Ling 566
Nov 9, 2017

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*

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

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?

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

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*?

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

A New Type of Lexeme: Complementizers

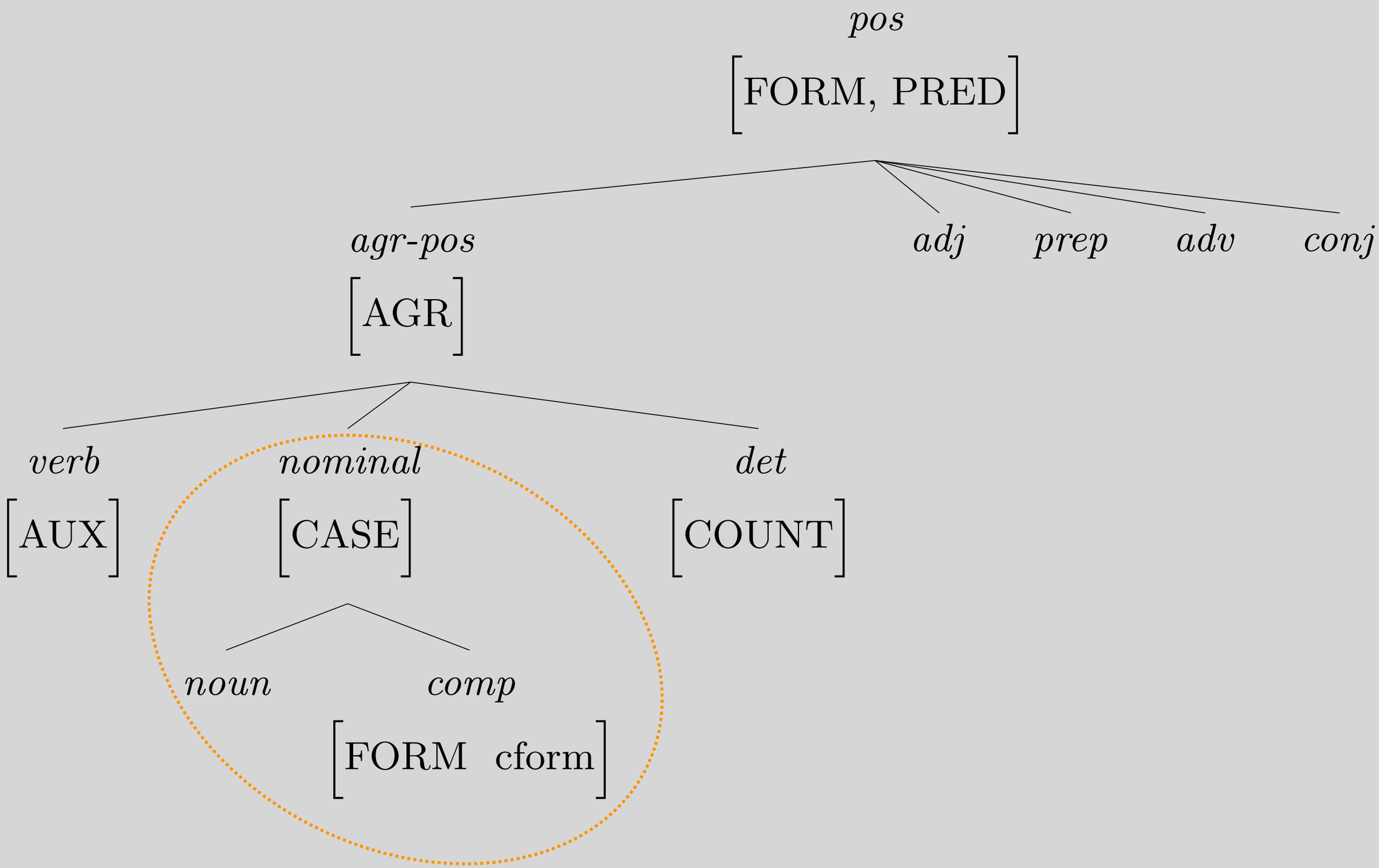
$$comp\text{-}lxm : \left[\begin{array}{ll} \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} comp & \\ \text{AGR} & 3sing \end{array}\right] \\ \text{VAL} & \left[\text{SPR} \quad \langle\ \rangle\right] \end{array}\right] \\ \text{ARG-ST} & \left\langle \left[\begin{array}{c}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

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?

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

The Type *comp*



The Lexical Entry for Complementizer *that*

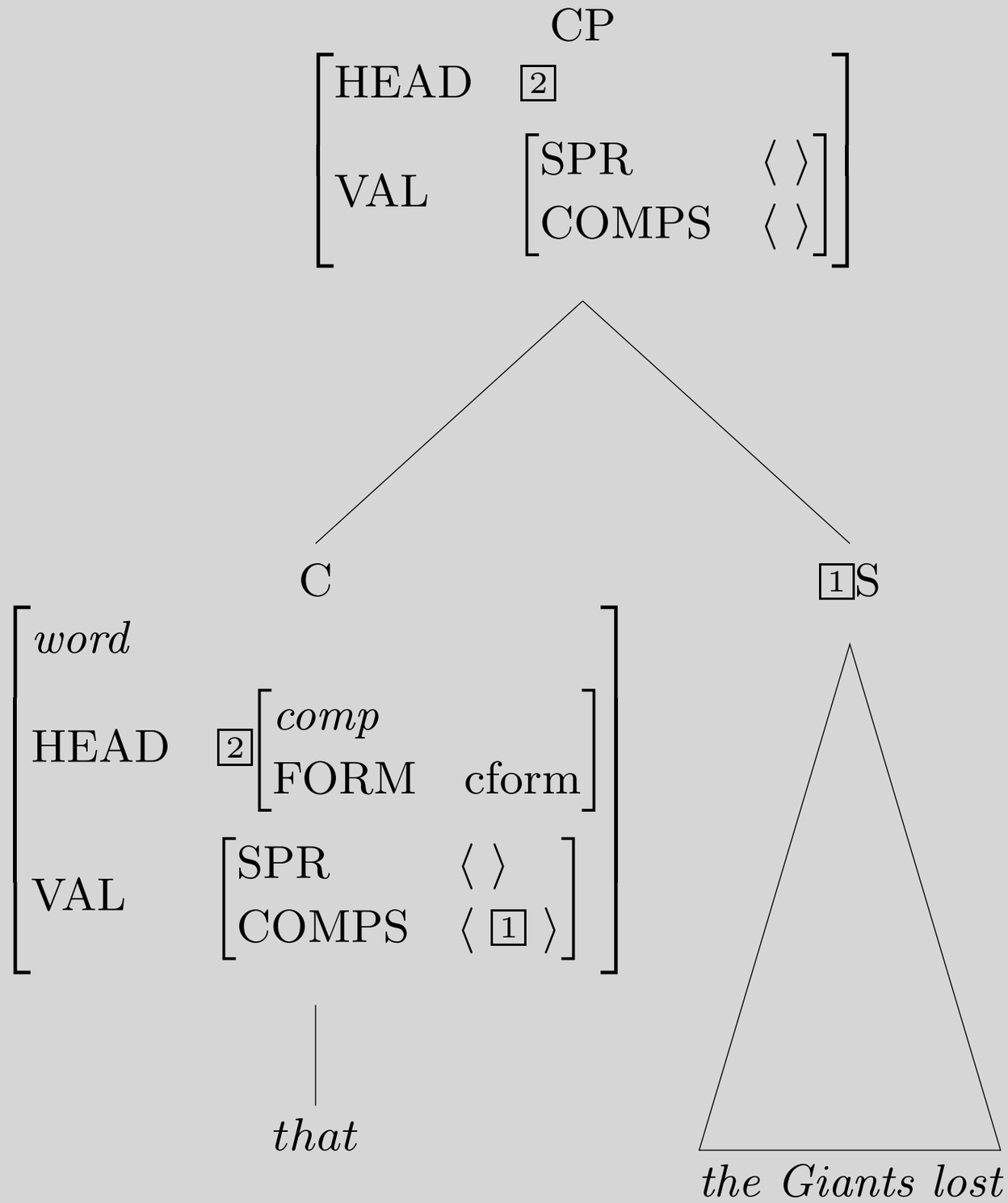
$$\left\langle \text{that} \ , \begin{bmatrix} \textit{comp-lxm} & \\ \text{ARG-ST} & \left\langle \left[\text{FORM fin}\right] \right\rangle \\ \text{SEM} & \left[\text{MODE prop}\right] \end{bmatrix} \right\rangle$$

…and with inherited information filled in

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

Question: Where did [FORM cform] come from?

Structure of a Complementizer Phrase



Sample Verb with a CP Subject

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

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 on INPUT $\boxed{\text{A}}$, 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

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

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 online activists.

- But not:

  Many people were taken advantage of.

- Why not?

Overview

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

Reading Questions

- What about *Yes, Virginia, there is a Santa Claus*?
- We've generalized the second ARG-ST element of *tv-lxm* to be [HEAD nominal], but then said that not all transitive verbs take CP complements. Why isn't this constraint marked as defeasible?
- How do we handle predicative NPs? (ex: *Kim is a doctor; That is Kim; This is she*.)

Reading Questions

- The Extraposition LR creates new words from any word whose first argument is a CP. So for the sentence, *That dogs bark annoys people*, would the word in the input of the rule be *annoys* because its SPR is a CP?

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 on INPUT $\boxed{\text{A}}$, not < >?

Reading Questions

- After reading this chapter, I'm having a difficult time understanding how our lexical rules differ from the operations performed in transformational grammar. Admittedly, my knowledge of transformational grammar is extremely limited, but it seems like reordering the argument structure of a word, as we do in the Extraposition Lexical Rule, does essentially the same thing as a transformation that moves parts of the sentence around. Am I missing something, or are the two approaches actually pretty similar here?

Reading Questions

- How do we get *kick/s/ed the bucket* and not *kick the bucket/s/ed*?
- Is the main metric for whether an idiomatic expression can be split up into the individual words (like *take advantage of* or *keep tabs on*) as opposed to those that must be retained as one phrase (like *kick the bucket*) whether or not the phrase can be passivized?
- How do practical parsers actually deal with idioms?

Reading Questions

- Why PRED is a HEAD feature, rather than an AGR feature or a SYN feature?
- If the lexical entry for dummy *it* is the one shown in (24) (with [INDEX none]), how can we match the semantic rule required by its following predication? For example, in *It mattered that the Giants had lost*, the predication matter requires a MATTERING role in its RESTR list. In general, the value of the role is identical to the INDEX value of the predication's specifier. In this sentence, however, the INDEX value of it is none. So, it seems that there is a problem to match the predication's semantic rule.

Reading Questions

- It seems like our inventory of FORM values keep on growing, and it's getting a little difficult to keep track of). Will how we handle FORM values be revised in later chpts, and is there a way for us to determine whether a new FORM value is needed or if we can just employ an existing one?

Reading Questions

- I am a bit confused by the definition of *predicative* and how it relates to other similar words we've seen. What exactly does it mean for something to be predicative? And how does the predicative phrase that follows *be* relate to predicative prepositions? What about the predications in our RESTR list?

Reading Questions

- The chapter assigns *it* the lexical type of *pron-lxm* and FORM it for the dummy it. Does *it* comply with the binding principles since it is a *pron-lxm*?