

Introduction to Syntactic Structure: Part One

- Why do we need syntactic structure?
 - who needs it?
 - for what?
- How do we find syntactic structure?
- How do we describe syntactic structure?
 - constituents
 - phrase structure rules

How do we understand
sentences?

Grammar

- description and explanation of the language structures that occur
 - not rules in books for people to check whether they are talking properly!
 - non-linguistic grammar rules tend to be simplifications and therefore include shortcuts and *mistakes*!
 - not rules that people can ‘choose’ to obey or not—the mechanisms by which language units get put together at all!!

“Theories should be as simple as possible, but not more so.”

Albert Einstein

The role of Simplifications...

Language is complex: Problems are difficult to avoid

Simplifications (even in a good cause) will lead to:

- **RECOGNITION PROBLEMS**
- **CONSISTENCY PROBLEMS**
- **EXCEPTION PROBLEMS**
- **COVERAGE PROBLEMS**



A small gnome

in the garden

wiped

his hands

Language:
beads on a string?



A small gnome

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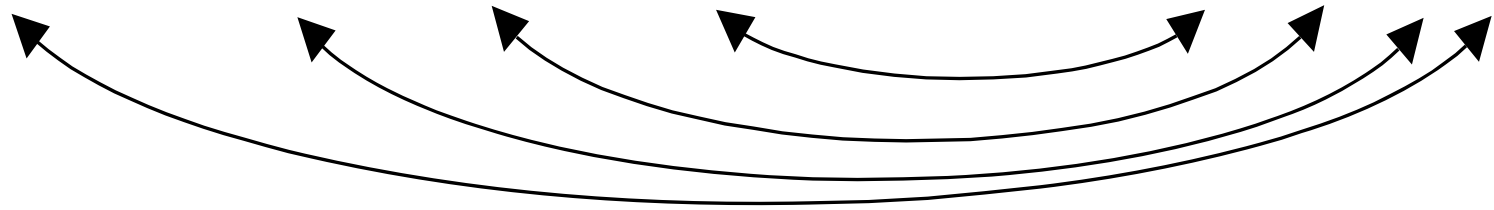
**This is a bad model
because it does not
allow us to make any
accurate predictions
about how we
understand language or
how sentences behave.**

How much does a language user
have to remember?

How much **can** a language user
remember?

“Daddy, what did you bring that book that I don’t want to be read to out of up for?”

“Daddy, what did you bring that book that I don’t want to be read to out of up for?”



“How Anne Salisbury
can claim
that Pam Dawber’s anger
at not receiving her share of acclaim for *Mork and
Mindy*’s success
derives from a fragile ego
escapes me.”

Structure effects

- I saw the gnome in the garden.
- What were you doing in the garden?
- No, I wasn't in the garden, the gnome was.
- Oh.

Structure effects

- Wanted:
 cook with spoon
 for efficient beating.

Structure effects

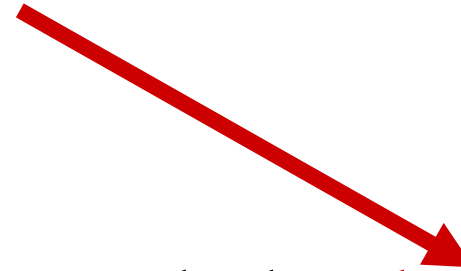
- The gnome in the garden next door caught a fish in the pond.
- A fish in the pond was caught by the gnome in the garden next door

Structure effects

- The gnome in the garden next door caught a fish in the pond.



- A fish in the pond was caught by the gnome in the garden next door



Grammar, Syntax and Structure

“You saw a film”

“You did see a film”

“Which film did you see?”



you ~~saw~~ a film

Syntactic constituents

sentences are made up of parts,
called constituents

- what are they?
- how can we find them?
- what different kinds are there?
- what maps might we need to describe them?

Grammar: The Rank Scale

- clauses
- groups and phrases
 - nominal groups/phrases
 - verbal groups
 - adjectival groups/phrases
 - adverbial groups/phrases
 - prepositional phrases
- words
- morphemes

are made up of



The Rank Scale

- clauses
- groups and phrases
 - nominal groups
 - verbal groups
 - adjectival groups
 - adverbial groups

Morphology

- **words**
- **morphemes**

are made up of



The Bank Scale

Grammar/Syntax

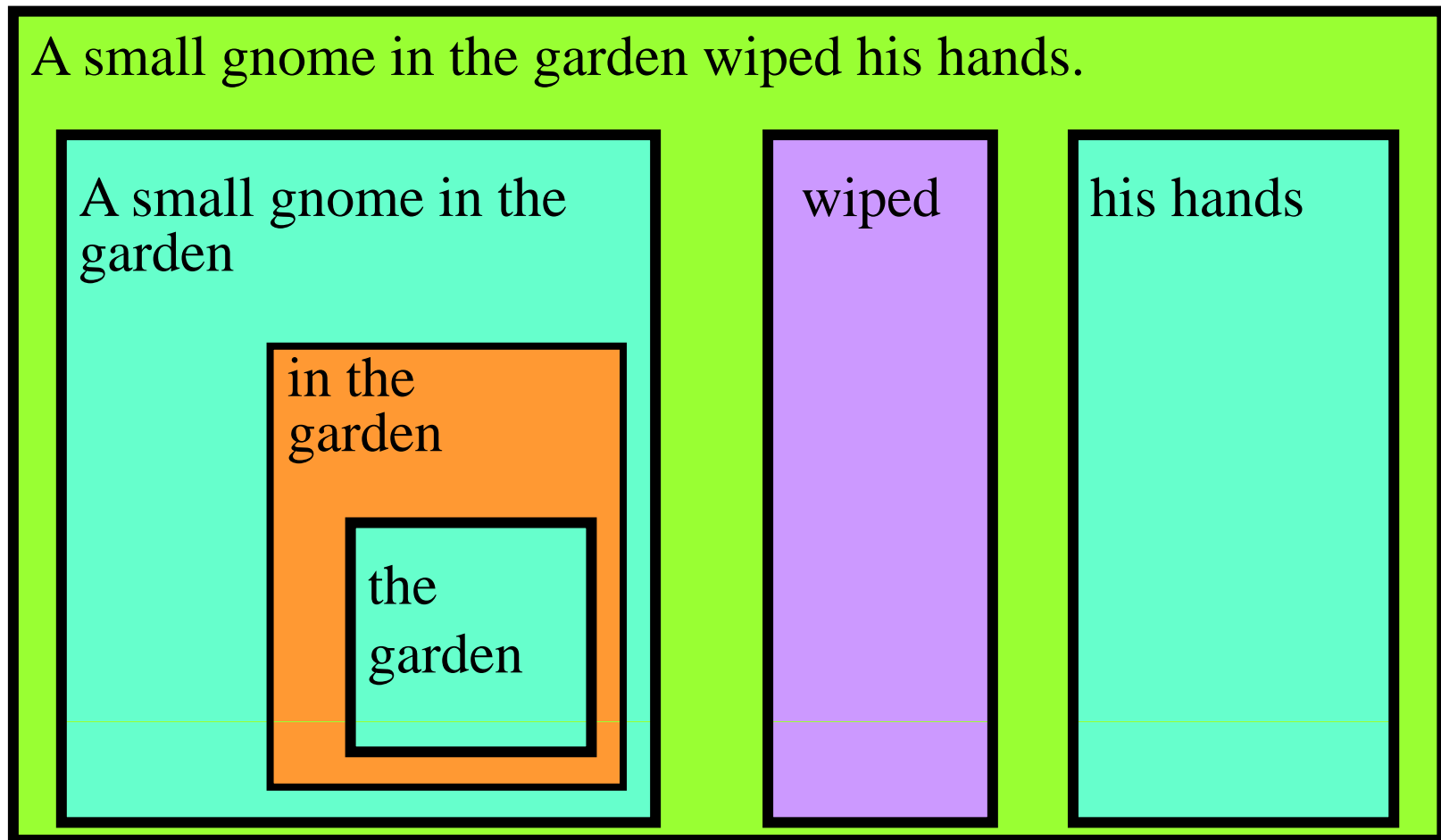
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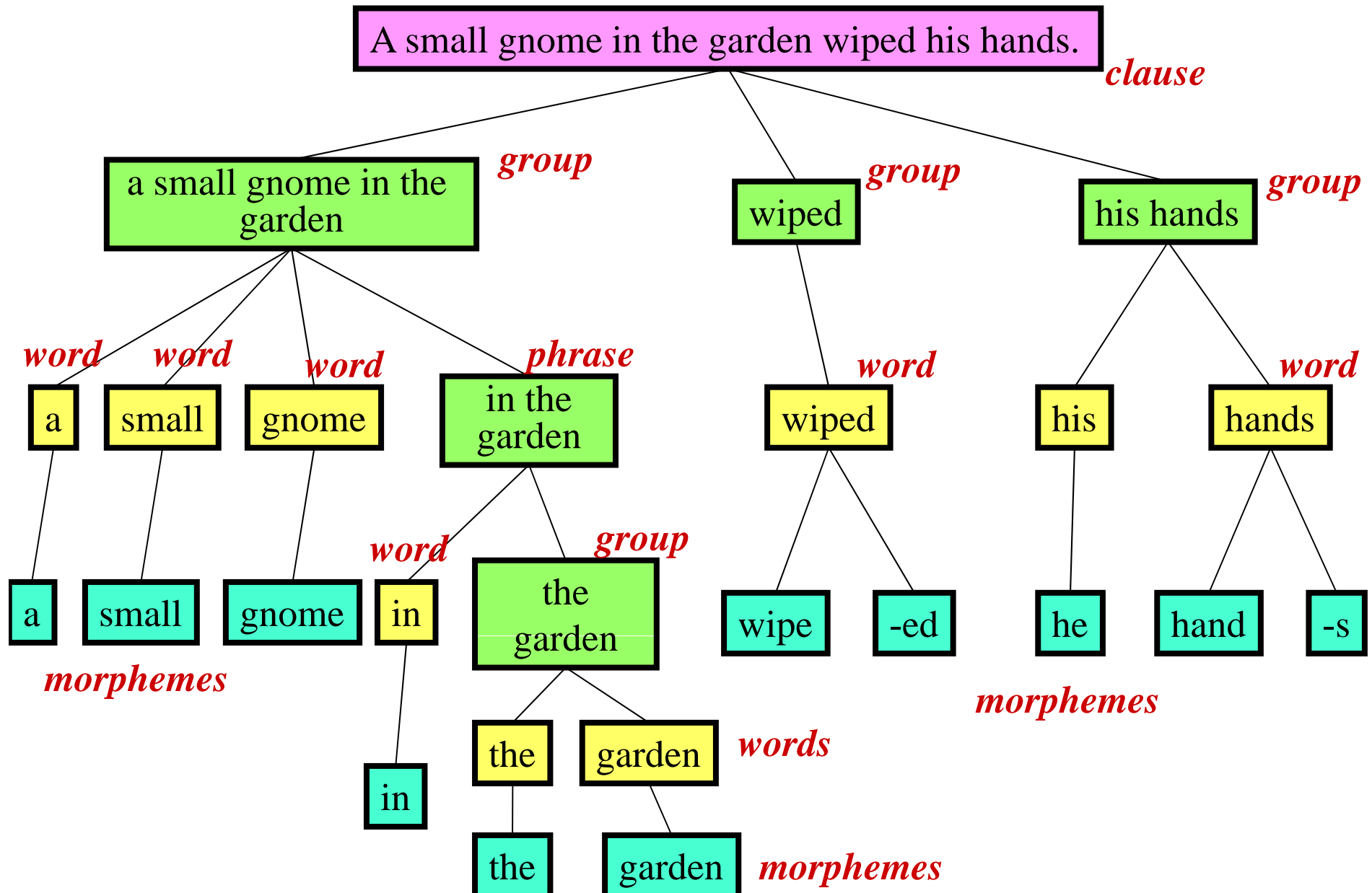


A 'Chinese Box' representation of grammatical structure: clauses and groups

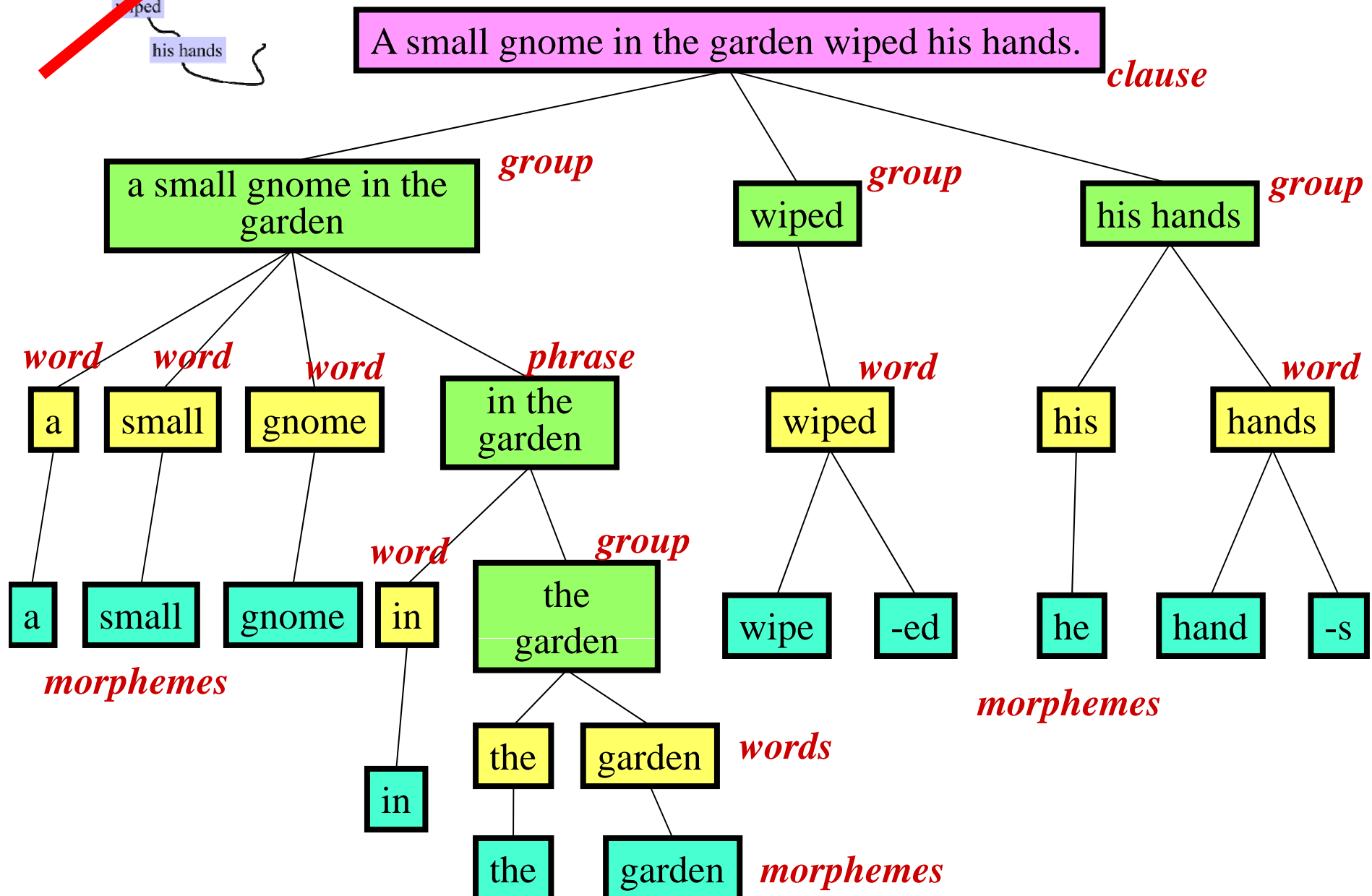
clause



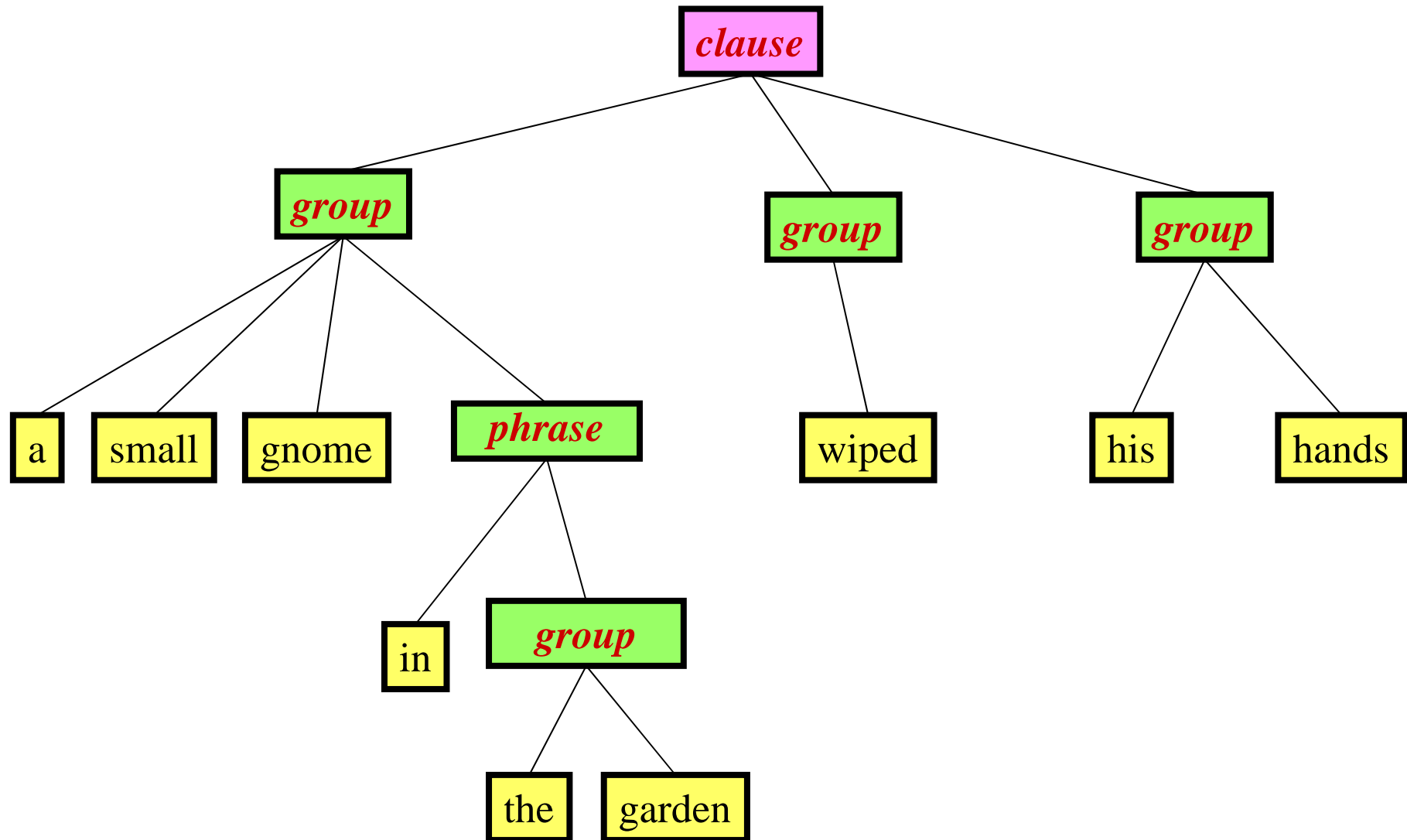
Names of parts: Rank Units



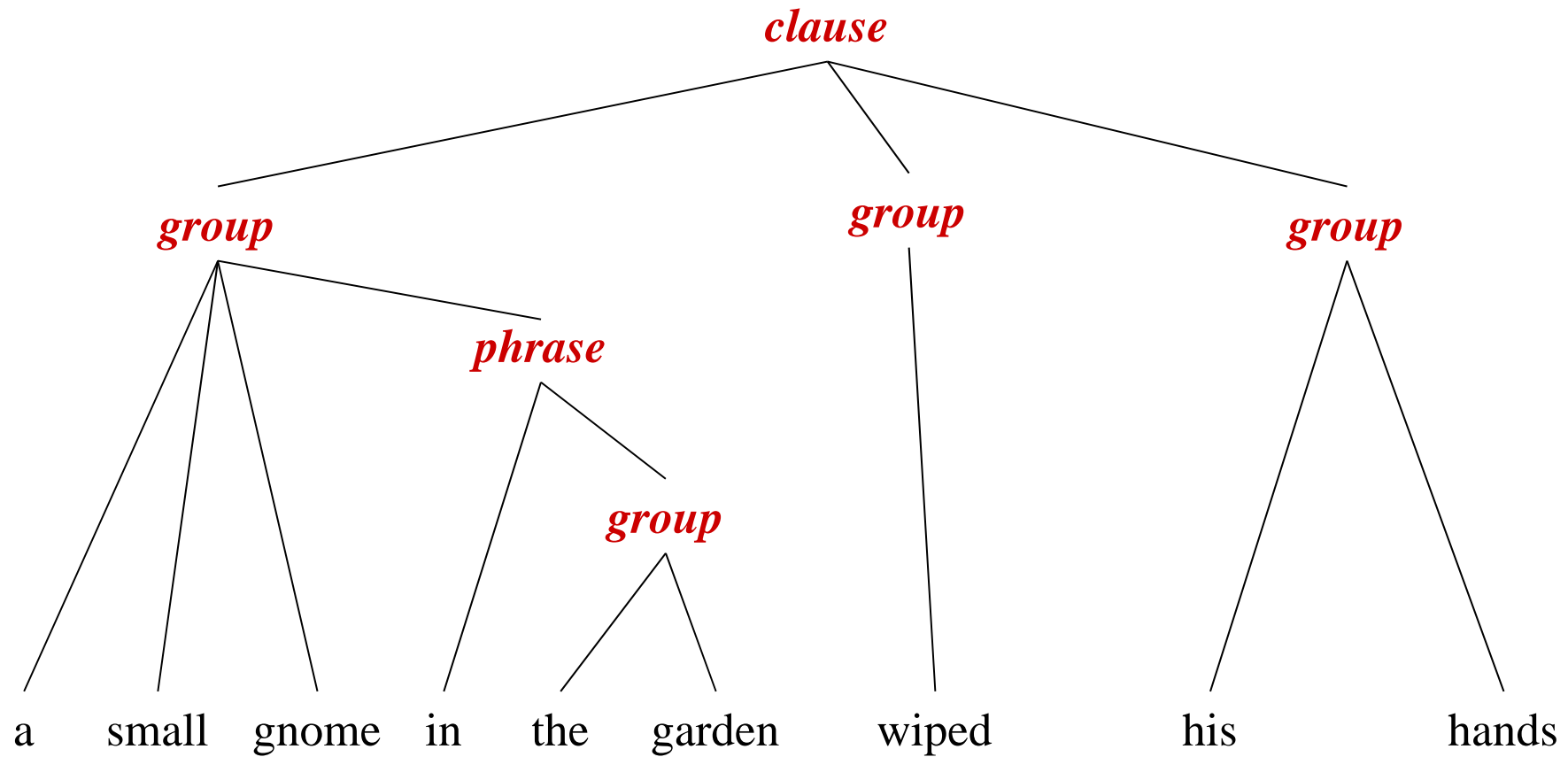
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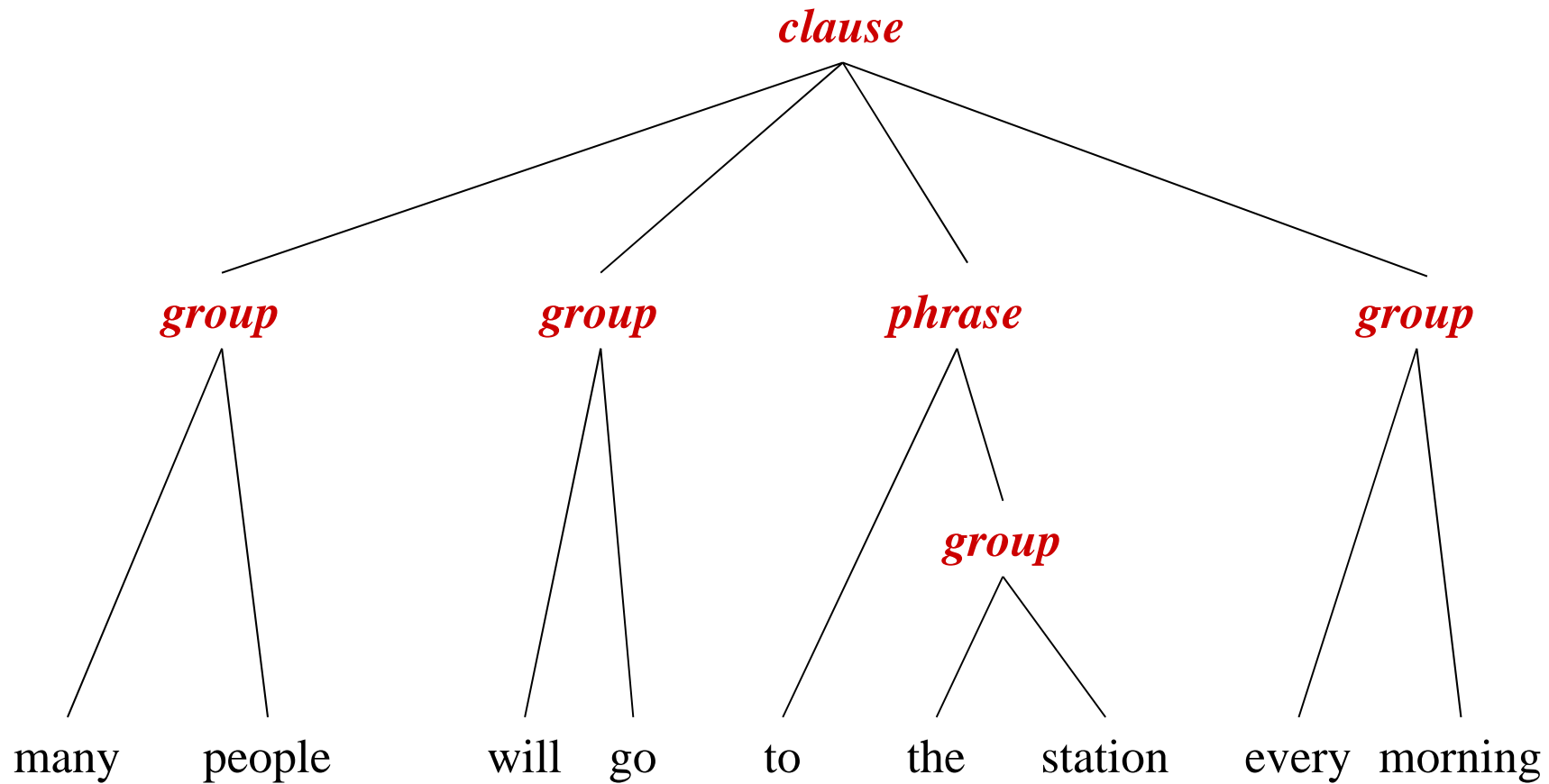
Syntactic Trees



Syntactic Trees

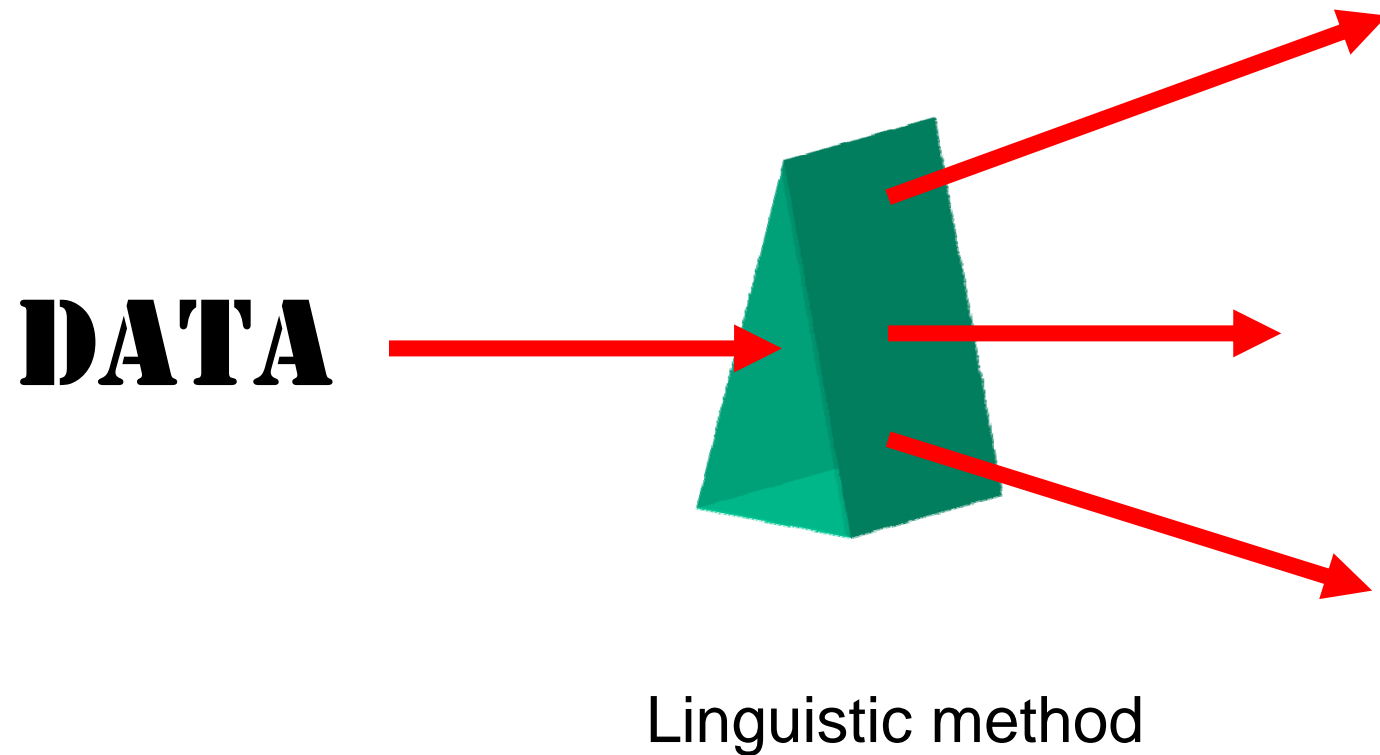


Syntactic Trees



How do we know precisely
which trees are required?

Linguistic analysis



Sentence Structure Tests and Probes

Types of structure ‘probes’: *syntactic constituents*

- Expansions and substitutions

– If you have a sentence:

The king of England ate cake

– then you can pick out constituents by trying to substitute ‘smaller’ but equivalent units:

- **The king ate cake**
- **He ate cake**
- **He ate it**

PRO-FORMS

Types of structure 'probes': '*semantic constituents*'

- these are the parts of a sentence that answer the questions:
 - who?
 - where?
 - when?
 - why?
 - how?
 - to whom?

Types of structure 'probes': *syntactic constituents*

- **Conjunction/Coordination test**
 - if you can replace a unit by that unit and another one of a *similar* kind, then you have a constituent:
 - The boy chased the dog.
 - The boy chased the dog and the cat.
 - *John rang up his friend and up his mother.

Types of structure 'probes': *syntactic constituents*

- **Reduction/Ellipsis test**

- If you have a sentence:

John won't wash the dishes

- then you can pick out constituents by seeing what can be 'left out' or **ellipsed**:

- **He will _____ if you ask him**

wash the dishes

- *John won't help me with my homework...*

Movement tests

- The gnome washed his hands in the pool.
- In the pool the gnome washed his hands.
- It was in the pool that the gnome washed his hands.

Not:

- The gnome in the pool washed his hands.

Movement tests

- The gnome washed his hands on Tuesday.
- On Tuesday the gnome washed his hands.
- It was on Tuesday that the gnome washed his hands.

Not:

- The gnome on Tuesday washed his hands.

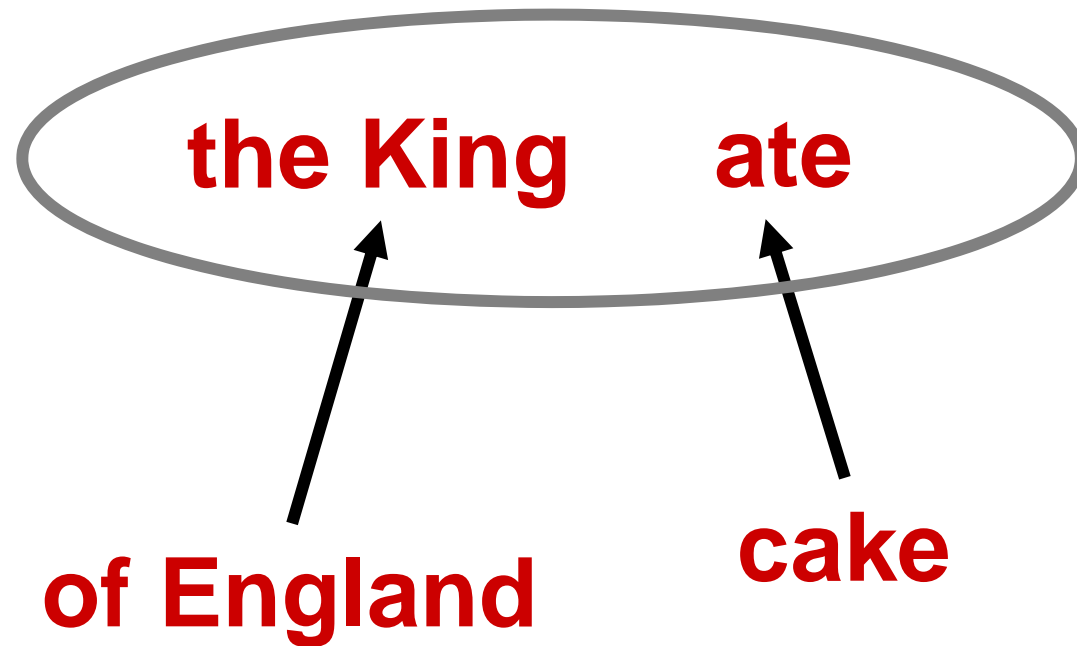
Types of structure 'probes': *Grammatical Subjects*

- Subject tests:
 - the Subject and the finite part of the verb **agree in grammatical number**
 - a **tag question** always picks out the Subject
 - if you make a **passive construction** the Subject is always the one to disappear or to be moved to a 'by phrase'

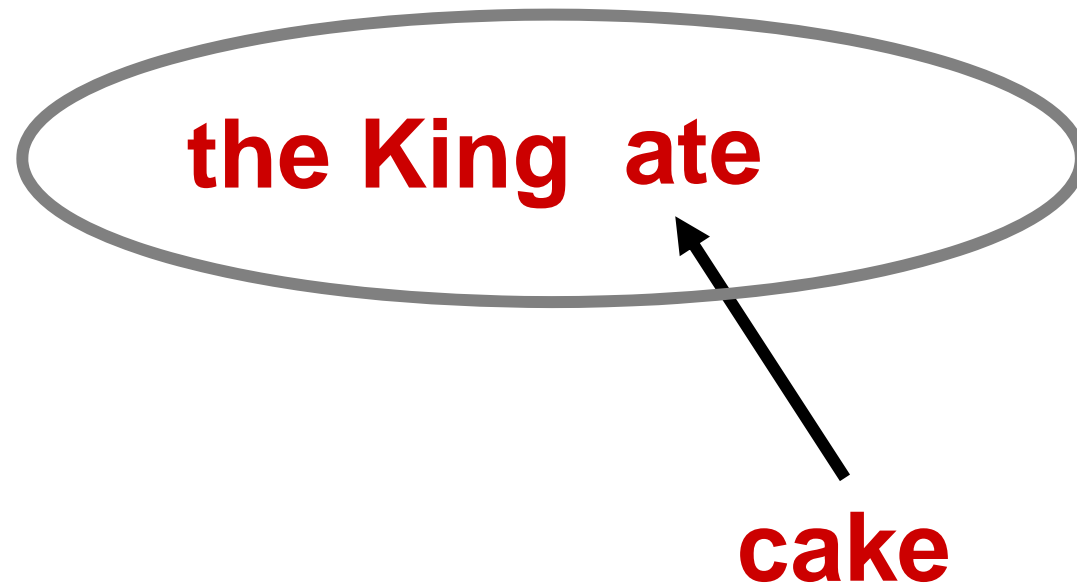
Types of structure 'probes': *syntactic constituents*

- **Dependency test**
 - if some words cannot be removed from a sentence or other unit **without taking others out with them** then these words are **dependent on** the others and form part of a larger constituent.
 - **the King of England ate cake**
 - **the King ate cake**
 - *** of England ate cake**

Dependency



Dependency

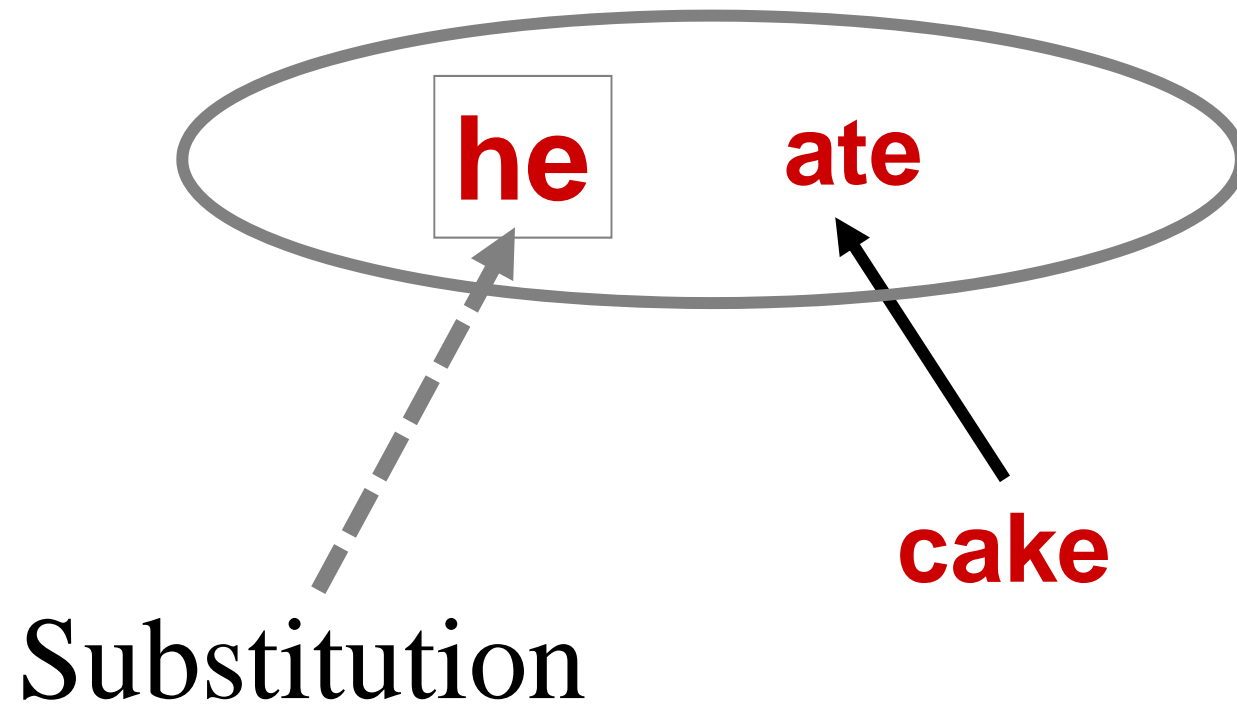


Dependency



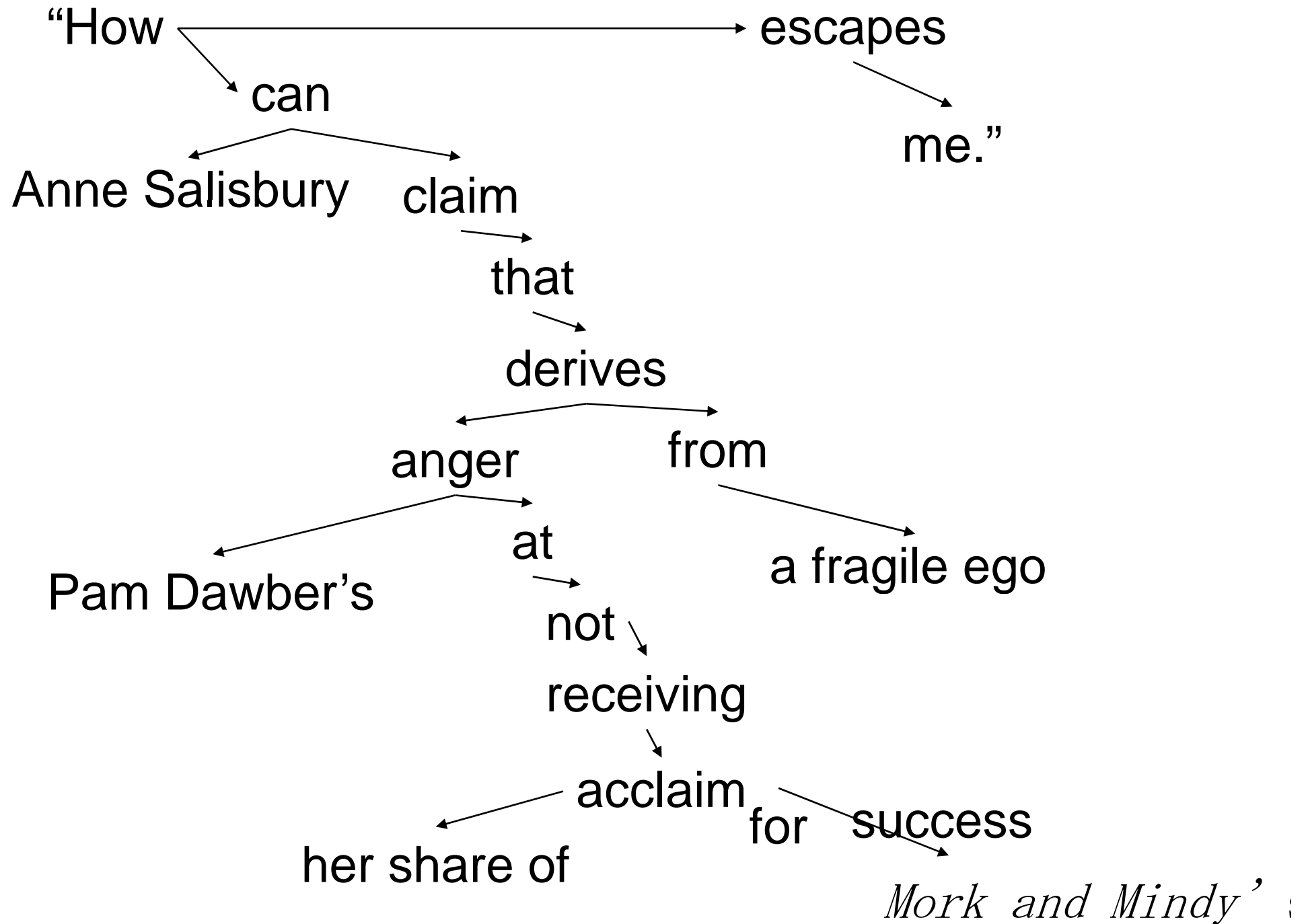
the King ate

Dependency



Dependency at work

“How Anne Salisbury
can claim
that Pam Dawber’s anger
at not receiving her share of acclaim for *Mork and
Mindy’s* success
derives from a fragile ego
escapes me.”



- The gnome in the garden was sad.
- The gnome was sad in the garden.
- In the garden the gnome was sad.

Tests:

- Who was sad was
the gnome in the garden.
- Who was sad in the garden was
the gnome.

Types of structure ‘probes’: *syntactic constituents*

- **Pseudo-clefts** (‘wh-cleft’)

- If you have a sentence:

The boy kicked the ball

- then you can pick out the constituents of the sentence using the **pseudocleft** construction:

- what the boy kicked was **the ball**
 - (the one) who kicked the ball was **the boy**

Circumstance or phrasal verb?

- They got off the old bus.
- They ran down the boy.
- They ran down the lane.

Theme predication probe: “It was X ...”

Circumstance or phrasal verb?

- They got off the old bus.
 - It was the old bus that they got off.

Theme predication probe: “It was X ...”

Circumstance or phrasal verb?

- They ran down the boy.
 - It was the boy that they ran down.

Theme predication probe: “It was X ...”

Circumstance or phrasal verb?

- They ran down the lane.
 - It was the lane that they ran down
 - It was down the lane that they ran
 - * It was down the boy that they ran

Theme predication probe: “It was X ...”

Tests and Probes

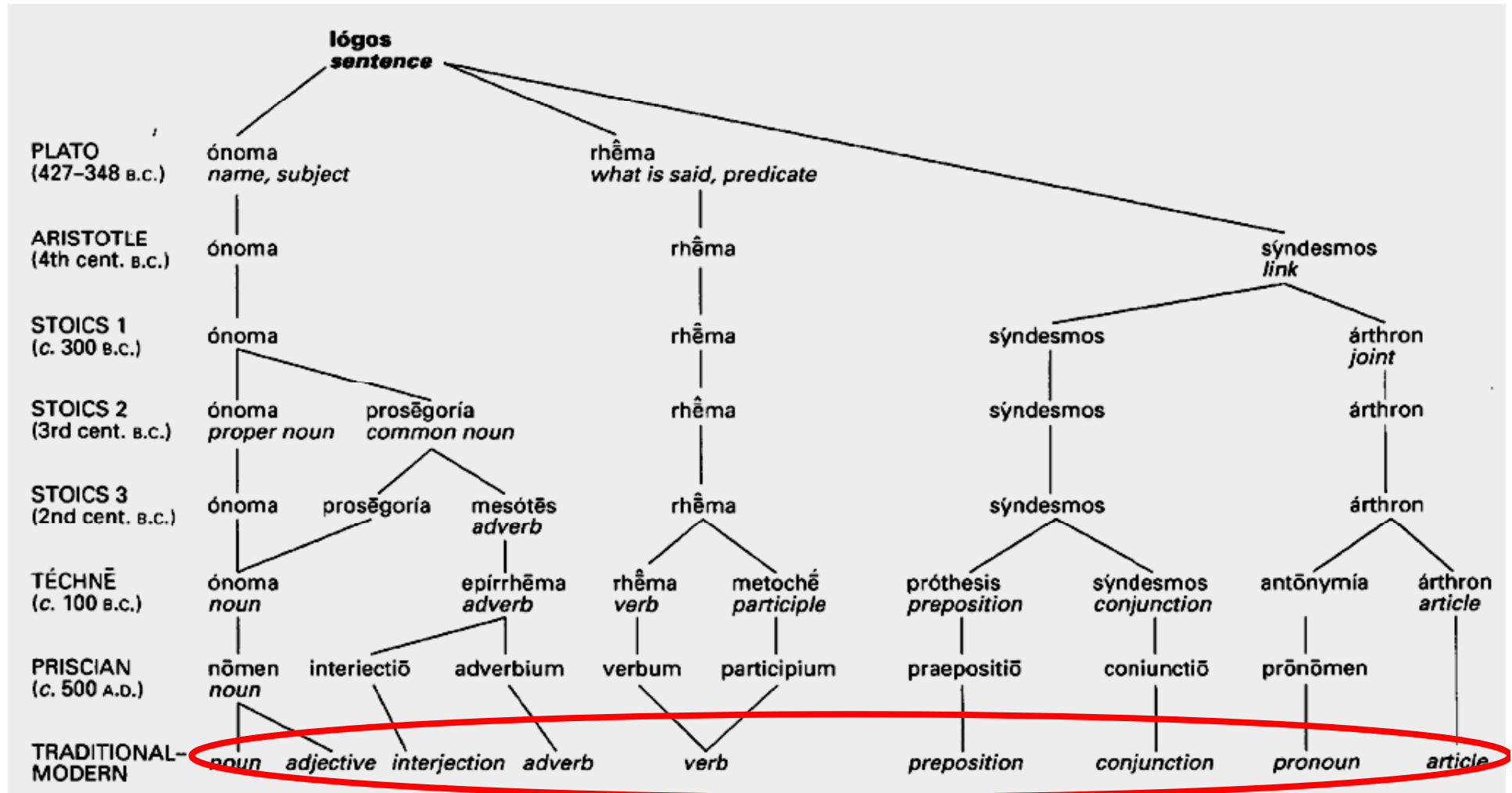
- semantic unity
- expansions & substitutions
- dependencies
- conjunction & coordination
- reduction & ellipsis
- movement
- pseudo-clefts (wh-clefts)
- theme predication (it-clefts)

The gnome in the garden was sad.

- semantic unity ?
- expansions & substitutions ?
- dependencies ?
- conjunction & coordination ?
- reduction & ellipsis ?
- movement ?
- pseudo-clefts (wh-clefts) ?
- theme predication (it-clefts) ?

- The gnome in the garden was sad.
- The giraffe in the field could eat the leaves in the neighbouring garden.
- The radio in the car could be heard in the street.
- The gnome from the garden is my best friend.

Traditional categories



Robins' *Short history of linguistics*

Two ways of defining word classes

- by their
grammatical form

- der Angestellte
- das blaue Flugzeug
- laufen wir weg

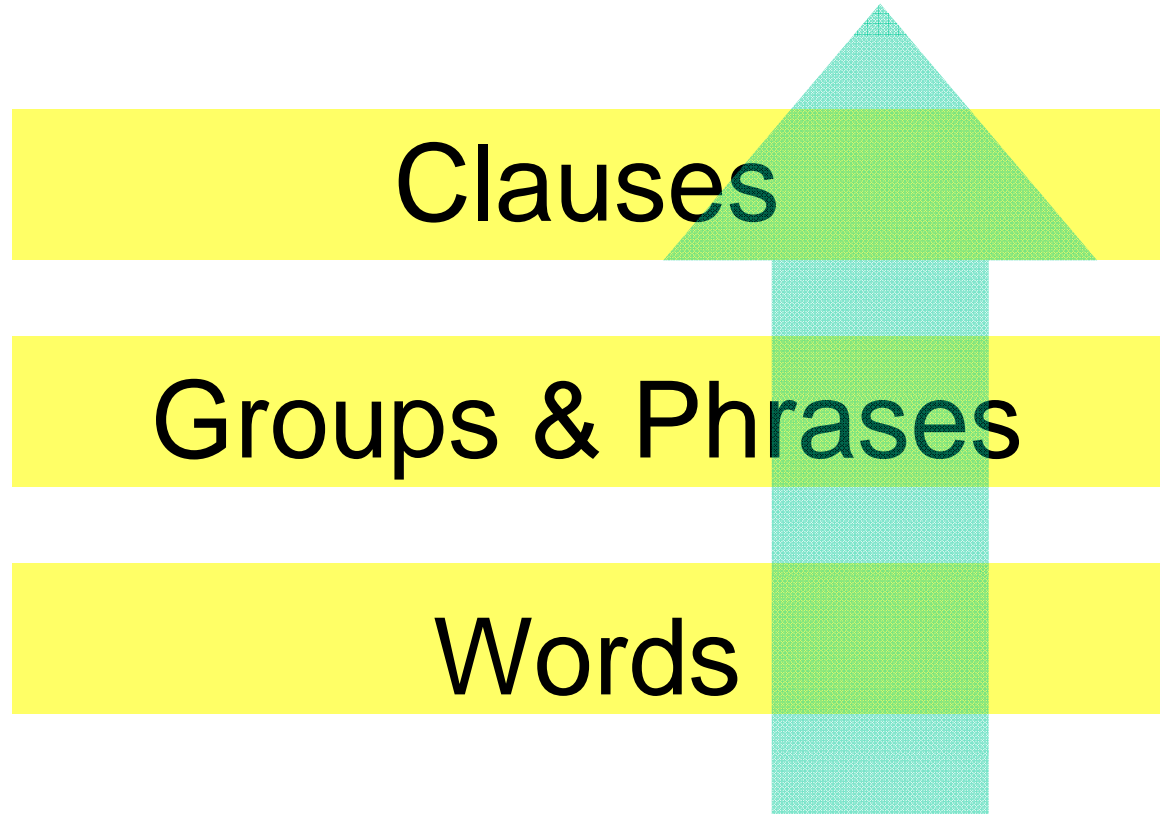
morphology

- by their
distribution

- i.e., where they occur
in relation to other
words

syntax

Immediate Constituency structure



Building up a constituent from a word class

- start with a word class:
noun, adjective, verb, etc.
- and see what we can ‘add to it’ to get something bigger that
 - does the same kind of job (**function**) and
 - appears in the same kind of places
(**form**: distribution)

the Phrase

Building up a constituent from a word class: nouns

- | | |
|-------------------------|-----------------------------|
| • he | [pronoun] |
| • John | [proper name] |
| • The boy | [determiner noun] |
| • The good boy | [determiner adjective noun] |
| • The boy in the garden | ?? |

the Noun Phrase (NP)

Building up a constituent from a word class: verbs

- | | |
|-------------------------------------|---------------|
| • ate | [V] |
| • ate a cake | [V NP] |
| • ate a cake in the park | [V NP PP] |
| • quickly ate a cake
in the park | [Adv V NP PP] |

the Verb Phrase (VP)

Building up a constituent from a word class: prepositions

- in [preposition]
- in the garden [preposition ??]
- right in the garden [adv? preposition NP]

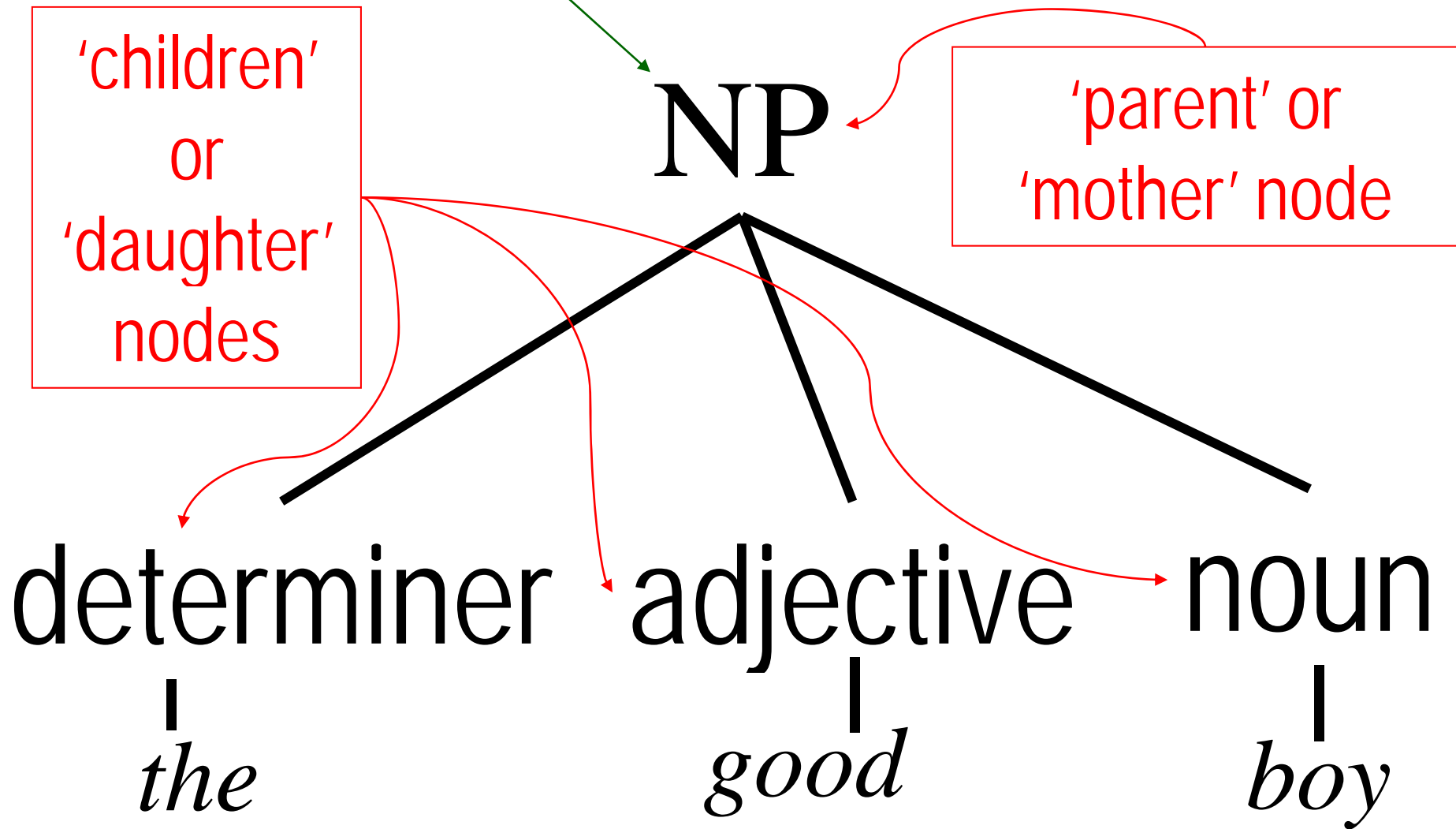
the Prepositional Phrase (PP)

Describing Structure

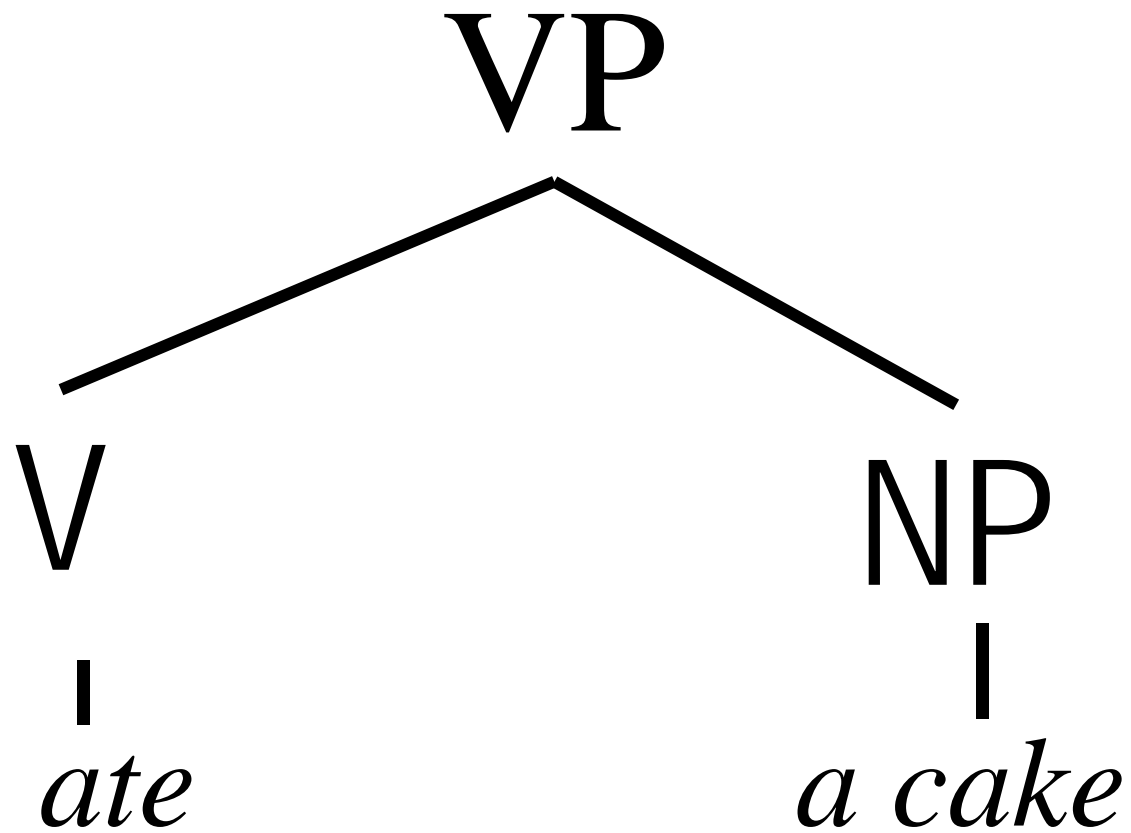
- to describe these ‘immediate constituents’
we use

–SYNTACTIC TREES

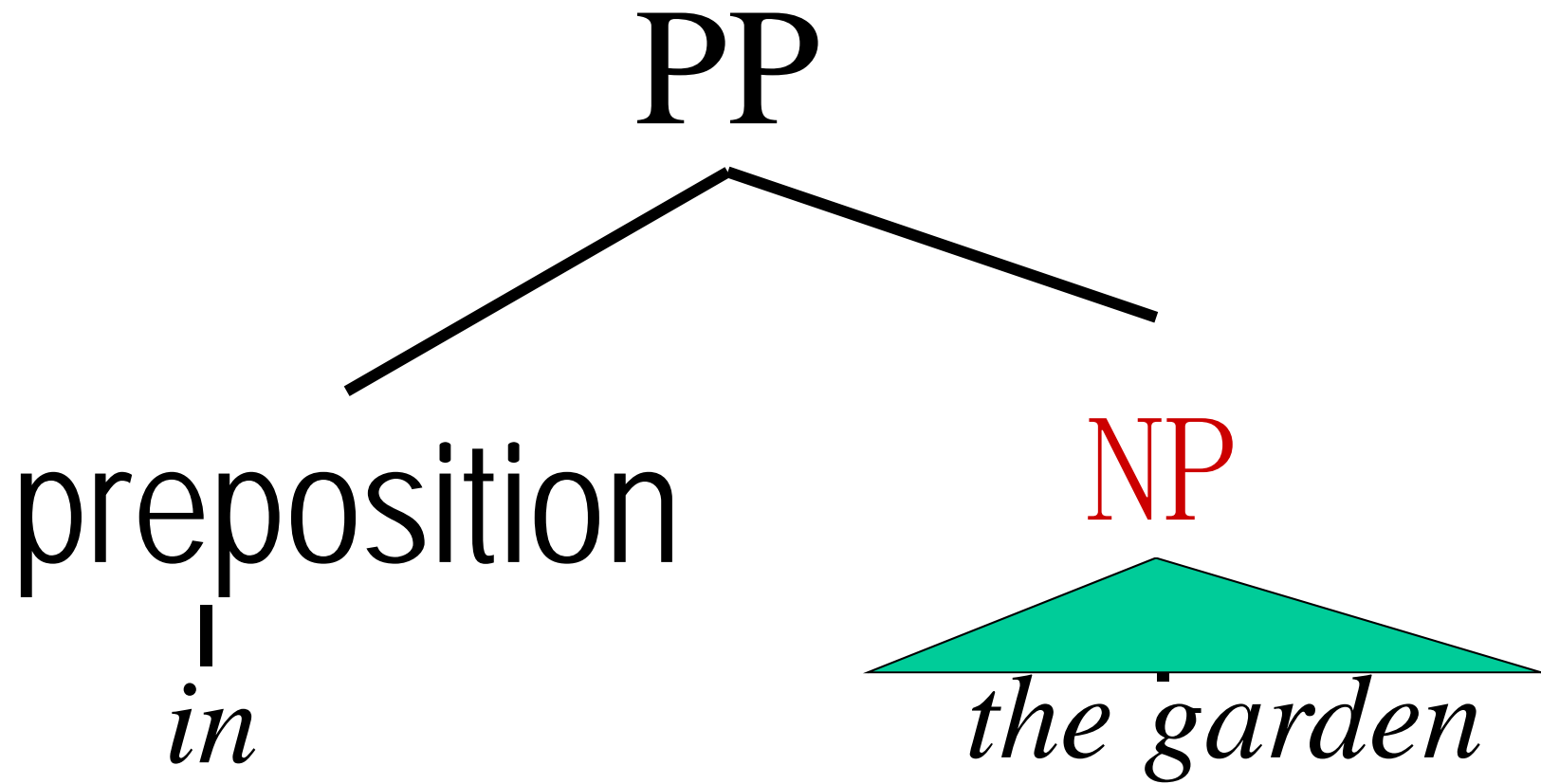
dominating node



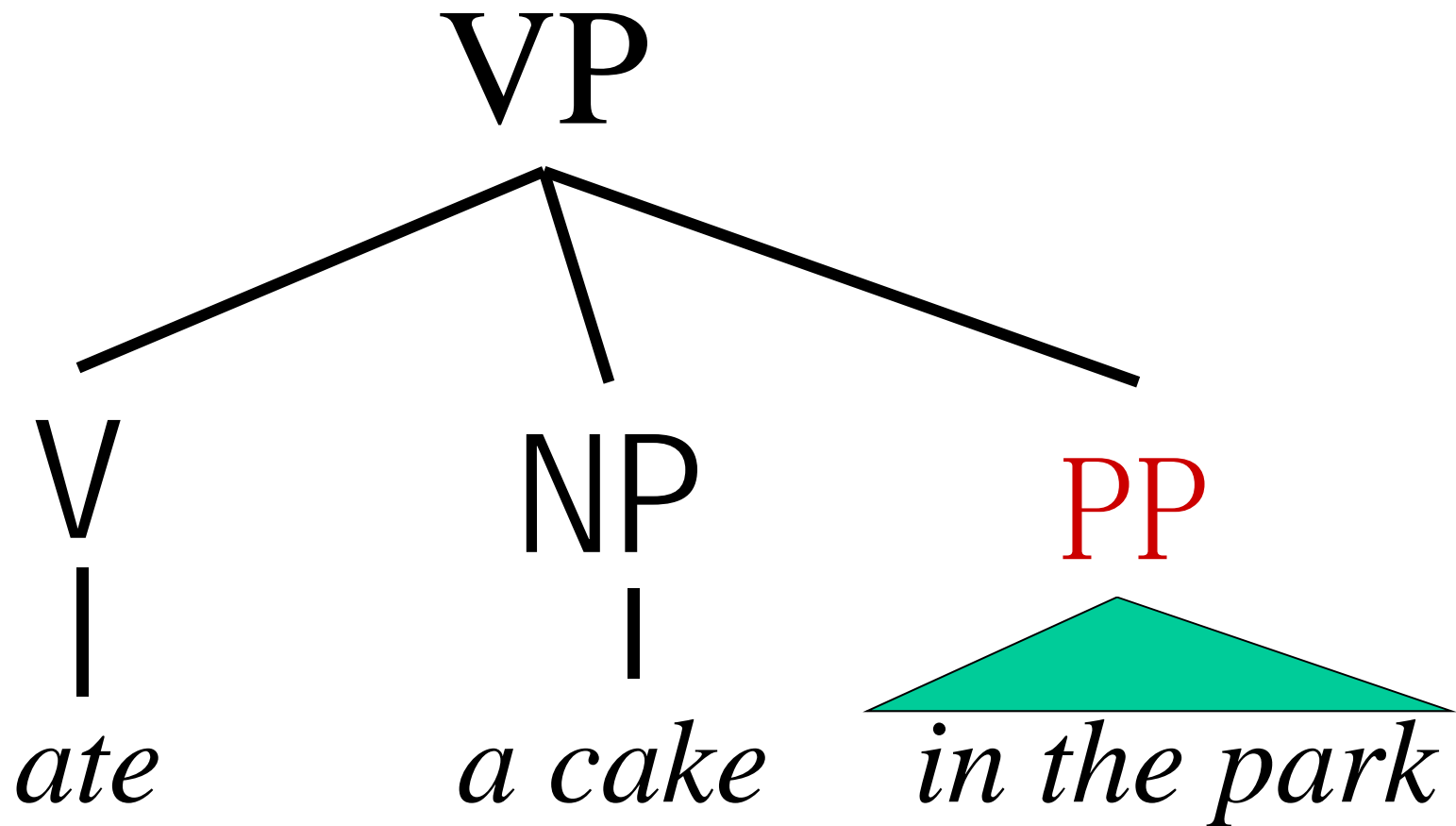
Another constituent ‘tree’



A third constituent 'tree'



Yet another constituent ‘tree’

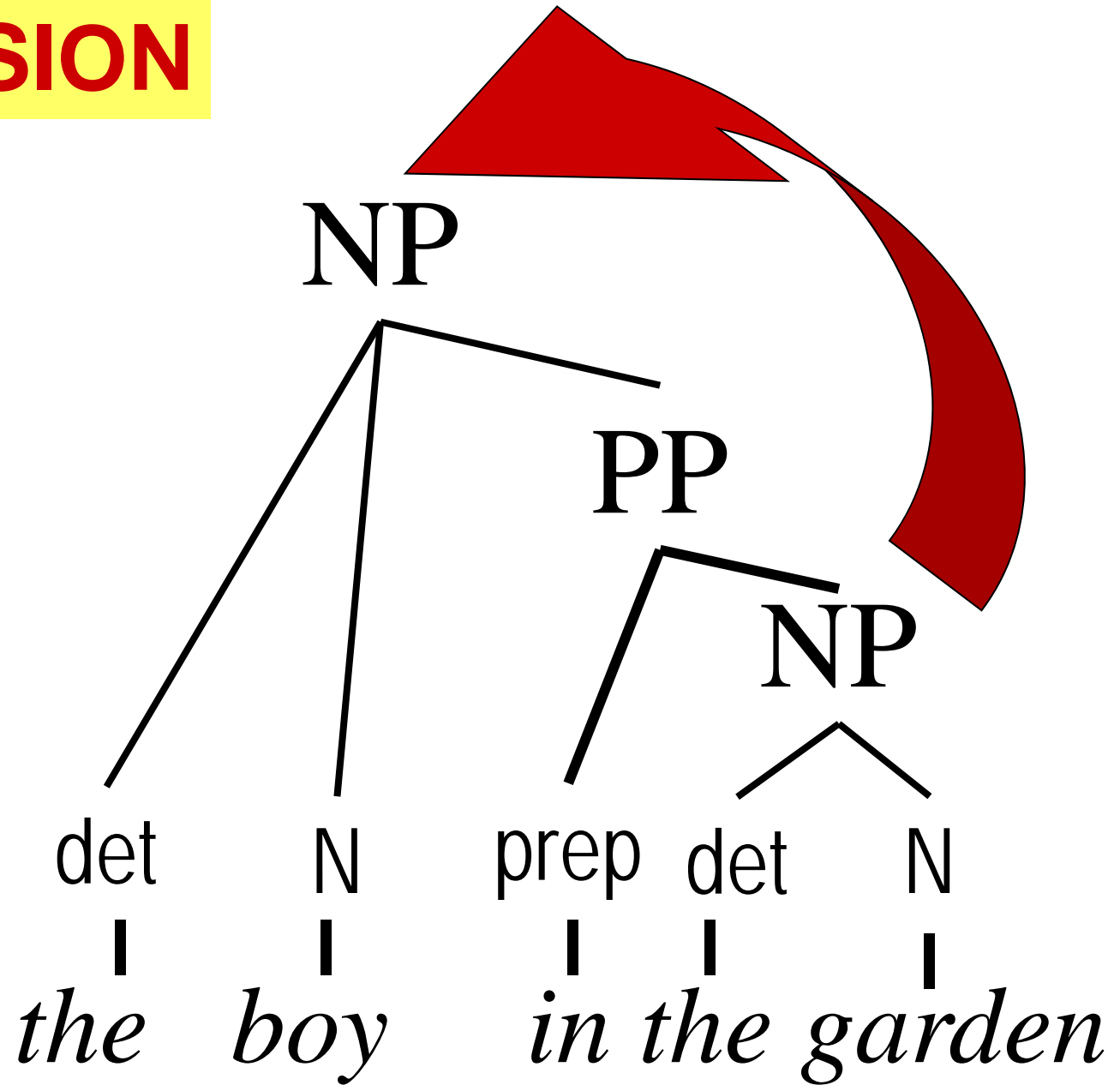


A phrase structure tree for...

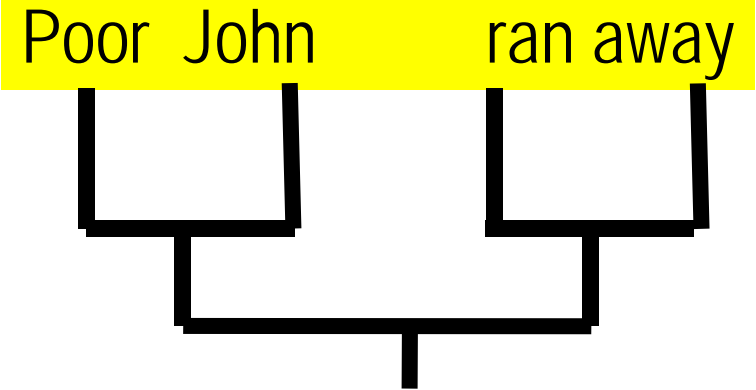
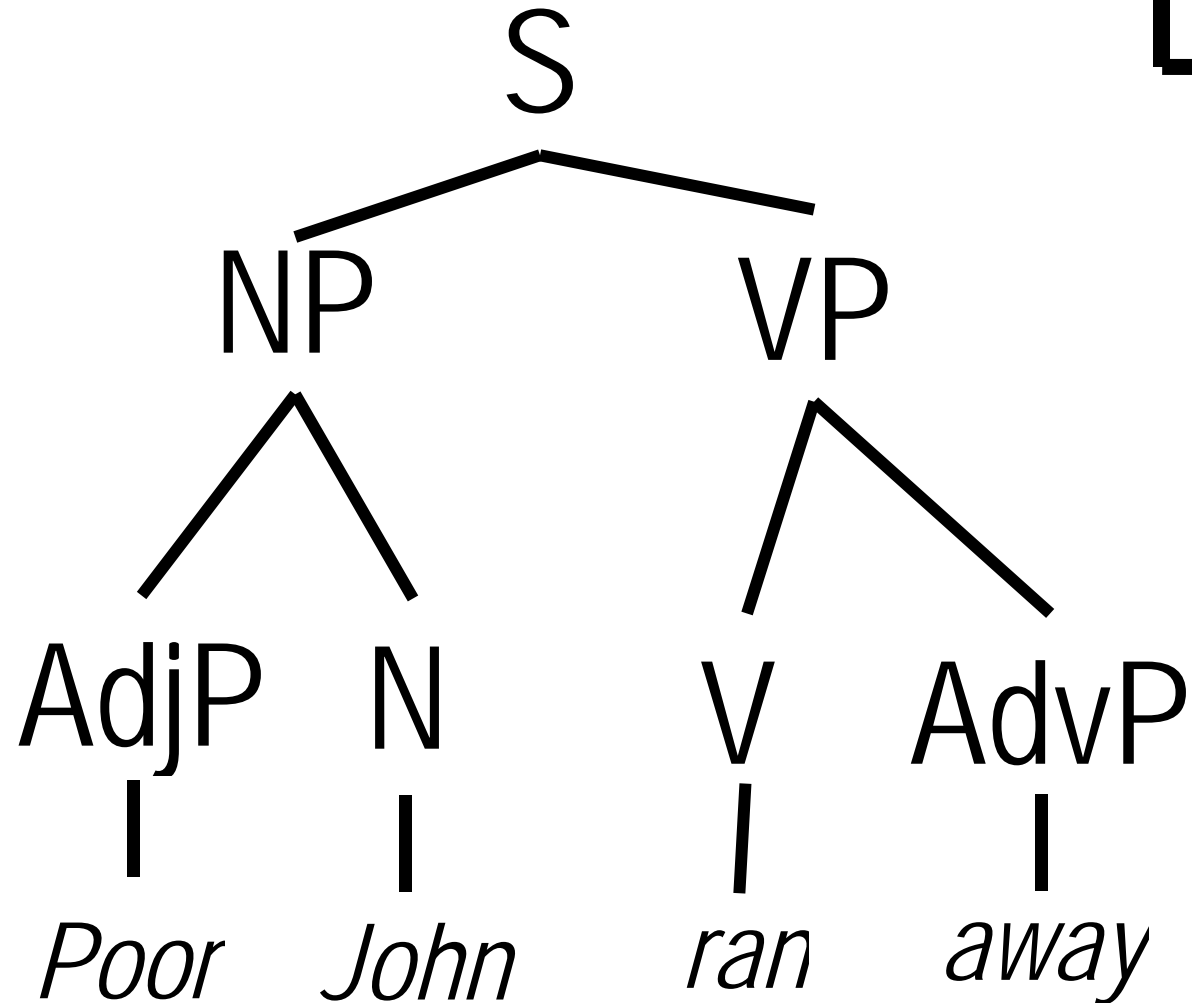
The boy in the garden

??

RECURSION

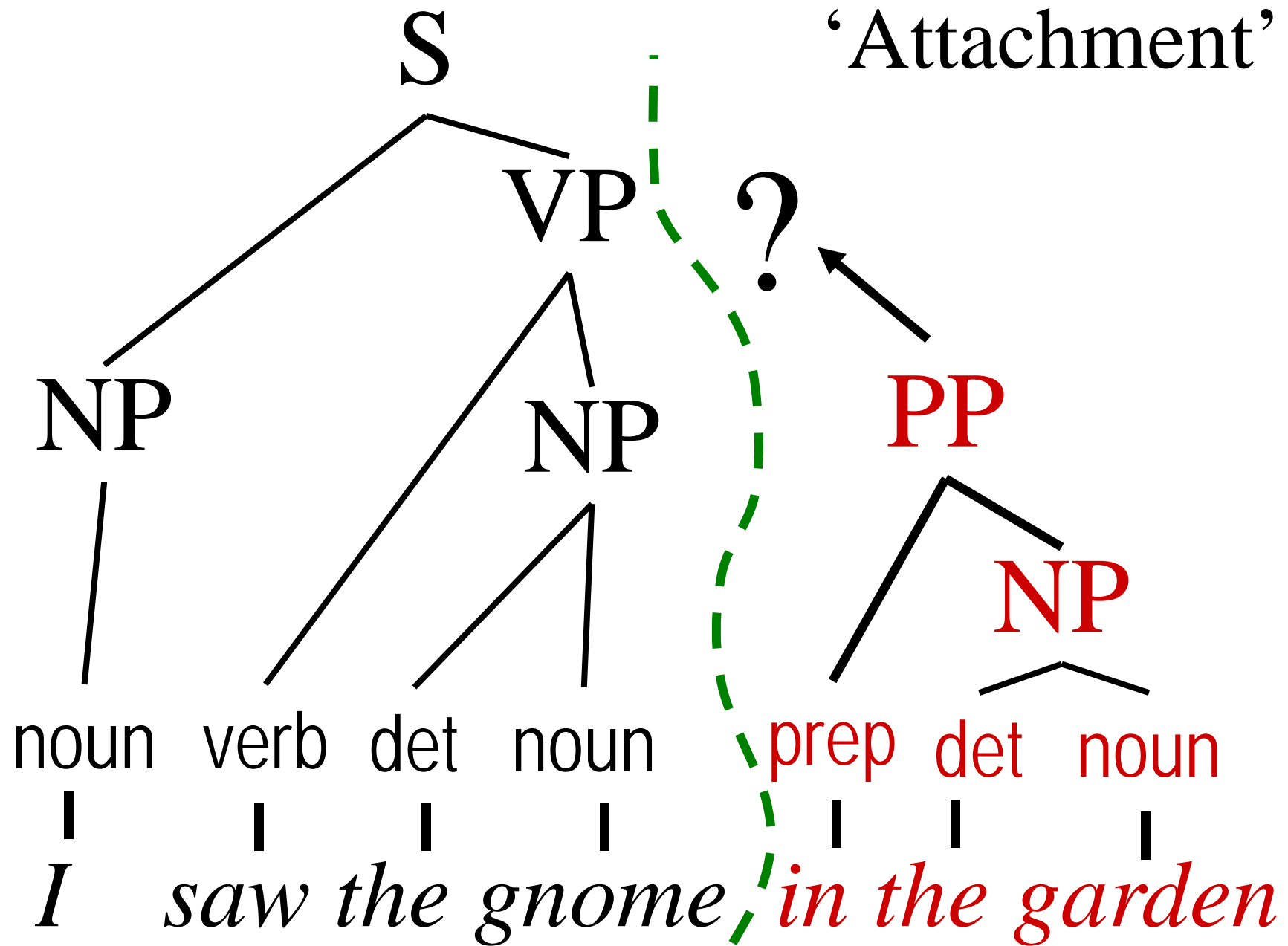


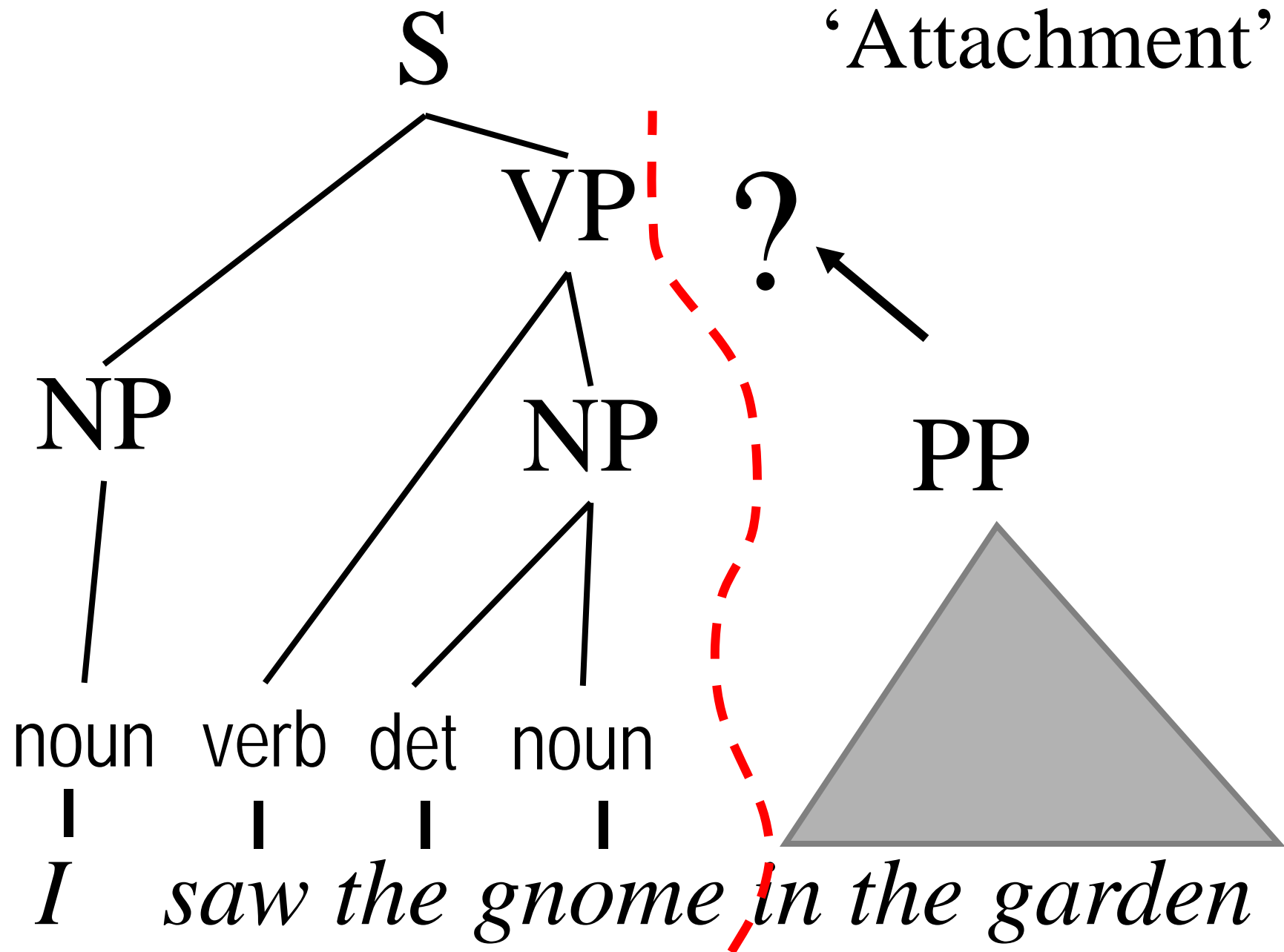
The **Sentence**

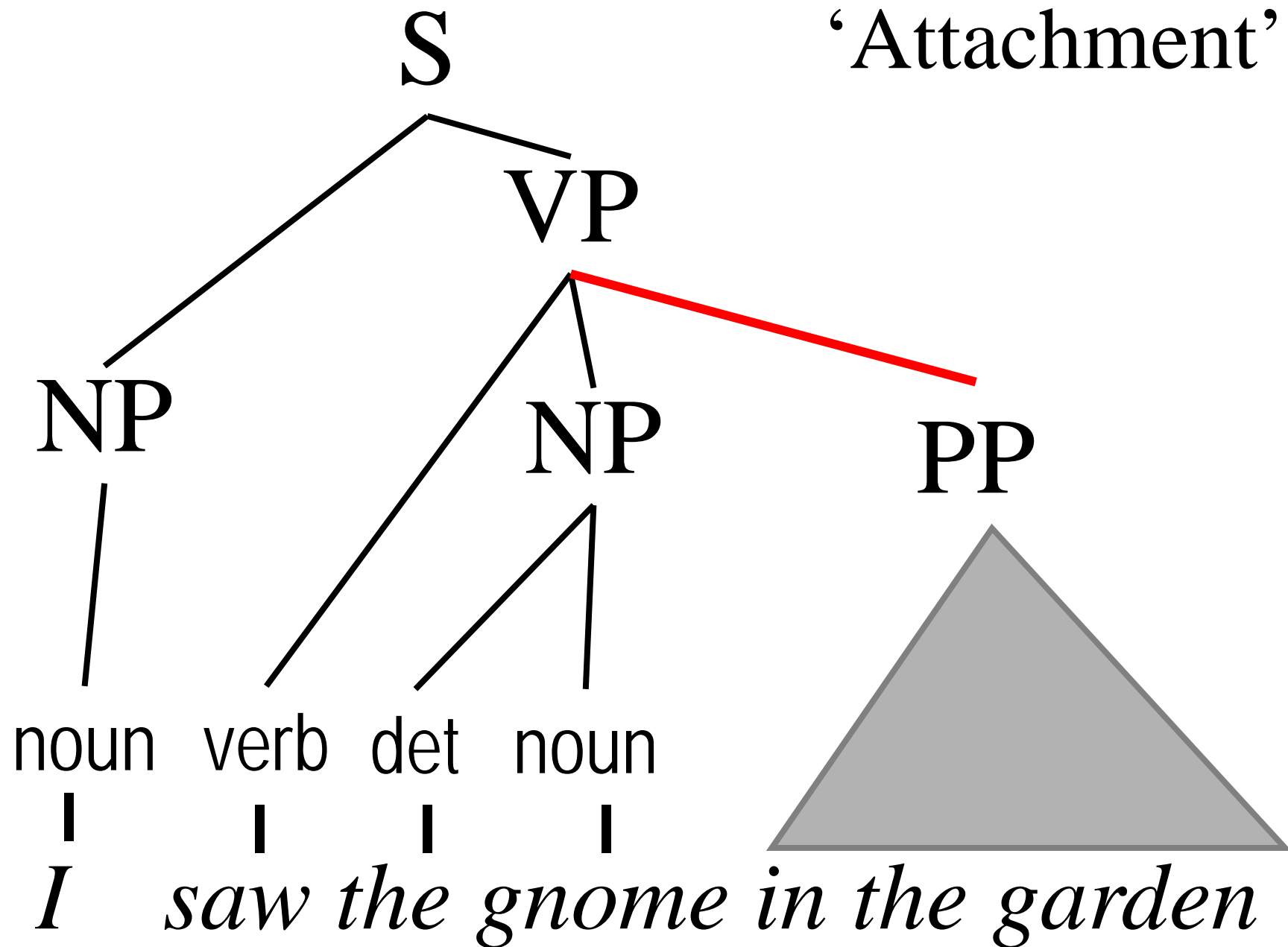


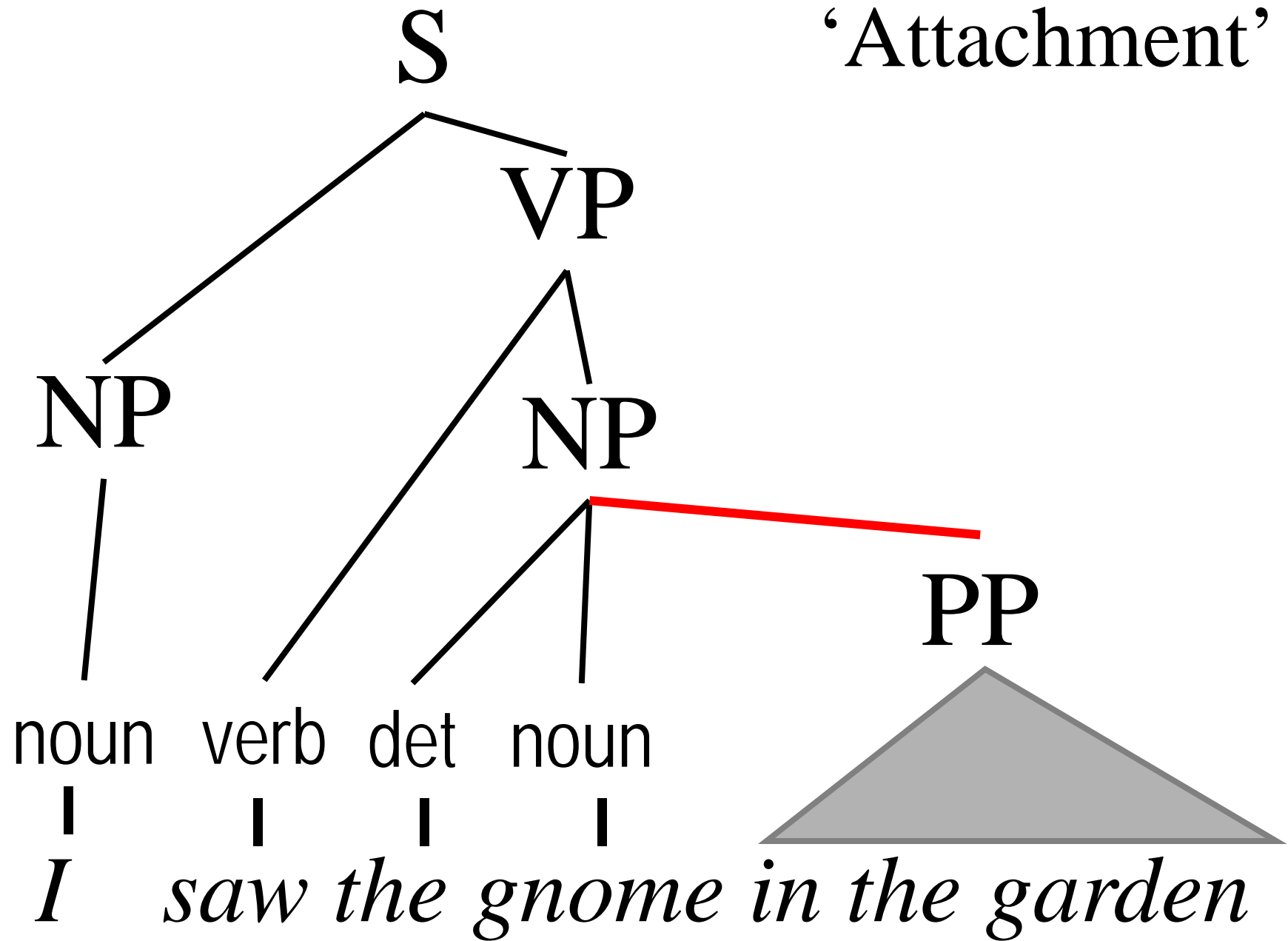
What do all these trees do?

- help construct structure...









What do all these trees do?

- help construct structure...
- guide interpretation...