of native speakers' subconscious syntactic knowledge.
- In addition, it should also tell us why languages differ in their sentence structures the way they do.
- In the syntax section of this class, we discuss these two issues.

Constituency

- A sentence is not a random sequence of words; rather, every sentence has a ***syntactic structure***.
- And the key notion to understanding syntactic structure is that of ***constituency***. Let's see what this means.

Constituency

- Consider the following sentence:
  The linguist has drawn a tree.
- If I ask you to divide the sentence into two units, where would you draw the line?
- Right:
  (1) The linguist | has drawn a tree.

Constituency

- Intuitively, we "know" that certain words "hang together" in the sentence to the exclusion of others. We call such strings of words "**constituents**".
- And we can actually determine constituency by means of "objective" diagnostic tests. Let's consider what these tests are.

Substitution test for constituency

- If a string of words can be replaced by one word and the result is a grammatical sentence while preserving the original meaning, then it must be that this string of words comprises a "constituent".

Substitution test for constituency

(2) a. [The linguist] has drawn a tree.
✓*He* has drawn a tree.
b. The linguist has drawn [a tree].
✓The linguist has drawn *it*.
c. The [linguist has drawn a tree].
*The ???
d. [The linguist has] drawn a tree.
*??? drawn a tree.
e. [The linguist has drawn a] tree.
*??? tree.
f. The linguist [has drawn a tree].
The linguist *has*. (In response to "Who has drawn a tree?")

Substitution test for constituency

(3) a. [The tall boy] ate the burrito.
✓*He* ate the burrito.
b. The tall boy ate [the burrito].
✓The tall boy ate *it*.
c. [The tall boy ate] the burrito.
*??? the burrito.
d. The tall boy [ate the burrito].
✓The tall boy *did (so)*. (In response to "Who ate the burrito?")
e. The tall boy ate the burrito [in the classroom].
The tall boy ate the burrito *there*.
f. The tall boy ate [the burrito in the classroom].
*The tall boy ate *it*. *(The sentence may look ok, but we changed the meaning)*

Movement test for constituency

- If a string of words can be moved together in a sentence keeping the same meaning intact, then this string of words comprises a "constituent":

(4) a. We will hold the meeting [in Sam's office].
In Sam's office we will hold the meeting .
b. We will hold [the meeting in Sam's office].
**The meeting in Sam's office* we will hold.

Movement test for constituency

c. I know he will [eat the whole pizza], and
eat the whole pizza he will.
d. *I know he [will eat the] whole pizza, and
will eat the he whole pizza.
e. I read [this book by Chomsky] before.
This book by Chomsky I read before.
f. I read this book [by Chomsky before].
**By Chomsky before* I read this book.

Clefting

- Clefting (*It is X that …*) may also be used as a constituency diagnostic:
This linguist drew several trees on the board.

It is ***this linguist*** that drew several trees on the board.
It is ***several trees*** that this linguist drew on the board.
It is ***on the board*** that this linguist drew several trees.
*It is ***trees on*** that this linguist drew the board.
*It is ***linguist drew*** that this several trees on the board.

Stand-alone test (using answers to questions)

- If a string of words can stand alone as an answer to a question, then it is a constituent, e.g.,

Q: What did John eat?
A: The whole pizza./*The whole.

Q: What did John do?
A: Eat the whole pizza./*Eat the.

Phrase structure: Heads and complements

- Once we determine that a string of words is a constituent, the next step is to determine its syntactic category.
- For this we make a distinction between a ***head*** and a ***complement***.
- The head is the central word in a string, the one that requires other elements to be there.
- The complement is the part of the string that is there because of the head.
- The head and the complement together form what we call a ***phrase***, and the type of the syntactic category of the whole phrase is that of the head.

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.

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".
  - "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".

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 → N PP

  VP → V NP

  PP → P NP

  AP → A PP

Subcategorization

- Notice that heads differ as to whether they need complements and how many they take. Technically, we say they have different ***subcategorization*** properties.
- For example, transitive verbs require complements, but intransitive verbs do not:

  John slept.

  *John slept the dog.

  John bought a new car.

  *John bought.
- Remember the *eat-devour* puzzle?

Subcategorization

- Furthermore, transitive verbs differ in whether they subcategorize for an NP complement like "buy" above, or a PP complement as "talk":

  I talked [$_{PP}$ to his boss].
- Some transitive verbs even require two complements, such as "give" and "put":

  She gave [$_{NP}$ me] [$_{NP}$ money].

  Alice put [$_{NP}$ the car] [$_{PP}$ in the garage].

Table 5.5 Some examples of verb complements

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

Table 5.9 Some verbs permitting CP complements

Complement options	*Sample heads*	*Example*
CP	believe, know, think, remember	They believe [$_{CP}$ *that Mary left*].
NP CP	persuade, tell, convince, promise	They told [$_{NP}$ *Eric*] [$_{CP}$ *that Mary had left*].
PP_{to} CP	concede, admit	They admitted [$_{PP}$ *to Eric*] [$_{CP}$ *that Mary had left*].

Table 5.6 Some examples of noun complements

Complement option	*Sample heads*	*Example*
Ø	car, boy, electricity	the car __
PP_{of}	memory, failure, death	the memory [$_{PP}$ *of a friend*]
PP_{of} PP_{to}	presentation, gift, donation	the presentation [$_{PP}$ *of a medal*] [$_{PP}$ *to the winner*]
PP_{with} PP_{about}	argument, discussion, conversation	an argument [$_{PP}$ *with Stella*] [$_{PP}$ *about politics*]

Table 5.7 Some examples of adjective complements

Complement option	*Sample heads*	*Example*
Ø	tall, green, smart	very tall __
PP_{about}	curious, glad, angry	curious [$_{PP}$ *about China*]
PP_{to}	apparent, obvious	obvious [$_{PP}$ *to the student*]
PP_{of}	fond, full, tired	fond [$_{PP}$ *of chocolate*]

Table 5.8 Some examples of preposition complements

Complement option	*Sample heads*	*Example*
Ø	near, away, down	(he got) down __
NP	in, on, by, near	in [$_{NP}$ *the house*]
PP	down, up, out	down [$_{PP}$ *into the cellar*]

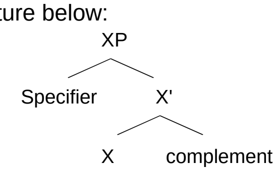
Phrase structure: Specifiers

- While complements may be obligatory (depending on the subcategorization 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*

X'-schema for phrase structure

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

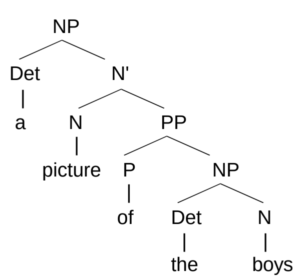
(5)



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

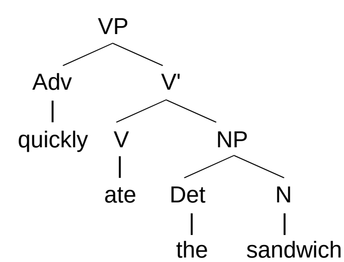
NP

(6)



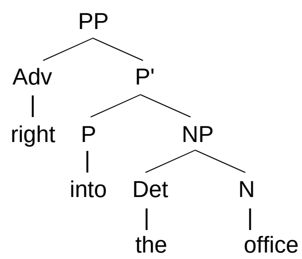
VP

(7)



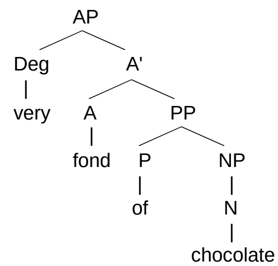
PP

(8)



AP

(9)

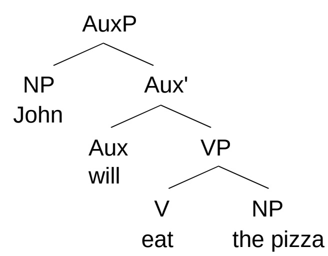


So, what's the head of a sentence?

- 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. But what kind of constituent is it?
- Let's 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 following tree diagram:

AuxP

(10)



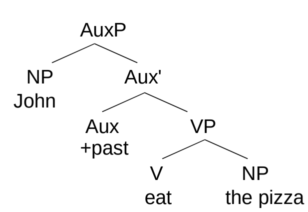
AuxP

- 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.
- Linguists 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).

AuxP

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

(12)



- Question: How does "eat" and "past" become the word "ate"?

One more category

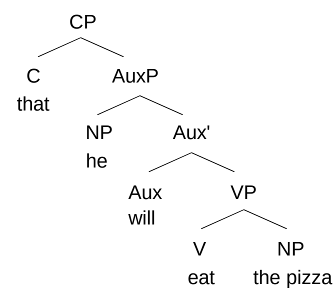
- Consider the *complement* (also called *embedded clause*) of the verb “says” in
  (13) John says [that he will eat the pizza].
- Now, the embedded clause looks identical to the AuxP in tree #10, except that it has an extra element: the so-called **complementizer** *that*, which is said to carry the *illocutionary force* of the clause, i.e., it marks the clause as either declarative, interrogative, etc.

CP

- Using the same X'-schema, this must be a head-complement relation (though no specifier is available here, but remember that specifiers are optional).
- Let’s assume then that a complementizer (abbreviated **C**) also heads a phrase, and that its complement is AuxP, as shown on the next slide:

CP (embedded)

(14)

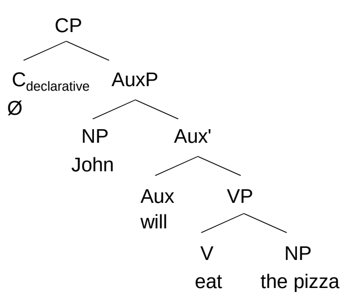


CP

- But if C determines the illocutionary force of a clause, then it must also be present in matrix (i.e., non-embedded) clauses, though not pronounced.
- 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:

CP (main)

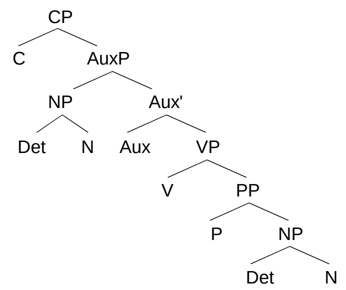
(15)



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: (**<u>Note</u>**: This is by no means an exhaustive list.)
  (16)
  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)

One possible structural tree of a simple English sentence



A mini-grammar for English: Lexical rules

- 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, …)
  etc.

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

Tree-drawing exercise

- For Wednesday’s class after the break, draw syntactic tree diagrams for the following sentences:

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

Next class agenda

- More syntax: Accounting for ambiguity and sentence relatedness. Introducing transformational rules.

Have a good break everyone!