Ling 566

Nov 20, 2014

Catch-up/review

Overview

- Ch 13 examples
- Big picture
- Untangle this...
- If time: Berlin CCS recap

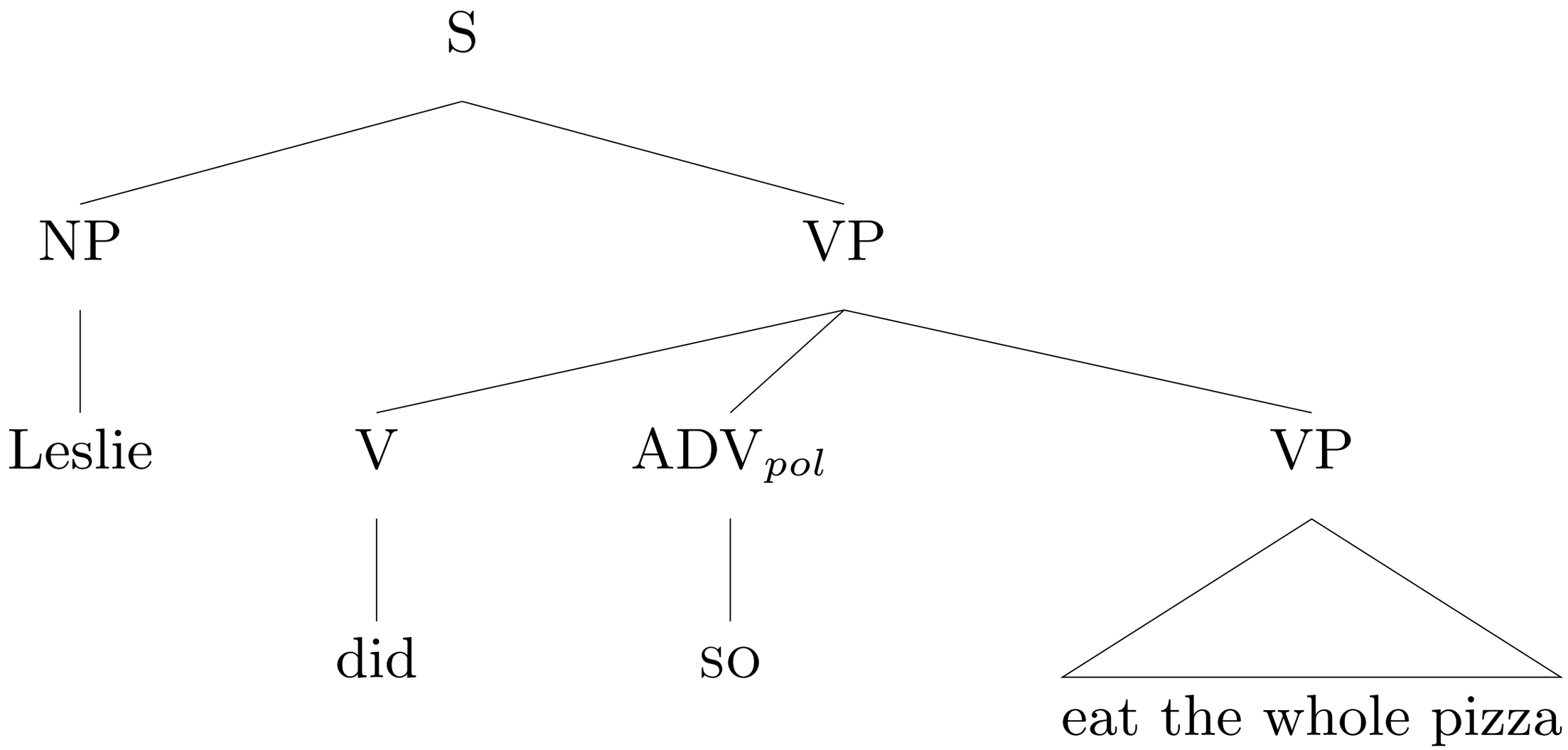
Some Type Constraints

TYPE	FEATURES/CONSTRAINTS	IST
verb-lxm	$\begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AUX} \quad / & - \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\, [\text{HEAD } \textit{nominal}] \,,\, \ldots \,\rangle \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{prop} \end{bmatrix} \end{bmatrix}$	*infl-lxm*
srv-lxm	$\begin{bmatrix} \text{ARG-ST} & \left\langle \boxed{1} \,,\, \begin{bmatrix} \text{SPR} & \langle\, \boxed{1} \,\rangle \\ \text{COMPS} & \langle\, \rangle \end{bmatrix} \right\rangle \end{bmatrix}$	*verb-lxm*
ic-srv-lxm	$\begin{bmatrix} \text{ARG-ST} & \left\langle \text{X} \,,\, \begin{bmatrix} \overset{\text{VP}}{\text{INF}} & + \\ \text{INDEX} & s \end{bmatrix} \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{RESTR} & \left\langle \begin{bmatrix} \text{ARG} & s \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$	*srv-lxm*
auxv-lxm	$\begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AUX} & + \end{bmatrix} \end{bmatrix} \end{bmatrix}$	*srv-lxm*

The ADV$_{pol}$-Addition Lexical Rule

$$
\left[\begin{array}{l}
\textit{pi-rule} \\
\\
\text{INPUT} \quad \left\langle \text{X} , \left[\begin{array}{ll}
\text{SYN} & \left[\text{HEAD} \left[\begin{array}{ll} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{POL} & - \\ \text{AUX} & + \end{array}\right]\right] \\
\text{ARG-ST} & \langle\, \boxed{1} \,\rangle \oplus \boxed{\text{A}} \\
\text{SEM} & \left[\text{INDEX} \quad s_1\right]
\end{array}\right] \right\rangle \\
\\
\text{OUTPUT} \quad \left\langle \text{Y} , \left[\begin{array}{ll}
\text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\text{POL} \;\; +\right] \\ \text{VAL} & \left[\text{SPR} \quad \langle\, \text{Z} \,\rangle\right] \end{array}\right] \\
\text{ARG-ST} & \langle\, \boxed{1} \,\rangle \oplus \left\langle \left[\begin{array}{ll} \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \left[\text{ARG} \quad s_1\right] \right\rangle \end{array}\right]_{\text{ADV}_{pol}} \right\rangle \oplus \boxed{\text{A}} \\
\text{SEM} & \left[\text{INDEX} \quad s_2\right]
\end{array}\right] \right\rangle
\end{array}\right]
$$

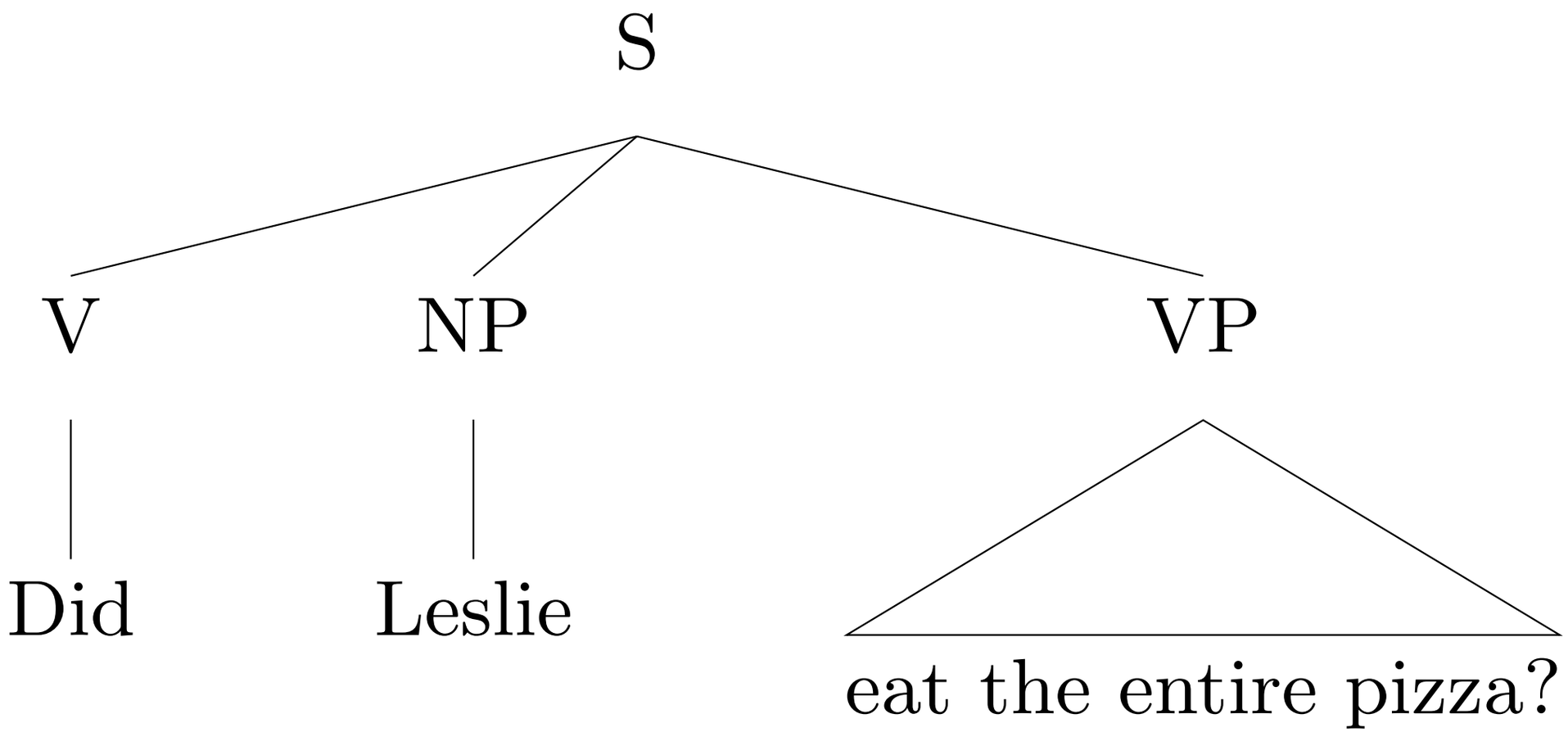
Negation and Reaffirmation: A Sample Tree



The Inversion Lexical Rule

$$\left[\begin{array}{l}\textit{pi-rule} \\ \\ \text{INPUT} \quad \left\langle \text{W} , \left[\begin{array}{ll}\text{SYN} & \left[\begin{array}{ll}\text{HEAD} & \left[\begin{array}{ll}\textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \end{array}\right] \\ \text{VAL} & \left[\text{SPR} \quad \langle\ \text{X}\ \rangle\right] \end{array}\right] \\ \text{ARG-ST} & \boxed{\text{A}} \\ \text{SEM} & \left[\text{MODE} \quad \text{prop}\right] \end{array}\right] \right\rangle \\ \\ \text{OUTPUT} \quad \left\langle \text{Z} , \left[\begin{array}{ll}\text{SYN} & \left[\begin{array}{ll}\text{HEAD} & \left[\text{INV} \quad +\right] \\ \text{VAL} & \left[\text{SPR} \quad \langle\ \rangle\right] \end{array}\right] \\ \text{ARG-ST} & \boxed{\text{A}} \\ \text{SEM} & \left[\text{MODE} \quad \text{ques}\right] \end{array}\right] \right\rangle \end{array}\right]$$

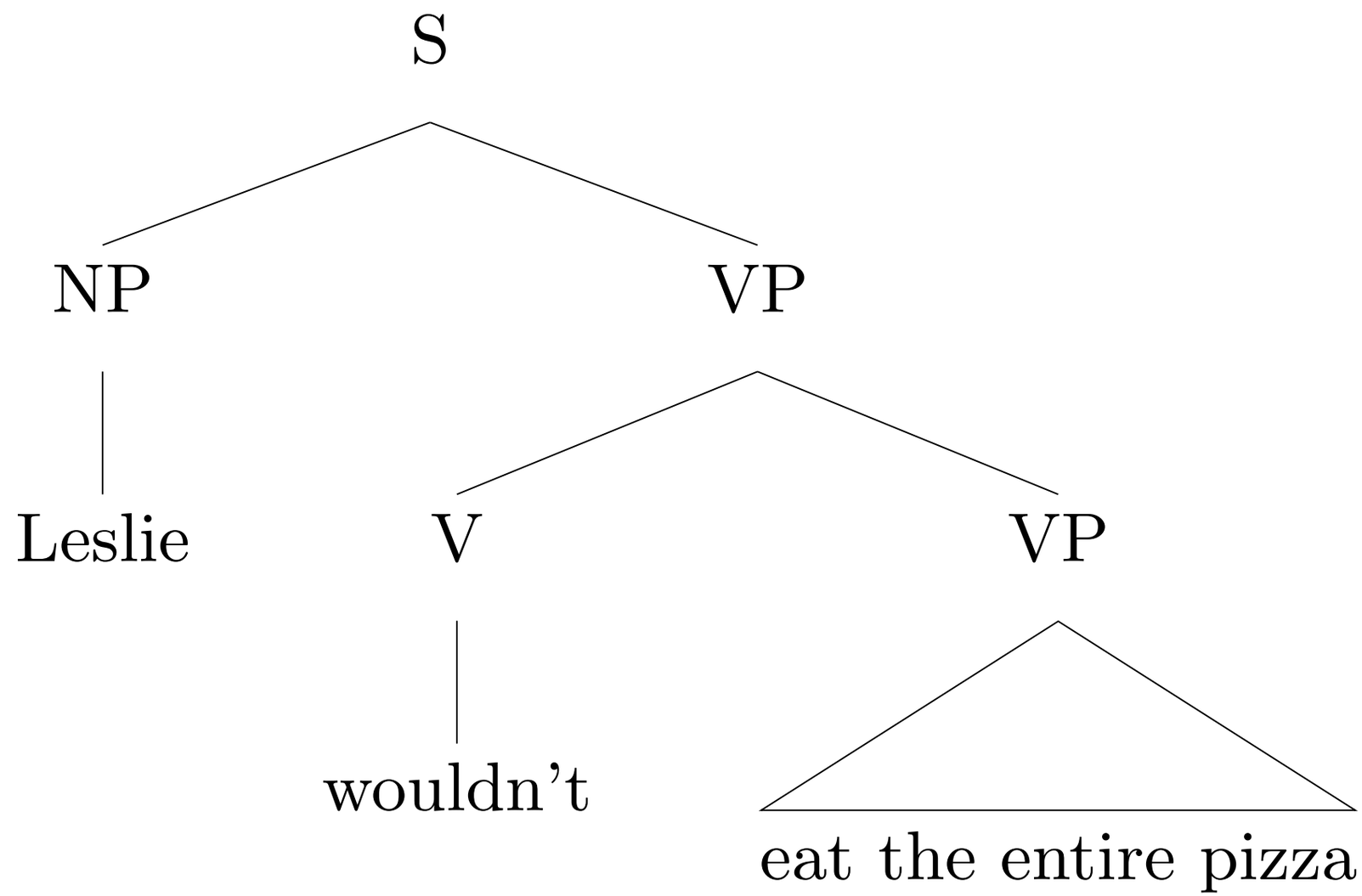
Inversion: A Sample Tree



The Contraction Lexical Rule

$$
\left[\begin{array}{l}
\textit{pi-rule} \\
\\
\text{INPUT} \quad \left\langle \boxed{2}, \left[\begin{array}{ll}
\text{SYN} & \left[\text{HEAD} \left[\begin{array}{ll} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \\ \text{POL} & - \end{array}\right]\right] \\
\text{ARG-ST} & \boxed{B} \\
\text{SEM} & \left[\begin{array}{ll} \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{A} \end{array}\right]
\end{array}\right] \right\rangle \\
\\
\text{OUTPUT} \quad \left\langle \text{F}_{NEG}(\boxed{2}), \left[\begin{array}{ll}
\text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\text{POL} \quad +\right] \\ \text{VAL} & \left[\text{SPR} \quad \langle\ \text{X}\ \rangle\right] \end{array}\right] \\
\text{ARG-ST} & \boxed{B} \\
\text{SEM} & \left[\begin{array}{ll} \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \textbf{not} \\ \text{SIT} & s_2 \\ \text{ARG} & s_1 \end{array}\right] \right\rangle \oplus \boxed{A} \end{array}\right]
\end{array}\right] \right\rangle
\end{array}\right]
$$

Contraction: Sample Tree

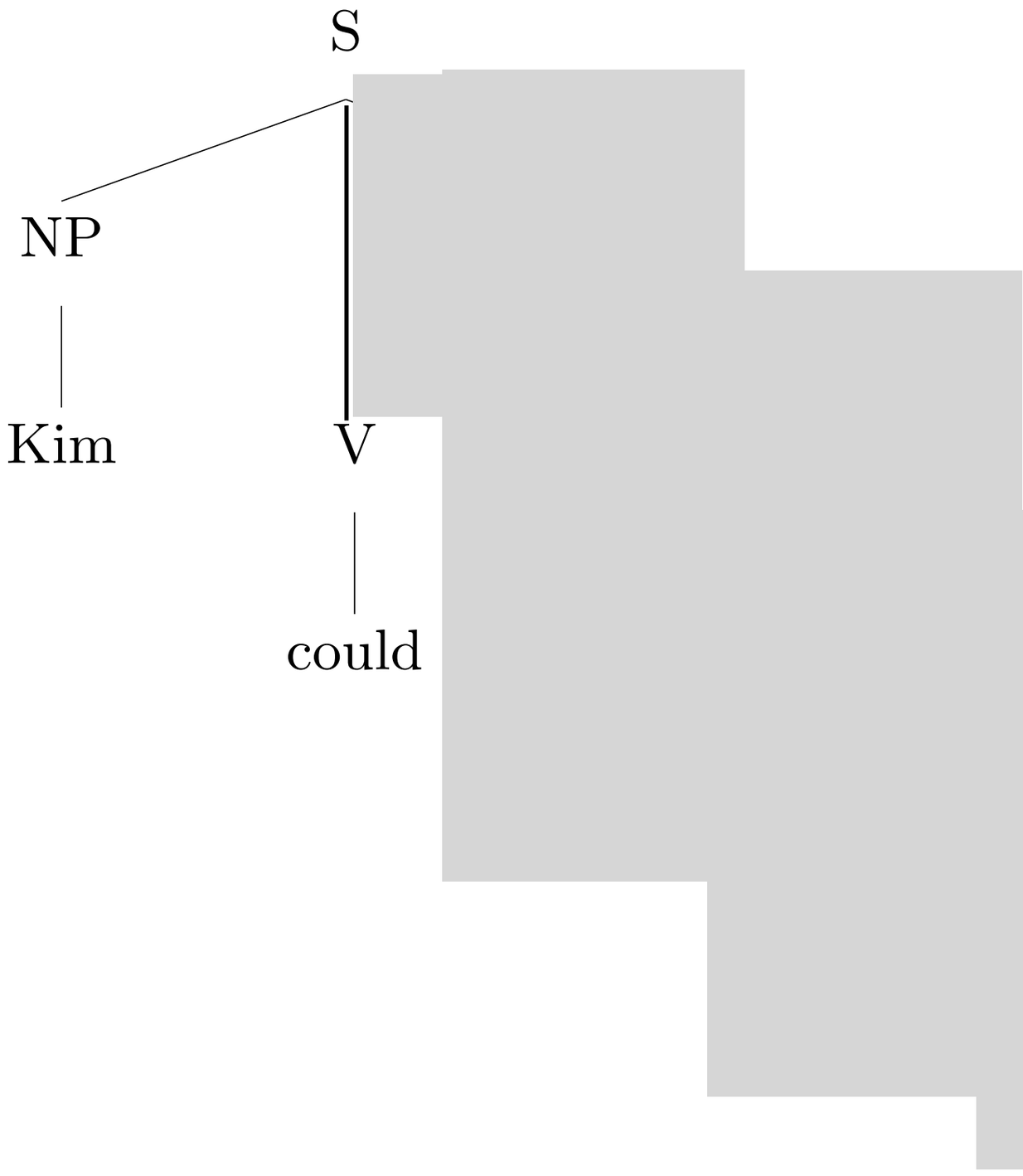


The Ellipsis Lexical Rule

$$\left[\begin{array}{l} \textit{d-rule} \\ \text{INPUT} \quad \left\langle \boxed{1}, \left[\begin{array}{l} \textit{auxv-lxm} \\ \text{ARG-ST} \quad \langle\, \boxed{2} \,\rangle \;\oplus\; \boxed{\text{A}} \end{array}\right] \right\rangle \\ \text{OUTPUT} \quad \left\langle \boxed{1}, \left[\begin{array}{l} \textit{dervv-lxm} \\ \text{ARG-ST} \quad \langle\, \boxed{2} \,\rangle \end{array}\right] \right\rangle \end{array}\right]$$

- Note that this is a derivational LR (*d-rule*) -- that is, lexeme-to-lexeme
- This means that SYN and SEM are unchanged, by default

Ellipsis: A Sample Tree



Parts of our model

- Type hierarchy (lexical types, other types)
- Phrase structure rules
- Lexical rules
- Lexical entries
- Grammatical principles
- Initial symbol

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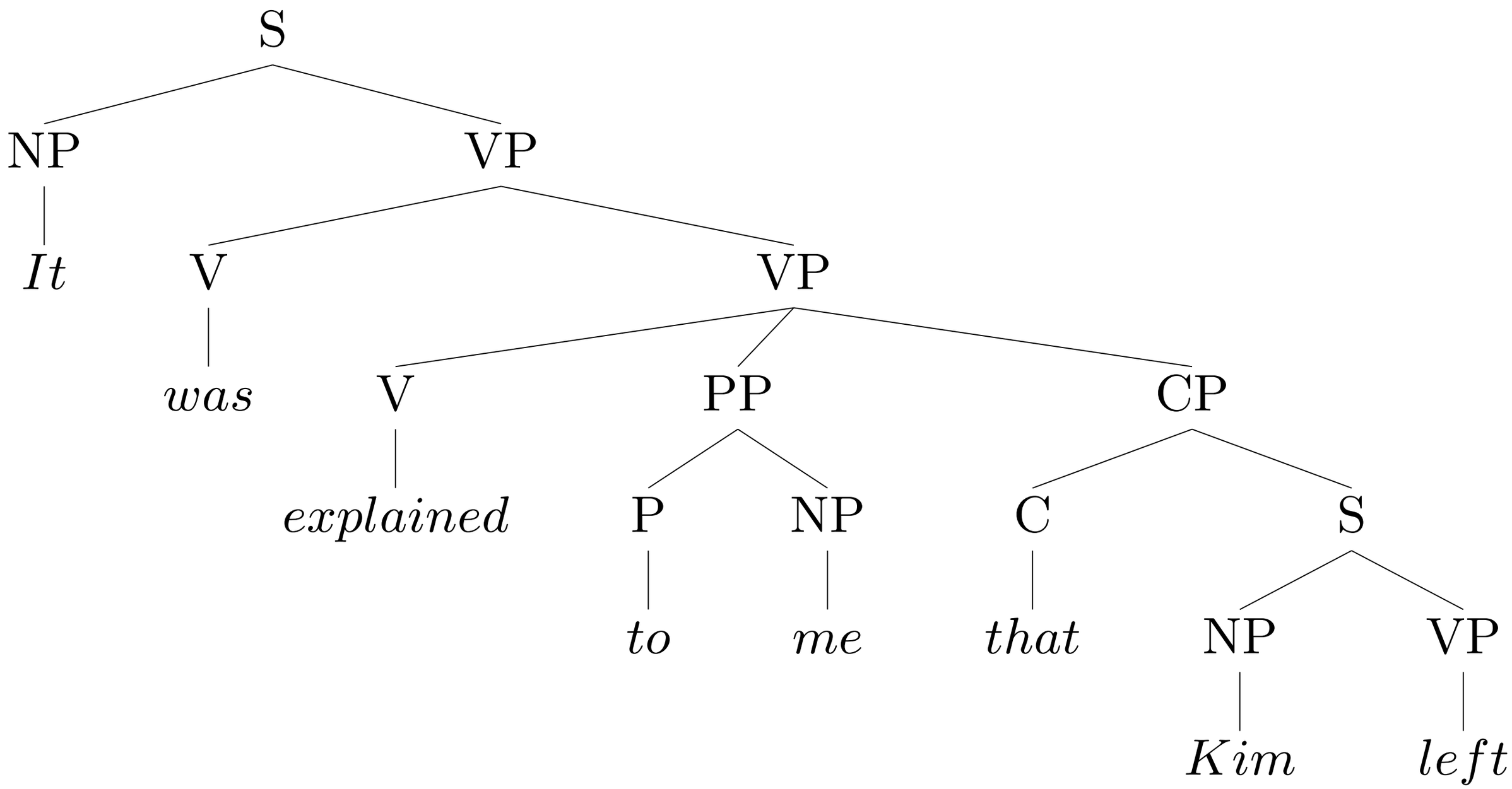
Pause for reflection

- What have you learned about the nature of human language?
- What have you learned about how linguists think about language?
- How does this model/type of model differ from CFG (with atomic categories)?
- In what applications might (atomic category) CFG be sufficient?
- What applications might benefit from something linguistically more motivated?

Complicated example #1

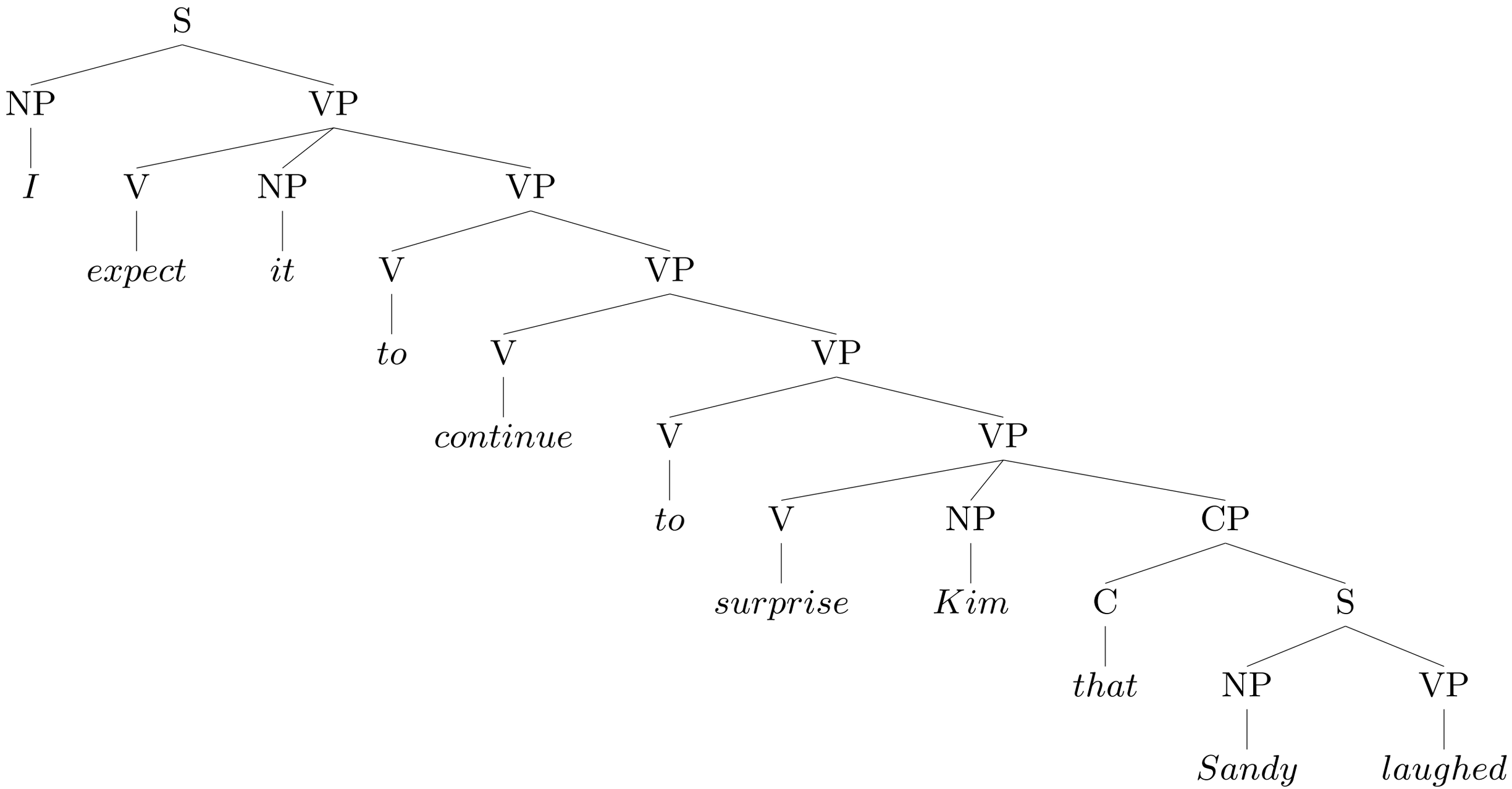
- What phenomena are illustrated by this sentence?
- What rules or interesting lexical types are involved in our analysis of it?
- What tree structure does our grammar assign?

It was explained to me that Kim left.



Complicated examples #2

I expect it to continue to surprise Kim that Sandy laughed.



Why not these?

**I expect it to continue to surprise Kim Sandy laughed.*

**I expect there to continue to surprise Kim that Sandy laughed.*

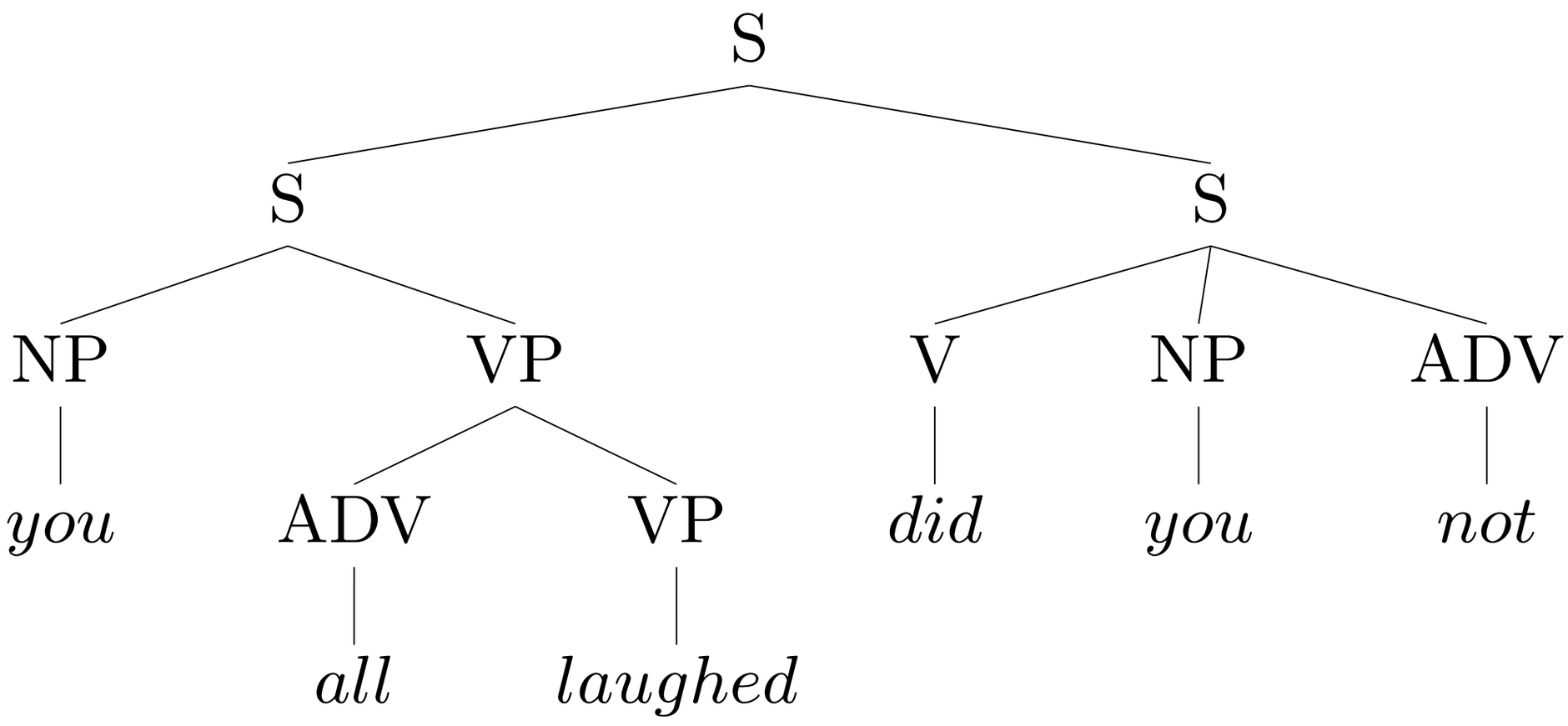
**I expect that Sandy laughed to Kim be surprised.*

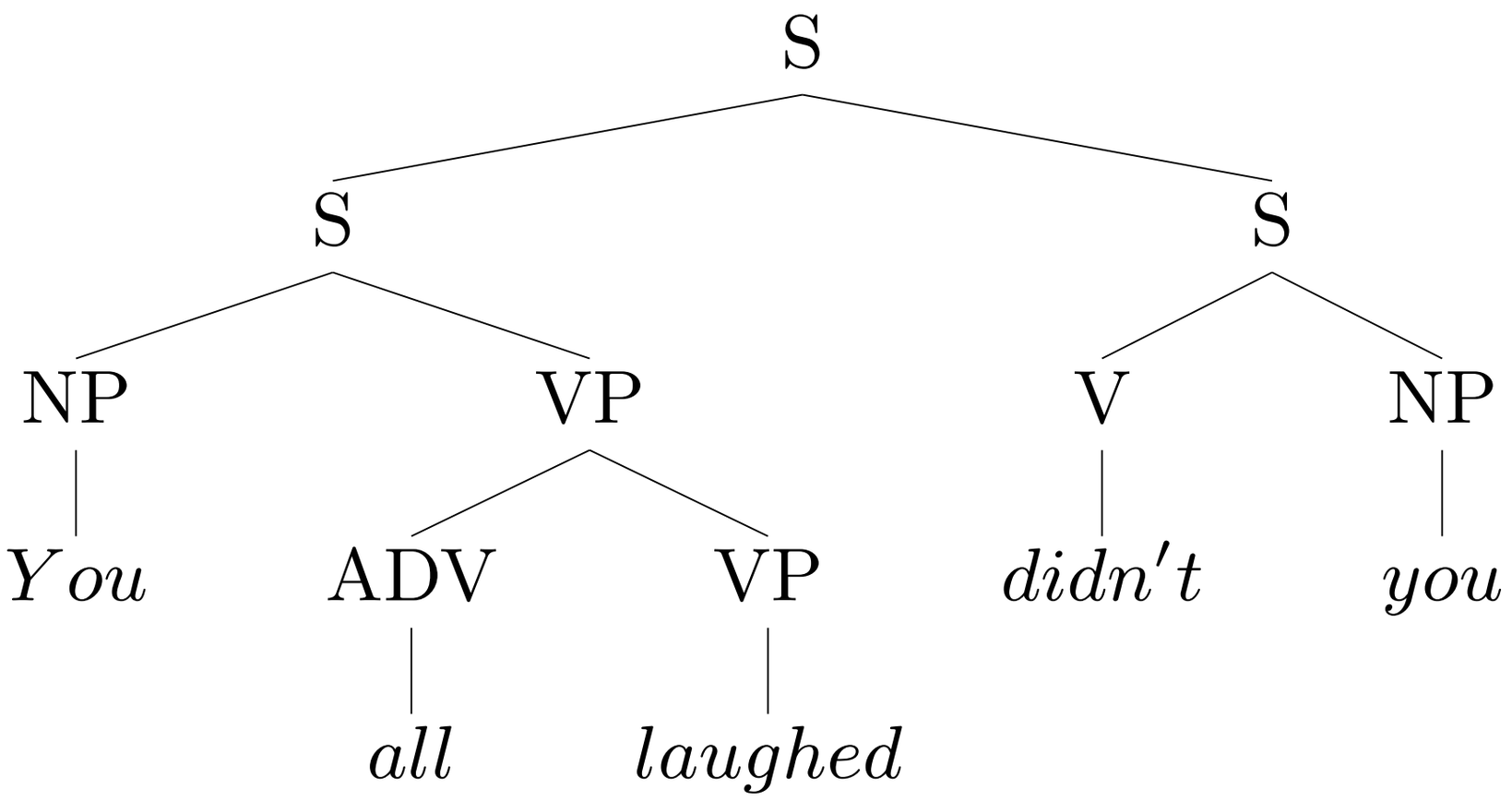
Complicated example #4

You all laughed, did you not?

**You all laughed, did not you?*

You all laughed, didn't you?





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