



Another look at PSRs:

Intermediate Structure

Starting X-bar theory



Substitution



Substitution

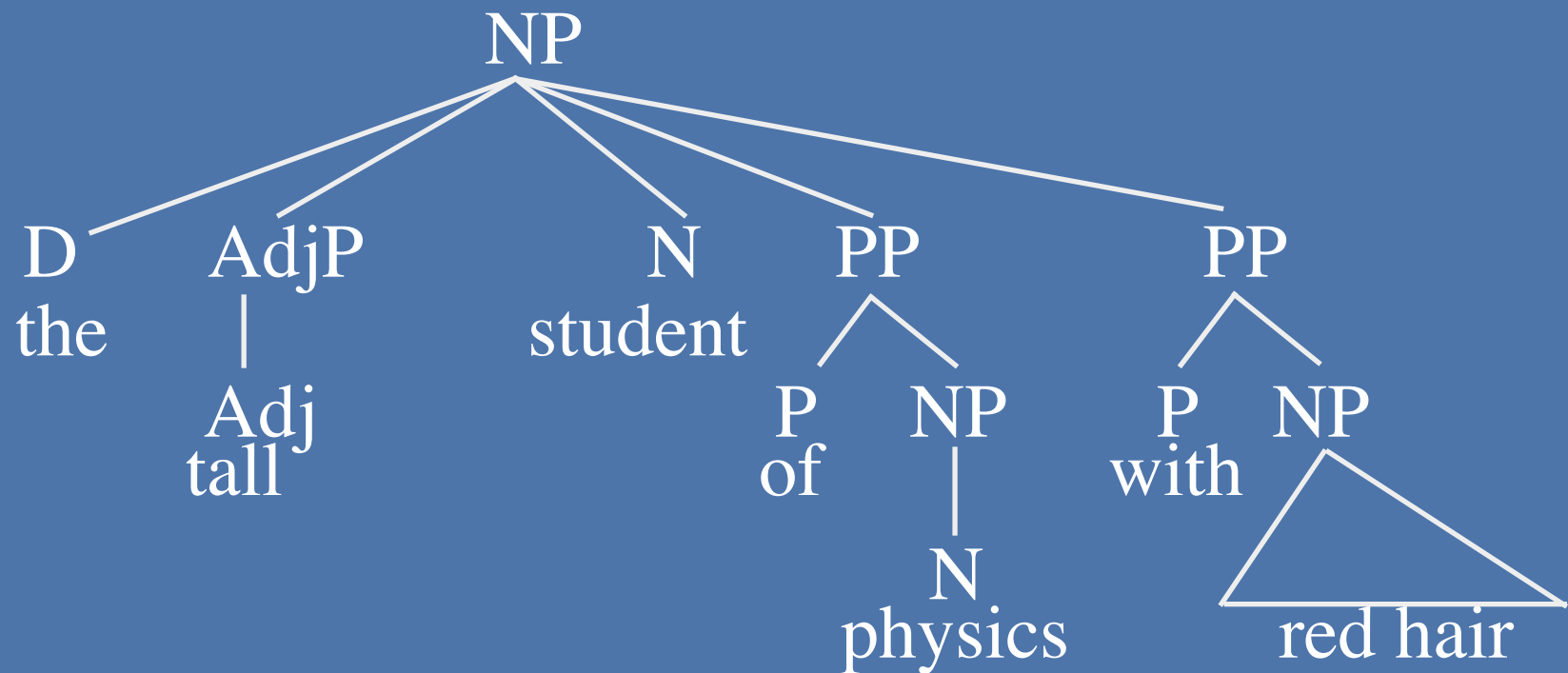
- If a group of words can be replaced by a single word, they are a constituent.
 - I saw [the teacher]/him.
→ [the teacher] is a constituent

Substitution

- If a group of words can be replaced by a single word, they are a constituent.
 - I saw [the teacher]/him.
→ [the teacher] is a constituent
- If two constituents can be replaced by the SAME word, they are constituents of the same type.
 - I saw [the teacher]/him.
 - I saw [my crazy uncle]/him.
→ [the teacher] and [my crazy uncle] are constituents of the same type (NP)

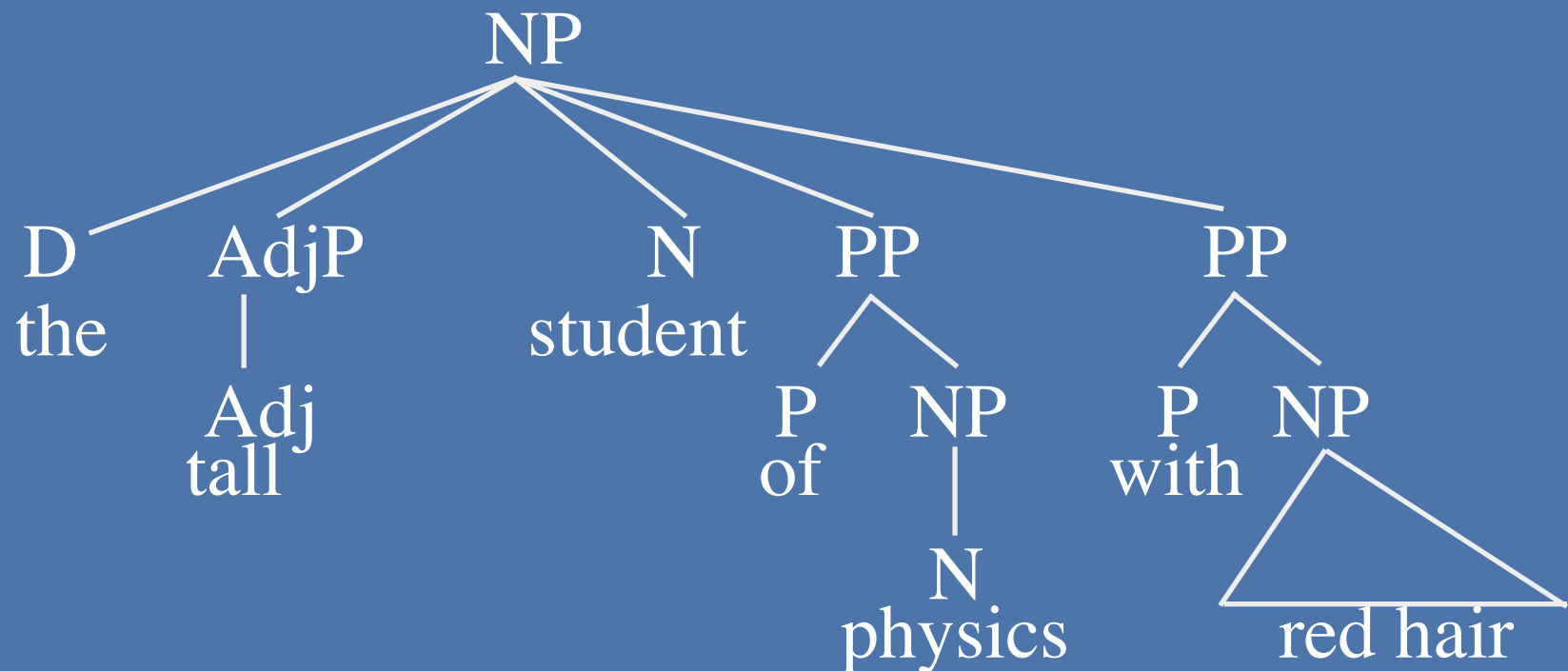
Flat Structure

○ NP → (D) (AdjP+) N (PP+)



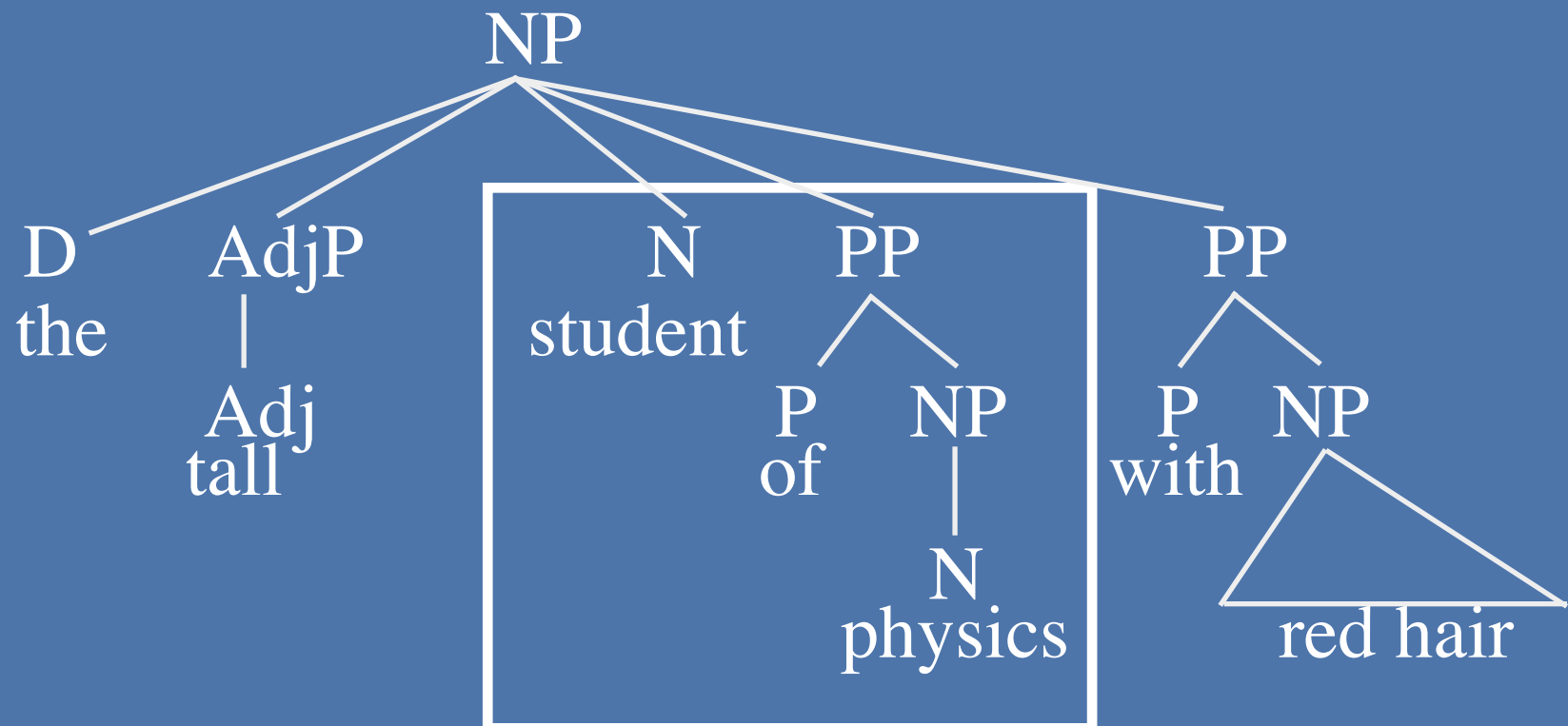
Flat Structure

- I saw the tall [student of physics] with red hair not the short [one] with brown hair.



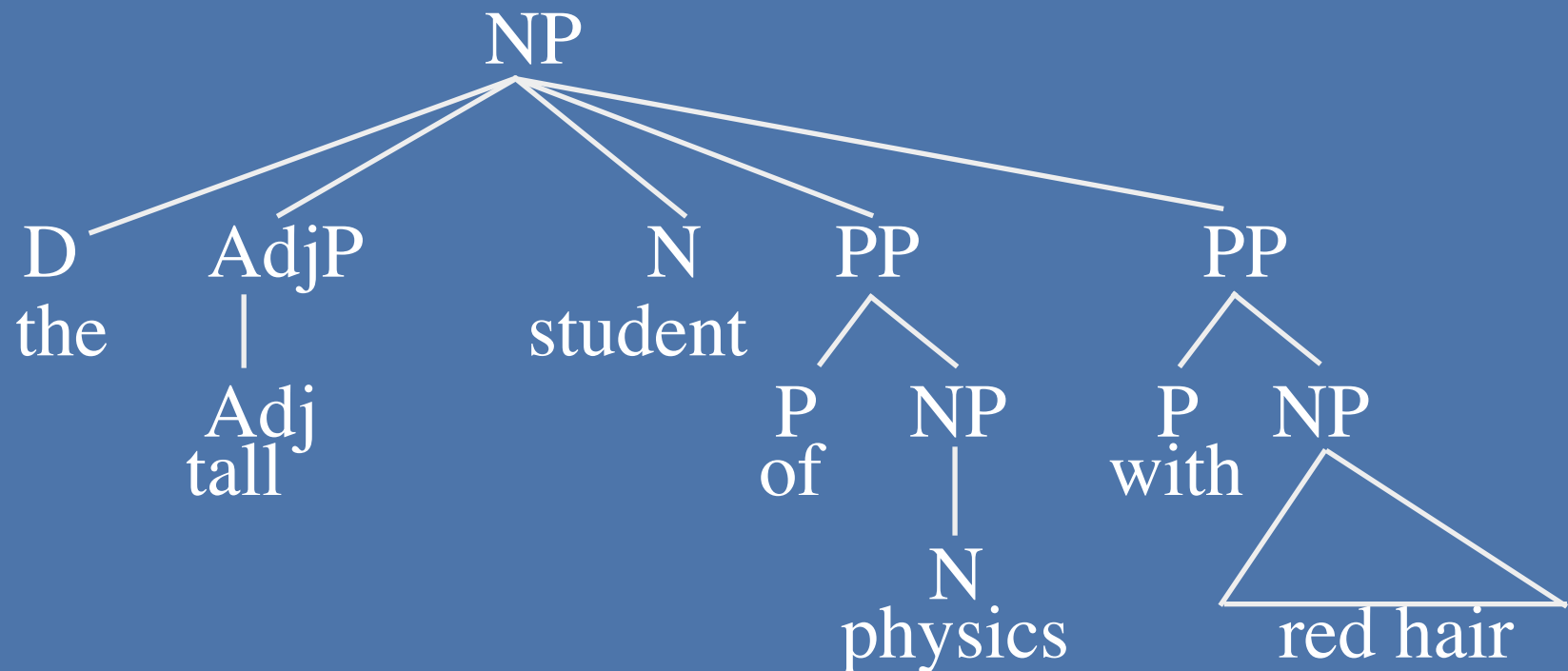
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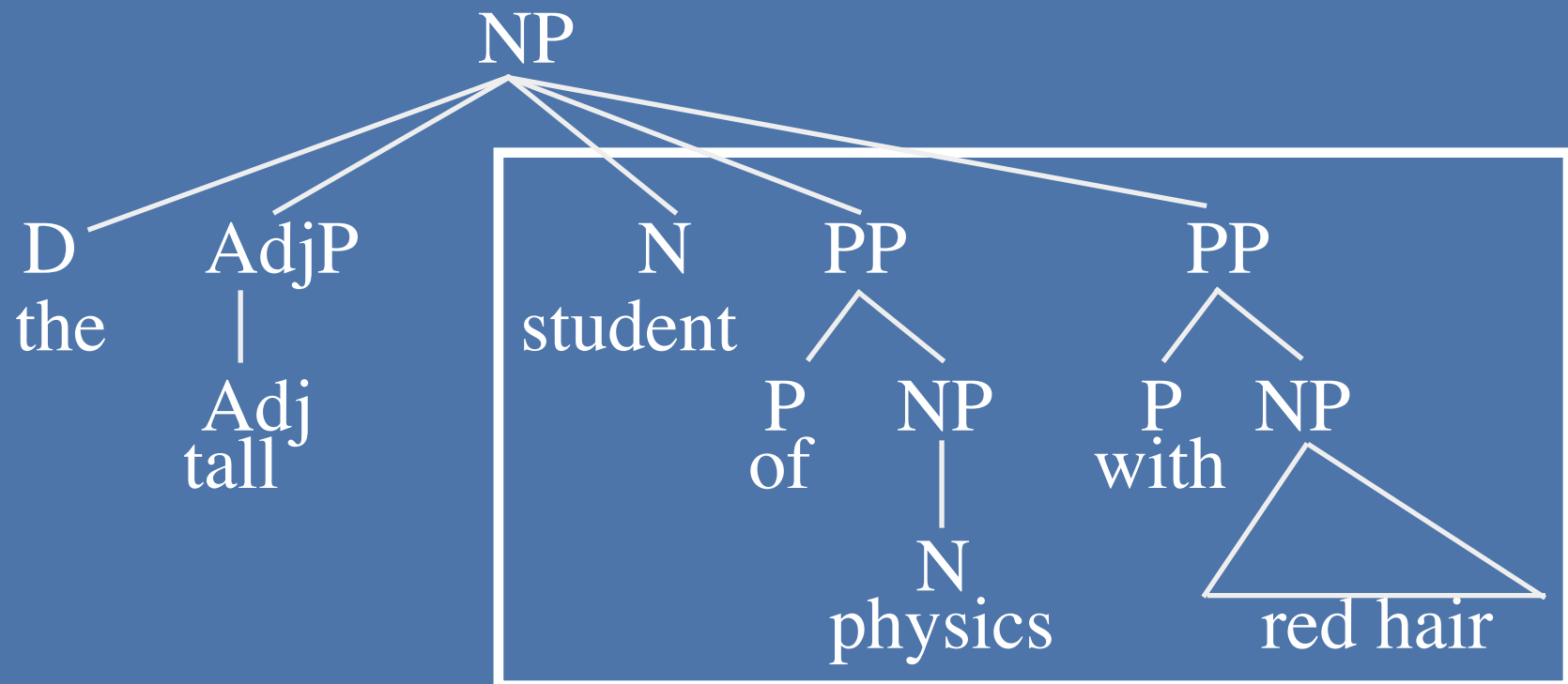
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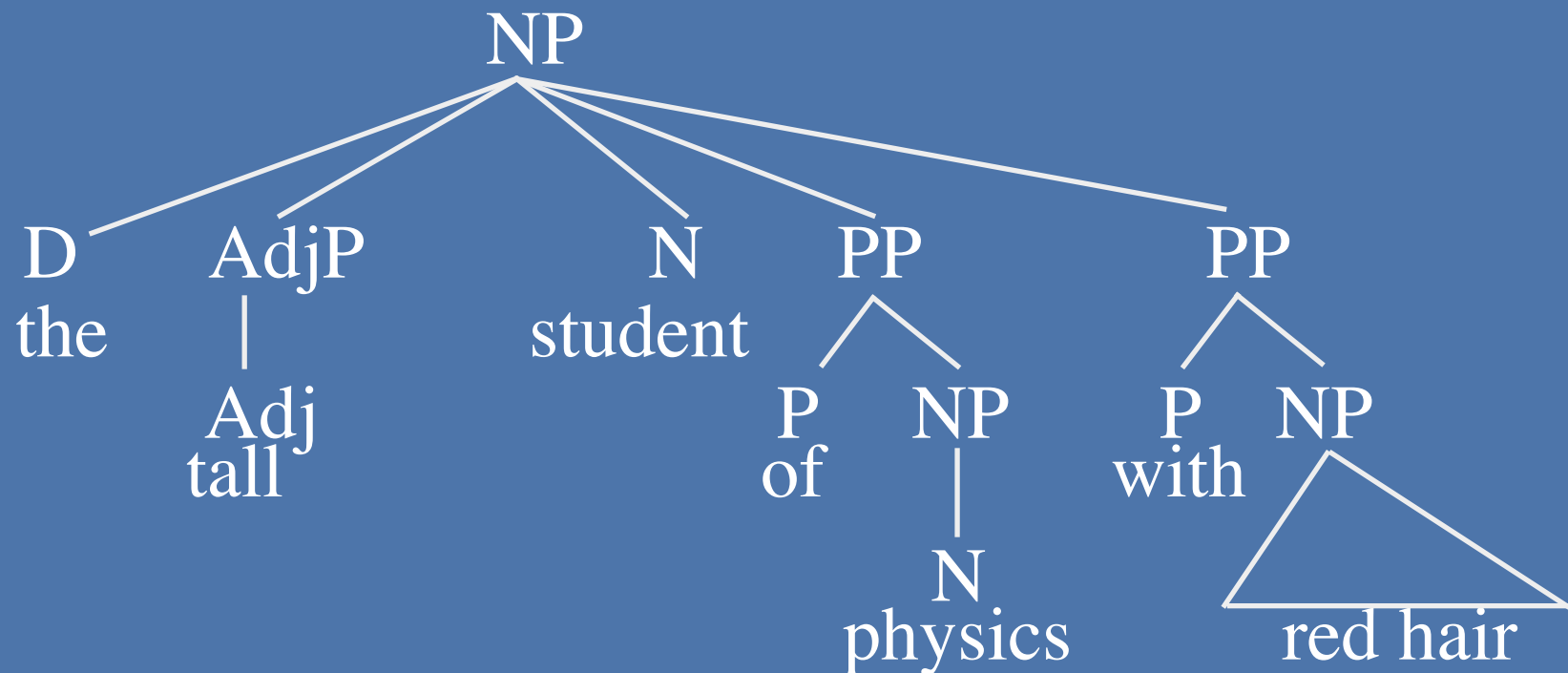
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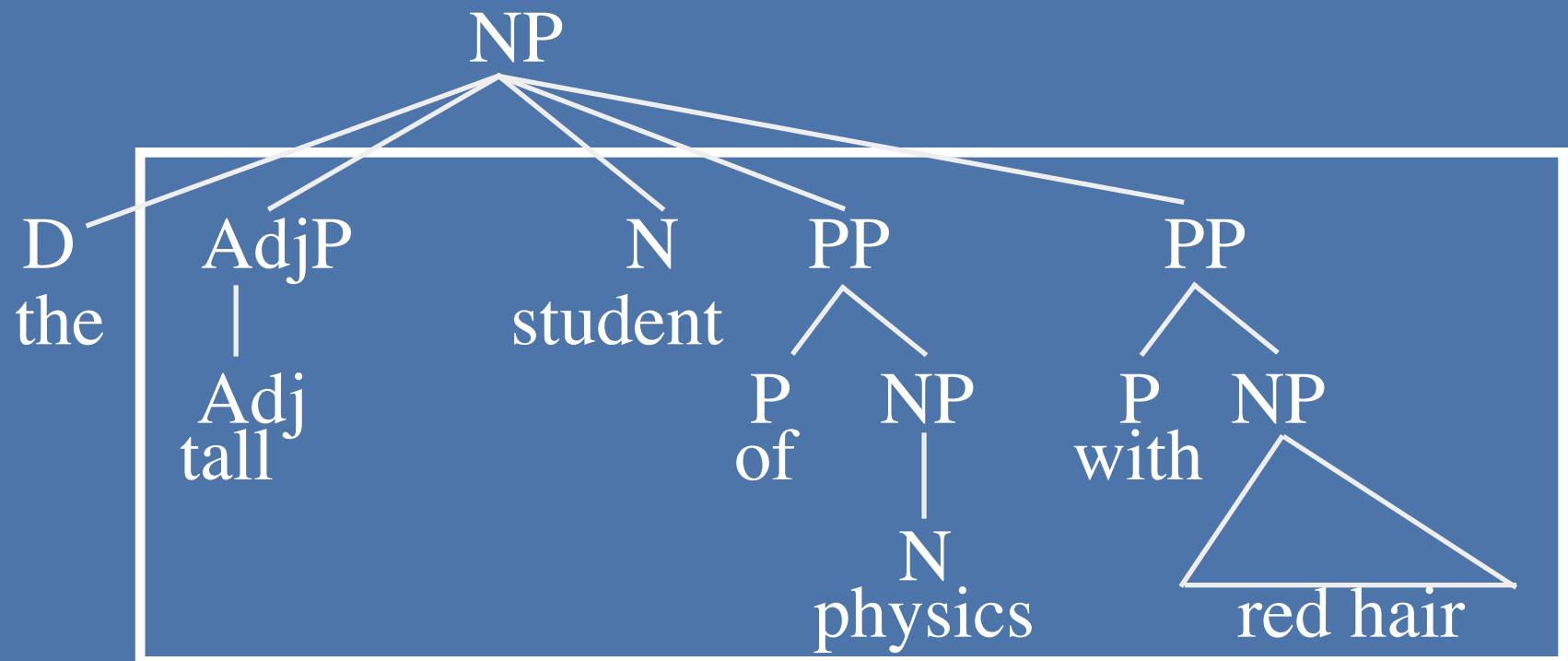
Flat Structure

- I saw this [tall student of physics with red hair] not that [one].

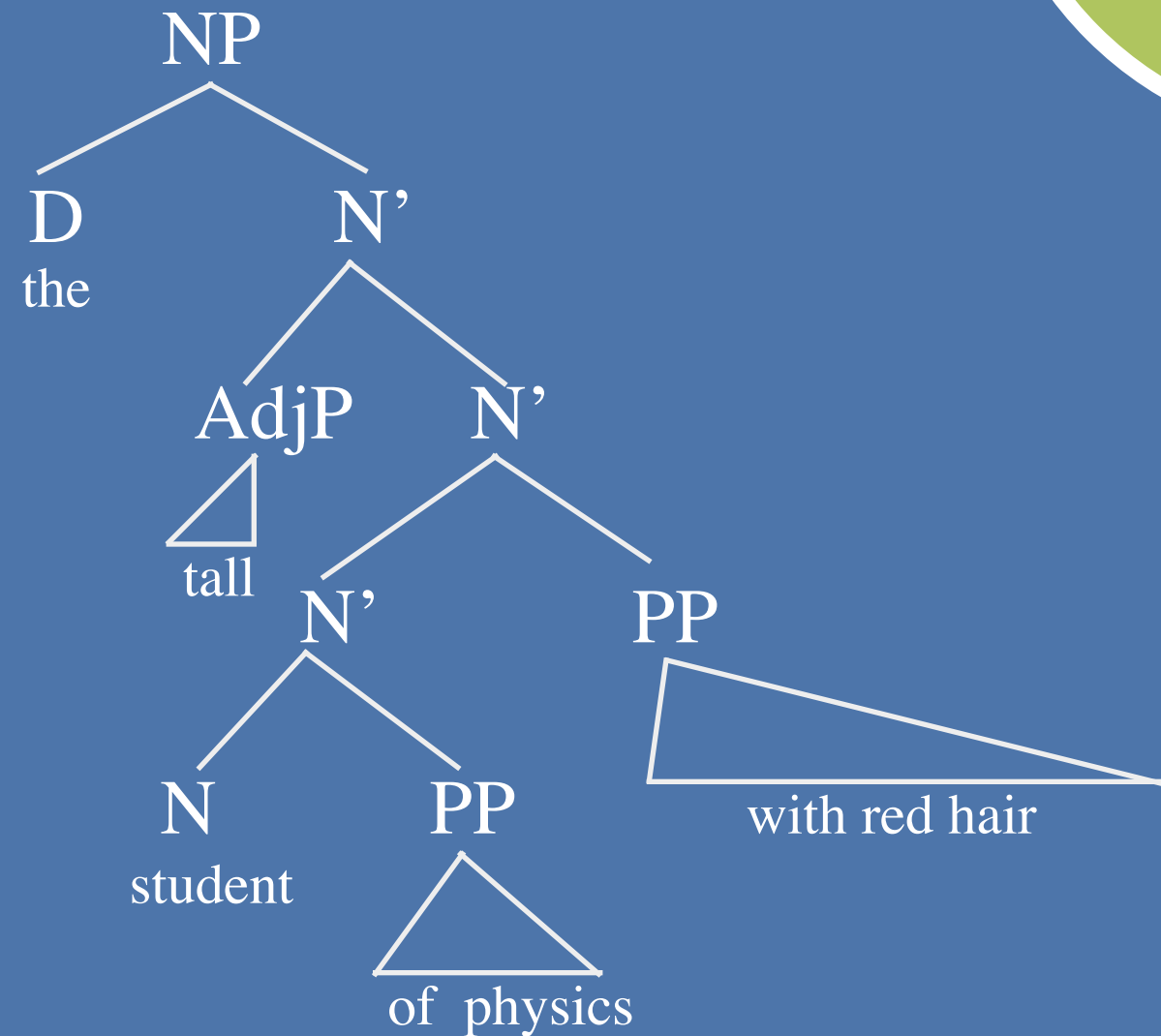


Flat Structure

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N' Structure



N' rules



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○ NP → (D) N'

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○ N' → N (PP)

N' rules

○ NP → (D) N'

○ (N') → (AdjP)(N') *or* N' (PP) ←

○ N' → N (PP)

An iterative (self-recursive) rule:
can apply as many times as
needed

One-Replacement



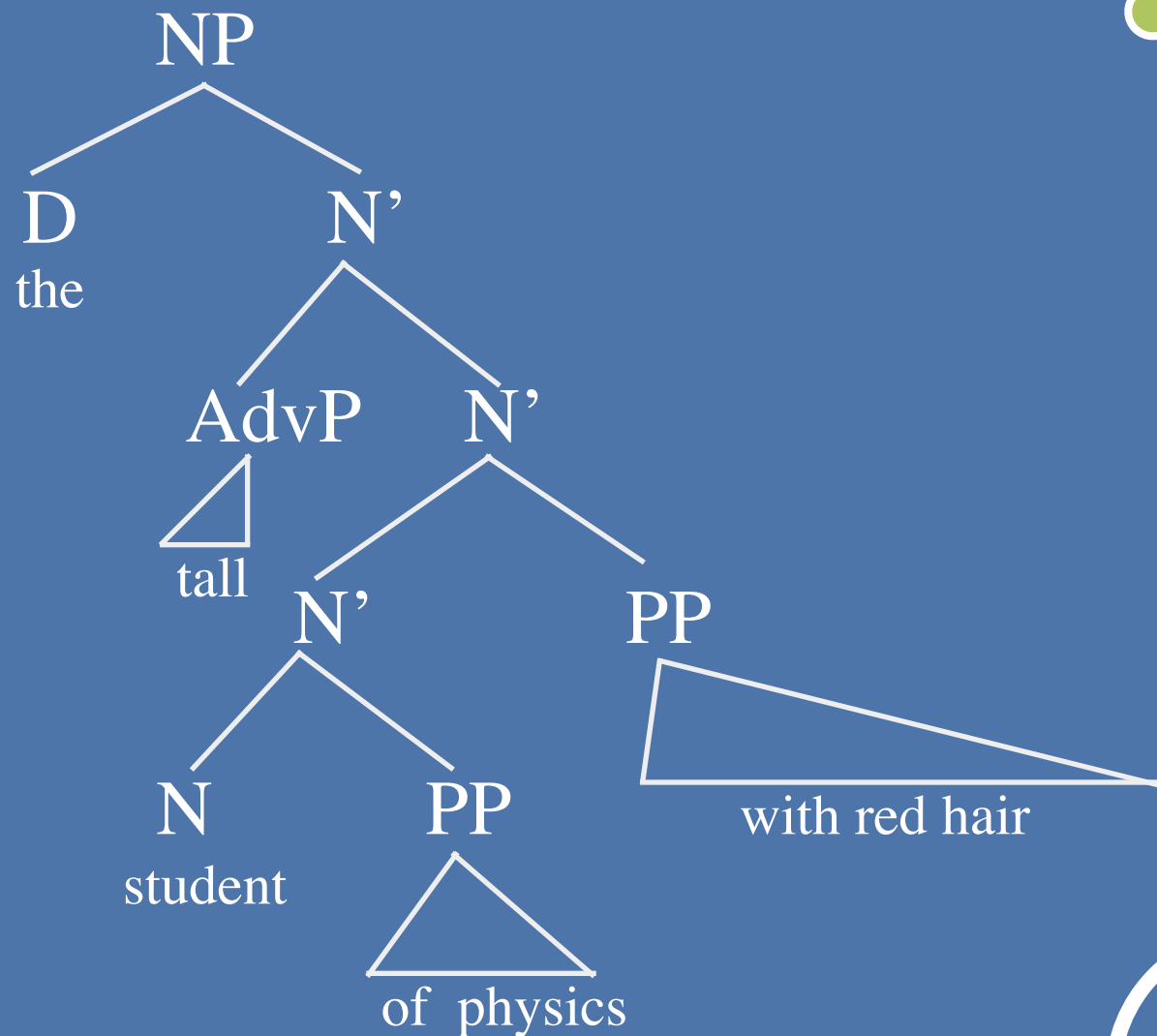
Replace an N' node with [one]

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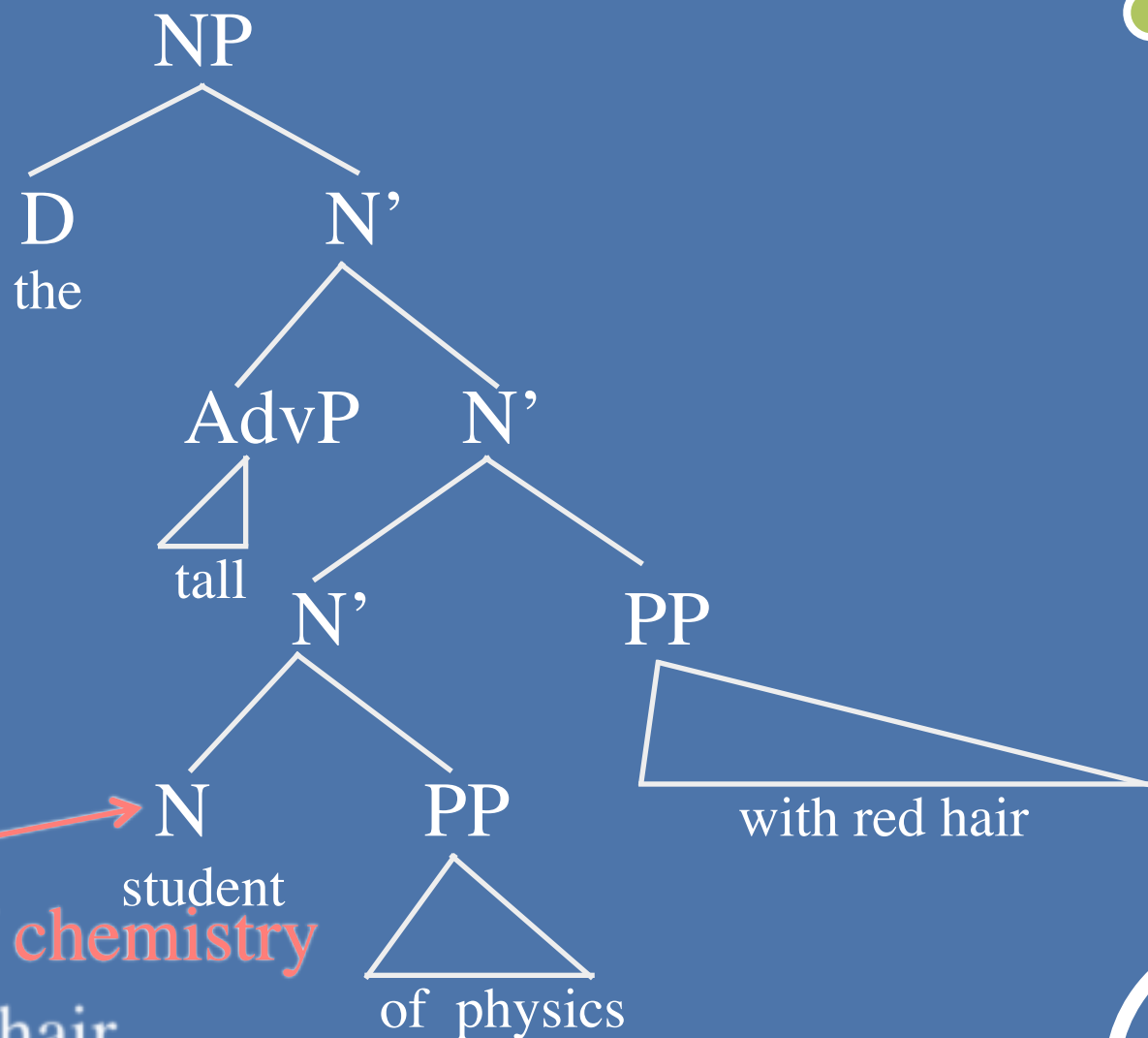
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not N, not NP

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One replacement

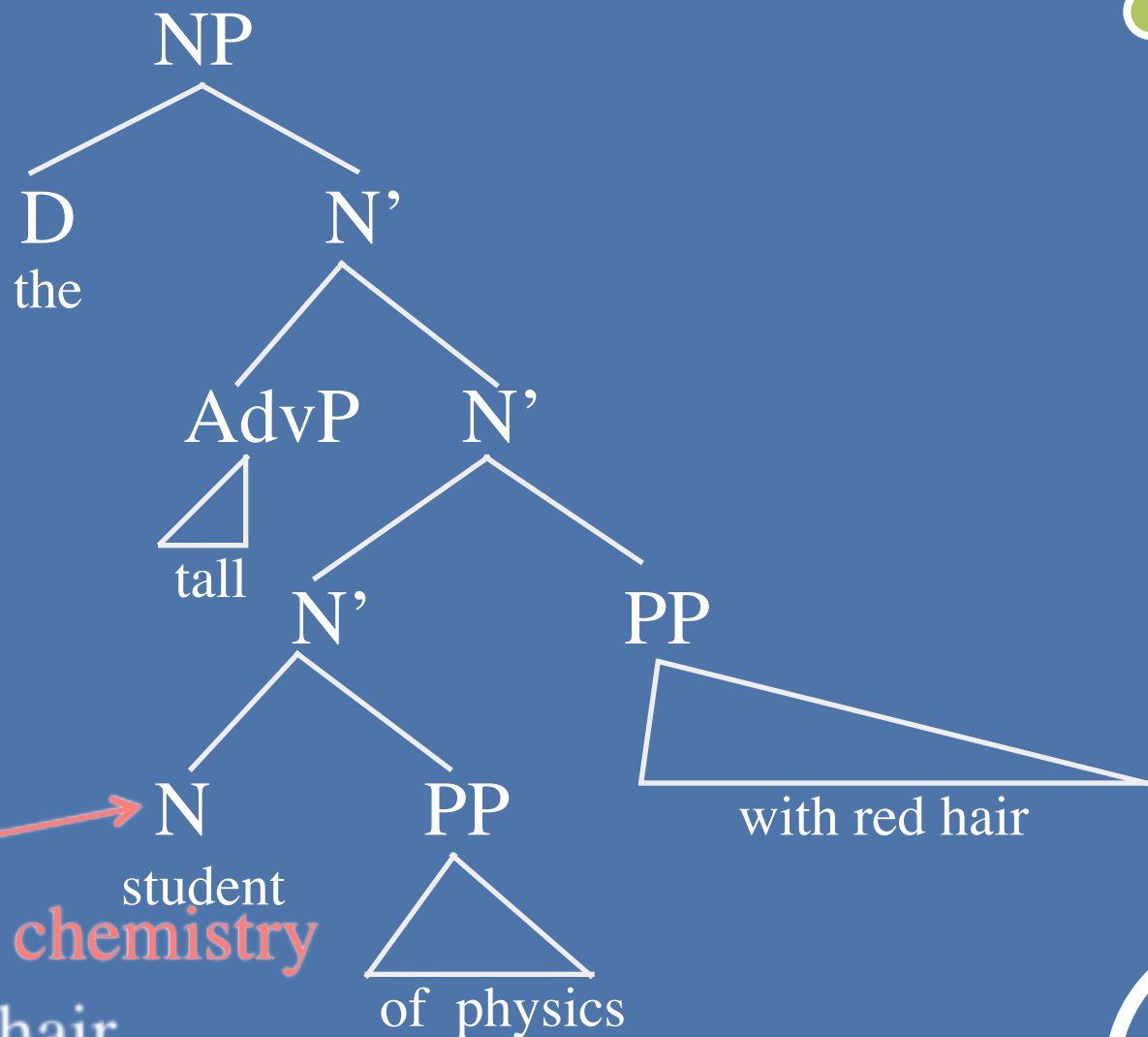


*the short [one] of chemistry

with brown hair

One replacement

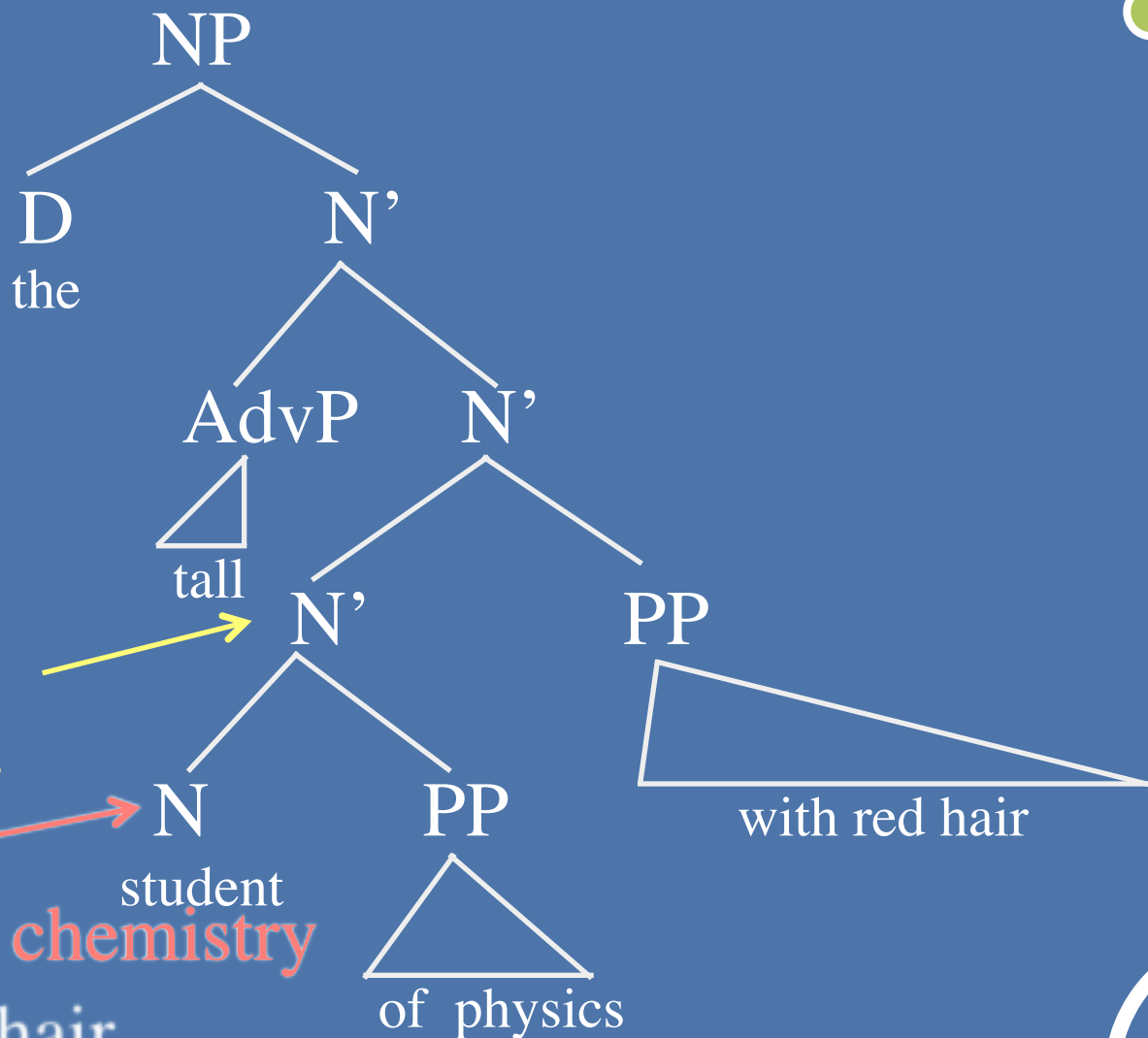
some of you might find this one grammatical -- this is a dialect issue



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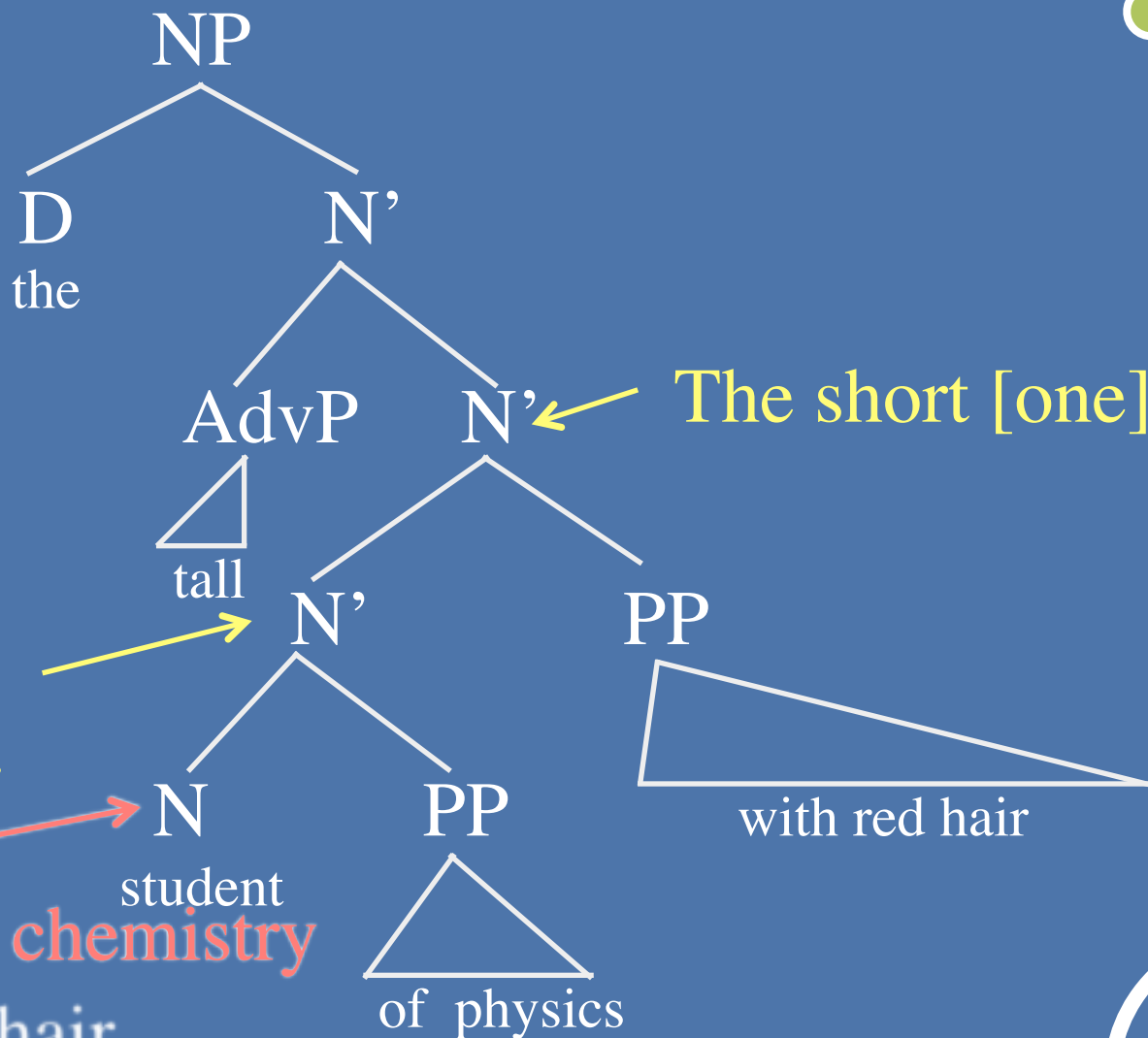


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One replacement

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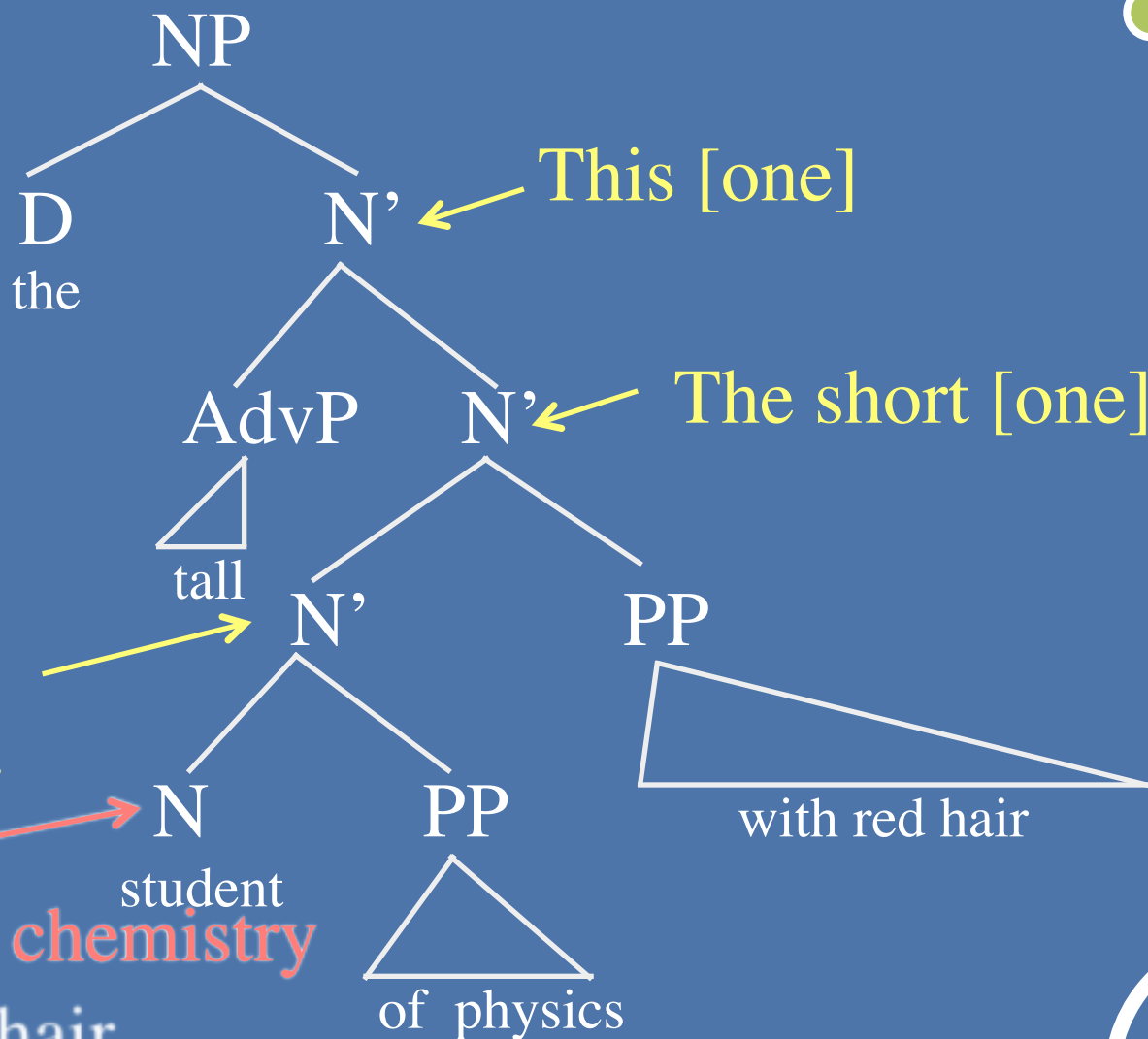
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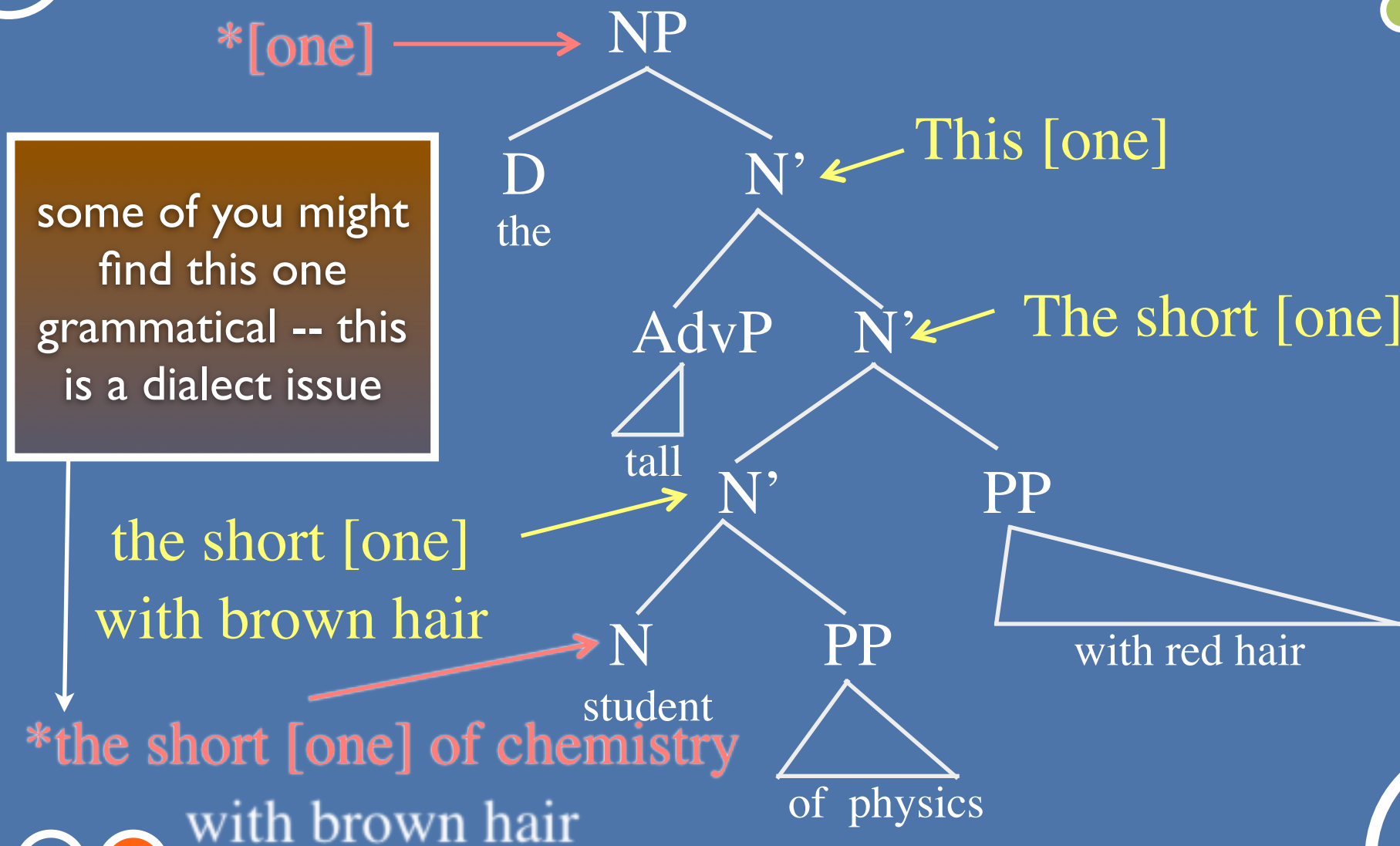
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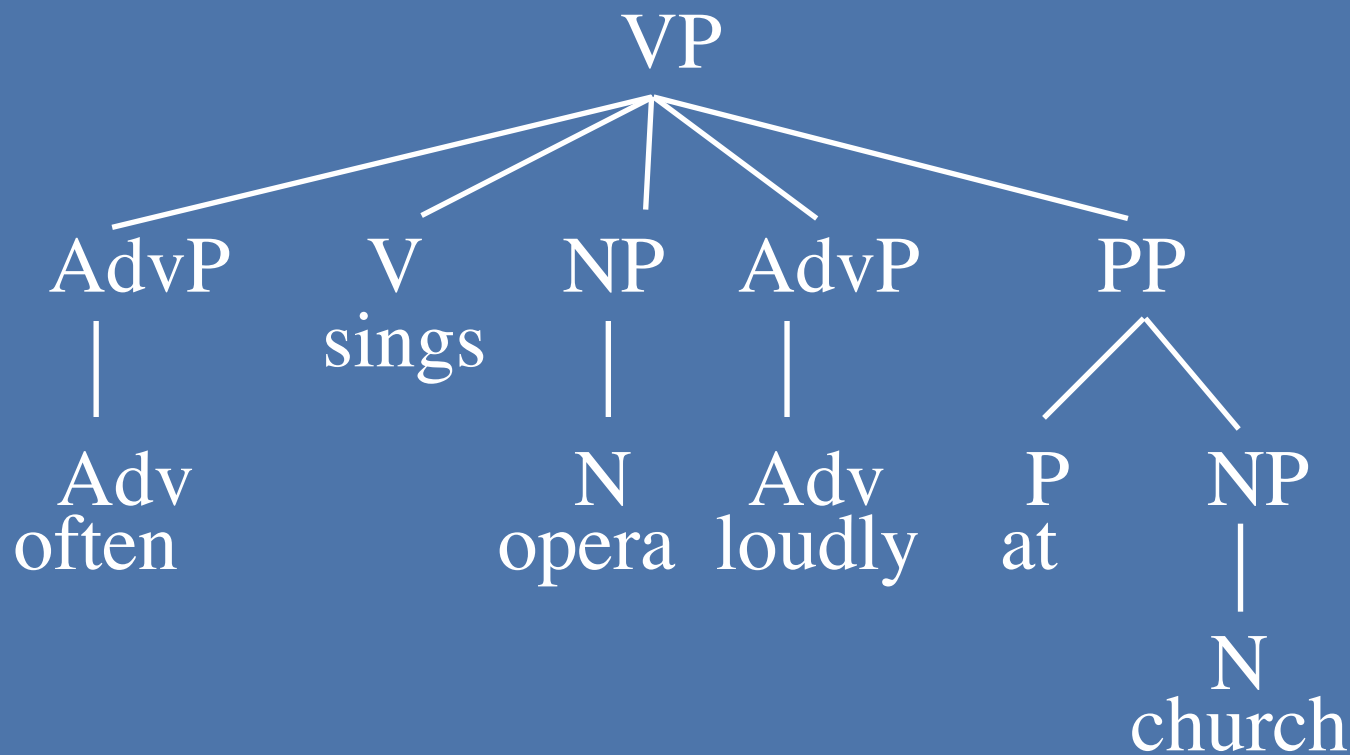


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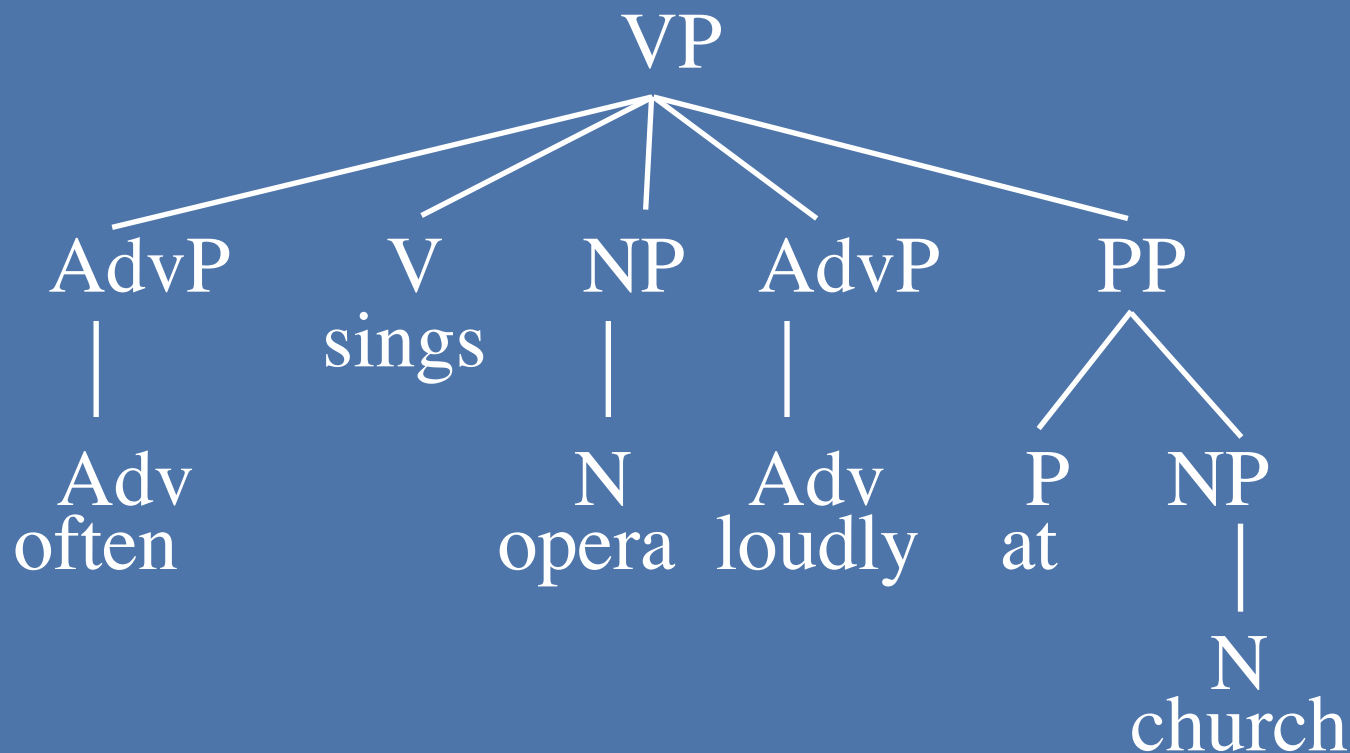
Flat Structure in VPs

● VP → (AdvP+) V (NP) (AdvP+) (PP+) (AdvP+)



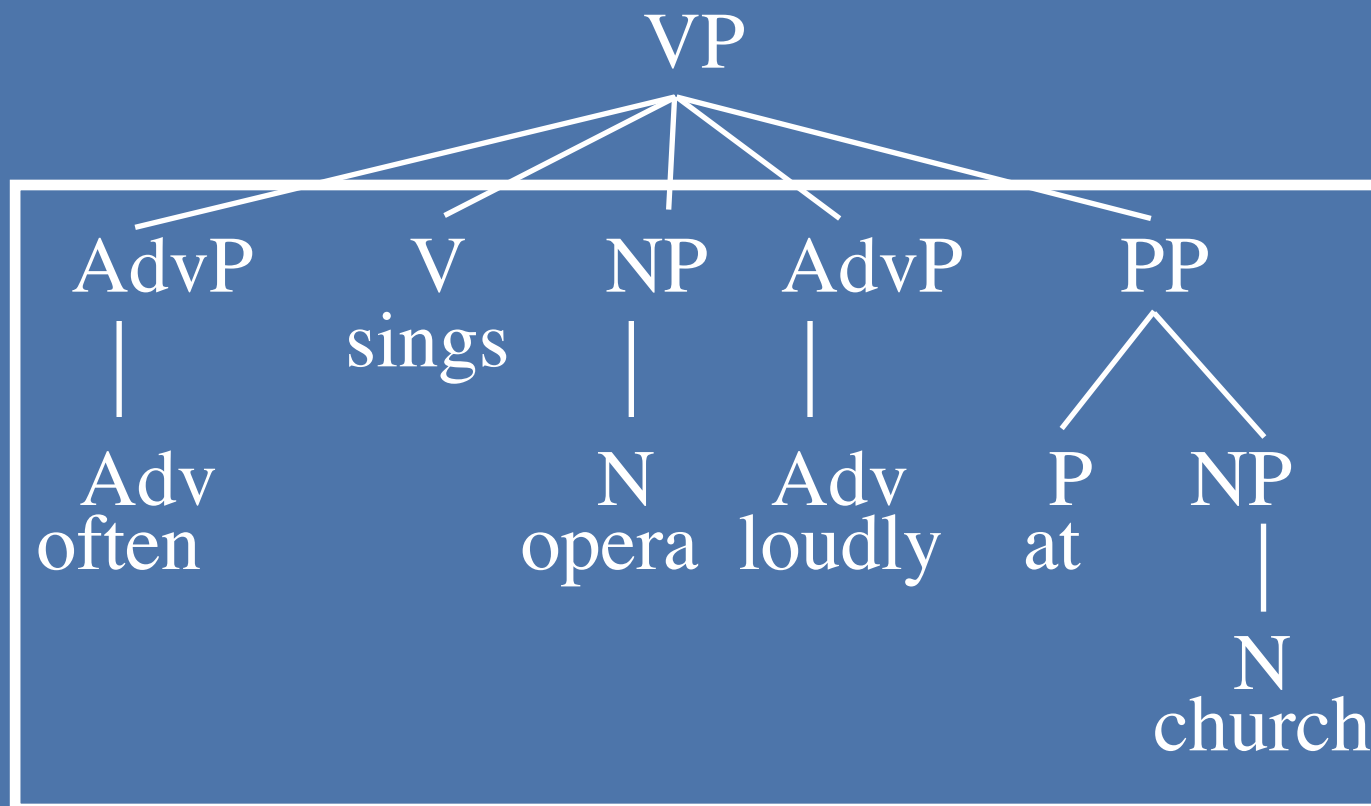
Flat Structure in VPs

- John often sings opera loudly at church and Mary [does so too].



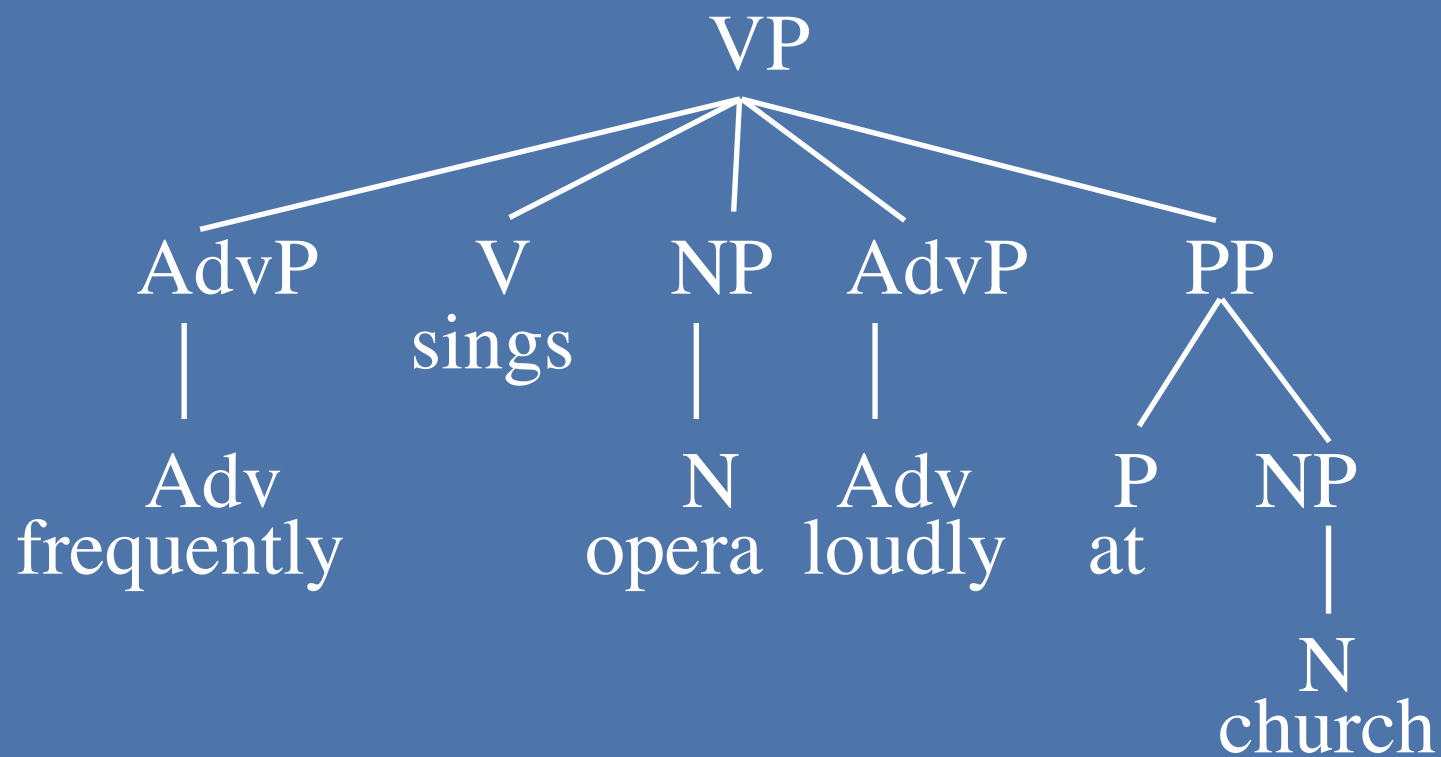
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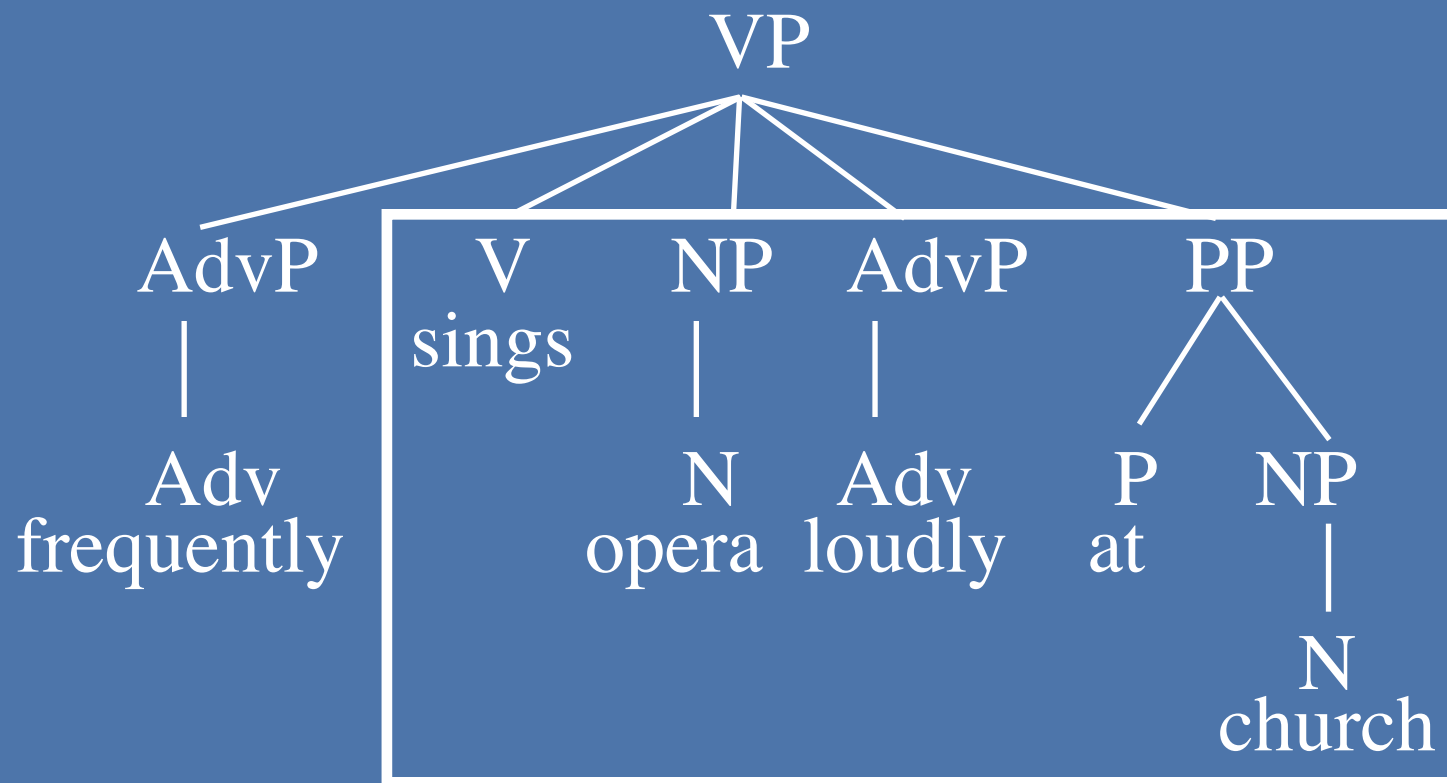
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- John often sings opera loudly at church and Mary frequently [does so too].



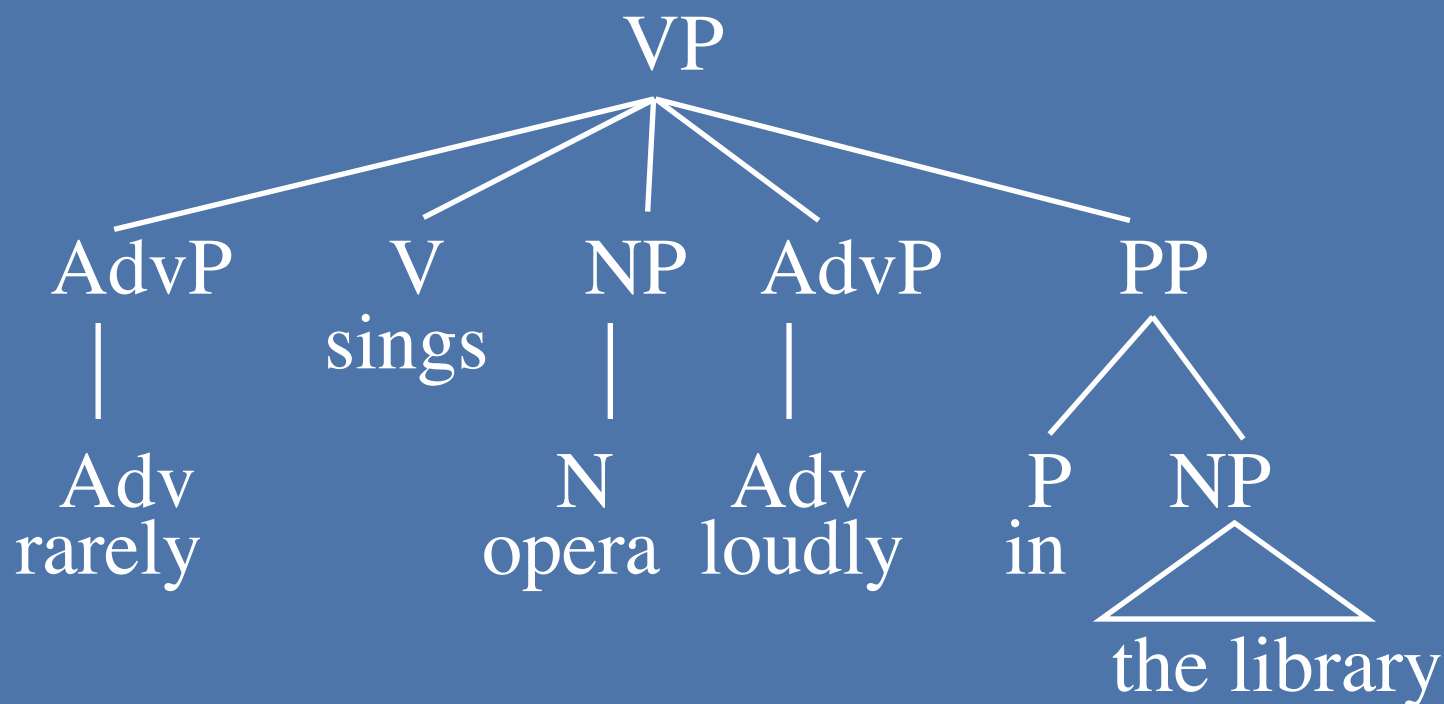
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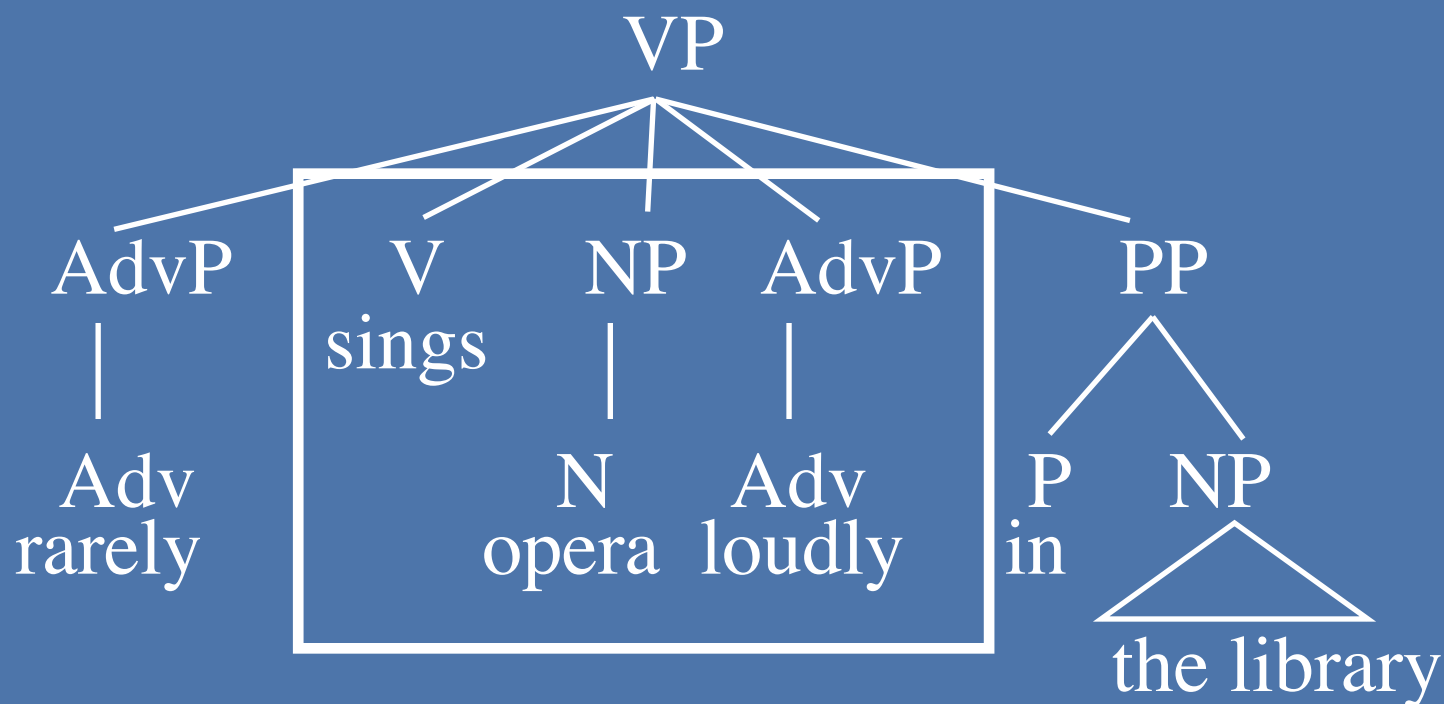
Flat Structure in VPs

- John often sings opera loudly at church but Mary rarely [does so] in the library.



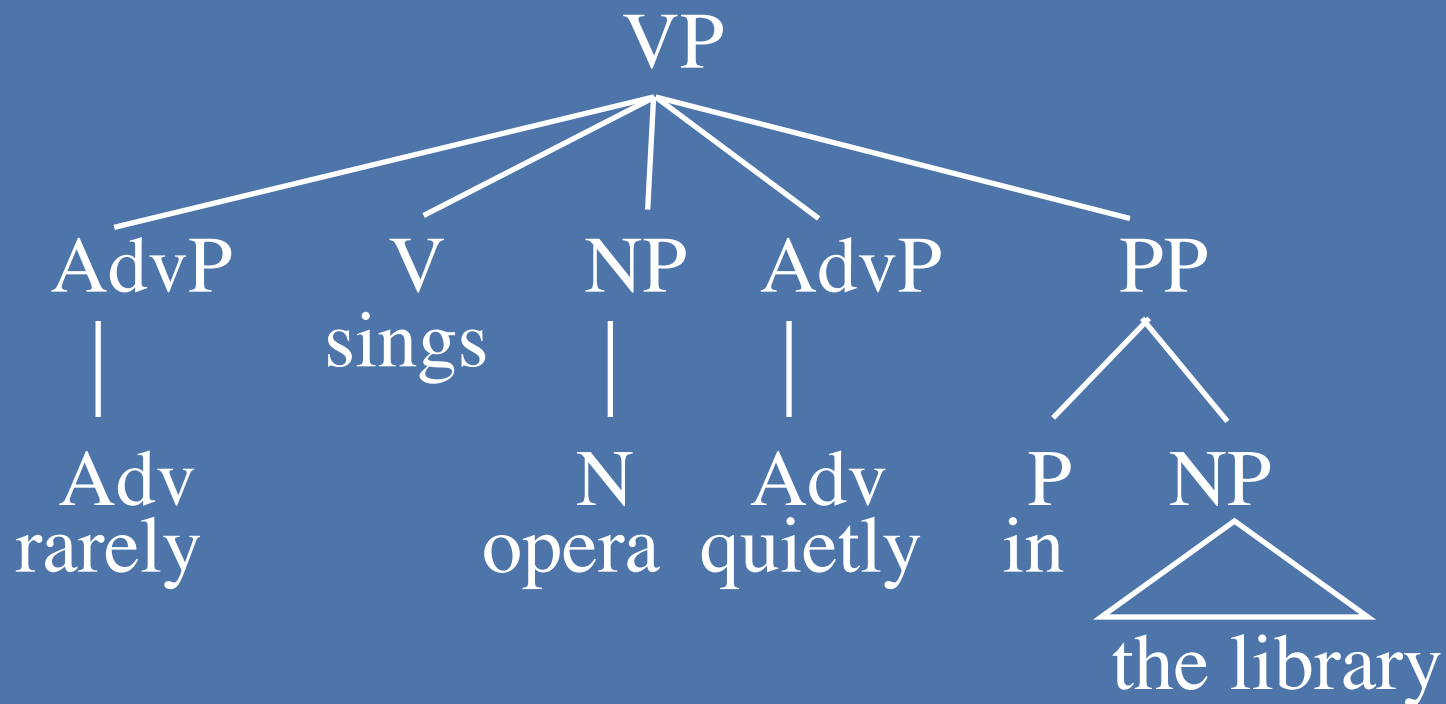
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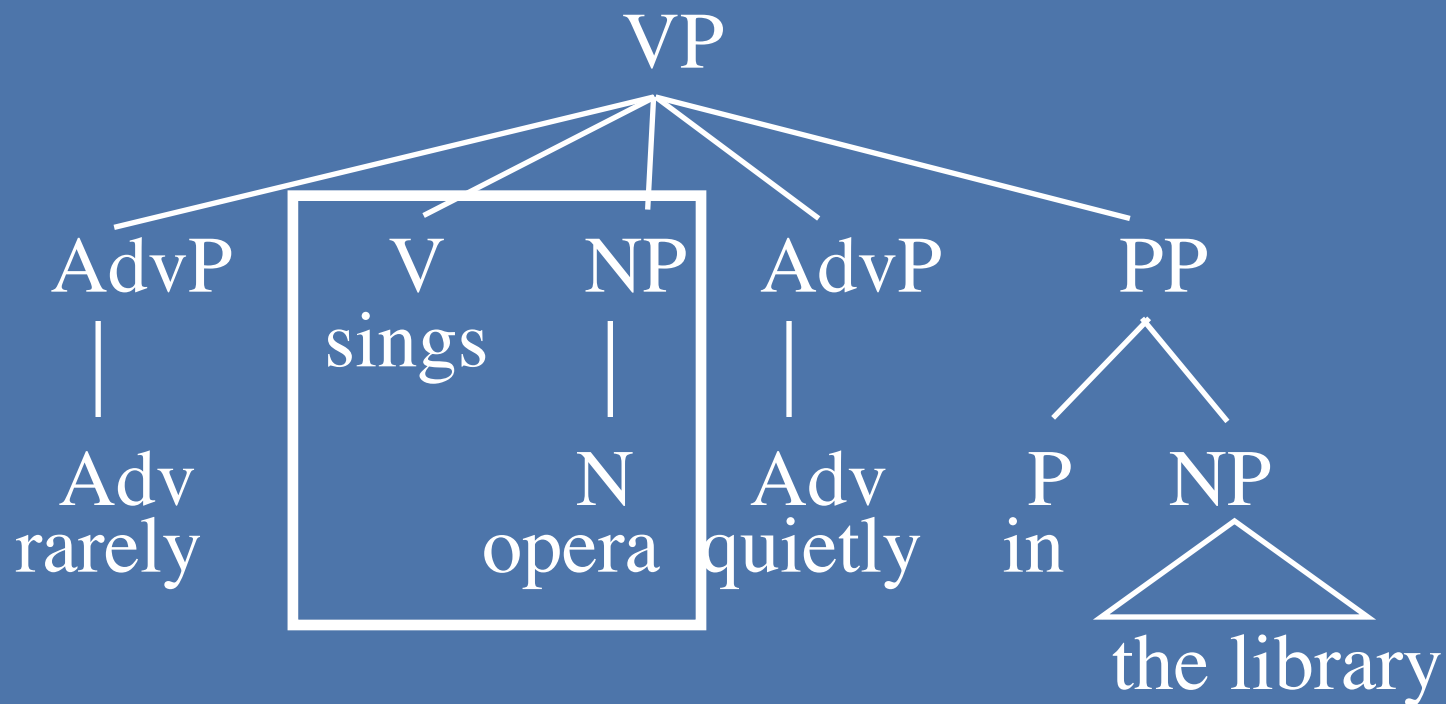
Flat Structure in VPs

- John often sings opera loudly at church but Mary rarely [does so] quietly in the library.

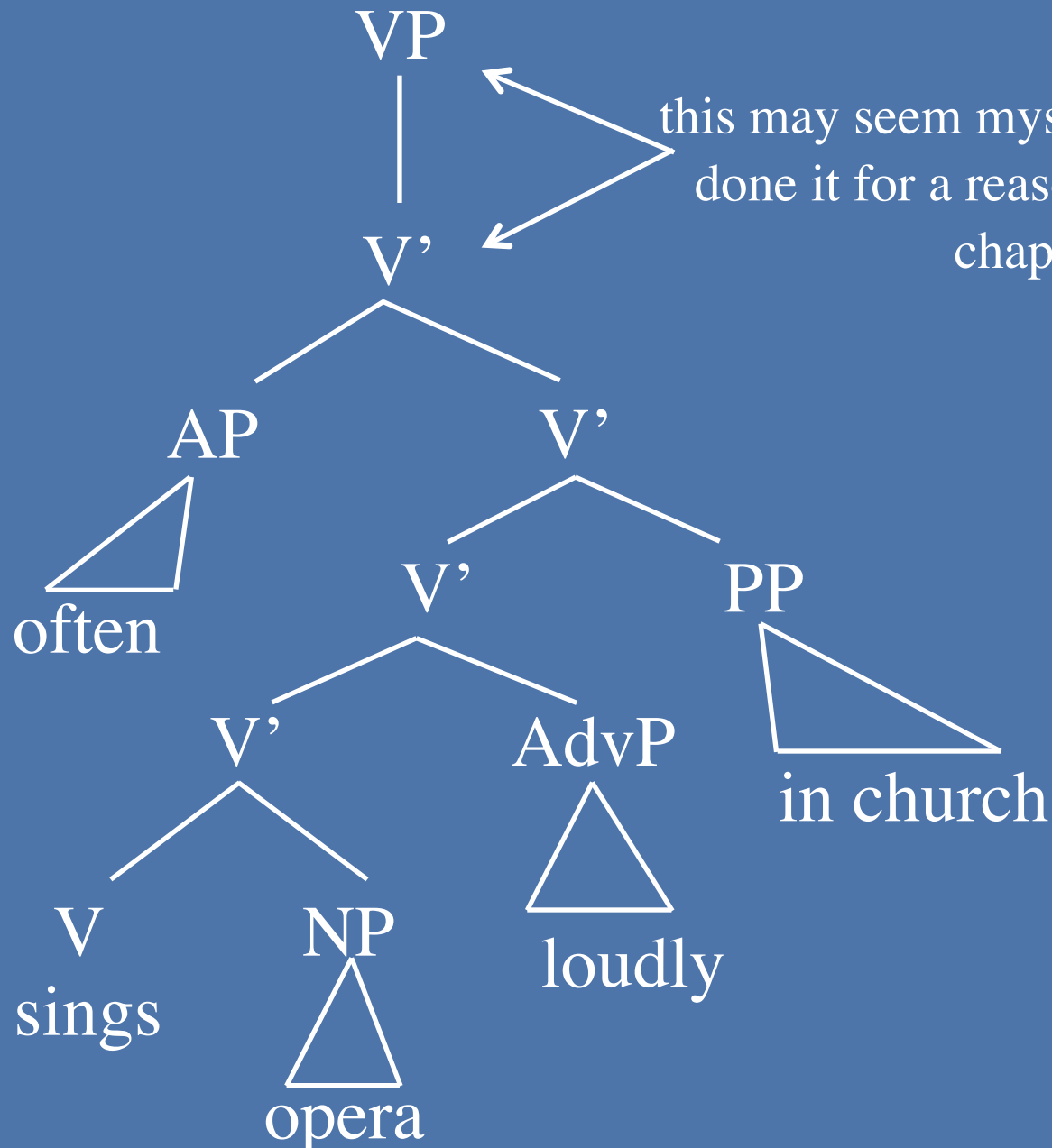


Flat Structure in VPs

- John often sings opera loudly at church but Mary rarely [does so] quietly in the library.



V' Structure



this may seem mysterious, but we've done it for a reason -- we'll see in chapter 8



V' rules





V' rules



- $VP \rightarrow V'$ (a vacuous rule)





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- $V' \rightarrow (\text{AdvP}) V' \text{ or } V' (\{\text{AdvP/PP}\})$





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An iterative (self-recursive) rule:
can apply as many times as
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Do-so (too) replacement

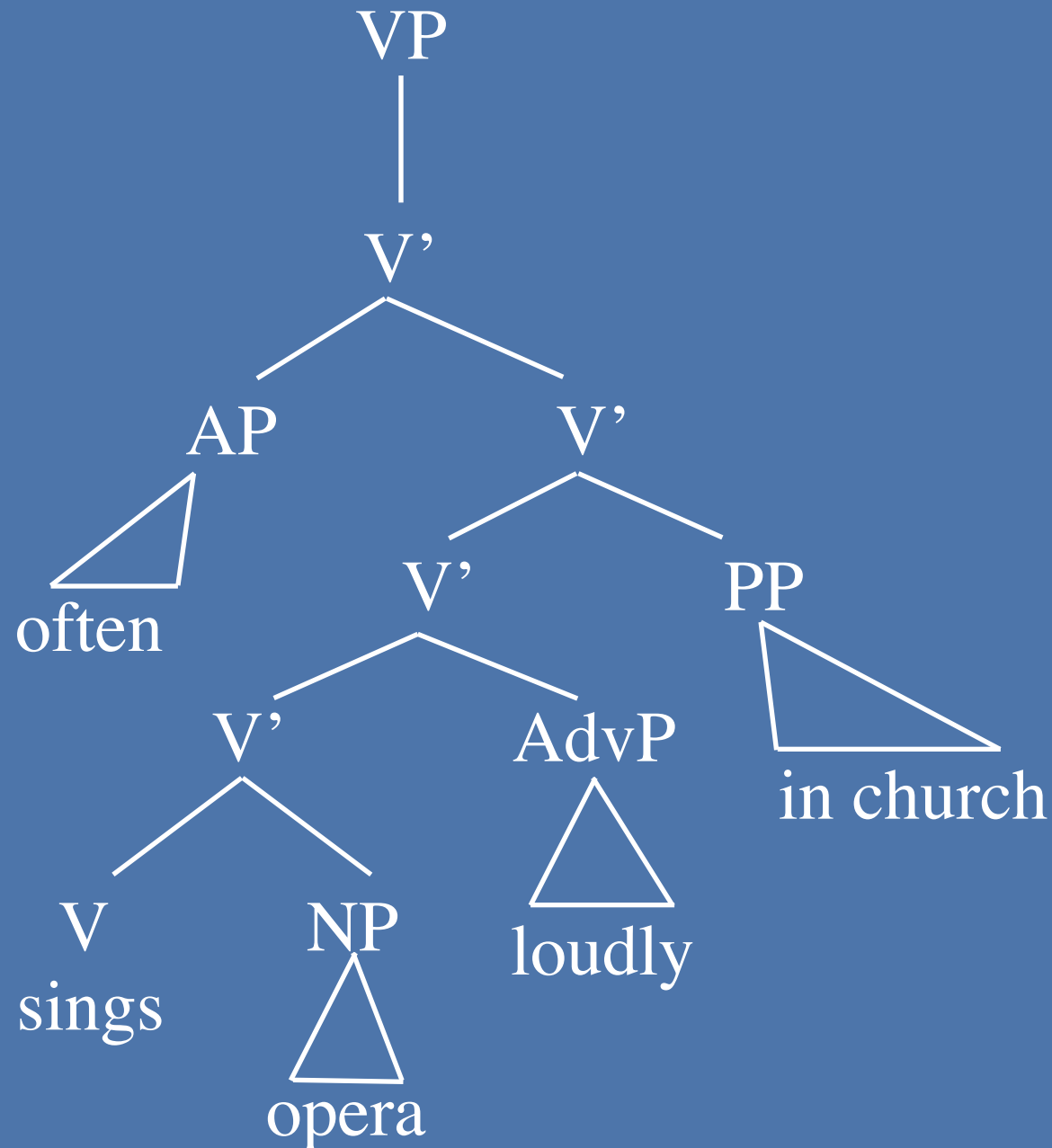


replace a V' node with [did so (too)]

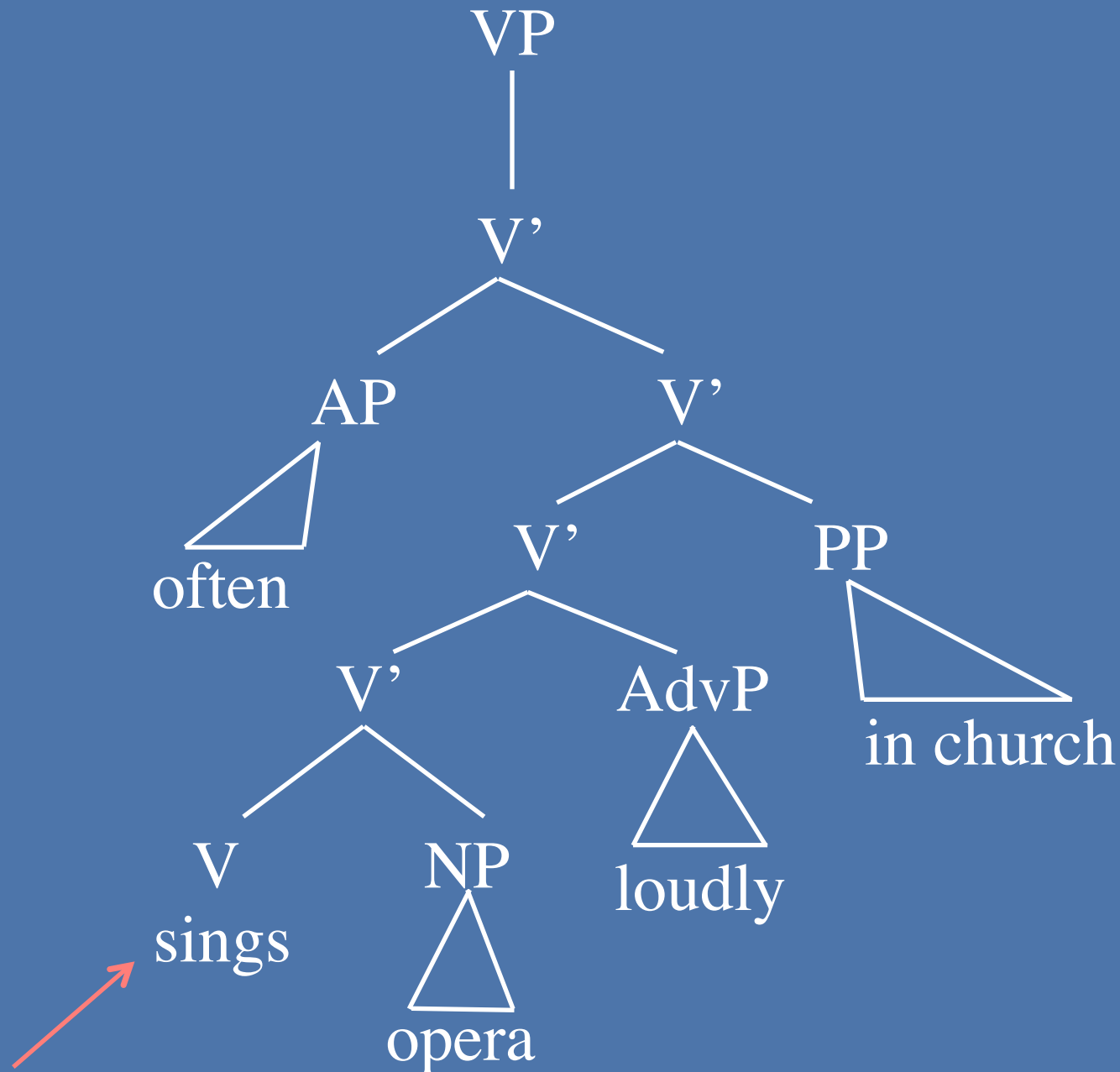
not VP, not V



John often sings opera loudly in church and/but Mary ...

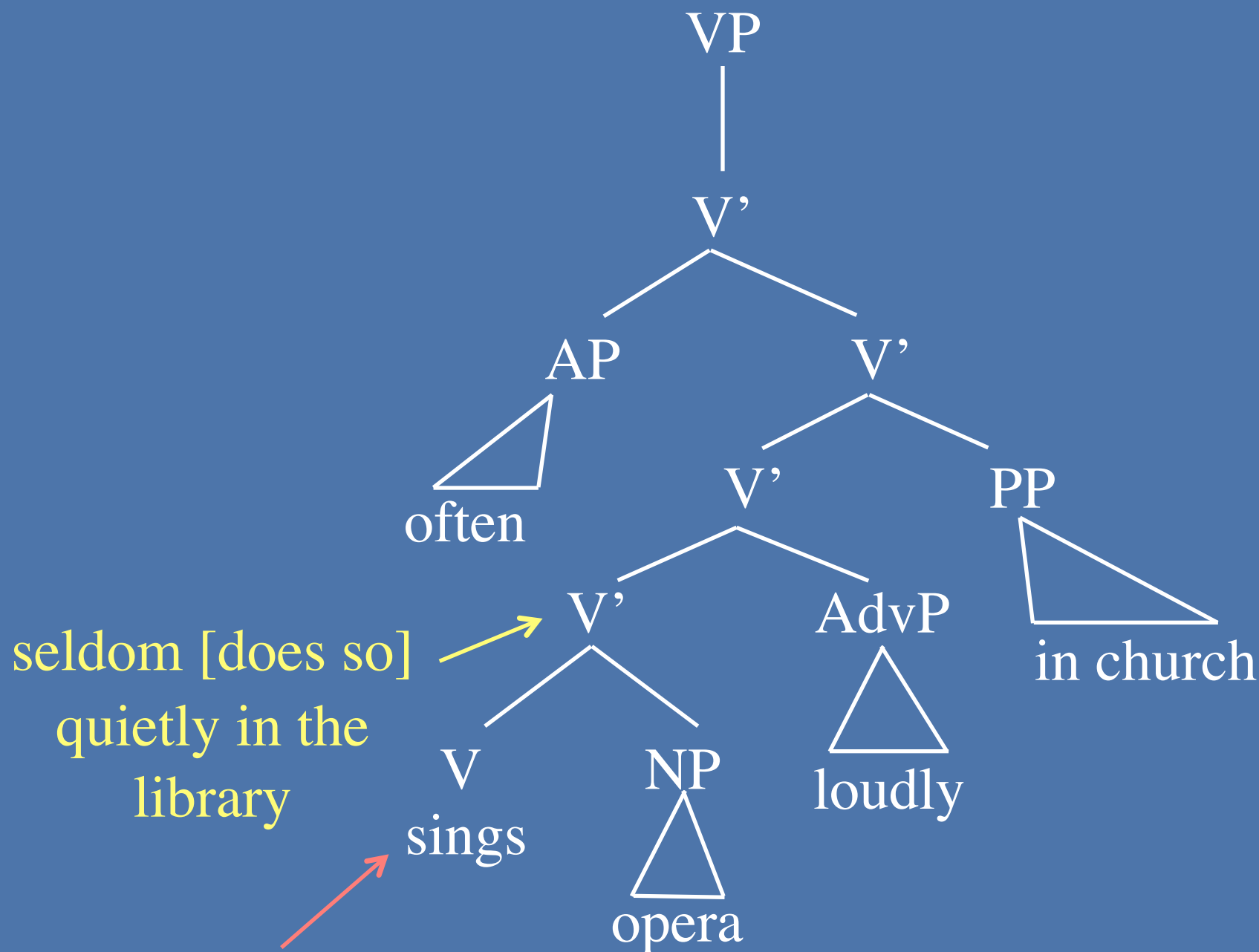


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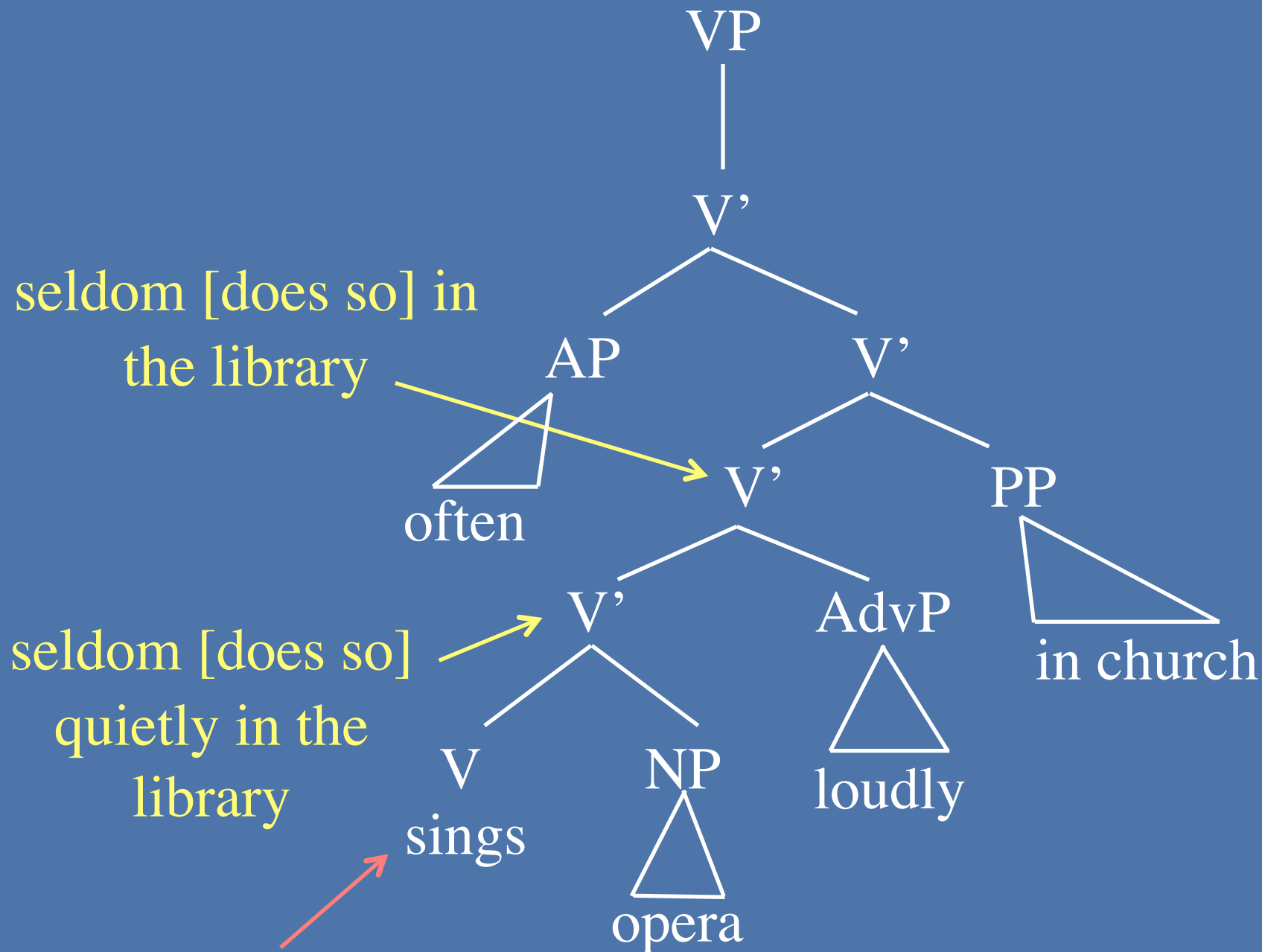
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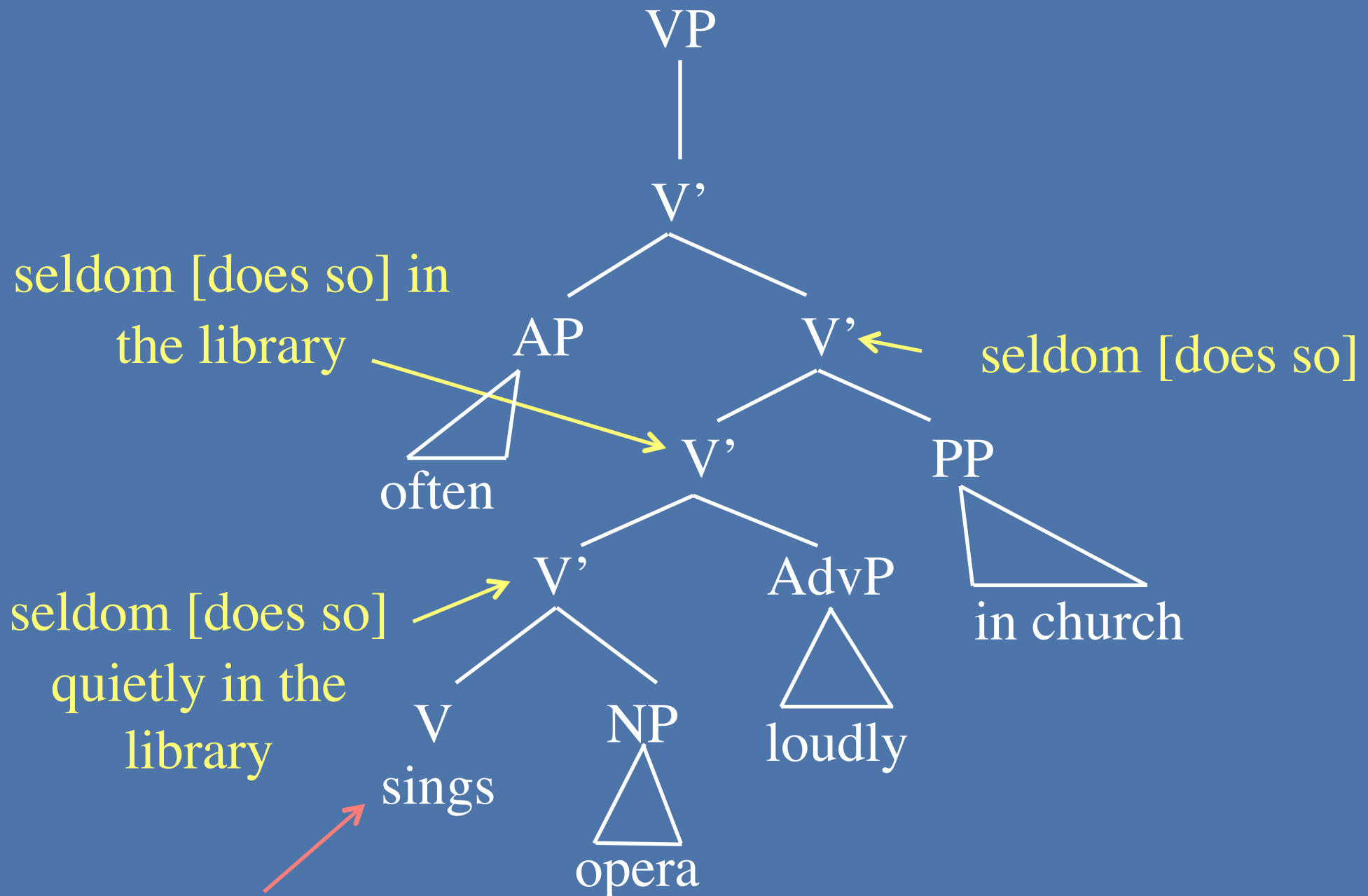
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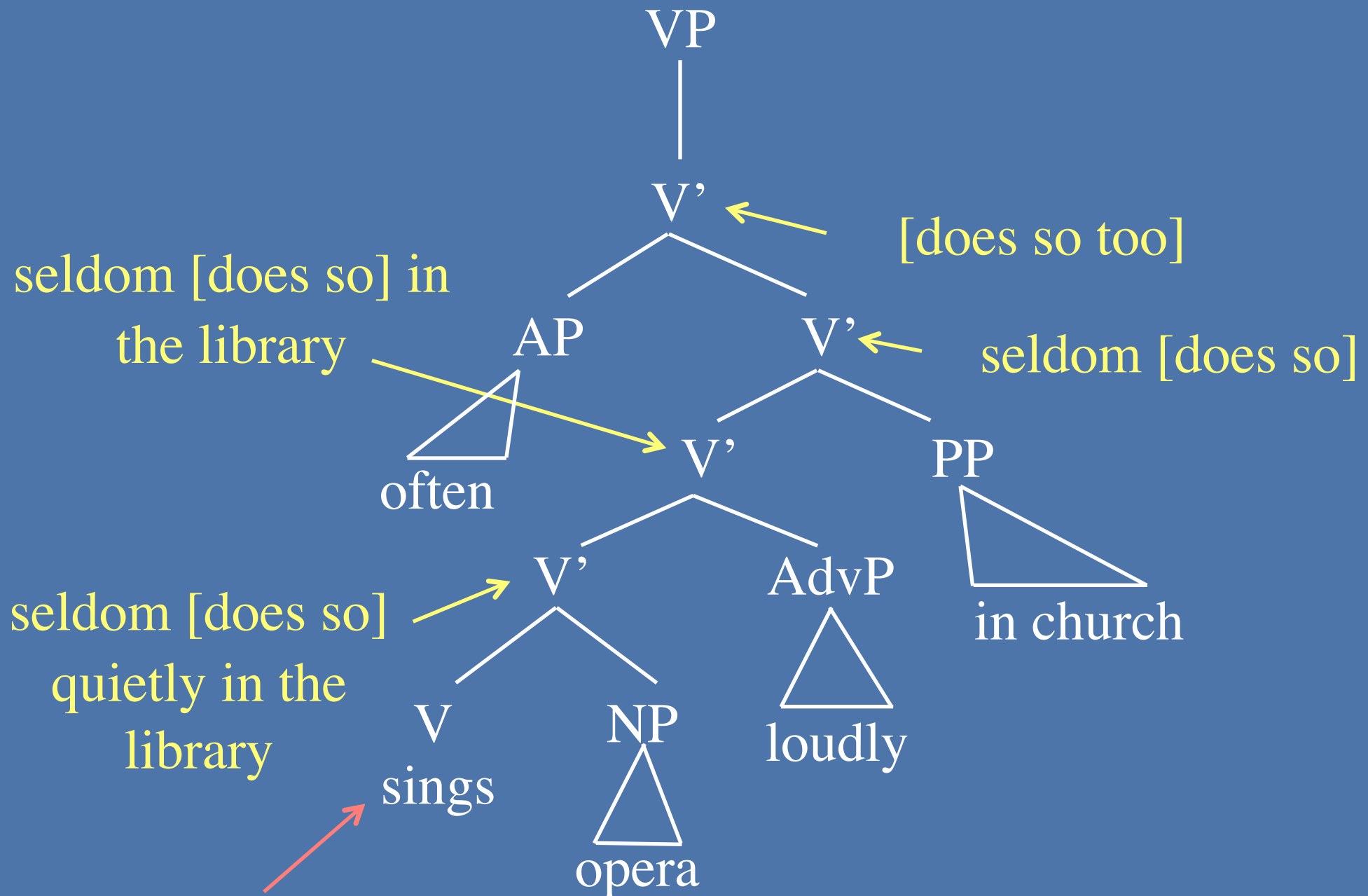
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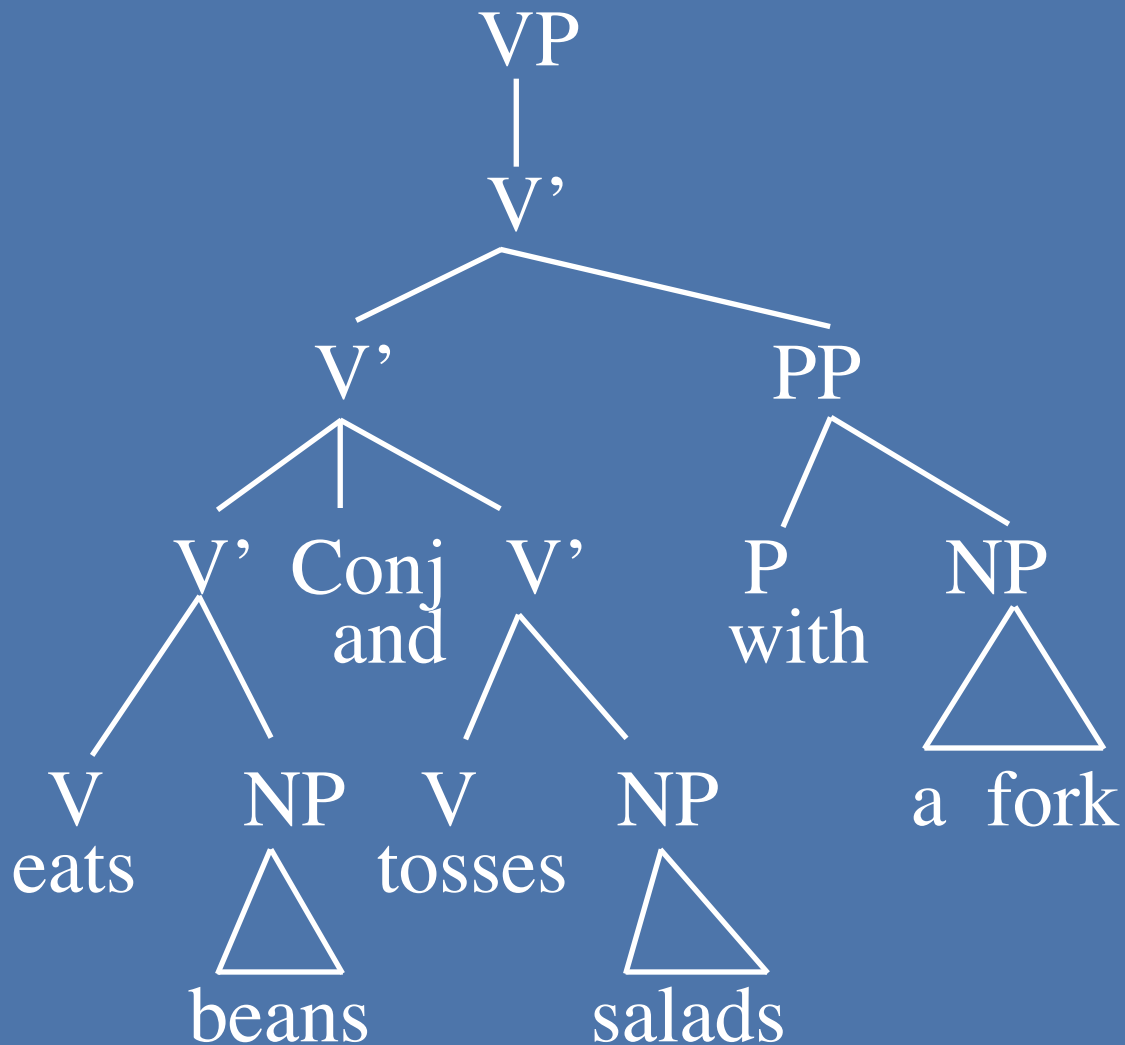
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Further Evidence for V'



Flat Structure in PPs

● $P \rightarrow P (NP)$

○ Tara is very in love with her boss

● $PP \rightarrow (AdvP) P (NP) (PP)$

Flat Structure in PPs

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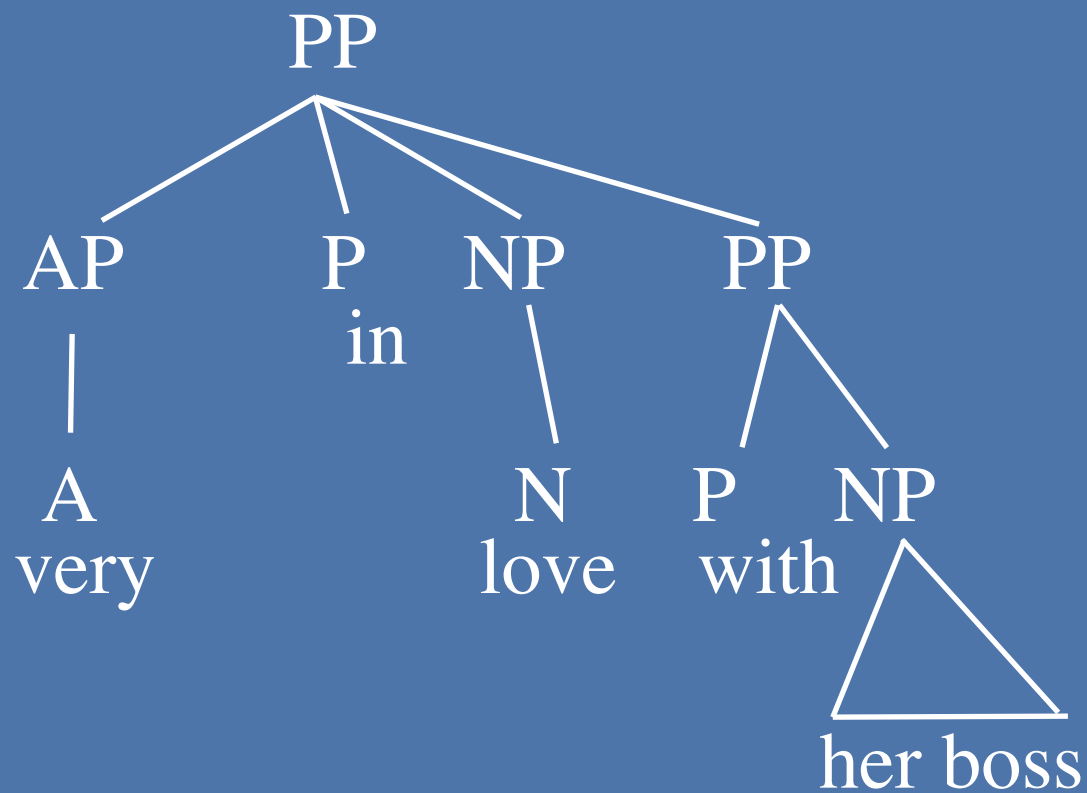
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ok, this only shows up with the idiom “in love” and fixed expressions like it... So I’m giving you a hokey story here.

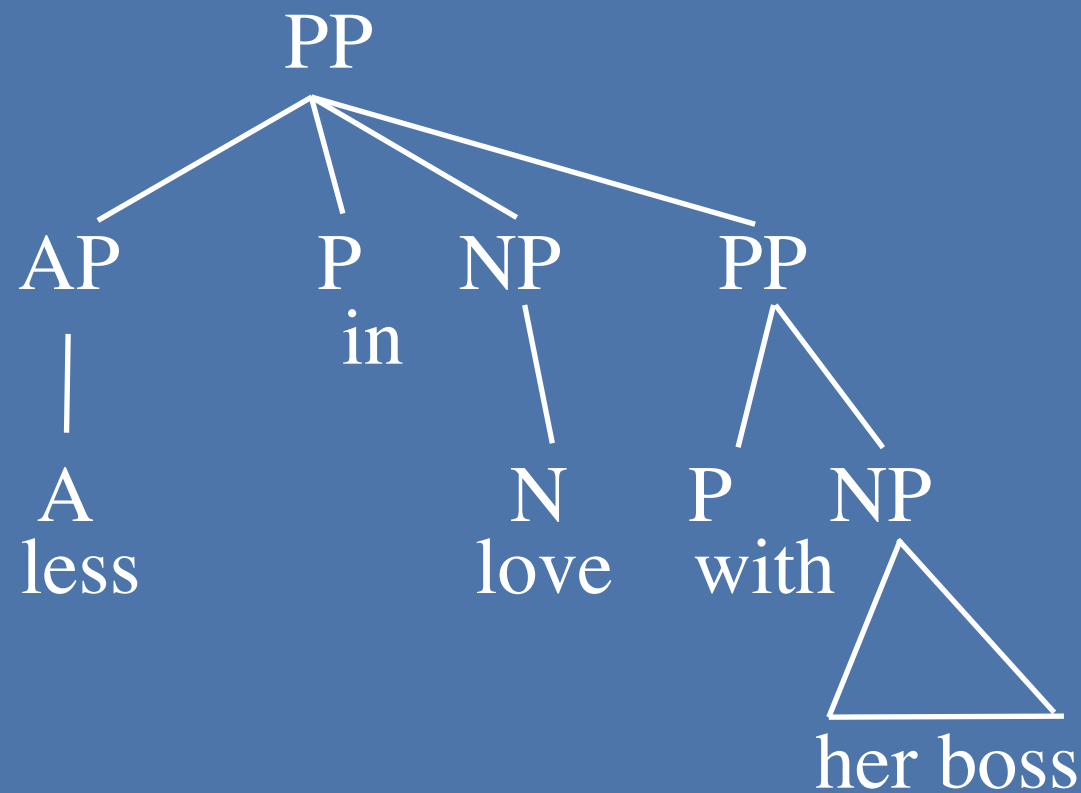
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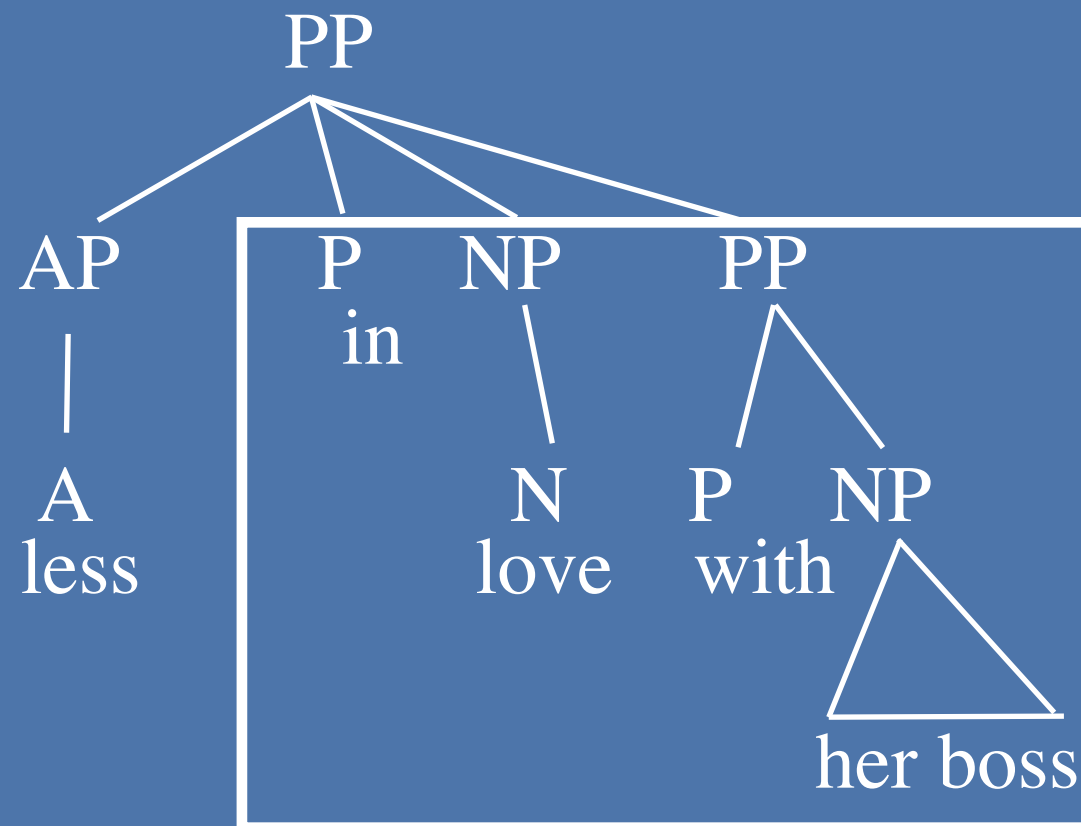
Flat Structure in PPs

- Mary was very in love with her boss, Susanna was less [so]



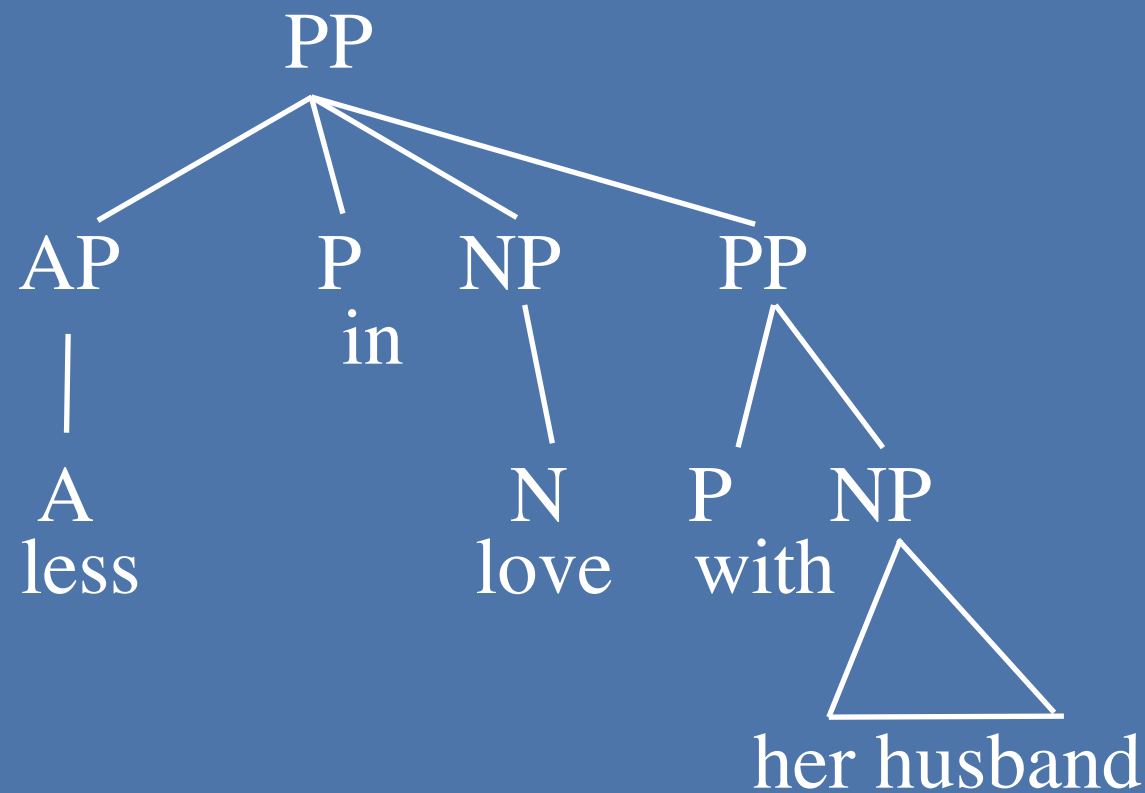
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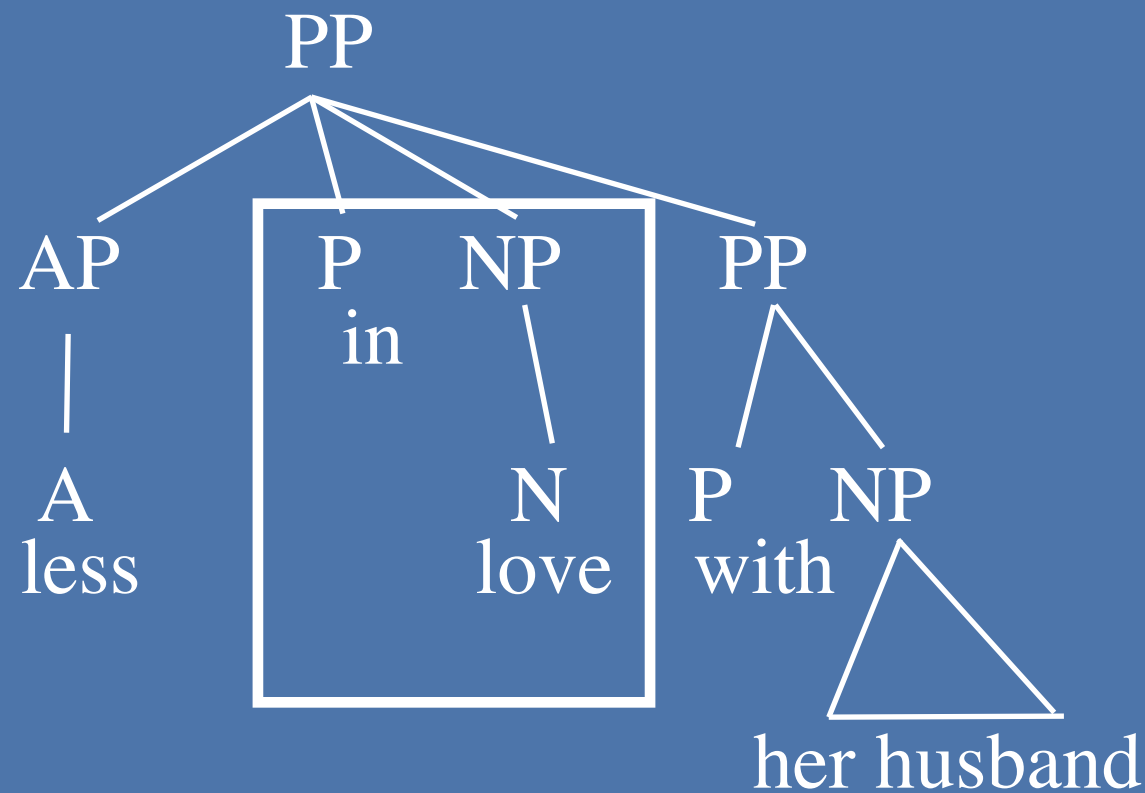
Flat Structure in PPs

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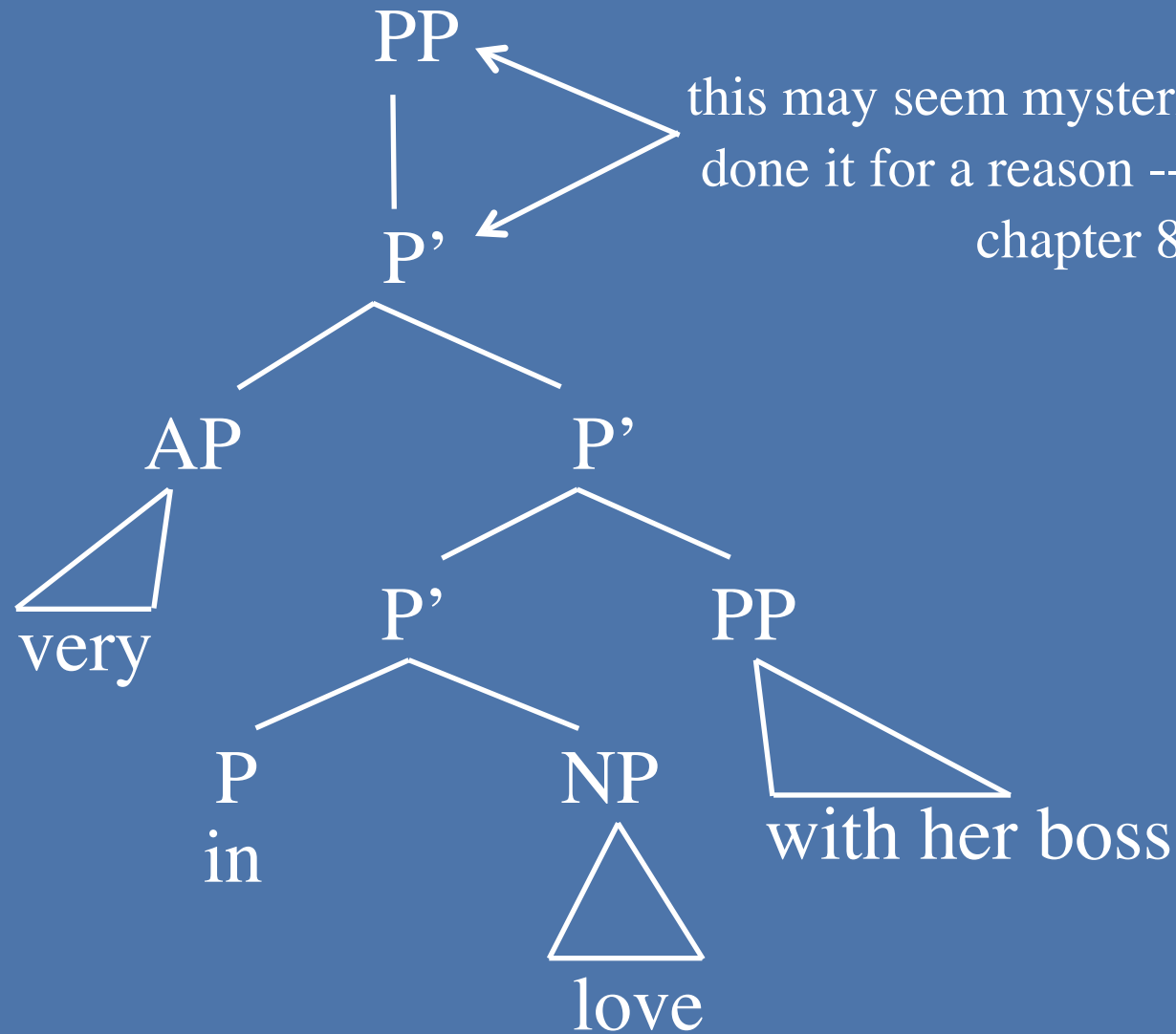


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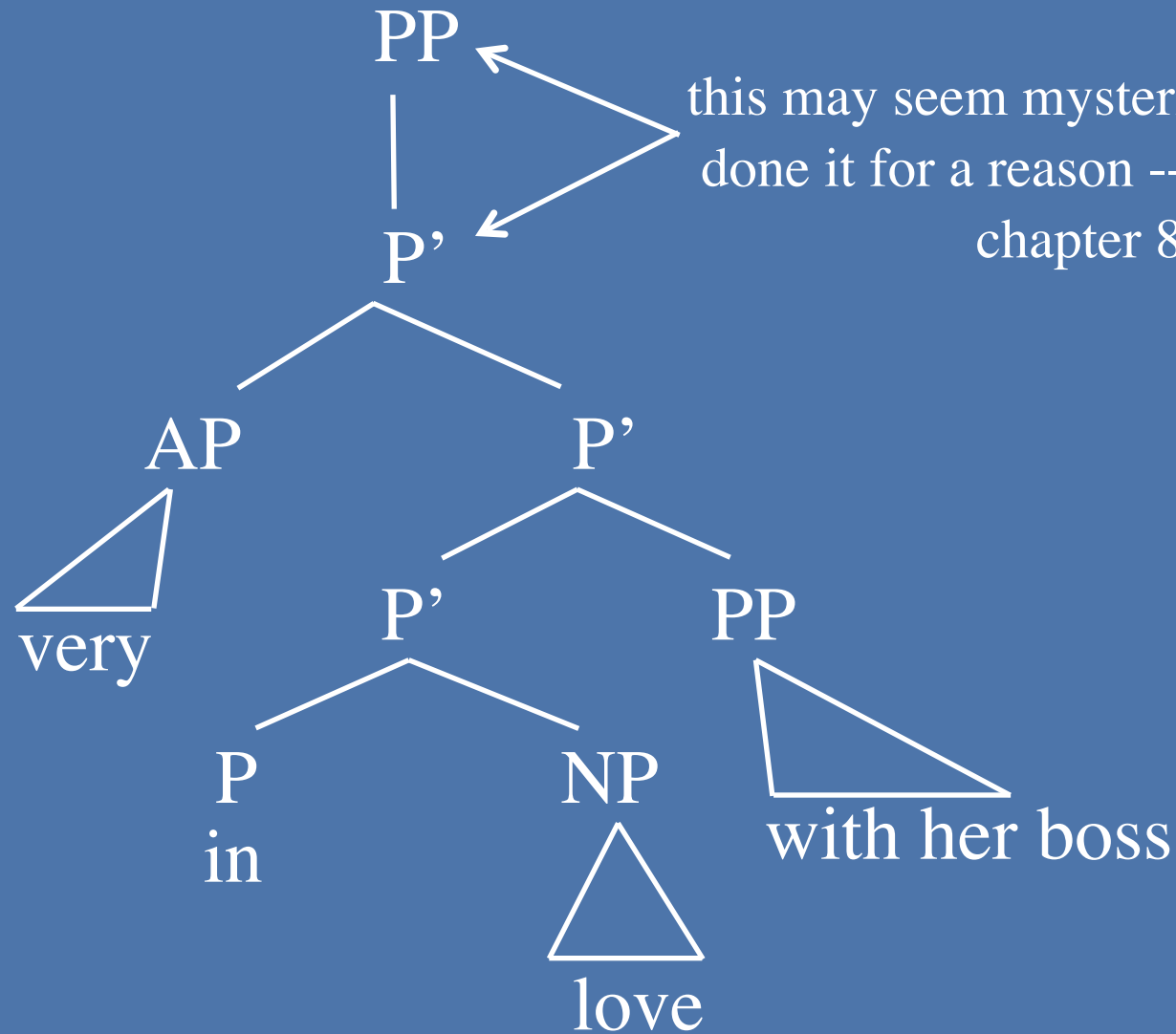
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P' Structure



P' Structure



There is less evidence for this

What about AdjP and AdvP

- Is there intermediate structure in AdjP and AdvPs?
- There certainly are adjuncts:
 - Lynn is interested in syntax but less [so] in phonology
- What about complements? There is a problem set on this (Challenge Problem 4) that you can try.

What about AdjP and AdvP

- For parsimony reasons, we will assume the following rules
 - $\text{AdjP} \rightarrow \text{Adj}'$ (a vacuous rule)
 - $\text{Adj}' \rightarrow (\text{AdvP}) \text{P}' \text{ or } \text{Adv}' (\text{PP})$
 - $\text{Adj}' \rightarrow \text{Adj} (\text{PP})$
- And the equivalent set of rules for AdvPs

The New Rules (to be revised)

- NP → (D) N'
- N' → (AdjP) N' or N' (PP)
- N' → N (PP)
- VP → V'
- V' → (AdvP) V' or V' ({AdvP/PP})
- V' → V (NP)
- AdjP → Adj'
- Adj' → (AdvP) Adj'
- Adj' → Adj (PP)
- PP → P'
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YIKES! Is there a simpler way?

Are we missing any generalizations??



Generalization I: 3 types of rules





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Generalization 1: 3 types of rules

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Specifier rule

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Specifier rule

Adjunct rule

Complement rule



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Generalization 2: Headedness

- In each rule the only item that is obligatory is the item that gives its category to the node that dominates it:
 - $\underline{NP} \rightarrow (D) \underline{N}'$
 - $\underline{N}' \rightarrow (AP) \underline{N}'$
 - $\underline{N}' \rightarrow \underline{N} (PP)$
- There are no rules of the form $NP \rightarrow V AP$.
(this is called **endocentricity**)



Generalization 3: Optionality





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- With the exception of determiners (more on that in chapter 6), all non-head material is both phrasal and optional



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Generalization 3: Optionality

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Goals of X-bar theory

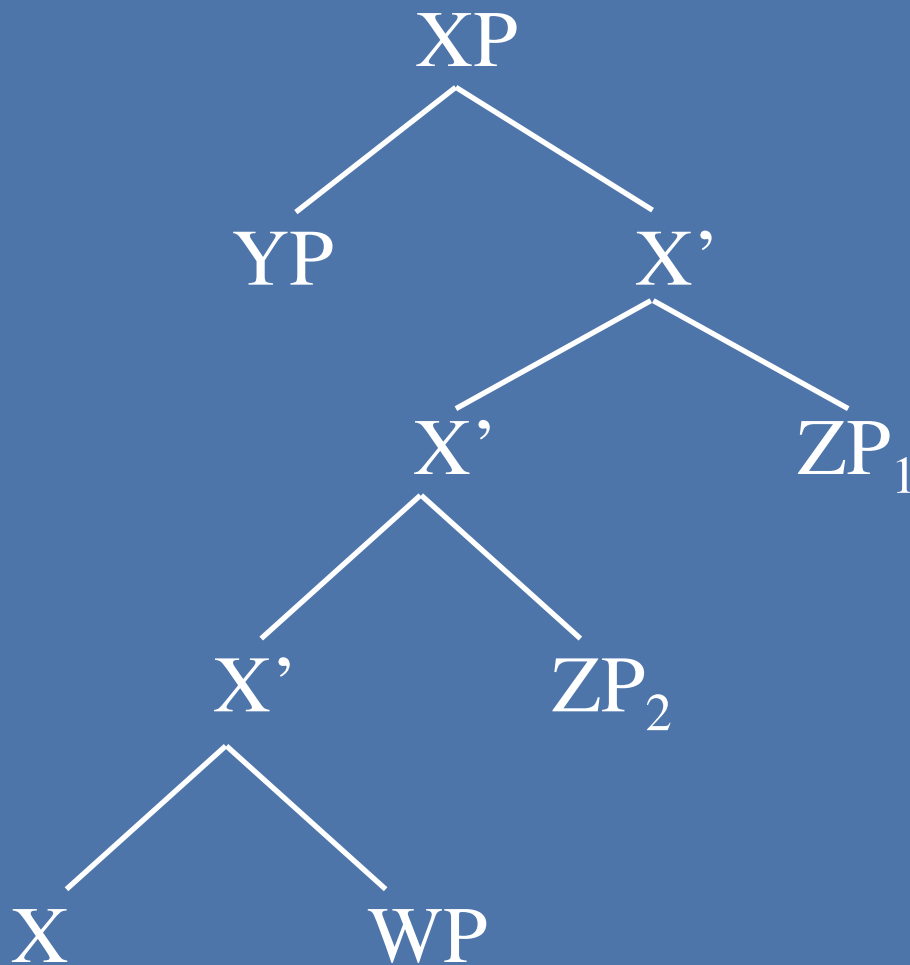
- Simplify the system of rules
- Capture intermediate structure
- Capture the cross-categorial generalizations.
- We will use **VARIABLES** to do this. A variable is a category that can stand for any other category.
 - X, Y, W, Z are variables that can stand for ANY of N, V, A, P

The X-bar Rules (to be slightly revised)

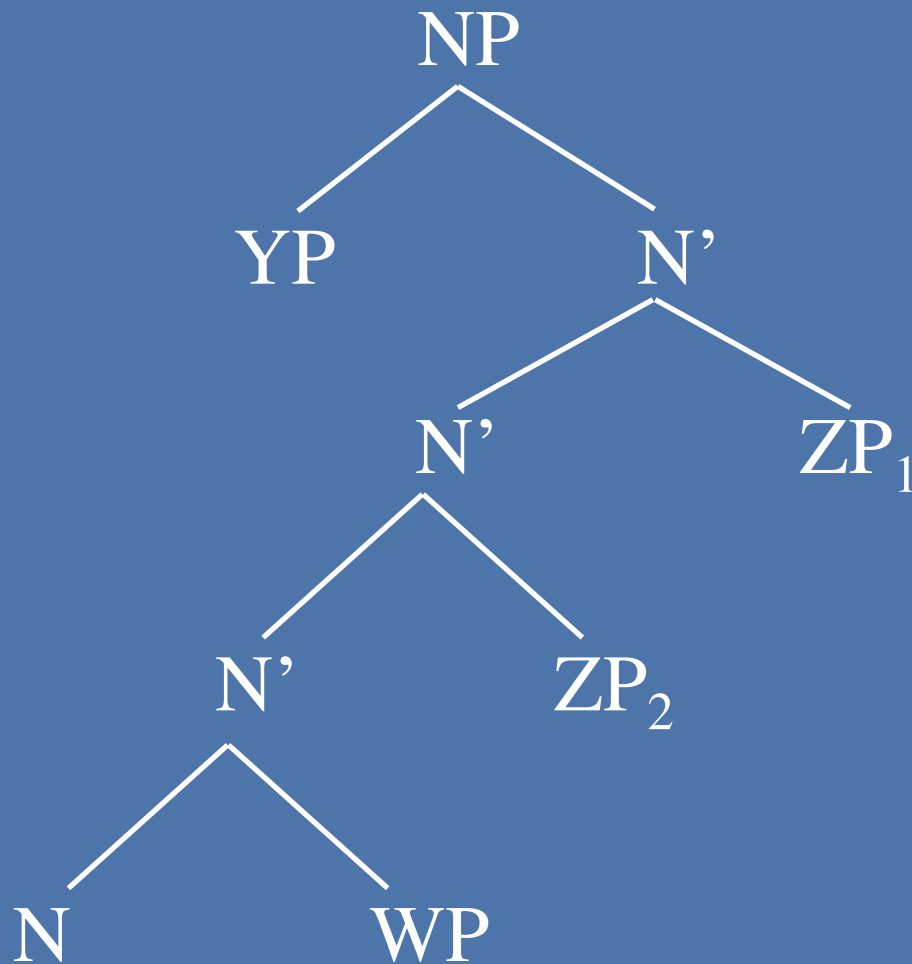
- Specifier Rule: $XP \rightarrow (YP) X'$
- Adjunct Rule: $X' \rightarrow (ZP) X'$ or $X' \rightarrow X' (ZP)$
- Complement Rule: $X' \rightarrow X (WP)$

where X can stand for any category (N, V, Adj, Adv, P). X must be consistent through the 3 rules.

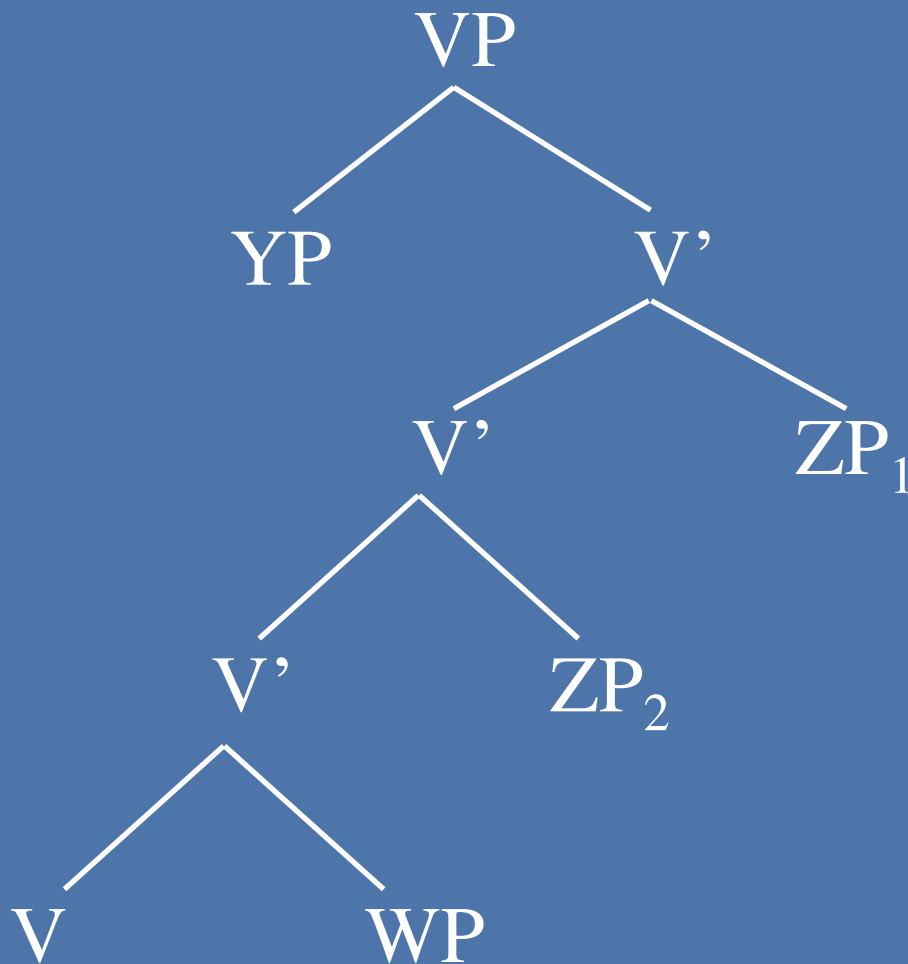
X-bar Structures



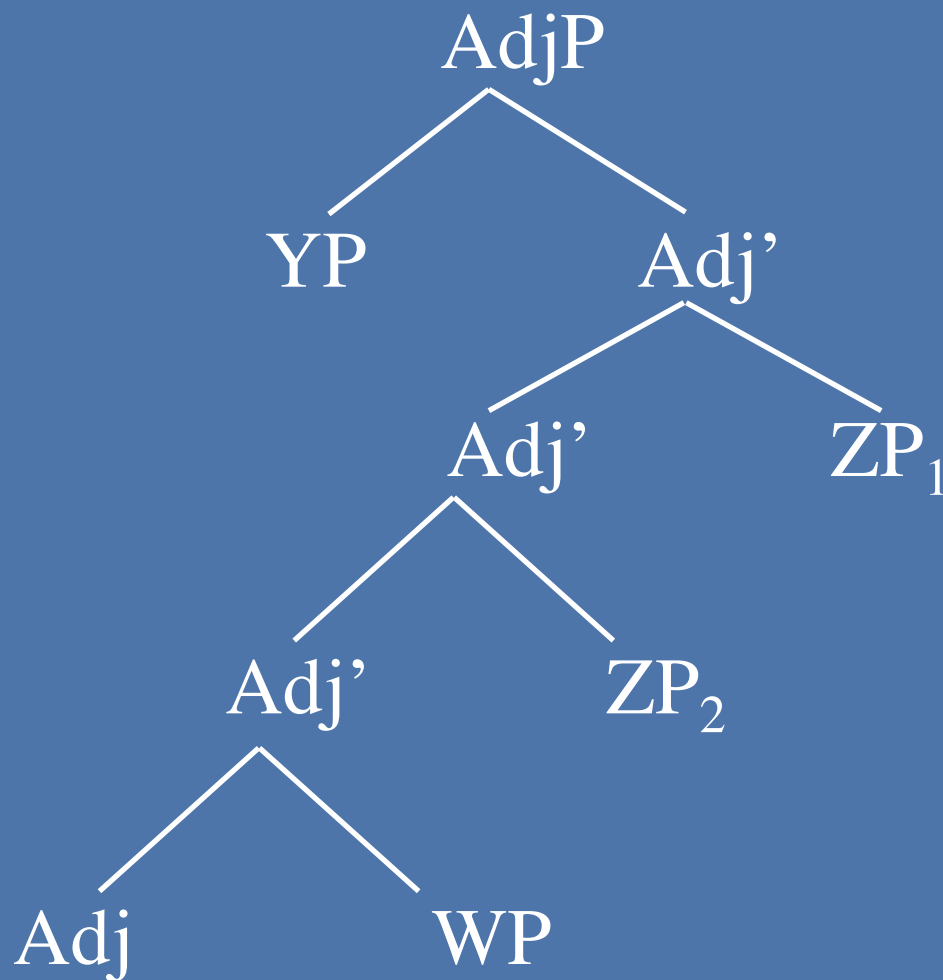
X-bar Structures



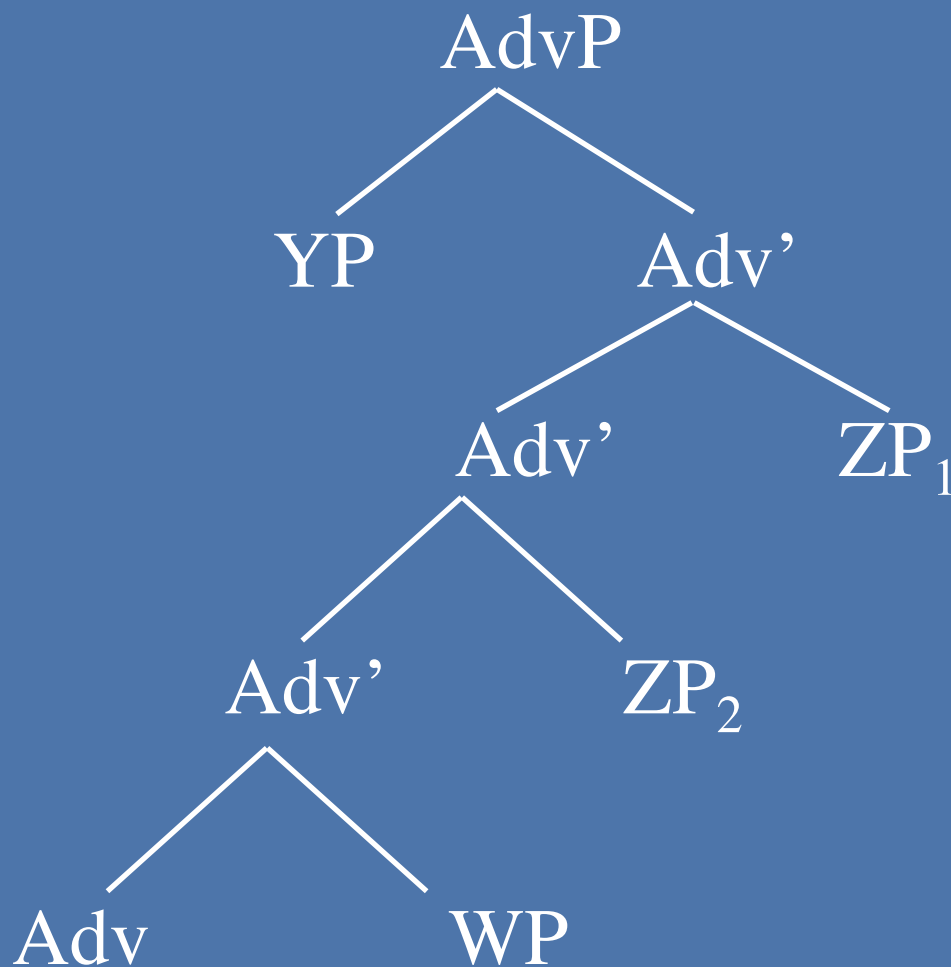
X-bar Structures



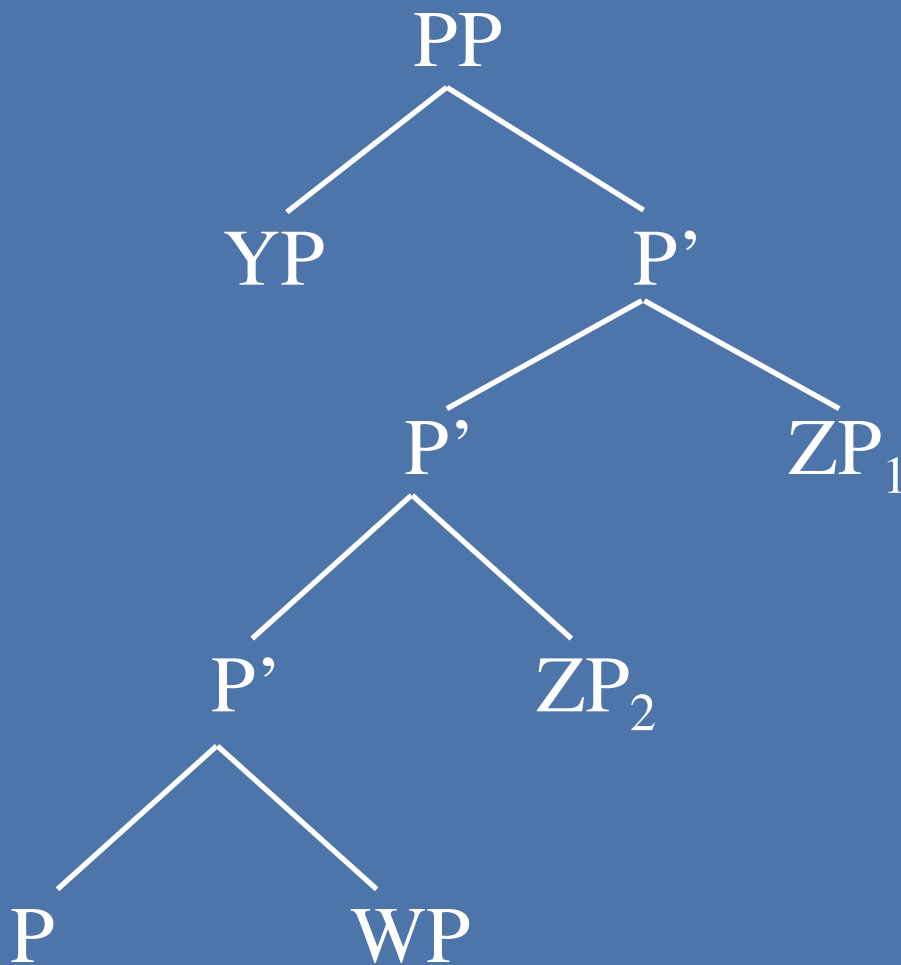
X-bar Structures



X-bar Structures



X-bar Structures



Summary

- Constituency tests show us there is intermediate structure in phrases. (evidence varies in strength)
- There are cross-categorial generalizations to be made:
 - 3 rules: Specifier, adjunct, complement
 - Headedness & Endocentricity
 - Optionality of modifiers

Summary

● X-bar rules:

- Specifier Rule: $XP \rightarrow (YP) X'$
- Adjunct Rule: $X' \rightarrow (ZP) X'$ or $X' \rightarrow X' (ZP)$
- Complement Rule: $X' \rightarrow X (WP)$

● This is still pretty messy. **To do:**

- discuss the differences between the specifier/complement/adjunct rules
- Account for cross-linguistic variation
- tidy up some ugly loose ends (like the lack of motivation for the specifier rule, the fact that determiners aren't phrases, and the fact that the TP rule doesn't fit into the system.)