

Syntax / Phrase Structure

Specific Properties of Korean Nouns (1)

- Common Noun / Proper Noun
 - Common noun: 사람, 나라, 도시, 강, ...
 - Proper noun: 신라, 경주, 한강, 서울, ...
 - * 한 신라가 멸망하였다
 - 한 나라가 멸망하였다
- Dependent Noun (의존명사)
 - Dependent Noun must be always modified
 - 내가 좋아하는 **것**은 축구이다
 - * **것**은 축구이다
 - 선생님께 배운 바가 많습니다
 - *선생님께 **바**가 많습니다
 - Functions sometimes as a complementizer
 - 나는 그녀가 철수를 사랑하는 **것**을 알았다
 - I knew **that** she loves Cheolswu

Specific Properties of Korean Nouns (2)

- Many Sino-Korean words
 - 入學(입학), 卒業(졸업), 希望(희망), 合流(합류), 困難(곤란), 誠實(성실), 無限(무한), ...
 - Can function as a verb or an adjective combined with ‘hata (하다)’
 - 입학하다
 - 졸업하다
 - 희망하다
 - 합류하다
 - 곤란하다
 - 성실하다
 - 무한하다

Pronouns/Pronomen

- Words that act like variables in that they refer to a person or thing that is somehow salient in the discourse context
 - After *Mary* arrived in the village, *she* looked for a bed-and-breakfast
 - Als ich *Peter ein Buch* über Antennenbau gab, stellte *er es* sofort in den Bücherschrank
- Antecedent – Anaphor
 - When $\underbrace{Jill_i}_{\text{Co-indexing}}$ arrived at the party, she_i was drunk

Determiners / Adjectives

■ Determiners describe the particular reference of a noun

◆ Articles

- Indefinite: a, an / ein, eine
- Definite: the / der, die, das

◆ Demonstratives

- this, that / dies, jen-

■ Adjectives are used to describe properties of nouns

◆ Adnominal

- The long journey / die lange Reise

◆ Predicative

- The rose is red / Die Rose ist rot

Verbs

- Used to describe actions
 - Undergoes inflection
 - Go, goes, went, will go, have gone
 - Gehen, geht, ging, gegangen, wird gehen, ...
 - Features commonly marked on verbs
 - Subject number
 - Subject person
 - Tense
 - Aspect
 - Mood/modality
 - Participle
 - voice
-

Specific Properties of Korean Verbs

- Honorific agreement
 - (?) 어머니께서 잔다
 - 어머니께서 주무신다
 - (?) 그 녀석이 오신다
 - 그 녀석이 온다
- Korean Auxiliary Verb (?)
 - Loses its inherent meaning and adds a certain meaning to the verb with which it is combined
 - Ex) 날씨가 점점 추워 온다 ➔ The weather is becoming colder
나는 그 문제를 드디어 이해해 버렸다 ➔ I finally came to understand the problem

Adverbs/Prepositions/Particles

- Adverb
 - modify a verb (sometimes adjectives and adverbs)
 - space, time, manner, degree
 - She often travels to Las Vegas / Sie reist oft nach Las Vegas
 - A very unlikely event / ein sehr unwahrscheinliches Ereignis
- Preposition/Particles
 - spatial/temporal meaning
 - Sleep in the room, leave in the morning / in dem Zimmer schlafen, verlassen am Morgen
 - Particle: subclass of prepositions that can enter into strong bonds with verbs in the formation of the so-called “phrasal verbs”
 - The plane took off at 8 am.

Conjunctions & Complementizer

- Conjunctions
 - Conjoin or coordinate two words or phrases or sentences
 - Husband and wife
 - She bought or leased the car
 - The green triangle and the blue square
 - She bought the car, but she also considered leasing it
- Complementizer
 - Link two sentences or clauses
 - She said that he would be late / dass ...
 - She complained because she was late / weil ...
 - I won't wait if he is late / wenn ...

Korean specific word categories (1)

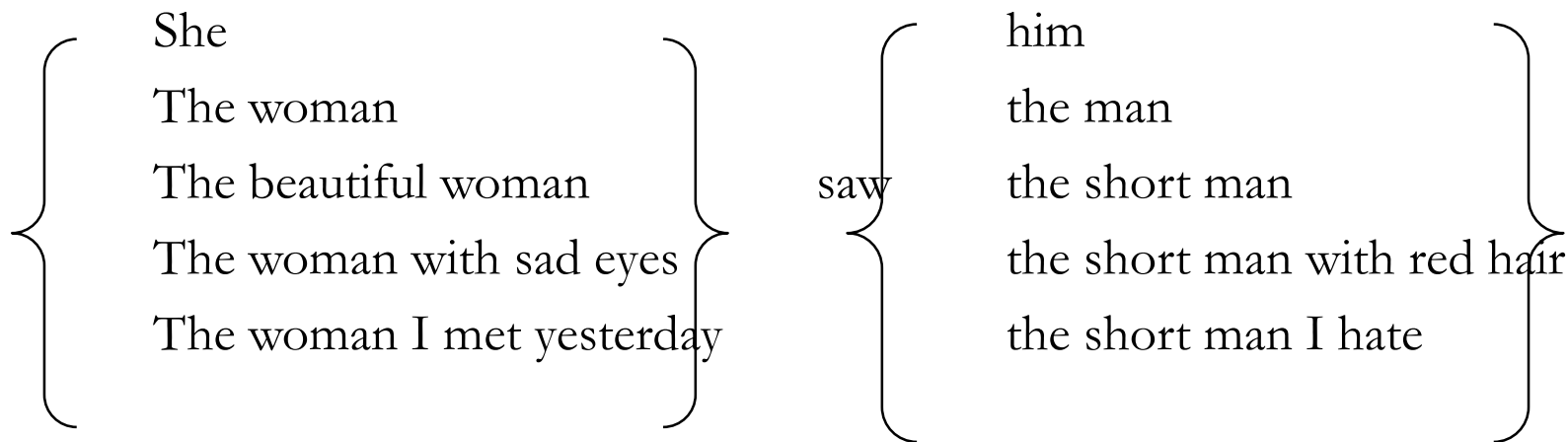
- Postposition
 - Case Marker:
 - assigns a case to the noun to which it is attached
 - Ex: 영희가, 철수를, 선생님에게, 칼로써
 - Subject, object, indirect object, adverbial
 - Conjunctive postposition
 - Conjoins two words or phrases
 - Ex: 철수와 영희, 내가 먹은 사과랑 그녀가 먹은 포도
 - Attention!: 나는 동생과 같이 공부했다 (adverbial case marker)

Korean specific word categories (2)

- Topic Marker (contrast, emphasis, ...)
 - Assigns discourse function to the noun to which it is attached
 - Ex: 나는 축구를 좋아한다 (그러나 그녀는 싫어한다)
내가 축구는 좋아한다 (그러나 야구는 싫어한다)
철수도 축구를 좋아한다
철수가 축구도 좋아한다
철수가 축구만 좋아한다

Phrases (1)

- Words are organized into *phrases*
 - Grouping of words that are clumped as a unit
- Certain grouping of words behave as *constituents*



Phrases (2)

- Noun phrase (NP)
 - Head: noun
 - **Head**: the central constituent that determines the syntactic character of the phrase
 - Usually **arguments** of verbs, the participants in the action, activity or state described by the verb
- Prepositional phrase (PP)
 - Head: Preposition
 - Contain a noun phrase **complement**

Phrases (3)

- Verb Phrase (VP)
 - Head: verb
 - In most syntactic theories the verb phrase does not contain the subject noun phrase
- ◆ Adjective Phrase (AP)
 - Head: adjective
 - Less common in English
 - ◆ She is **very sure of herself**
 - ◆ He seemed a man who was **quite certain to succeed**
 - ◆ **Sie ist ihrer Mutter sehr ähnlich**

Korean Phrases

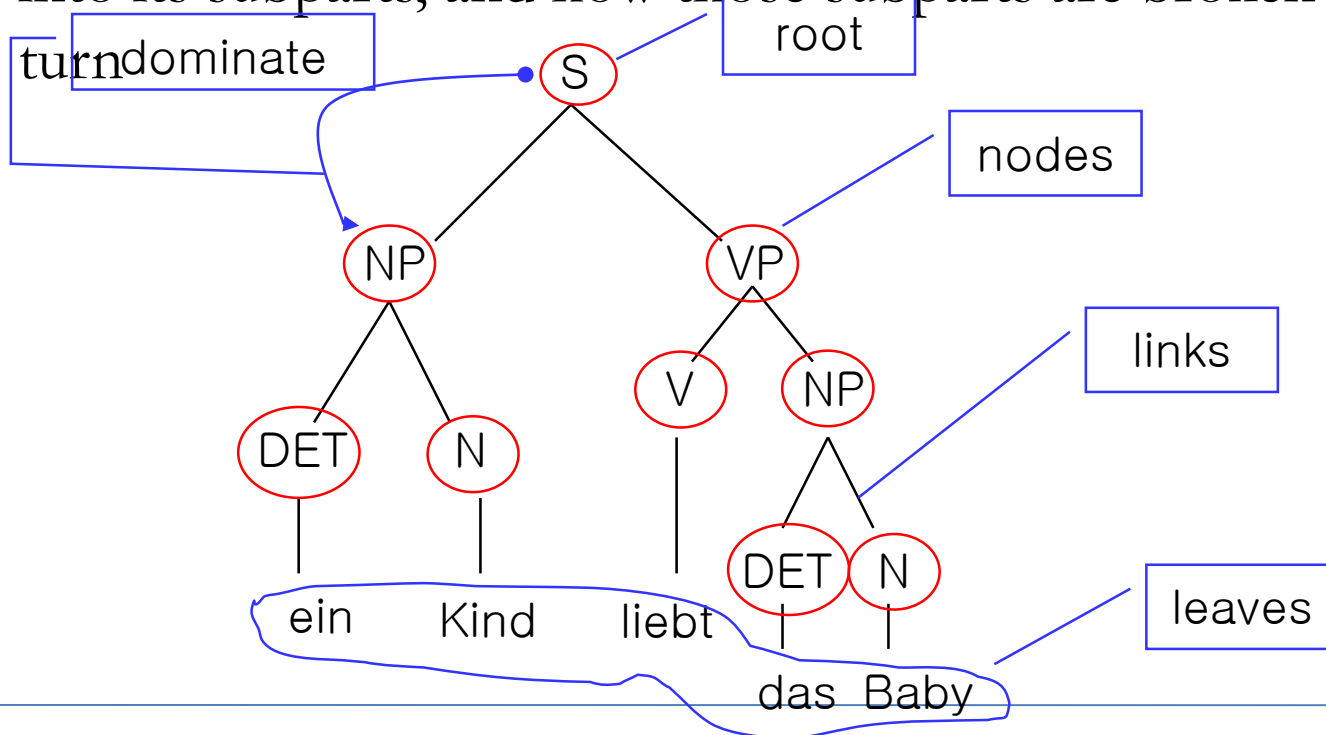
- NP
 - 그 사과
 - 예쁜 꽃
 - 그것이 의미하는 바
- VP
 - 책을 읽다
 - 도시를 개발하다
- PostP
 - 사람이
 - 도시를
 - 집에서

PSG - Phrase Structure Grammar (1)

- Grammar
 - Formal specification of the structures allowable in the language
 - Rewrite rules
 - Category \rightarrow Category*
 - The symbol on the left side can be rewritten as the sequence of symbols on the right side
 - English Phrase Structure Grammar
 - The structures allowable in English is formally specified in the form of the rewrite rules
 - Ex)
- | | | |
|--------------------------------|-----------------------------------|----------------------------------|
| $S \rightarrow NP VP$ | $NP \rightarrow DET NOUN$ | $VP \rightarrow V NP$ |
| $DET \rightarrow \{ein, das\}$ | $NOUN \rightarrow \{Kind, Baby\}$ | $V \rightarrow \{liebt, sieht\}$ |

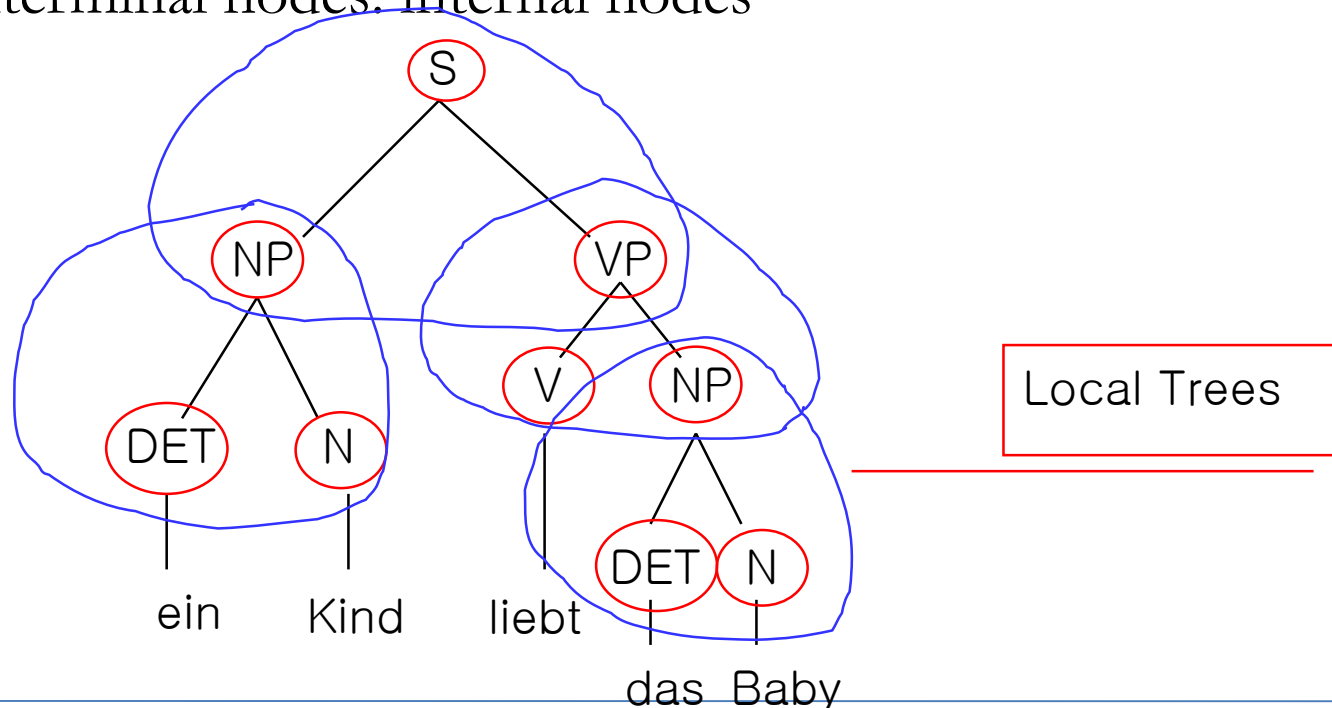
PSG – Basic Notions (2)

- Tree
 - Most common way of representing how a sentence is broken into its subparts, and how those subparts are broken up in



PSG – Basic Notions (3)

- Terminal/ Nonterminal nodes
 - Terminal nodes: leaf nodes
 - Nonterminal nodes: internal nodes

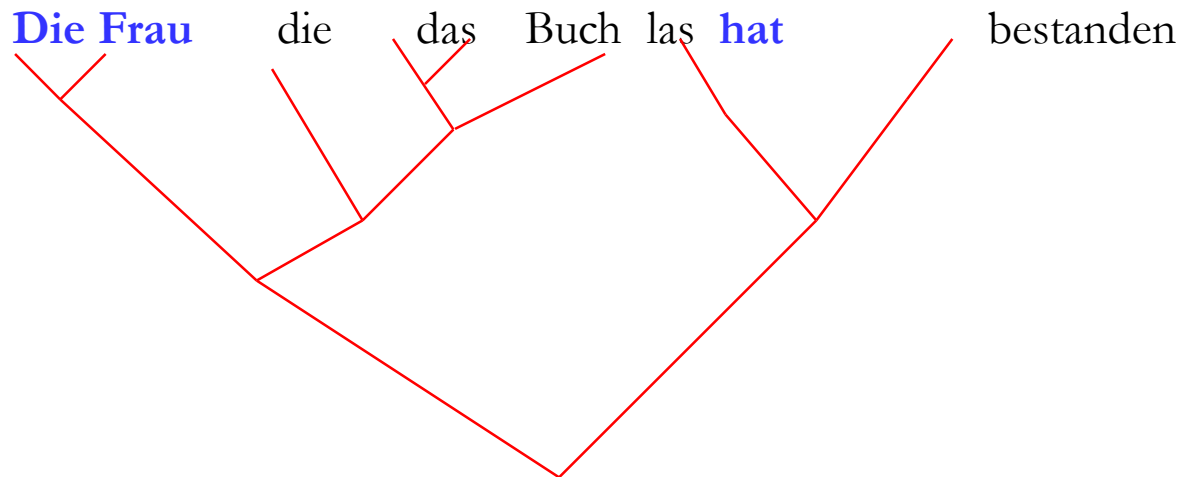


PSG – Basic Notions (4)

- Constituent
 - Each node in a tree
 - Phrase Structure Tree is sometimes called constituency structure
- Bracketing
 - Another way to show constituency
 - $[_S[_{NP}[_{AT} \text{Ein}] [_{NNS} \text{Kind}]] [_{VP}[_{VBD} \text{liebt}] [_{NP}[_{AT} \text{das}] [_{NN} \text{Baby}]]]]$
- Recursivity
 - Natural Language
 - Der Student las ein Buch über Deutschland mit einem Freund in der Bibliothek in Seoul ...
 - $NP \rightarrow NP PP$; $PP \rightarrow P NP$

PSG – Basic Notions (5)

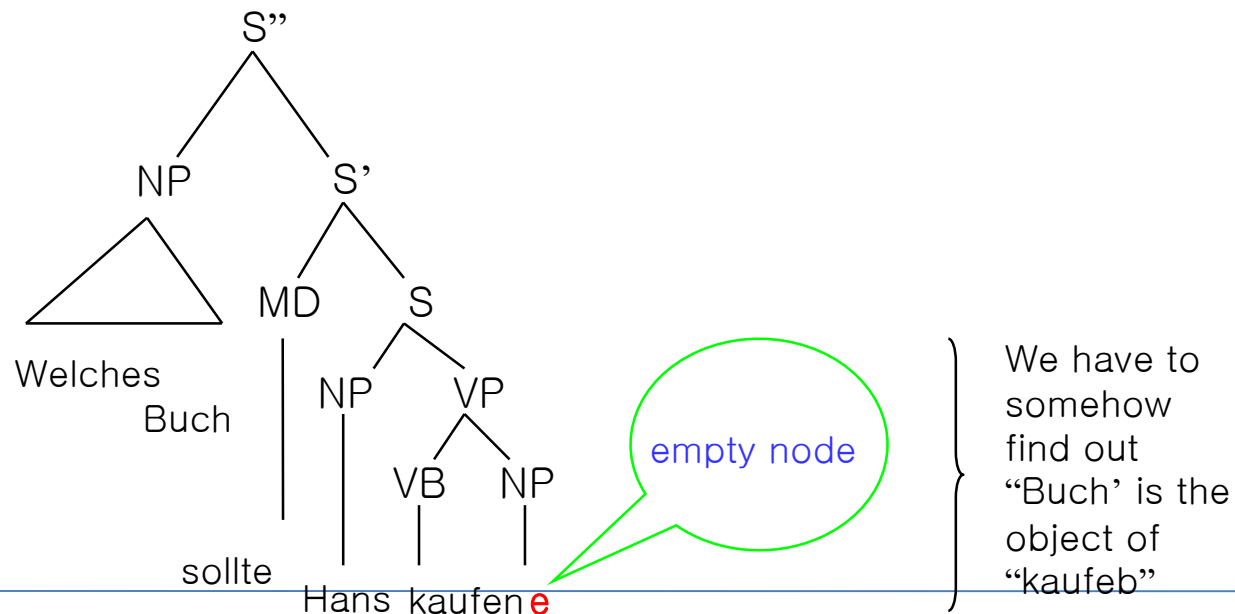
- Non-local dependency (1)
 - Two words can be syntactically dependent even though they occur far apart in a sentence



PSG – Basic Notions (6)

- Non-local dependency (2)
 - Wh-extraction

Welches Buch sollte Hans kaufen?



Simple Korean PSG

- 예문: 나는 영화를 즐겨 본다 (*I like to see a movie*)
- Rewrite Rules

$S \rightarrow \text{PostPP VP}$

$\text{PostPP} \rightarrow \text{NP PostP}$

$\text{NP} \rightarrow \text{PRON}$

$\text{NP} \rightarrow \text{N}$

$\text{VP} \rightarrow \text{PostPP ADV V}$

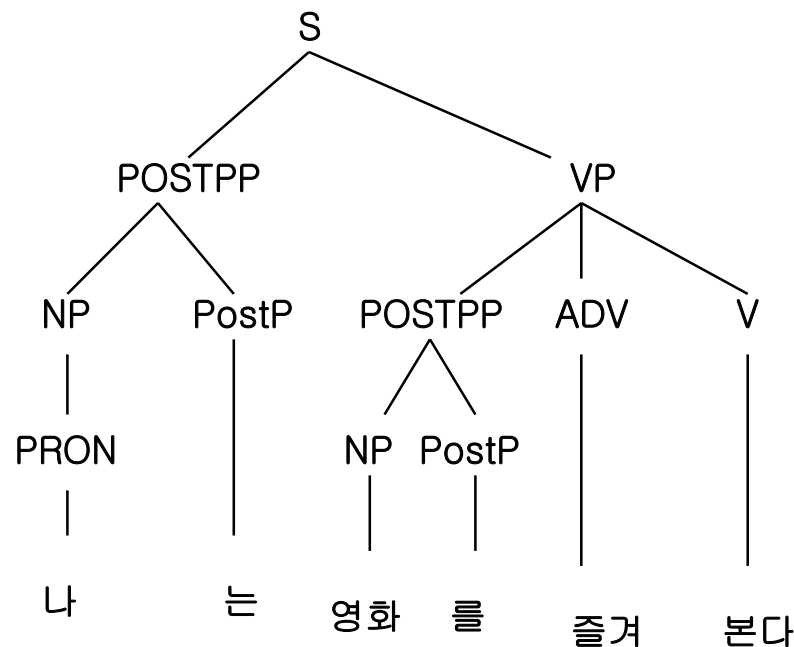
$\text{PRON} \rightarrow \{\text{나}\}$

$\text{POSTP} \rightarrow \{\text{는, 를}\}$

$\text{N} \rightarrow \{\text{영화}\}$

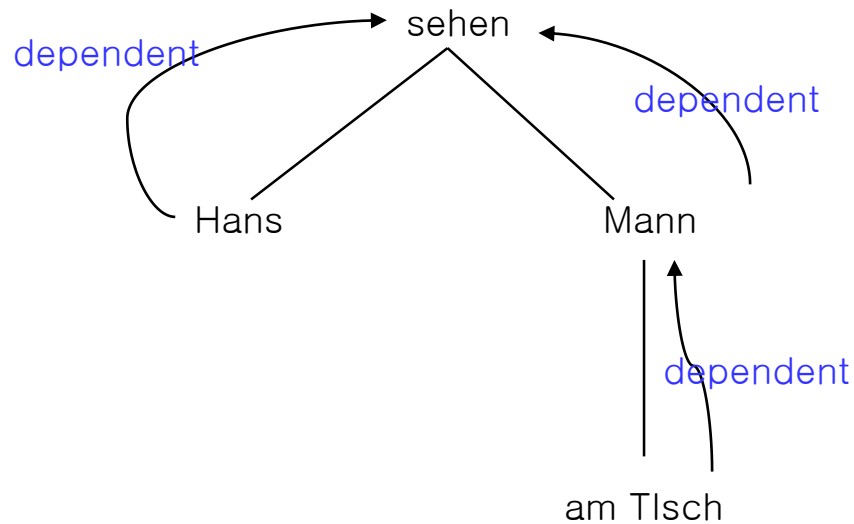
$\text{ADV} \rightarrow \{\text{즐거}\}$

$\text{V} \rightarrow \{\text{본다}\}$



Dependency (1)

- Hans sah einen Mann am Tisch



Dependency tree

Dependency (2)

- Arguments
 - Han sah einen Mann am Tisch
 - ‘Hans’ and ‘einen Mann’ are arguments of ‘sehen’ event
- Two levels of describing arguments
 - Semantic Roles (thematic roles)
 - Grammatical Relations
- Semantic Roles
 - Assign certain “roles” to the arguments
 - Agent, Patient (Theme), Recipient, Goal, Instrument, Location (Temporal/Spatial)
 - Sue: agent, the man: patient

Dependency (3)

- Grammatical Relations
 - Subject, Object, Indirect Object
 - Sue: Subject, the man: Object
 - Hans[sub] gab Maria[i.o] ein Buch[d.o]
- Usually a subject has an “agent” role, however not always
 - Maria bekam ein Geschenk von dem Mann
- Grammatical Relations in English
 - Determined by the word order
 - Subject comes before the main verb
 - Object follows the main verb

Dependency (4)

- Verbs differ in the number of entities that they relate
 - Transitive
 - She brought a bottle of whiskey - Maria kaufte eine Flasche Wein
 - * She brought – *Maria kaufte
 - Intransitive
 - She walked (along the river) – Hans lief (am Fluss)
- Arguments / Adjuncts
 - Arguments
 - Arguments express entities that are centrally involved in the activity of the verb
 - Most arguments are expressed as NPs, but they may be expressed as PPs, VPs, or as clauses
 - We deprived him *of food* – Wir warten *auf ihn*
 - John knows *that he is losing* – Johann weiß, *dass er das Spiel verloren hat*

Dependency (5)

- Adjuncts
 - Phrases that have a less tight link to the verb
 - Adjuncts are optional whereas many complements are obligatory
 - Typically phrases that tell us the time, place or manner of the action or state
 - She saw a Woody Allen movie *yesterday*
 - She saw a Woody Allen movie *in Paris*
 - She saw the Woody Allen movie *with great interest*
 - She saw a Woody Allen movie *with a couple of friends*
- The distinction between complements and adjuncts is not clear-cut
 - She put the book *on the table*
 - He lives *in Seoul*

Subcategorization (1)

- Classification of verbs according to the types of complements they permit
 - We say, “a verb **subcategorizes for** a subject and an object”
 - Subcategorized Arguments
 - **Subject:** *The children* eat candy
 - **Object:** The children eat *candy*
 - **PP:** She put the book *on the table*
 - **Predicative Adjective:** We made the man *angry*
 - **Bare Infinitive:** She helped me *walk*
 - **To-Infinitive:** She likes *to walk*
 - **Participial Phrase:** She stopped *that singing* that tune eventually
 - **That-Clause:** She thinks *that it will rain tomorrow*
 - **Question-form clause:** She is wondering *why it is raining in August* } S-bar

Subcategorization (2)

- Subcategorization Frame
 - Particular set of arguments that a verb can appear with
- Various Subcategorization Frames
 - Intransitive Verb
 - NP [subject] : *The woman walked*
 - Transitive Verb
 - NP [subject] NP [object] : *John loves Mary*
 - Ditransitive Verb
 - NP [subject] NP [direct object] NP [indirect object] : *Mary gave Peter flowers*
 - Intransitive with PP
 - NP [subject] PP : *I rent in Taejeon*

Subcategorization (3)

- Transitive with PP
 - NP [subject] NP [object] PP : *She put the book on the table*
- Sentential Complement
 - NP [subject] clause : *I know that she likes you*
- Transitive with sentential complement
 - NP [subject] NP [object] clause : *She told me that Gary is coming on Tuesday*

Subcategorization (4)

- Subcategorization frame can be used to impose **semantic restrictions** on arguments
 - Eat : NP [subj, +animal], [obj, +edible]
 - The man eats vegetables every day
 - (?) The dream eats the desk every day
 - Read: NP [subj, human], [obj, book]
 - John[human] is reading the bible[book]
 - John[human] is reading the juice[water]

Subcategorization of Korean verbs (1)

- Intransitive
 - 자다 : NP[가]
아기가 잔다
- Transitive
 - 마시다 : NP[가], NP [를]
나는 커피를 마셨다
- Ditransitive
 - 주다: NP[가], NP[를], NP[에게]
그녀는 나에게 넥타이를 주었다
- Intransitive with PostPP
 - 살다: NP[가], NP [에서]
민종이는 서울에서 산다

Subcategorization of Korean verbs (2)

- Transitive with PostPP
 - 배치하다: NP[가], NP[를], NP[에]
정부가 군병력을 이라크에 배치하였다
- Sentential Complement
 - 알다: NP[가], S[를]
나는 ICU가 좋은 대학이라는 것을 안다
- Transitive with sentential complement
 - 말하다: NP[가], NP[를], S[라고]
선생님은 우리학교를 세계최고수준이라고 말했다
- Question
 - [목을] 축이다: ?

X-bar Theory (1)

- PS rules presented so far does not predict any systematicity of natural language

NP → DET ADJ N

VP → V NP

PP → P NP

...

XP → SPEC X'

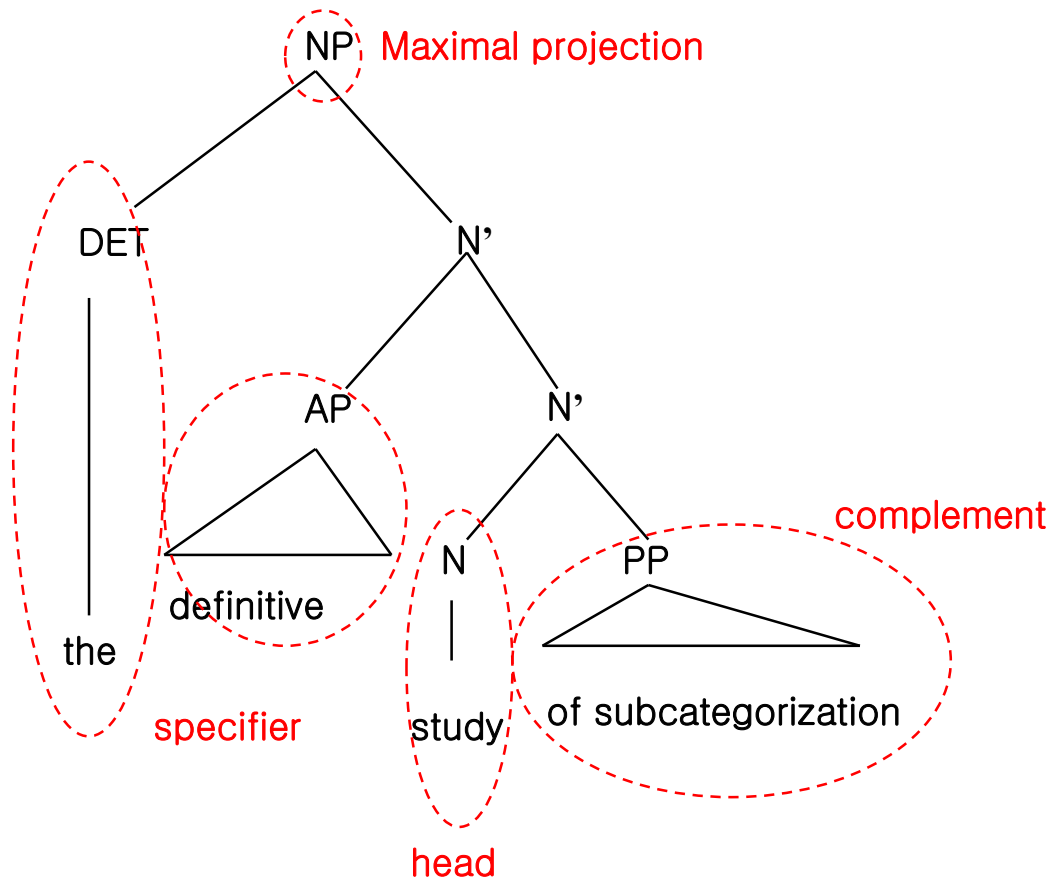
X' → ADJUNCT X'

X' → X COMPLEMENT

} Generalization

X-bar Theory (2)

NP structure based on X-bar theory



Phrase Structure Ambiguity

- PP-Attachment Ambiguity

