Ling 566
Oct 14, 2014

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*

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

- 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*

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

cat

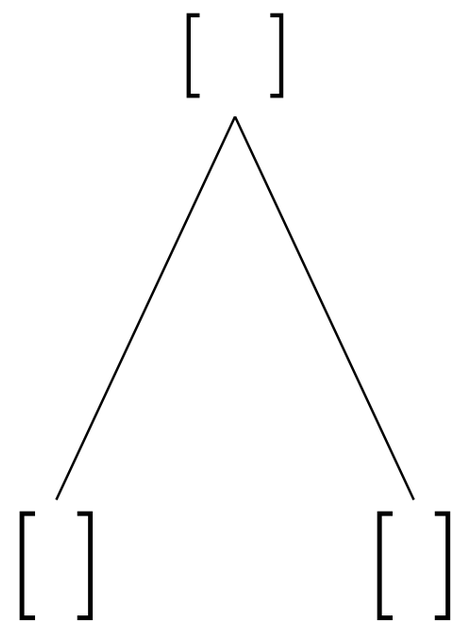
Description of Word Structures for *a*

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

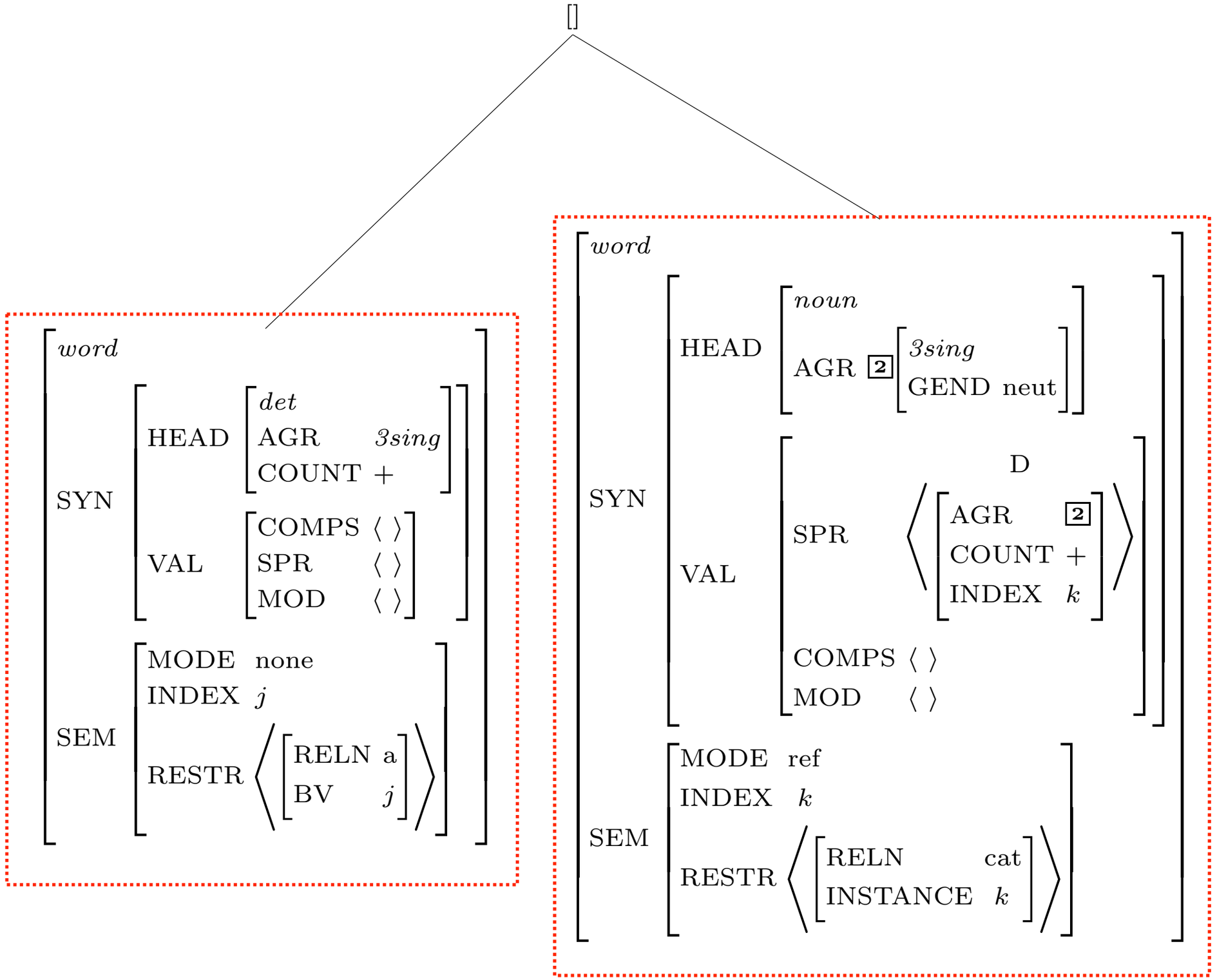
$$\Big|$$

$$a$$

Building a Phrase



Constraints Contributed by Daughter Subtrees



Constraints Contributed by the Grammar Rule

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

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

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

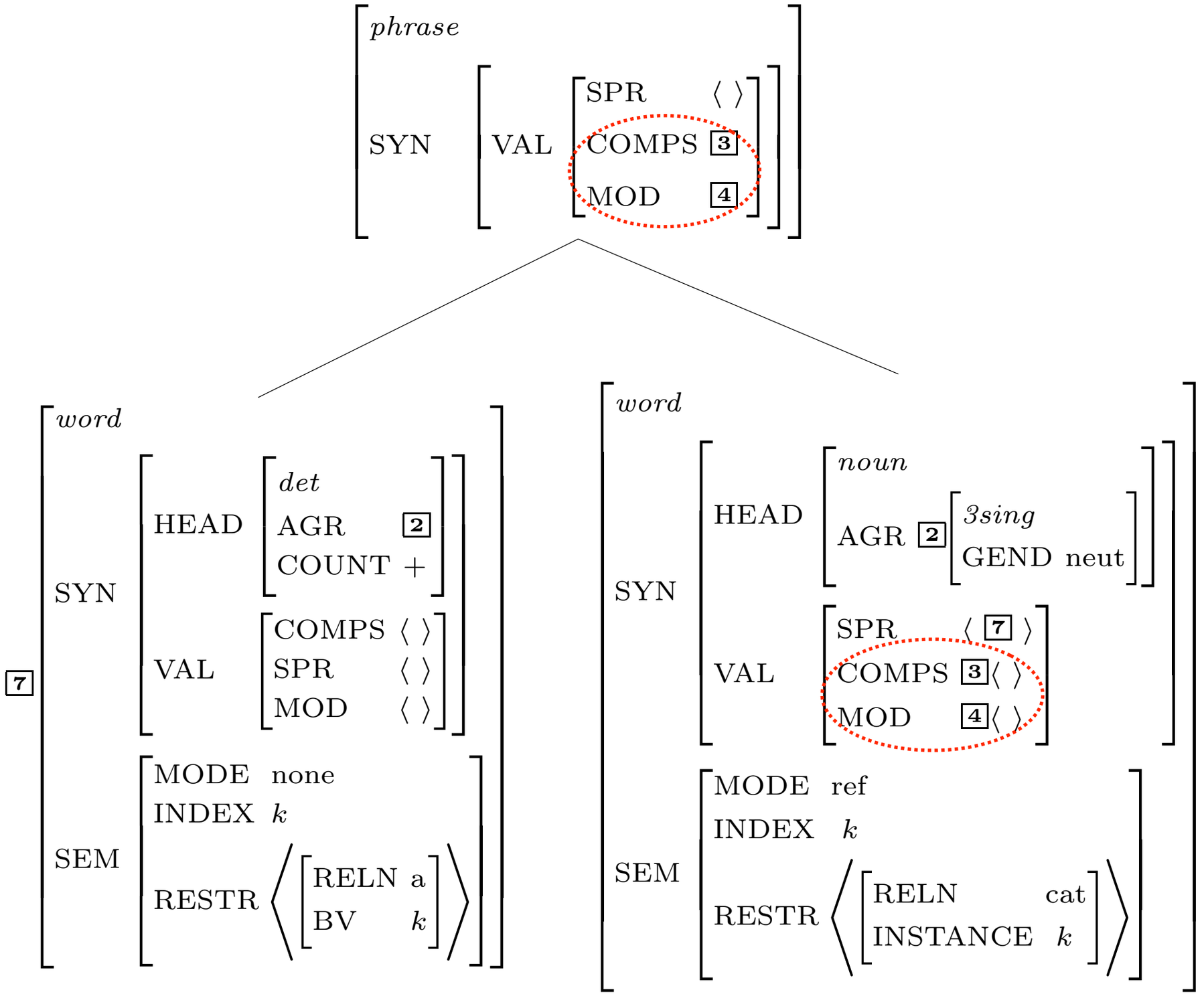
A Constraint Involving the SHAC

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

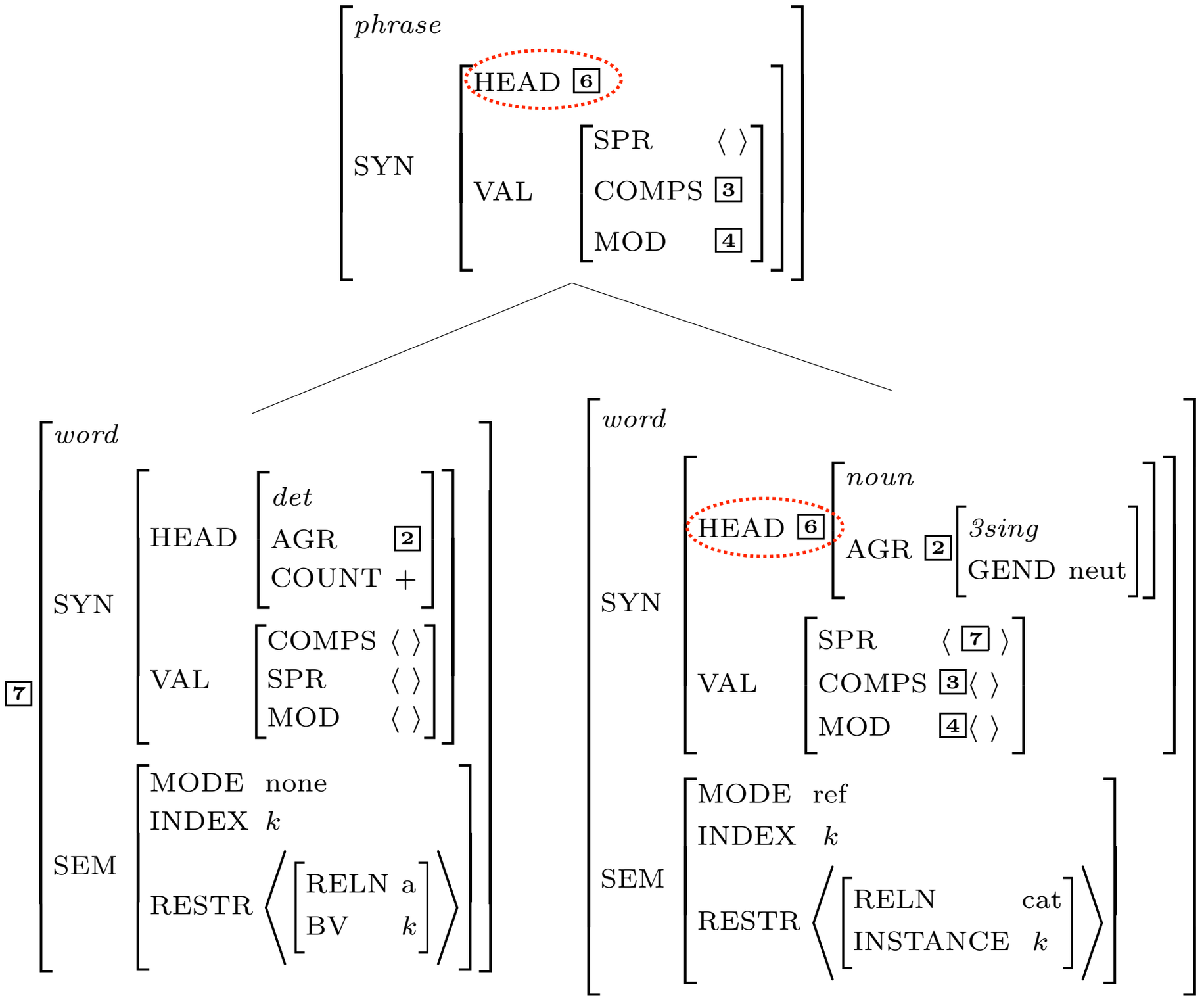
$$\begin{bmatrix} word \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} & \begin{bmatrix} det \\ \text{AGR} & \begin{bmatrix} 3sing \\ \text{GEND} \ \text{neut} \end{bmatrix} \\ \text{COUNT} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle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

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

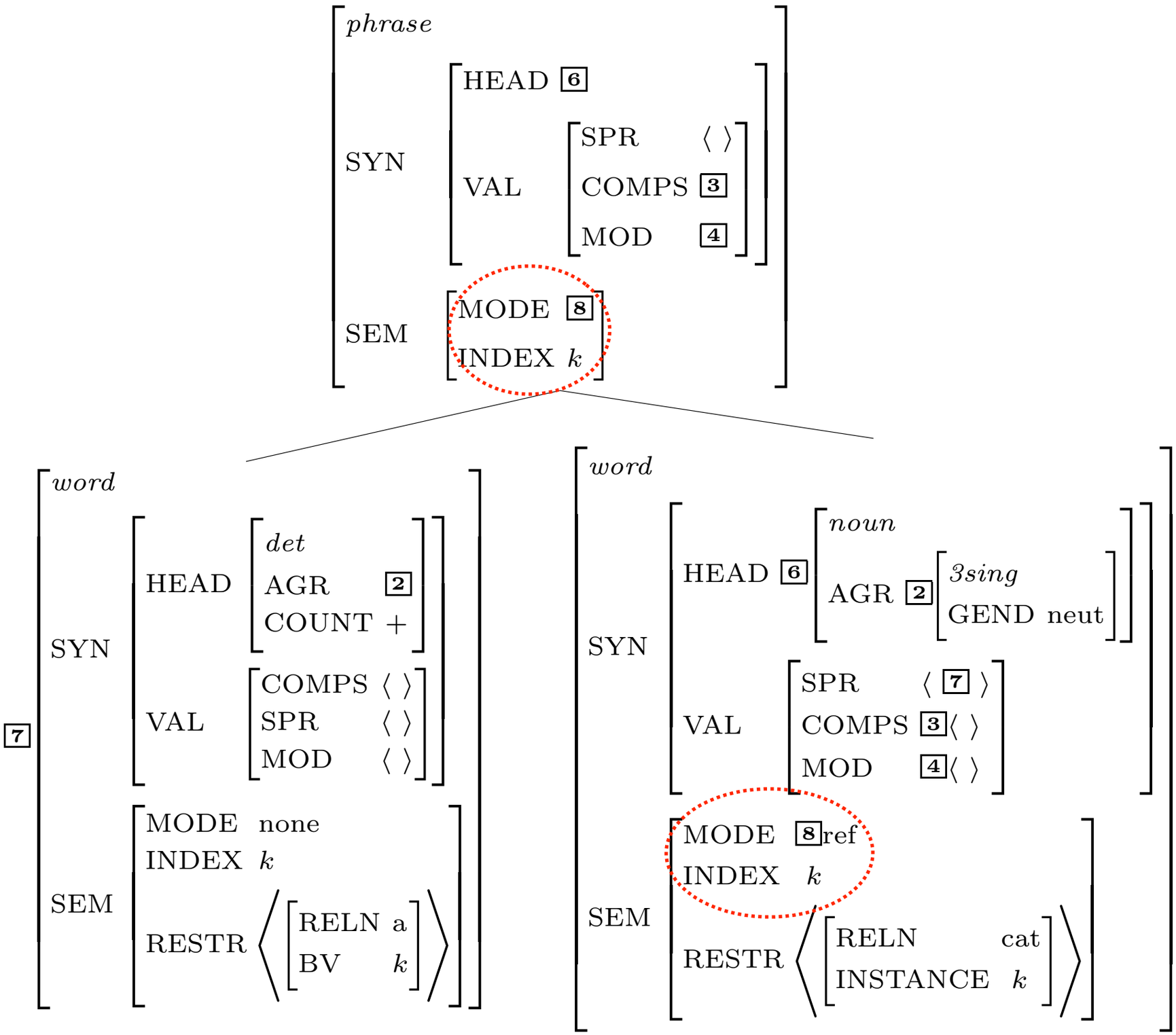
Effects of the Valence Principle



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?

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

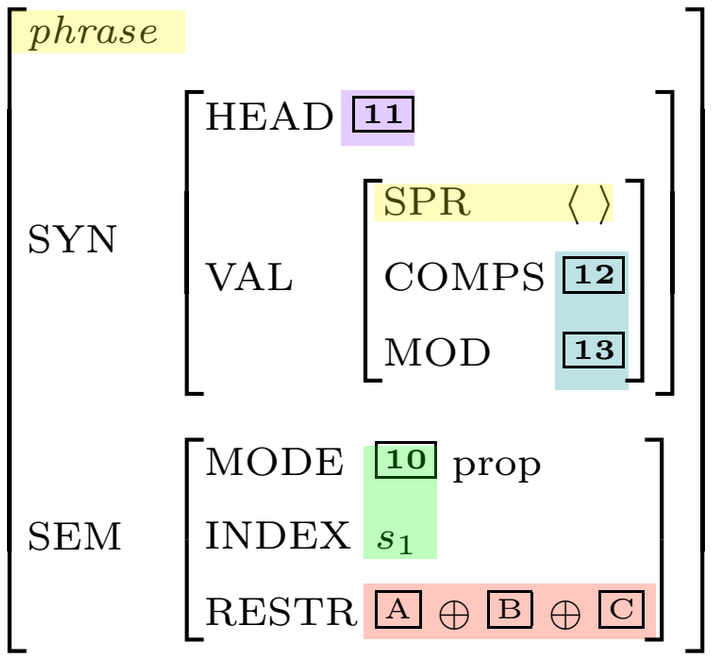
$$\boxed{7}\begin{bmatrix} \textit{word} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{det} & \\ \text{AGR} & \boxed{2} \\ \text{COUNT} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle \\ \text{MOD} & \langle\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

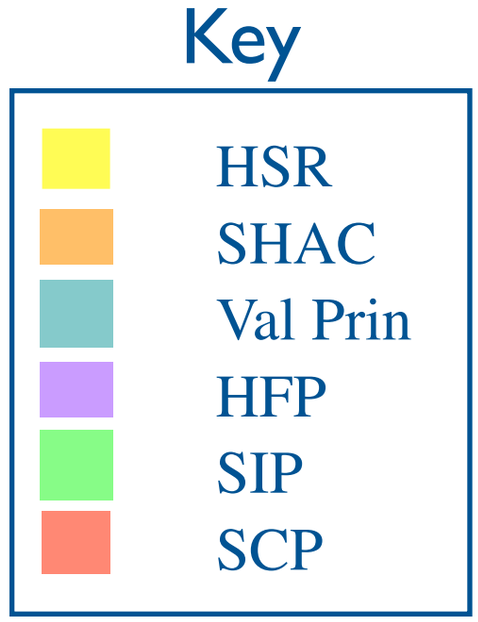
$$\begin{bmatrix} \textit{word} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{6}\begin{bmatrix} \textit{noun} & \\ \text{AGR} & \boxed{2}\begin{bmatrix} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{bmatrix} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \boxed{7}\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

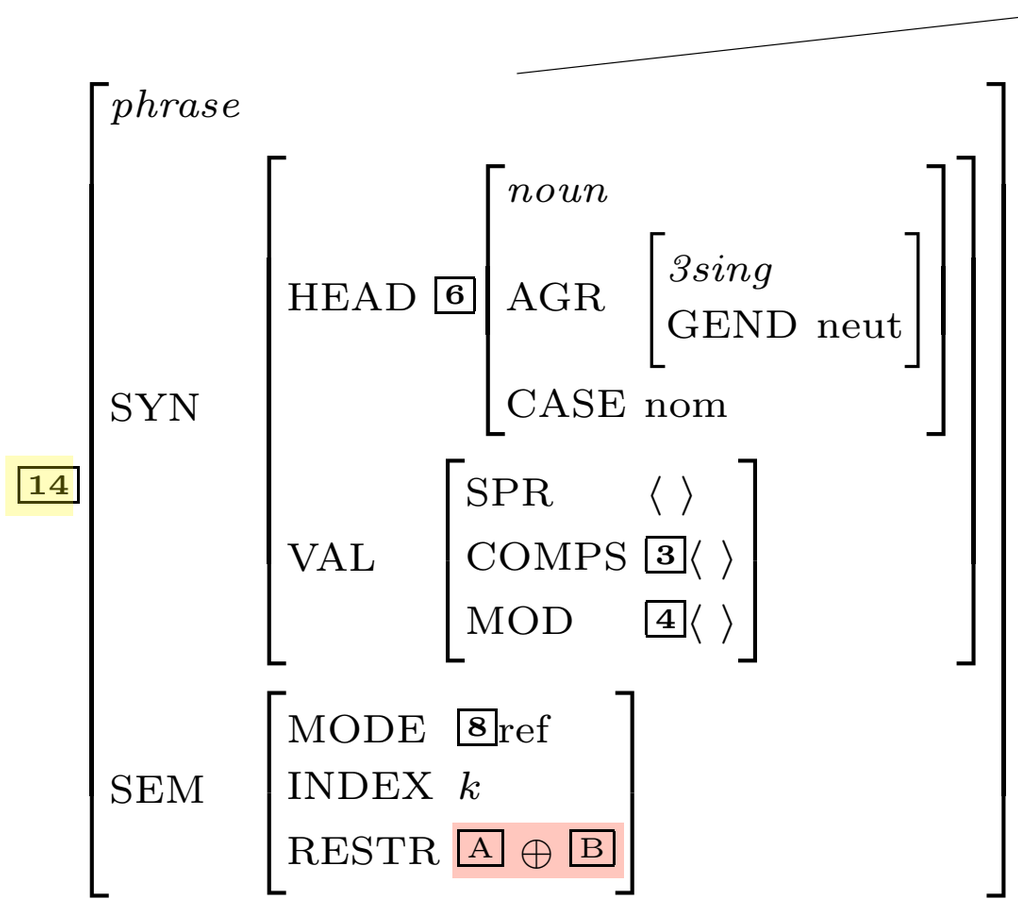
Lexical Entry for *slept*

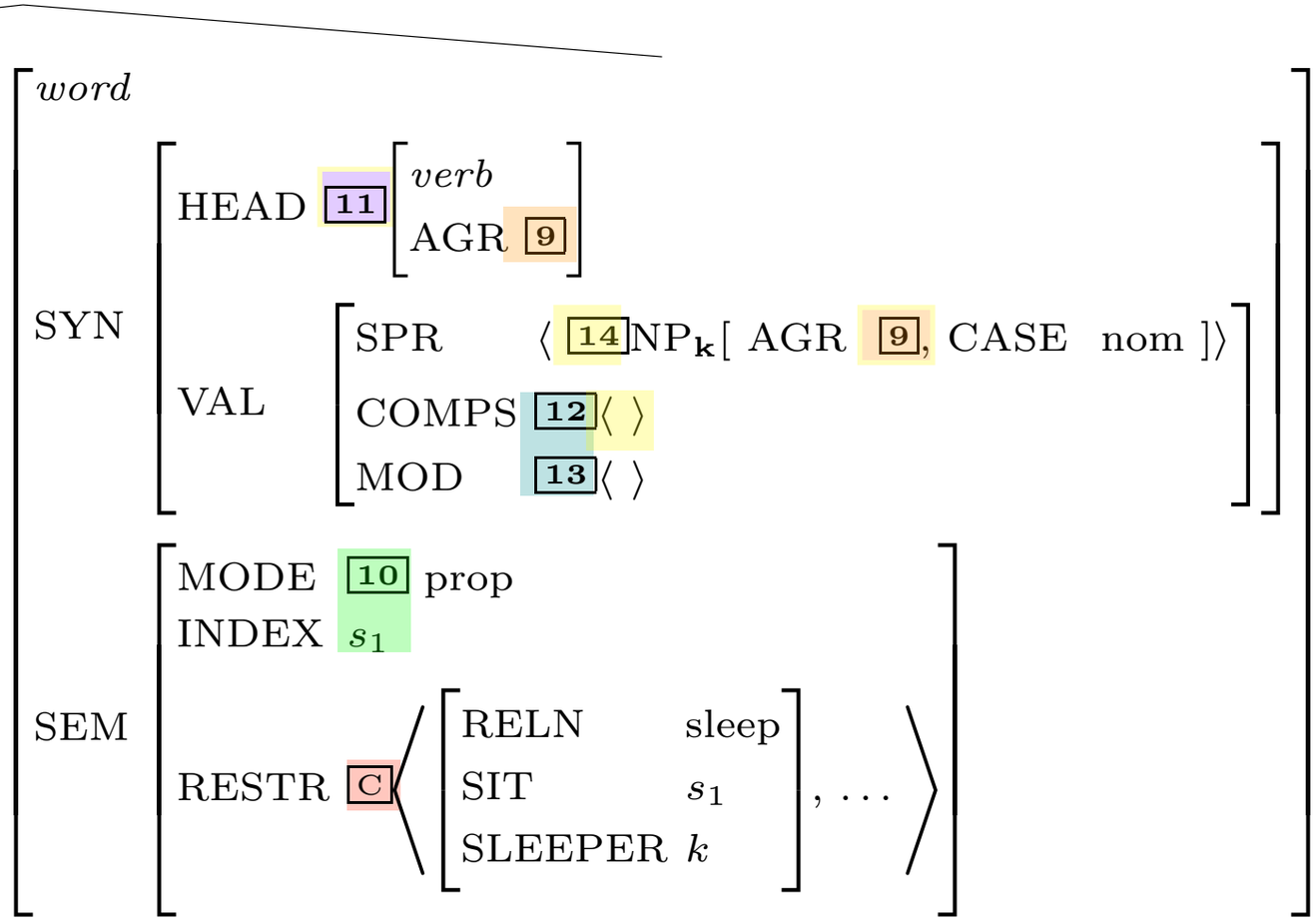
$$\left\langle \text{slept}, \left[\begin{array}{l} \textit{word} \\ \text{SYN} \left[\begin{array}{ll} \text{HEAD} & \textit{verb} \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \left[\begin{array}{ll} \text{NP}_m & \\ \text{AGR} & \boxed{9} \\ \text{CASE} & \text{nom} \end{array}\right]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

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?

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

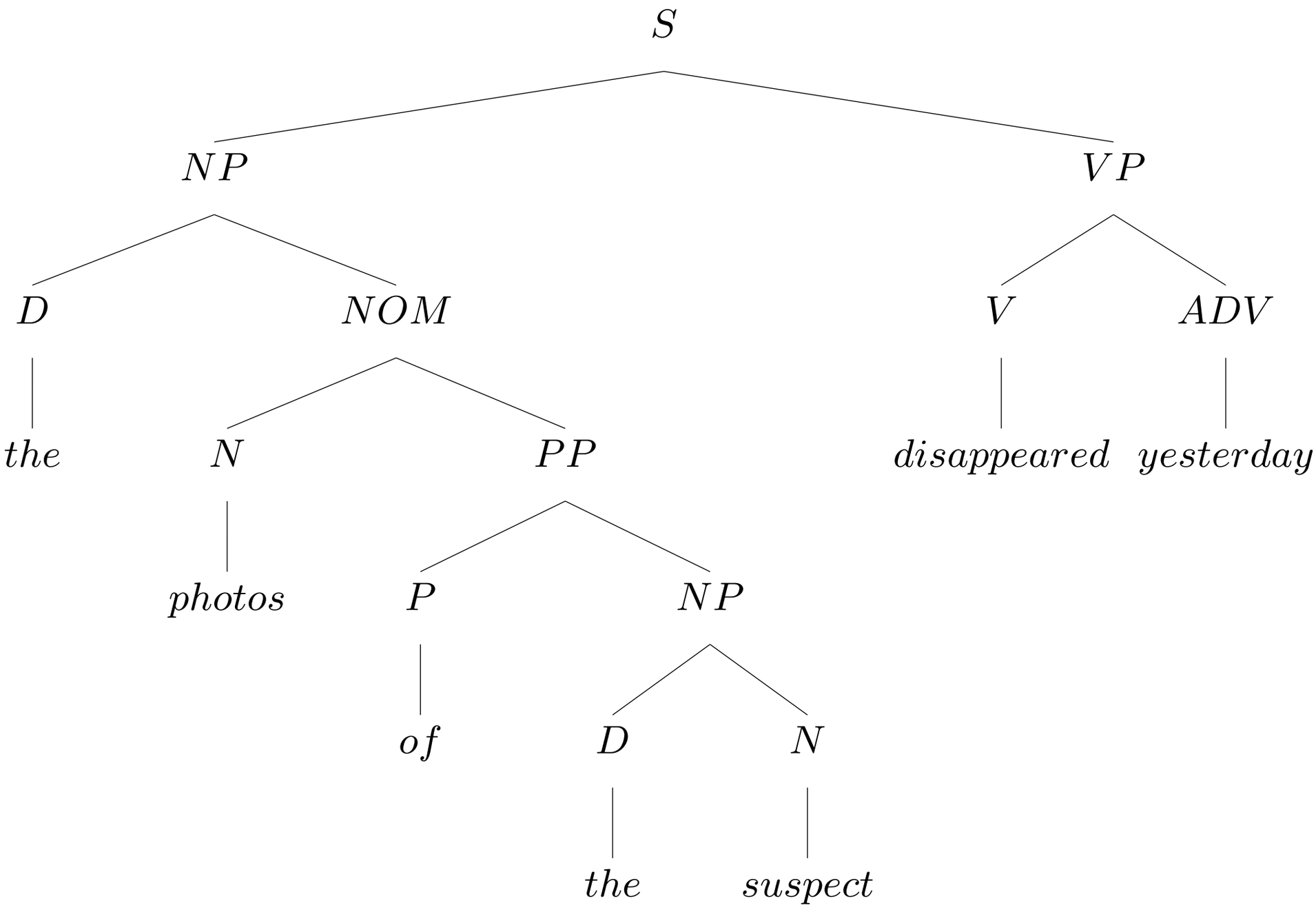
$$\boxed{14}\begin{bmatrix} \textit{phrase} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \boxed{6}\begin{bmatrix} \textit{noun} & \\ \text{AGR} & \begin{bmatrix} \textit{3sing} & \\ \text{GEND} & \text{neut} \end{bmatrix} \\ \text{CASE} & \text{nom} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR}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

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

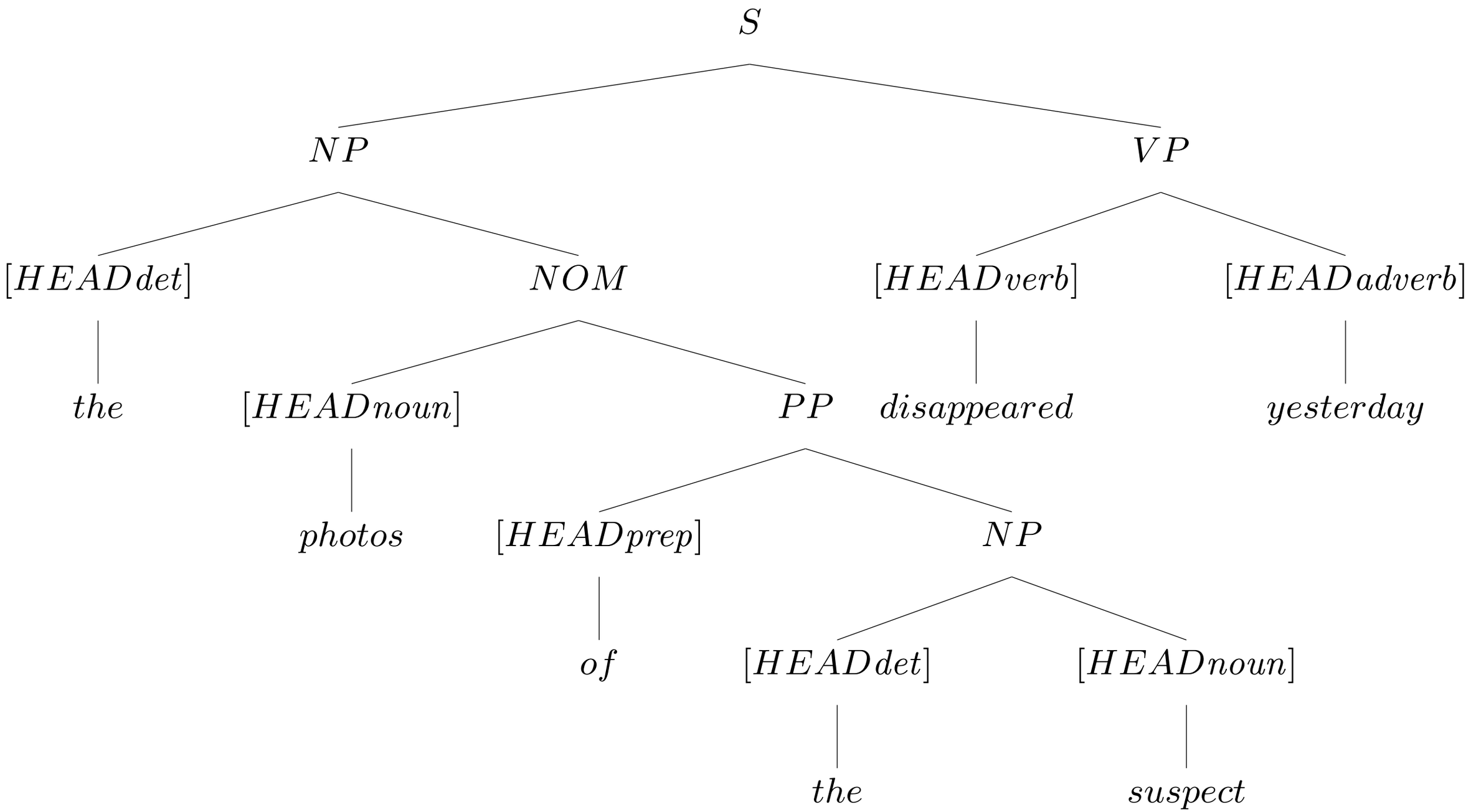
RESTR of the S node

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

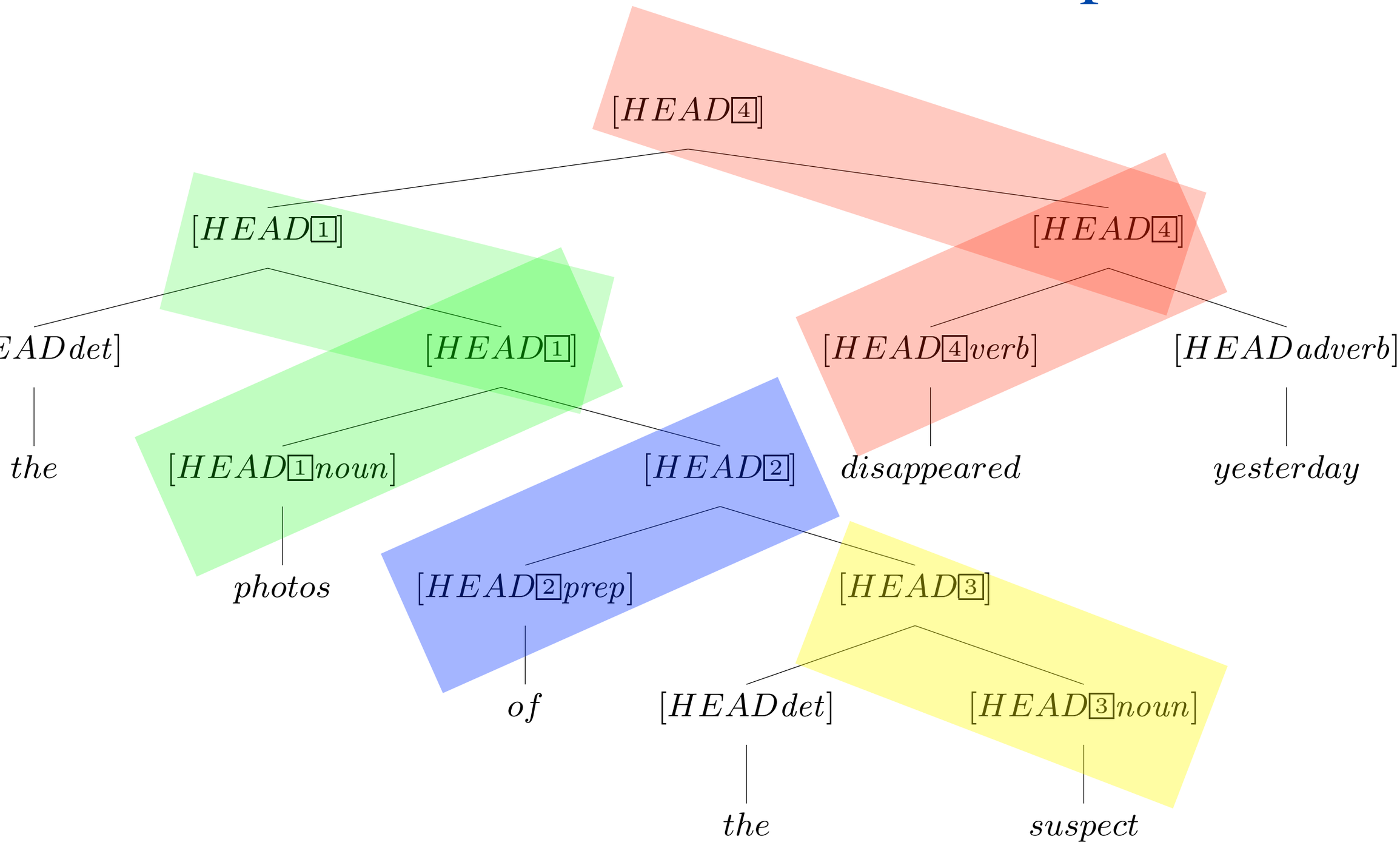
Another Example



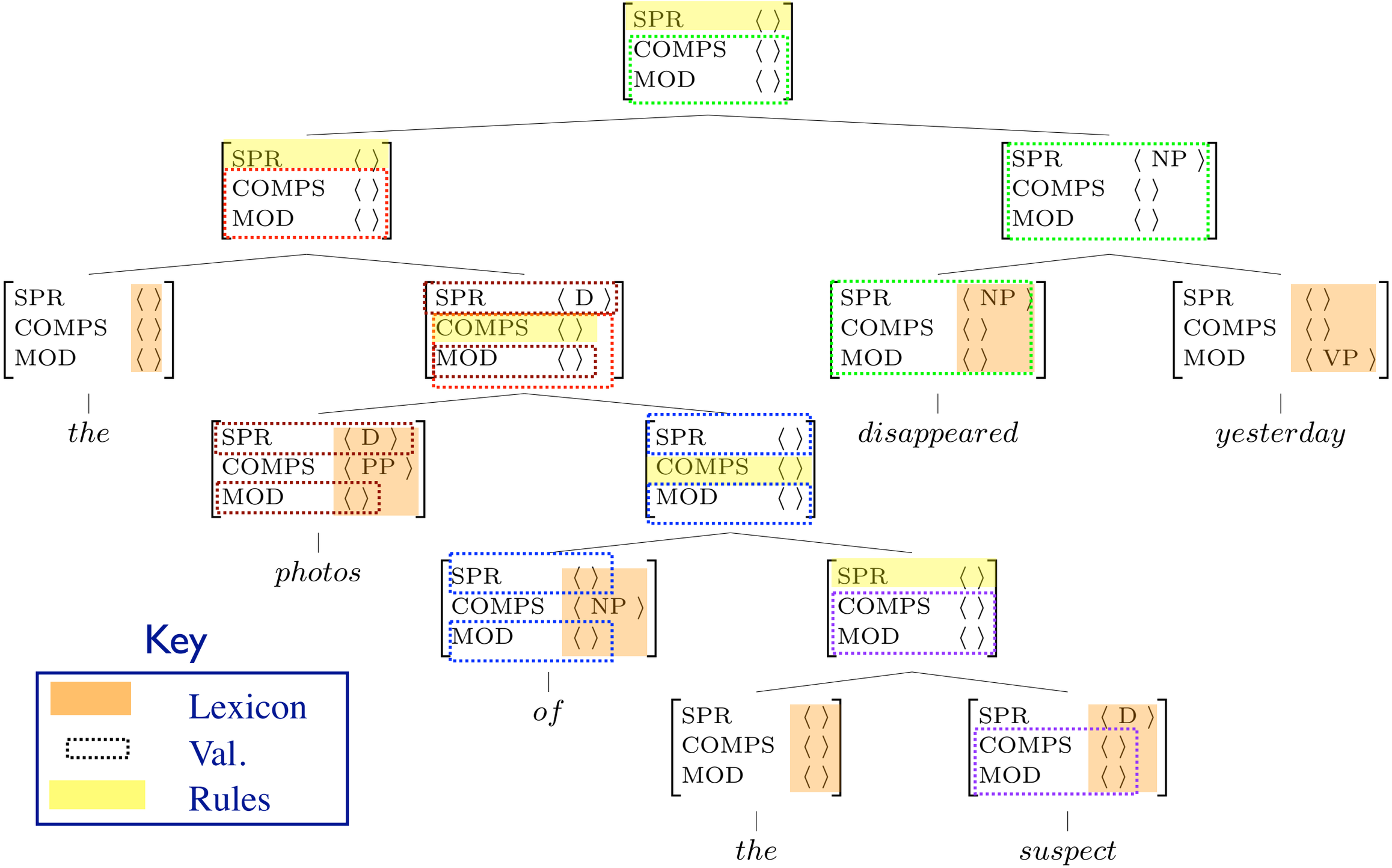
Head Features from Lexical Entries



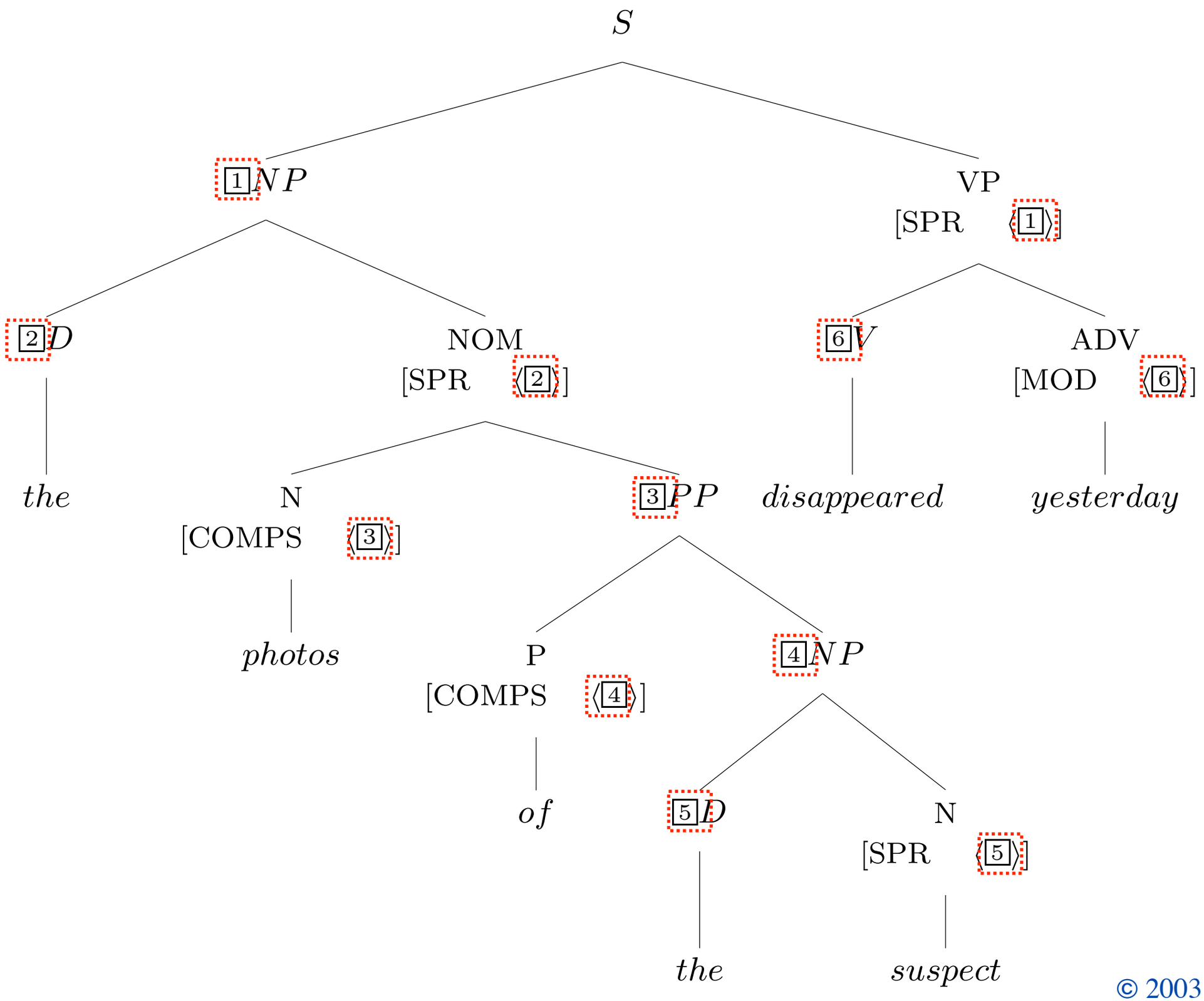
Head Features from Lexical Entries, plus HFP



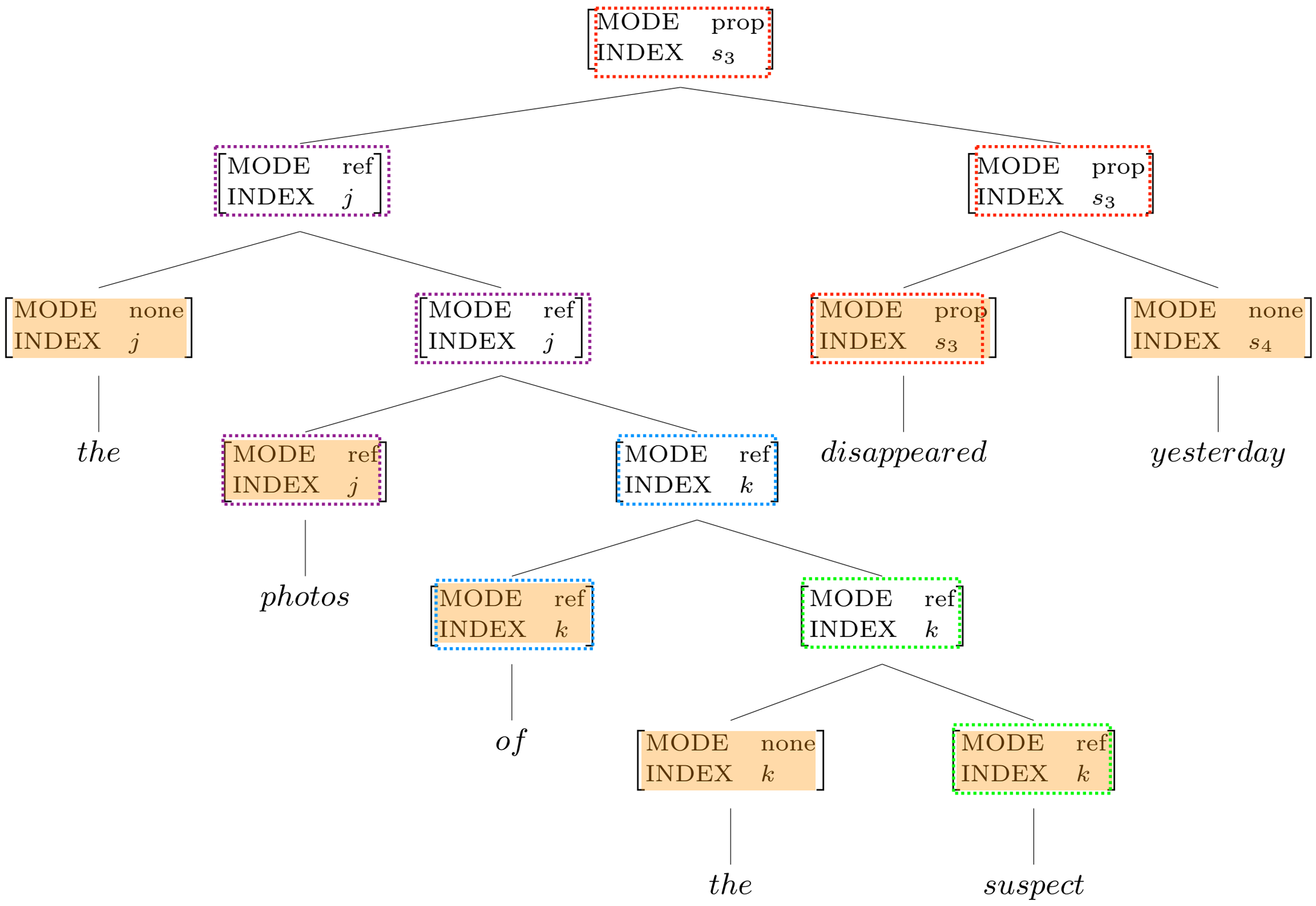
Valence Features: Lexicon, Rules, and the Valence Principle



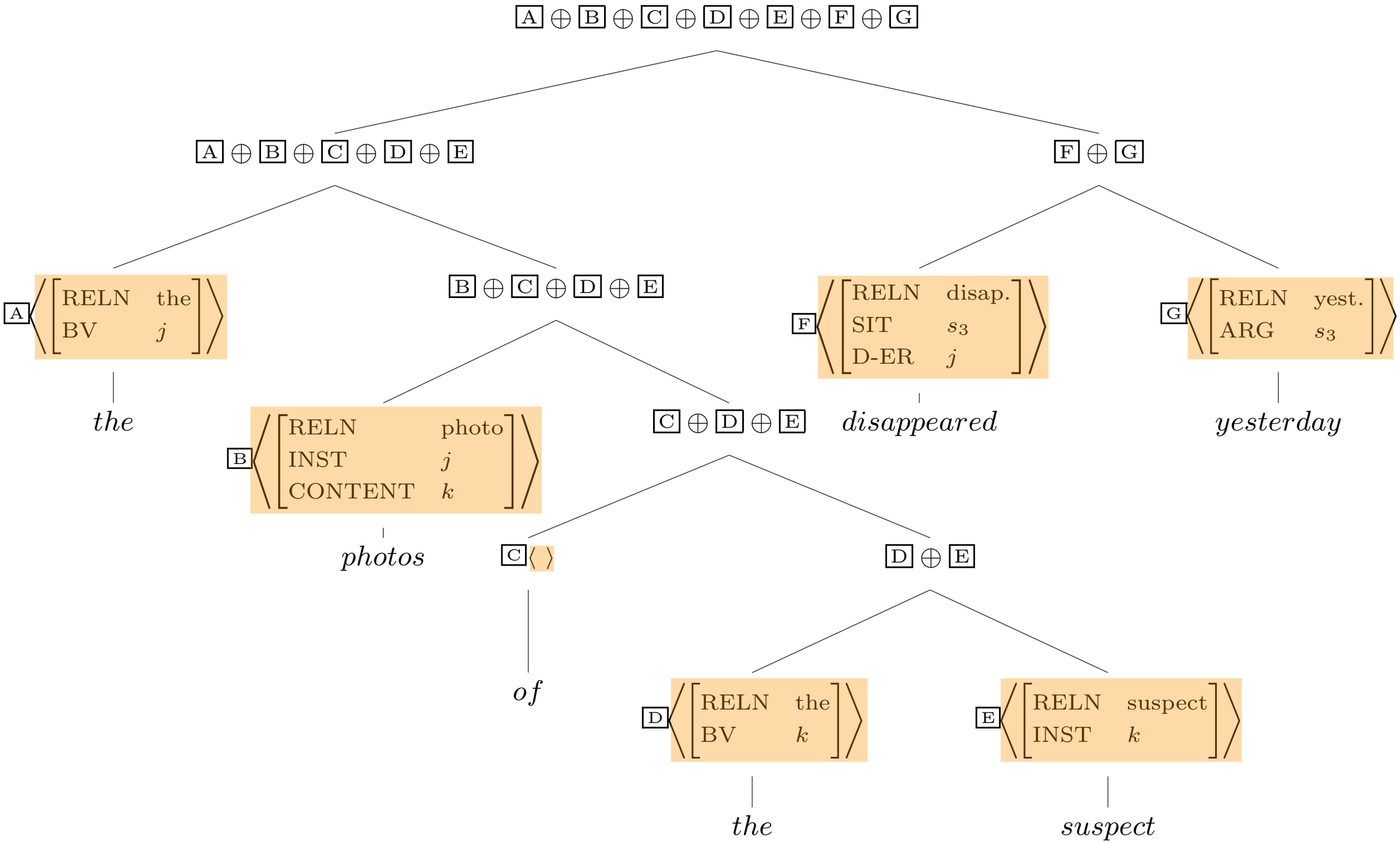
Required Identities: Grammar Rules



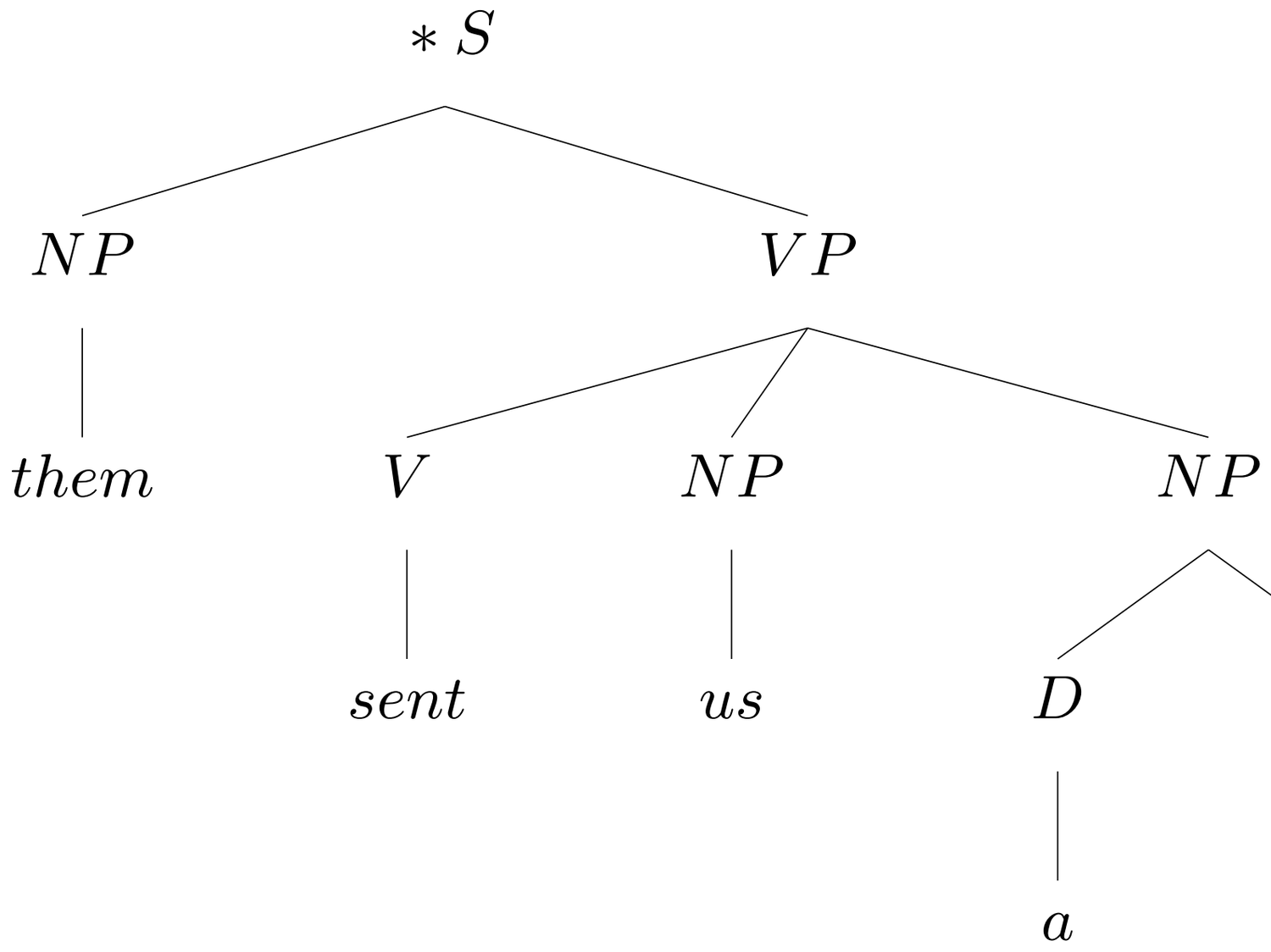
Two Semantic Features: the Lexicon & SIP



RESTR Values and the SCP

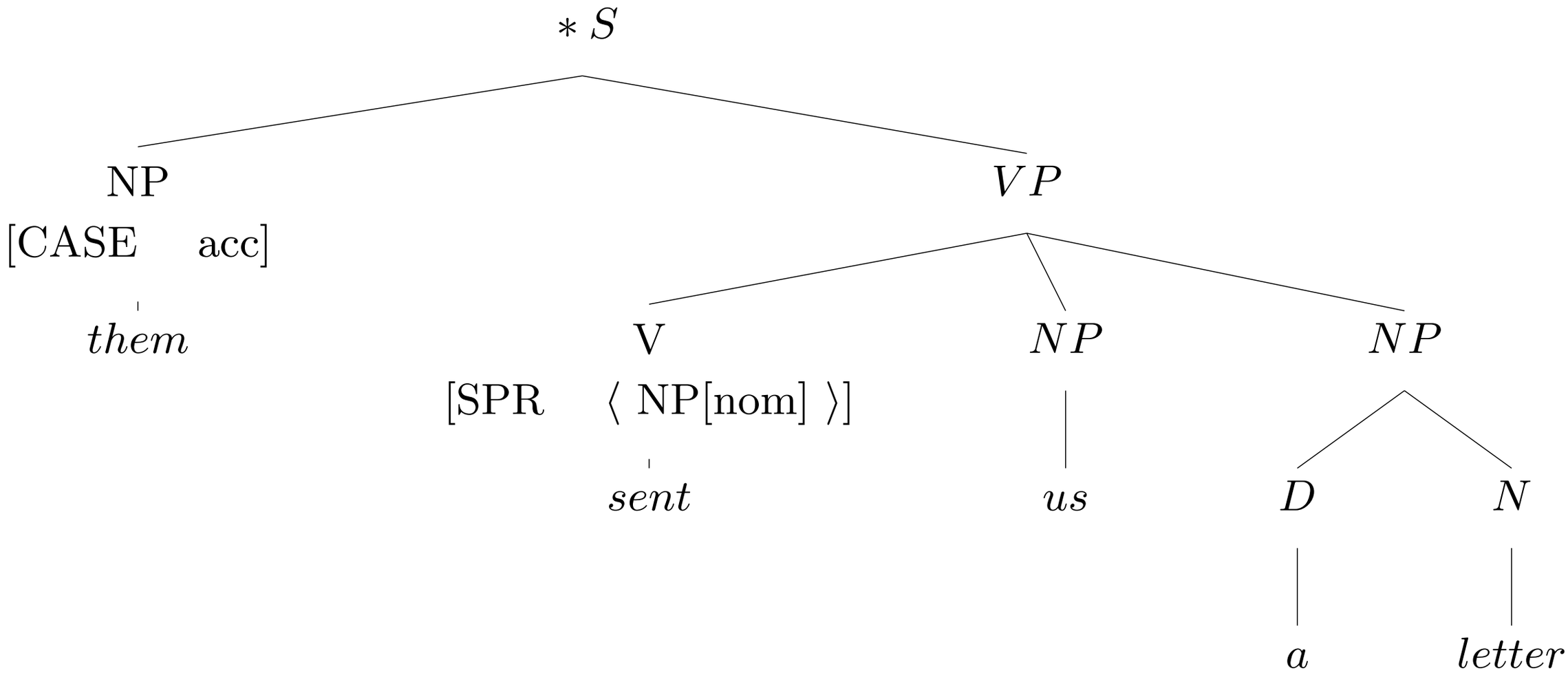


An Ungrammatical Example



What's wrong with this sentence?

An Ungrammatical Example

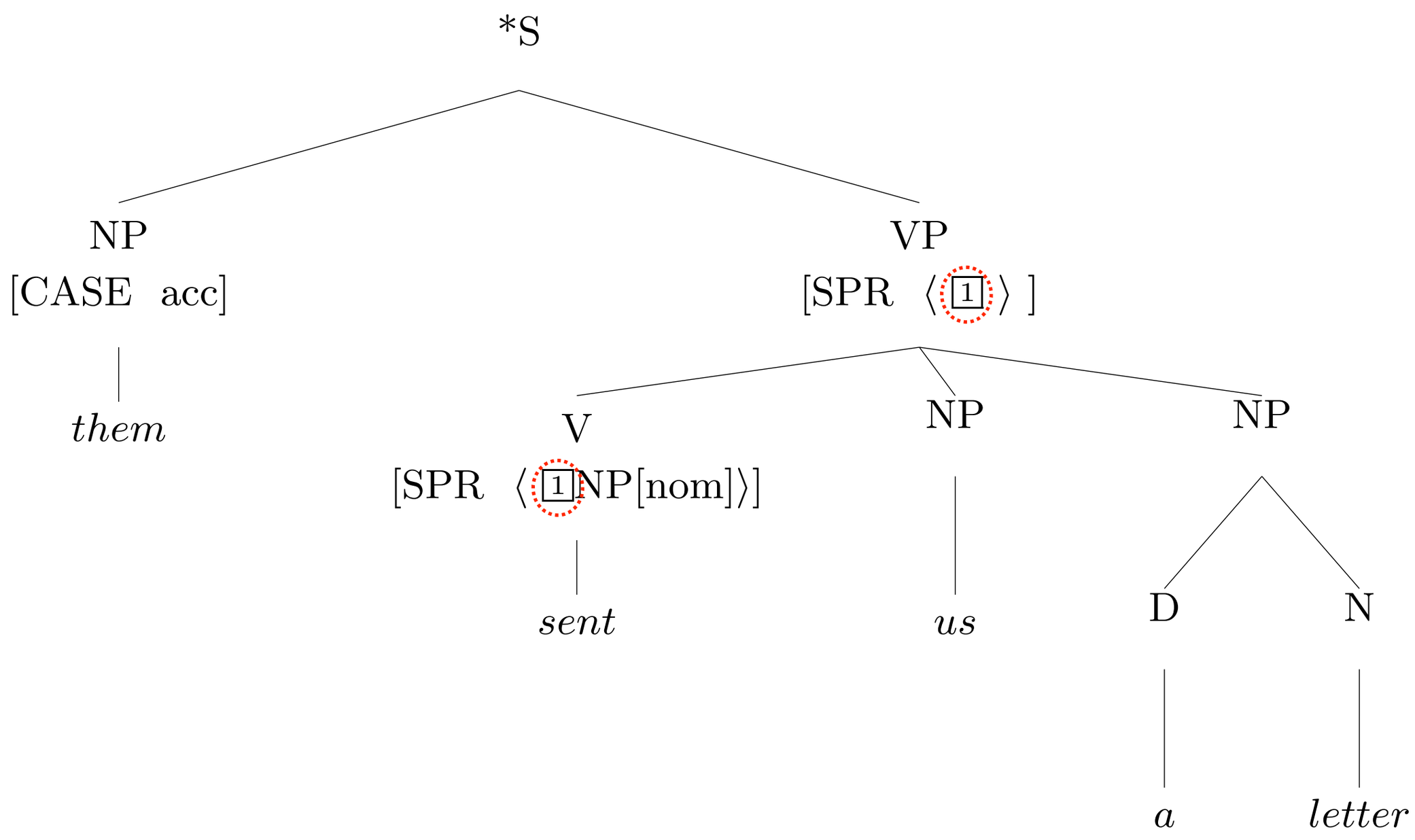


What's wrong with this sentence?

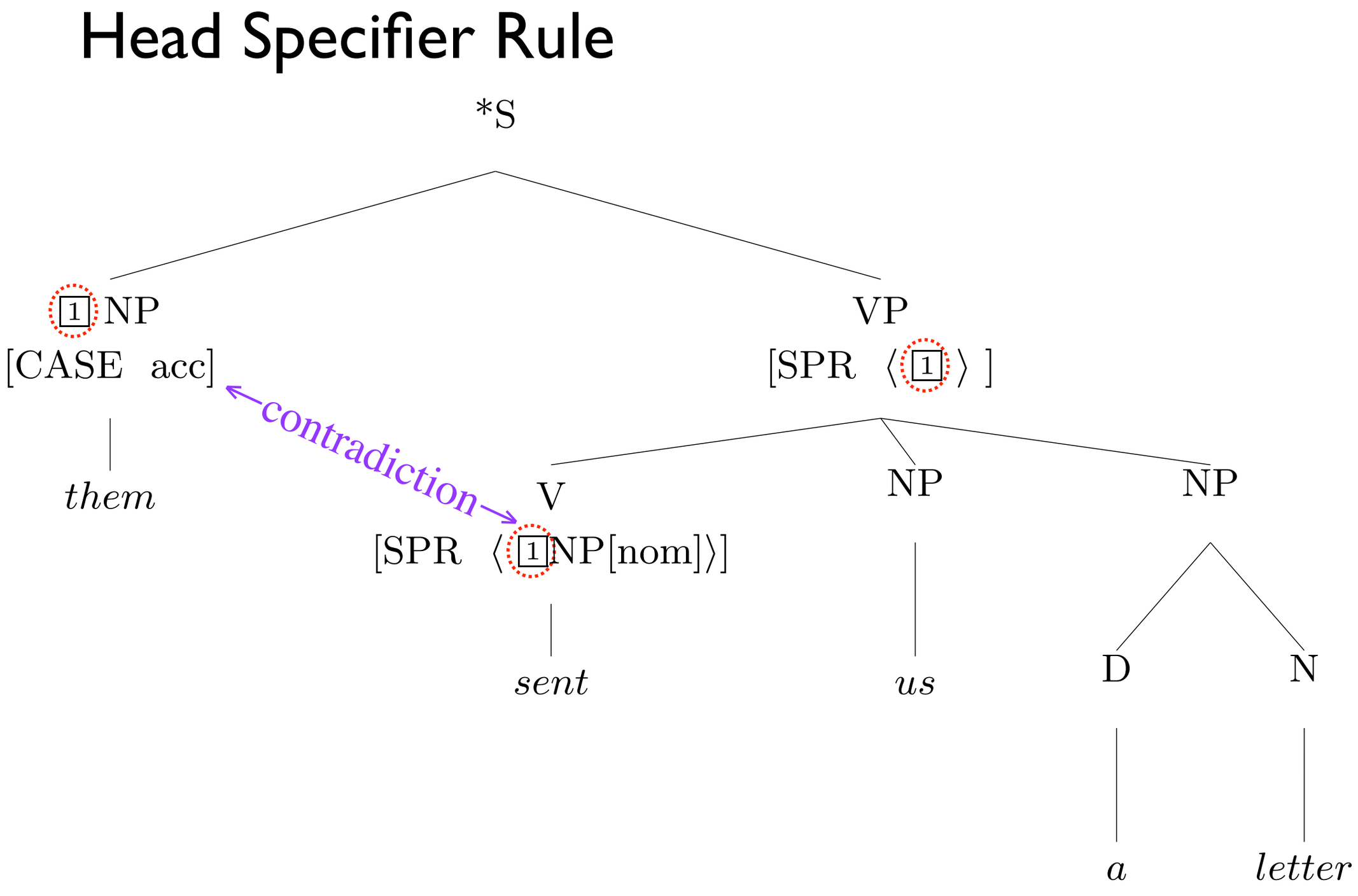
So what?

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: Binding Theory & Imperatives

Reading Questions

- Do we have to understand 6.3 (the squiggly bits)?
- "Unless the rule says otherwise, the mother's values for the VAL features are identical to those of the head daughter?" Which rule?
- If the HCR 'overrides' the Valence Principle for COMPS, why have COMPS be part of the Valence Principle at all?

Reading Questions

- Why do English nouns need a value for CASE, if they never inflect for it?
- How come we say that both 'a letter' and 'us' in 'They sent us a letter' are [CASE acc] when they plainly play different roles with respect to the verb semantically?
- Why not give send the COMPS value < NP (PP | NP) > ?

Reading Questions

- Why is MOD a general val-cat feature when we only use it for adj, prep and adv? Even section 5.6 where it is introduced indicates that it is only for those 3 values, so couldn't it create another sub-group of pos like AGR does for verb, noun, and det?

- Is it correct that all the attributes of RESTR structures don't have to be filled for sentence to be acceptable? If so how do we derive meaning of RESTR structures with missing arguments? Do we ignore them?

Reading Questions

- For the case of the word *sent*, the example says that even though *sent* doesn't show any marking for plurality, etc..., we still have to specify that it is 3rd person plural because the specifier noun is 3rd person plural. Why is this? Would the two features not agree with each other if we just put no agreement marking on the verb? Or is the grammar saying that there are actually several different instances of the word 'sent' and that this specific instance is 3rd person plural in order to agree with the noun?

Reading Questions

- I'm also a little bit confused on when we can underspecify the feature structures, and what we can leave unspecified when we can.
- How is top-down processing different from bottom-up processing?
- How does our grammar handle ambiguous sentences like *This is a minute hand*?

Reading Questions

- In section 6.3, the book expresses a formalism that appears a bit more like a mathematical theorem. With this new formalism, can we begin to infer any type of precedence on the rules? I believe that the book has done an excellent job of presenting HPSG in a manner that makes many of its conclusions seem intuitive. Yet, with a mathematical background, this intuition makes me a bit nervous. When I see the new formalism presented in chapter 6, I suspect that this intuition will be insufficient as the problem space becomes more complex. Therefore, I am wondering if there is a preferred order in which the grammar rules and principles can be applied. In other words, is the order of presentation in section 6.3.6 any indication of the order that we should perform the tests of (39), (40), ... , (45)?