Drawing Trees & Ambiguity in Trees

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Some Phrase Structure Rules of English

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Some Phrase Structure Rules of English

CP → (C) TP

TP → {NP/CP} (T) VP

VP →(AdvP+) V (NP)({NP/CP}) (AdvP+) (PP+) (AdvP+)

NP → (D) (AdjP+) N (PP+) (CP)

PP → P (NP)

AdjP → (AdvP) Adj

AdvP → (AdvP) Adv

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Drawing trees

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Drawing trees

Step 1: Identify the parts of speech for all the words in the sentence

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Drawing trees

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Step 2: try to figure out what words "go together in phrases" (i.e. figure out what the constituents are)

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Start with AdvP & AdjPs

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Next do NPs, then PPs, then VPs

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Generally, start at the RIGHT edge of the tree and work leftwards apply the TP rule last.

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Start with AdvP & AdjPs

Next do NPs, then PPs, then VPs

Generally, start at the RIGHT edge of the tree and work leftwards apply the TP rule last.

Step 4: now check your tree against your rules. Start at the top, and check that each set of lines can be generated by the rules.

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Drawing trees

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Important:

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Drawing trees

Important:

- Nothing can be left dangling in space.

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- Everything has to be attached to something higher up.

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Drawing trees

Important:

- Nothing can be left dangling in space.
- Everything has to be attached to something higher up.
- Lines can't cross one another.

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Some trees

The very big man gave the marble to his son

©Andrew Carnie, 2006

Some trees

D	Adv	Adj	N	V	D	N	P	D	N
The	very	big	man	gave	the	marble	to	his	son

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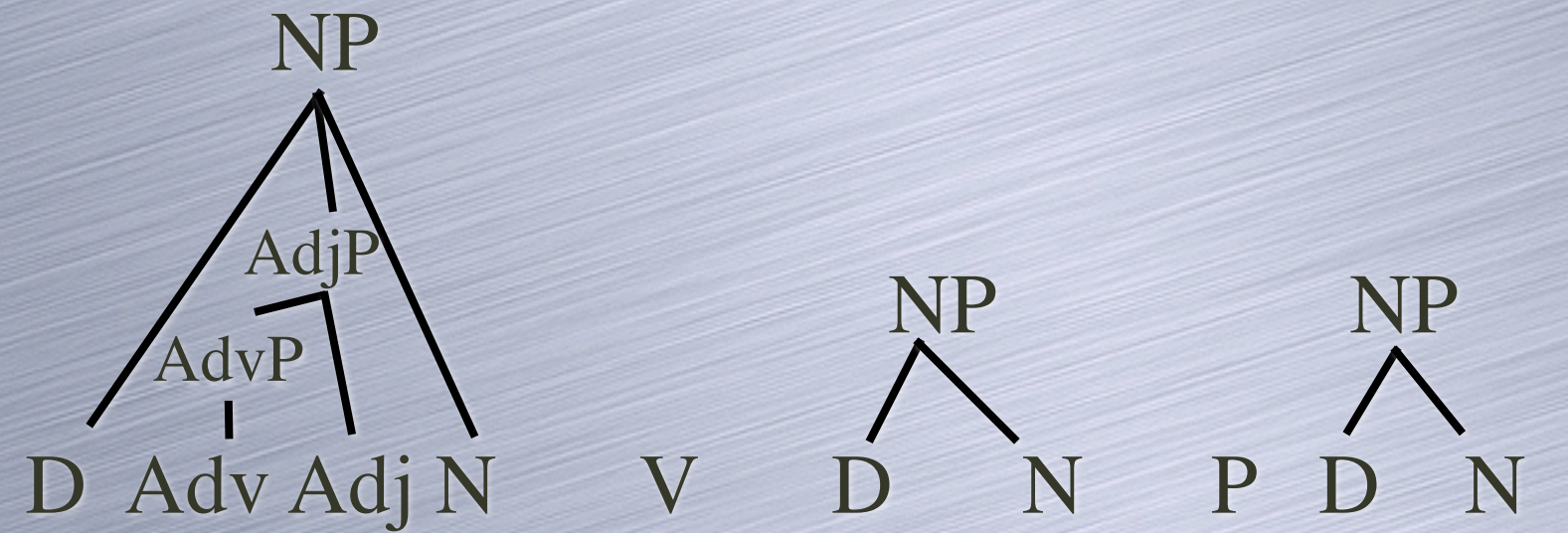

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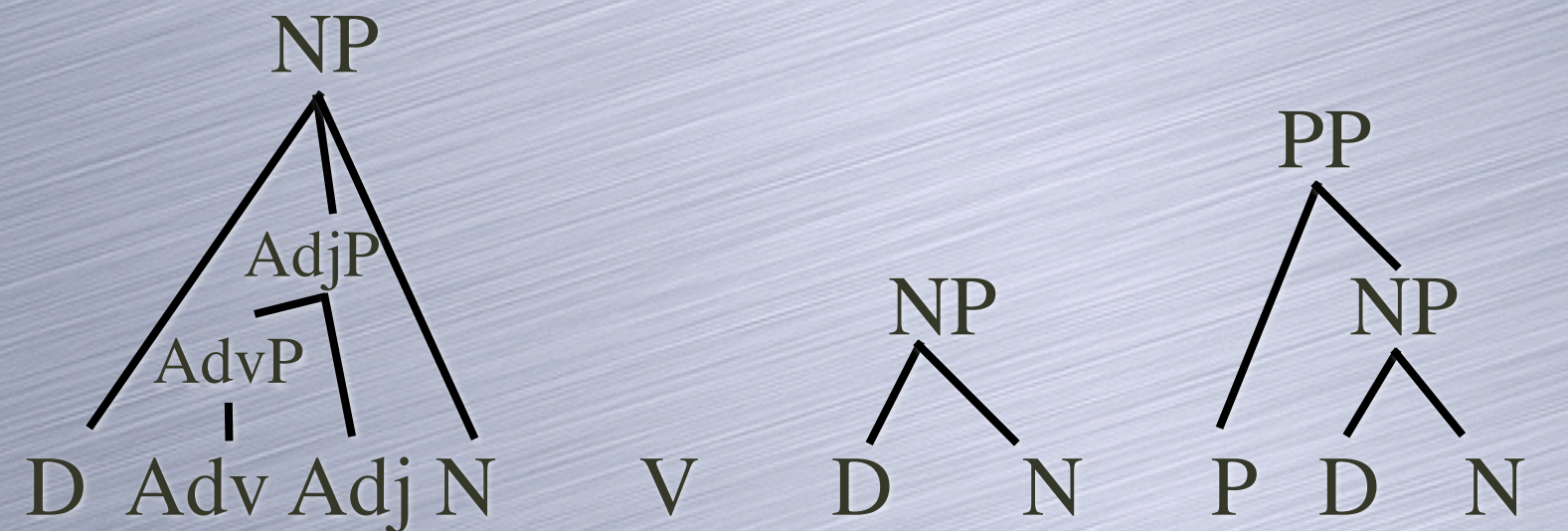

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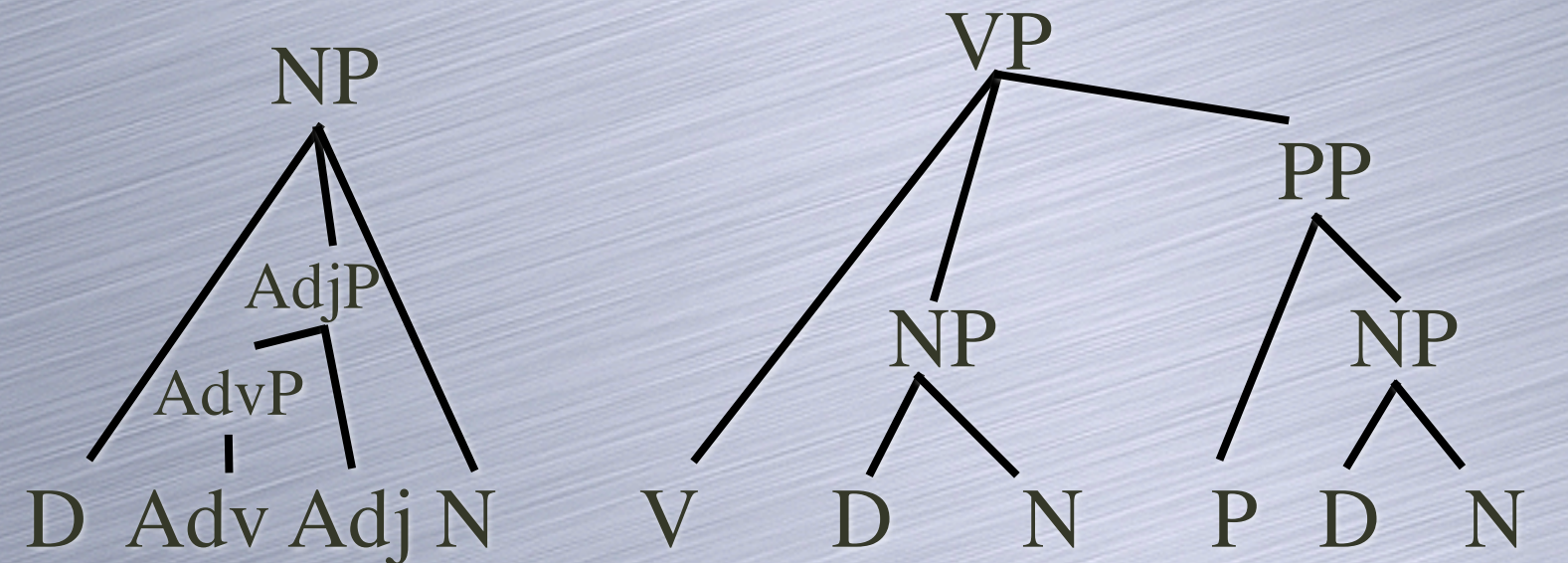

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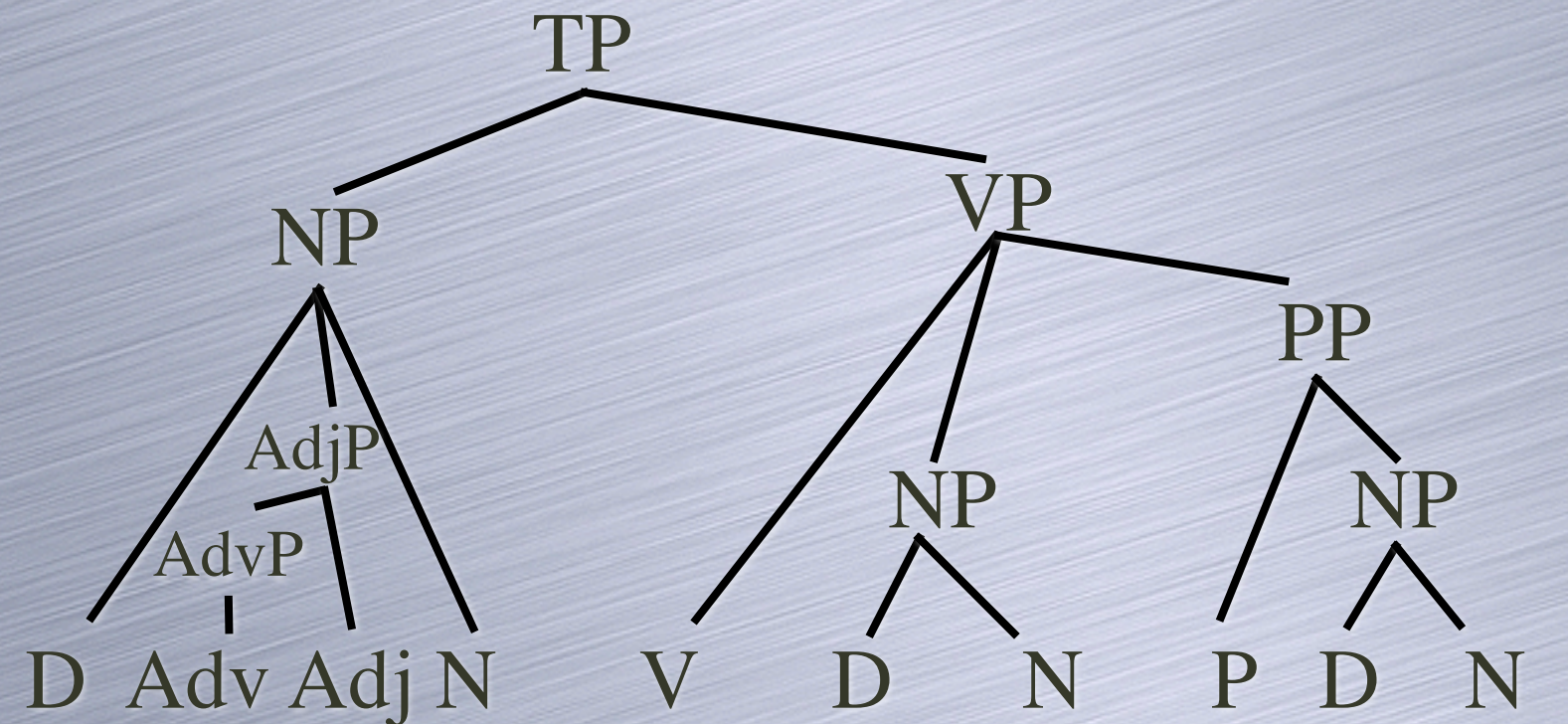

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Some trees

The big lazy dog bit a mouthful of food

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Some trees

D Adj Adj N V D N P N
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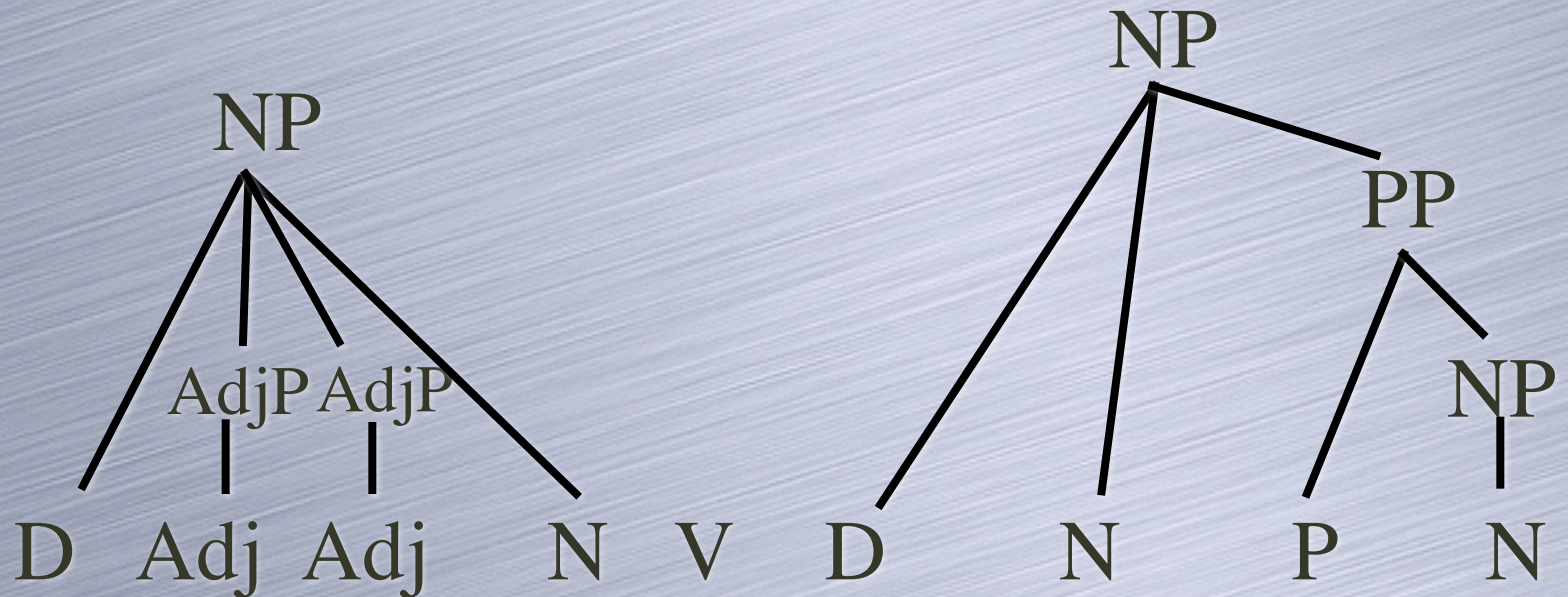

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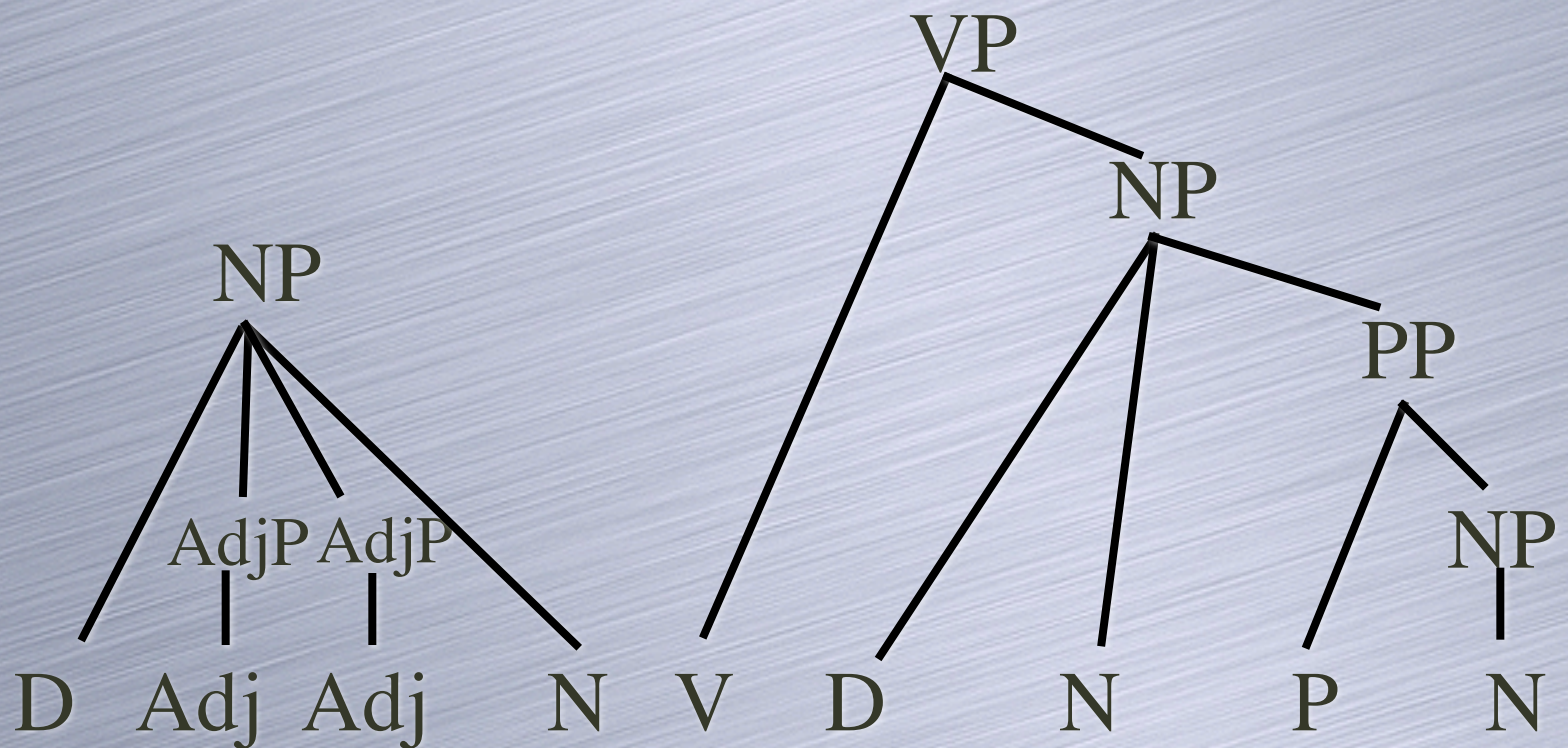

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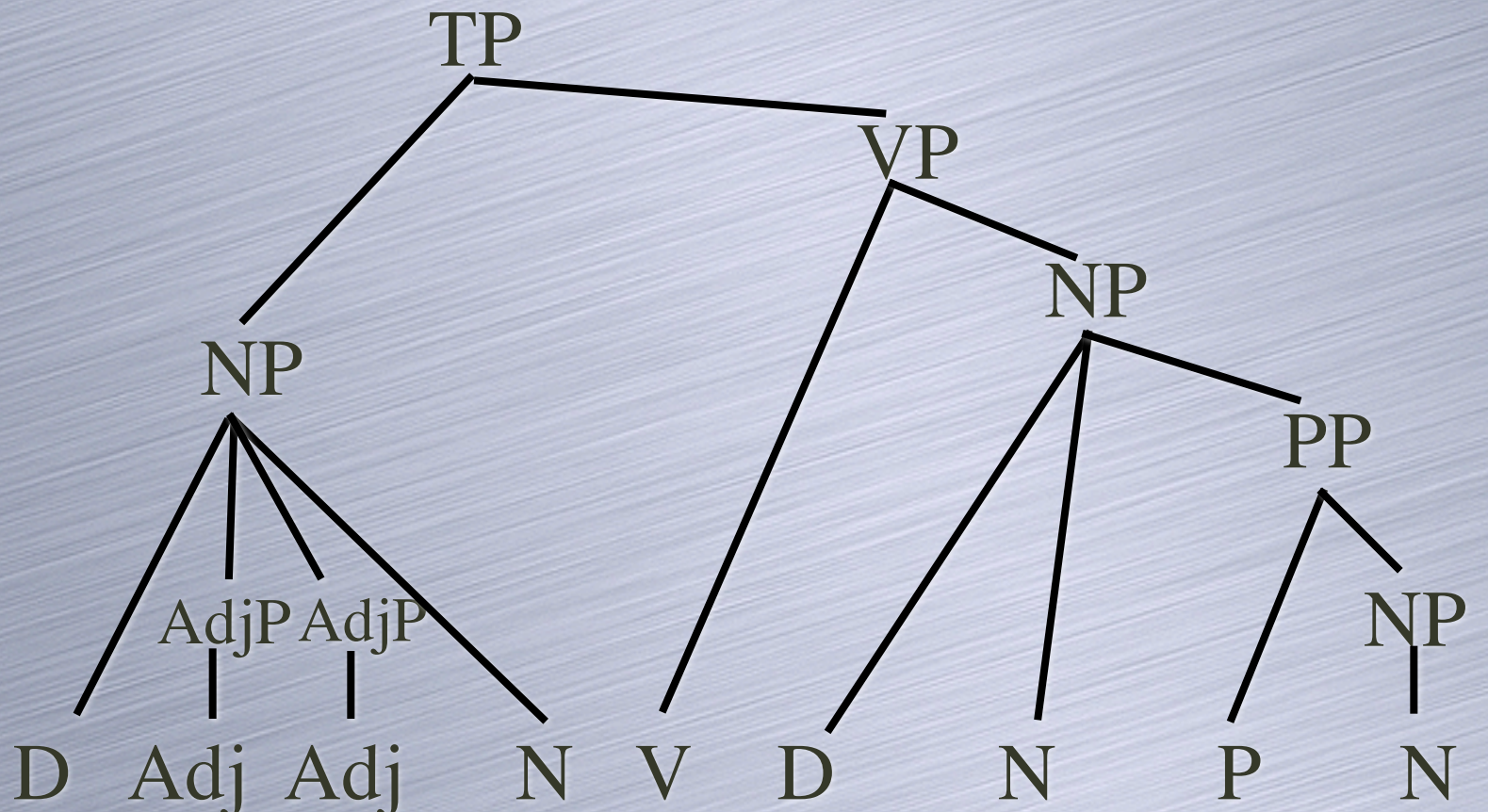

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Some trees

I will finish an assignment about trees

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Some trees

N	T	V	D		N	P	N
I	will	finish	an		assignment	about	trees

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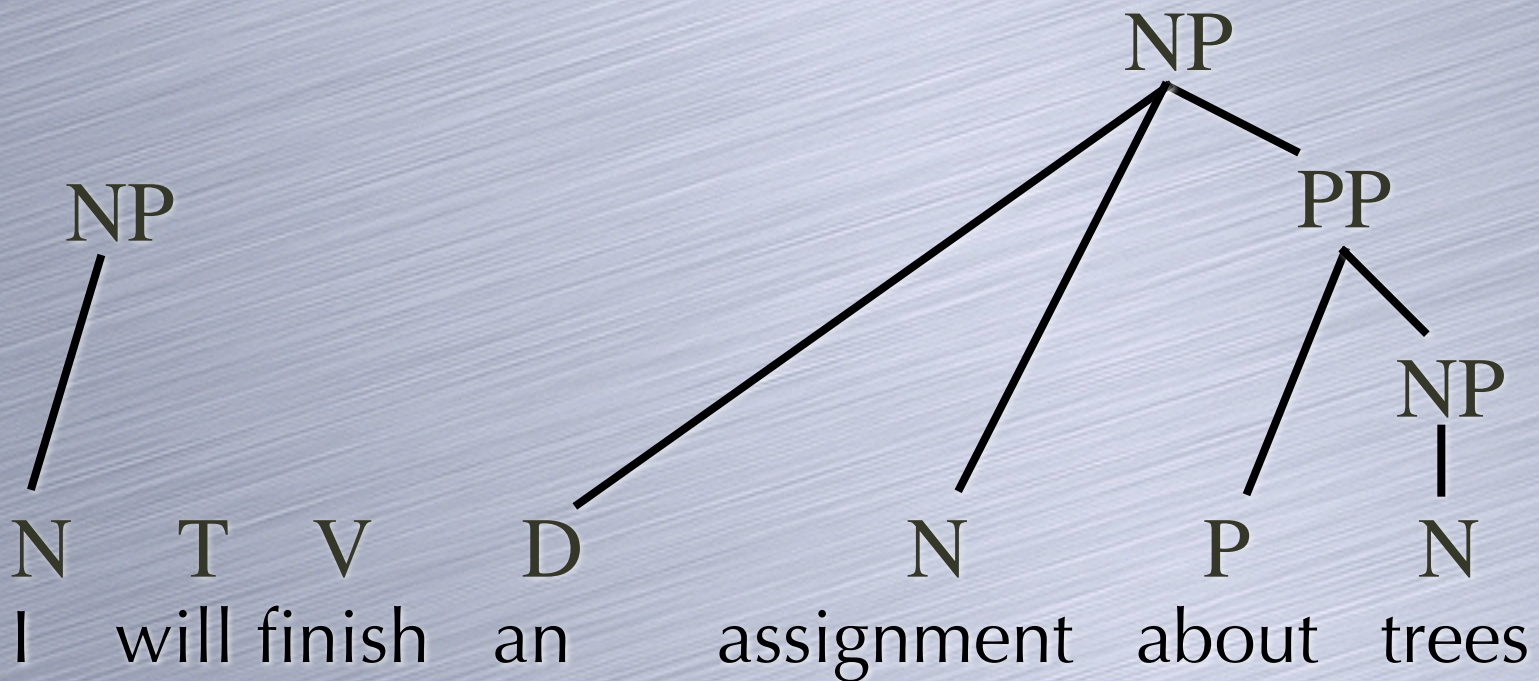

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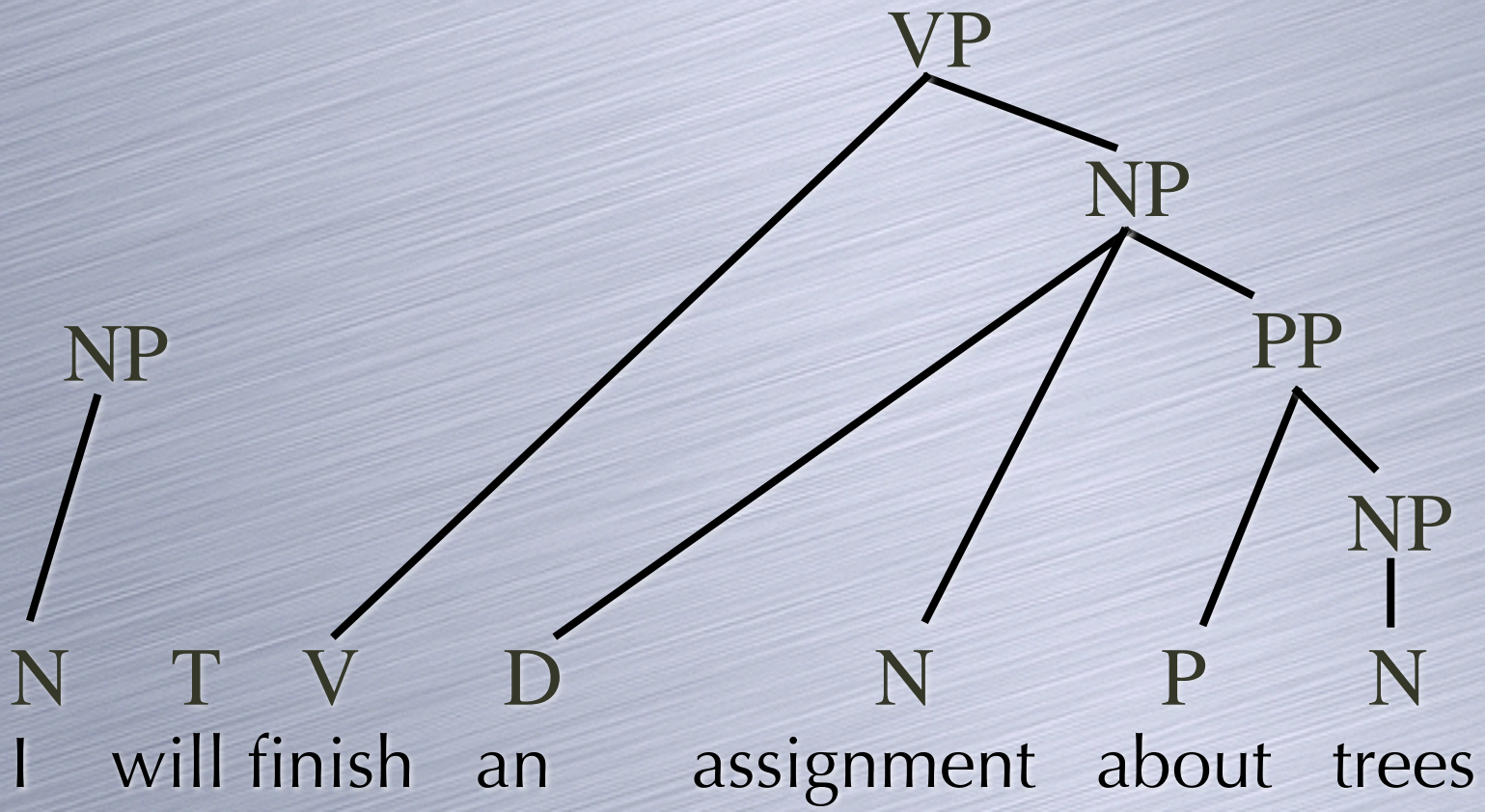

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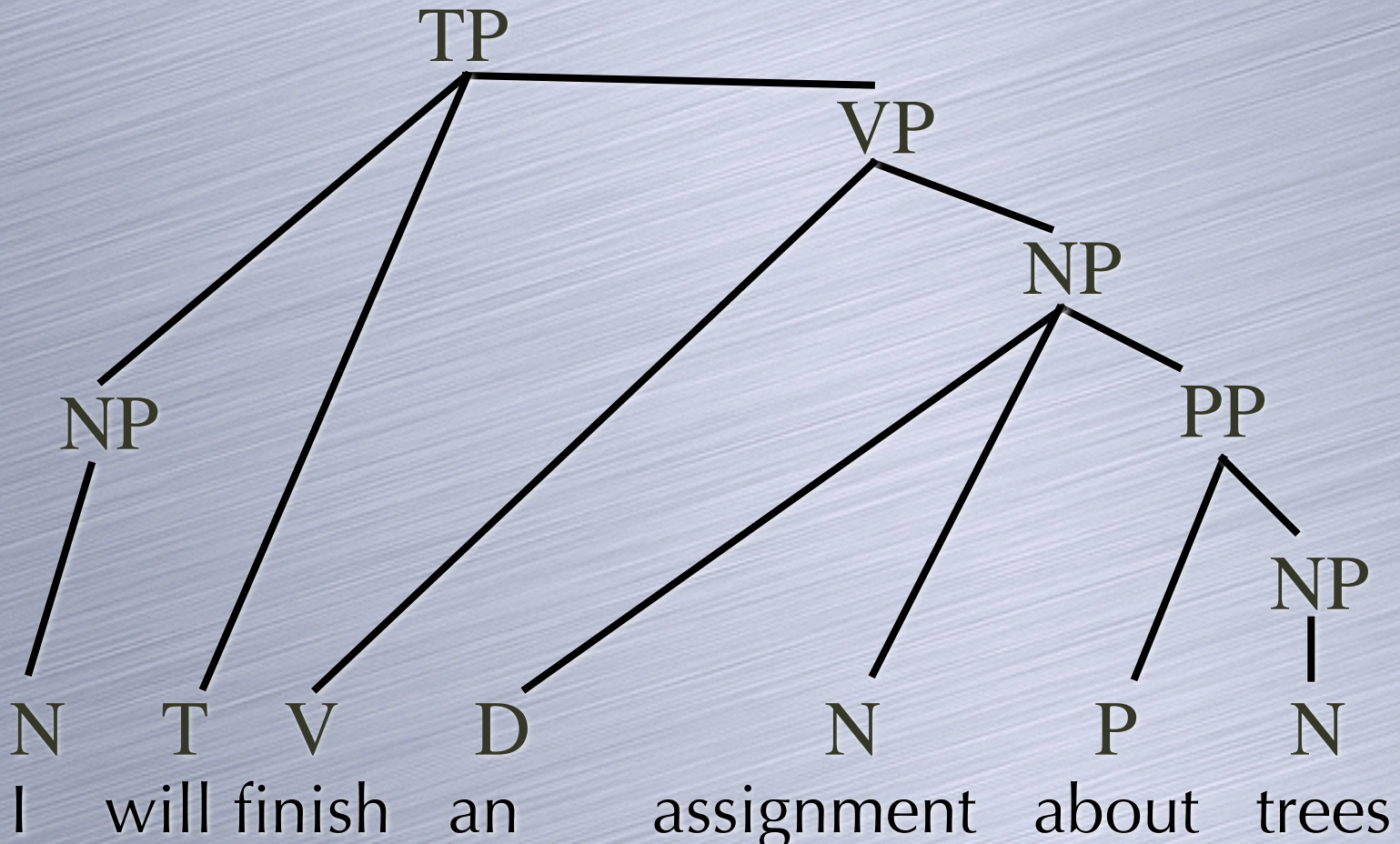

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A Personal Pet-peeve

The line in a tree represents the application of a PSR, so there is no line between a word and its category:

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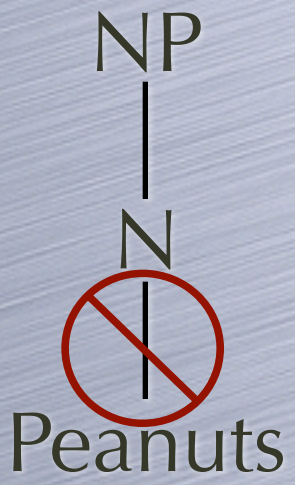

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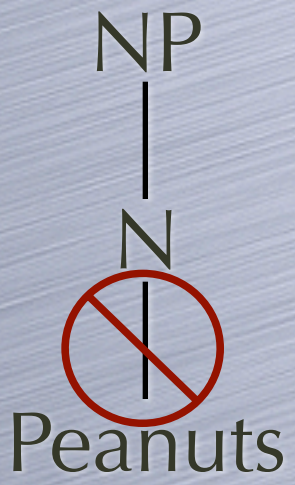

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Ambiguity

Ambiguity: when a sentence has two meanings

Paraphrase: A restatement of the meaning of a sentence, used to disambiguate ambiguous sentences.

- John went to the bank.
- Paraphrase 1: John went to the financial institution
- Paraphrase 2: John went to the side of the river

- We use paraphrases to disambiguate. But be sure that when you draw trees you draw them of the **ORIGINAL** sentence, not the paraphrase

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Ambiguity

Two kinds:

- **Lexical ambiguity** uses words with more than one meaning.
- **Structural ambiguity** ambiguous due to the structure of the tree.

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Lexically Ambiguous Headlines

Safety Experts Say School Bus Passengers Should Be Belted

Drunk Gets Nine Months in Violin Case

Iraqi Head Seeks Arms

Farmer Bill Dies in House

Stud Tires Out

Prostitutes Appeal to Pope

British Left Waffles on Falkland Islands

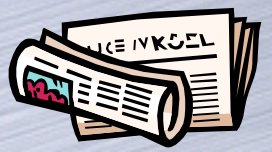
Reagan Wins on Budget, But More Lies Ahead

Red Tape Holds Up New Bridge

Deer Kill 17,000

Man Struck by Lightning Faces Battery Charge

Ban on Soliciting Dead in Trotwood



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Structurally Ambiguous Headlines

Two Sisters Reunited after 18 Years in Checkout Counter

Enraged Cow Injures Farmer With Ax

Hospitals are Sued by 7 Foot Doctors

Killer Sentenced to Die for Second Time in 10 Years.

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The Principle of Modification
"The Golden Rule"

If an XP modifies a head Y then XP must be Y's sister (be the daughter of YP)

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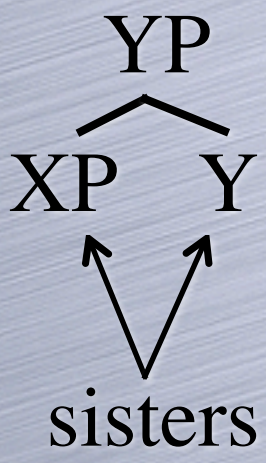

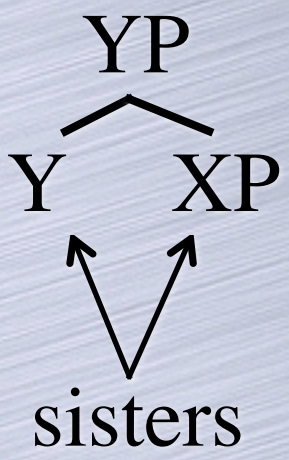

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Ambiguity in Structure

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Ambiguity in Structure

The man put the book in the box on the table

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Ambiguity in Structure

The man put the book in the box on the table

Meaning 1: put the book (currently in the box) on the table. The box isn't on the table

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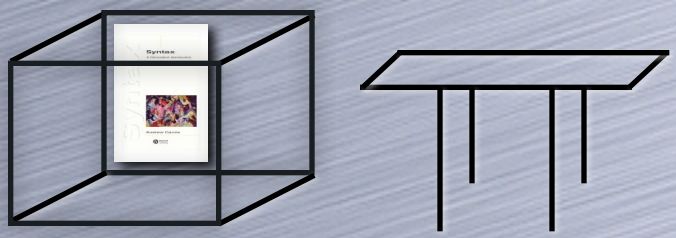

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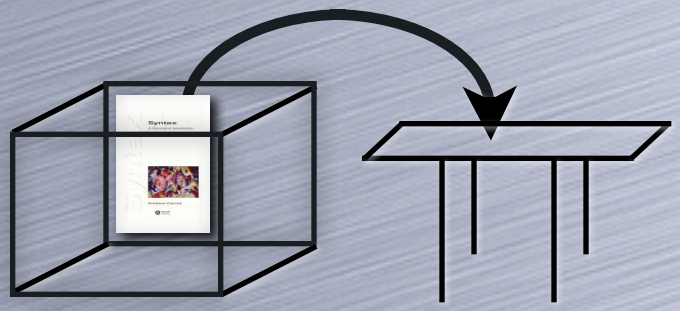

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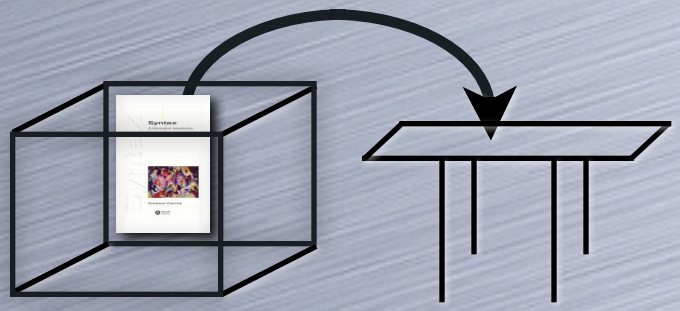

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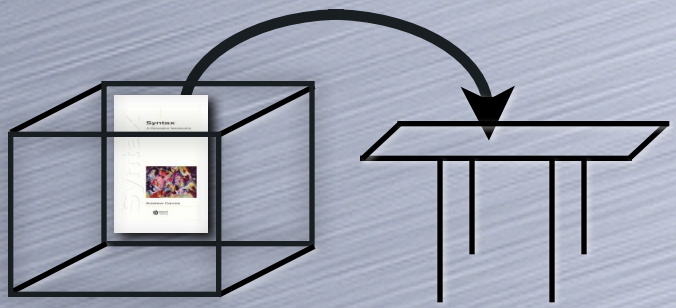

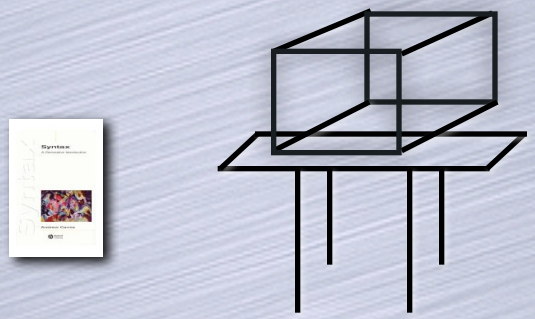

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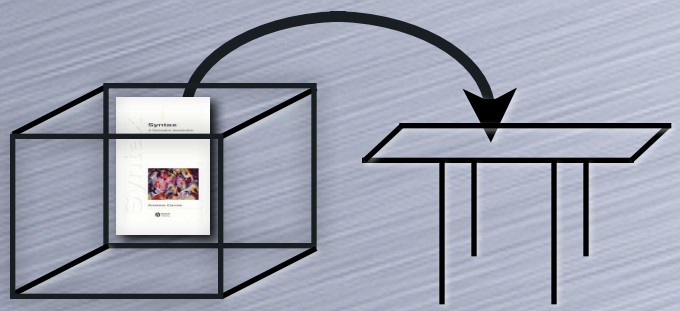

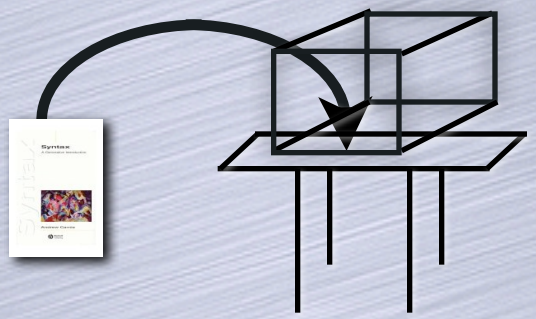

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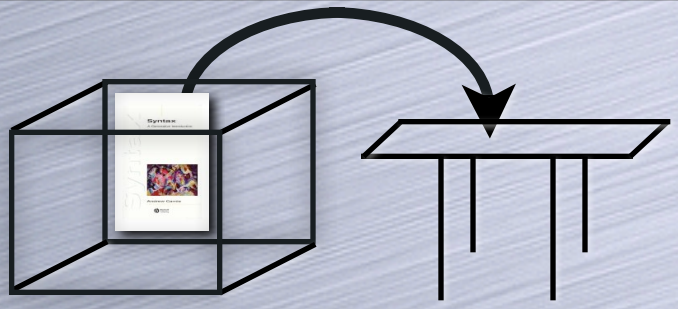

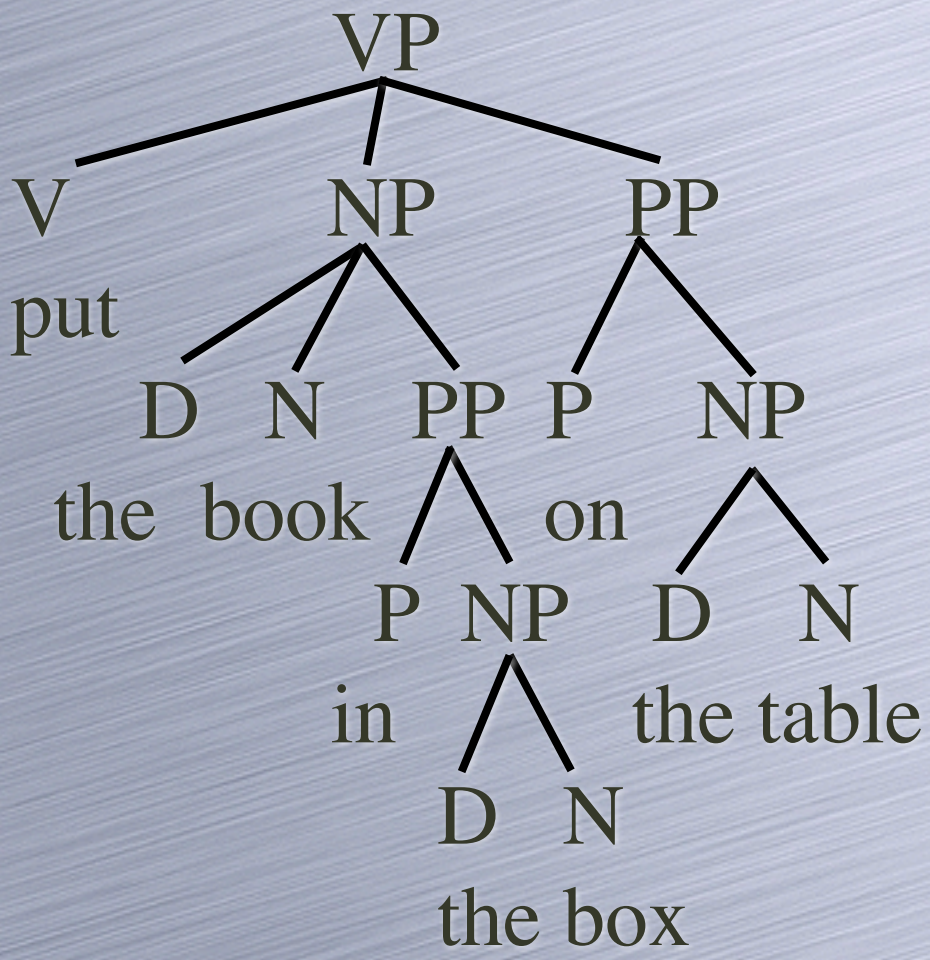

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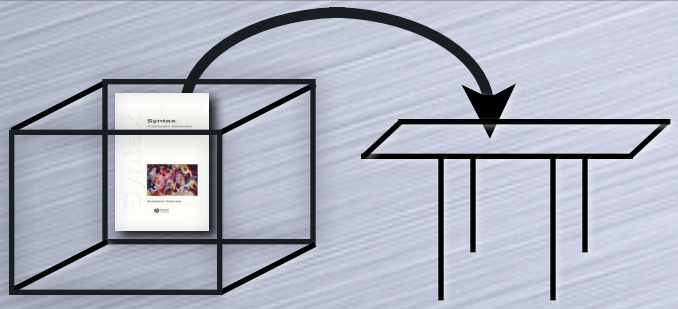

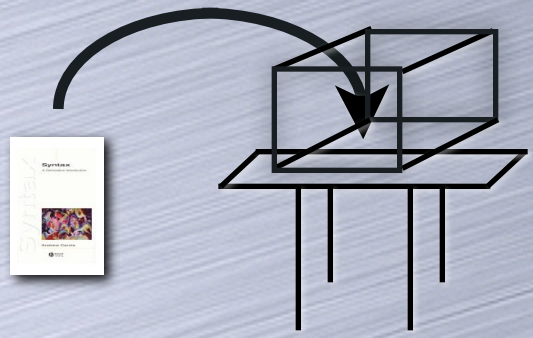

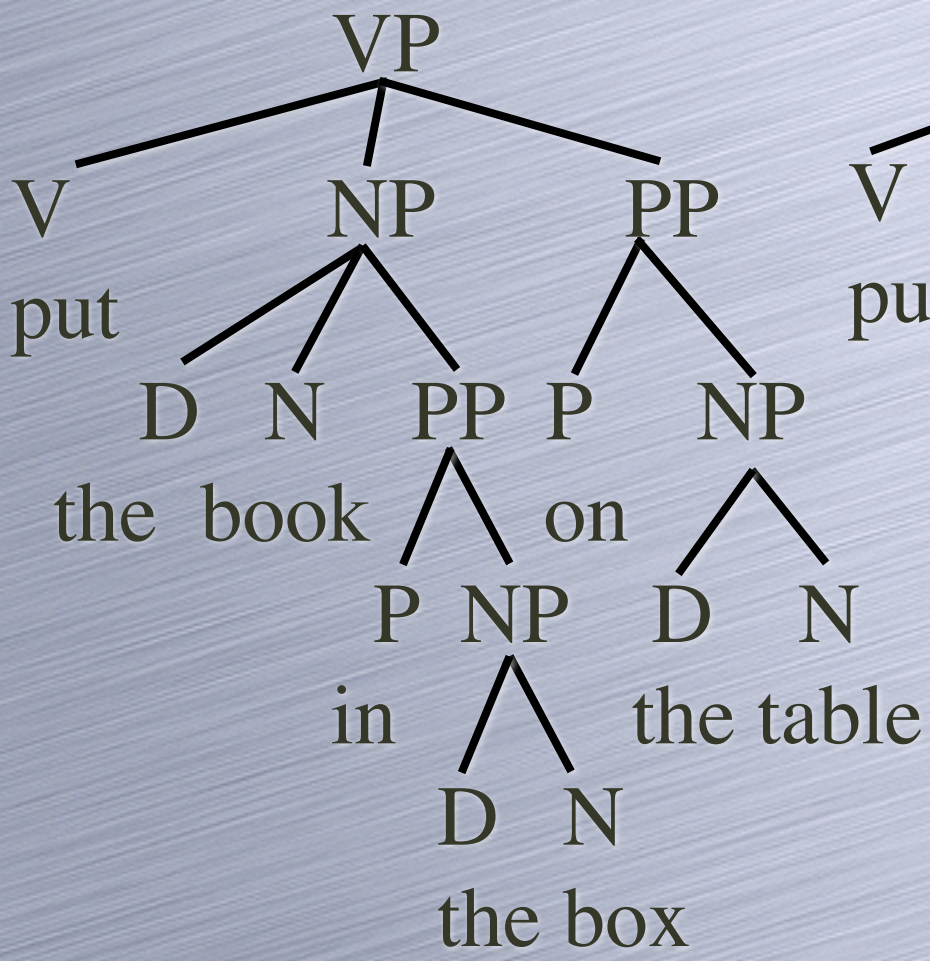

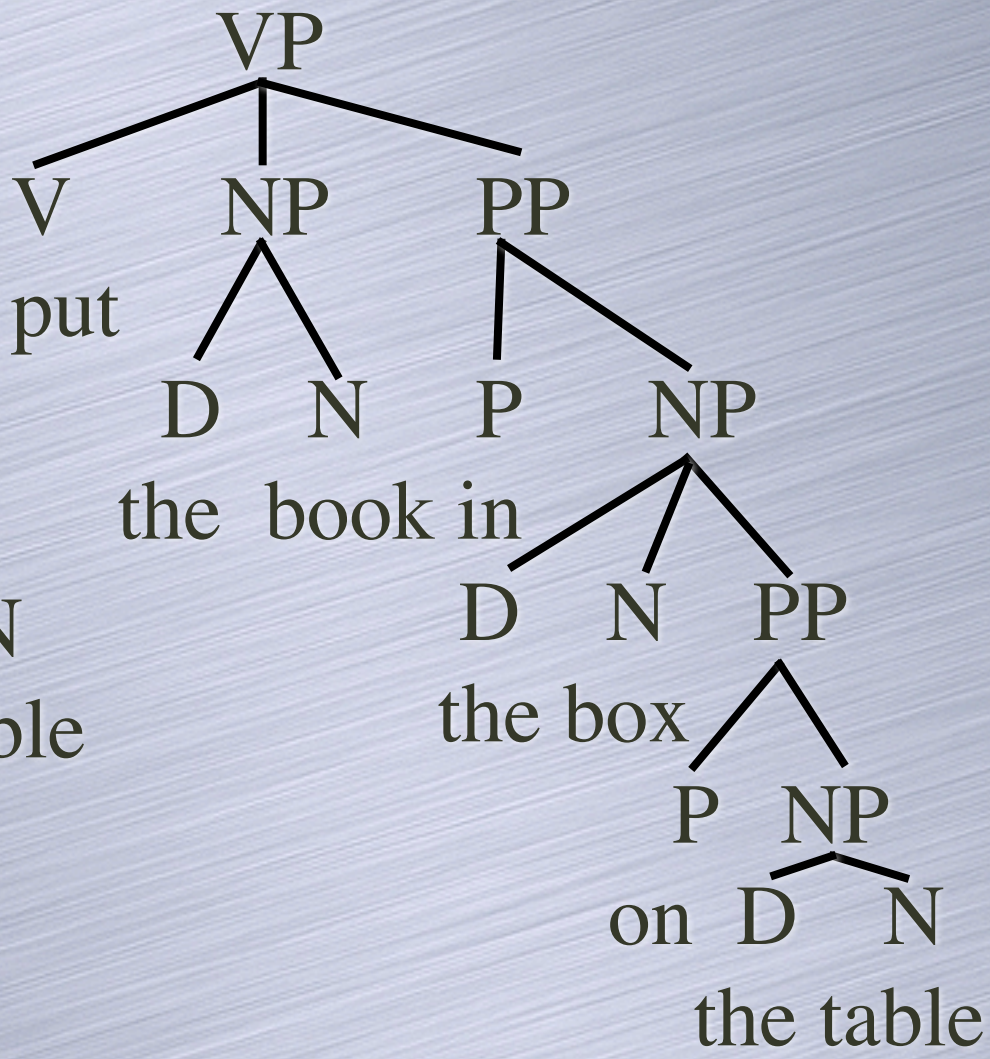

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Ambiguity in Structure

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Ambiguity in Structure

I killed the king with the knife

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Ambiguity in Structure

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- **easy reading:** "used a knife for the killing"

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Ambiguity in Structure

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- **easy reading:** "used a knife for the killing"
- **harder reading:** "king holding a knife"

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I killed the king with the red hair

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I killed the king with the red hair

- **easy reading:** "king who has red hair"

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- **easy reading:** "king who has red hair"
- **harder reading:** "used red hair to kill him"

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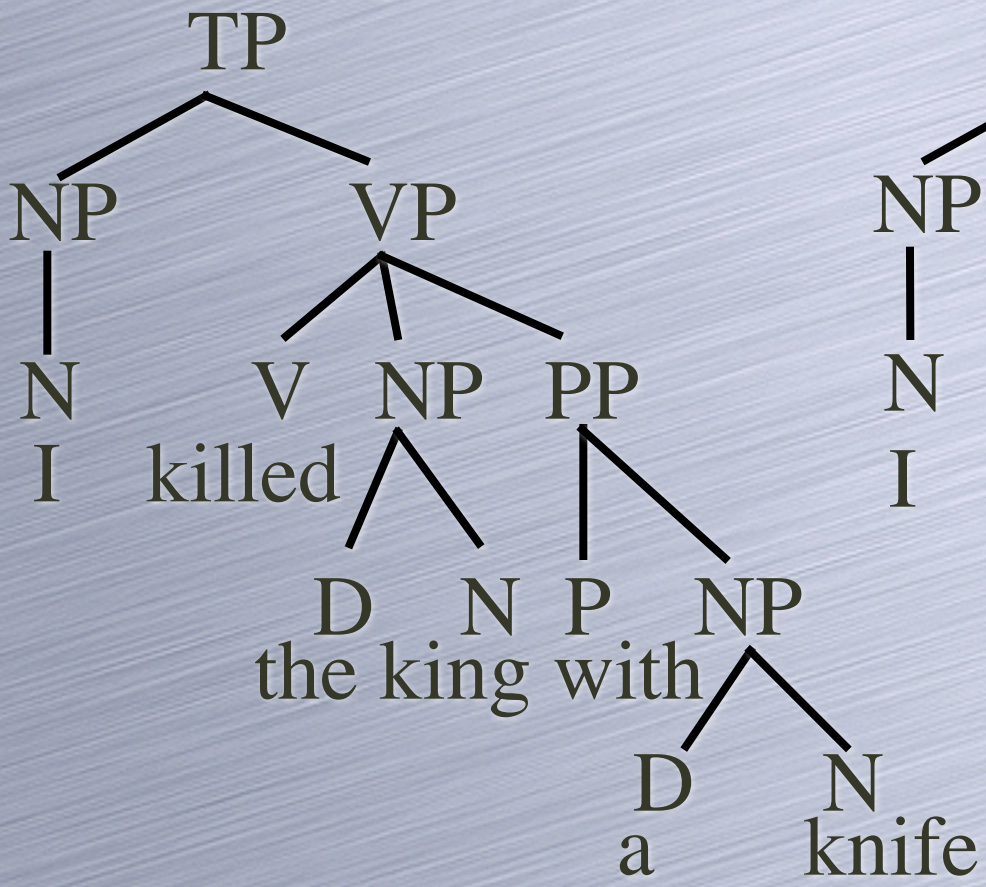
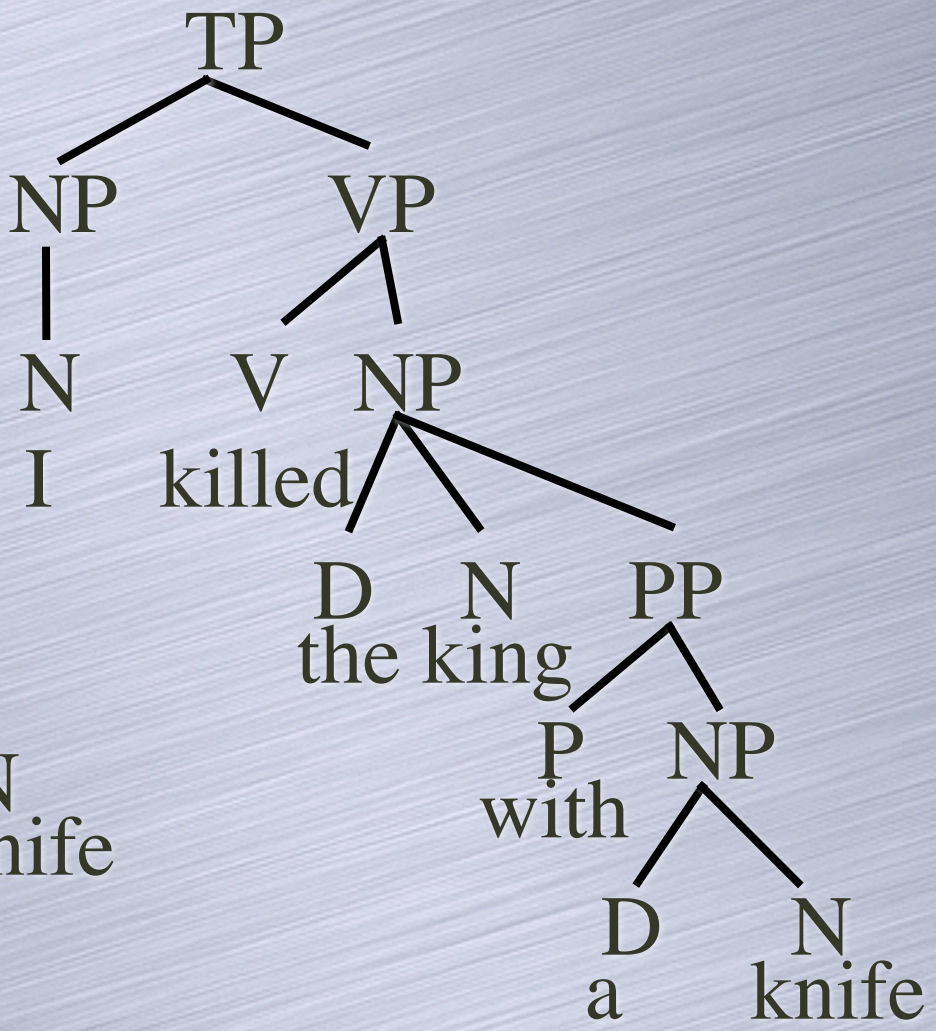
I killed the king with a knife

killed using a knife



king holding a knife



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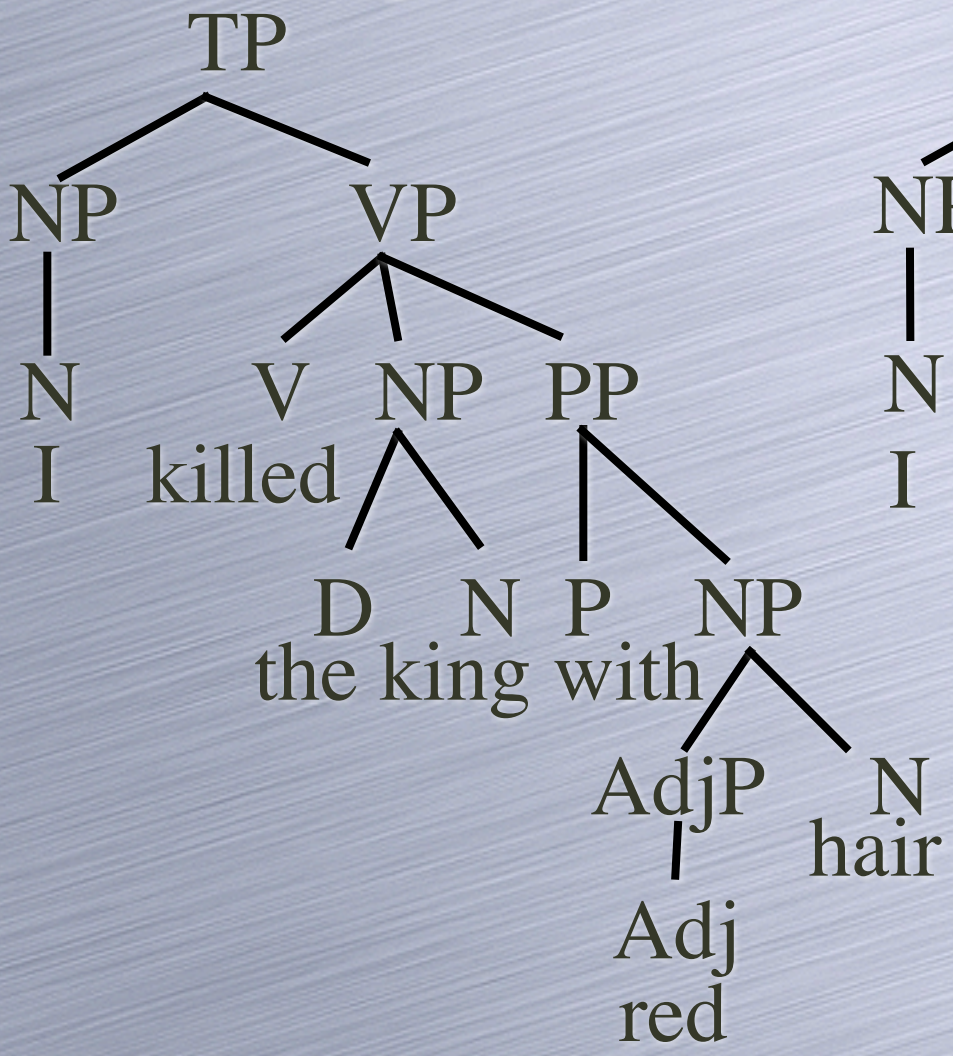
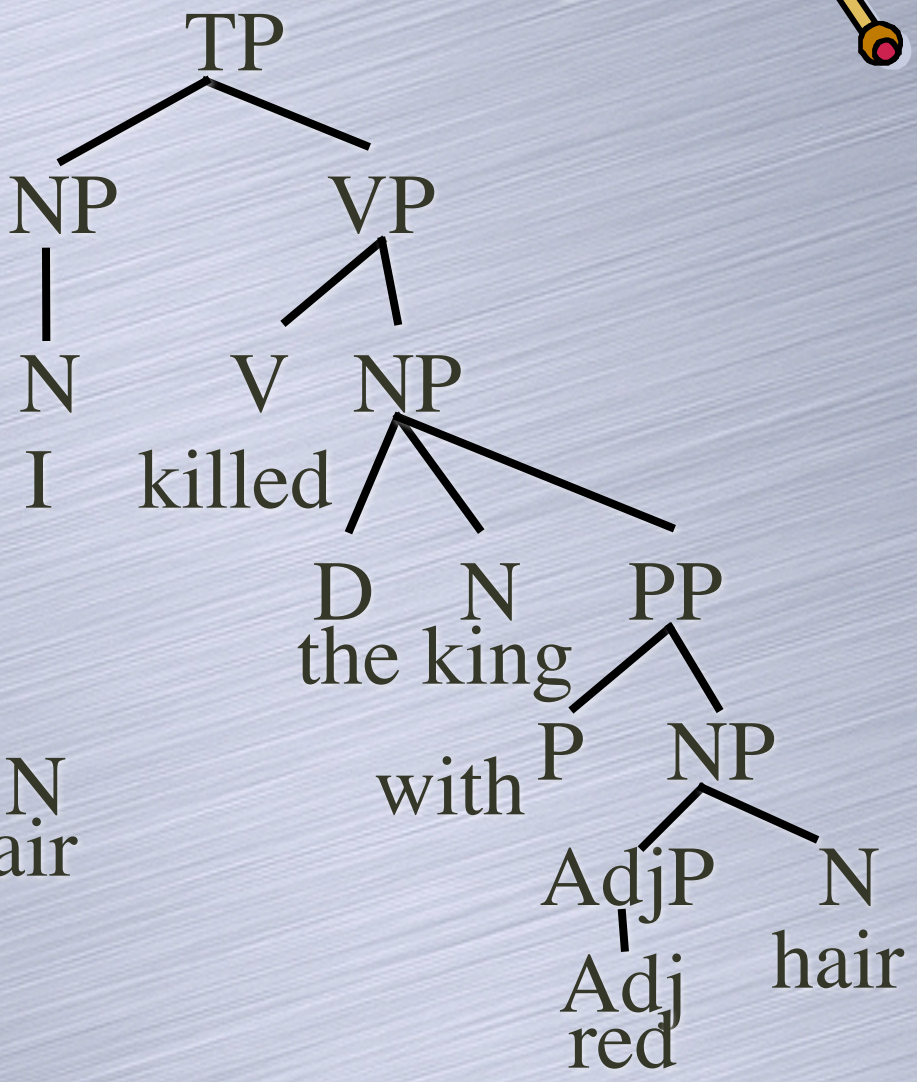
I killed the king with red hair

killed using red hair



red-headed king



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Summary

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- Tree drawing
  - practice, practice, practice

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- Apply rules from bottom up, start with AdjPs, AdvPs, NPs, PPs first. Start from right edge.

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- Make sure everything is connected, no crossing lines.

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Summary

- Tree drawing
  - practice, practice, practice
- Apply rules from bottom up, start with AdjPs, AdvPs, NPs, PPs first. Start from right edge.
- Make sure everything is connected, no crossing lines.
- **CHECK** your trees against the phrase structure rules.

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Summary

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Summary

- Structurally vs. Lexically ambiguous.

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Summary

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- Structurally ambiguous
  - different meanings have different trees.
  - relies on the principle of modification!

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Summary

- Structurally vs. Lexically ambiguous.
- Structurally ambiguous
  - different meanings have different trees.
  - relies on the principle of modification!
- A paraphrase is a restatement of meaning. *Don't draw trees for the paraphrase* -- draw them for the actual sentence.

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