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*

\[
\langle \text{be} , \begin{bmatrix}
\text{be-lxm} \\
\text{ARG-ST}
\end{bmatrix}
\begin{bmatrix}
\begin{bmatrix}
1 \\
\text{SYN}
\end{bmatrix},
\begin{bmatrix}
\text{HEAD} \\
\text{VAL}
\end{bmatrix}
\begin{bmatrix}
\text{verb} \\
\text{FORM} \\
\text{spr}
\end{bmatrix}
\begin{bmatrix}
\text{COMP} \\
\text{INDEX}
\end{bmatrix}
\begin{bmatrix}
s
\end{bmatrix}
\begin{bmatrix}
\text{INDEX} \\
\text{RESTR}
\end{bmatrix}
\end{bmatrix}
\rangle
\]
Copula (generalized)
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 \textit{be}

\[
\langle \text{be}, \begin{bmatrix}
\text{exist-be-lxm} \\
\text{ARG-ST} \left\langle \begin{bmatrix}
\text{NP} \\
\text{FORM there}
\end{bmatrix}, 2
\right\rangle, \\
\text{VAL} \left[ \text{SPR} \left\langle 2 \right\rangle \right], \\
\text{SEM} \left[ \text{INDEX } s \right], \\
\text{RESTR} \left\langle \right\rangle
\end{bmatrix} \rangle
\]
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?*

\[
\langle be, \begin{array}{c}
\text{exist-be-lxm} \\
\text{ARG-ST} \\
\text{SEM}
\end{array}
\begin{array}{c}
\text{NP} \\
\text{FORM there}
\end{array}
\begin{array}{c}
\text{val} \\
\text{spr} \langle 2 \rangle \\
\text{comps} \langle \rangle
\end{array}
\begin{array}{c}
\text{pred} + \\
\text{sem} [\text{index} s]
\end{array}
\begin{array}{c}
\text{rest} \langle \rangle
\end{array}\rangle
\]
The Entry for Existential *there*
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?

\[
\langle \text{there} \ , \ \begin{bmatrix} \text{pron-lxm} \\ \text{SYN} \ \\ \text{SEM} \end{bmatrix} \begin{bmatrix} \text{FORM} & \text{there} \\ \text{AGR} \ \\ \text{PER} & 3rd \end{bmatrix} \begin{bmatrix} \text{MODE} & \text{none} \\ \text{INDEX} & \text{none} \\ \text{RESTR} & \langle \rangle \end{bmatrix} \rangle
\]
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 \textit{it}

\[
\langle \textit{it}, \begin{bmatrix}
\textit{it}, \\
\textit{it}, \\
\end{bmatrix}
\end{bmatrix}
\]

\[
\begin{bmatrix}
\textit{pron-lxm} \\
\text{SYN} \\
\text{SEM} \\
\end{bmatrix}
\]

\[
\begin{bmatrix}
\text{FORM} & \text{it} \\
\text{AGR} & \text{3sing} \\
\text{MODE} & \text{none} \\
\text{INDEX} & \text{none} \\
\text{RESTR} & \langle \rangle \\
\end{bmatrix}
\]
Questions About Dummy \textit{it}

- How does it differ from the entry for dummy \textit{there}? Why do they differ in this way?

- Is this the only entry for \textit{it}?

\[
\langle \text{it,} \text{pron-lxm} \rangle \\
\begin{bmatrix}
\text{SYN} \\
\text{SEM} \\
\end{bmatrix}
\begin{bmatrix}
\text{HEAD} \\
\text{MODE} \\
\text{INDEX} \\
\text{RESTR} \\
\end{bmatrix}
\begin{bmatrix}
\text{FORM} & \text{it} \\
\text{AGR} & 3\text{sing} \\
\text{none} & \text{none} \\
\langle \rangle \\
\end{bmatrix}
\]
A New Type of Lexeme: Complementizers

\[
\begin{align*}
\text{comp-lxm} : \\
\text{ARG-ST} &\quad \left\langle \left[ \begin{array}{c} \text{INDEX} \\ s \end{array} \right] \right\rangle \\
\text{SEM} &\quad \left[ \begin{array}{c} \text{INDEX} \\ s \end{array} \right] \\
\text{SYN} &\quad \left[ \begin{array}{c} \text{HEAD} \\ \text{VAL} \\ \text{comp} \\ \text{AGR} \\ 3\text{sing} \\ \text{SPR} \\ \langle \rangle \end{array} \right]
\end{align*}
\]
Questions About the Type \textit{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?
The Type *comp*

```
pos
  [FORM, PRED]

agr-pos
  [AGR]

verb
  [AUX]

nominal
  [CASE]

det
  [COUNT]

noun
  [FORM cform]

comp
```

[FORM, PRED]

adj

prep

adv

conj
The Lexical Entry for Complementizer *that*

\[ \left\langle \text{that}, \begin{bmatrix} \text{comp-lxm} \\ \text{ARG-ST} & \left\langle \left[ \text{FORM fin} \right]\right\rangle \\ \text{SEM} & \left[ \text{MODE prop} \right]\end{bmatrix} \right\rangle \]
...and with inherited information filled in

\[
\begin{align*}
\text{comp-lxm} & \quad \text{SYN} & \quad \text{VAL} \\
\quad & \quad \quad \quad \quad \quad \text{HEAD} & \quad \quad \quad \quad \text{FORM} & \quad \text{AGR} & \quad \text{3sing} \\
\text{that} , & \quad \text{ARG-ST} & \quad \text{S} & \quad \left[ \text{FORM} \quad \text{fin} \right] \\
& \quad \quad \quad \quad \quad \text{FORM} & \quad \text{INDEX} & \quad \text{s} \\
\text{SEM} & \quad \quad \quad \text{MODE} & \quad \text{prop} \\
& \quad \quad \quad \text{INDEX} & \quad \text{s} \\
& \quad \quad \text{RESTR} & \quad \left( \right)
\end{align*}
\]

Question: Where did \([\text{FORM cform}]\) come from?
Structure of a Complementizer Phrase

```plaintext
CP
[HEAD 2
VAL
[SPR ⟨ ⟩
COMPS ⟨ ⟩]]

C

[HEAD
word
HEAD 2
FORM cform
VAL
[SPR ⟨ ⟩
COMPS ⟨ 1 ⟩]]

that

the Giants lost
```
Sample Verb with a CP Subject

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:
    \[That \text{ Bush won matters} \text{ vs. } *\text{Bush won matters}\]
  • Argument-marking PPs are semantically identical to their object NPs, but we get:
    \[The \text{ election mattered} \text{ vs. } *\text{Of the election mattered}\]
  • So we need to add a syntactic constraint.

\[
\begin{align*}
\text{ARG-ST} & \left[ \langle \text{siv-lxm} , \text{matter} \rangle \right] \\
\text{SEM} & \left[ \langle \text{INDEX s} , \text{RESTR} \rangle \right] \\
\text{RESTR} & \left[ \langle \text{RELN SIT \事项} s \rangle \right] \\
\end{align*}
\]

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

Why is the type \textit{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 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

\[
\langle \text{advantage}, \quad \begin{bmatrix}
\text{massn-lxm} \\
\text{SYN} & \text{HEAD} & \text{FORM} & \text{advantage} \\
\text{SEM} & \text{MODE} & \text{none} \\
\text{INDEX} & \text{none} \\
\text{RESTR} & \langle \rangle
\end{bmatrix}
\rangle
\]
The Verb that Selects *advantage*

\[
\langle \text{take}, \langle \text{INDEX } s, \langle \text{RELN exploit } s, \langle \text{EXPLOITER } i, \langle \text{EXPLOITED } j, \langle \text{FORM advantage}, \text{INDEX of } j \rangle \rangle \rangle \rangle \rangle \rangle
\]

\[
\langle \text{ARG-ST} \langle \text{NP}_i, \langle \text{FORM advantage}, \text{INDEX of } j \rangle \rangle \rangle
\]

\[
\langle \text{ptv-lxm} \rangle
\]
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).
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