

# LING 201: Introduction to Linguistics

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# Agenda

- Mid-term exam
- Syntax
- New assignments

# Introduction

- What is syntax?
- Study of language, beyond the level of elementary phonological units, morphemes, words...
- but below the level of meaning and conceptual structure.
- Syntax is a branch of linguistics...
- What is syntax good for?

# Introduction

- What is the difference between the following sentences?
- What is wrong with (1b)?
  - (1) a. *The cat chases the mouse.*  
b. \**Cat mouse the the chases.*

# Introduction

- **Intuition:**
  - We seem to have some **intuition** about word order.
  - We could assign gradual well-formedness **scores** to sentences:
    - (2) a. *The cat chases the mouse.*
    - b. *\*Chases the cat the mouse.*
    - βc. *\*Cat mouse the the chases.*
- Why can we do that? How can we describe this intuition?

# Formal properties of language

- Natural language utterances are a combination of basic units of language.
- **Finite set of words, morphemes, sounds**
- Rules and principles constrain the possible combinations, but allow for endless (number of) combinations.
- **Infinite set of utterances, combinations of the basic units**

# Language and Mind

- Communication:
  - *Language production:*  
Meaning → Language → Speech
  - *Language processing:*  
Speech → Language → Meaning
- Breaking language down into domains and units:
  - to reduce its complexity

# Language and Mind

- Breaking language down into domains and units:
  - **Speech:** acoustic, phonetic
  - **Language:** morphological, syntactic
  - **Meaning:** semantic, pragmatic
- External sense: acoustics, movements...
- Internal sense: grammar, structure, combinatorics, basic units...



# Language and Mind

- Research issue:
  - Grammar and its properties
  - Grammar as a mental system: it is in the mind
- Modeling the mental state of “knowing a grammar/language”

# Syntactic Analysis

- Research methods:
  - Observation → Generalization
  - Theory formulation (Hypotheses)
  - Testing and Falsification
  - Revision of theory and hypotheses (positive falsificationism)
- Domain in syntax: Sentence
- Hypothesis: Sentences are made of syntactic constituents (the elementary units at the syntactic level).

# Syntactic Analysis

- How do we find out about constituents and their inter-relations?
  - Maybe single words are constituents?
  - Maybe types (rather than concrete words) are constituents?
  - Maybe groups of words are constituents?
- Are there tests, or just intuitions?

(3) a. *The cat chases the mouse.*

# Syntactic Analysis

- Testing structural properties:
  - Location and collocation:
    - Do some words always occur together?
    - Do some words always occur in a certain position?
  - Mutual exclusiveness
    - Are some words mutually exclusive in a certain position?  
([example?](#))
  - Dependencies
    - Does one word depend on the occurrence of another word? ([example?](#))

# Approaching Syntax

- Research methods: some tests for constituency
  - Replacement and Matching
  - Pronominalization
  - *Wh*-test (Question)
  - Elimination
  - Dislocation
  - Coordination
- These tests are **not proofs for constituency**, they are just **hints**.

# Replacement Test

- What can be replaced in a sentence is probably a constituent.

John bought a book.

John bought some chocolate.

Mary bought a book.

- Observational hypotheses e.g.:  
a book  
some chocolate

# Pronominalization Test

- What can be replaced by a pronoun in a sentence is probably a constituent.

John bought a book.

He bought a book.

John bought it.

- Observational hypotheses e.g.:

John

a book

# Wh-Test

- What can be questioned (i.e. replaced by a *wh*-pronoun) in a sentence is probably a constituent.

John bought a book.

What did John buy?

Who bought a book?

- Observational hypotheses e.g.:

John

a book



# Elimination Test

- What can be eliminated (or deleted) in a sentence is probably a constituent.

John bought a **new** book **yesterday**.

John bought a book **yesterday**.

John bought a **new** book.

- Observational hypotheses e.g.:

new

yesterday

# Dislocation Test

- What can be dislocated in a sentence is probably a constituent.

John put all the new books on the table.

John put on the table all the new books.

- Observational hypotheses e.g.:

all the new books

on the table

# Coordination Test

- What can be coordinated in a sentence is probably a constituent.

John and Mary bought a new house.

John slept in the car and Mary in the house.

- Observational hypotheses e.g.:

John slept in the car

Mary (slept) in the house

# Constituent-test Pitfalls

- Tests for constituency vs. tests for constituents of the same type?

John loves *fish*.

John might *fish*.

- Constituent-tests are **tests** about **syntactic structure**, they do **not** tell us anything about the **type of constituents!**

# Constituent-test Assumptions

- Tests for constituency with grammatical sentence pairs!  
John bought a new book.  
\*John bought in a new bookstore.
- The notion of grammaticality:
  - Native-speaker judgments vs. prescriptive rules: here only
    - Explanatory: theory of the language faculty based on [native-speaker judgments](#), [introspection](#), and [psycho-linguistic research](#)
    - Prescriptive and descriptive: [selective judgments](#), and [descriptive linguistic analysis](#)

# Grammaticality

- Explanatory approach:
  - **Answers** to: Why are some sentences grammatical and other not?  
  
Mary is likely to win.  
\*Mary is possible to win.  
  
You think John loves Mary.  
You think that John loves Mary.  
  
Who do you think loves Mary?  
\*Who do you think that loves Mary?
- not just **pure descriptions** of **good** and **bad** sentences (as in a descriptive approach).

# Sentence structure

- **Clause:**
  - Simple clause
  - Complex clause
    - Embedding
    - Subordination

# Sentence structure

- **Clause:**
  - Group of words (a syntactic constituent!)
  - Contains:
    - Subject (explicit or implicit)
    - Predicate



# Sentence structure

- **Simple clause:**
  1. *John bought a car.*
  2. *to read a book*
- **Essential parts:**
  - Predicate: logical, traditional notion
  - Subject (Noun in 1.; implicit in 2.)
- **Implicit parts:**
  - Subject in 2.

# Sentence structure

- **Predicate**
  - Consists of:
    - Verb + permitted/required/precluded other elements (e.g. objects, adverbs, predicates)
  - Provides information about the subject
  - Relation: Subject + Predicate = *Nexus*

# Sentence structure

- Predicate
- Predicate Nominal
  - A noun phrase functions as the main predicate of the clause, in combination with a copula, e.g.:  
*John is a lawyer.*

# Sentence structure

- Predicate
- Predicate Adjective
  - An adjective functions as the main predicate in the clause, together with a copula, e.g.:

*Syntax is interesting.*

# Sentence structure

- **Simple clause:**
  1. *John bought a car yesterday.*
  2. *John bought a car in London.*
  3. \* *John bought in London.*
  4. \* *Bought a car in London.*
  5. *John bought a car.*
  6. *to buy a car*

# Sentence structure

- **Simple clause:**
  - Omitting required parts leads to *ungrammaticality*.
  - Thus, parts that can be omitted are *optional*.
- **Optional parts are e.g.:**
  - Temporal adverb in 1.
  - Locational preposition phrase in 2.

# Sentence structure

- **Complex clause:**

*John said that Mary bought a car.*

[<sub>s</sub> John said [<sub>s</sub> that Mary bought a car ] ]

- **Contains:**

- Two predicates:

- **Matrix clause:** *John said* \_

- **Embedded clause:** *that Mary bought a car*

# Sentence structure

- Why is the structure better represented as:

*[<sub>S</sub> John said [<sub>S</sub> that Mary bought a car ] ]*

- and not as:

*[<sub>S</sub> John said ] [<sub>S</sub> that Mary bought a car ]*

?



# Sentence structure

- The verb “say” selects/requires a complement clause:

*[<sub>S</sub> John said [<sub>S</sub> that Mary bought a car ] ]*

- And thus, the structural representation for:

*John bought a book.*

is?

# Sentence structure

- The verb “*buy*” selects/requires a complement noun phrase as the direct object:

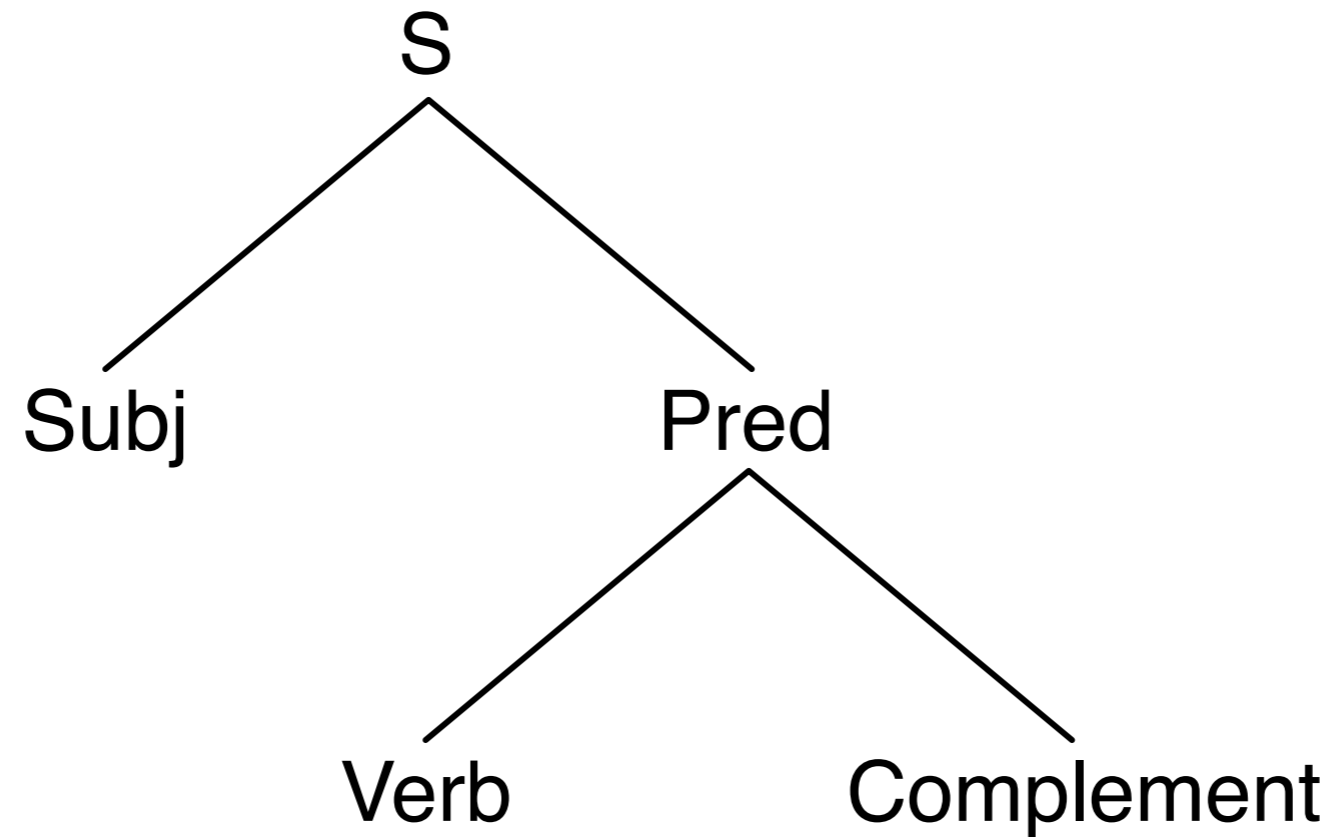
[S *John* [Pred *bought a book* ] ]

- and not:

[S *John* [Pred *bought* ] ] [ *a book* ]

[S *John* [Pred *bought* ] [ *a book* ] ]

# Sentence structure



# Sentence structure

- Predicates: *buy*

*John bought something.*

\* *John bought.*

\* *John bought yesterday.*

\* *John bought in London.*

\* *John bought that Mary has a car.*

# Sentence structure

- Predicates: *buy*

*John bought something.*

*John bought something yesterday.*

*John bought something yesterday in  
London.*

# Sentence structure

- Predicates: *buy*
  - Requires a nominal complement as the direct object.
  - Allows for optional adverbial, or prepositional modifiers.
  - *buy* is a transitive verb.

# Sentence structure

- Predicates: *dance*

*John dances.*

? *John dances a table.*

*John dances a tango.*

*John dances in London/tomorrow.*

\* *John dances that Mary bought a car.*

# Sentence structure

- **Predicates:** *dance*
  - Does **not require** any complement as the direct object.
  - Allows for **optional** nominal, adverbial, or prepositional modifiers.
  - *dance* is an **intransitive** verb.



# Sentence structure

- **Predicates: *listen***

*John listens to the radio.*

\* *John listens.*

\* *John listens the radio.*

\* *John listens in London/tomorrow.*

\* *John listens that Mary bought a car.*

# Sentence structure

- **Predicates:** *listen*

*John listens to the radio.*

*John listens to the radio tomorrow.*

*John listens to the radio in London.*

\* *John listens to the radio that Mary bought a car.*

# Sentence structure

- **Predicates:** *listen*
  - **Requires** a prepositional complement with the preposition “*to*”.
  - Allows for **optional** adverbial, or prepositional modifiers.
  - *dance* is a **transitive** verb (here transitivity as requiring a complement, not as requiring a nominal complement!).

# Sentence structure

- Predicates: *give*

*John gives Mary a book.*

*John gives a book to Mary.*

? *John gives a book.*

? *John gives Mary.*

? *John gives to Mary.*

# Sentence structure

- Predicates: *give*

*John gives Mary a book.*

? *John gives a book from Mary.*

*John gives a book to Mary in Paris.*

*John gives Mary a book tomorrow.*

# Sentence structure

- Predicates: *give*
- Requires either
  - a nominal accusative (direct object) and a prepositional complement with the preposition “*to*”, or
  - a nominal accusative (direct object) and a nominal dative (indirect object)
- as complements.

# Sentence structure

- Predicates: *give*
  - The indirect object cannot be realized as a preposition phrase with some other preposition, but “*to*”.
  - *give* is a **ditransitive** verb.

# Sentence structure

- Predicate structure
  - The choice of **syntactic category** and **semantic type** of **obligatory complements** is determined by the lexical choice of the predicate **head**, i.e. the verb.
  - The choice of **optional modifiers** is also determined by the lexical **head** of the predicate.

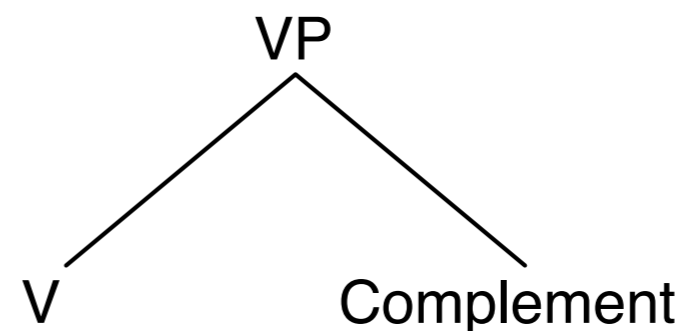
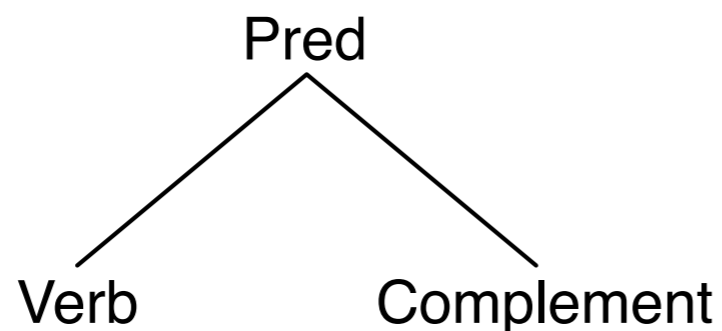


# Sentence structure

- Predicate structure
  - Described in Verb Frames:
    - *give*: NP<sub>io</sub> NP<sub>do</sub>
    - *give*: NP<sub>do</sub> PP<sub>to</sub>
    - with additional description of semantic types!

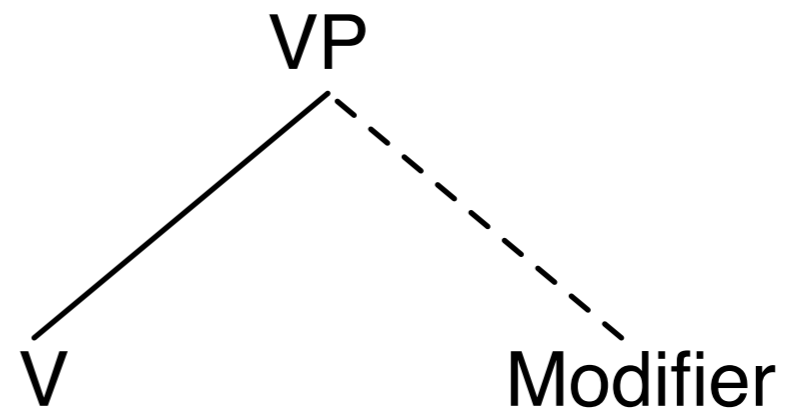
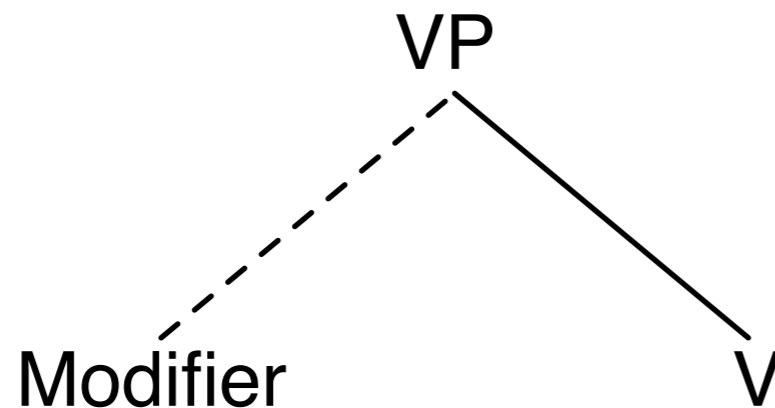
# Sentence structure

- Predicate structure
  - It contains a verbal *head*.
  - It contains *obligatory complements* and *optional modifiers*.



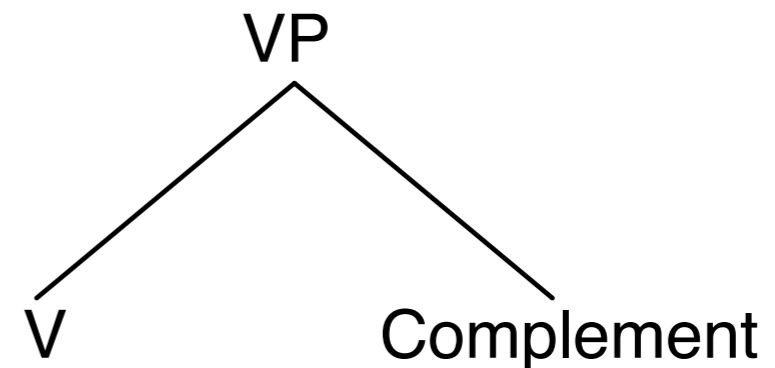
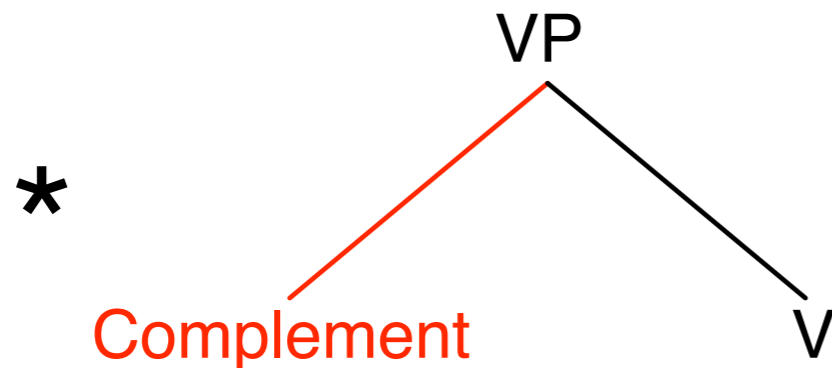
# Sentence structure

- Predicate structure for intransitive verbs in English:
  - It contains a verbal *head*.
  - It contains *optional modifiers*.



# Sentence structure

- Predicate structure for transitive verbs in English:
  - It contains a verbal *head*.
  - It contains the *obligatory complement*.



# Sentence structure

- Possible complements of verbs e.g.:
  - Noun phrases: NP
  - Preposition phrases: PP
  - Sentences: S
- What about adverbs (Adv), adjectives (Adj), or verbs (V)?

# Sentence structure

- Possible complements of verbs:
  - have to be phrases
  - these phrases have a head, and can have complements and modifiers themselves
  - What do standard phrases look like? (e.g. noun phrases, preposition phrases)

# Sentence structure

- Examples of noun phrases in English:

*John*

*a house*

*the big red house*

*John's big red house*

*the big red house of John's father*

*the big red house that John bought yesterday*

# Sentence structure

- Examples of noun phrases in English:
  - \* *the John*
  - \* *house a*
  - \* *the house big red*
  - \* *a big red house John's*
  - \* *of John big red house*
  - \* *that John bought yesterday the big red house*



# Sentence structure

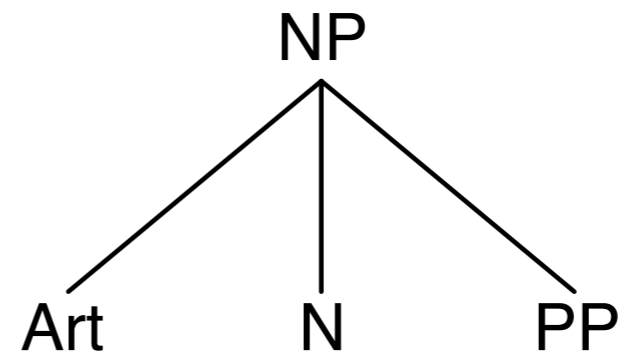
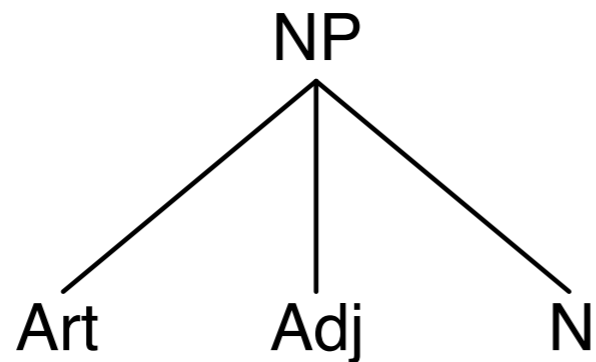
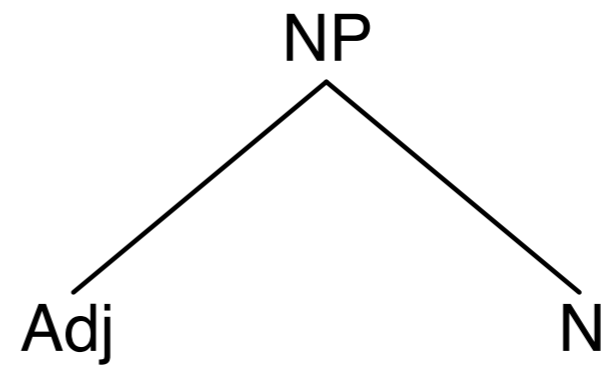
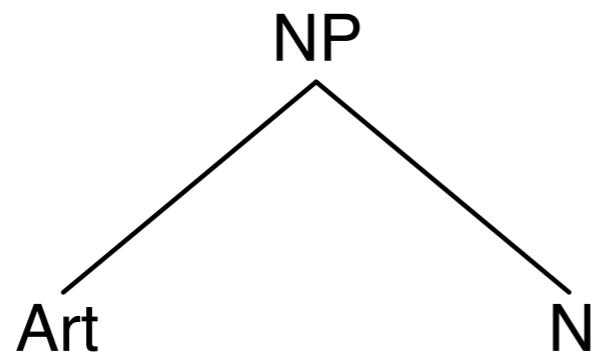
- Observations with noun phrases in English:
  - proper nouns do not come with articles
  - adjectives precede nouns
  - articles precede common nouns and optional adjectives
  - s-genitive (possessives) precede nouns
  - prepositional and sentential complements follow nouns

# Sentence structure

- Generalizations about noun phrases in English:
  - there is only one noun head per noun phrase
  - articles are left-peripheral, complements right peripheral...
- but, wait... do nouns have complements like verbs do??? What would be arguments *pro* or *contra* this hypothesis?

# Sentence structure

- Structures of noun phrases in English:



# Sentence structure

- Observations about preposition phrases in English:

*on the roof*

\* *the roof on*

\* *in on the house*

\* *in big*

\* *in that Mary bought a car*

# Sentence structure

- Generalizations about preposition phrases in English:
  - there is only one preposition head per preposition phrase
  - complements appear to the right...
- but, wait... do prepositions have complements like verbs do??? What would be arguments *pro* or *contra* this hypothesis?

# Sentence structure

- Looking at all the phrases so far, the generalizations could be:
  - all phrases have a head
  - they have complements, if these are obligatory/selected
  - they may have optional modifiers
  - complements and modifiers appear in different positions

# Sentence structure

- Assumptions and observations so far:
  - there are heads and phrases
  - phrases have a head and inherit its properties
  - heads have impact on complements
  - modifiers modify phrases

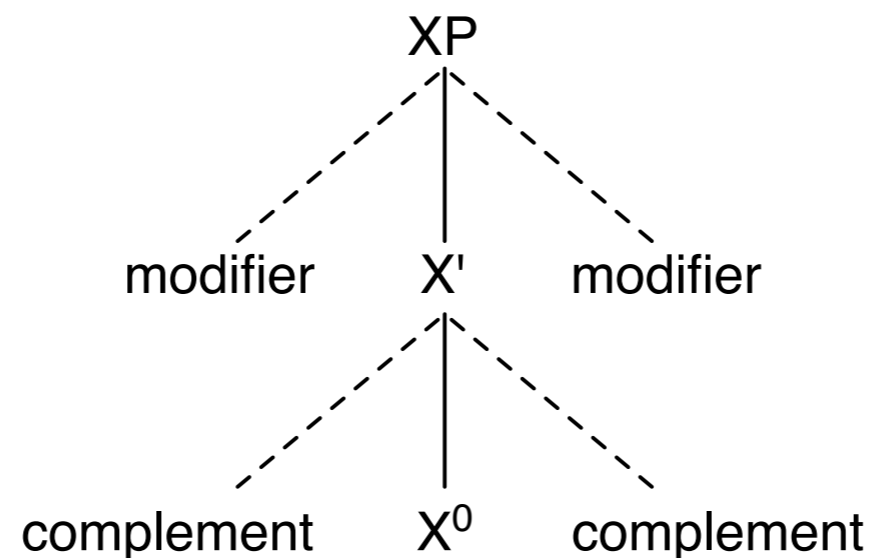
# Sentence structure

- Modifiers are not as closely related to the head, as complements are.
- In terms of structural relations, this could be expressed as: *structurally further away*, represented via the assumption of an intermediate structural level
- i.e. not just **head** and **phrase level**, but intermediate phrasal levels



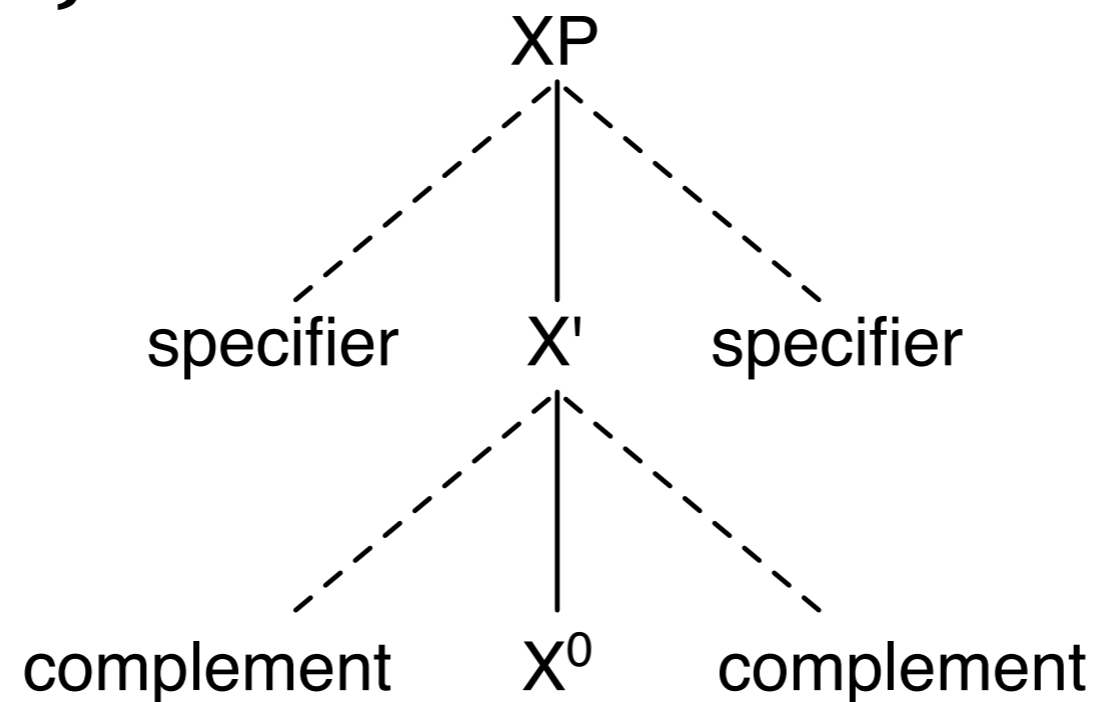
# Sentence structure

- Assuming that:
  - for all categories: V, N, P, Adj, Adv
  - the same generalizations hold, then the general structural properties seem to be:



# Sentence structure

- More specific:
  - with  $X^0$  = head, for all  $X$  from  $\{N, V, P, Adj, Adv, \dots\}$ :



# Homework

- Homework assignment VI
  - Reading: chapter 5 complete, Akmajian et. al!
  - Exercise 1, End of chapter 5