Syntax

Story of Human Language
Hye-Won
Choi

Basic Ideas of Syntax

▶ Syntax: how sentences and other phrases can be constructed out of smaller phrases and words

▶ Grammatical judgment: a reflection of speakers' mental grammar

- grammatical vs ungrammatical (*)
- Syntactically well-formed vs syntactically ill-formed

The Relationship between Syntax and Semantics

▶ Different syntactic combinations produce different meanings.

(1) a. Sally likes Bob.

b. *Likes Bob Sally.

(2) a. Sally likes Bob.

b. Bob likes Sally.

▶ Principle of Compositionality

- The meaning of a sentence depends on the meanings of the expressions it contains and on the way they are syntactically combined

- The principle of compositionality underlies the design feature of productivity: all languages have a finite lexicon, yet they all allow for the construction of an infinite number of meaningful sentences

- Syntax and semantics are intimately related

► Syntax and semantics are independent from each other

- It is possible to have a grammatical syntactically well fromed sentence with a bizarre meaning,

(3) Colorless green ideas sleep furiously.

(4) *Green sleep colorless furiously ideas.

- It is possible to have a non-sentence whose meaning we can understand

(5) *Me bought dog!

(6) I bought a dog.

- The syntactic properties of expressions cannot be predicted or explained on the basis of an expressions' meaning.

(7) a. Sally ate an apple.

b. Sally devoured an apple.

(8) a. Sally ate.

b. *Sally devoured.

(9) a. This dog is mine.   *This is mine dog.

b. *This dog is my.   This is my dog.

▶ While different languages have expressions that have the same meanings, these expressions can have vastly different syntactic properties in different languages.

▶ English vs Serbo-Crotian

(10) a. Ana has a dog.

b. Ana ima jednog psa.

Ana has a dog.

'Ana has a dog'

(11) a. *Ana has dog.

b. Ana ima psa.

Ana has dog.

'Ana has a dog'

▶ While syntactic combination has consequences for the meanings that sentences express, meanings do not determine the syntactic properties of expressions

▶ Syntactic well-formedness is largely independent of meaning

Syntactic Properties

Word Order

▶ Word order is the most obvious aspect of syntactic well-formedness.

▶ SVO [English] (35% of the world's language)

(1) a. Sally walked.

b. *Walked Sally.

(2) a. Sally ate an apple.

b. *Sally an apple ate.

c. *Ate Sally an apple.

d. *Ate an apple Sally.

▶ SOV [Korean, Turkish] (44% of languages)

▶ VSO [Arabic, Irish] (19% of languages)

▶ VOS, OVS, OSV (rare)

- VOS [Malagasy, anAustronesian]

(3) Manasa   lamba   amin'ny   savony   ny   lehilahy.

    washes   clothes   with the   soap   the   man

    'The man washes clothes with the soap'

- Many languages exhibit different word order patterns in different contexts

- German: SVO (main); SOV (subordinate)

(4) a. Otto   liest   das   Buch.

      Otto   reads   the   book

    'Otto is reading the book'

  b. Ich   weiß   <u>daß Otto dad Buch   liest</u>.

    I   know   that   Otto   the   book   reads

    'I know that Otto is reading the book'

- English: VSO (yes-no question); OSV (topicalization)

(5) a. Is Sally a student?

  b. Sally: I know you don't like apples, Polly, so I made you a pecan pie instead of apple pie.

    Polly: Oh, <u>apples, I like</u>. It's pears that I can't stand.

- Some languages have flexible word order; it is not clear if they have a "typical" word order pattern

- Slavic languages like Russian and Serbo-Croatian, as well as in Dyirbal, an Australian language, all 6 possible orders of verbs, subjects, and objects result in grammatical sentences.

▶ Word order within phrases are important too..

▶ English: Det + N

(6) a. Sally still didn't receive <u>that letter</u>.

  b. *Sally still didn't receive <u>letter that</u>.

▶ Malay, an Austonesian Language: Det + N

(7) a. surat itu

  letter that

  'that letter'

  b. *itu surat

▶ English: P + NP

(8) a. Sally finally met <u>with that person</u>.

  b. * Sally finally met <u>that person with</u>.

▶ Japanese: NP + P

(9) a. Sono hito   to

  that   person   with

  'with that person'

  b. * to sono hito

Co-Occurrence: Arguments

► The expression you choose may allow or even require that certain other expressions co-occur with it in a sentence.

► Arguments: co-occurrence required

► Y is an argument of X if the occurrence of some expression X in a sentence necessitates the occurrence of some expression Y

  • devour (subject, object)

► Complements: non-subject arguments

(10) a. Sally devoured an apple.

   b. *Sally devoured.

(11) *Devoured an apple.

▶ Serbo-Croatian: voli (subject, object)

(12) a. Marija   voli   muziku.

   Marija   likes   music

   'Marija likes music'

   b. Marija muziku voli.

   c. Voli muziku Marija.

   d. Voli Marija muziku.

   e. Muziku voli Marija.

   d. Muziku Marija voli.

(13) a. *Marija voli.

   b. Voli Marija.

▶ Non-NP arguments: Sally wondered about Bob

▶ Multiple complements

(14) a. Sally told <u>Polly</u> <u>she's leaving</u>.

   [*Polly* and *she's leaving* are both complements of *told*]

   b. Sally put <u>the book</u> <u>on the desk</u>.

   [*the book* and on *the desk* are both complements of *put*]

   c. Sally persuaded <u>Bob</u> <u>to go on vacation</u>.

   [*Bob* and *to go on vacation* are both complements of *persuaded*]

- ▶ Some languages allow subject to be omitted
- ▶ Italian

(15) a. Ho   comprato   un   libro.

   have-1sg   bought   a   book

   'I bought a book'

   b. Io   ho   comprato   un   libro.

   I   have-1sg   bought   a   book

   'I bought a book'

- ▶ Some verbs require particular arguments
- ▶ English

  - It rained
  - Sally relied on Bob
  - Sally relied on her charm

▶ Non-verbs take arguments too

(16) a. Sally came to the party with <u>Bob</u>.

b. *Sally came to the party with.

[*Bob* is an argument of *with*]

(17) a. Sally if fond <u>of parties</u>.

b. *Sally is fond.

[*of parties* is an argument of *fond*]

(18) a. Bob invited <u>Polly</u> and <u>Sally</u> to the party.

b. *Bob incited Polly and to the party.

c. *Bob invited and Sally to the party.

[*Polly* and *Sally* are both arguments of *and*]

▶ For a sentence to be well formed, all the expressions it contains have to be provided with all and only the arguments they need

- *Sally devoured

- *Sally devoured an apple a pear

- *Devoured an apple

- *Sally Tom devoured an apple

► Det + N

(19) a. Sally has {a/this/my} dog.

    b. *Sally has dog.

    c. *Sally has this a dog.

    d. *Sally has this a my dog.

► Languages differ in terms of co-occurrence restrictions

► Serbo-Croatian: multiple determiners

(20) Marija sad   ima tog mog psa.

   Marija now has this my dog

  'Marija now has that dog of mine'

► Failing to provide expressions with the right number and kind of arguments will result in ungrammaticality

Co-Occurrence: Adjuncts

▶ Optional, multiple, freely ordered expressions

▶ Adjective + Noun

(21) a. Sally likes dogs.

  b. Sally likes <u>small</u> dogs.

  c. Sally likes <u>small</u> <u>fluffy</u> dogs.

  d. Sally likes <u>small</u> <u>fluffy</u> <u>brown</u> dogs.

(22) a. Sally likes Bob.

  b. *Sally likes fluffy Bob.

(23) a. Sally runs.

  b. *Sally runs small.

▶ *small* is an adjunct of *dogs*; *dogs* is an argument of *small*

- ▶ If X is anadjunct of Y, then Y is an argument of X
- ▶ It is not necessarily true that if Y is an argument of X, then X is Y's adjunct, e.g. Sally runs
- ▶ Semantic function of adjectives: modifiers

(24) a. Sally went to France.

    b. Sally went to France <u>last year</u>.

    c. Sally went to France <u>last year</u> <u>in July</u>.

    d. Sally went to France <u>last year</u> <u>in July</u> <u>with some friends</u>.

    e. Sally went to France <u>last year</u> <u>in July</u> <u>with some friends</u> <u>to study French</u>.

- ▶ The same expression can be an argument in an argument in one sentence, but an adjunct in another sentence, e.g. Last year was the best year for Sally's life

(25) a. Sally urged Bob <u>to study French</u>.   [argument of *urged*]

    b. Sally went to France <u>to study French</u>.   [adjunct]

(26) a. Sally put the book <u>on the desk</u>.   [argument of *put*]

    b. Sally's cat was sleeping <u>on the desk</u>.   [adjunct]

(27) a. Sally's cat seemed <u>cute</u>.   [argument of *seemed*]

    b. Sally has a <u>cute</u> cat.   [adjunct]

(28) a. Sally behaved <u>very carelessly</u>.   [argument of *behaved*]

    b. Sally did her homework <u>very carelessly</u>.   [adjunct]

(29) Distinguishing arguments and adjuncts

Arguments	**Adjuncts**
Obligatory:	**Optional:**
Sally seemed <u>happy</u>. *Sally seemed.	The cat was sleeping <u>on the table</u>.
	The cat was sleeping.
<u>Sally</u> seemed happy. *seemed happy.	The <u>fluffy</u> cat was sleeping.
	The cat was sleeping.
Cannot have more than required:	***Can have as many as you like:***
Sally seemed <u>cute</u>. *Sally seemed <u>cute</u> <u>happy</u>.	The cat was sleeping. The <u>gray</u> cat was sleeping.
	The <u>fluffy</u> <u>gray</u> cat was sleeping.
<u>Sally</u> seemed cute. *<u>Sally</u> <u>Bob</u> seemed cute.	Sally left. Sally left <u>yesterday</u>. Sally left <u>yesterday</u> <u>around 3 P.M.</u>
Cannot be freely ordered with respect to one another:	***Can be freely ordered with respect to one another:***
Sally put <u>the book</u> <u>on the table</u>.	The <u>fluffy</u> <u>gray</u> cat was sleeping.
*Sally put <u>on the table</u> <u>the book</u>.	The <u>gray</u> <u>fluffy</u> cat was sleeping.
Sally persuaded <u>Bob</u> <u>to study French</u>.	Sally left <u>yesterday</u> <u>around 3 P.M.</u>
*Sally persuaded <u>to study French</u> <u>Bob</u>.	Sally left <u>around 3.P.M.</u> <u>yesterday</u>.

Co-Occurrence: Agreement

▶ Expressions require particular morphological form of their arguments: number, person, gender, and other grammatical features

▶ Subject-verb agreement in person, number: inflectional morphology

(30) a. Sandy likes Bob.

    b. *{I/you/we/they} likes Bob.

    c. *Sandy like Bob.

    d. {I/you/we/they} like Bob.

▶ Demonstrative-noun agreement: number

(31) a. This girl came.

    b. *This girls came.

    c. *This girl came.

    d. These girls came.

▶ Mixing and matching of expression are not allowed

► Inuktitut, (in Northern Canada): singular, plural, dual

(32) iglu   'a house'

igluk   'two houses'

iglut   'three or more houses'

► Some languages do not mark grammatical number on nouns

► Korean

(33) kile   chaka   dallinta.

road   car   run

'There is one car running on the road'

'There are (multiple) cars running on the road'

► Grammatical number: scissors (pl) in English; lisce 'leaves' (sg) in Sero-Croatian

▶ Some verbal forms have to agree with the subject in gender.

▶ Italian

(34) a. Lei   e   andata   a   Palermo.

    she   be-3sg   go-part.fem.sg.   to   Palermo

    'She went to Palermo'

  b. Lui   e   andato   a   Palermo.

    he   be-3sg   go-part.masc.sg.   to   Palermo

    'He went to Palermo'

  c. *Lei e andato a Palermo.

  d. *Lei e andata a Palermo.

▶ Grammatical Gender

- Das Madchen 'the girl' in German (neuter); male giraffes in Serbo-Croatian (feminine)
- Book: le livre in French (masculine); das Buch in German (neuter), kniga in Russian (feminine)

▶ Morphology and syntax are often seen as tightly related components of grammar → morphosyntax

Syntactic Constituency

▶ Syntactic constituent:

- A syntactic unit formed by groups of expressions within a larger phrase

- Tightly combined together, more tightly than with other expressions in the same sentence

- Omitting an element of a syntactic constituent will result in ungrammaticality

▶ Syntactic constituents reveal the syntactic structure of the sentence.

Constituency test: answers to questions

▶ Answers to Questions

(1) Is *on the desk* in *The cat was sleeping on the desk* a constituent? Yes.

a. Where was the cat sleeping?

b. <u>On the desk</u>.

b'. *on the.

(2) Is *sleeping on the desk* in *The cat was sleeping on the desk* a constituent? Yes.

a. What was the cat doing?

b. <u>Sleeping on the desk.</u>

(3) Is *the cat* in *The cat was sleeping on the desk* a constituent? Yes.

a. Who was sleeping on the desk?

b. <u>The cat.</u>

Constituency test: clefting

▶ Cleft: a kind of sentence in which some constituent is displaced (or moved) to the left.

▶ It was X that Y, where X is the displaced constituent and Y is the remainder of the sentence

(4) Is *on the desk* in *The cat was sleeping on the desk* a constituent? Yes.

It was <u>on the desk </u>that the cat was sleeping.

(5) Is *the cat* in *the cat was sleeping on the desk* a constituent? Yes.

It was <u>the cat </u>that was sleeping on the desk.

(6) Is *on the* in *The cat was sleeping on the desk* a constituent? No.

*It was <u>on the</u> that the cat was sleeping desk.

▶ *sleeping on the desk* is a constituent, *but *It was sleeping on the desk that the cat* is not a grammatical cleft.

▶ If a cleft is ungrammatical, it doesn't necessarily imply that he displaced expression does not form a constituent.

Constituency test: coordination

▶ *and* needs two arguments

(7) a. Polly invited Sally and Bob to the party.

  b. * Polly invited and Bob to the party.

  c. *Polly invited Sally and to the party.

▶ conjuncts can be switched around in a sentence without loss of grammaticality

(8) a. Polly invited <u>Sally</u> and <u>Bob</u> to the party.

  b. Polly invited <u>Bob</u> and <u>Sally</u> to the party.

▶ Which expressions are conjuncts in a given sentence?

(9) Bob sent Sally a book and a CD.

(10) *Bob sent <u>a CD</u> and <u>Sally a book</u>.

(11) *Bob sent Sally a <u>a CD</u> and <u>book</u>.

(12) Bob sent Sally <u>a CD</u> and <u>a book</u>.

▶ Any syntactic constituent can be an argument of a coordinating conjunction

(13) Is *the cat* in *The cat was sleeping on the desk* a constituent? Yes.

    a. <u>The cat </u>and the dog were sleeping on the desk.

    b. The dog and <u>the cat </u>were sleeping on the desk.

▶ Semantic awkwardness does not imply syntactic ill-formedness

(14) Is *on the desk* in *The cat was sleeping on the desk* a constituent? Yes.

    a. The cat was sleeping <u>on the desk </u>and on the chair.

    b. The cat was sleeping on the chair and <u>on the desk</u>.

(15) Is *sleeping on the desk* in *The cat was sleeping on the desk* a constituent? Yes.

    a. The cat was <u>sleeping on the desk</u> and snoring.

    b. The cat was snoring and <u>sleeping on the desk</u>.

(16) Is *on the* in *The cat was sleeping in the desk* a constituent? No.

    *The cat was sleeping <u>on the </u>or under the desk.

Syntactic Categories

▶ The notion of syntactic category is similar to but distinct from the traditional notions of parts of speech or lexical categories

▶ A syntactic category consists of a set of expressions that have very similar syntactic properties; they have approximately the same word order and co-occurrence requirements; they have the same syntactic distribution

(1) a. Sally likes <u>the cat</u>.   Sally likes <u>Fluffy</u>.

   b. <u>The cat</u> is sleeping.   <u>Fluffy</u> is sleeping.

   c. Sally gave <u>the cat</u> some food.   Sally gave <u>Fluffy</u> some food.

   d. It was <u>the cat</u> that Sally hated.   It was <u>Fluffy</u> that Sally hated.

   e. Sally bought it for <u>the cat</u>.   Sally bought it for <u>Fluffy</u>.

   f. <u>The cat</u>'s bowl was empty.   <u>Fluffy</u>'s bowl was empty.

(2) a. The cat was sleeping.   *The <u>Fluffy</u> was sleeping.

   b. *Sally gave cat some food.   Sally gave <u>Fluffy</u> some food.

   etc.

▶ Why are syntactic categories important?

- We would immediately know the distribution of all of the new expressions: how they can combine with other expressions, how they have to be ordered with respect to other expressions, what their arguments are, etc.

▶ Expressions do not belong to a given syntactic category by virtue of their morphological or semantic properties; rather, it is because of their syntactic properties

- exploded vs destroyed ("action words"): Sally exploded, * Sally destroyed

- slept, vegetated ("action words"?): Sally exploded, Sally vegetated, Sally slept

- mountains vs the hills: Sally likes the <u>mountains</u>, *Sally likes the <u>the hill</u>

- Even expressions that mean essentially the same thing can be syntactically different (my vs mine, ate vs devoured)

▶ We cannot distinguish syntactic categories based on their morphological properties

- sleep, tell, destroy, devour are all in the same category. However, because these expressions do not all have the same syntactic properties, they do not comprise a useful syntactic category

- *I'd like to devour now (cf. I'd like to sleep now)

- * I'll devour you what I found (cf. I'll tell you what I found)

Syntactic Categories in English

▶ S (sentences): a syntactic test for distinguishing the category sentence S

(3) Sally thinks that _____.

▶ NP (Noun Phrases): personal pronouns (he, she, you, it, we, etc.), proper names, etc.

(4) Is *Fluffy* in *Fluffy was sleeping on the desk* an NP? Yes.

   a. <u>Fluffy</u> was sleeping on the desk.

   b. <u>She</u> was sleeping on the desk.

(5) Is *the cat* in *The cat was sleeping on the desk* an NP? Yes.

   a. <u>The cat </u>was sleeping on the desk.

   b. <u>She</u> was sleeping on the desk.

(6) Is *the desk* in *The cat was sleeping on the desk* an NP? Yes.

   a. The cat was sleeping <u>on the desk</u>.

   b. The cat was sleeping on <u>it</u>.

▶ N (Nouns)

(7) Is *cat* in *The cat was sleeping on the desk* an NP? No.

    a. The <u>cat</u> was sleeping on the desk.

    b. *The <u>she</u> was sleeping on the desk.

(8) Is *desk* in *The cat was sleeping on the desk* an NP? No.

    a. The cat was sleeping on the <u>desk</u>.

    b. *The cat was sleeping on the <u>it</u>.

▶ Det (Determiners)

(9) a. this, that these, those   [demonstrative determiners]

    b. my, your, his, her, our, etc.   [possessive determiners]

    c. a, some, the, every, all, few, most, etc. [quantificational determiners]

▶ Adj (Adjectives)

(10) <u>The cute gray cat </u>is sleeping   <u>Fluffy</u> is sleeping.

    Sally likes <u>the cute gray cat</u>.   Sally likes <u>Fluffy</u>.

▶ A noun and the adjective-noun sequence have the same syntactic distribution

(11) a. The <u>cat</u> is sleeping.   The <u>gray cat </u>was sleeping.

    b. Sally likes her <u>cat</u>.   Sally likes her <u>gray cat</u>.

    c. The fluffy <u>cat</u> is sleeping.   The fluffy <u>gray cat</u> is sleeping.

▶ VP (Verb Phrases): With an NP on their left, will result in a sentence S

(12) a. Sally <u>slept</u>.

   b. Sally <u>likes Bob</u>.

   c. Sally <u>gave Bob some money</u>.

   d. Sally <u>traveled to France</u>.

   e. Sally <u>put the book on the desk</u>.

   f. Sally <u>persuaded Bob to study French</u>.

▶ a VP test: *did so* replacement

▶ A VP consists of a verb and any complements in may have; optionally, a VP can include one or more adjuncts as well

▶ ITV (Intransitive Verbs): slept

▶ TV (Transitive Verbs): liked, devoured

(13) Sally liked her cute gray cat.

(14) a. Sally liked her cute gray cat.

b. Sally did so.

c. Sally slept.

d. *Sally did so her cute gray cat.

e. *Sally slept her cute gray cat.

▶ DTV (Ditransitive Verbs): gave

(15) a. Sally gave Bob a book.

b. Sally did so.

c. *Sally did so a book.

d. *Sally did so Bob.

e. *Sally did so Bob a book.

▶ SV (Sentential Complement Verbs)

(16) a. Sally thought Bob liked her.

b. Sally did so.

c. *Sally did so Bob liked her.

▶ Adv (Adverbs)

(17) a. Sally wrote the letter <u>carefully</u>.

    b. Sally walked <u>fast</u>.

    c. Sally put the book on the desk <u>yesterday</u>.

    d. Sally ate her dinner <u>quickly</u>.

▶ Any expression that consists of a VP followed by an adverb has the same distribution as a VP: you can replace a verb and its complements with *did so*, leaving the adverb behind, or you can replace the verb, its complements, and an adverb with   .

(18) a. Sally wrote the letter carefully.

    b. Sally did so carefully.

    c. Sally did so.

▶ PP (Prepositional Phrases)

(19) a. Sally wrote the letter <u>with a pen</u>.

    b. Sally walked <u>down the street</u>.

    c. Fluffy slept <u>on the desk</u>.

    d. Sally ate her dinner <u>at the table</u>.

▶ Prepositions need an argument of category NP in order to form PPs

(20) a. That bar <u>down the street </u>is my favorite.

    b. Sally likes all cats <u>with long hair</u>.

    c. That cat <u>under the bed </u>is Fluffy.

(21) Major syntactic categories in English and their properties

Syntactic Category	Relevant Properties	Example
S (sentence)	can occur in Sally thinks that	Fluffy is cute
NP (noun phrase)	has the same distribution as a personal pronoun or a proper name	she Sally the cat this cute dog that cat under the bed
N (noun)	needs a determiner to its left to form an NP	cat cute dog cate under the bed
Det (determiner)	occurs to the left of the noun to form an NP	the every this

Adj (adjective)	occurs in between a determiner and a noun; can be a noun adjunct, that is, combines with a noun to its right which results in an expression that is also of category N	cute fluffy gray
VP (verb phrase)	consists minimally of a verb and all its complements; combines with an NP to its left which results in a sentence; has the same distribution as *slept* or *did so*	slept wrote the letter quickly liked Bob walked believed she liked that man
TV (transitive verb)	needs an NP complement to form a VP	liked devoured
DTV (ditransitive verb)	needs two NP complements to form a VP	gave sent

$\rightarrow$

SV (Sentential Complement verb)	needs a sentential complement to form a VP	believed said
Adv (adverb)	can be a VP adjunct, that is, combines with a VP to its left which results in an expression that is also of category VP	fast quickly tomorrow
P (preposition)	combines with an NP to form a PP	at for with
PP (prepositional phrase)	can be a VP or an N adjunct; consists of a preposition and its NP complement	at the table for Sally under the bed

Construction a Grammar

▶ Parts of the Grammar: The Lexicon and the Rules

(1) NP → she

NP → Fluffy

NP → Sally

(2) NP → {she, Fluffy, Sally}

(3) NP → {she, Fluffy, Bob, Sally, … }

N → {dog, cat, man, … }

Adj → {fluffy, cute, gray, … }

Det→ {the, this, some, … }

VP → { slept, barked, …}

TV → {liked, devoured, … }

DTV → { gave, sent, … }

SV → { thought, said, … }

P → { to, for, with, on, under, … }

Adv → { carefully, quickly, yesterday, … }

Phrase Structure Rules

(4) S → NP VP

(5)
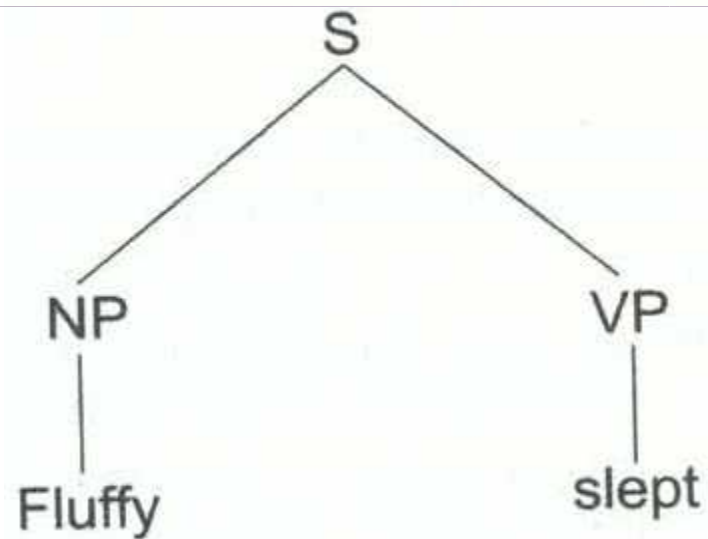
(6) NP → Det N

(7) N → Adj N

(8)
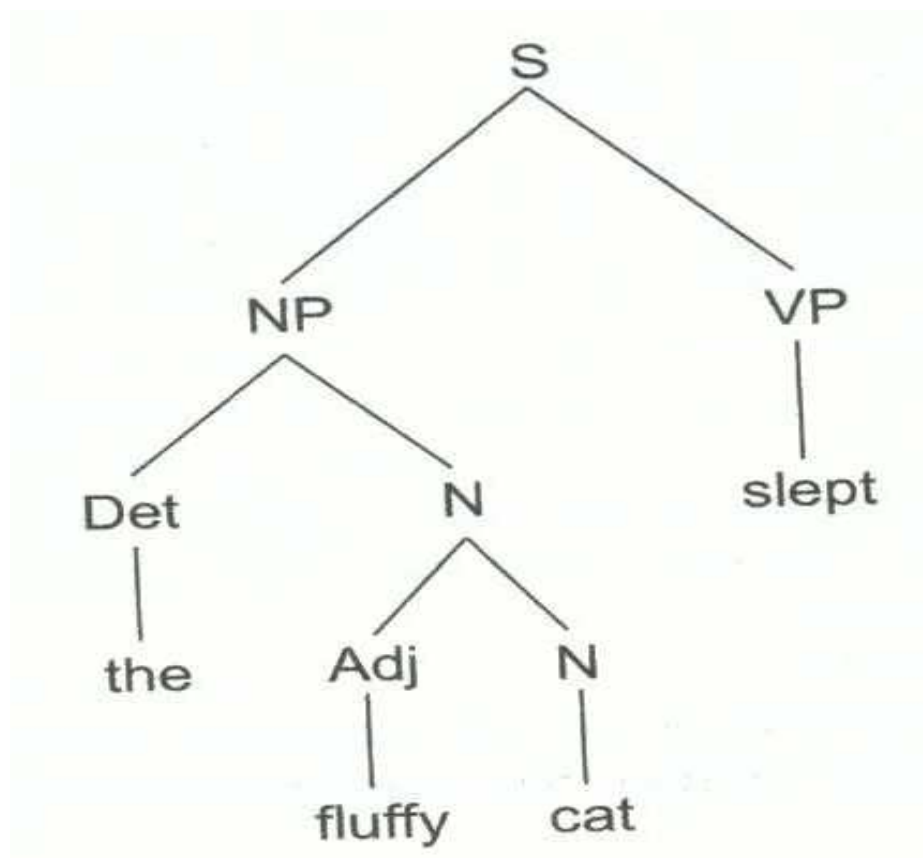
(9) a. VP → TV NP [a VP can consist of a transitive verb followed by an NP]

b. VP → DTV NP NP [a VP can consist of a ditransitive verb followed by a sequence of two NPs]

c. VP → SV S [a VP can consist of a sentential complement verb followed by a sentence]

(10)

(11) VP → VP Adv

(12) PP → P NP

(13) a. N → N PP

[PPs can be noun adjuncts]

b. VP → VP PP

[PPs can be VP adjuncts]

```
                    S
                  /   \
                NP     VP
                |        \
              Sally       \
                    DTV    \
                     |    NP   NP
                   gave   |   /  \
                         Bob Det   N
                              |    |
                            this  dog
```
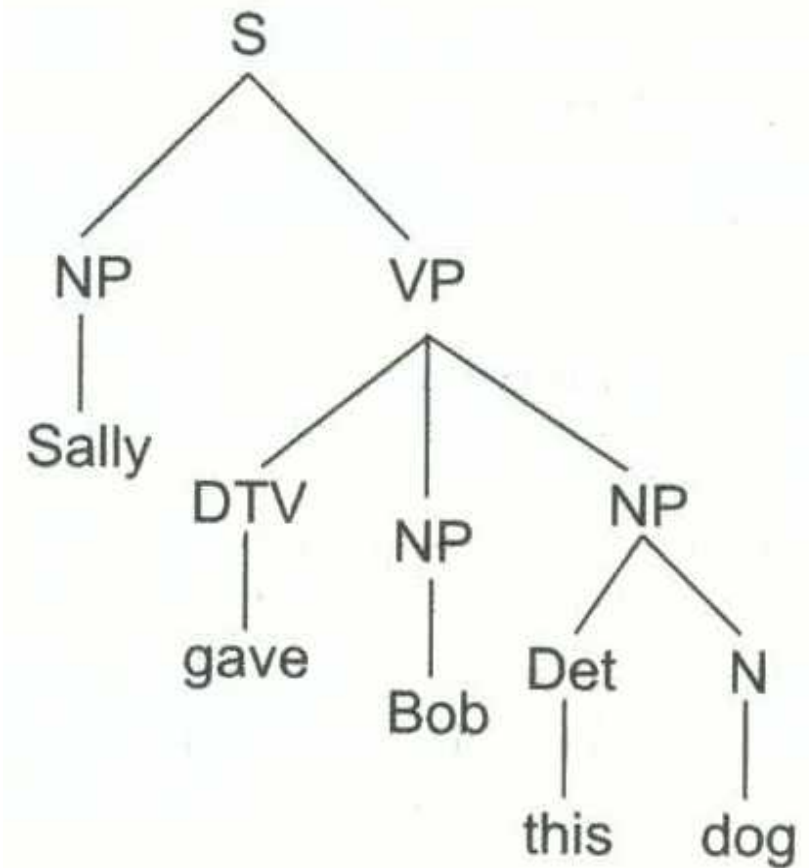
(14) Phrase structure rules

Phrase Structure rule	**Function**
S → NP VP	allows VPs to combine with their subject NP to form a sentence
NP → Det N	allows determiners to combine with a noun to form an NP
N → Adj N	allows attributive adjectives to be noun adjuncts
VP → VP Adv	allows adverbs to be VP adjuncts
VP → TV NP	allows transitive verbs to combine with their object NP to form a VP
VP → DTV NP NP	allows ditransitive verbs to combine with their object NPs to form a V
VP → SV S	allows sentential complement verbs to combine with their complement S to form a VP
PP → P NP	allows prepositions to combine with their complement NP to form a P
N → N PP	allows PPs to be noun adjuncts
VP → VP PP	allows PPs to be VP adjuncts

Ambiguity

(15) a. Sally works at a <u>bank</u> downtown.

b. There is a bike path along the east <u>bank</u> of the Olentangy River.

(16) a. They went for a <u>walk</u>.

b. They <u>walk</u> quickly.

(17) a. Sally is going to have the <u>mole</u> on her back surgically removed.

b. Sally hates that pesky <u>mole</u> that keeps digging holes in her backyard.

(18) a. We should fine some essential readings in syntax and collect them into a <u>reader</u>.

b. Sally is an avid <u>reader</u> of science fiction.

(19) a. We <u>love</u> Fluffy.   *love* is of category transitive verb (TV)

   b. Our <u>love</u> for Fluffy will never die.   *love* is of category noun (N)

(20 a. Sally likes <u>that</u>.   *that* is of category noun phrase (NP)

   b. Sally likes <u>that</u> dog.   *that* is of category determiner (Det)

(21) a. Sally has a <u>fast</u> car.   *fast* is of category adjective (Adj)

   b. Sally walks <u>fast</u>.   *fast* is of category adverb (Adv)

(22) a. I know most people have cats and dogs as pets, but I always wanted to have a <u>duck</u>.

   b. Sandy and Polly are scared of Frisbees- they both just <u>duck</u> if somebody throws one

      in their general direction.

(23) a. Teachers take attendance in class to figure out which students are <u>present</u>.

   b. Sally got a really cool <u>present</u> from Polly for her birthday.

Structural Ambiguity

▶ A structural ambiguity occurs when two distinct phrasal expressions contain all the same lexical expressions, in exactly the same order, but the way these expressions are combined is different

(24) The cop saw the man with the binoculars.

(25) Sandy said Tom would be here yesterday.

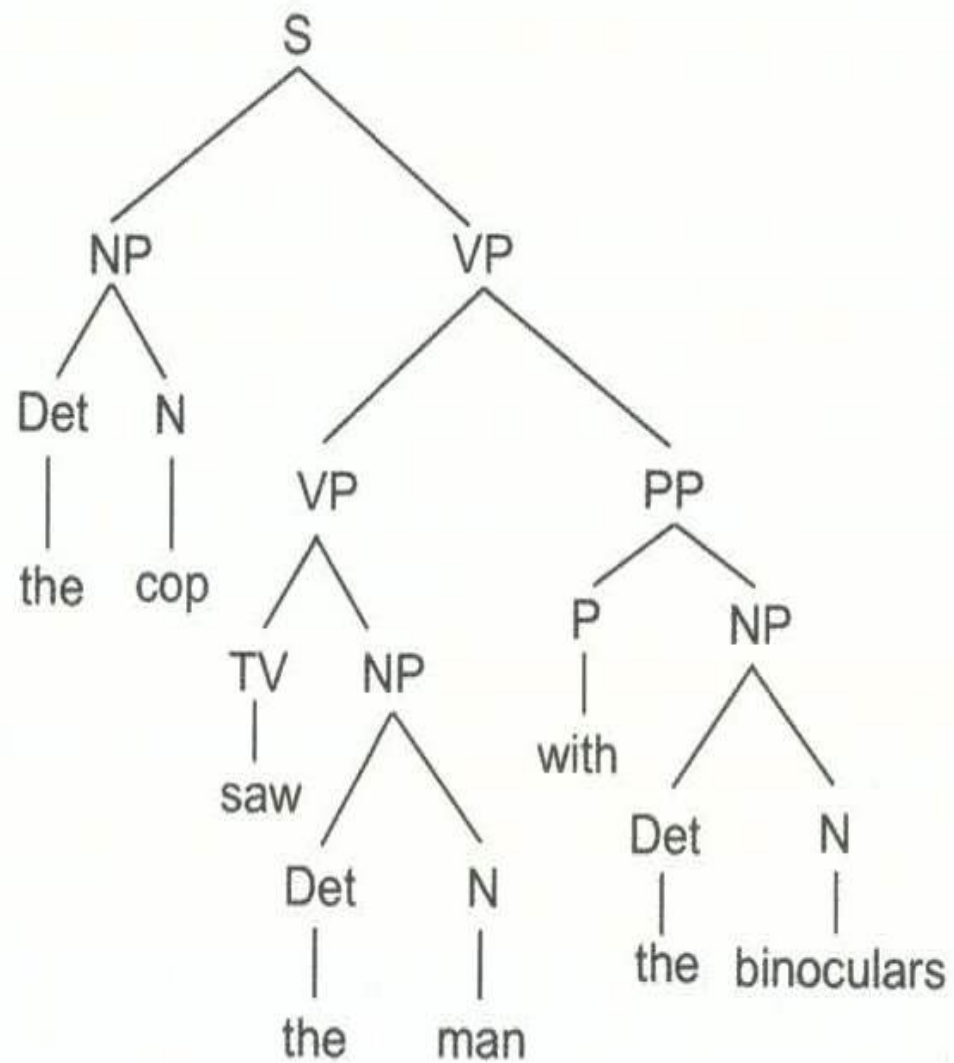(26) I know you like the back of my hand.

(27) a. N → N PP

[PPs can be noun adjuncts]

b. VP → VP PP

[PPs can be VP adjuncts]

(28)

(29)