Ling 566
Oct 17, 2011

How the Grammar Works

Overview

- What we're trying to do
- The pieces of our grammar
- Two extended examples
- Reflection on what we've done, what we still have to do
- Reading questions

What We're Trying To Do

- Objectives
  - Develop a theory of knowledge of language
  - Represent linguistic information explicitly enough to distinguish well-formed from ill-formed expressions
  - Be parsimonious, capturing linguistically significant generalizations.
- Why Formalize?
  - To formulate testable predictions
  - To check for consistency
  - To make it possible to get a computer to do it for us

How We Construct Sentences

- The Components of Our Grammar
  - Grammar rules
  - Lexical entries
  - Principles
  - Type hierarchy (very preliminary, so far)
  - Initial symbol (S, for now)
- We combine constraints from these components.
  - Q: What says we have to combine them?

An Example

A cat slept.

- Can we build this with our tools?
- Given the constraints our grammar puts on well-formed sentences, is this one?

Lexical Entry for *a*

$$\left\langle \text{a} \;, \left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{det} & \\ \text{AGR} & \textit{3sing} \\ \text{COUNT} & + \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{COMPS} & \langle\,\rangle \\ \text{SPR} & \langle\,\rangle \\ \text{MOD} & \langle\,\rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\begin{array}{ll} \text{MODE} & \text{none} \\ \text{INDEX} & j \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{a} \\ \text{BV} & j \end{array}\right] \right\rangle \end{array}\right] \end{array}\right] \right\rangle$$

- Is this a fully specified description?
- What features are unspecified?
- How many word structures can this entry license?

Lexical Entry for *cat*

$$\left\langle \text{cat} , \left[\begin{array}{l} \textit{word} \\ \text{SYN} \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{noun} & \\ \text{AGR} & \left[\begin{array}{ll} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{array} \right] \end{array} \right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \left[\begin{array}{ll} \text{D} & \\ \text{COUNT} & + \\ \text{INDEX} & k \end{array} \right] \right\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{MOD} & \langle\,\rangle \end{array} \right] \end{array} \right] \\ \text{SEM} \left[\begin{array}{ll} \text{MODE} & \text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{cat} \\ \text{INSTANCE} & k \end{array} \right] \right\rangle \end{array} \right] \end{array} \right] \right\rangle$$

- Which feature paths are abbreviated?
- Is this a fully specified description?
- What features are unspecified?
- How many word structures can this entry license?

Effect of Principles: the SHAC

$$\left\langle \text{cat} \;,\; \left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{noun} & \\ \text{AGR} & \boxed{2}\left[\begin{array}{ll} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{array}\right] \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \left[\begin{array}{ll} \text{AGR} & \boxed{2} \\ \text{COUNT} & + \\ \text{INDEX} & k \end{array}\right] \right\rangle_{\text{D}} \\ \text{COMPS} & \langle\,\rangle \\ \text{MOD} & \langle\,\rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\begin{array}{ll} \text{MODE} & \text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{cat} \\ \text{INSTANCE} & k \end{array}\right] \right\rangle \end{array}\right] \end{array}\right] \right\rangle$$

Description of Word Structures for *cat*

$$
\begin{bmatrix}
\textit{word} & \\
\text{SYN} & \begin{bmatrix}
\text{HEAD} & \begin{bmatrix} \textit{noun} & \\ \text{AGR} & \boxed{2}\begin{bmatrix} \textit{3sing} \\ \text{GEND} \ \text{neut} \end{bmatrix} \end{bmatrix} \\
\text{VAL} & \begin{bmatrix}
\text{SPR} & \left\langle \begin{bmatrix} \text{AGR} & \boxed{2} \\ \text{COUNT} & + \\ \text{INDEX} & k \end{bmatrix}_{\text{D}} \right\rangle \\
\text{COMPS} & \langle\ \rangle \\
\text{MOD} & \langle\ \rangle
\end{bmatrix}
\end{bmatrix} \\
\text{SEM} & \begin{bmatrix}
\text{MODE} & \text{ref} \\
\text{INDEX} & k \\
\text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{cat} \\ \text{INSTANCE} & k \end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
$$

cat

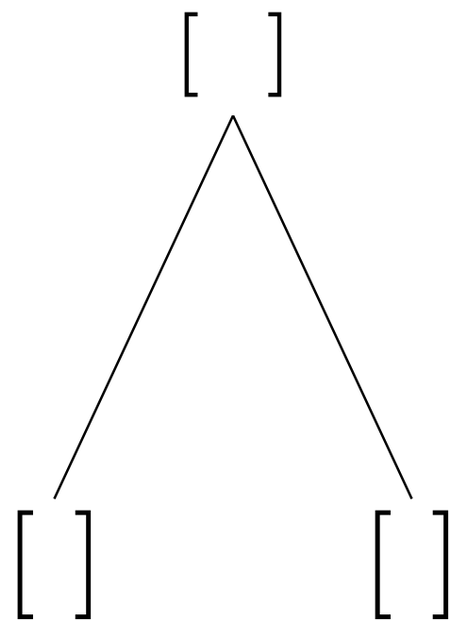
Description of Word Structures for *a*

$$\left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{det} & \\ \text{AGR} & \textit{3sing} \\ \text{COUNT} & + \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{COMPS} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle \\ \text{MOD} & \langle\ \rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\begin{array}{ll} \text{MODE} & \text{none} \\ \text{INDEX} & j \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{a} \\ \text{BV} & j \end{array}\right] \right\rangle \end{array}\right] \end{array}\right]$$

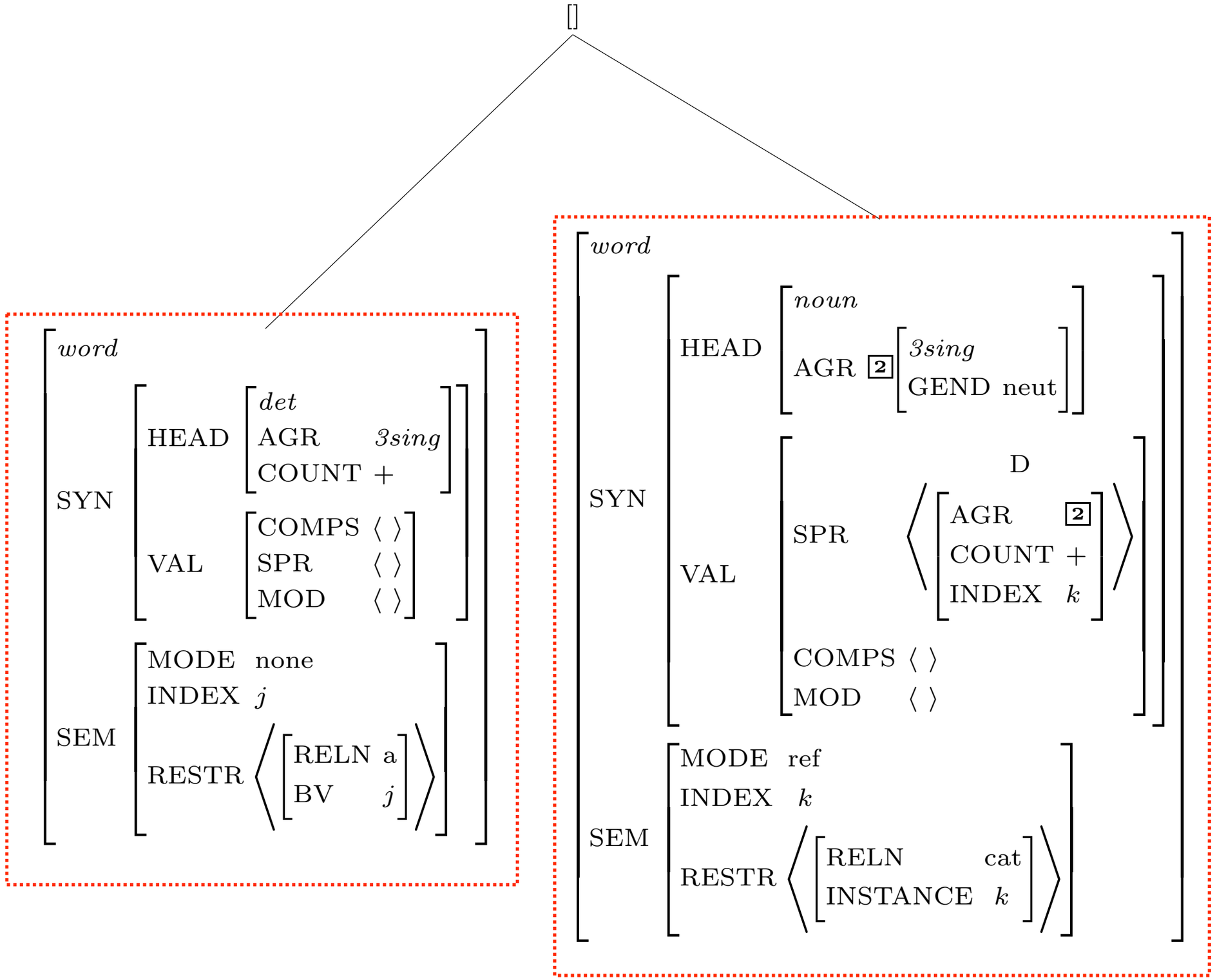
$$\Big|$$

$$a$$

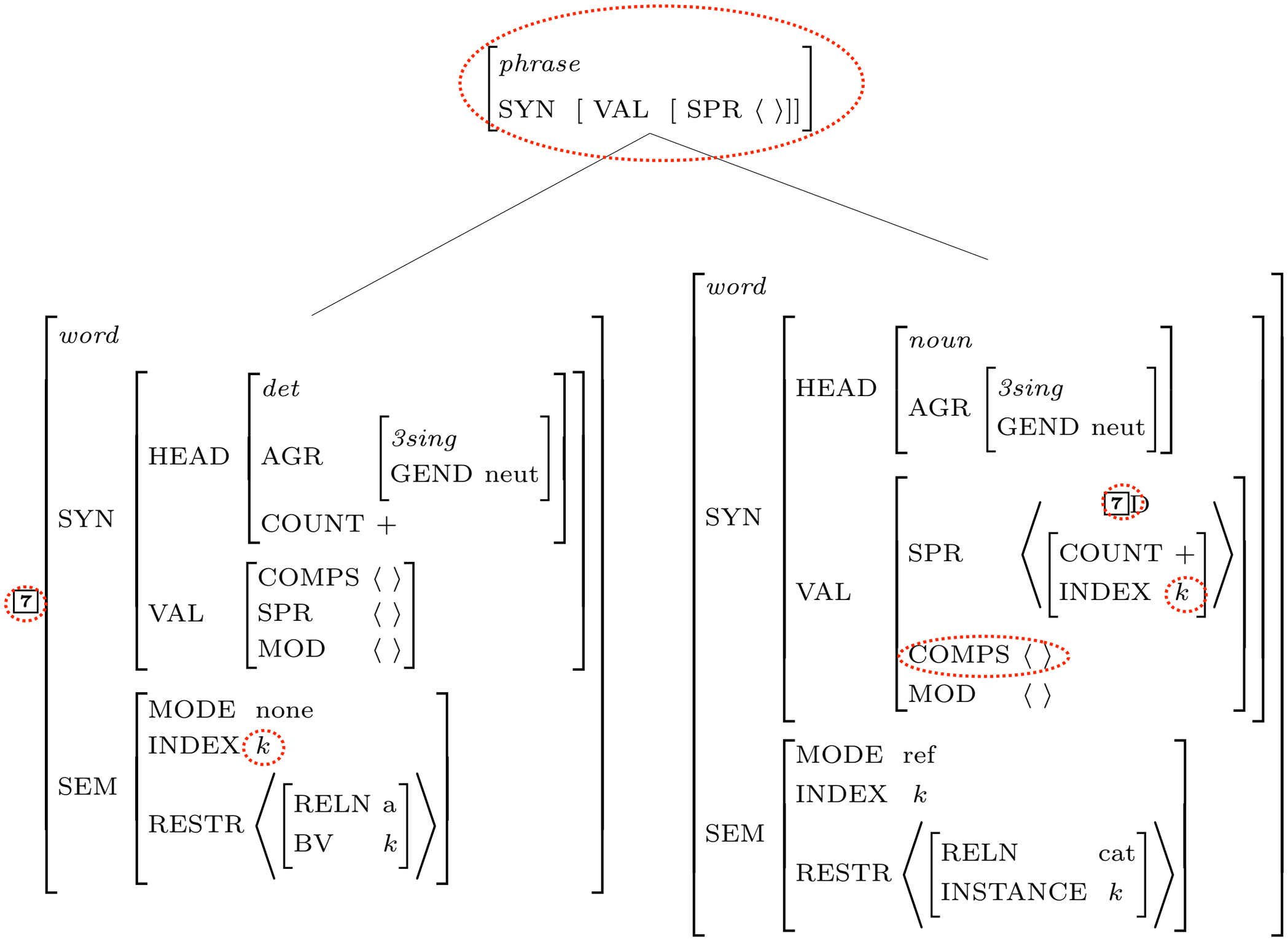
Building a Phrase



Constraints Contributed by Daughter Subtrees



Constraints Contributed by the Grammar Rule



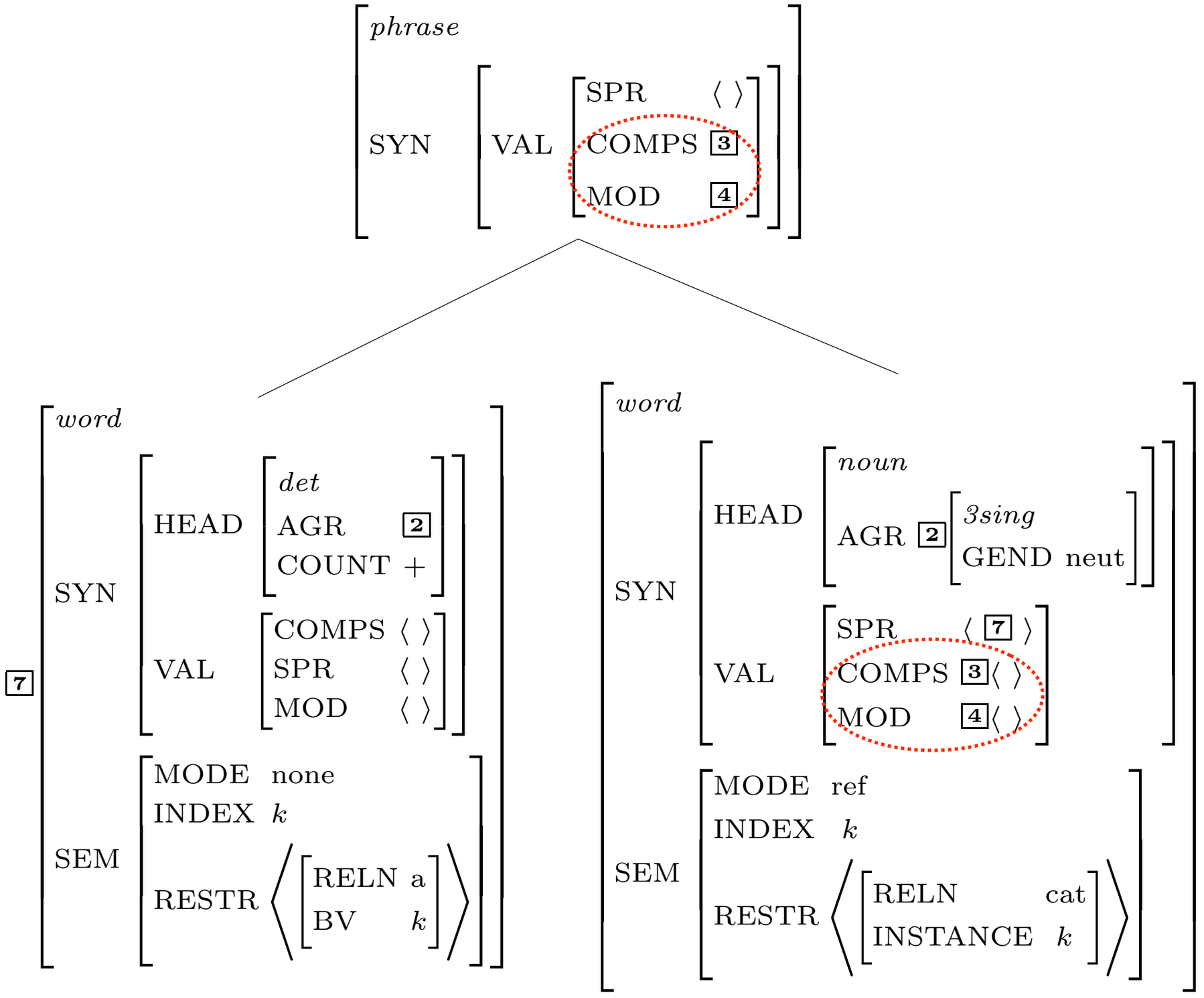
A Constraint Involving the SHAC

$$\begin{bmatrix} phrase \\ \text{SYN} \quad [\ \text{VAL} \quad [\ \text{SPR} \ \langle\ \rangle]] \end{bmatrix}$$

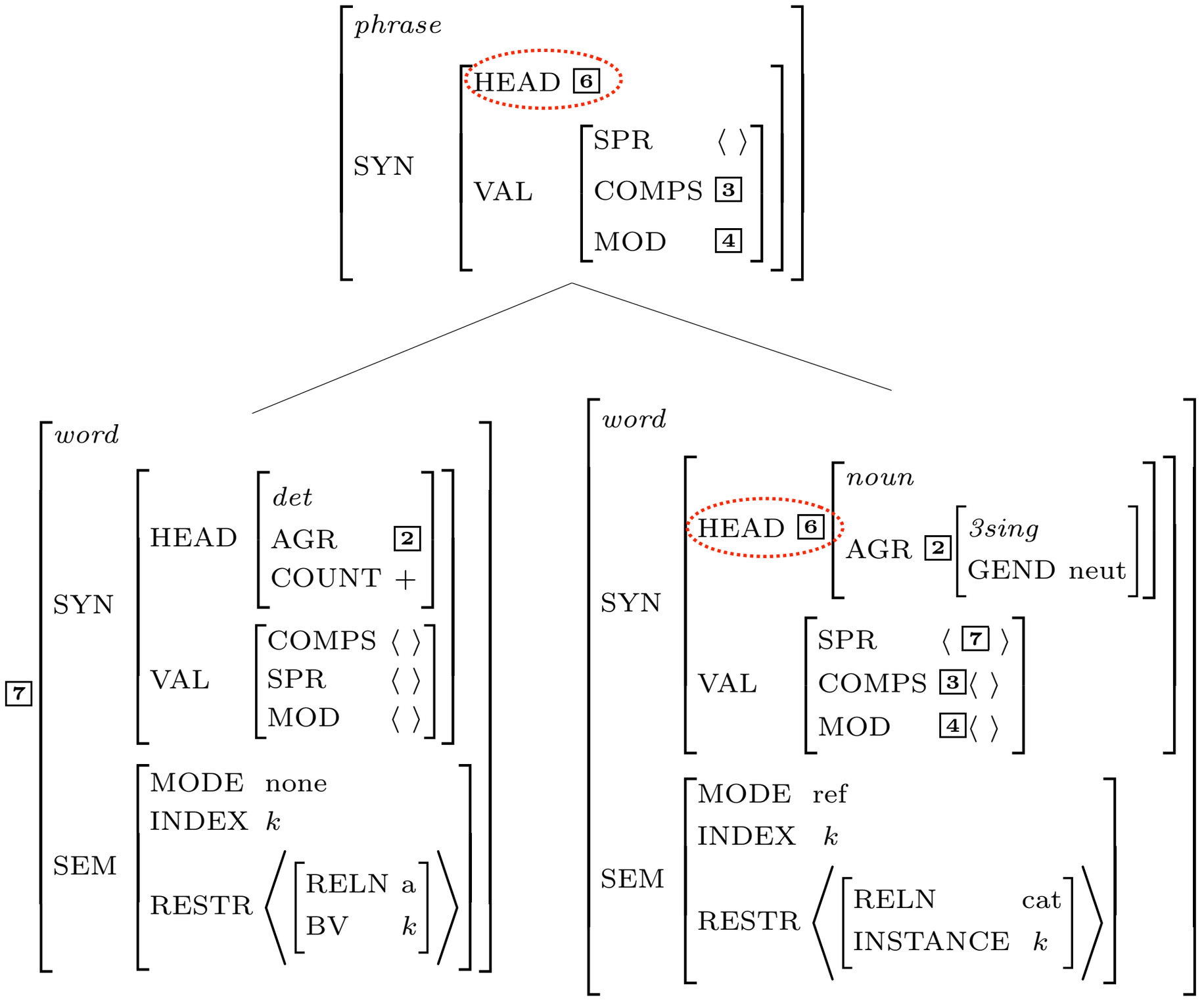
$$\begin{bmatrix} word \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} & \begin{bmatrix} det \\ \text{AGR} & \begin{bmatrix} 3sing \\ \text{GEND} \ \text{neut} \end{bmatrix} \\ \text{COUNT} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle \\ \text{MOD} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \boxed{7} \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & k \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{a} \\ \text{BV} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

$$\begin{bmatrix} word \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} & \begin{bmatrix} noun \\ \text{AGR} & \begin{bmatrix} 3sing \\ \text{GEND} \ \text{neut} \end{bmatrix} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \left\langle \boxed{7}\text{D} \begin{bmatrix} \text{COUNT} & + \\ \text{INDEX} & k \end{bmatrix} \right\rangle \\ \text{COMPS} & \langle\ \rangle \\ \text{MOD} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} & \text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{cat} \\ \text{INSTANCE} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

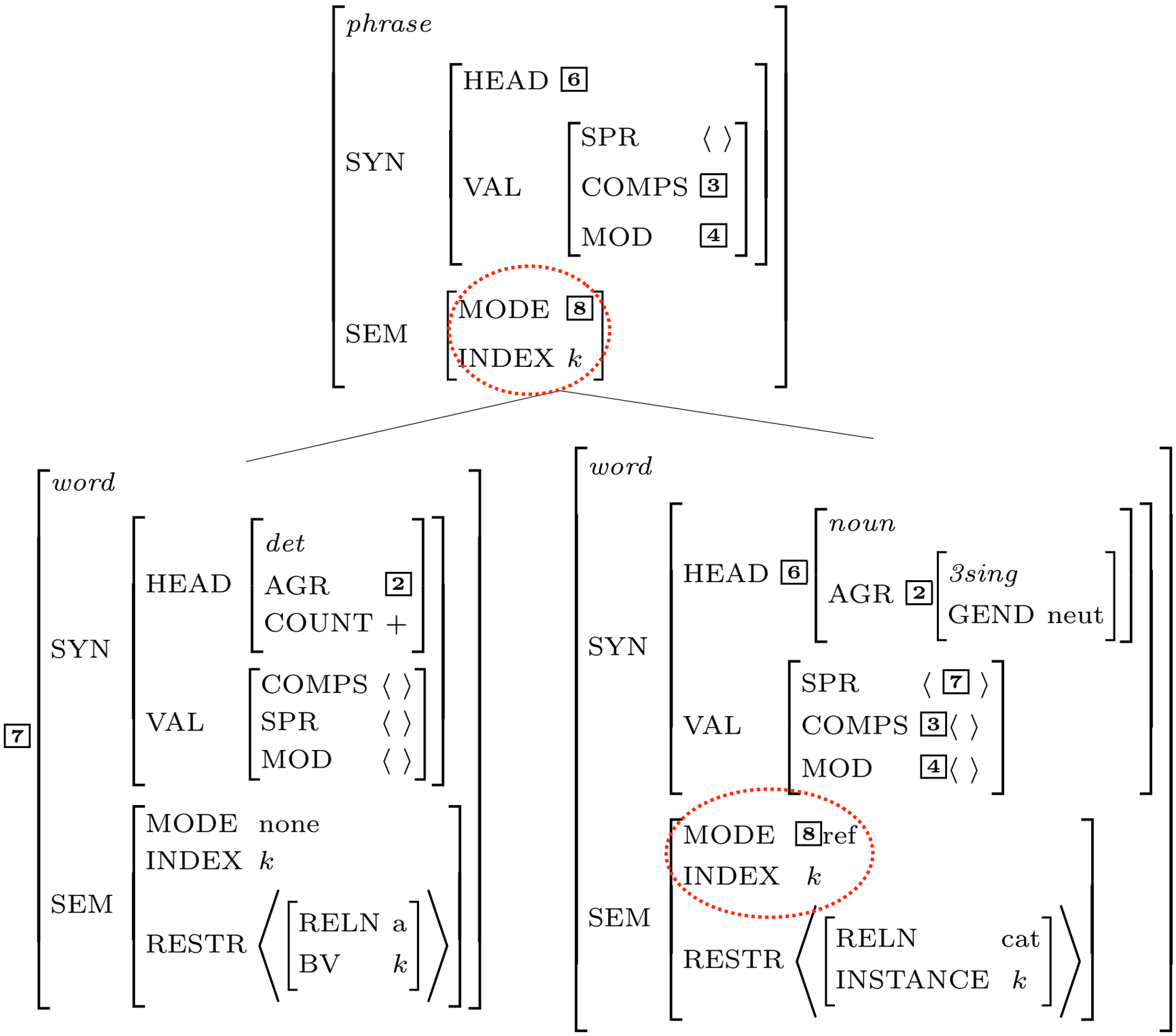
Effects of the Valence Principle



Effects of the Head Feature Principle



Effects of the Semantic Inheritance Principle



Effects of the Semantic Compositionality Principle

$$\begin{bmatrix} \textit{phrase} \\ \text{SYN} \begin{bmatrix} \text{HEAD } \boxed{6} \\ \text{VAL} \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \boxed{3} \\ \text{MOD} & \boxed{4} \end{bmatrix} \end{bmatrix} \\ \text{SEM} \begin{bmatrix} \text{MODE} & \boxed{8} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{\text{A}} \oplus \boxed{\text{B}} \end{bmatrix} \end{bmatrix}$$

$$\boxed{7}\begin{bmatrix} \textit{word} \\ \text{SYN} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \textit{det} \\ \text{AGR} & \boxed{2} \\ \text{COUNT} & + \end{bmatrix} \\ \text{VAL} \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle \\ \text{MOD} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{\text{A}} \left\langle \begin{bmatrix} \text{RELN} & \text{a} \\ \text{BV} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

$$\begin{bmatrix} \textit{word} \\ \text{SYN} \begin{bmatrix} \text{HEAD } \boxed{6} \begin{bmatrix} \textit{noun} \\ \text{AGR } \boxed{2} \begin{bmatrix} \textit{3sing} \\ \text{GEND} & \text{neut} \end{bmatrix} \end{bmatrix} \\ \text{VAL} \begin{bmatrix} \text{SPR} & \langle\ \boxed{7}\ \rangle \\ \text{COMPS} & \boxed{3}\langle\ \rangle \\ \text{MOD} & \boxed{4}\langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} \begin{bmatrix} \text{MODE} & \boxed{8}\text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{\text{B}} \left\langle \begin{bmatrix} \text{RELN} & \text{cat} \\ \text{INSTANCE} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

Is the Mother Node Now Completely Specified?

$$\begin{bmatrix} \textit{phrase} & & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{6} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \boxed{3} \\ \text{MOD} & \boxed{4} \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{8} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{A} \oplus \boxed{B} \end{bmatrix} \end{bmatrix}$$

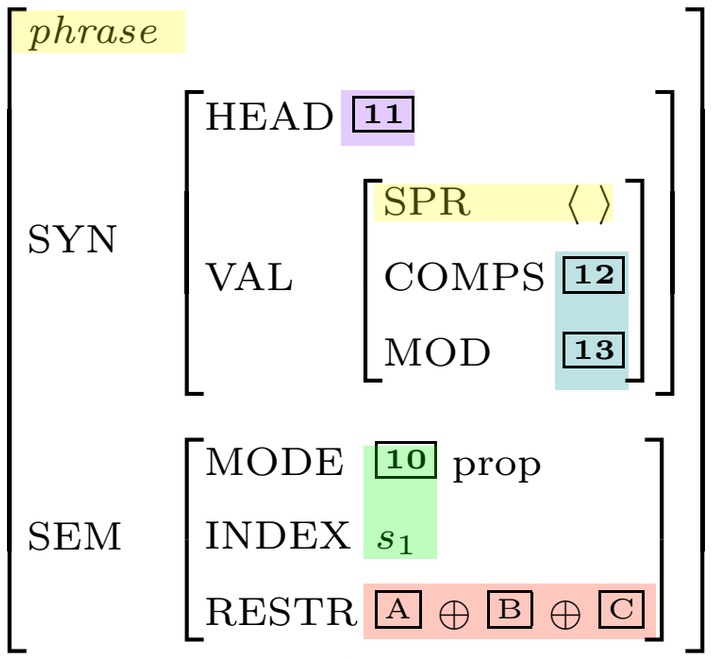
$$\boxed{7}\begin{bmatrix} \textit{word} & & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{det} & \\ \text{AGR} & \boxed{2} \\ \text{COUNT} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle \\ \text{MOD} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{A}\left\langle \begin{bmatrix} \text{RELN} & \text{a} \\ \text{BV} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

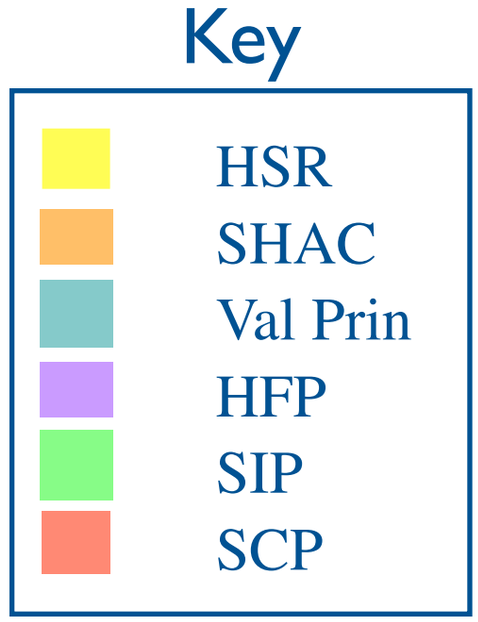
$$\begin{bmatrix} \textit{word} & & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{6}\begin{bmatrix} \textit{noun} & \\ \text{AGR} & \boxed{2}\begin{bmatrix} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{bmatrix} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \boxed{7}\ \rangle \\ \text{COMPS} & \boxed{3}\langle\ \rangle \\ \text{MOD} & \boxed{4}\langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{8}\text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{B}\left\langle \begin{bmatrix} \text{RELN} & \text{cat} \\ \text{INSTANCE} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

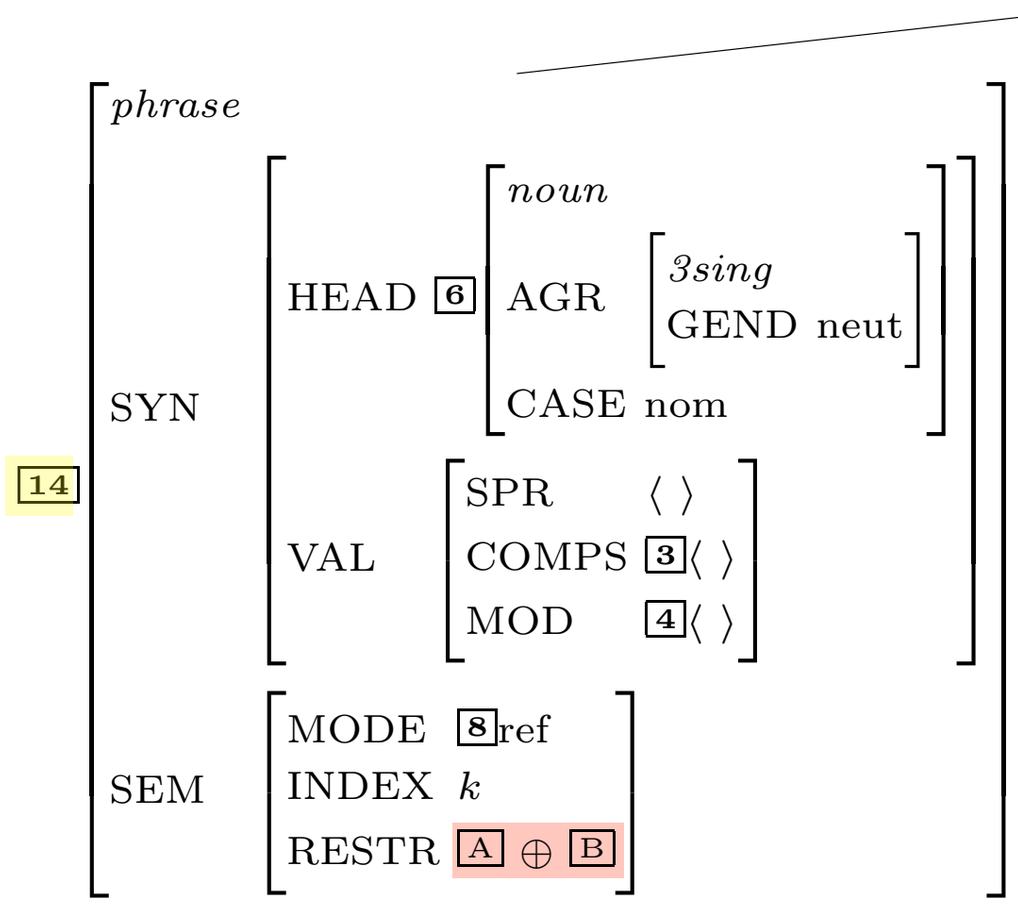
Lexical Entry for *slept*

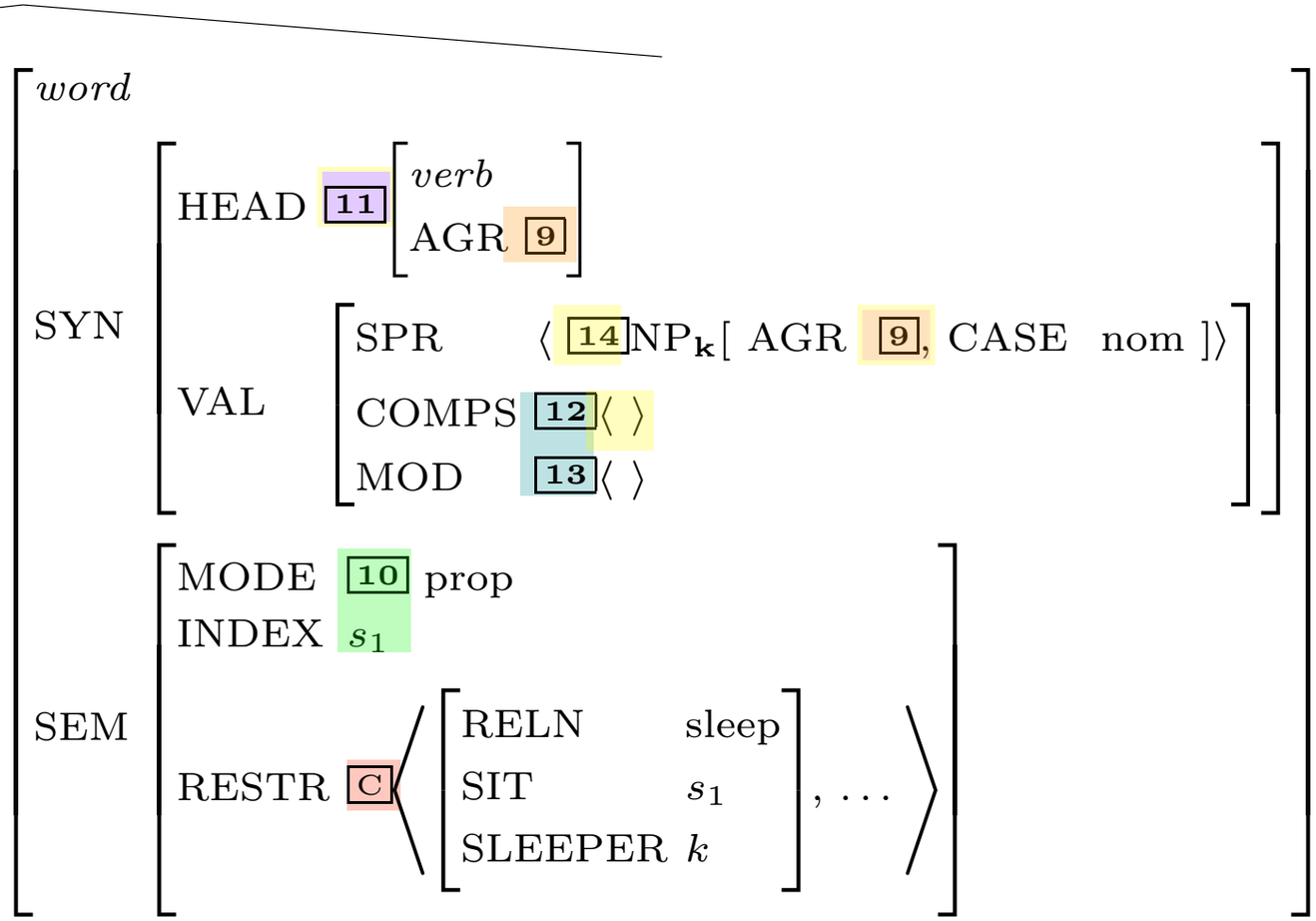
$$\left\langle \text{slept}, \left[\begin{array}{l} \textit{word} \\ \text{SYN} \left[\begin{array}{ll} \text{HEAD} & \textit{verb} \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \left[\begin{array}{ll} \text{NP}_m & \\ \text{AGR} & \boxed{9} \\ \text{CASE} & \text{nom} \end{array}\right] \right\rangle \\ \text{COMPS} & \langle\ \rangle \\ \text{MOD} & \langle\ \rangle \end{array}\right] \end{array}\right] \\ \text{SEM} \left[\begin{array}{ll} \text{INDEX} & s_1 \\ \text{MODE} & \text{prop} \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{sleep} \\ \text{SIT} & s_1 \\ \text{SLEEPER} & m \end{array}\right], \ldots \right\rangle \end{array}\right] \end{array}\right] \right\rangle$$

Another Head-Specifier Phrase









Is this description fully specified?

$$\begin{bmatrix} \textit{phrase} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD } \boxed{11} & \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \boxed{12} \\ \text{MOD} & \boxed{13} \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{10}\ \text{prop} \\ \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{\text{A}} \oplus \boxed{\text{B}} \oplus \boxed{\text{C}} \end{bmatrix} \end{bmatrix}$$

$$\boxed{14}\begin{bmatrix} \textit{phrase} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD } \boxed{6} & \begin{bmatrix} \textit{noun} & \\ \text{AGR} & \begin{bmatrix} \textit{3sing} \\ \text{GEND } \text{neut} \end{bmatrix} \\ \text{CASE } \text{nom} & \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \boxed{3}\langle\,\rangle \\ \text{MOD} & \boxed{4}\langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{8}\text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{\text{A}} \oplus \boxed{\text{B}} \end{bmatrix} \end{bmatrix}$$

$$\begin{bmatrix} \textit{word} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD } \boxed{11} & \begin{bmatrix} \textit{verb} \\ \text{AGR } \boxed{9} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\, \boxed{14}\text{NP}_{\mathbf{k}}[\ \text{AGR } \boxed{9},\ \text{CASE } \text{nom}\ ] \rangle \\ \text{COMPS} & \boxed{12}\langle\,\rangle \\ \text{MOD} & \boxed{13}\langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{10}\ \text{prop} \\ \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{\text{C}}\left\langle \begin{bmatrix} \text{RELN} & \text{sleep} \\ \text{SIT} & s_1 \\ \text{SLEEPER} & k \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \end{bmatrix}$$

Does the top node satisfy the initial symbol?

$$\begin{bmatrix} \textit{phrase} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{11} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \boxed{12} \\ \text{MOD} & \boxed{13} \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{10}\ \text{prop} \\ \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{\text{A}} \oplus \boxed{\text{B}} \oplus \boxed{\text{C}} \end{bmatrix} \end{bmatrix}$$

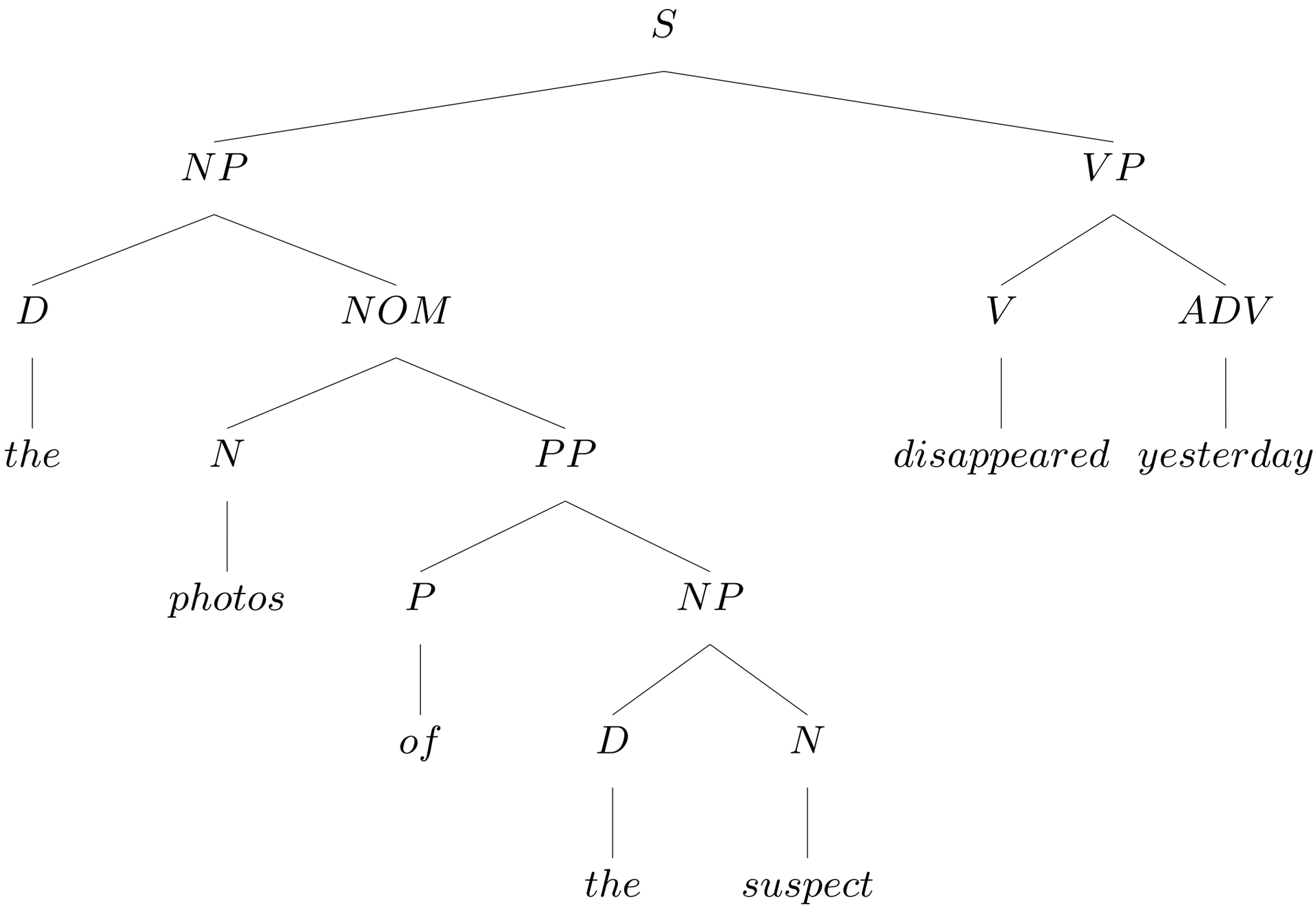
$$\boxed{14}\begin{bmatrix} \textit{phrase} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{6}\begin{bmatrix} \textit{noun} & \\ \text{AGR} & \begin{bmatrix} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{bmatrix} \\ \text{CASE} & \text{nom} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \boxed{3}\langle\,\rangle \\ \text{MOD} & \boxed{4}\langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{8}\text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \boxed{\text{A}} \oplus \boxed{\text{B}} \end{bmatrix} \end{bmatrix}$$

$$\begin{bmatrix} \textit{word} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{11}\begin{bmatrix} \textit{verb} & \\ \text{AGR} & \boxed{9} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\boxed{14}\text{NP}_{\mathbf{k}}[\ \text{AGR}\ \boxed{9},\ \text{CASE}\ \ \text{nom}\ ]\rangle \\ \text{COMPS} & \boxed{12}\langle\,\rangle \\ \text{MOD} & \boxed{13}\langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \boxed{10}\ \text{prop} \\ \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{\text{C}}\left\langle \begin{bmatrix} \text{RELN} & \text{sleep} \\ \text{SIT} & s_1 \\ \text{SLEEPER} & k \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \end{bmatrix}$$

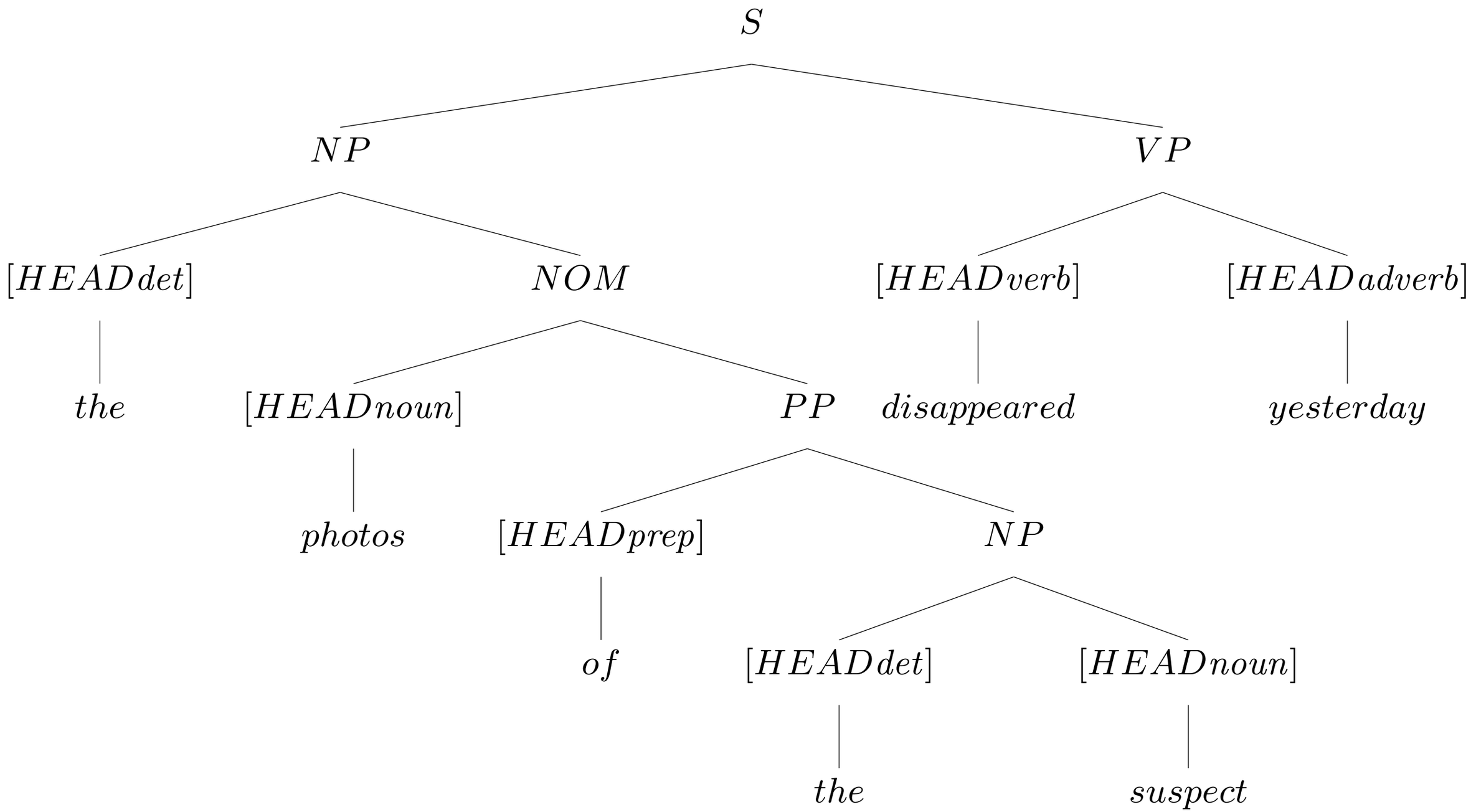
RESTR of the S node

$$\left\langle \begin{bmatrix} \text{RELN} & \text{a} \\ \text{BV} & k \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{cat} \\ \text{INST} & k \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{sleep} \\ \text{SIT} & s_1 \\ \text{SLEEPER} & k \end{bmatrix}, \ldots \right\rangle$$

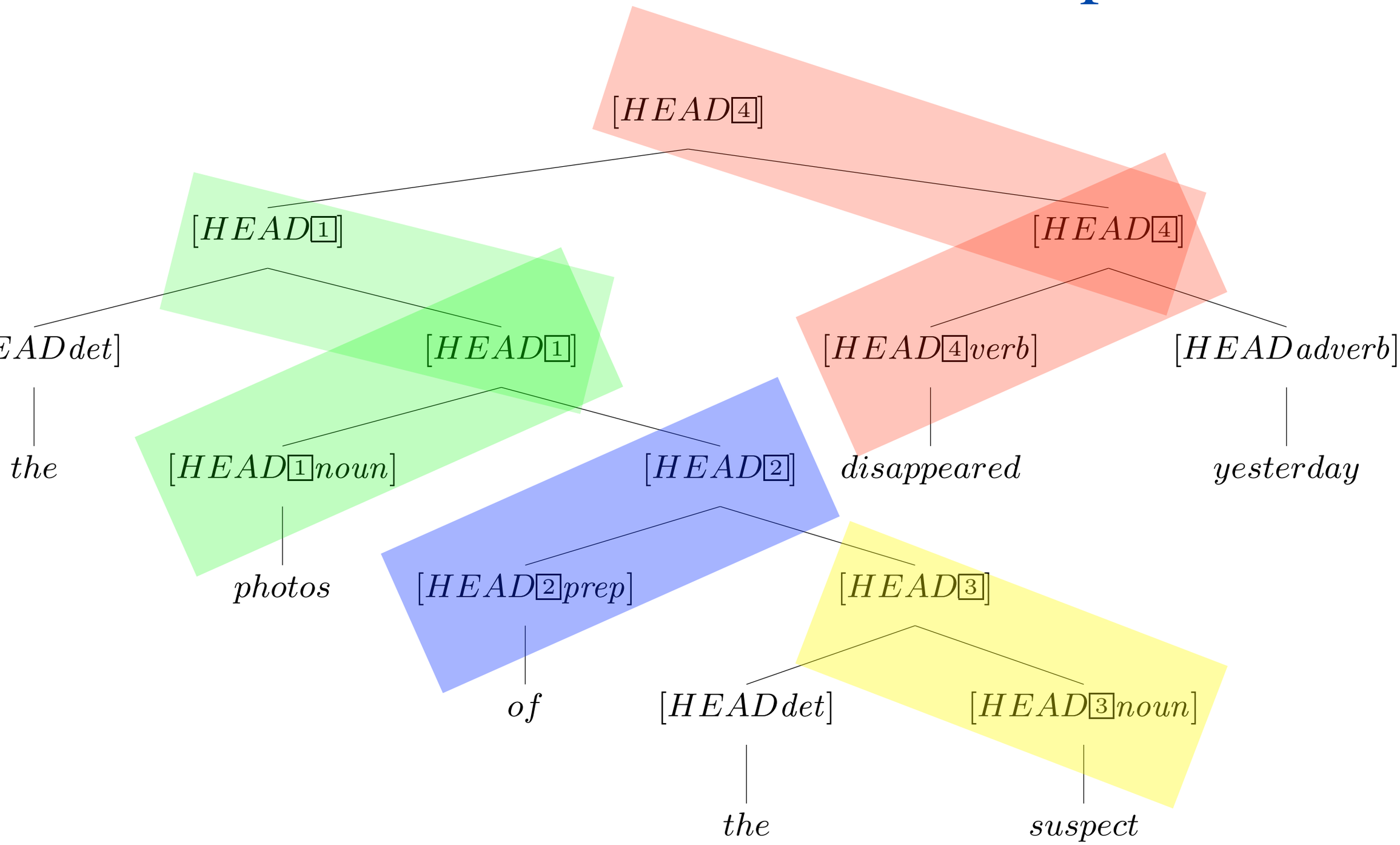
Another Example



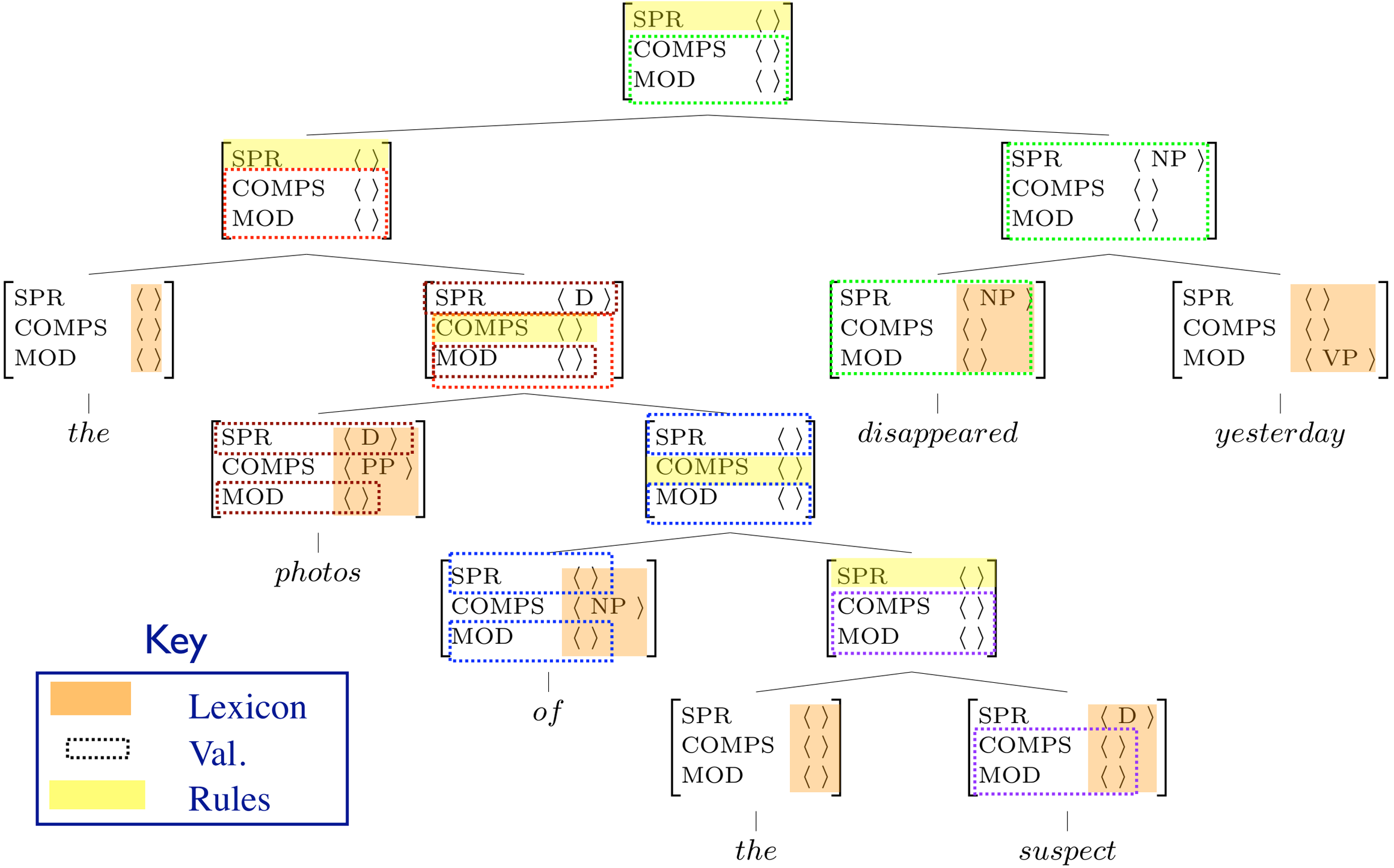
Head Features from Lexical Entries



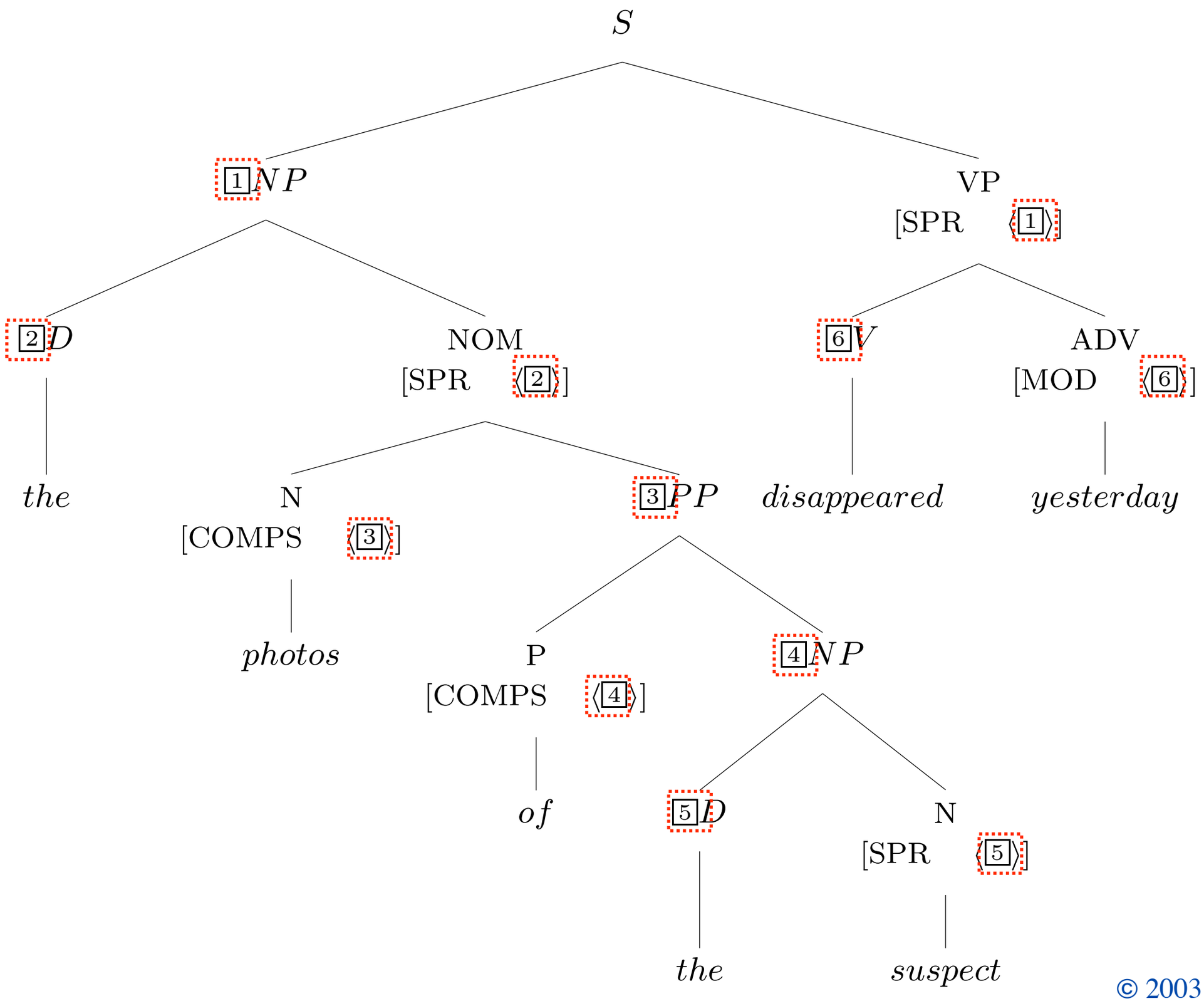
Head Features from Lexical Entries, plus HFP



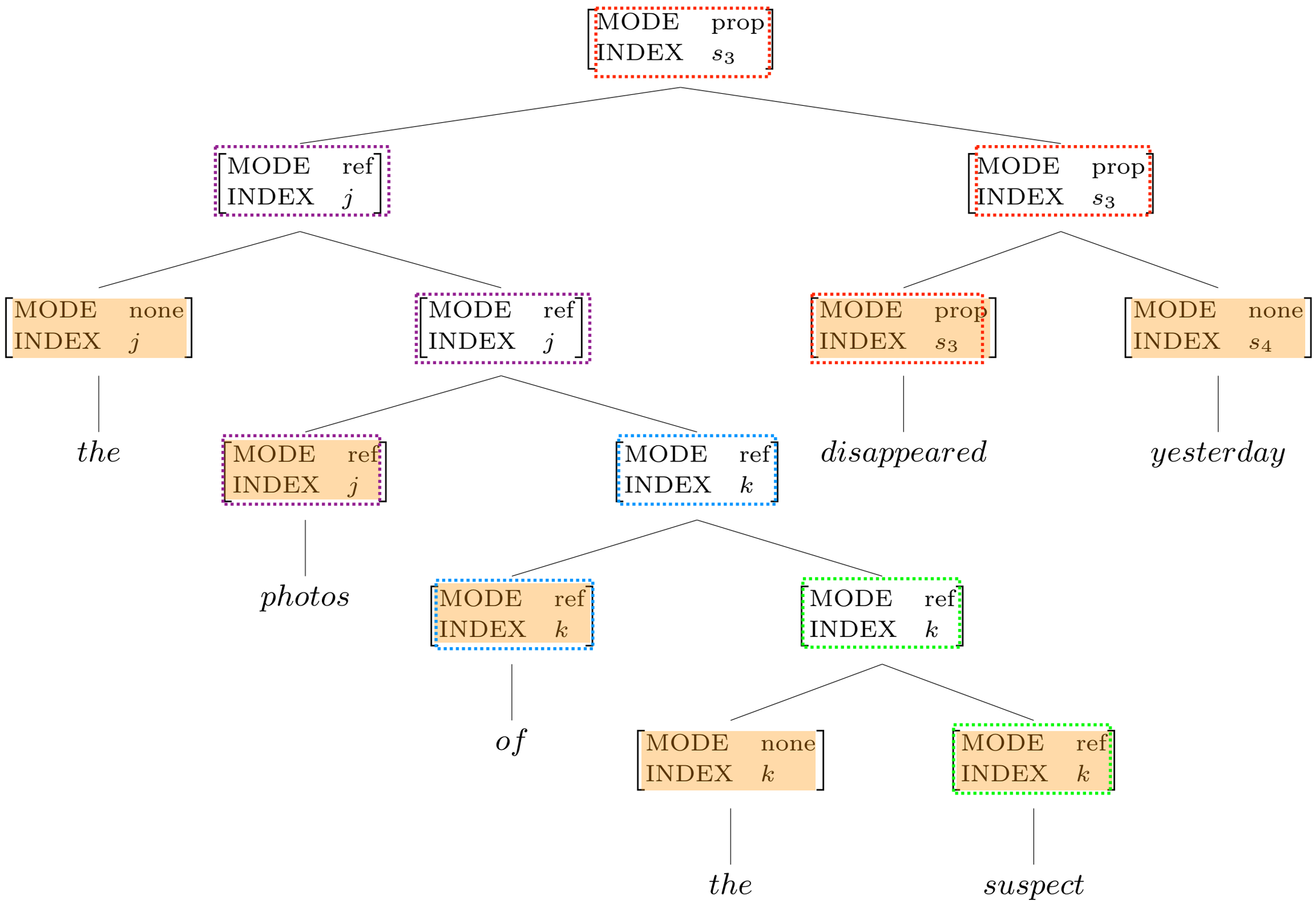
Valence Features: Lexicon, Rules, and the Valence Principle



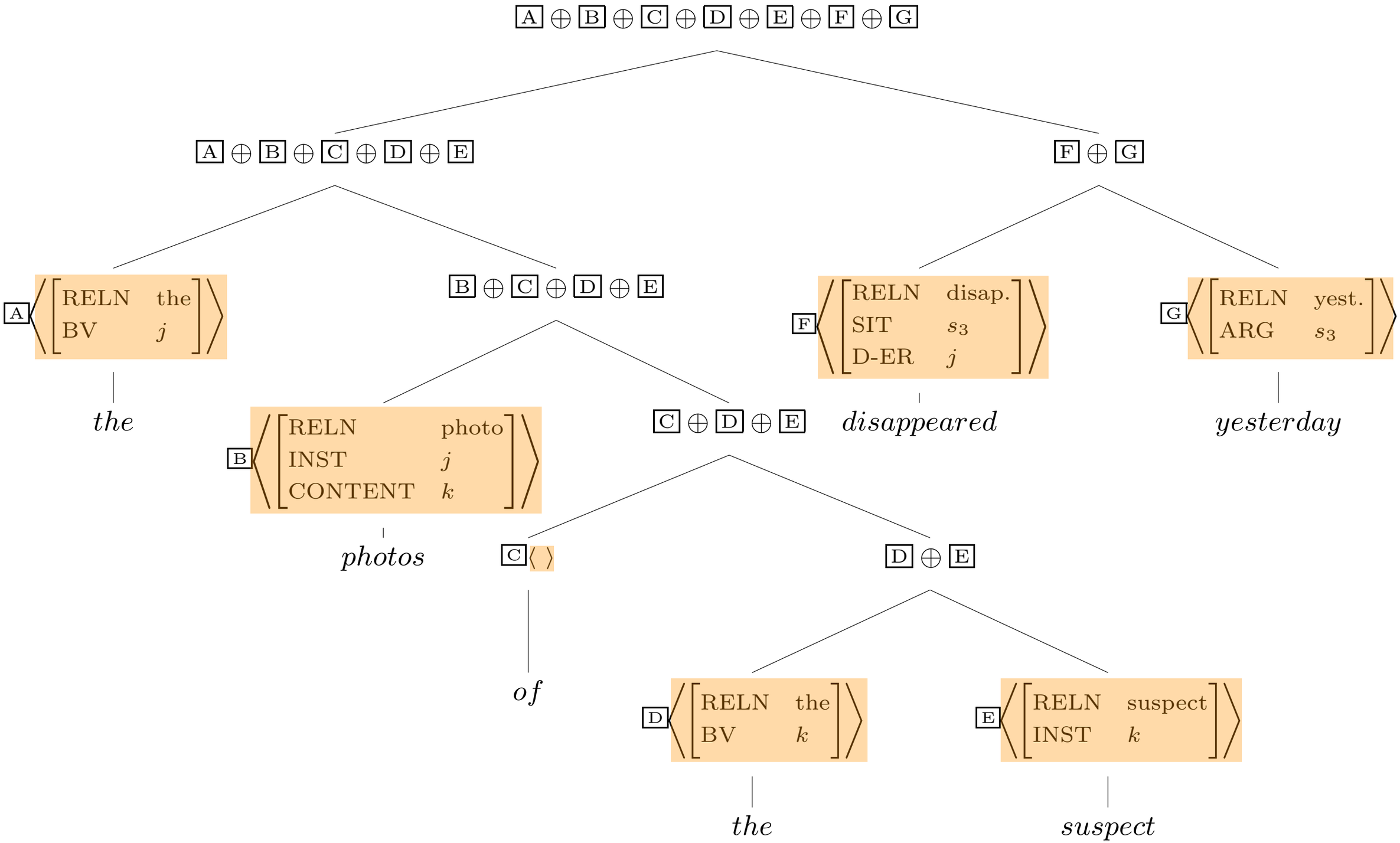
Required Identities: Grammar Rules



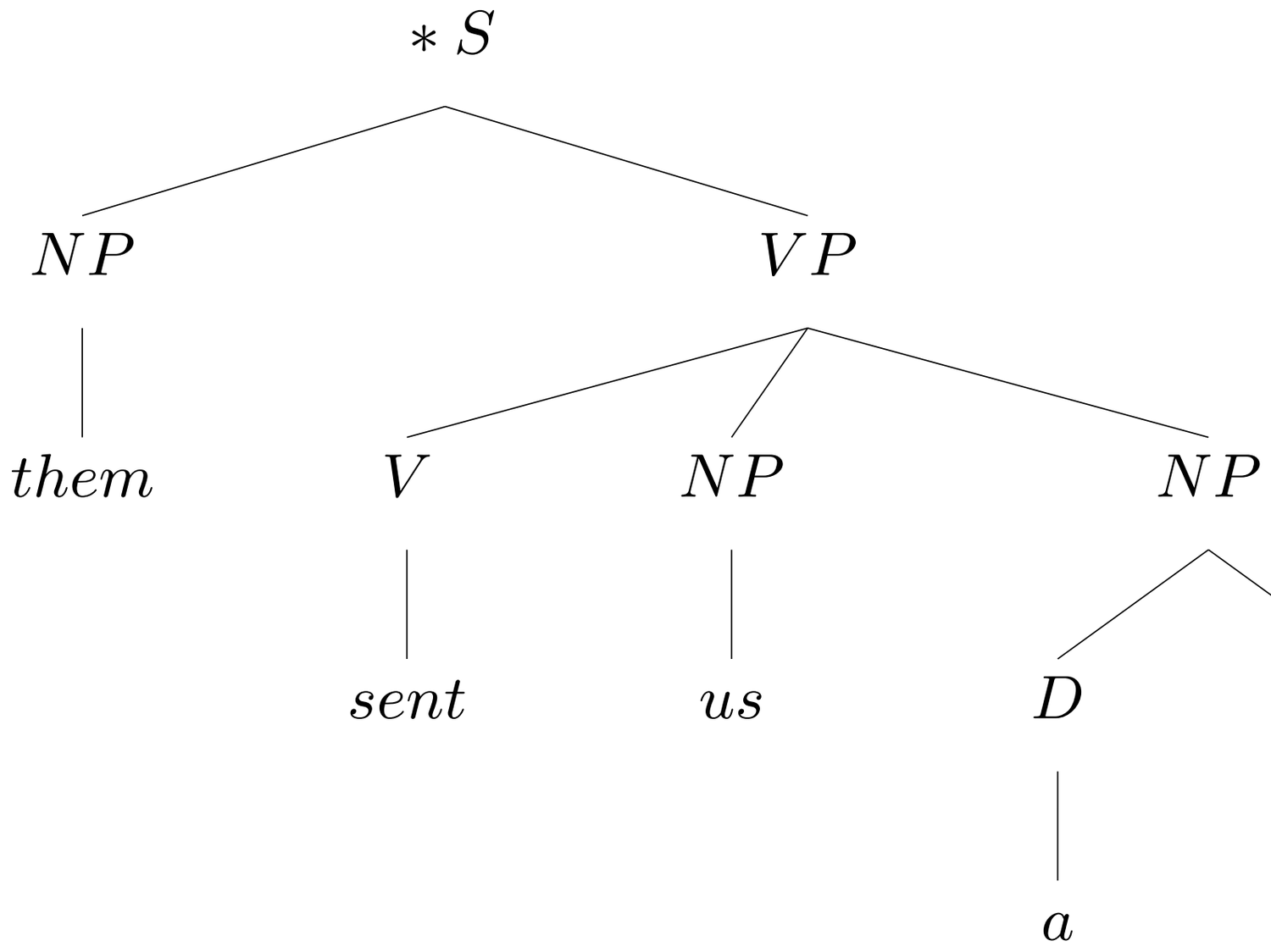
Two Semantic Features: the Lexicon & SIP



RESTR Values and the SCP

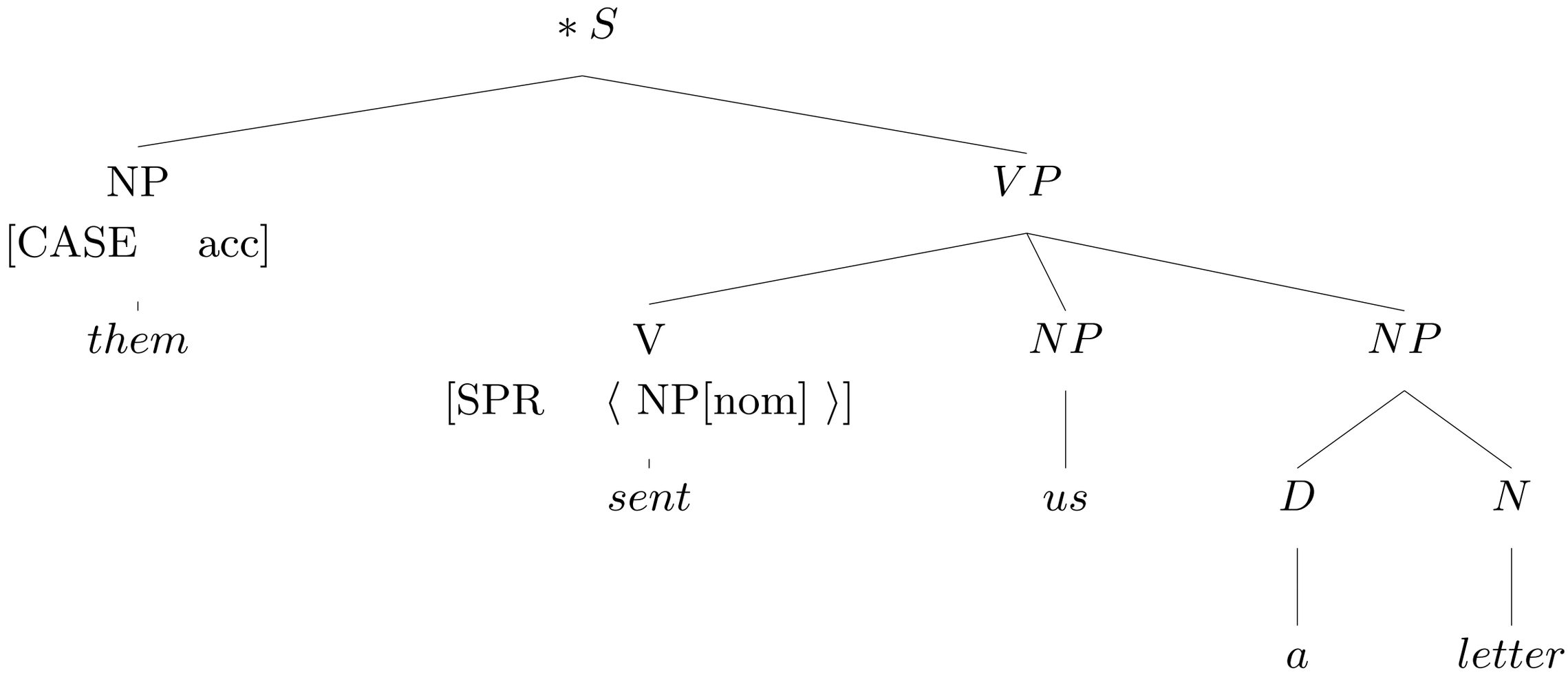


An Ungrammatical Example



What's wrong with this sentence?

An Ungrammatical Example

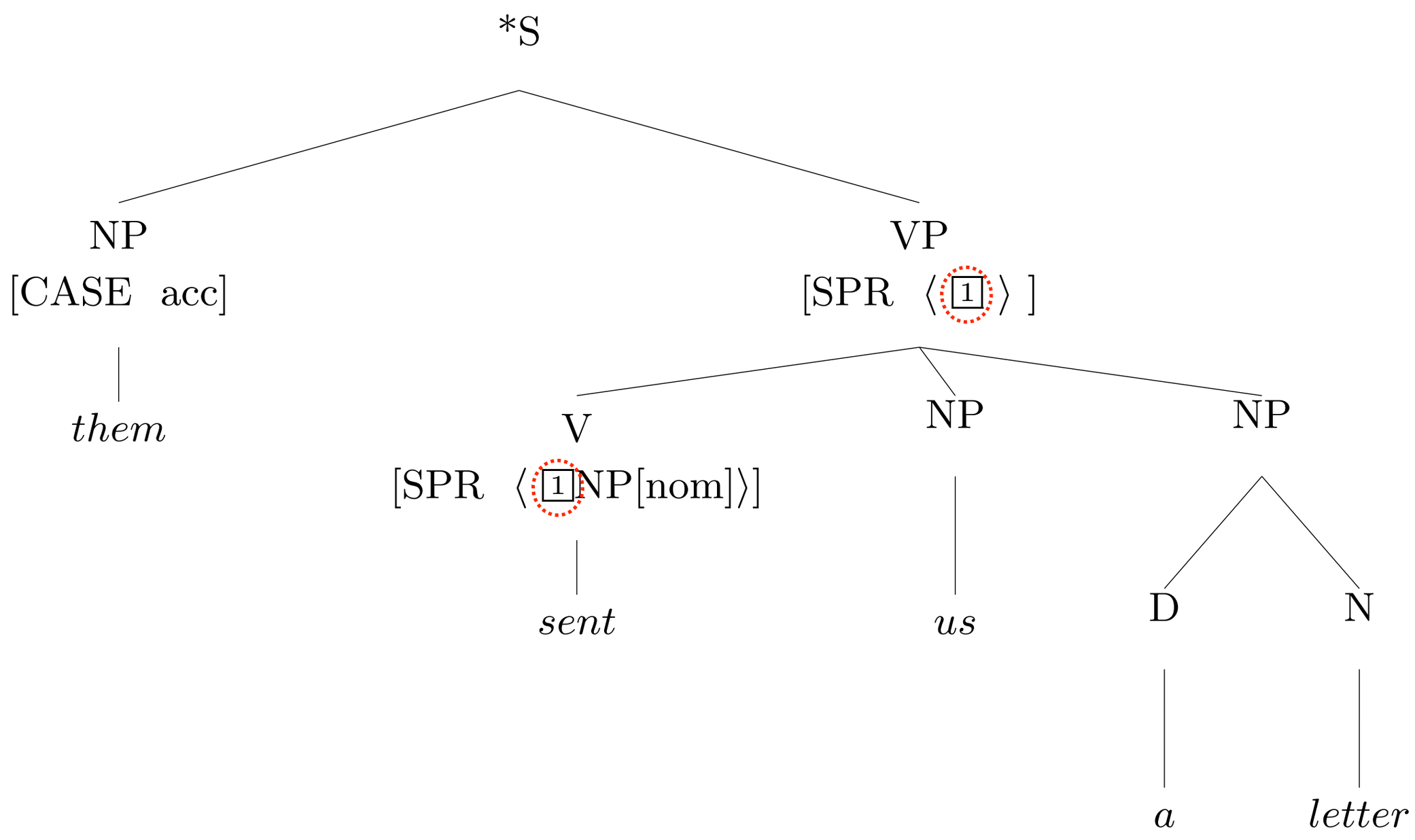


What's wrong with this sentence?

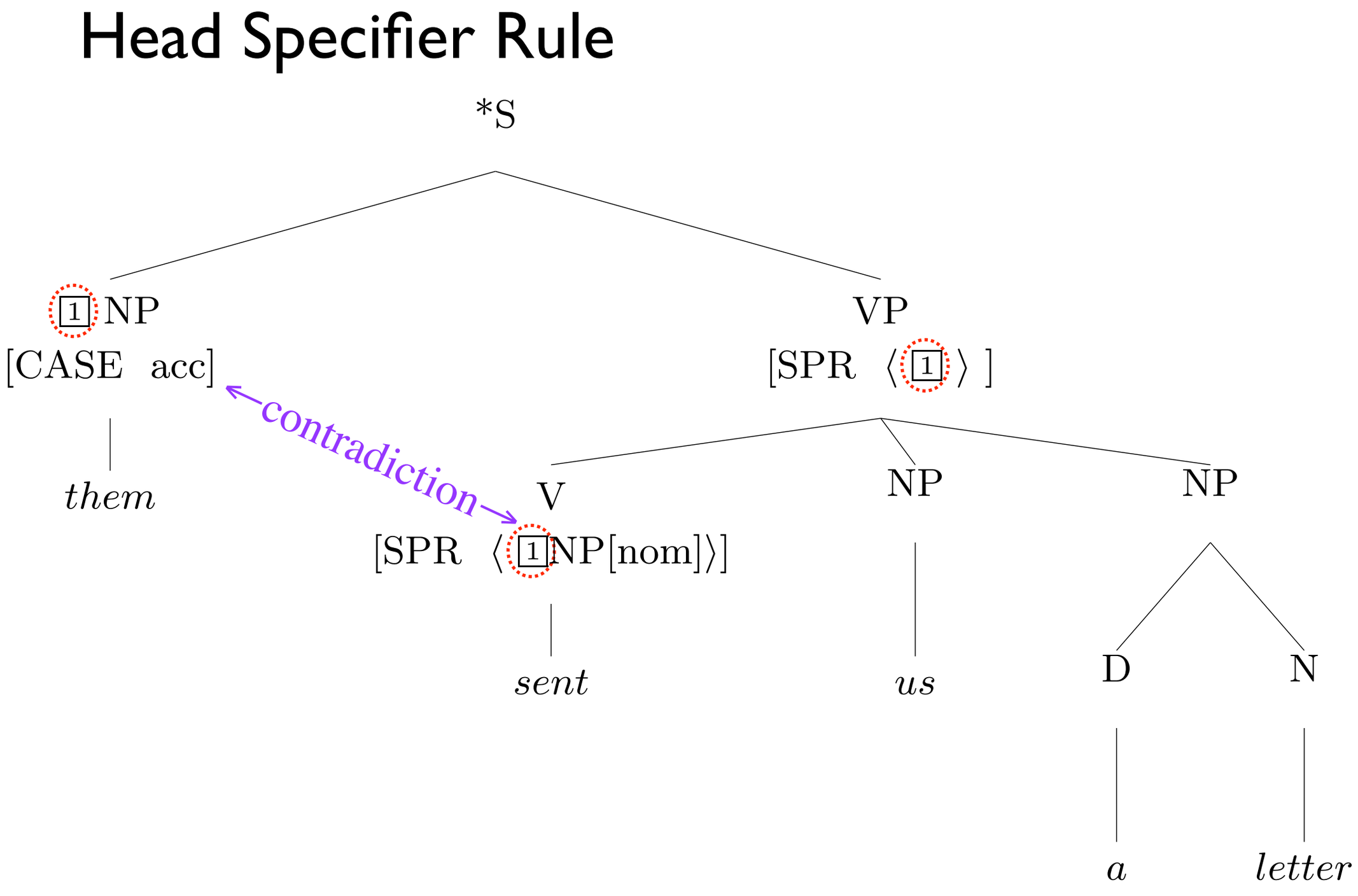
So what?

An Ungrammatical Example

The Valence Principle



An Ungrammatical Example



Exercise in Critical Thinking

- Our grammar has come a long way since Ch 2, as we've added ways of representing different kinds of information:
  - generalizations across categories
  - semantics
  - particular linguistic phenomena: valence, agreement, modification
- What else might we add? What facts about language are as yet unrepresented in our model?

Overview

- What we're trying to do
- The pieces of our grammar
- Two extended examples
- Reflection on what we've done, what we still have to do
- Reading questions
- Next time: Catch up & review

Reading Questions

- Do we have to understand the squiggly bits?
- Does RESTR mean we can take any structure and make an infinite number of variations on it?
- Does dative shift mean that we need to lexical entries for every dative shift verb?
- Is [AGR *non-3sing*] the same as not [AGR *3sing*]?

Reading Questions

- Are the grammar rules applied in some defined order of priority (e.g., HCR before HSR), or can they be applied in any order?
- Re (17) on p.179 the text says that the predications are listed "in the indicated order". To what extent is that order meaningful?

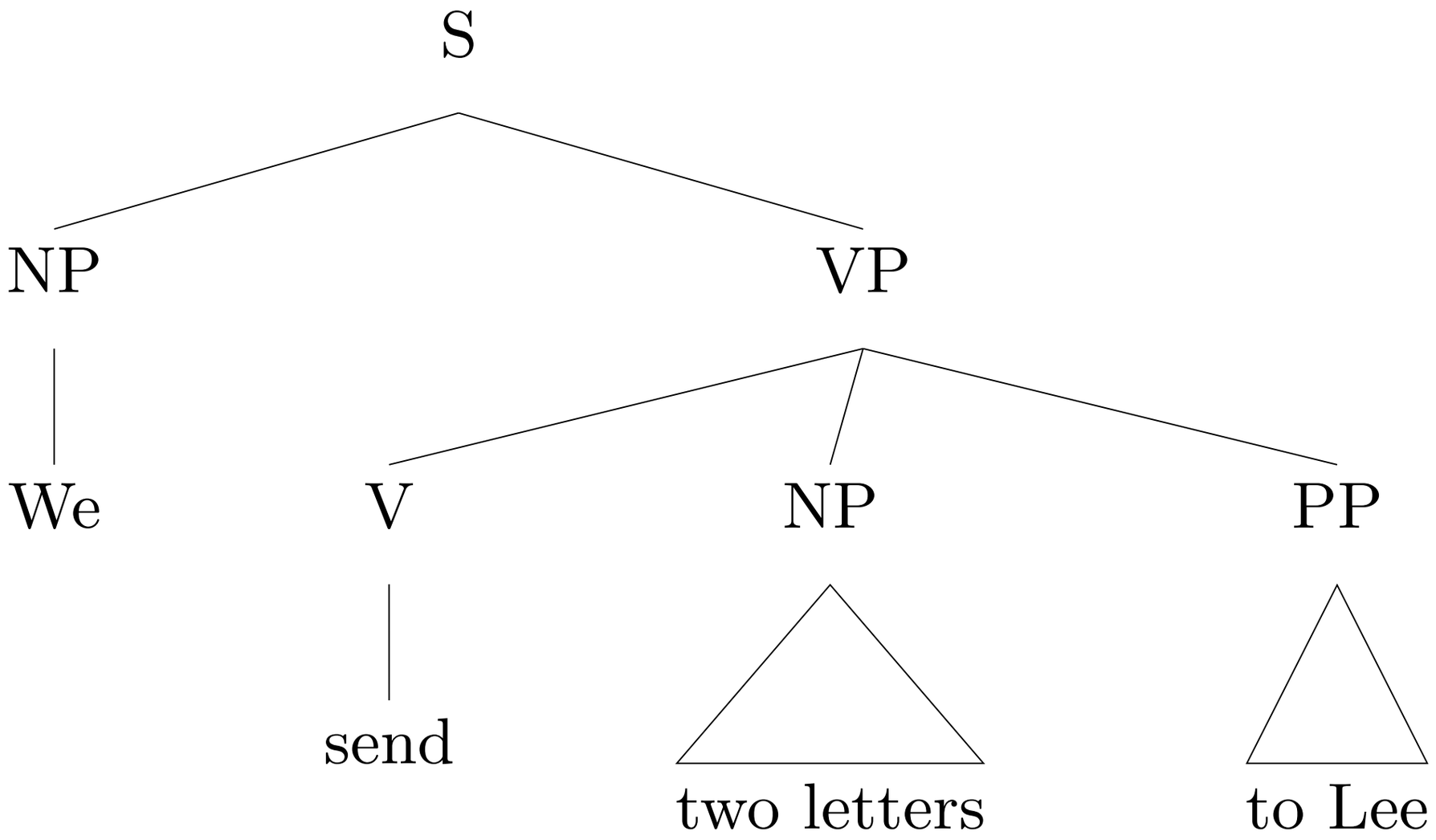
Reading Questions

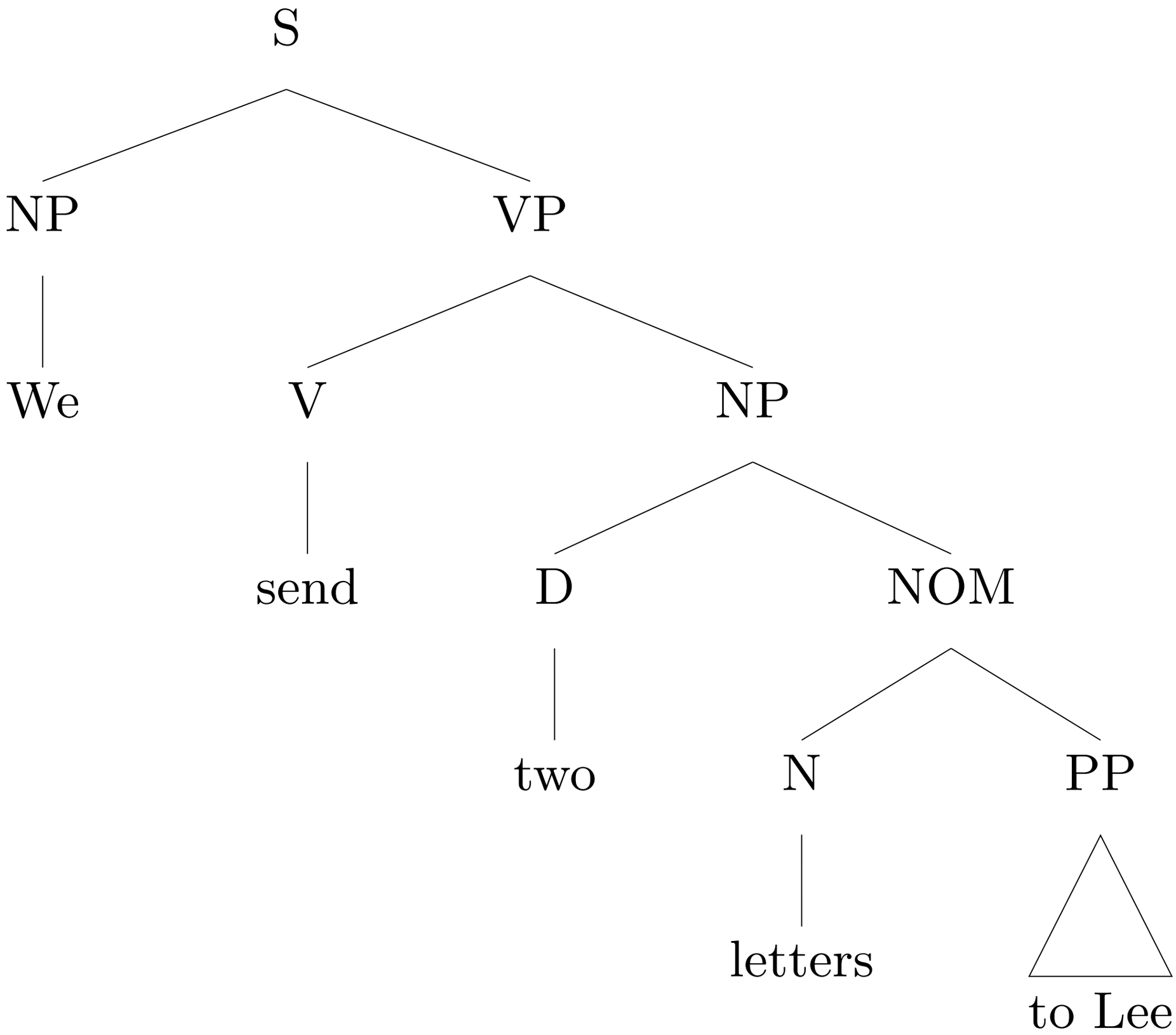
- The lexical entry for *letter* has an ADDRESSEE role in its semantics, but in *They sent us a letter*, the text claims that nothing is coindexed with that role. Why isn't *us* coindexed with it?

$$\left\langle \text{letter} \;,\; \left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{noun} & \\ \text{AGR} & \left[\begin{array}{ll} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{array}\right] \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \left[\begin{array}{ll} \text{D} & \\ \text{COUNT} & + \\ \text{INDEX} & k \end{array}\right] \right\rangle \\ \text{COMPS} & \langle\ (\text{PP}_m)\ \rangle \\ \text{MOD} & \langle\ \rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\begin{array}{ll} \text{MODE} & \text{ref} \\ \text{INDEX} & k \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{letter} \\ \text{INST} & k \\ \text{ADDRESSEE} & m \end{array}\right] \right\rangle \end{array}\right] \end{array}\right] \right\rangle$$

Reading Questions

- Do the two structures for *We send two letters to Lee* have the same meaning?





$$\begin{bmatrix} \text{RELN} & \textbf{group} \\ \text{INST} & i \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{speaker} \\ \text{INST} & l \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{member} \\ \text{SET} & i \\ \text{ELEMENT} & l \end{bmatrix},$$

$$\begin{bmatrix} \text{RELN} & \textbf{send} \\ \text{SIT} & s_7 \\ \text{SENDER} & i \\ \text{SENDEE} & j \\ \text{SENT} & k \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{two} \\ \text{BV} & k \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{letter} \\ \text{INST} & k \\ \text{ADDRESSEE} & m \end{bmatrix},$$

$$\begin{bmatrix} \text{RELN} & \textbf{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & j \end{bmatrix}$$

$$\begin{bmatrix} \text{RELN} & \textbf{group} \\ \text{INST} & i \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{speaker} \\ \text{INST} & l \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{member} \\ \text{SET} & i \\ \text{ELEMENT} & l \end{bmatrix},$$

$$\begin{bmatrix} \text{RELN} & \textbf{send} \\ \text{SIT} & s_7 \\ \text{SENDER} & i \\ \text{SENDEE} & j \\ \text{SENT} & k \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{two} \\ \text{BV} & k \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{letter} \\ \text{INST} & k \\ \text{ADDRESSEE} & m \end{bmatrix},$$

$$\begin{bmatrix} \text{RELN} & \textbf{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & m \end{bmatrix}$$

Reading Questions

- How much of the lexical entries will we be expected to include in our assignments? Will this be specified in the problems? To what extent can we use abbreviations?
- Should this be called “lexically driven phrase structure grammar” instead?
- Is it feasible to show complete trees of complex sentences in any reasonable amount of space?

Reading Questions

- Page 173: (10) obeys the Valence Principle. Doesn't that apply to all of VAL? Shouldn't the phrase have [2] in its SPR list? It says here that because of the Head Specifier rule, the mother's SPR list is empty. Do rules overtake principles? Furthermore, it appears to be completely contradicted on page 177, where it says (14) obeys the Head Complement Rule, so that the specifier bubbles up but the mother's COMPS list is empty. How can both happen at the same time, and what's the point of the Valence Principle if we're ignoring it because of these rules?

Reading Questions

- **Valence Principle**: Unless the rule says otherwise, the mother's values for the VAL features (SPR, COMPS, and MOD) are identical to those of the head daughter.