BBN–FLN11–001/eng
FOUNDATIONS OF LINGUISTICS
6. SYNTAX

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judging sentences

the cat fell in the pool

*cat the in fell pool the

%you is kind

%you are kind

pale little children sleep peacefully

#colourless green ideas sleep furiously

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* = ungrammatical, % = syntactic variation, # = semantically (= meaningwise) odd

grammaticality judgements

are not based either on meaning or that we have encountered a given sentence before:

we can decide the grammaticality of the following sentences

all grypnos are tichek

*grypnos tichek all are

cf Lewis Carroll's Jabberwocky

fixed vs flexible word order

of the following sentence, in English only some orders are grammatical (in the sense ‘M loves V’), in Hungarian all are



Mars loves Venus / Mars szereti Venust
*Mars Venus loves / Mars Venust szereti
*loves Mars Venus / szereti Mars Venust
*loves Venus Mars / szereti Venust Mars
Venus Mars loves / Venust Mars szereti
*Venus loves Mars / Venust szereti Mars

but the meaning of the sentences above that are grammatical is often different

terminology

- sentence: a complete statement, question, or command; a clause that is used on its own
- clause: a subject and a predicate, a clause may be part of another clause
- predicate: whatever is attributed to the subject in the sentence (typically expressed by V or A)
- argument: a part of the clause that the predicate relates to

some argument types

- subject: typically before the predicate (pronouns: *I, he, she, we, they*)
- direct object: typically after the predicate (pronouns: *me, him, her, us, them*)
- indirect object: usually the recipient of the direct object, after the predicate before the direct object

predicates

- ???

  it rains
- intransitive: one argument (subject)

  Mary sleeps
- transitive: two arguments (subject, object)

  Mary loves Joseph
- ditransitive: three arguments (subject, indirect object, direct object)

  Mary gives Joseph a kiss

sentence types by function

- declarative: statements (that can be true or false): *Jill ran home*
- interrogative: questions
  - yes/no (or polar) questions: *did Jill run home?*
  - content (or wh-)questions: *who ran home?; where did Jill run?*
- imperative: requests, commands: *run home, Jill*

sentence types by structure

- simple: a single clause

  Jill was jogging
- compound: several clauses linked by *and, or, but*

  Jill was jogging and Jack was gardening
- complex: clause containing an embedded clause

  Jill was jogging while Jack was gardening

  Jill, who was jogging yesterday, is gardening today

language types by argument order

- 41% **SOV:** Japanese, Korean, Turkish, Farsi, Hindi/Urdu, Malayalam, Amharic, Haida
- 36% **SVO:** English, Mandarin, Cantonese, Nahuatl, most Romance languages
- **VSO:** most Celtic languages, some Algonquian languages
- **VOS, OVS, OSV** (where O is before S) are less common

sentences are not made up of words

but phrases (some phrases comprise a single word); the phrase that is the subject is underlined

- *puppies are very cute*
- *all kittens are very cute*
- *the ducklings that I saw earlier are very cute*
- *these videos of a baby panda sneezing are very cute*

phrases have a head, the verb agrees with the number of the head of the subject;
the head of a phrase selects its complement(s)

the position of the head

complements in En typically follow the head: *the dog in the garden, behind the garden; eat an apple*

complements in Hu typically precede the head: *a kertben levő kutya, a kert mögött, almát eszik*

constituents

a phrase is a constituent, constituency can be argued for by constituent tests

constituents can be replaced, moved, clefted, used as an utterance

replacement test

1. *the students saw a movie after class ~ the students saw it after class*
2. *the students saw a movie about dinosaurs ~ *the students saw it about dinosaurs*

⇒ *a movie* is a constituent in sentence 1, but not in sentence 2

3. *João lifted the girl from poverty ~ João lifted her from poverty*
4. *João kissed the girl from Ipanema ~ *João kissed her from Ipanema*

⇒ *the girl* is a constituent in sentence 3, but not in sentence 4

5. *Jill saw the guy with the telescope ~ Jill did so with the telescope*
6. *Jill saw the guy with a moustache ~ *Jill did so with a moustache*

⇒ *saw the guy* is a constituent in sentence 5, but not in sentence 6

movement test

1. *Amy knows the guy well ~ the guy Amy knows well*
2. *Amy knows the guy in the office ~ *the guy Amy knows in the office*

⇒ *the guy* is a constituent in sentence 1, but not in sentence 2

3. *Mary left yesterday at ten ~ yesterday Mary left at ten*
4. *Mary left yesterday morning ~ *yesterday Mary left morning*

⇒ *yesterday* is a constituent in sentence 3, but not in sentence 4

cleft test

1. *the students saw a movie after class ~ *it was a movie after class that the students saw*
2. *the students saw a movie about dinos ~ it was a movie about dinos that the students saw*

⇒ *a movie after class* is not a constituent in sentence 1, but *a move about dinos* is in 2

3. *João lifted the girl from poverty ~ *it was the girl from poverty that João lifted*
4. *João kissed the girl from Ipanema ~ it was the girl from Ipanema that João kissed*

⇒ *the girl from poverty* is not a constituent in sentence 3, but *the girl from Ipanema* is in 4

5. *Jill saw the guy with the telescope ~ it was the guy that Jill saw with the telescope*
6. *Jill saw the guy with a moustache ~ *it was the guy that Jill saw with a moustache*

⇒ *the guy* is a constituent in sentence 5, but not in sentence 6

answers

Rathna's brother baked a delicious cake

— *what did Rathna's brother bake?*

— *a delicious cake / a cake / *a delicious / *cake*

— *who baked these delicious cookies?*

— *Rathna's brother / *brother / *Rathna's brother baked*

the asterisked strings are not constituents

phrase types

- **noun phrase (NP):** *the dog, the black dog, the dog in the garden*
- **verb phrase (VP):** *sleep, eat biscuits, decide on their fate, give the parents a book, put the book on the shelf*
- **adjective phrase (AP):** *dark, very dark, proud of his daughter*
- **prepositional phrase (PP):** *under, under the table, right under the table*

functional categories (closed classes)

- **determiner (D):** *the dog, this dog, each dog, my dog,* **nb** *those girls' dog*
- **pronoun:** *I, me, you, he, him, she, her, we, us, they, them, who, which, when, this, that…*
  nb the earlier 2sg personal pronoun was lost in English, *you* is both 2sg and 2pl
- **auxiliary (Aux):** *can, will, may, should, have, be, do, …*
- **preposition (P):** *on, up, before, through, in, without, of, for, from, …*

prepositions are sometimes considered to be a lexical category (cf may occur in compounds: *close-up, income*)

recursion

a phrase is potentially infinitely long

- *the dog*
- *the dog in the garden*
- *the dog in the garden on the narrow road*
- *the dog in the garden on the narrow road by the river*
- etc

embedding

- *Mary said something*; something = *Joseph was a carpenter*
- *Mary said that Joseph was a carpenter*

that Joseph was a carpenter is an embedded clause, *that* is a complementizer (makes the clause a complement of the verb *said*)

we can take any sentence to be a complementizer phrase (CP), a nonembedded clause often does not have an overt complementizer: ~~*that*~~ *Mary said something*

a clause may contain another clause which may contain another clause which may contain another clause…

they know that she said that he thinks that we considered…

this is a recursive structure

selecting the complement

	they know…	***they said…***	***they talked…***
NP	*… this fact*	*…something*	*%…mythology*
PP	*… about birds*	**…about chocolate*	*…about mythology*
CP	*… that birds can fly*	*…that they like chocolate*	**…that mythology is interesting*

selecting the complementizer (the head of the CP)

they know…	***they believe…***	***they wonder…***
…that…	*… that…*	**…that…*
… ∅…	*… ∅…*	**… ∅…*
… whether…	**…whether…*	*…whether…*
… if…	**…if…*	*…if…*

…ghosts exist

embedded questions

- *they said {that,∅} ghosts exist = they said “ghosts exist”*
- *they asked {whether,if} ghosts exist = they asked “do ghosts exits?”*

obligatory *that*

- *they reported that there was a demonstration yesterday*
- **they reported ∅ there was a demonstration yesterday*
- *that there was a demonstration surprised some of us*
- **∅ there was a demonstration surprised some of us*
- *it is surprising that there was a demonstration*
- **it is surprising ∅ there was a demonstration*

yes/no questions

- *Jill can sing ~ can Jill sing?*
- *the dog in the garden is hungry ~ is the dog in the garden hungry?*
- *Amy has left ~ has Amy left?*
- *Mary will have left by then ~ will Mary have left by then?*
- *she ∅ knows her role ~ does she know her role?*
- *every Christian lion-hearted man ∅ learned the lesson ~ did every Christian lion-hearted man learn the lesson?*
- *he ∅ did the dishes ~ did he do the dishes?*
- *we ∅ have a party ~ do we have a party?* vs †*we have a party ~ have we a party?*

auxiliaries

yes/no questions are marked by the inversion of the subject and the auxiliary

- [the information [that was shared]] will surprise them
- *was [the information [that __ shared]] will surprise them?
- will [the information [that was shared]] __ surprise them?

sentences without an auxiliary use (dummy) *do*:

she feeds puppies ~ she does feed puppies ~ does she feed puppies?

have as an auxiliary: *have you eaten yet?*, *have* as a main verb: *did you have to eat it?*

content (or wh-)questions

- *Kate was knitting a scarf on the terrace last week*
- *who was knitting a scarf on the terrace last week?*
- *what was Kate knitting __ on the terrace last week?*
  **Kate was knitting what…?, *what Kate was knitting…?*
- *where was Kate knitting a scarf __ last week?*
  **Kate was knitting a scarf where…?, *where Kate was knitting…?*
- *when was Kate knitting a scarf on the terrace __?*
  **Kate was knitting a scarf on the terrace when…?, *when Kate was knitting…?*

echo questions

no fronting of wh-word, pitch starts rising at the wh-word

- *who was knitting a scarf on the terrace last week?*
- *Kate was knitting what on the terrace last week?*
- *Kate was knitting a scarf where last week?*
- *Kate was knitting a scarf on the terrace when?*

sentence types so far

	statements	**yes/no questions**	**content questions**
main clause	no C	subj/aux inversion	subj/aux inv. & wh-word fronting
embedded	*…that/∅…*	*…if/whether…*	???

embedded content questions

- *I know {if,whether} you are being stalked* (yes/no question)
- *I know what you did __ last summer* (content question)
- *I asked {if,whether} you are being stalked* (yes/no question)
- *I asked what you did __ last summer* (content question)
- *I wonder {if,whether} you are being stalked* (yes/no question)
- *I wonder what you did __ last summer* (content question)
- **I know {if,whether,that} what you did last summer* ⇒ the wh-word is in C position
- **I know what did you do last summer* ⇒ no subject/auxiliary inversion in embedded questions

sentence types

	statements	**yes/no questions**	**content questions**
main clause	no C	subj/aux inversion	subj/aux inv. & wh-word fronting
embedded	…*that*/∅…	…*if*/*whether*…	wh-word fronting to C

embedded clauses as NP complements

- *the knowledge* [$_{CP}$ *that you are being stalked*] *is very scary*
- *the knowledge of* [$_{CP}$ *what you did last summer*] *is very scary*

relative clauses

- *the cookies* [$_{CP}$ *(that) Joe baked* __] *were delicious*
- *I cleaned the terrace* [$_{CP}$ *where Kate was knitting a scarf* __ *last week*]
- *I arrived last week* [$_{CP}$ *when Kate was knitting a scarf on the terrrace* __]

relative clauses

modify and are not complements of the head of a noun phrase

- *the knowledge that you are being stalked* (complement)
- *the knowledge that everyone possesses* (relative clause)
- *the knowledge of which child ate the candy* (complement)
- *the knowledge which we possess* (relative clause)

free relative clauses

- *what(ever) everyone possesses is much less interesting*
- *they talked about what(ever) they found interesting*
- *I'll have what they have*

finite & nonfinite clauses

know	***want***
I know that Amy is a spy	**I want that Amy is a spy*
I know that Amy was a spy	**I want that Amy was a spy*
I know that Amy should be a spy	**I want that Amy should be a spy*
I know Amy to be a spy	*I want Amy to be a spy*
I know that she is a spy	*I want her to be a spy*
**I know ∅ to be a spy*	*I want ∅ to be a spy*

finite & nonfinite clauses

	finite verbs	**nonfinite verbs**
have tense?	yes	no
agree with subject in person/number?	yes	no
subject obligatory?	yes	depends on verb
case of subject?	nominative	accusative

what is a subject or an object?

consider the following sentences

1. *Jill broke a window with a brick*
2. *a brick broke a window*
3. *a window broke*

- although *a window* is the object of *broke* in sentences 1 & 2, but the subject in sentence 3, it somehow has the same role in the event
- *subject* and *object* are structural/syntactic roles

thematic (or semantic) roles

- **agent:** animate actor acting on purpose
  the pirate sank the ship
- **causer:** inanimate actor causing an event not on purpose
  the bilge pump malfunction sank the ship
- **experiencer:** animate participant experiencing a mental state
  pirates frighten me
  I fear pirates
  the priates saw an approaching storm
- **theme/patient:** participant to which something happens
  (themes are not changed, patients are changed in the event)
  the author read a book
  the pirate sank the ship

further thematic roles

- **instrument:** usually introduced by *with*
  the pirate sank the ship with a cannon
- **location:** usually introduced by *in, at, on,* etc
  the pirate sank the ship at sea
- **goal:** often the indirect object
  the pirate sent the ship a message
  the pirate sent a message to the ship

selecting arguments and thematic roles

verbs do not only select their arguments but often also the thematic roles of these arguments, eg the subject of *say* is an agent (animate):

- *#the rocks say hello*
- *#the Earth says hello* (in *Hair* this is metonymy, *Earth* = 'people of Earth')
- *#the idea says Billy is a hero*

the agent is typically the subject

- *the pirate laughed*

though the subject is often not an agent

- *the train arrived*

verbs not assigning any thematic role

- *it is raining*
- *#the sky is raining*
- *it is snowing*
- *#the weather is snowing*

it is a dummy that occupies the obligatory subject position in lack of an argument

causative

adding an argument, a second agent/causer

- *she* *writes*$_{finite}$ *the homework*
- *the teacher* *makes/has/gets*$_{finite}$ *her* *write*$_{nonfinite}$ *the homework*

morphological causative in Hungarian

- *(ő)* *meg-ír-ja* *a házi-t*
  ‘(she) VP-write-DEF.3SG the homework-ACC’
- *a tanár* *meg-ír-at-ja* *vel-e* *a házi-t*
  ‘the teacher VP-write-CAUS-DEF.3SG with-3SG the homework-ACC’

passive

removing an argument, the agent

- *she writes the homework*
- *the homework is written (by her)*

diagnostics for the grammatical passive

1. obligatory subject turns into optional argument (*by* phrase)
2. object turns into subject
3. verb: *be* + past participle

thus *the ship sank* is not a passive sentence, *the ship was sunk* is

further passives

a passive sentence may have an object

- *Mary gave Joseph a kiss*
- *Joseph was given a kiss*

the object of a preposition may also be passivized

- *someone slept in this bed*
- *this bed was slept in*

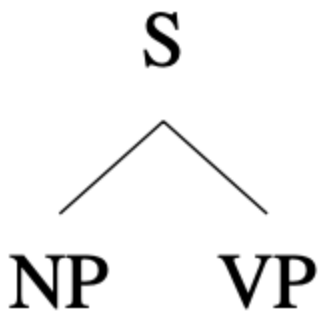
the representation of constituents

a sentence is made up of a noun phrase and a verb phrase, this fact can be represented as

a rewrite rule: **S** $\longrightarrow$ **NP VP**

or

a tree diagramme:



the noun phrase

- robots (N)
- some robots (D N)
- six robots (Num N)
- the six robots (D Num N)
- the six small robots (D Num A N)
- robots from Boston (N PP)
- the robots from Boston (D N PP)
- the six small robots from Boston (D Num A N PP)

$NP \longrightarrow (D)\ (Num)\ (A)_n\ N\ (PP)_n$

the internal structure of the noun phrase

- [$_{NP}$ *yesterday's launch of a spaceship*] *was exciting, but* [$_{NP}$ *today's one*] *was not*
  (where [*one*] = [*launch of a spaceship*])
- *[$_{NP}$ *the launch of a spaceship*] *is exciting, but* [*one of a mining drone*] *is not*
  (where [*one*] = [*the launch*])

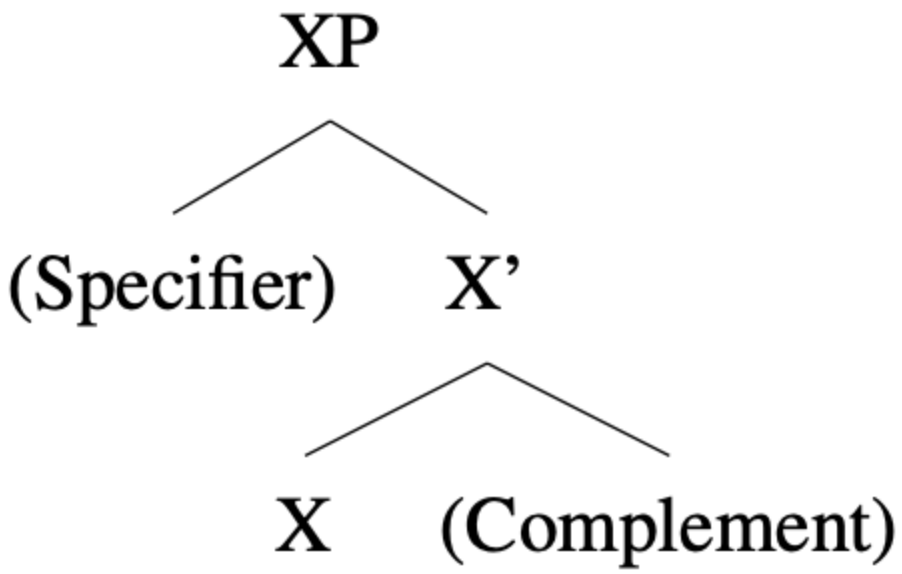
⇒ *launch of a spaceship* is a constituent (can be replaced by *one*) smaller than a NP (cannot be the subject or object of a S) and larger than a N; it is usually labelled N' ("en-prime") or N̄ ("en-bar")

a difference

$[_{NP}$ *the* $[_{N'}$ *blonde* $[_{\mathbf{N'}}$ *teacher* $]]]$ vs $[_{NP}$ *the* $[_{N'}$ *French* $[_{\mathbf{N}}$ *teacher* $]]]$

- *the blonde one* vs **the French one*
- *the blonde French teacher* vs **the French blonde teacher*

X-bar theory: all phrases have the same structure



XP ⟶ (Specifier) X'

X' ⟶ X (Complement)

VP

- [$_{VP}$ *quickly* [$_{V'}$ *build* [$_{NP}$ *a spaceship*]]]
- [$_{VP}$ [$_{V'}$ [$_{V}$ *sleep*]]]

AP

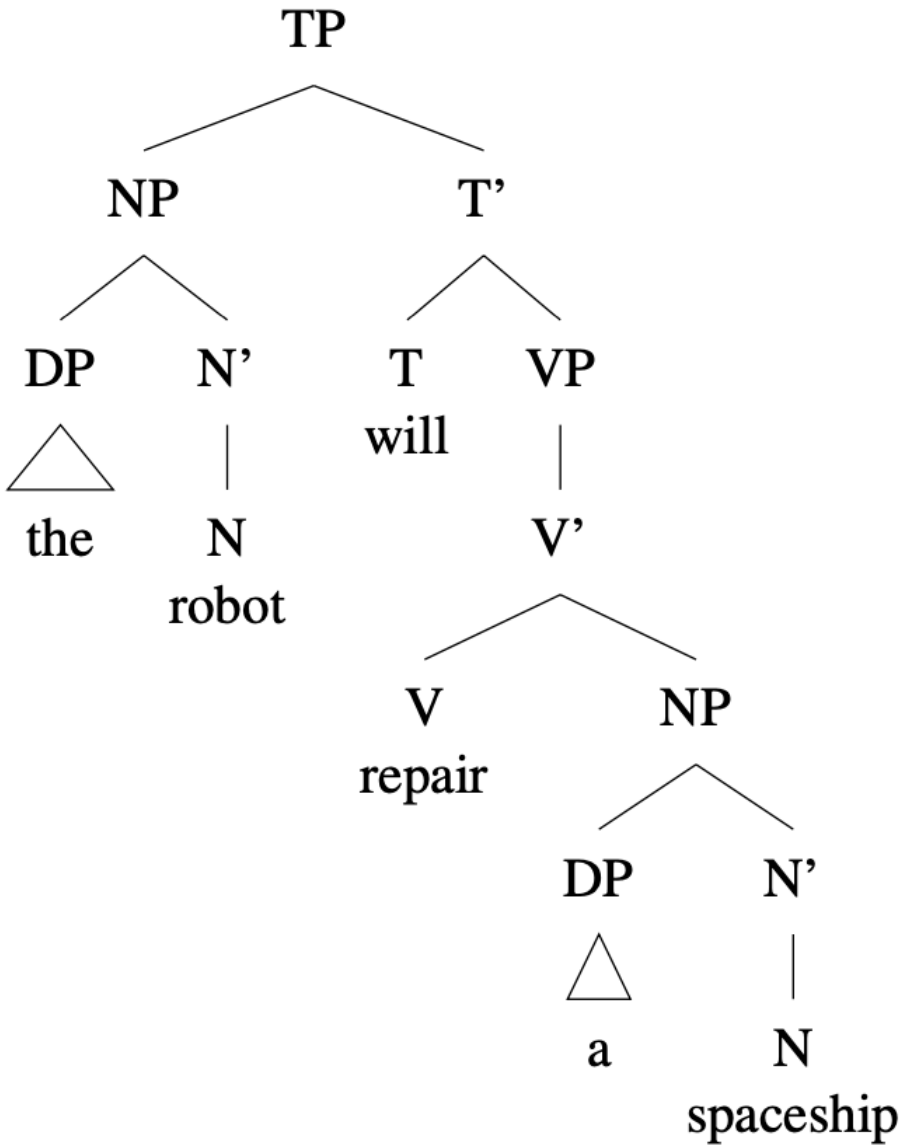
- [$_{AP}$ *very* [$_{A'}$ *fast* [$_{PP}$ *for a sloth*]]]
- [$_{AP}$ [$_{A'}$ *worth* [$_{NP}$ *a lot*]]]

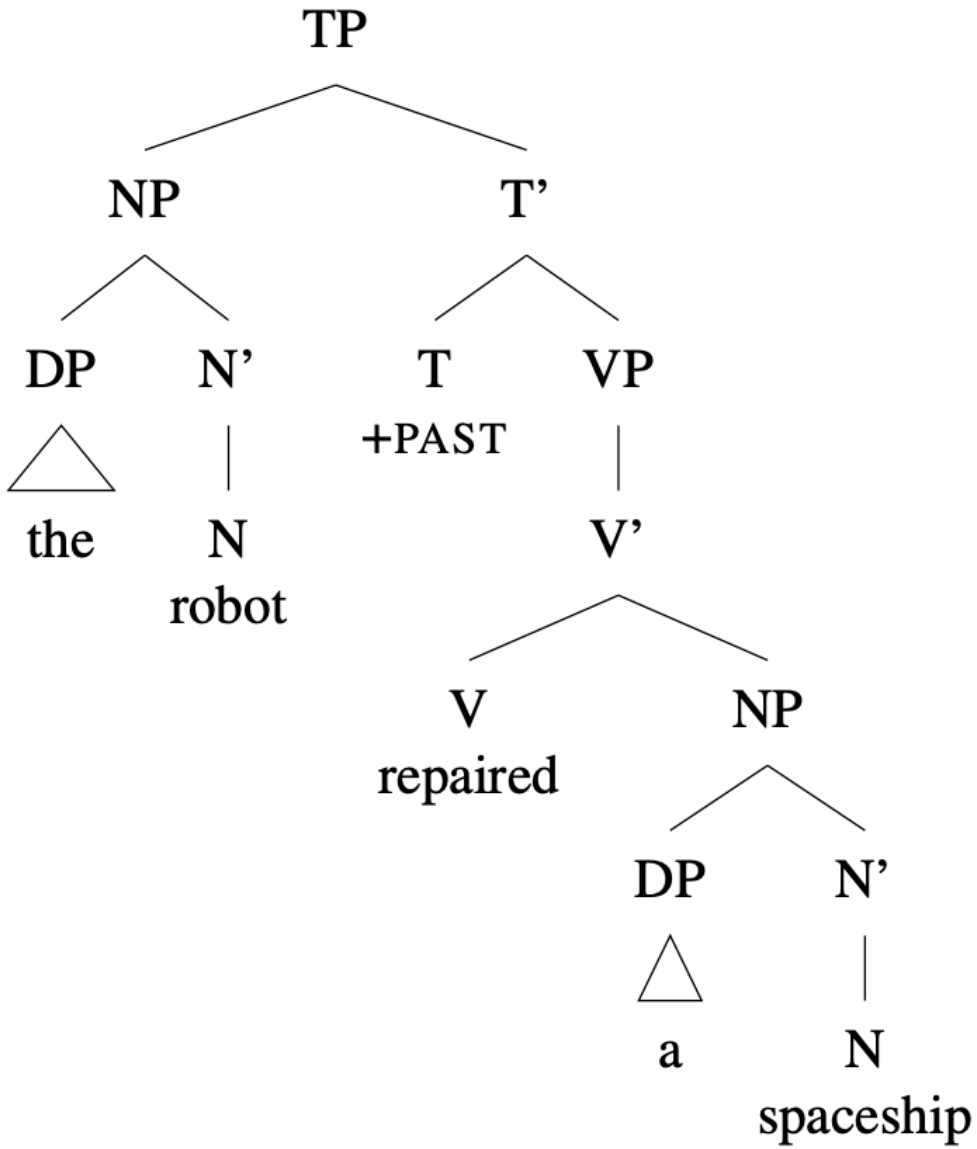
PP

- [$_{PP}$ *way* [$_{P'}$ *beyond* [$_{NP}$ *our knowledge*]]]
- [$_{PP}$ *right* [$_{P'}$ *up* [$_{PP}$ *to the door*]]]

what about sentences? are they exocentric?

- all sentences contain a finite verb, ie tense
- a sentence is a tense phrase (TP)
- subject = TP specifier
- predicate (VP) = TP complement


TP
NP
T'
DP
N'
T
VP
will
the
N
robot
V'
V
NP
repair
DP
N'
a
N
spaceship


TP
NP
T'
DP
N'
T
VP
+PAST
the
N
robot
V'
V
NP
repaired
DP
N'
a
N
spaceship

adjuncts, recursion

a constituent that is both a “child” and a “sibling” of X' is an adjunct

- [$_{NP}$ *the lazy black cat*] ~ [*the lazy one*]

  NP ⟶ D N'

  N' ⟶ AP N' / N' ⟶ N' PP (= recursive rule)

  N' ⟶ N

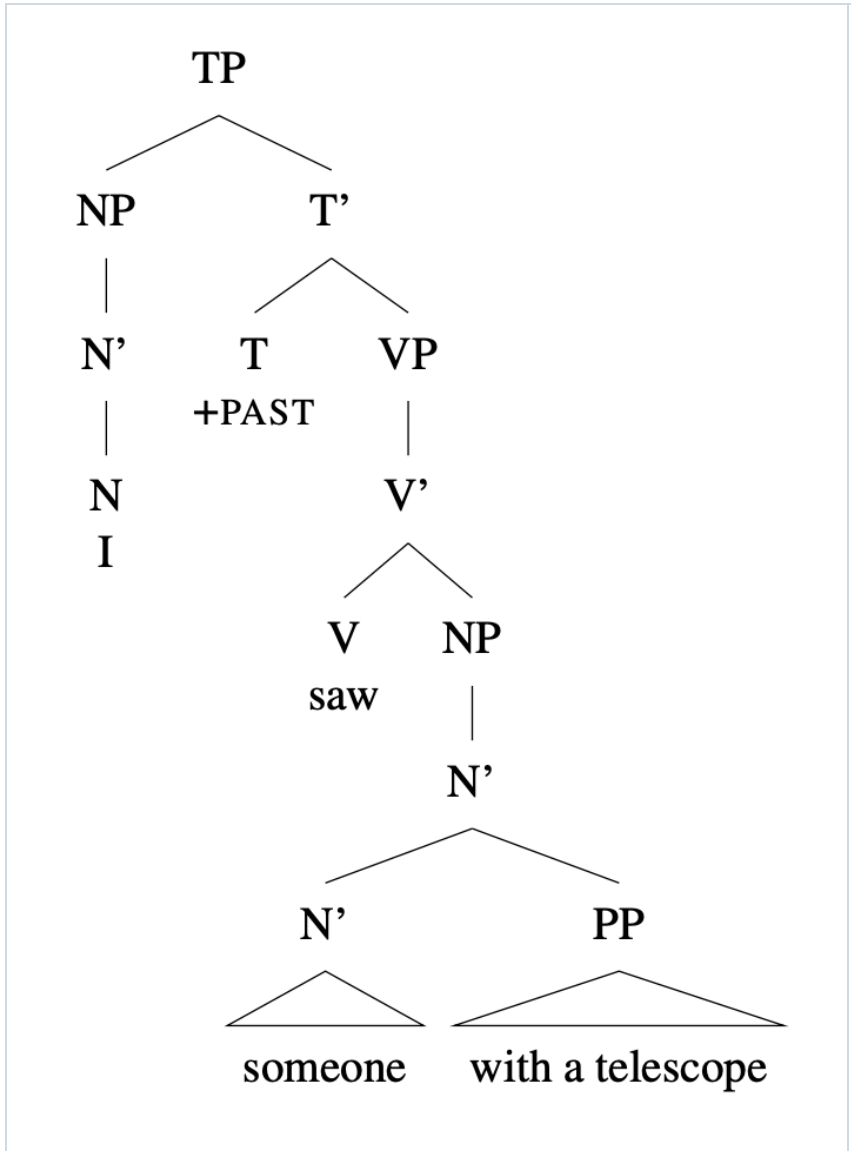
- [$_{NP}$ *the* [$_{N'}$ *black* [$_{N'}$ *cat*]]] ; [$_{NP}$ *the* [$_{N'}$ *letter* [$_{PP}$ *from home*]]]
- [$_{NP}$ *the* [$_{N'}$ *lazy* [$_{N'}$ *black* [$_{N'}$ *cat*]]]] ; [$_{NP}$ *the* [$_{N'}$ [$_{N'}$ *letter* [$_{PP}$ *from home*]] [$_{PP}$ *in the mailbox*]]]
- …

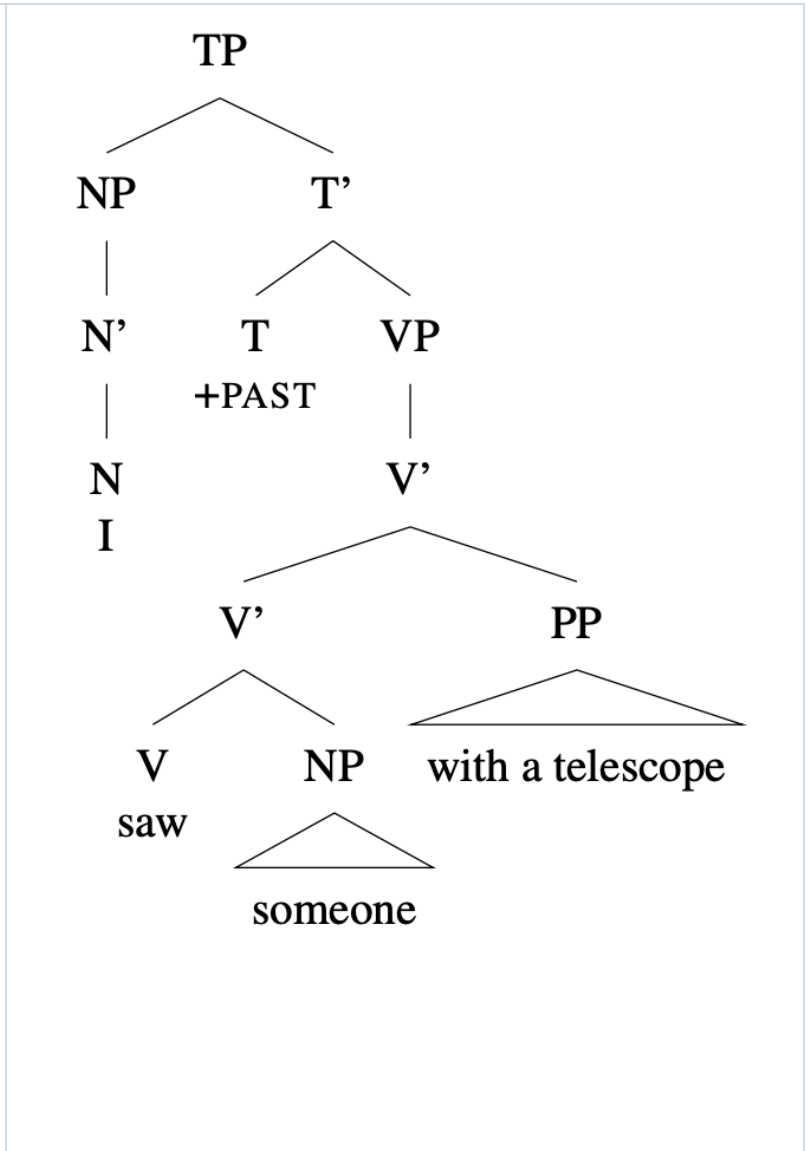
structural ambiguity

different structures may result in the same sequence of words:

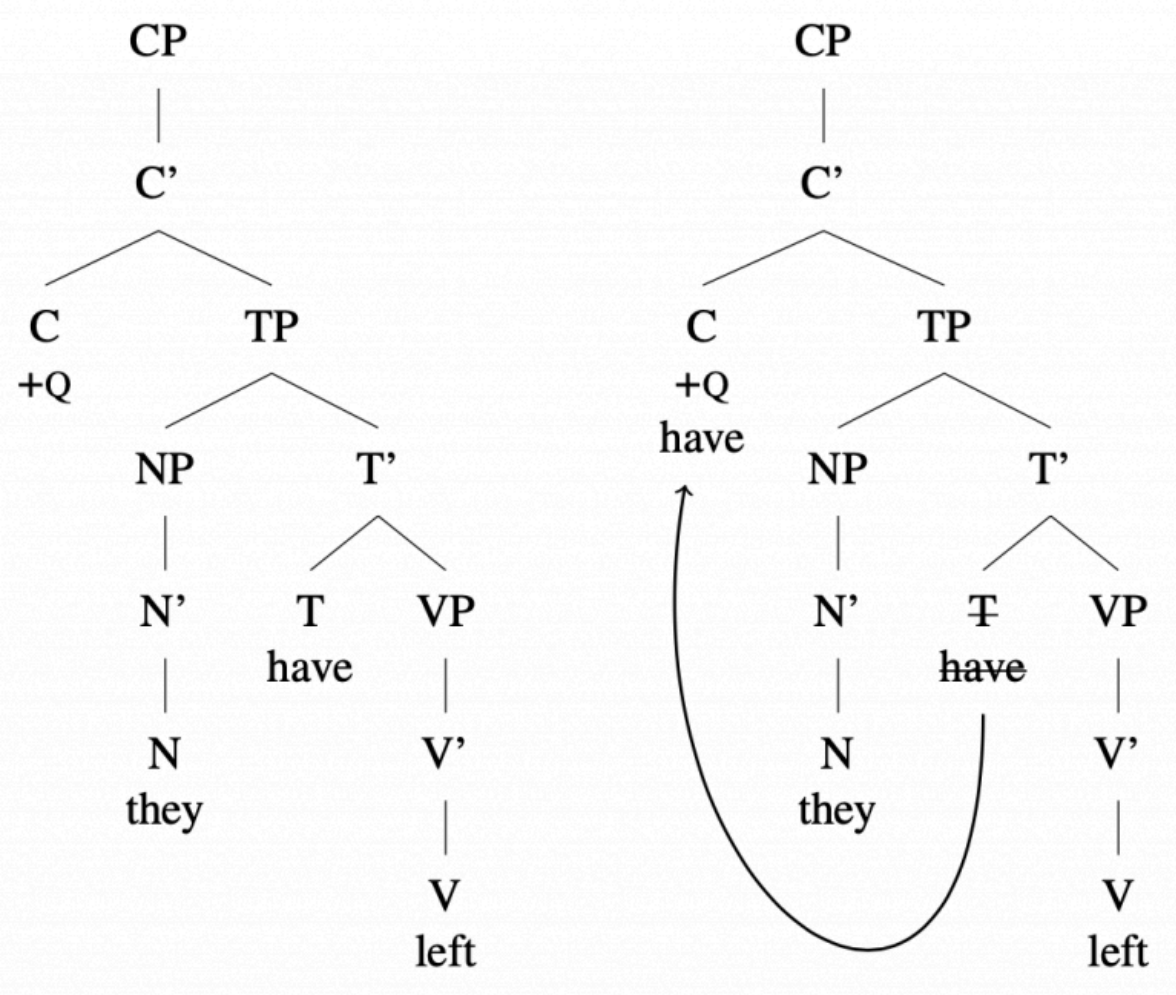
- I saw someone with a telescope
  - someone had a telescope and I saw them (PP is NP-adjunct)
  - I used a telescope to see someone (PP is VP-adjunct)

(**lexical ambiguity** includes homophones: eg *I bought a pen* ‘cage’ or ‘stylo’)

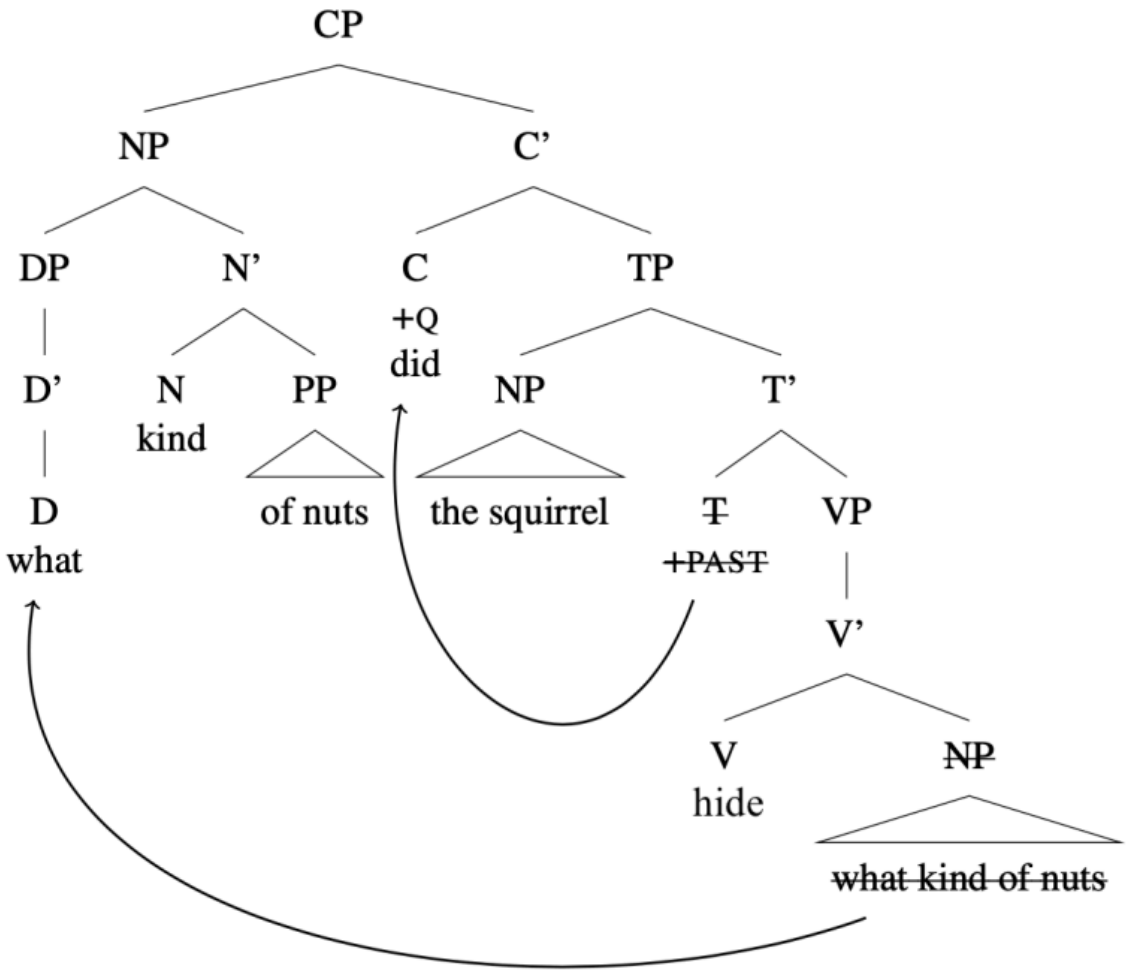

TP
NP
T'
N'
T
+PAST
VP
N
I
V'
V
saw
NP
N'
N'
PP
someone
with a telescope


TP
NP
T'
N'
T
+PAST
VP
N
I
V'
V'
PP
V
saw
NP
with a telescope
someone

head movement: T to C in questions



phrase movement: to $Spec_{CP}$ in wh-questions



movement in passive

