Ling 566
Nov 16, 2009

Non-referential NPs, Expletives, and Extraposition

Overview

- Existentials
- Extraposition
- Idioms

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*

$$\left\langle \text{be} , \left[\begin{array}{l} \textit{be-lxm} \\ \\ \text{ARG-ST} \left\langle \boxed{1} , \left[\begin{array}{l} \text{SYN} \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} & \\ \text{FORM} & \text{pass} \end{array} \right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \left\langle \, \right\rangle \end{array} \right] \end{array} \right] \\ \text{SEM} \left[\text{INDEX} \quad s \right] \end{array} \right] \right\rangle \\ \\ \text{SEM} \left[\begin{array}{ll} \text{INDEX} & s \\ \text{RESTR} & \left\langle \, \right\rangle \end{array} \right] \end{array} \right] \right\rangle$$

Copula (generalized)

$$\left\langle \text{be} , \left[\begin{array}{l} \textit{be-lxm} \\ \\ \text{ARG-ST} \quad \left\langle \boxed{1} , \left[\begin{array}{l} \text{SYN} \quad \left[\begin{array}{ll} \text{HEAD} & \left[\text{PRED} + \right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\, \rangle \end{array} \right] \end{array} \right] \\ \text{SEM} \quad \left[\text{INDEX} \quad s\right] \end{array} \right] \right\rangle \\ \\ \text{SEM} \quad \left[\begin{array}{ll} \text{INDEX} & s \\ \text{RESTR} & \langle\, \rangle \end{array} \right] \end{array} \right] \right\rangle$$

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*

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

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*?

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

The Entry for Existential *there*

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

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?

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

Other NPs that don't seem to refer

- *It sucks that the Rockies 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*

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

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*?

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

A New Type of Lexeme: Complementizers

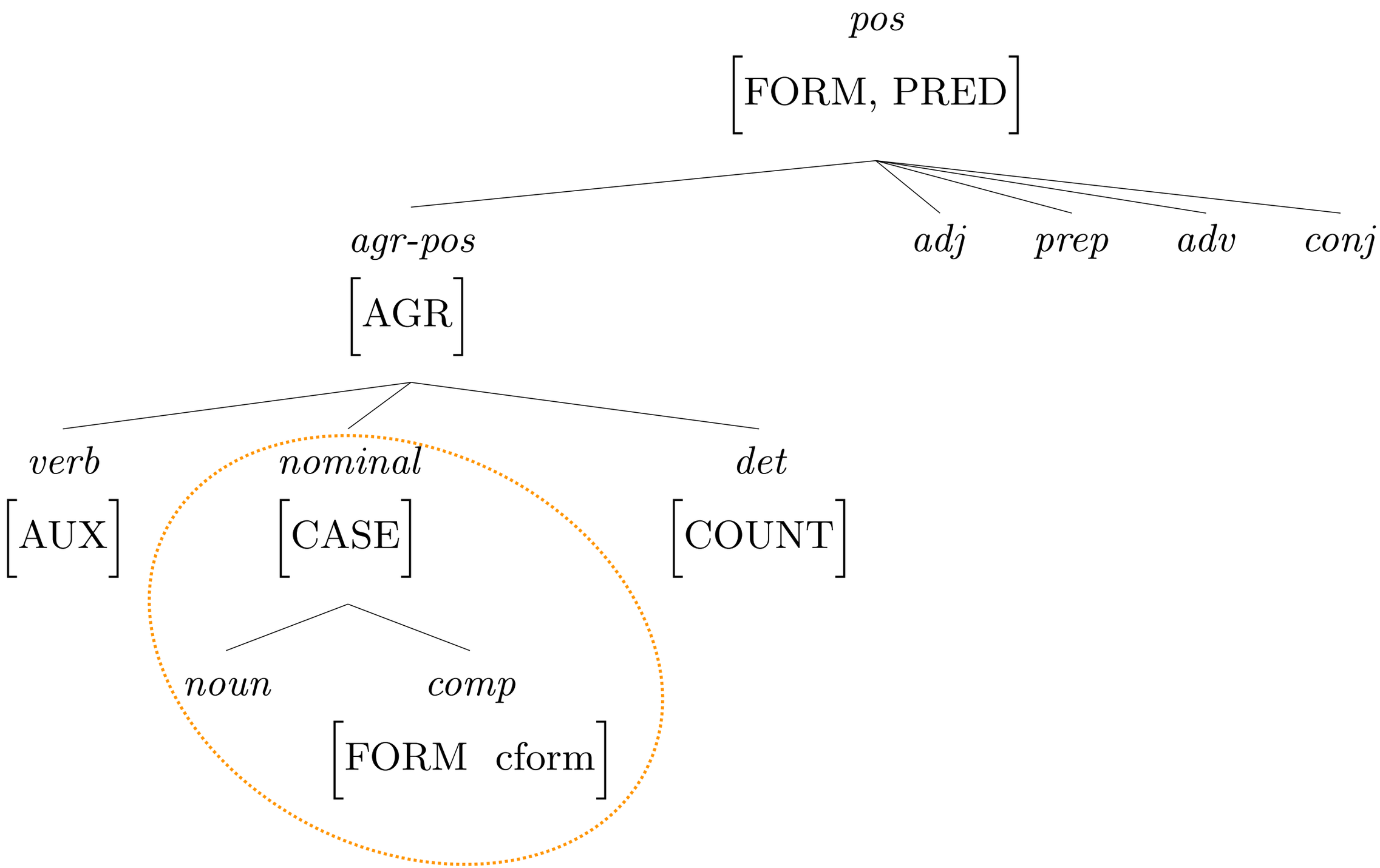
$$comp\text{-}lxm : \left[\begin{array}{ll} \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} comp & \\ \text{AGR} & 3sing \end{array}\right] \\ \text{VAL} & \left[\text{SPR} \quad \langle\ \rangle\right] \end{array}\right] \\ \text{ARG-ST} & \left\langle \left[\begin{array}{c} \text{S} \\ \text{INDEX} \quad s \end{array}\right] \right\rangle \\ \text{SEM} & \left[\begin{array}{ll} \text{INDEX} & s \\ \text{RESTR} & \langle\ \rangle \end{array}\right] \end{array}\right]$$

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?

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

The Type *comp*



The Lexical Entry for Complementizer *that*

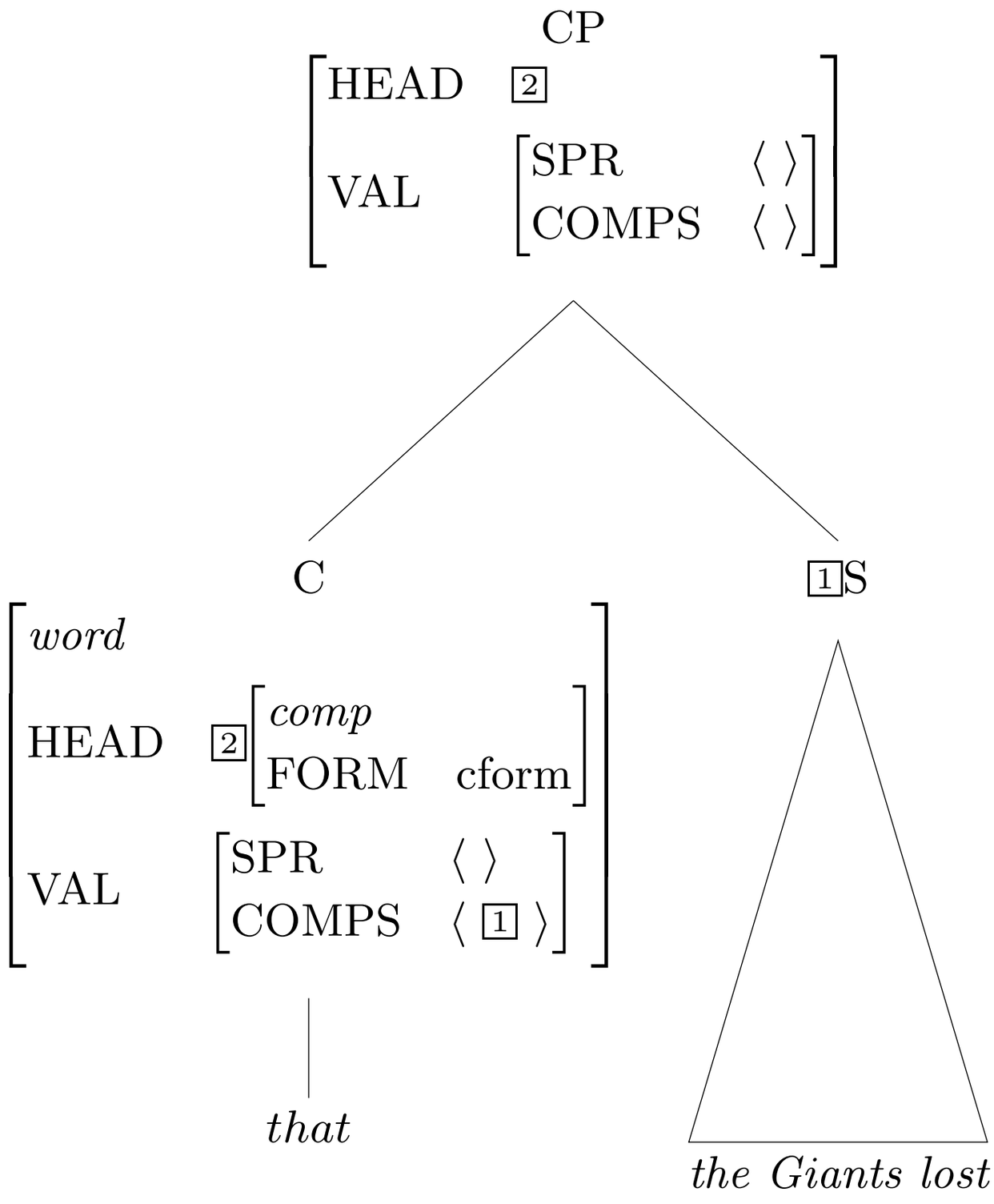
$$\left\langle \text{that} \ , \begin{bmatrix} \textit{comp-lxm} & \\ \text{ARG-ST} & \left\langle \left[\text{FORM fin}\right] \right\rangle \\ \text{SEM} & \left[\text{MODE prop}\right] \end{bmatrix} \right\rangle$$

…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



Sample Verb with a CP Subject

$$\left\langle \text{matter} , \left[\begin{array}{ll} \textit{siv-lxm} & \\ \text{ARG-ST} & \left\langle \left[\text{SEM } [\text{INDEX } \boxed{1}] \right] \right\rangle \\ \text{SEM} & \left[\begin{array}{ll} \text{INDEX} & s \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \textbf{matter} \\ \text{SIT} & s \\ \text{MATTERING} & \boxed{1} \end{array} \right] \right\rangle \end{array} \right] \end{array} \right] \right\rangle$$

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.

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

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

The Extraposition Lexical Rule

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

- Why is the type *pi-rule*?
- Why doesn't it say anything about the semantics?
- Why is the COMPS value $\boxed{\text{A}}$, not < >?

Extraposition with Verbs whose COMPS Lists are Nonempty

- *It worries me that war is imminent.*
- *It occurred to Pat that Chris knew the answer.*
- *It endeared you to Andy that you wore a funny hat.*

Another Nonreferential Noun

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

The Verb that Selects *advantage*

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

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.

- Why not?

Overview

- Existentials (*there*, *be*)
- Extraposition (*that*, *it*, *LR*)
- Idioms