Ling 566
Feb 13 2006

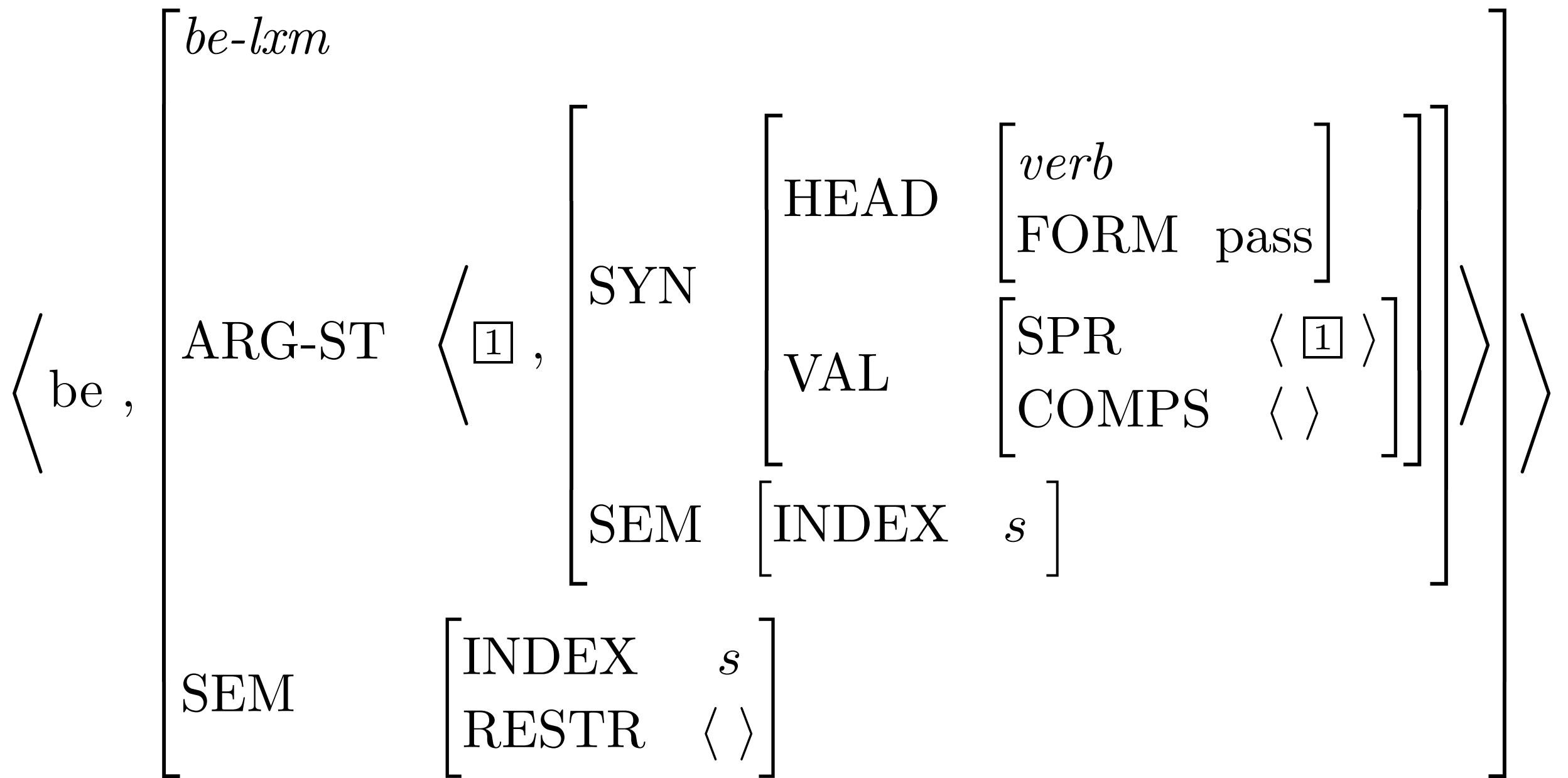Non-referential NPs, Expletives, and Extraposition

Overview

- Homework comments

- Existentials

- Extraposition

- Idioms

- Questions about midterm

Where We Are, and Where We're Going

- Last time, we met the passive *be*.

- Passive *be* is just a special case -- that *be* generally introduces [PRED **+**] constituents (next slide).

- Today, we'll start with another *be*, which occurs in existential sentences starting with *there*, e.g. *There is a monster in Loch Ness*.

- Then we'll look at this use of *there*.

- Which will lead us to a more general examination of NPs that don't refer, including some uses of *it* and certain idiomatic uses of NPs.

Chapter 10 entry for *be*

$$
\left\langle \text{be} ,\
\begin{bmatrix}
\textit{be-lxm} \\[4pt]
\text{ARG-ST} \quad \left\langle \boxed{1} ,\
\begin{bmatrix}
\text{SYN} \quad
\begin{bmatrix}
\text{HEAD} \quad
\begin{bmatrix}
\textit{verb} \\
\text{FORM} \quad \text{pass}
\end{bmatrix} \\[8pt]
\text{VAL} \quad
\begin{bmatrix}
\text{SPR} \quad \langle \boxed{1} \rangle \\
\text{COMPS} \quad \langle\ \rangle
\end{bmatrix}
\end{bmatrix} \\[18pt]
\text{SEM} \quad
\begin{bmatrix}
\text{INDEX} \quad s
\end{bmatrix}
\end{bmatrix}
\right\rangle \\[24pt]
\text{SEM} \quad
\begin{bmatrix}
\text{INDEX} \quad s \\
\text{RESTR} \quad \langle\ \rangle
\end{bmatrix}
\end{bmatrix}
\right\rangle
$$

Copula (generalized)

$$
\left\langle \text{be} \,,
\begin{bmatrix}
\textit{be-lxm} \\[2ex]
\text{ARG-ST} \quad \left\langle \boxed{1} \,,
\begin{bmatrix}
\text{SYN} \quad
\begin{bmatrix}
\text{HEAD} \quad \begin{bmatrix} \text{PRED} + \end{bmatrix} \\[2ex]
\text{VAL} \quad
\begin{bmatrix}
\text{SPR} \quad \langle \boxed{1} \rangle \\
\text{COMPS} \quad \langle \, \rangle
\end{bmatrix}
\end{bmatrix} \\[4ex]
\text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \end{bmatrix}
\end{bmatrix} \right\rangle \\[6ex]
\text{SEM} \quad
\begin{bmatrix}
\text{INDEX} \quad s \\
\text{RESTR} \quad \langle \, \rangle
\end{bmatrix}
\end{bmatrix}
\right\rangle
$$

Existentials

- The *be* in *There is a page missing* cannot be the same *be* that occurs in sentences like *Pat is tall* or *A cat was chased by a dog*. Why not?

- So we need a separate lexical entry for this *be*, stipulating:

  - Its SPR must be *there*

  - It takes two complements, the first an NP and the second an AP, PP, or (certain kind of) VP.

  - The semantics should capture the relation between, e.g. *There is a page missing* and *A page is missing*.

Lexical Entry for the Existential *be*

$$
\left\langle \text{be} , \begin{bmatrix} \textit{exist-be-lxm} \\[2ex] \text{ARG-ST} \quad \left\langle \begin{bmatrix} \text{NP} \\ \text{FORM} \quad \text{there} \end{bmatrix} , \boxed{2} , \begin{bmatrix} \text{PRED} & + \\[1ex] \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\, \boxed{2}\, \rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix} \\[2ex] \text{SEM} & [\text{INDEX} \;\; s\,] \end{bmatrix} \right\rangle \\[4ex] \text{SEM} \quad \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \langle\,\rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

Questions About the Existential *be*

- What type of constituent is the third argument?
- Why is the third argument [PRED **+**]?
- Why is the second argument tagged as identical to the SPR of the third argument?
- What is the contribution of this *be* to the semantics of the sentences it occurs in?
- Can all [PRED **+**] predicates appear as the third argument in existentials?
- How do we rule out **There was a greyhound a good runner*?

$$
\left\langle \text{be} , \begin{bmatrix} \textit{exist-be-lxm} \\[4pt] \text{ARG-ST} \quad \left\langle \begin{bmatrix} \text{NP} \\ \text{FORM} \quad \text{there} \end{bmatrix} , \boxed{2} , \begin{bmatrix} \text{PRED} \quad + \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \langle\, \boxed{2}\, \rangle \\ \text{COMPS} \quad \langle\,\rangle \end{bmatrix} \\ \text{SEM} \quad [\text{INDEX} \ s\,] \end{bmatrix} \right\rangle \\[8pt] \text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \\ \text{RESTR} \quad \langle\,\rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

The Entry for Existential *there*

$$\left\langle \text{there} \,,\, \begin{bmatrix} \textit{pron-lxm} \\[6pt] \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \text{FORM} \quad \text{there} \\ \text{AGR} \quad \begin{bmatrix} \text{PER} \quad \text{3rd} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\[18pt] \text{SEM} \quad \begin{bmatrix} \text{MODE} \quad \text{none} \\ \text{INDEX} \quad \text{none} \\ \text{RESTR} \quad \langle \, \rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

Questions About Existential *there*

- Why do we call it a pronoun?

- Why don't we give it a value for NUM?

- What does this entry claim is *there*'s contribution to the semantics of the sentences it appears in?
  Is this a correct claim?

$$
\left\langle \text{there} , \begin{bmatrix} \textit{pron-lxm} \\ \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \text{FORM} \quad \text{there} \\ \text{AGR} \quad \begin{bmatrix} \text{PER} \quad \text{3rd} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\ \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} \quad \text{none} \\ \text{INDEX} \quad \text{none} \\ \text{RESTR} \quad \langle\,\rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

Other NPs that don't seem to refer

- *It sucks that the Giants lost the series.*

- *It is raining.*

- *Andy took advantage of the opportunity.*

- *Lou kicked the bucket.*

What we need to deal with examples like *It follows that you are wrong*

- A lexical entry for this dummy *it*

- An analysis of this use of *that*

- Entries for verbs that take clausal subjects (as in *That you are wrong follows*)

- A rule to account for the relationship between pairs like *That you are wrong follows* and *It follows that you are wrong*

The Entry for Dummy *it*

$$
\left\langle \text{it,} \begin{bmatrix} \textit{pron-lxm} \\ \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{FORM} & \text{it} \\ \text{AGR} & \textit{3sing} \end{bmatrix} \end{bmatrix} \\ \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & \text{none} \\ \text{RESTR} & \langle \ \rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

Questions About Dummy *it*

- How does it differ from the entry for dummy *there*? Why do they differ in this way?

- Is this the only entry for *it*?

$$
\left\langle \text{it,} \begin{bmatrix} \textit{pron-lxm} \\ \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \text{FORM} & \text{it} \\ \text{AGR} & \textit{3sing} \end{bmatrix} \end{bmatrix} \\ \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & \text{none} \\ \text{RESTR} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

A New Type of Lexeme: Complementizers

$$
\textit{comp-lxm} : \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{comp} \\ \text{AGR} & \textit{3sing} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{bmatrix} \text{S} \\ \text{INDEX} & s \end{bmatrix} \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \langle \ \rangle \end{bmatrix} \end{bmatrix}
$$

Questions About the Type *comp-lxm*

- Why does it stipulate values for both SPR and ARG-ST?

- Why is its INDEX value the same as its argument's?

- What is its semantic contribution?

$$comp\text{-}lxm : \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} comp \\ \text{AGR} & 3sing \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{matrix} \text{S} \\ \begin{bmatrix} \text{INDEX} & s \end{bmatrix} \end{matrix} \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \langle\,\rangle \end{bmatrix} \end{bmatrix}$$

The Type *comp*

pos

$$\Big[\text{FORM, PRED}\Big]$$

agr-pos

$$\Big[\text{AGR}\Big]$$

adj *prep* *adv* *conj*

verb

$$\Big[\text{AUX}\Big]$$

nominal

$$\Big[\text{CASE}\Big]$$

det

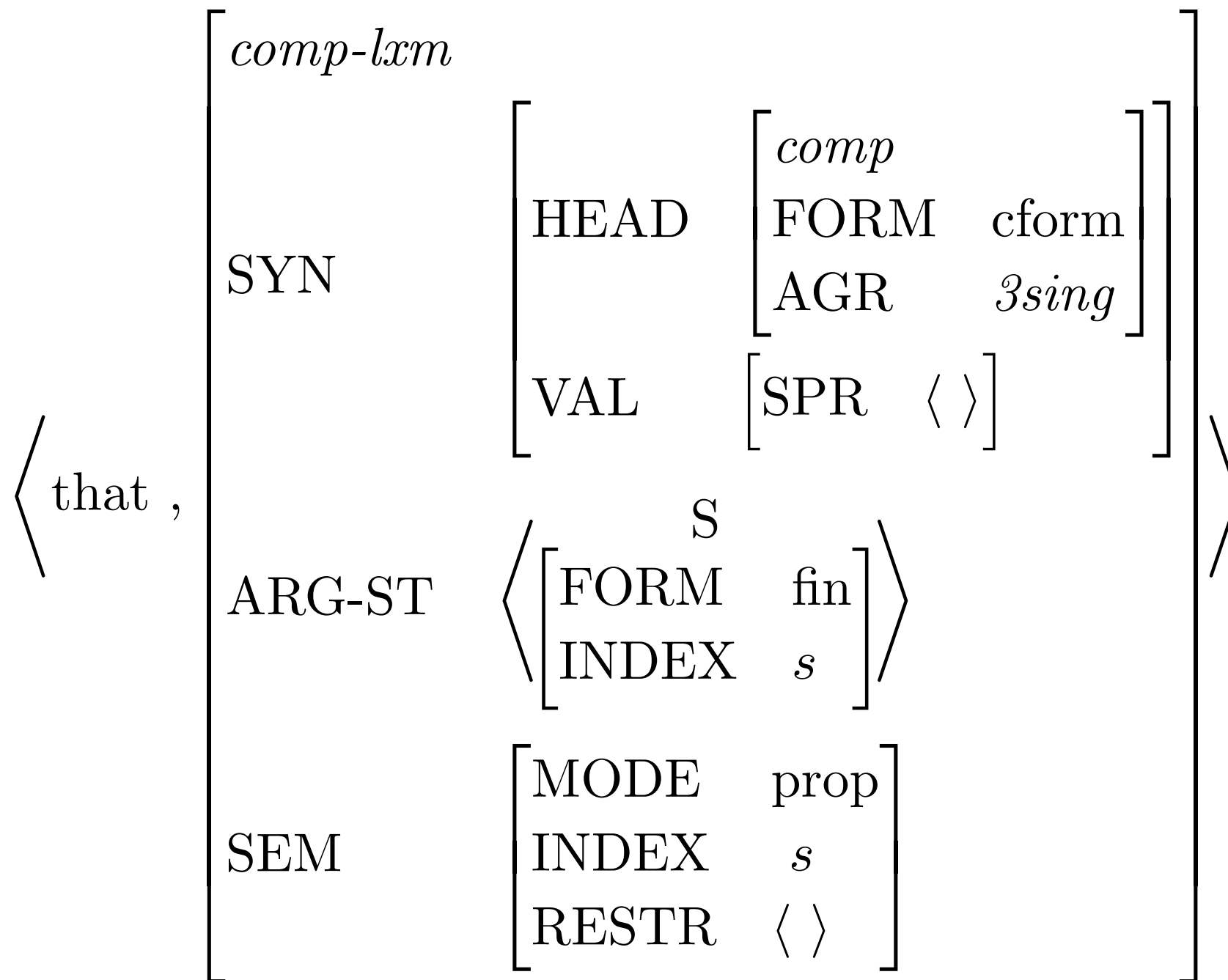$$\Big[\text{COUNT}\Big]$$

noun *comp*

$$\Big[\text{FORM cform}\Big]$$

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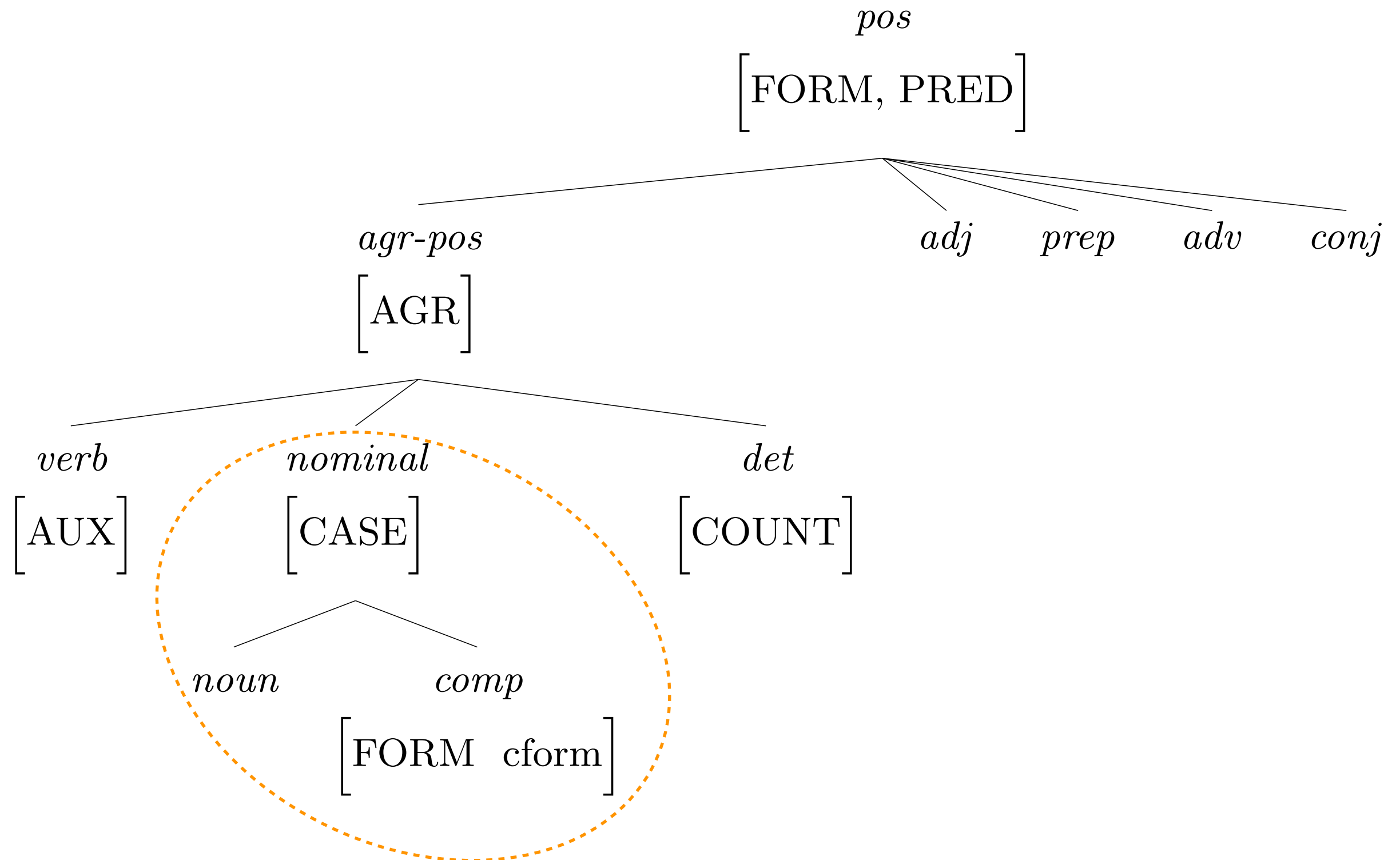
The Lexical Entry for Complementizer *that*

$$\left\langle \text{that} , \begin{bmatrix} \textit{comp-lxm} \\ \text{ARG-ST} & \left\langle \begin{bmatrix} \text{FORM fin} \end{bmatrix} \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{MODE prop} \end{bmatrix} \end{bmatrix} \right\rangle$$

…and with inherited information filled in

$$
\left\langle \text{that} , \begin{bmatrix} \textit{comp-lxm} \\ \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \textit{comp} \\ \text{FORM} \quad \text{cform} \\ \text{AGR} \quad \textit{3sing} \end{bmatrix} \\ \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \\ \text{ARG-ST} \quad \left\langle \begin{bmatrix} \text{S} \\ \text{FORM} \quad \text{fin} \\ \text{INDEX} \quad s \end{bmatrix} \right\rangle \\ \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} \quad \text{prop} \\ \text{INDEX} \quad s \\ \text{RESTR} \quad \langle\,\rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

Question: Where did [FORM cform] come from?

Structure of a Complementizer Phrase

CP

$$\begin{bmatrix} \text{HEAD} & \boxed{2} \\ \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \, \rangle \\ \text{COMPS} & \langle \, \rangle \end{bmatrix} \end{bmatrix}$$

C

$$\begin{bmatrix} word \\ \\ \text{HEAD} & \boxed{2} \begin{bmatrix} comp \\ \text{FORM} & \text{cform} \end{bmatrix} \\ \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \, \rangle \\ \text{COMPS} & \langle \, \boxed{1} \, \rangle \end{bmatrix} \end{bmatrix}$$

$\boxed{1}$S

that

the Giants lost

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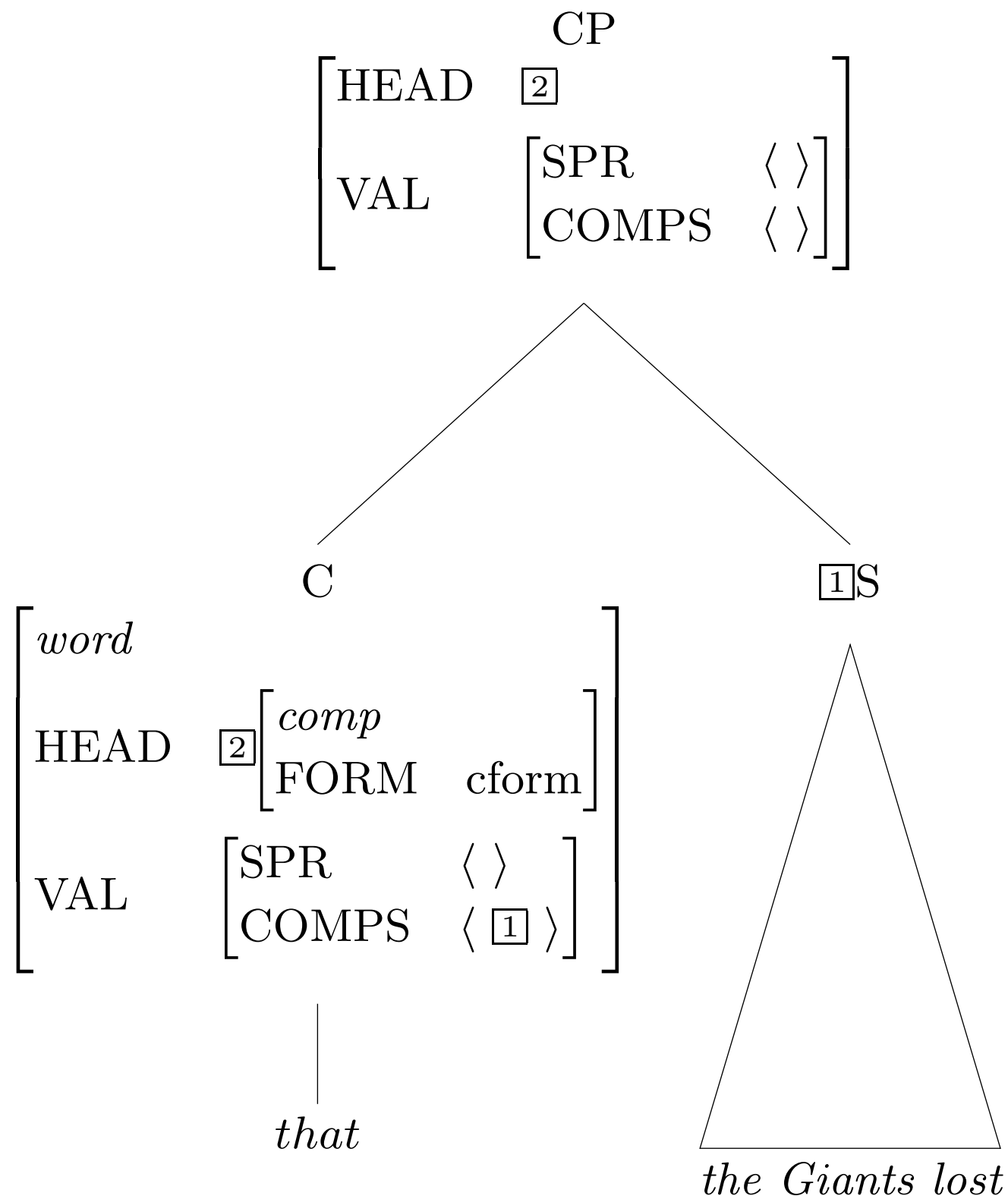
Sample Verb with a CP Subject

$$
\left\langle \text{matter} , \begin{bmatrix} siv\text{-}lxm \\ \text{ARG-ST} \quad \left\langle \begin{bmatrix} \text{SEM } [\text{INDEX} \quad \boxed{1}] \end{bmatrix} \right\rangle \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \\ \text{RESTR} \quad \left\langle \begin{bmatrix} \text{RELN} & \textbf{matter} \\ \text{SIT} & s \\ \text{MATTERING} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle
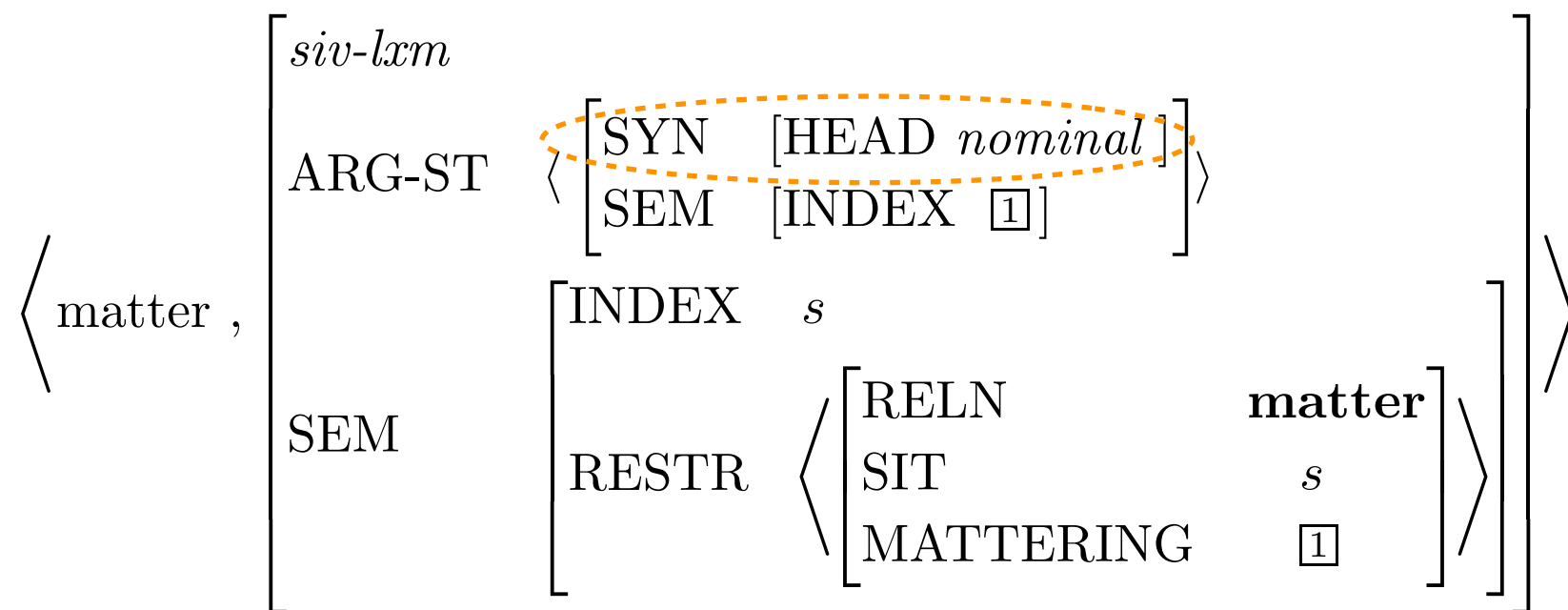$$
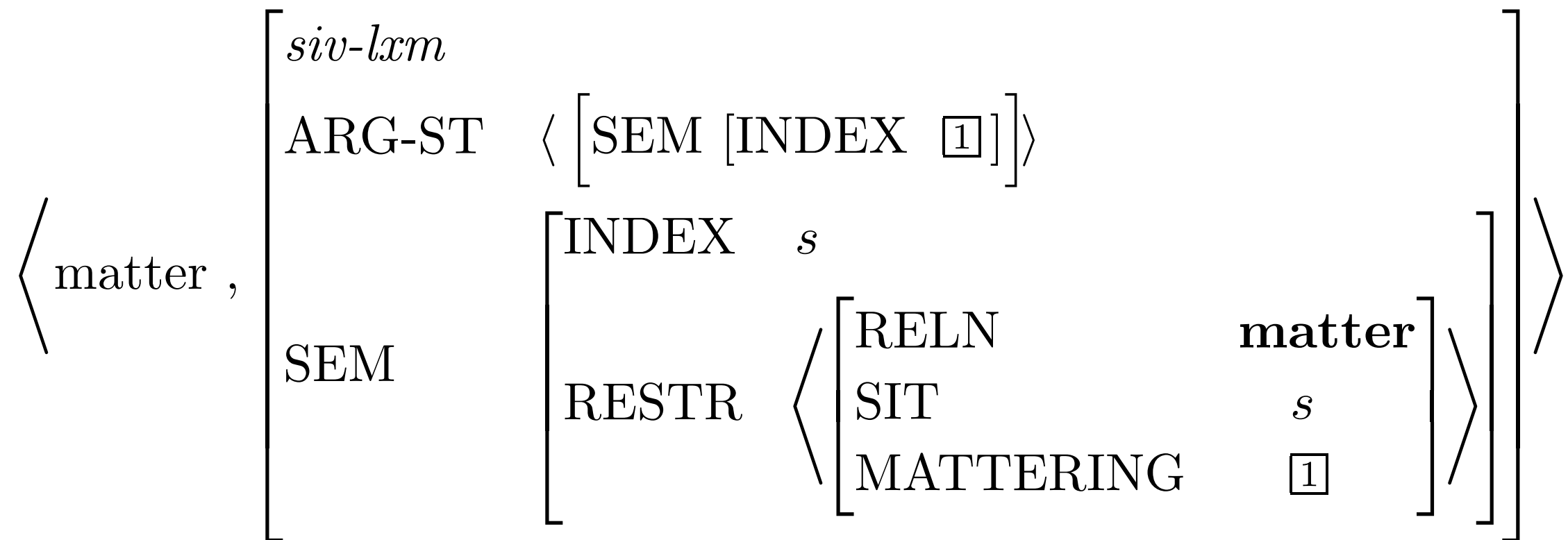
Note: the only constraint on the first argument is semantic

A Problem

- We constrained the subject of *matter* only semantically. However...
  - CP and S are semantically identical, but we get:

    That Bush won matters vs. **Bush won matters*

  - Argument-marking PPs are semantically identical to their object NPs, but we get:

    The election mattered vs. **Of the election mattered*

- So we need to add a syntactic constraint.

$$\left\langle \text{matter} \, , \begin{bmatrix} \textit{siv-lxm} \\[2pt] \text{ARG-ST} \quad \left\langle \begin{bmatrix} \text{SYN} & [\text{HEAD } \textit{nominal}] \\ \text{SEM} & [\text{INDEX } \boxed{1}] \end{bmatrix} \right\rangle \\[10pt] \text{SEM} \quad \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{matter} \\ \text{SIT} & s \\ \text{MATTERING} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

- S and PP subjects are generally impossible, so this constraint should probably be on *verb-lxm*.

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The Extraposition Lexical Rule

$$
\begin{bmatrix}
\textit{pi-rule} \\[2ex]
\text{INPUT} \quad \left\langle \text{X}, \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{SPR} & \langle\, \boxed{2}\text{CP}\, \rangle \\ \text{COMPS} & \boxed{A} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \\[4ex]
\text{OUTPUT} \quad \left\langle \text{Y}, \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{SPR} & \langle\, \text{NP[FORM it]}\, \rangle \\ \text{COMPS} & \boxed{A} \oplus \langle \boxed{2} \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle
\end{bmatrix}
$$

- Why is the type *pi-rule*?

- Why doesn't it say anything about the semantics?

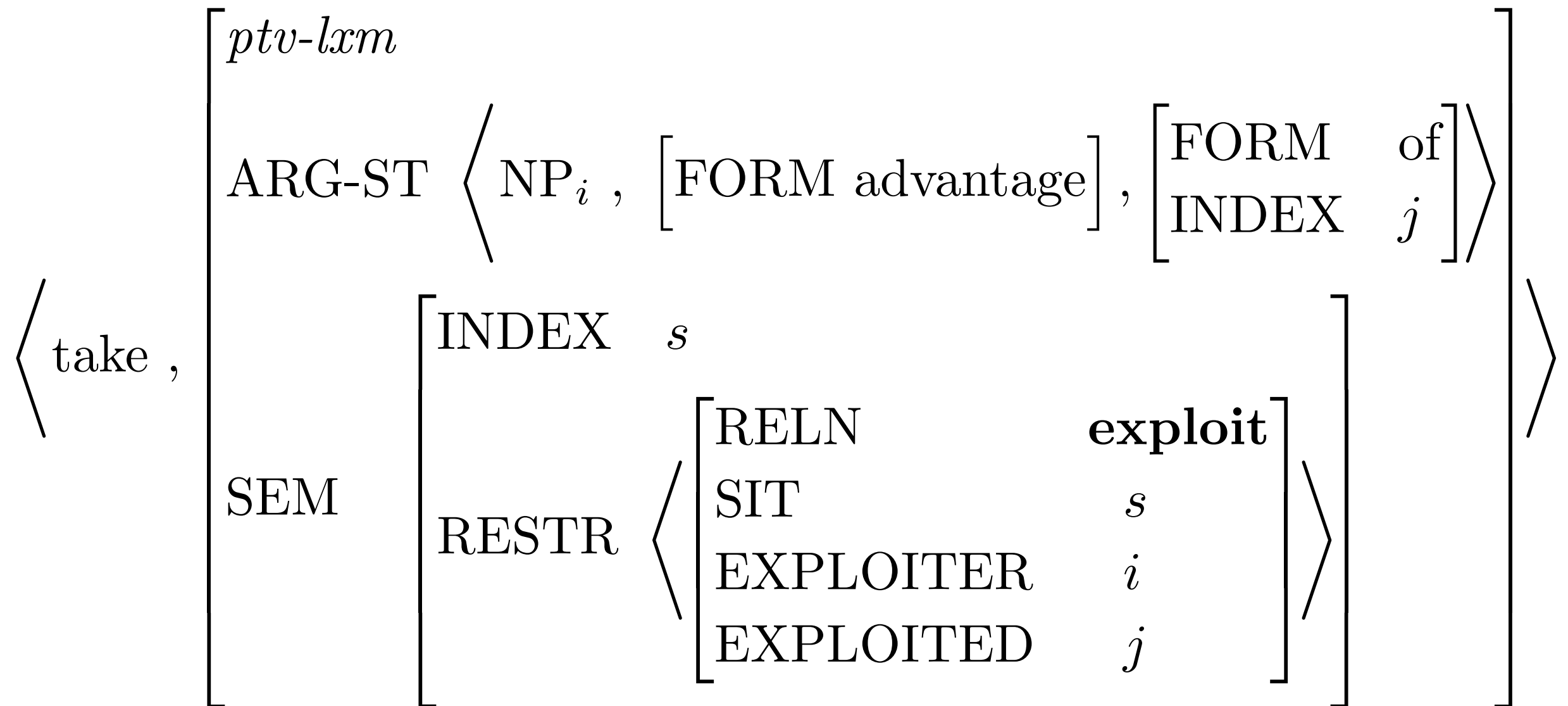- Why is the COMPS value $\boxed{A}$, not < >?

Extraposition with Verbs whose COMPS Lists are Nonempty

- *It worries <u>me</u> that war is imminent.*

- *It occurred <u>to Pat</u> that Chris knew the answer.*

- *It endeared <u>you</u> <u>to Andy</u> that you wore a funny hat.*

Another Nonreferential Noun

$$
\left\langle \text{advantage} , \begin{bmatrix} \textit{massn-lxm} \\ \\ \text{SYN} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \text{FORM} & \text{advantage} \\ \text{AGR} & \textit{3sing} \end{bmatrix} \end{bmatrix} \\ \\ \text{SEM} \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & \text{none} \\ \text{RESTR} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

The Verb that Selects *advantage*

$$
\left\langle \text{take} , \begin{bmatrix} \textit{ptv-lxm} \\[2pt] \text{ARG-ST} \left\langle \text{NP}_i , \begin{bmatrix} \text{FORM advantage} \end{bmatrix} , \begin{bmatrix} \text{FORM} & \text{of} \\ \text{INDEX} & j \end{bmatrix} \right\rangle \\[10pt] \text{SEM} \begin{bmatrix} \text{INDEX} & s \\[4pt] \text{RESTR} \left\langle \begin{bmatrix} \text{RELN} & \textbf{exploit} \\ \text{SIT} & s \\ \text{EXPLOITER} & i \\ \text{EXPLOITED} & j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle
$$

Our analyses of idioms and passives interact...

- We generate

  Advantage was taken of the situation by many people.
  Tabs are kept on foreign students.

- But not:

  Many people were taken advantage of.

- That would require another lexical entry, in which *take advantage of* is a transitive verb (with spaces in its written form).

Overview

- Homework comments

- Existentials (*there, be*)

- Extraposition (*that, it, LR*)

- Idioms

- Questions about midterm