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.
Copula (generalized)

\[
\langle \text{be}, \text{be-lxm} \rangle
\]

\[
\langle 1, \text{ARG-ST} \rangle
\]

\[
\text{SEM}
\]

\[
\text{INDEX} \quad s
\]

\[
\text{RESTR} \quad \langle \rangle
\]

\[
\text{SEM}
\]

\[
\text{INDEX}
\]

\[
\text{RESTR} \quad \langle \rangle
\]

\[
\text{SEM}
\]

\[
\text{INDEX}
\]

\[
\text{RESTR} \quad \langle \rangle
\]

\[
\text{SEM}
\]

\[
\text{INDEX}
\]

\[
\text{RESTR} \quad \langle \rangle
\]
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*

\[
\langle \text{be}, \text{exist-be-lxm} \rangle
\]

\[
\begin{align*}
\text{ARG-ST} & \quad \langle [\text{NP} \quad \text{there}], [2], \text{PRED} + \text{SPR} \langle \langle 2 \rangle \rangle \rangle \\
\text{SEM} & \quad \langle [\text{INDEX} \ s], \text{COMPS} \langle \langle \rangle \rangle, \text{SEM} \ [\text{INDEX} \ s] \rangle
\end{align*}
\]
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*?

\[
\begin{align*}
\langle \text{be}, & \text{ exist-be-lxm} \rangle \\
\text{ARG-ST} & \langle \text{NP \ FORM \ there}, 2 \rangle, \text{ [PRED +} \\
\text{SEM} & \langle \text{VAL \ SPR COMPS \ INDEX s} \rangle \rangle
\end{align*}
\]
The Entry for Existential "there"

\[
\langle \text{there}, \right]
\]

\[
\begin{aligned}
\text{SYN} & : \left[ \begin{array}{l}
\text{pron-lxm} \\
\text{HEAD} \\
\text{MODE} \\
\text{INDEX} \\
\text{RESTR}
\end{array} \right]
\end{aligned}
\]

\[
\begin{aligned}
\text{SEM} & : \left[ \begin{array}{l}
\text{FORM} \quad \text{there} \\
\text{AGR} \\
\text{none} \\
\text{none} \\
\langle \rangle \\
\end{array} \right]
\end{aligned}
\]

\[
\begin{aligned}
\text{HEAD} & : \left[ \begin{array}{l}
\text{PER} \quad 3rd
\end{array} \right]
\end{aligned}
\]
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?

```
⟨pron-lxm
 SYN [there ,
 SEM [MODE none]
 HEAD [FORM there
 AGR [PER 3rd]]]
 INDEX none
 RESTR ⟨⟩ ⟩
⟩
```
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*

\[
\langle \text{it}, \begin{array}{c}
\text{pron-lxm} \\
\text{SYN} \\
\text{SEM}
\end{array} \begin{array}{c}
\begin{array}{c}
\text{it} \\
\text{HEAD} \\
\text{MODE} \\
\text{INDEX} \\
\text{RESTR}
\end{array}
\begin{array}{c}
\text{it} \\
\text{AGR} \\
\text{none} \\
\text{none} \\
\langle \rangle
\end{array}
\end{array}\begin{array}{c}
\text{3sing}
\end{array}\rangle
\]
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*?

```
<it,>
  | pron-lxm
  | SYN
  | SEM
  | HEAD
  | MODE
  | INDEX
  | RESTR

[ [ FORM it ] ]
[ [ AGR 3sing ] ]
[ [ none ] ]
[ [ none ] ]
[ [ ⟨ ⟩ ] ]
```
A New Type of Lexeme: Complementizers

\[ \text{comp-lzm} : \]

\[
\begin{align*}
\text{SYN} & : \begin{cases}
\text{HEAD} & \begin{cases}
\text{comp} & 3\text{sing}
\end{cases} \\
\text{VAL} & : \begin{cases}
\text{AGR} & \langle \rangle 
\end{cases}
\end{cases} \\
\text{ARG-ST} & : \begin{cases}
\text{S} & \begin{cases}
\text{INDEX} & s
\end{cases} \\
\text{SEM} & : \begin{cases}
\text{INDEX} & s \\
\text{RESTR} & \langle \rangle
\end{cases}
\end{cases}
\end{align*}
\]
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?
The Type *comp*
The Lexical Entry for Complementizer *that*

\[
\langle \text{that}, \left[ \begin{array}{c}
\text{comp-lxm} \\
\text{ARG-ST} \\
\text{SEM} \\
\end{array} \right] \rangle
\]
...and with inherited information filled in

Question: Where did [FORM cform] come from?
Structure of a Complementizer Phrase

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

```
C
  word
  HEAD [2]
  FORM [2]
  comp
  cform
  VAL [SPR ⟨⟩]
  COMPS ⟨⟩
```

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

\[ \langle \text{matter}, \right. \]
\[ \left. \begin{array}{c}
\text{ARG-ST} \langle \left[ \text{SEM [INDEX 1]} \right] \rangle \\
\text{INDEX} \ s \\
\text{RESTR} \langle \left[ \text{RELN SIT MATTERING matter} \right] \rangle
\end{array} \right) \]

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

\[
\begin{array}{l}
\langle \text{siv-lxm} \rangle \\
\langle \text{ARG-ST} \rangle \\
\langle \text{matter} \rangle \\
\langle \text{SEM} \rangle \\
\langle \text{INDEX} \ s \rangle \\
\langle \text{RESTR} \ ⟩ \\
\langle \text{SIT} \ ⟩ \\
\langle \text{MATTERING} \ ⟩
\end{array}
\]

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

\[
\begin{array}{c}
\text{INPUT } \langle X, \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{SPR} \begin{bmatrix} \text{COMPS} \begin{bmatrix} \text{SPR} \langle 2 \rangle \text{CP} \rangle \text{COMPS} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix} \rangle \\
\text{OUTPUT } \langle Y, \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{SPR} \begin{bmatrix} \text{COMPS} \begin{bmatrix} \text{SPR} \langle \text{NP}[\text{FORM it}] \rangle \text{COMPS} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix} \rangle
\end{array}
\]

• Why is the type \textit{pi-rule}?  
• Why doesn’t it say anything about the semantics?  
• Why is the COMPS value \( A \), 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

\[
\langle \text{advantage,} \rangle
\begin{array}{c}
\text{massn-lxm} \\
\text{SYN} \\
\text{SEM}
\end{array}
\begin{array}{c}
\begin{array}{c}
\text{HEAD} \\
\text{FORM advantage}
\end{array} \\
\text{AGR 3sing}
\end{array}
\begin{array}{c}
\text{MODE none} \\
\text{INDEX none} \\
\text{RESTR } \langle \rangle
\end{array}
\]
The Verb that Selects *advantage*
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