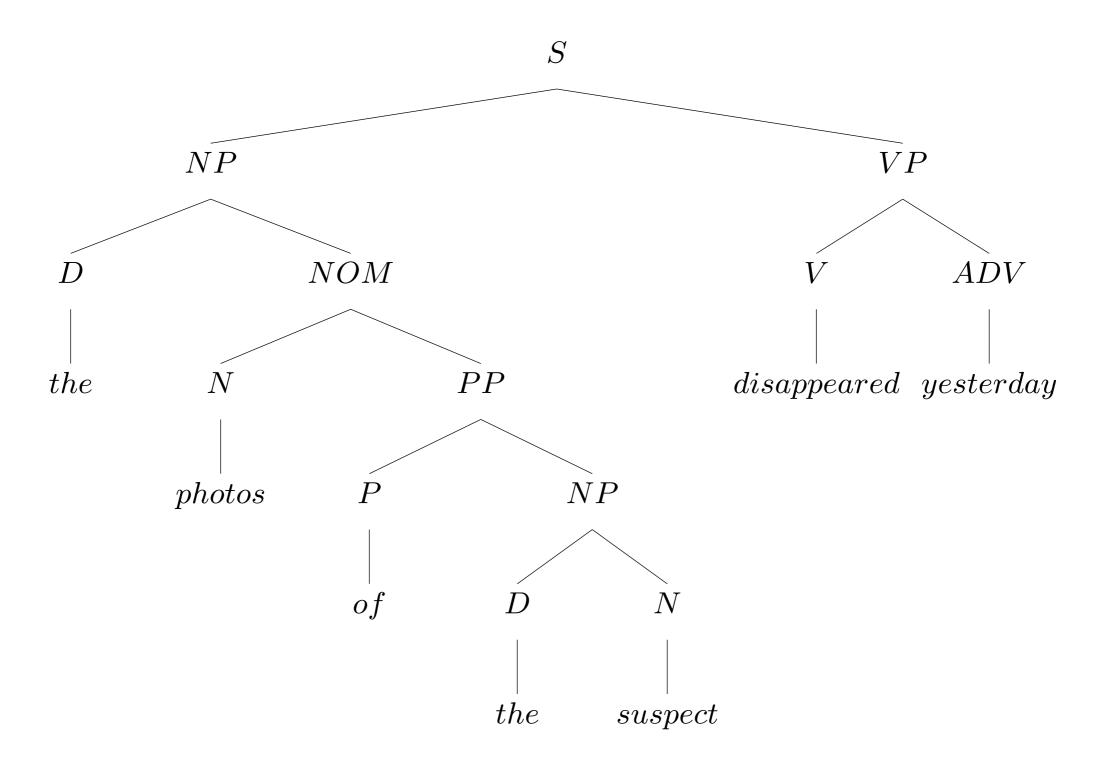
Ling 566 Oct 21, 2009

Review

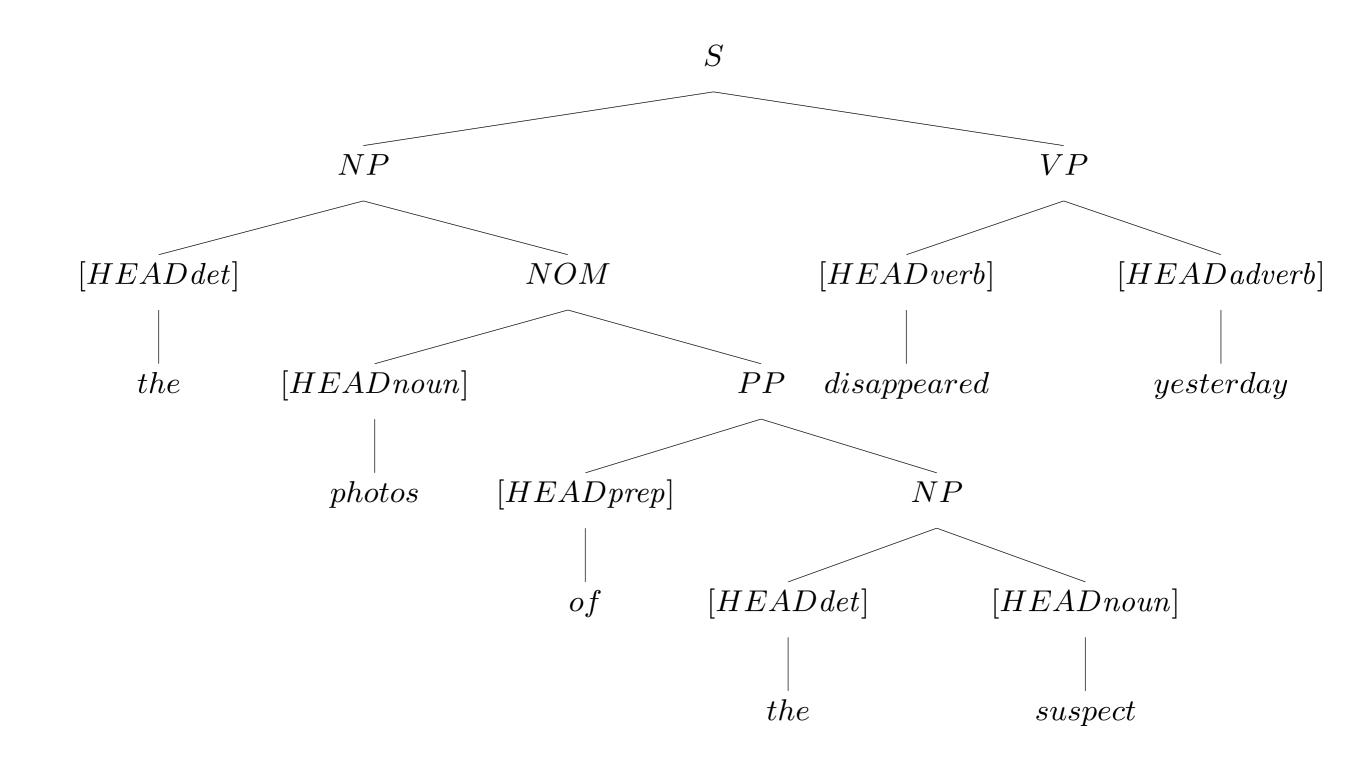
Overview

- Information movement in trees
- Exercise in critical thinking
- Homework tips
- SPR and COMPS
- Technical details (lexical entries, trees)
- Analogies to other systems you might know
- Your questions...

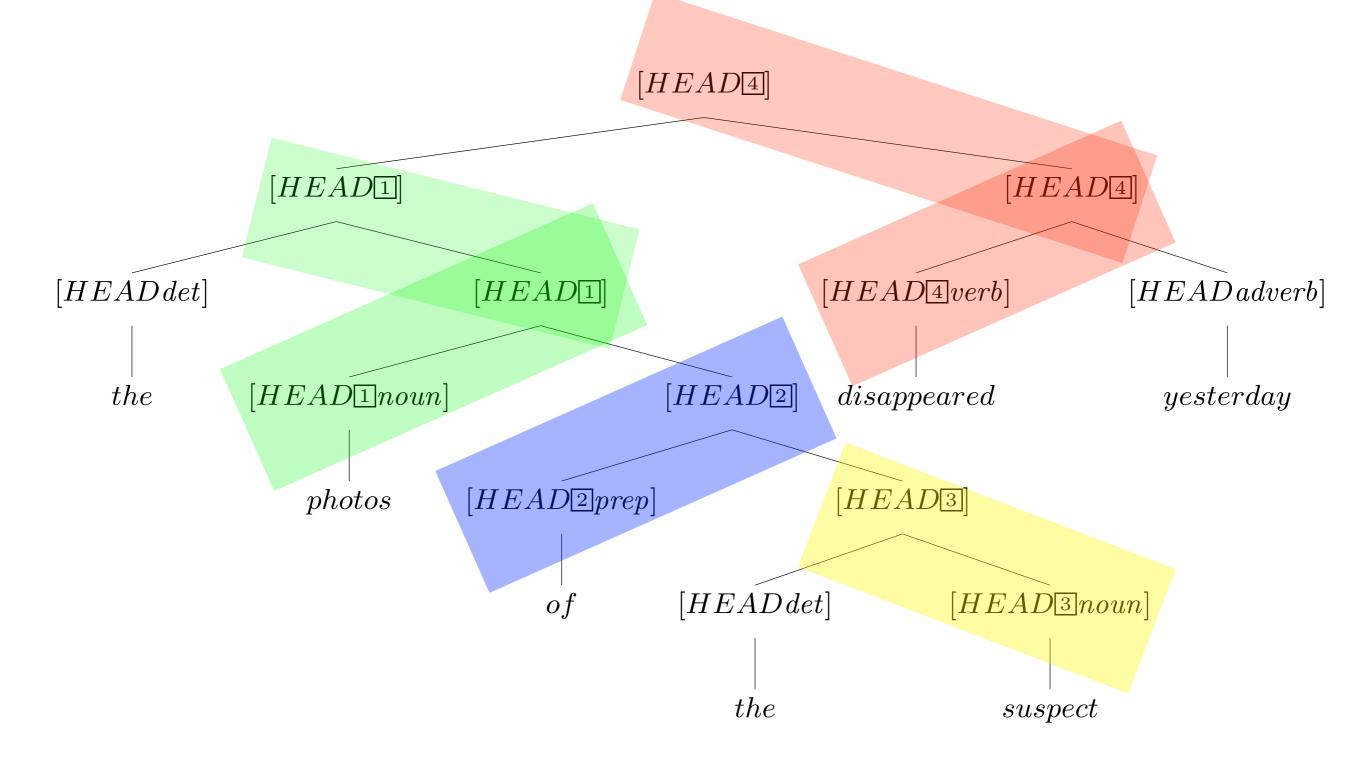
Another Example



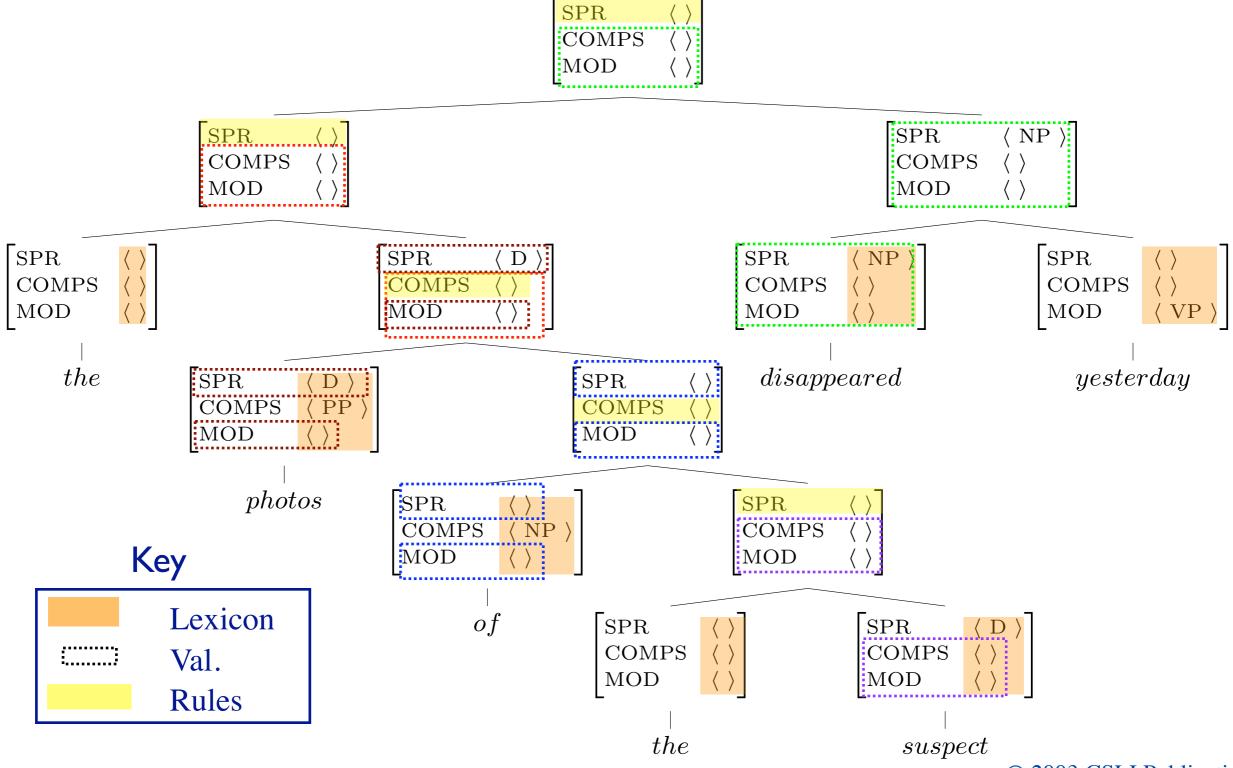
Head Features from Lexical Entries



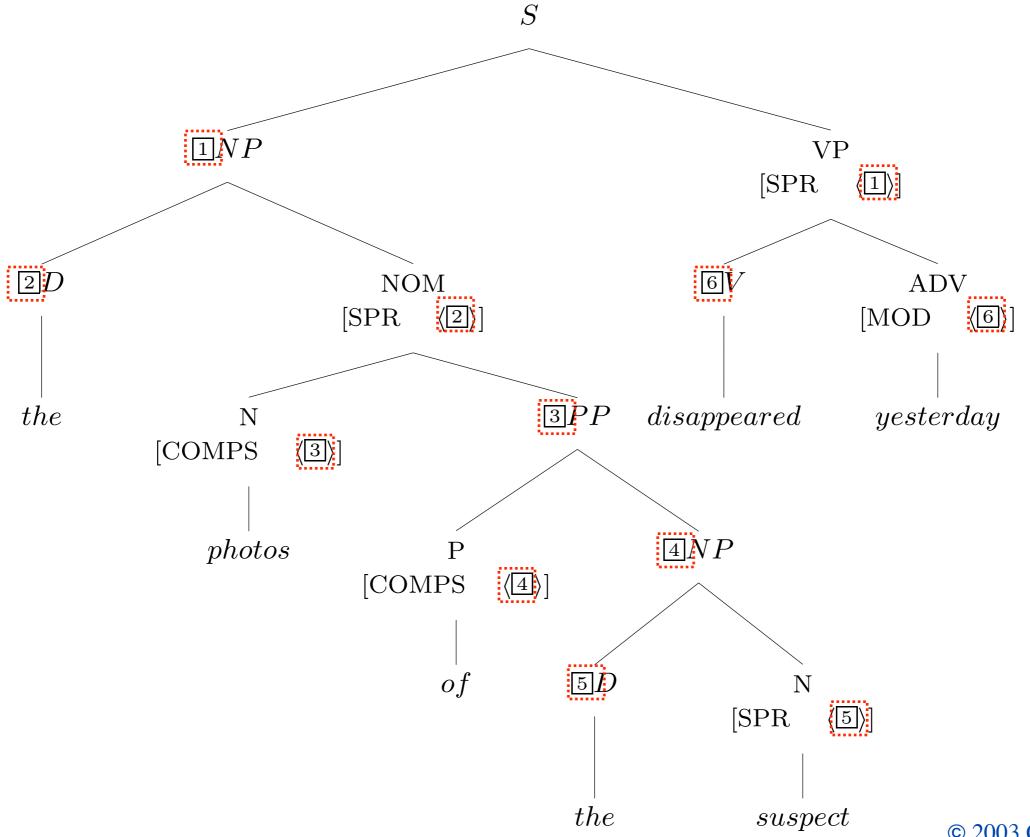
Head Features from Lexical Entries, plus HFP



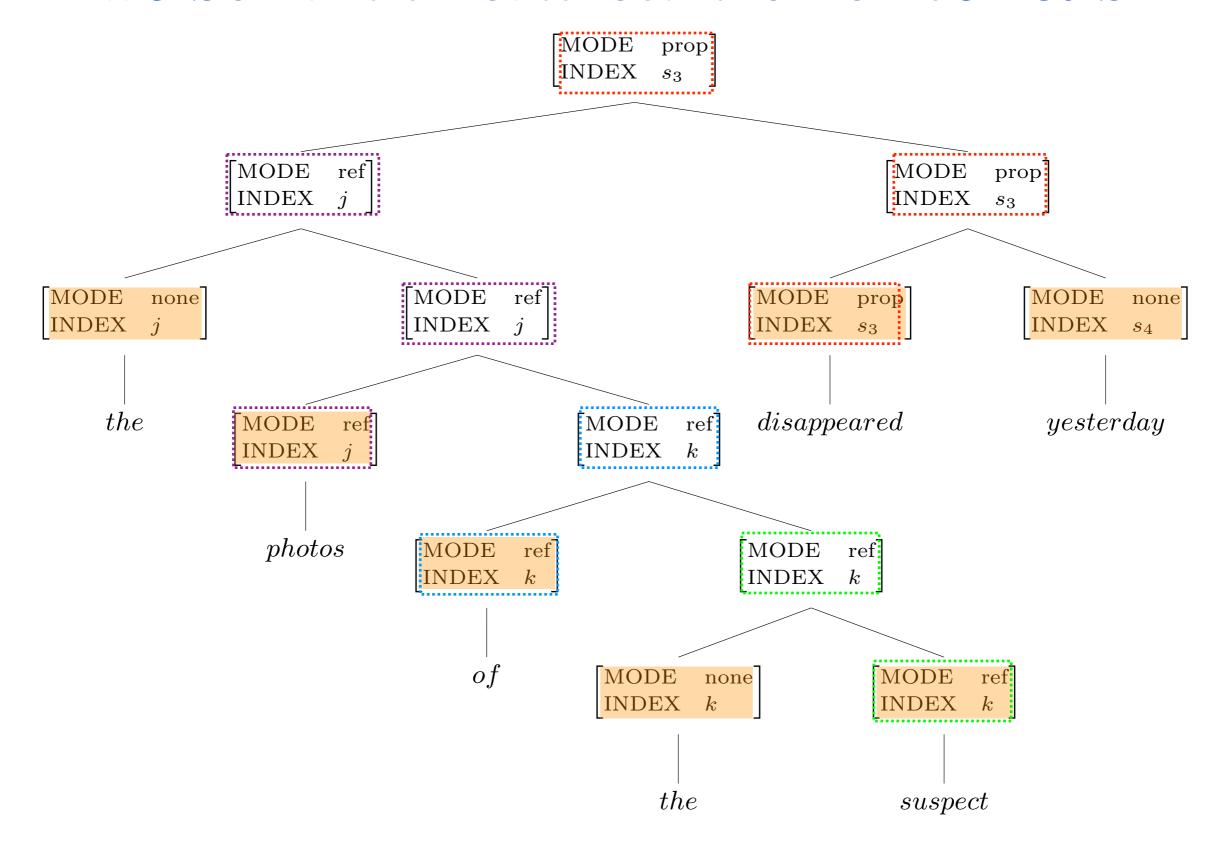
Valence Features: Lexicon, Rules, and the Valence Principle



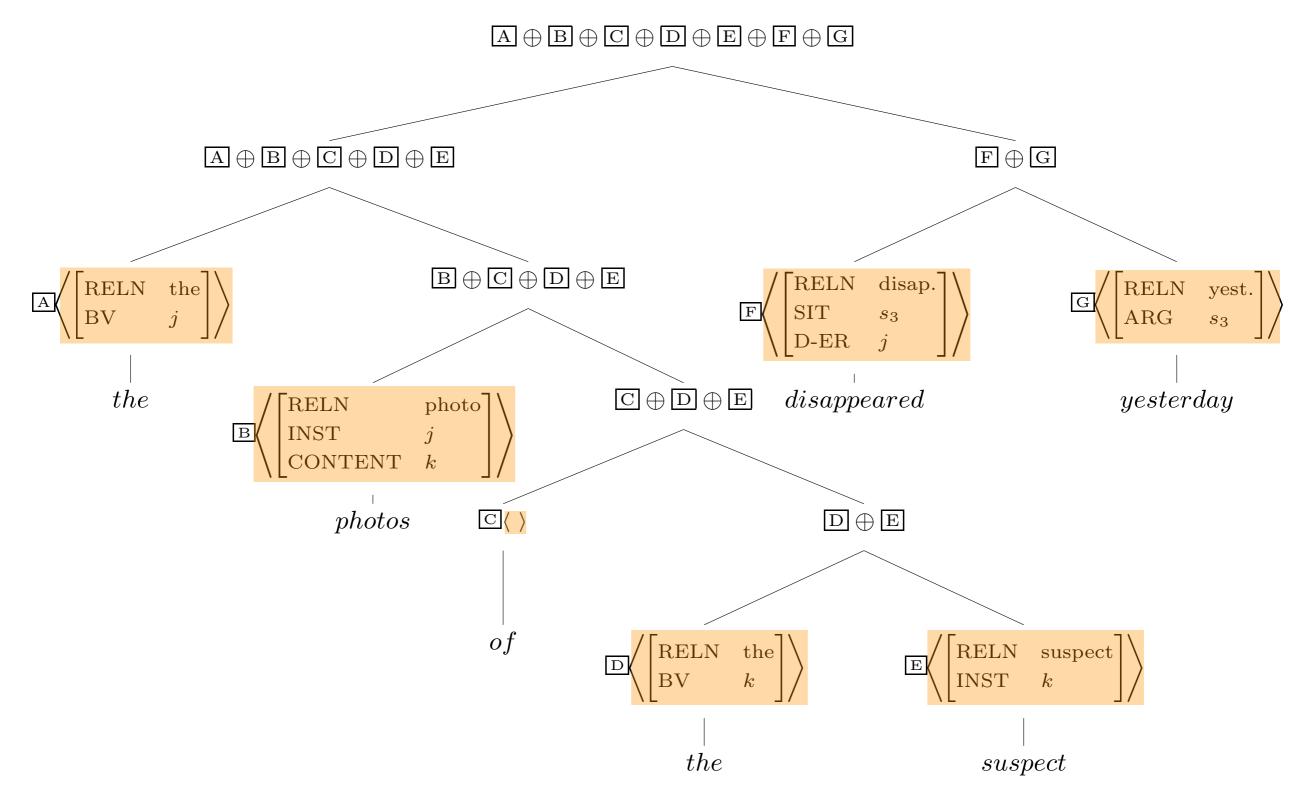
Required Identities: Grammar Rules

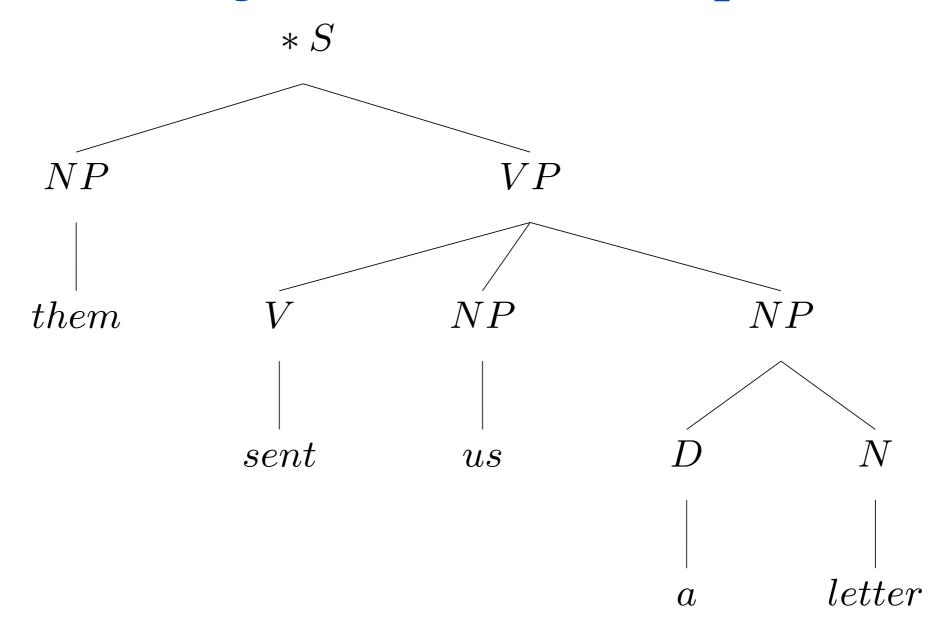


Two Semantic Features: the Lexicon & SIP

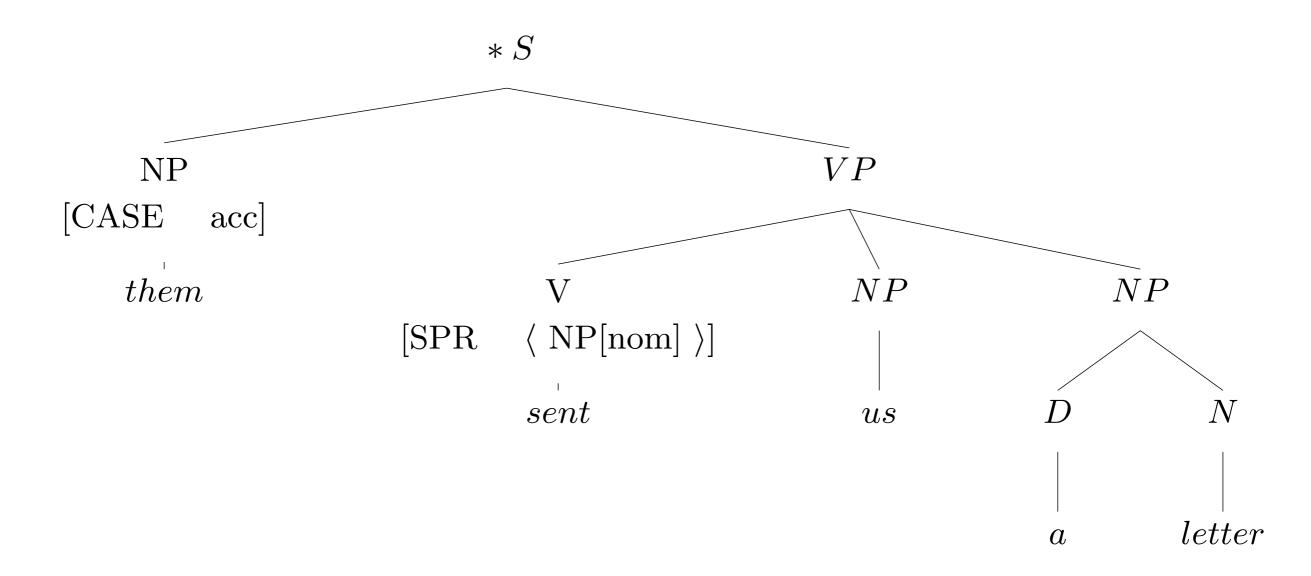


RESTR Values and the SCP





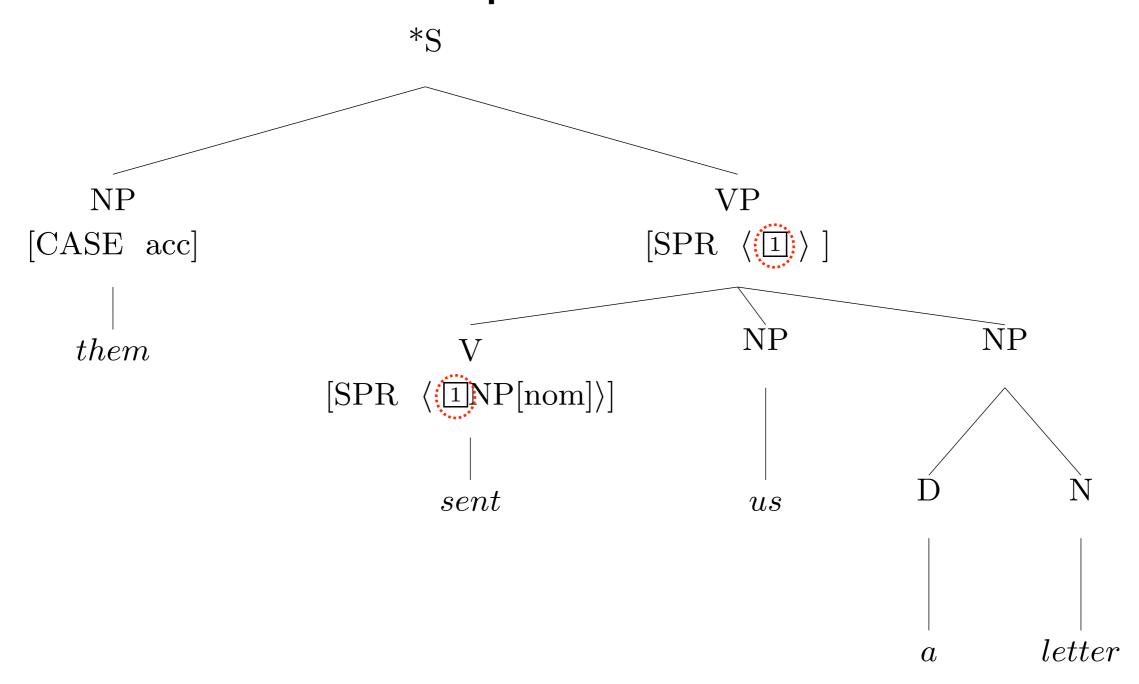
What's wrong with this sentence?



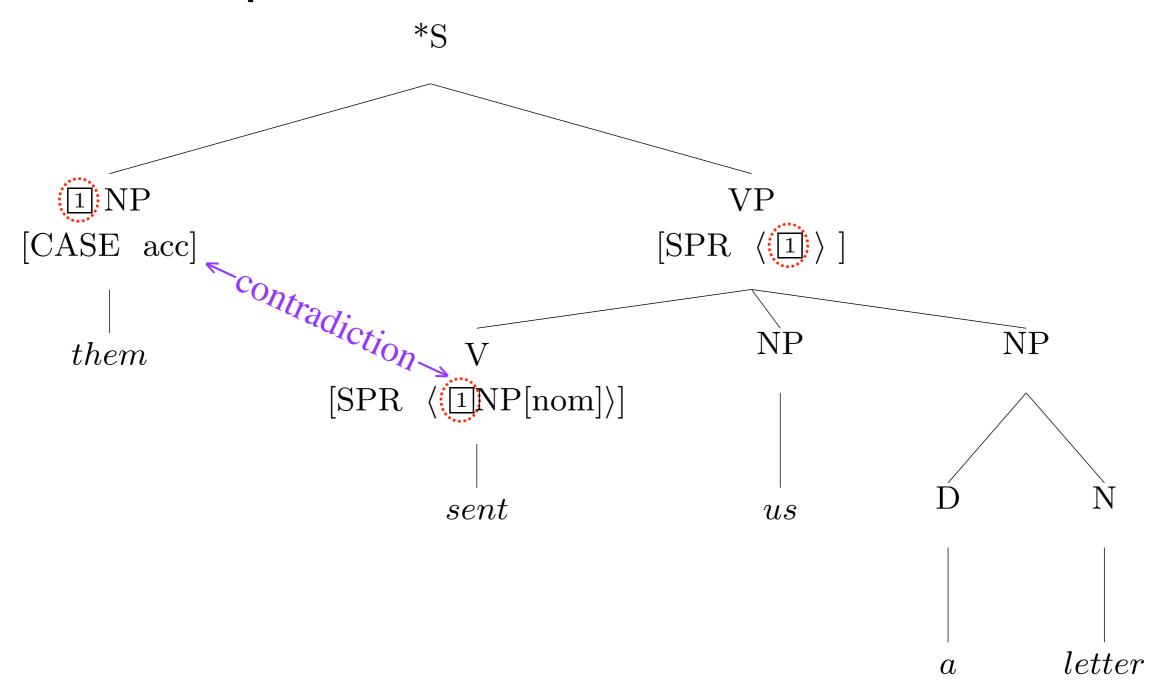
What's wrong with this sentence?

So what?

The Valence Principle



Head Specifier Rule



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?

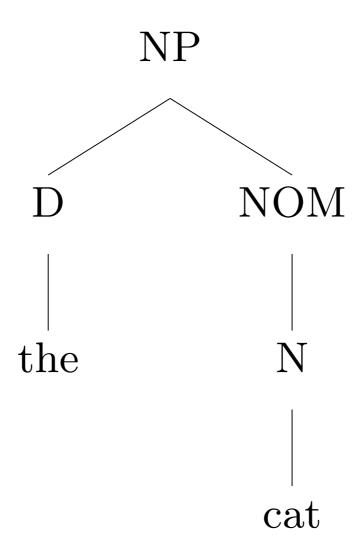
Homework tips/requests

- Type whenever possible
- Answer each part of each question separately
- Be sure to answer each part of each question, and follow the directions!
- Look over the problems early and ask questions
- Check your work
- Monitor GoPost
- WORK TOGETHER

SPR value on AP/PP?

- Kim grew fond of baseball.
- Kim and Sandy ate lunch in the park.
- Kim and Sandy are in the park.

Which grammar does this tree go with?



$$\left\langle \text{out,} \begin{bmatrix} word \\ \text{HEAD} & prep \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \text{ VP} \rangle \\ \text{COMPS} & \langle \text{ (PP | NP)} \rangle \end{bmatrix} \right\rangle$$

```
\left\langle \text{out,} \begin{bmatrix} word \\ \text{HEAD} & prep \\ \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \ \rangle \\ \text{COMPS} & \langle \ (\text{NP}) \ (\text{PP}) \ \rangle \end{bmatrix} \right] \right\rangle
```

```
\left\langle \text{out,} \begin{bmatrix} word \\ \text{HEAD} & prep \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \ \rangle \\ \text{COMPS} & ( \ \text{NP} \ | \ \text{PP} \ ) \end{bmatrix} \right\rangle
```

$$\left\langle \text{grew}, \begin{bmatrix} word \\ \text{HEAD} & \begin{bmatrix} verb \\ \text{AGR} & 3sing \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \text{NP} \rangle \\ \text{COMPS} & \langle \text{AP} \rangle \end{bmatrix} \right]$$

```
\left\langle \text{out,} \begin{bmatrix} word \\ \text{HEAD} & preposition \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \ \rangle \\ \text{COMPS} & \langle \ (\text{NP} \mid \text{PP} \ ) \ \rangle \end{bmatrix} \right\rangle
```

```
\left\langle \text{there,} \begin{bmatrix} phrase \\ \text{HEAD} & prep \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \ \rangle \\ \text{COMPS} & \langle \ \rangle \end{bmatrix} \right\rangle
```

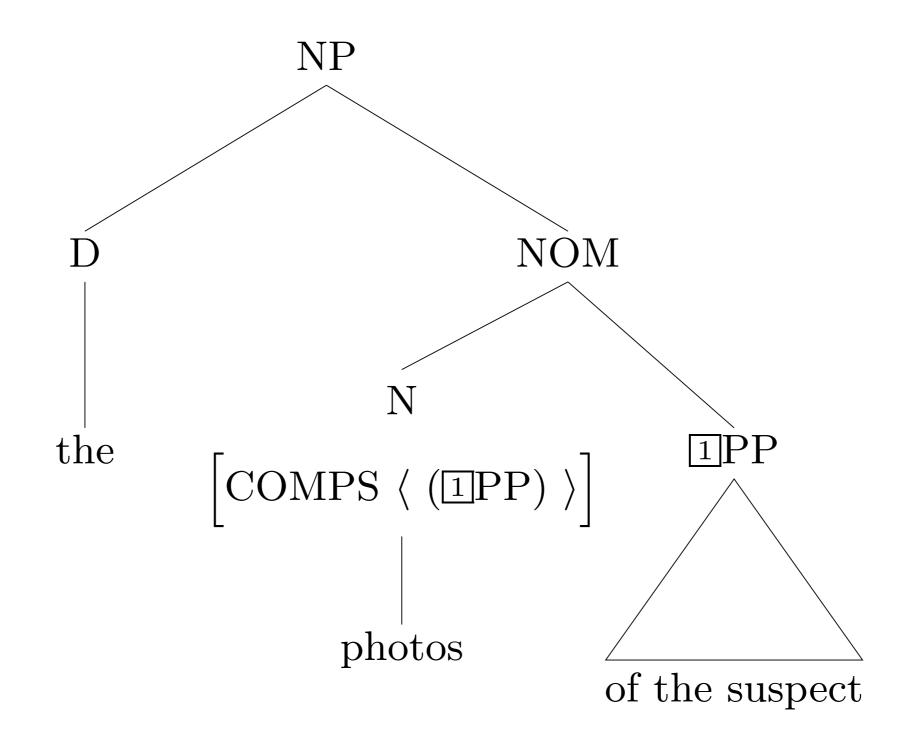
Tags & lists

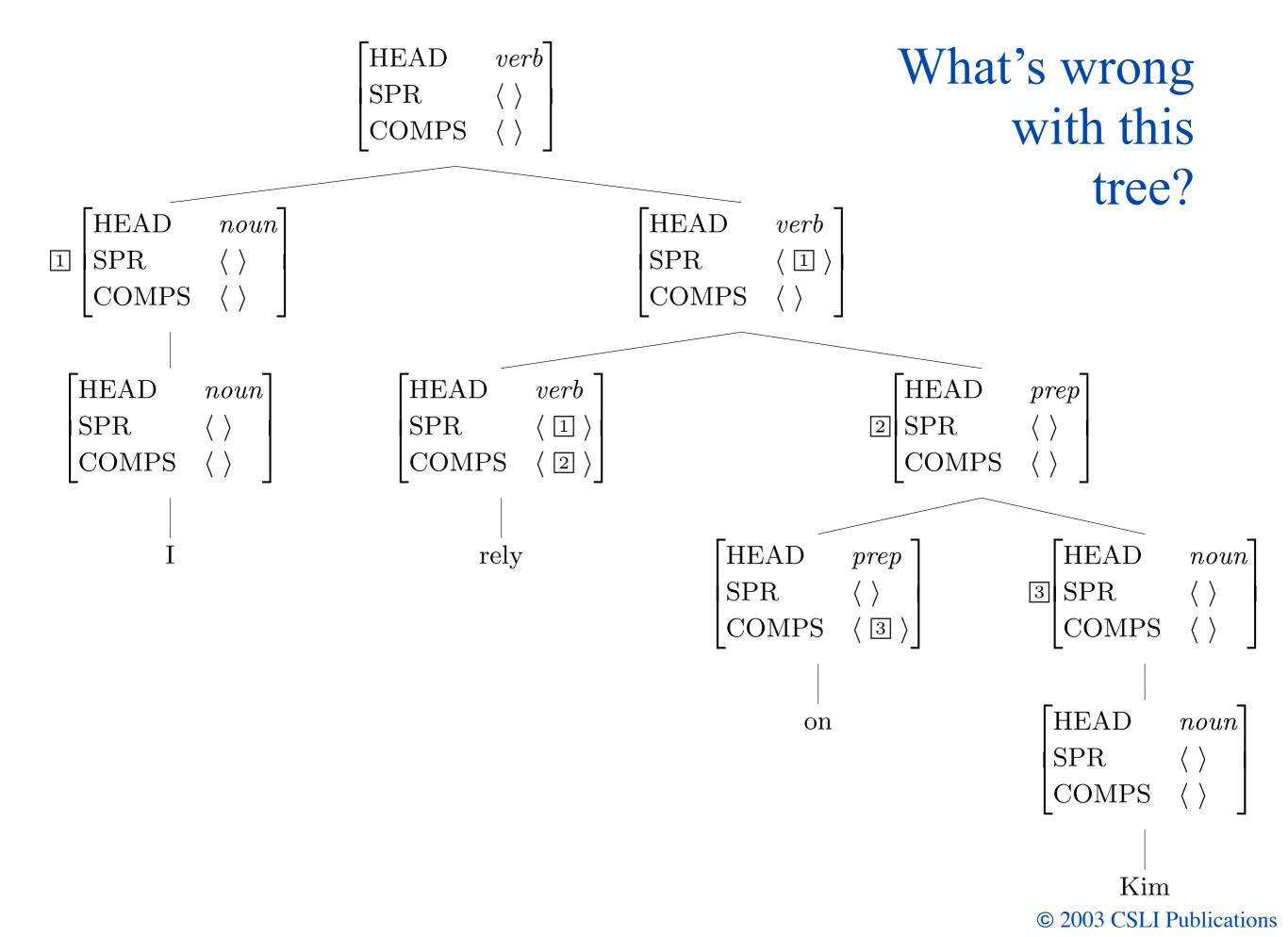
• What's the difference between these two?

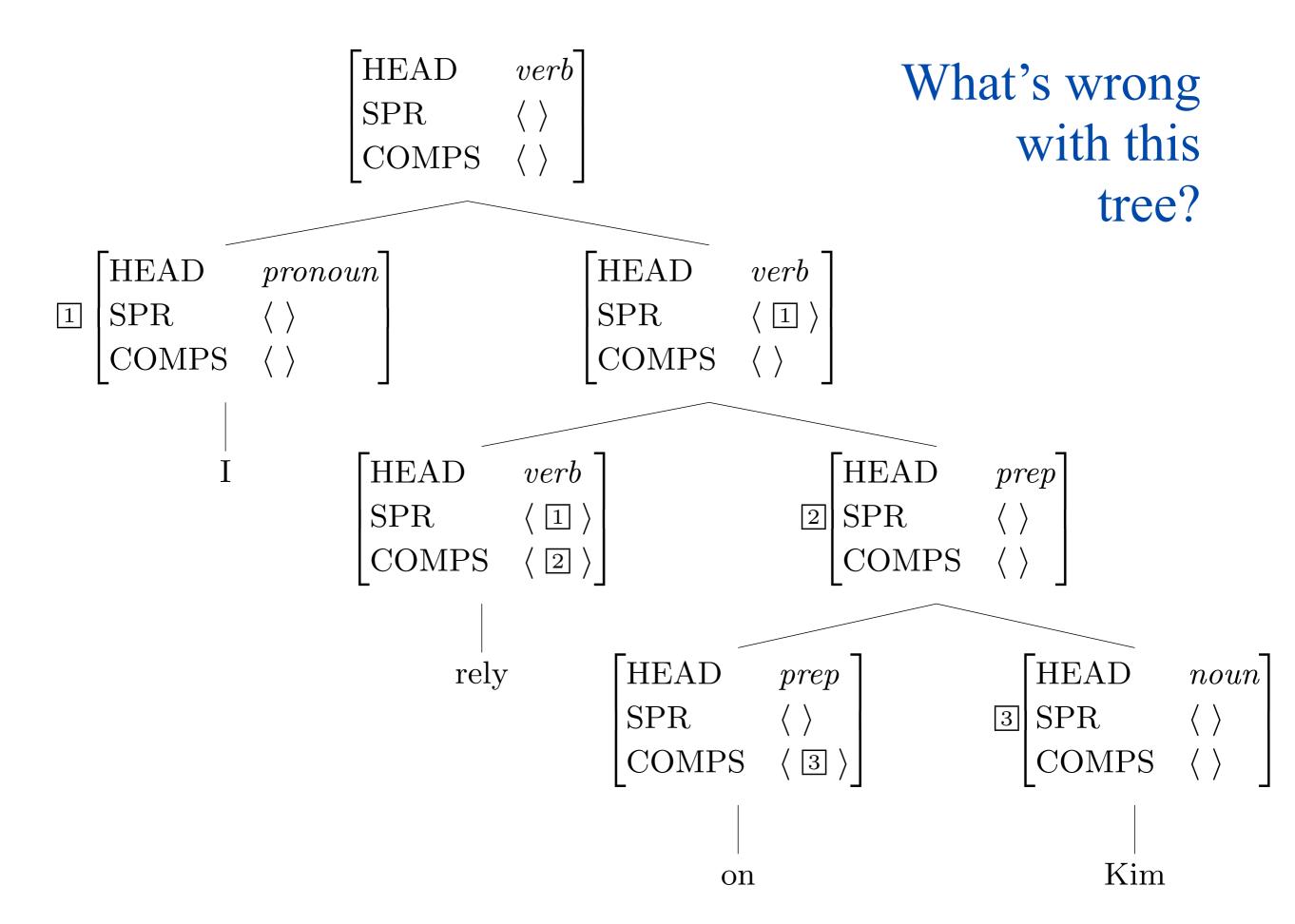
$$\begin{bmatrix} SPR & \mathbb{1}\langle NP \rangle \end{bmatrix}$$

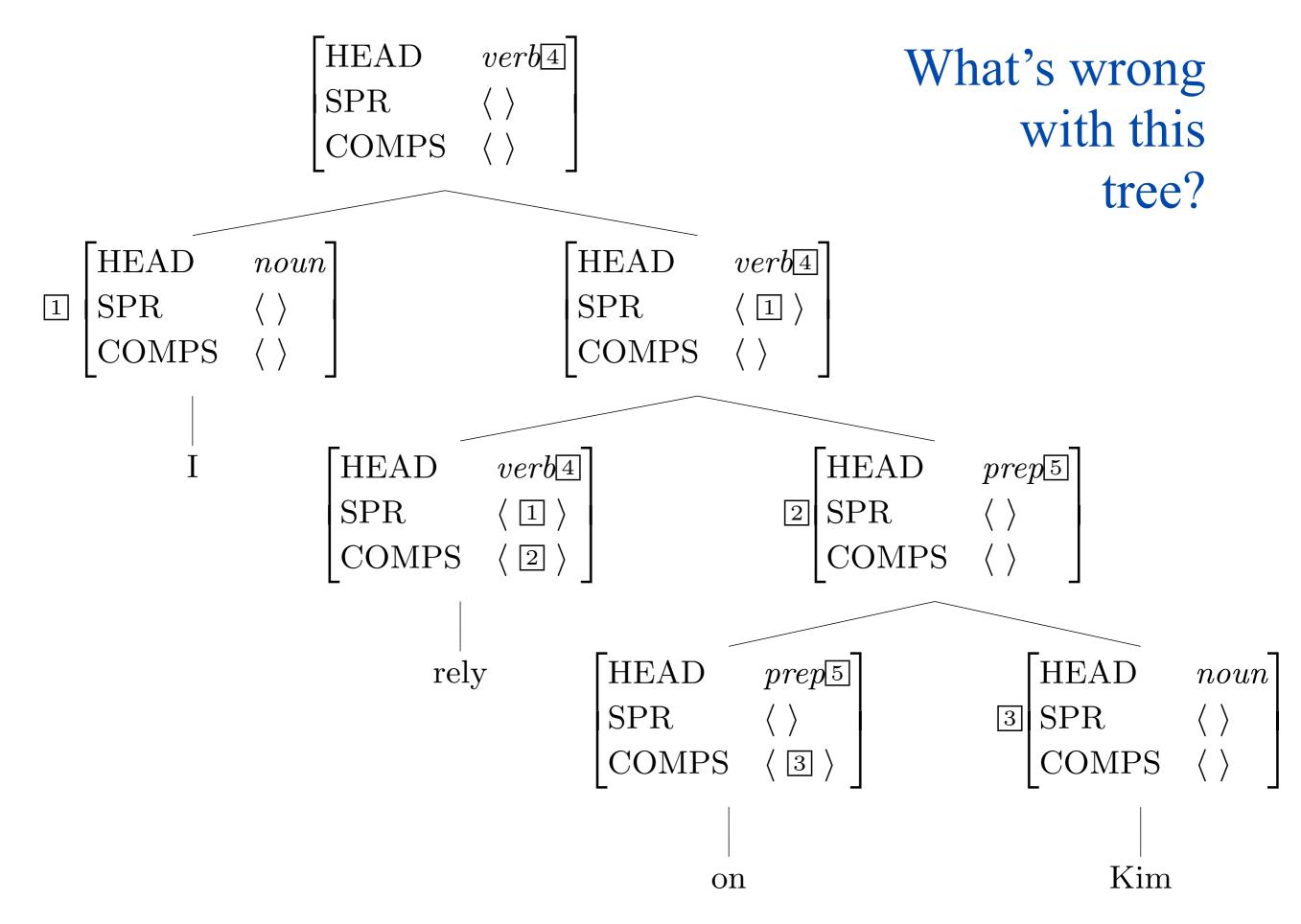
$$\begin{bmatrix} SPR & \langle \mathbb{1}NP \rangle \end{bmatrix}$$

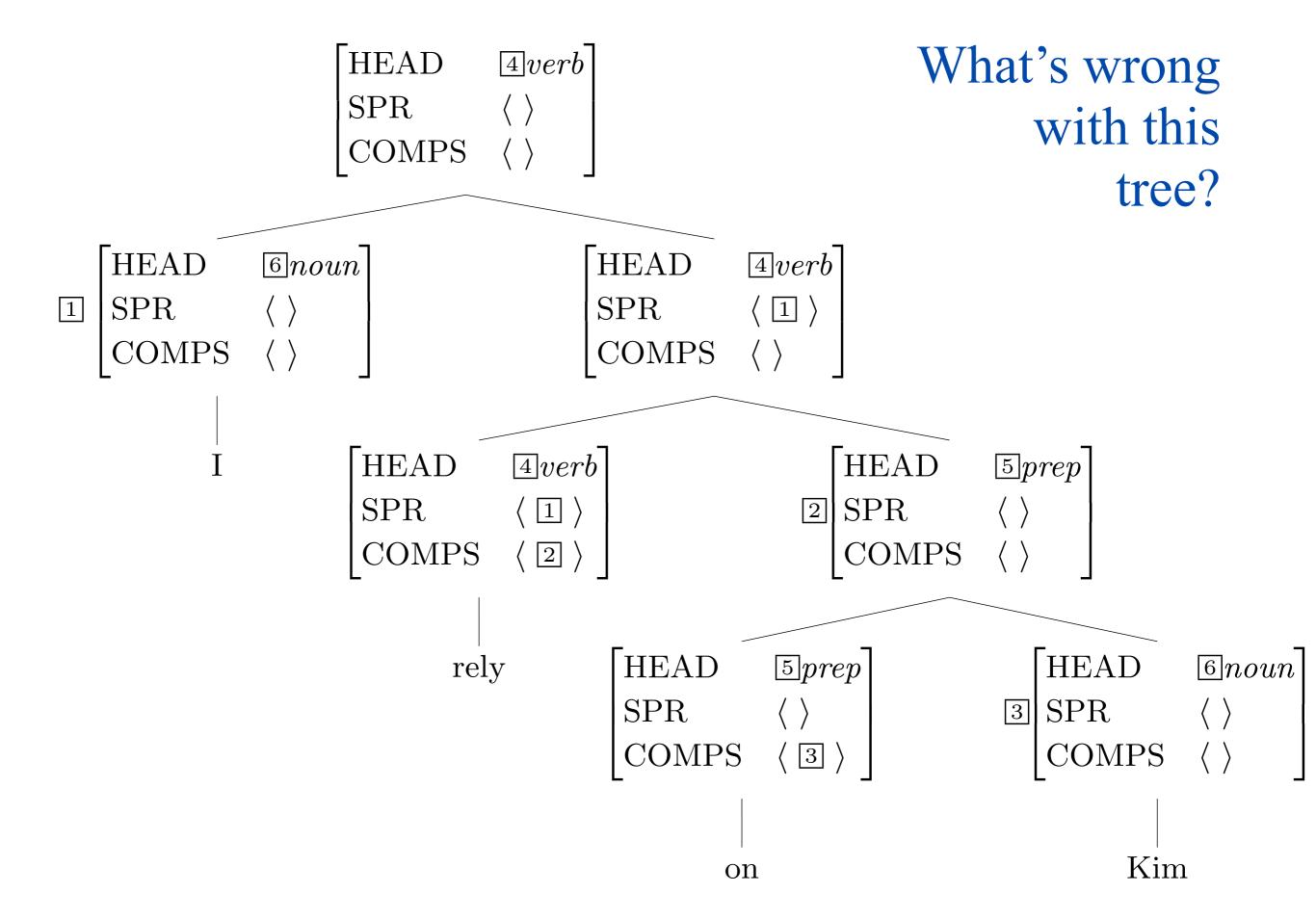
• When does it matter?

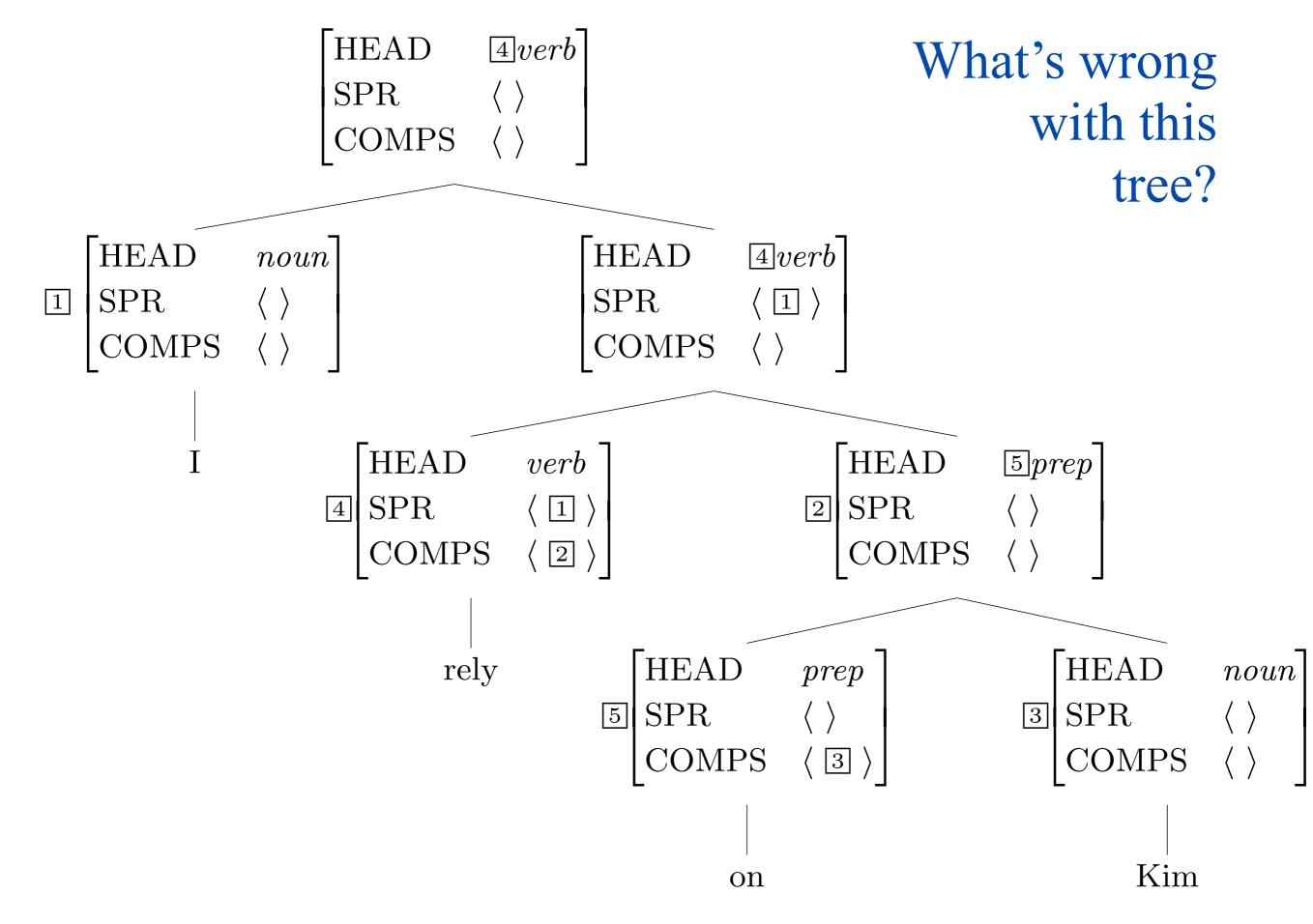










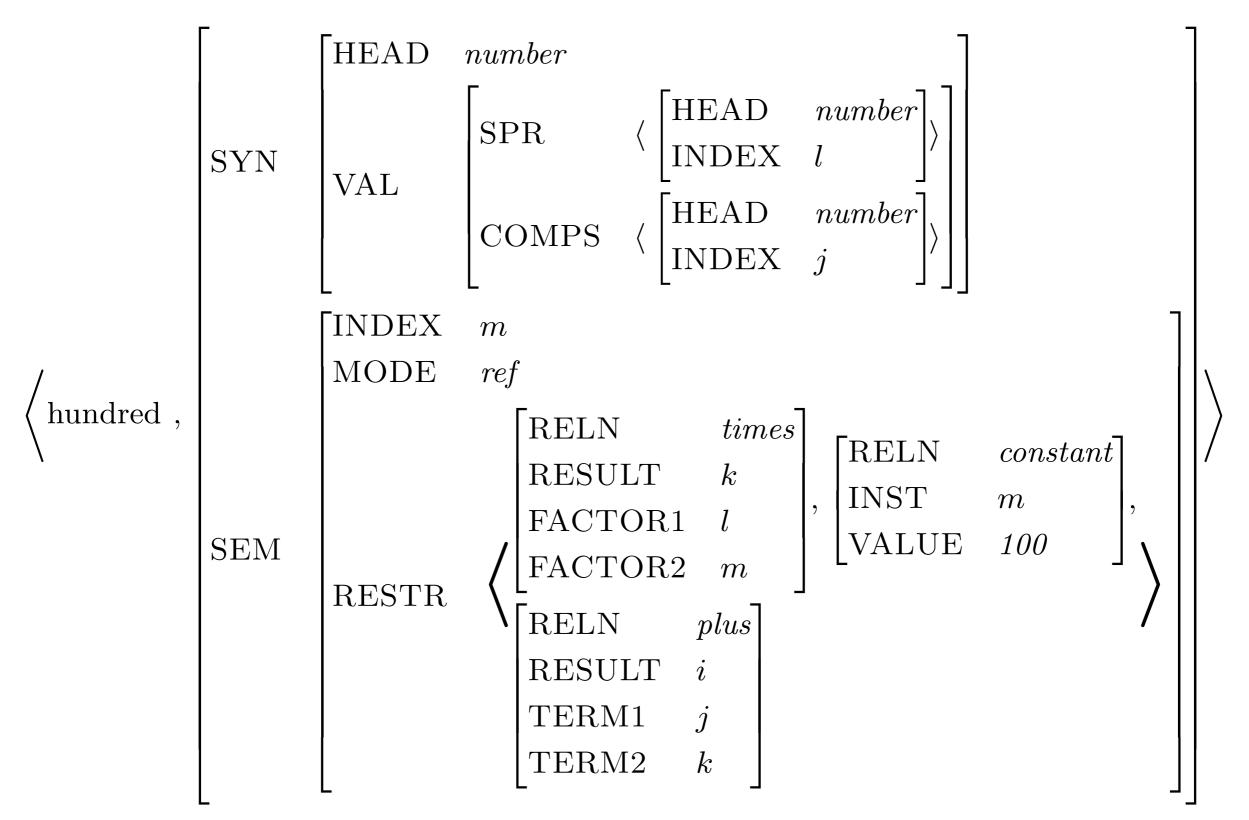


| | SYN | HEAD | number |
|---------------------------------------|-----|---------------|---|
| $\left\langle \text{hundred} \right.$ | | VAL | $\left\lceil 	ext{SPR} \left\langle \begin{bmatrix} 	ext{HEAD} & number \\ 	ext{INDEX} & j \end{bmatrix} ight angle ight ceil$ |
| | | | $\begin{bmatrix} \text{COMPS} & \langle \begin{bmatrix} \text{HEAD} & number \\ \text{INDEX} & k \end{bmatrix} \rangle \end{bmatrix}$ |
| | SEM | INDEX MODE | $m \\ ref$ |
| | | RESTR | $egin{array}{ c c c c } \hline RELN & hund-number \\ \hline MULTIPLIER & j \\ \hline ADDEND & k \\ \hline HUND-VALUE & m \\ \hline \end{array}$ |
| | | L | <u> </u> |

And this?

```
HEAD
                  number
                   SYN
             VAL
             INDEX
             MODE
                   ref
                     RELN
                              times
                                           constant
                                    RELN
hundred,
                     RESULT
                                    INST
                     FACTOR1
                                           100
       SEM
             RESTR
                             plus
                     RELN
                     RESULT
                     TERM1
                     TERM2
```

How about this?



Better version

| | SYN | HEAD | number |
|---------------------------------------|-----|---------------------------------|--|
| $\left\langle \text{hundred} \right.$ | | VAL | $\begin{bmatrix} \text{SPR} & \langle \begin{bmatrix} \text{HEAD} & number \\ \text{INDEX} & l \end{bmatrix} \rangle \end{bmatrix}$ |
| | | | $\begin{bmatrix} \text{COMPS} & \langle \begin{bmatrix} \text{HEAD} & number \\ \text{INDEX} & j \end{bmatrix} \rangle \end{bmatrix}$ |
| | | $\lceil \text{INDEX} i \rceil$ | |
| | | MODE ref | |
| | SEM | RESTR | $ \left\{ \begin{bmatrix} \text{RELN} & times \\ \text{RESULT} & k \\ \text{FACTOR1} & l \\ \text{FACTOR2} & m \end{bmatrix}, \begin{bmatrix} \text{RELN} & constant \\ \text{INST} & m \\ \text{VALUE} & 100 \end{bmatrix}, \\ \left\{ \begin{bmatrix} \text{RELN} & plus \\ \text{RESULT} & i \\ \text{TERM1} & j \\ \text{TERM2} & k \end{bmatrix} \right\} $ |

Type hierarchy analogies

- How is this formalism like OOP?
- How is it different?
- How is the type hierarchy like an ontology?
- How is it different?
- How is this formalism like the MP's formalism?
- How is it different?

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