Chapter 9

Syntax

What is syntax?

- When we concentrate on the structure & ordering of components within a sentence = studying the syntax of a language

- Syntax (originally Greek) = 'putting together'/ 'arrangement'

Syntax is the study of the rules governing the way words are combined to form sentences in a language.

Properties of syntactic knowledge

- Humans can understand & produce an infinite number of sentences they never heard before
  - "Some purple gnats are starting to tango on microwave"

- Our grammar can understand and produce long sentences
  - "Bill said that he thought that the esteemed leader of the house had it in mind to tell the unfortunate vice president that the calls that he made from the office in the White House that he thought was private….."

- Determine the grammatical relations in a sentence
  - Mary hired Bill Vs. Bill hired Mary

Syntax & meaning

- Non-sense sentences with clear syntax
    - Colorless green ideas sleep comfortably.
    - A verb crumpled the milk.
    - I gave the question an angry egg.
    - * Comfortably sleep ideas green colorless.
    - * Milk the crumpled verb a.
    - * the question I an gave egg angry.

- Sentences are composed of discrete units that are combined by rules.

- These rules explain how speakers can store infinite knowledge in a finite space - brain.

Generative Grammar

- Noam Chomsky 1950s

- In theoretical linguistics, generative grammar refers to a particular approach to the study of syntax.

- A generative grammar of a language attempts to give a set of rules that will correctly predict which combinations of words will form grammatical sentences.

Generative Grammar

- Language & mathematics
- The mathematical perspective helps to explain 'generative'.
- How?
- $3x + 2y$
- We give x and y the value of a number
- That simple algebraic expression can 'generate' an endless set of values
- When $x = 5$ and $y = 10$, the result is 35
- When $x = 2$ and $y = 1$, the result is 8

Generative Grammar

- These rules will follow directly & predictably from applying the explicit rules.

- If the sentences of a language can be compared to this , then there must be a set of explicit rules that can produce all those sentences.

- Such a set of explicit rules = *generative grammar*

Syntactic structure

- A generative grammar defines the syntactic structures of a language.

- The 'all and only' criterion:
  - The grammar will generate all the well-formed structures (e.g. sentences) of the language
  - The grammar will not generate any ill-formed structures.
- In other words, all the grammatical sentences and only the grammatical sentences will be produced.

- The grammar will have a finite (i.e. limited) number of rules, but will be capable of generating an infinite number of well-formed structures.

Symbols used in syntactic description

- ❖ S   (= sentence)
- ❖ NP (= noun phrase)
- ❖ N   (= noun)
- ❖ Art (= article)
- ❖ ⟶ (= consists of)

<u>For example:</u>

- NP ⟶ Art N
- It's a shorthand way of saying that a noun phrase consists of an article and a noun.

Symbols used in syntactic description

❖ round brackets ( ) = an optional constituent

For example:

- The dog = NP

- The small dog = NP

- When we want to use a NP in English, we can include an (Adj), but we don't have to. It's optional.

- NP → Art (Adj) N

- It's a shorthand way of saying that a noun phrase consists of an article (Art) and a noun (N), with the option of including an adjective (Adj) in a specific position between them.

Symbols used in syntactic description

❖ curly brackets { } = only one of the elements enclosed within the curly brackets must be selected.

<u>For example:</u>

- NP ⟶ Art N   (e.g. *the dog*)
- NP ⟶ Pro   (e.g. *it*)
- NP ⟶ PN   (e.g. *Cathy*)
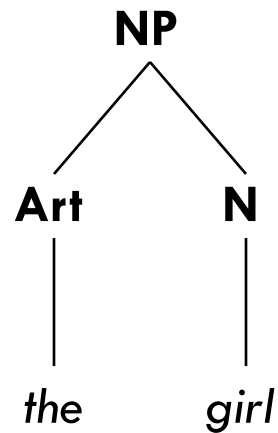
- NP ⟶ Art N
  NP ⟶ Pro   NP ⟶ { Art N / Pro / PN }   NP ⟶ {Art N, Pro, PN}
  NP ⟶ PN

Tree diagrams

- *The girl*

- Labeled & bracketed format

- Tree diagram

```
                NP
               /  \
             Art    N
              |     |
             the   girl
```
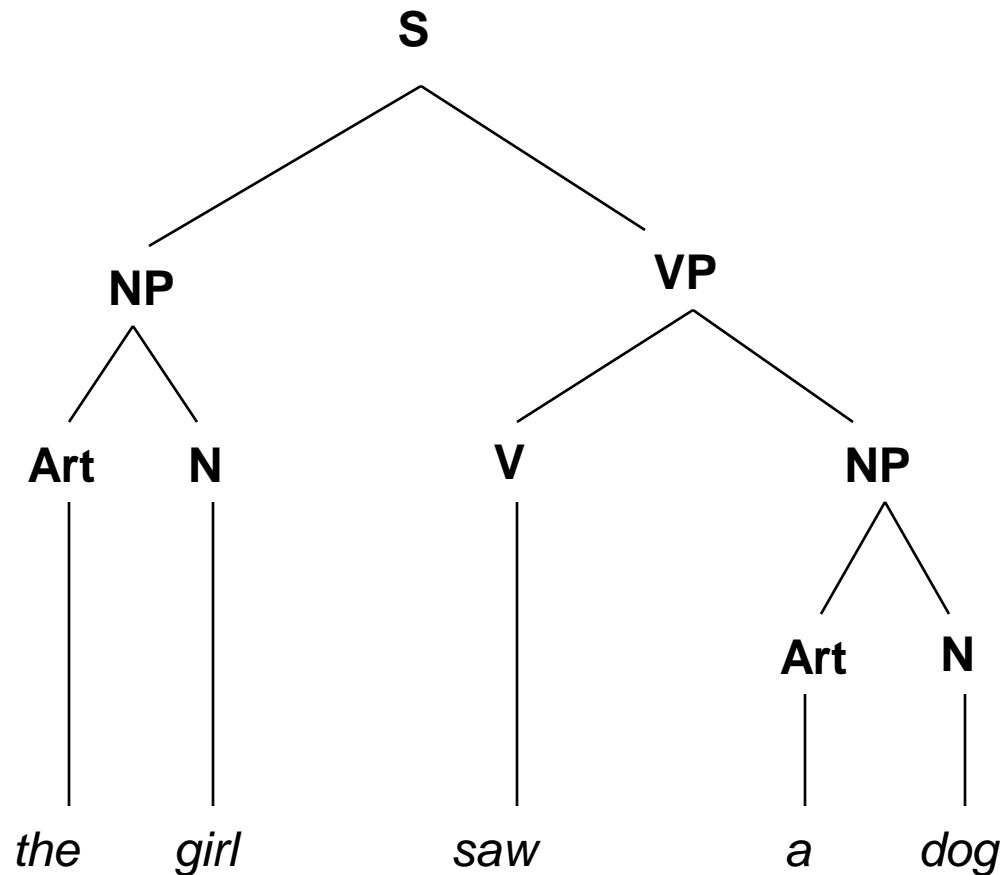
Tree diagrams

- *The girl saw a dog*

Phrase structure rules

We can think of the tree diagram format in 2 different ways.

1. Static representation of the structure of the sentence shown at the bottom of the diagram.

2. Dynamic format – represents a way of generating a very large number of other sentences with similar structures.

- Phrase structure rules state that the structure of a phrase of a specific type will consist of one or more constituents in a particular order.

```
        NP
       /  \
     Art    N
```
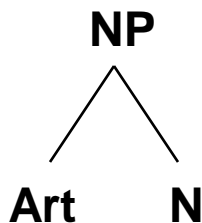
$$NP \longrightarrow Art\ N$$

Phrase structure rules

S → NP VP

NP → {Art (Adj) N, Pro, PN}

VP → V NP (PP) (Adv)

PP → Prep NP

Lexical rules

- Phrase structure rules generate structures.

- In order to turn this structure into <u>recognizable</u> English, we also need lexical rules.

PN ⟶ {Mary, George}　　　　V ⟶ {followed, helped, saw}

N ⟶ {girl, dog, boy}　　　　Adj ⟶ {small, crazy}

Art ⟶ {a, the}　　　　　　prep ⟶{near, with}

Pro ⟶ {it, you}　　　　　　Adv ⟶ {recently, yesterday}

- We can rely on these rules to generate the grammatical sentences 1-7, but not the ungrammatical sentences 8-10

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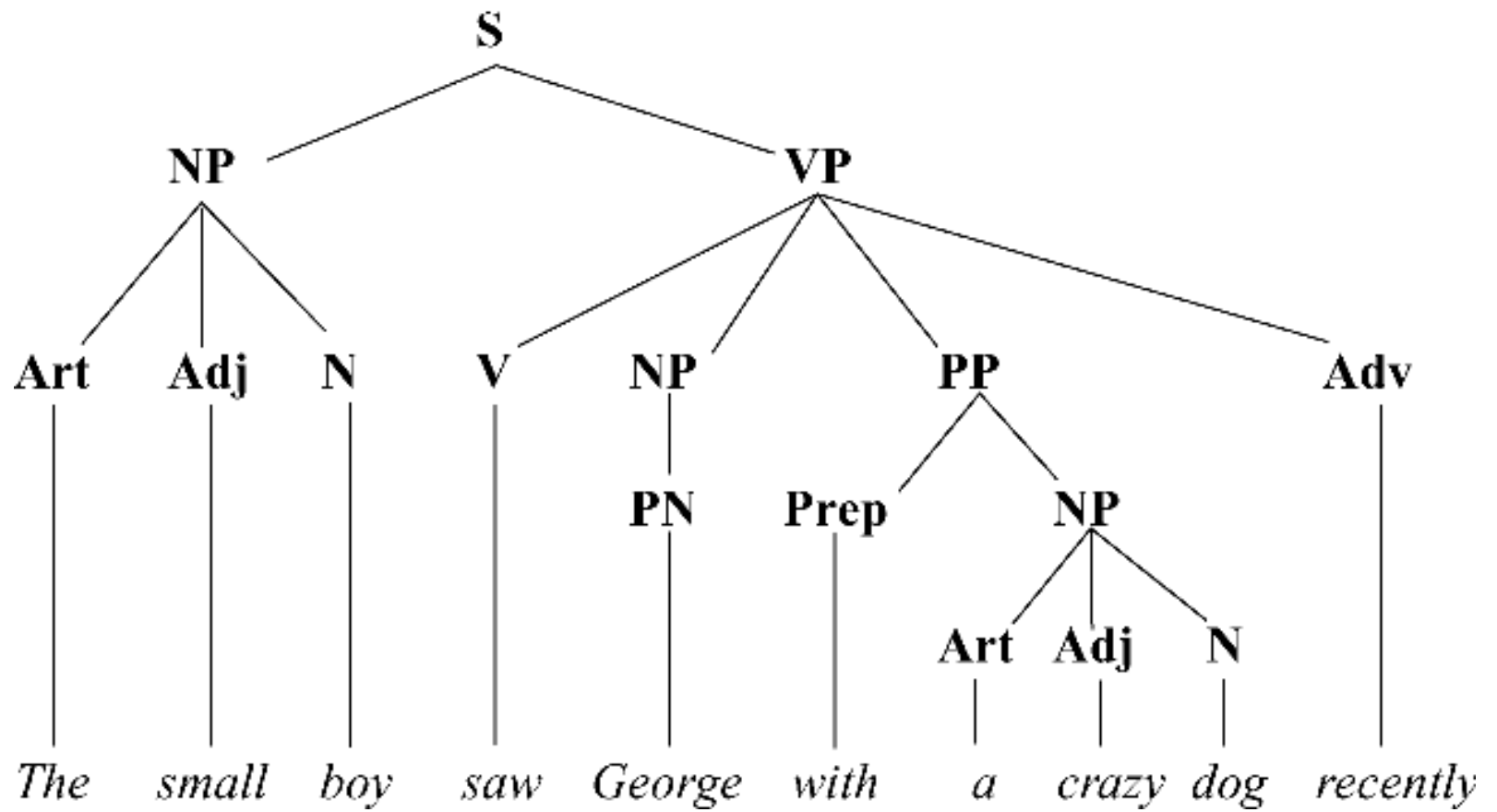
Exercises

- Try this:
  - Sarah went to the hospital.
  - He saw John with an amazing car yesterday.
  - I met her yesterday.

  - P. 96 (Question no. 4)
  - P. 97 (Question no. 6-A)

Deep and surface structure

- *Charlie broke the window.*
- *The window was broken by Charlie*
- *Charlie was the one who broke the window*
- *It was Charlie who broke the window*
- *Was the window broken by Charlie?*

- Different in their *surface structure* = different in syntactic forms = different arrangement or ordering

- BUT they have the same 'deep' or underlying structure = same basic components (NP + V + NP)
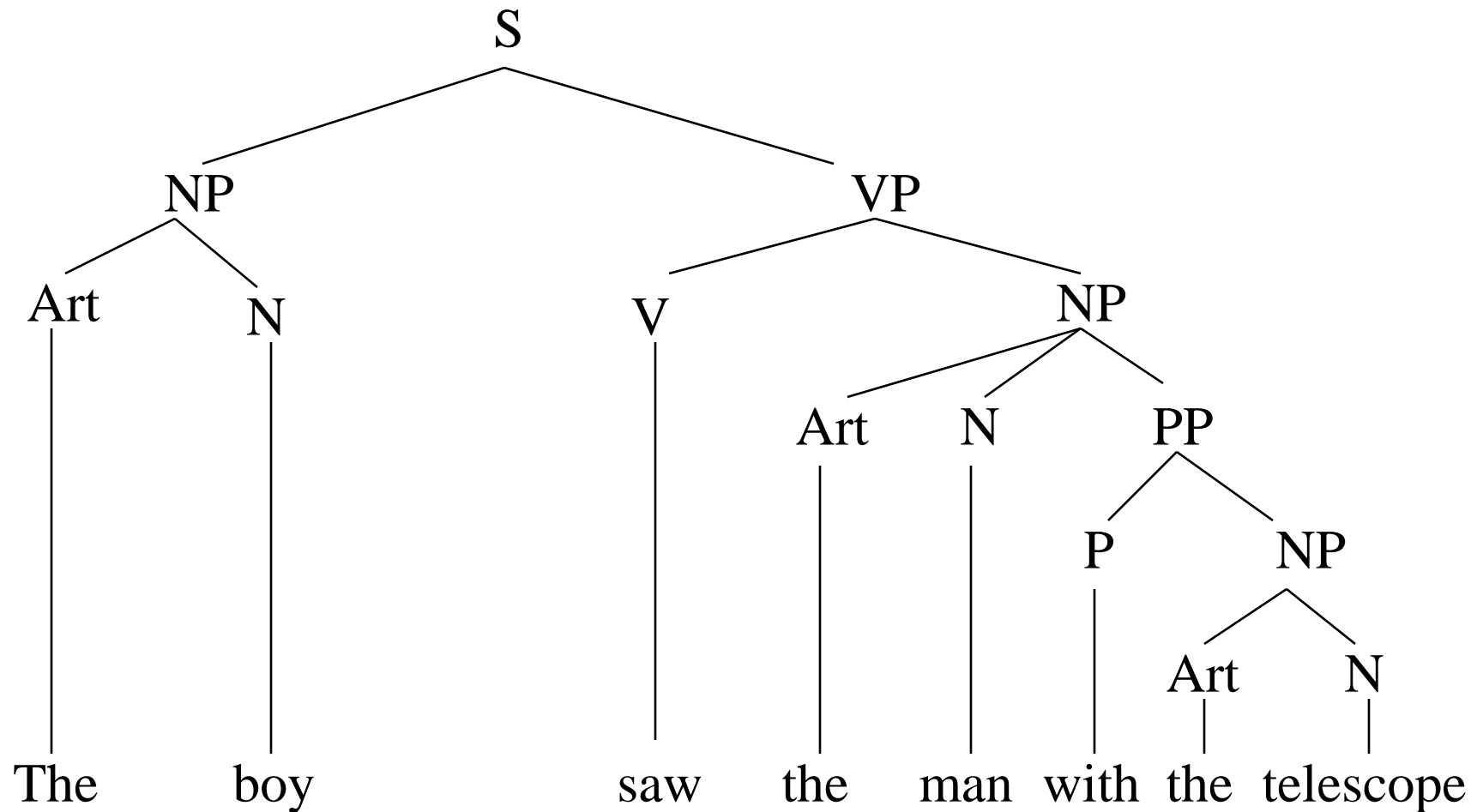
Structural ambiguity

- *Annie whacked the man with an umbrella*

  - Same surface structure
  - but different deep structure
  - What are the two possible meanings/ the two distinct deep structures/ two distinct underlying interpretations here?

- *The boy saw the man with a telescope*
- *Small boys and girls*

Structural ambiguity

```
                          S
              _____/ _____
            NP                          VP
          /   \              _____/ |  _____
        Art    N            V          NP             PP
         |     |            |         /  \           /   \
         |     |            |       Art    N        P     NP
         |     |            |        |     |        |    /  \
         |     |            |        |     |        |  Art    N
         |     |            |        |     |        |   |     |
        The   boy          saw      the   man     with the telescope
```
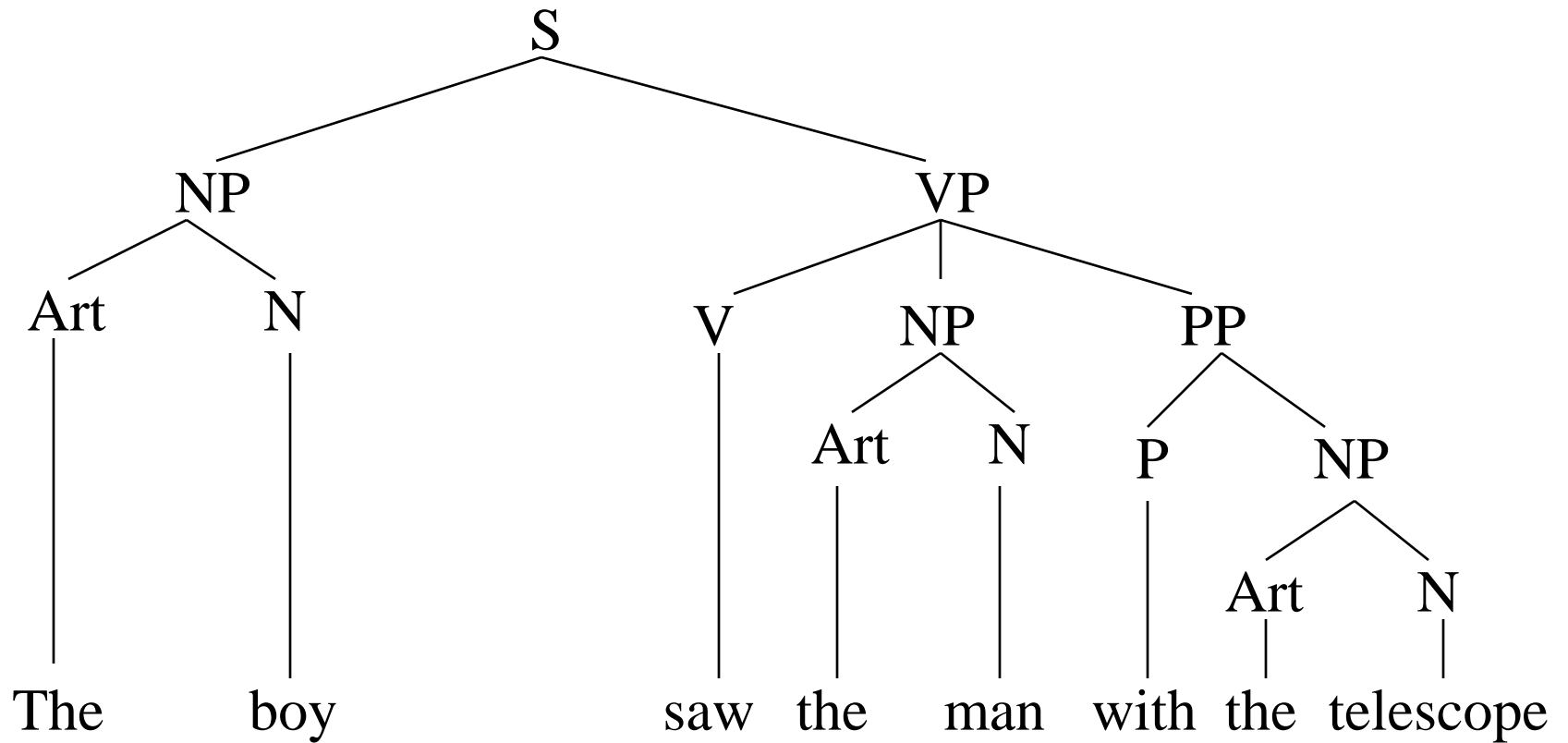
Meaning: Using the telescope, the boy saw the man

Structural ambiguity

Meaning: *The boy saw the man. The man had a telescope.*

Structural ambiguity

- *P. 96 – Question no. 2*

Recursion

- Rules can be applied more than once in generating sentences
- e.g. repeat prepositional phrase more than once
  - *The gun was on the table.*
  - *The gun was on the table near the window.*
  - *The gun was on the table near the window in the bedroom.*

- Put sentences inside other sentences
  - *Mary helped George*
  - *Cathy knew that Mary helped George.*
  - *John believed that Cathy knew that Mary helped George.*

  - *This is the cat that ate the rat that ate the cheese that was sold by the man that lived in the city that was on the river…*
- No end to recursion that would produce longer complex sentences.

Back to recursion

- Read p. 93

Complement Phrases

- *Cathy knew that Mary helped George*
- *that* = complementizer (C) = introducing complement phrase (CP)
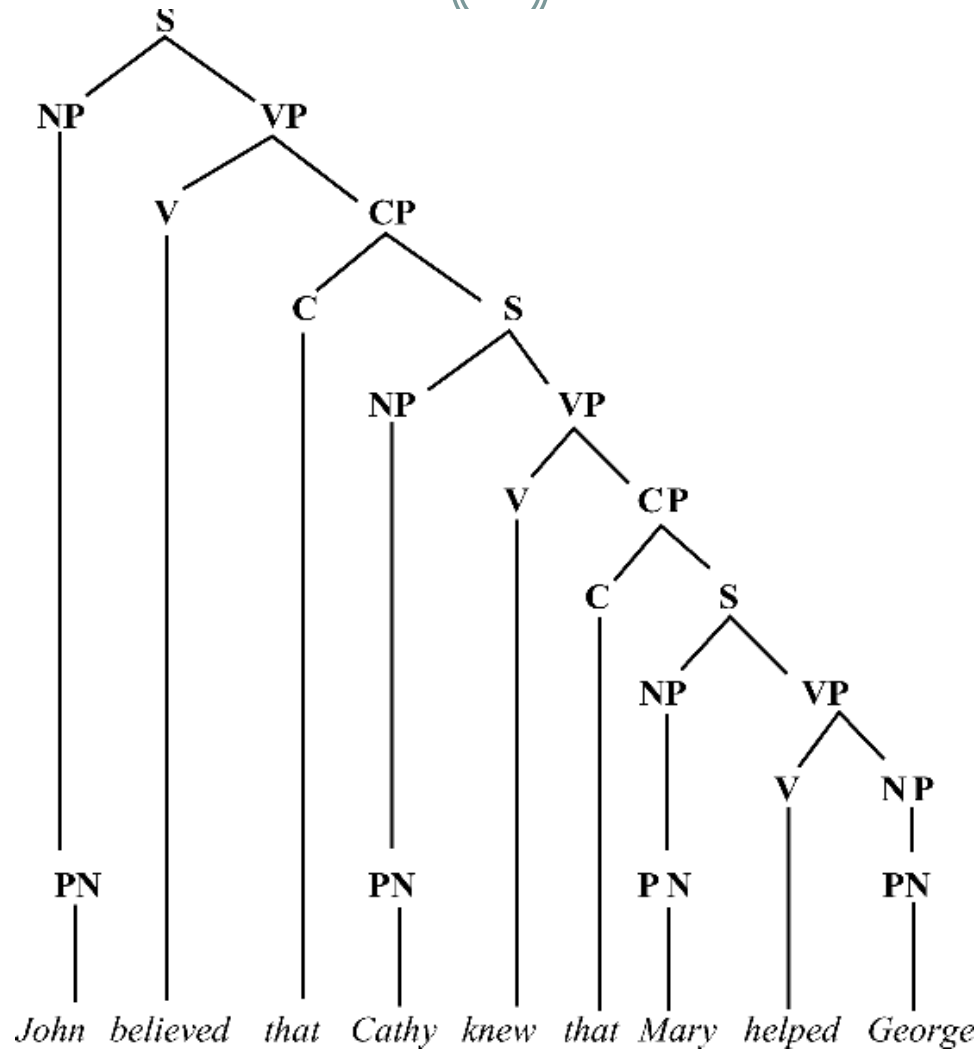- *that Mary helped George* = CP

CP ⟶ C S

"A complement phrase consists of a complementizer and a sentence."

- From the example, the CP comes after a V
- This means that we are using the CP as part of a VP (*knew that Mary helped George*).
- Now, we have a new rule, "A verb phrase consists of a verb and a complement phrase."
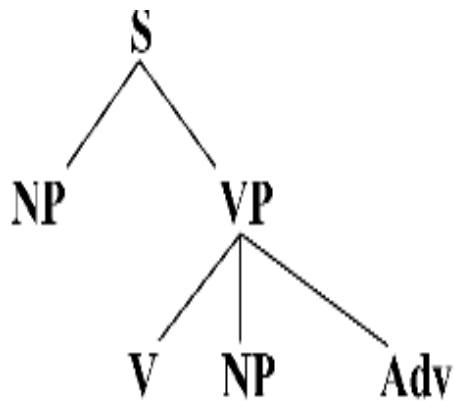
or, VP ⟶ V CP

Complement Phrases

Exercises

- Try this:
  - Ahmed thinks that the teacher knows that Muhammad met Hani.
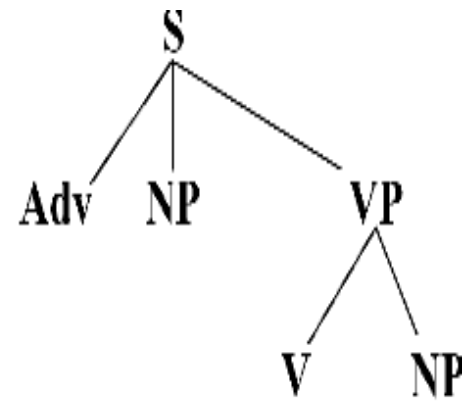 - P. 96-97 – Question no. 6 – (b)

Transformational Rules

- What do the transformational rules do?
- They take specific part of structure, like a branch of the tree, away from one part of the tree diagram and attach it to a different part.

Mary saw George recently $\Rightarrow$ Recently Mary saw George

Exercises

- Draw a tree diagram to represent the different syntactic components of the following sentences:

  - I talked to her briefly.

  - Briefly, I talked to her.

Transformational Rules

- For this particular rule, we need to specify:
  - which type of constituent can be moved
  - From where & to where
- We can also use a transformational rule to derive question structures in English.
- *You will help Cathy*
- *Will you help Cathy?*

- Phrase structure rule   S $\longrightarrow$ NP Aux VP
- Lexical rule   Aux $\longrightarrow$ {can, should, will}
- Transformational rule   Questions   NP Aux VP $\Longrightarrow$ Aux NP VP

- Form the phrase structure rules of the following sentences.

  - Can John see it?

  - Should Mary follow the small boy?

- Draw a tree diagram to represent each of the above sentences.

Exercises

- Draw a tree diagram to represent the different syntactic components of the following sentences.

    - The guy met the researcher.

    - The smart guy met the researcher.

    - The smart guy met the famous researcher.

- Now, create a labeled & bracketed analysis of the above sentences.

Homework: p. 96 (1, 2, 3, 4, & 5)

Thank you