Syntactic Theory WS09-10
Assignment 3, LFG
Task 1: due December 1st 2009
Tasks 2-3: due December 8th 2009, 16:15

01.12.2009

(1) The secretary has called the professor.

(2) a. Peter hat dem Mädchen eine Puppe verkauft.
Peter.nom has the girl.dat a doll.acc sold
"Peter sold a doll to the girl".

b. Eine Puppe hat Peter dem Mädchen verkauft.
a doll.acc has Peter.nom the girl.dat sold
"Peter sold a doll to the girl".

c. Dem Mädchen hat Peter eine Puppe verkauft.
the girl.dat has Peter.nom a doll.acc sold
"Peter sold a doll to the girl".

d. Eine Puppe verkauft hat Peter dem Mädchen.
a doll.acc sold has Peter.nom the girl.dat
"Peter sold a doll to the girl".

- **Task II (40 points)**: Provide the PS-rules that will generate examples (2a)-(2d): make sure the PS-rules are annotated appropriately. Provide c-structures and f-structure of three of the four sentences.

  Notes:

  - There are two ways to analyze the auxiliary + participle construction: (1) making the participle XCOMP of the auxiliary, or the monoclausal analysis. The monoclausal analysis assumes that the main predicate comes from 'verkaufen' and the auxiliary does not introduce a predicate at all. The monoclausal solution is easiest and therefore presented first.

- – The c-structures of all sentences (both monoclausal and xcomp analysis) are represented in a separate document (lfgtrees.pdf)
- – You may have different PS-rules that create different c-structures: this is fine, as long as your c-structures can be generated by your phrase structure rules.

Sample Solution:

$$\text{S} \rightarrow \text{VF LB MF RB}$$

$$\text{VF} \equiv \left\{ \begin{array}{llll} \text{NP} & \mid\ \textit{NP} & \mid\ \textit{NP} & \mid\ \textit{VP} \\ (\uparrow \textsc{subj}) = \downarrow & (\uparrow \textsc{obj}) = \downarrow & (\uparrow \textsc{obj}_{\theta}) = \downarrow & \uparrow = \downarrow \\ (\downarrow \textsc{case}) = \textsc{nom} & (\downarrow \textsc{case}) = \textit{acc} & (\downarrow \textsc{case}) = \textit{dat} & \end{array} \right\}$$

$$\text{LB} \equiv \begin{array}{c} \text{V} \\ \uparrow = \downarrow \end{array}$$

$$\text{MF} \equiv \left(\begin{array}{l} \text{NP} \\ (\uparrow \textsc{subj}) = \downarrow \\ (\downarrow \textsc{case}) = \textsc{nom} \end{array} \right) \left(\begin{array}{l} \text{NP} \\ (\uparrow \textsc{obj}_{\theta}) = \downarrow \\ (\downarrow \textsc{case}) = \textsc{dat} \end{array} \right) \left(\begin{array}{l} \text{NP} \\ (\uparrow \textsc{obj}) = \downarrow \\ (\downarrow \textsc{case}) = \textsc{acc} \end{array} \right)$$

$$\text{RB} \equiv \begin{array}{c} (\text{V'}) \\ \uparrow = \downarrow \end{array}$$

$$\text{V'} \rightarrow \begin{array}{c} \text{V} \\ \uparrow = \downarrow \end{array}$$

$$\text{NP} \rightarrow \begin{array}{cc} \text{D} & \text{N} \\ \uparrow = \downarrow & \uparrow = \downarrow \end{array}$$

$$\text{VP} \rightarrow \begin{array}{ccc} \left(\begin{array}{l} \text{NP} \\ (\uparrow \textsc{obj}_{\theta}) = \downarrow \\ (\downarrow \textsc{case}) = \textsc{dat} \end{array} \right) & \left(\begin{array}{l} \text{NP} \\ (\uparrow \textsc{obj}) = \downarrow \\ (\downarrow \textsc{case}) = \textsc{acc} \end{array} \right) & \text{V} \\ & & \uparrow = \downarrow \end{array}$$

For c-structures, see lfgtrees.pdf. The f-structure is the same for all sentences (we are not addressing 'topic' or 'focus' for now). It looks as follows:

$$\left[\begin{array}{ll}
\textsc{pred} & \textit{'verkaufen}\left\langle(\uparrow \textsc{subj}),(\uparrow \textsc{obj}),(\uparrow \textsc{obj}_\theta)\right\rangle\textit{'} \\
\textsc{tense} & \textsc{past} \\
\textsc{vform} & \textsc{ptc} \\
\textsc{subj} & \left[\begin{array}{ll}
\textsc{pred} & \textit{'Peter'} \\
\textsc{num} & \textsc{sg} \\
\textsc{pers} & \textit{3} \\
\textsc{case} & \textsc{nom}
\end{array}\right] \\
\textsc{obj} & \left[\begin{array}{ll}
\textsc{pred} & \textit{'Puppe'} \\
\textsc{def} & - \\
\textsc{num} & \textsc{sg} \\
\textsc{pers} & \textit{3} \\
\textsc{case} & \textsc{acc} \\
\textsc{gen} & \textsc{f}
\end{array}\right] \\
\textsc{obj}_\theta & \left[\begin{array}{ll}
\textsc{pred} & \textit{'Mädchen'} \\
\textsc{def} & + \\
\textsc{num} & \textsc{sg} \\
\textsc{pers} & \textit{3} \\
\textsc{case} & \textsc{dat} \\
\textsc{gen} & \textsc{n}
\end{array}\right]
\end{array}\right]$$

NOTE (for either solution):

- **IMPORTANT**: your ps-rules must be able to derive your c-structure, including annotations: make sure you check whether this works
- **IMPORTANT**: your f-structure must be derived from c-structure in combination with the lexical items in the tree.
  - ∗ Make sure you represent the relevant lexicon, either separately from the c-structure (see slides of the lecture of 1/12/2009 on how to define the lexicon), or you can present lexical information at the bottom of the tree (see sample solution)
  - ∗ Recall that each node in the tree is associated with an f-structure by function ϕ(n). ↑ brings you to the f-structure associated with the mother node: ↓ brings you to the f-structure associated with the current node. **Make sure your c-structure defines correctly where each item ends up in the f-structure: check this!**
- If you use topological fields (VF, LB, MF, RB) and you rewrite them (MF → NP) rather than making them equal to (MF ≡ NP)

this is fine as well, but in that case nodes corresponding to the field (VF, LB, MF, RB) have to appear in the c-structure (with appropriate annotation ($\uparrow = \downarrow$)).

Sample Solution xcomp analysis:

$$\mathrm{S} \rightarrow \mathrm{VF\ LB\ MF\ RB}$$

$$\mathrm{VF} \equiv \left\{\begin{array}{llll} \mathrm{NP} & \mid \ \mathit{NP} & \mid \ \mathit{NP} & \mid \ \mathit{VP} \\ (\uparrow \textsc{subj}){=}\downarrow & (\uparrow \textsc{xcomp obj}){=}\downarrow & (\uparrow \textsc{xcomp obj}_\theta){=}\downarrow & \uparrow = \downarrow \\ (\downarrow \textsc{case}){=}\ \textsc{nom} & (\downarrow \textsc{case}){=}\ \mathit{acc} & (\downarrow \textsc{case}){=}\ \mathit{dat} & \end{array}\right\}$$

$$\mathrm{LB} \equiv \begin{array}{c} \mathrm{V} \\ \uparrow = \downarrow \end{array}$$

$$\mathrm{MF} \equiv \begin{pmatrix} \mathrm{NP} \\ (\uparrow \textsc{subj}){=}\downarrow \\ (\downarrow \textsc{case}){=}\ \textsc{nom} \end{pmatrix} \begin{pmatrix} \mathrm{NP} \\ (\uparrow \textsc{xcomp obj}_\theta){=}\downarrow \\ (\downarrow \textsc{case}){=}\ \textsc{dat} \end{pmatrix} \begin{pmatrix} \mathrm{NP} \\ (\uparrow \textsc{xcomp obj}){=}\downarrow \\ (\downarrow \textsc{case}){=}\ \textsc{acc} \end{pmatrix}$$

$$\mathrm{RB} \equiv \begin{pmatrix} \mathrm{V'} \\ (\uparrow \textsc{xcomp}){=}\downarrow \end{pmatrix}$$

$$\mathrm{V'} \rightarrow \begin{array}{c} \mathrm{V} \\ \uparrow = \downarrow \end{array}$$

$$\mathrm{NP} \rightarrow \begin{array}{cc} \mathrm{D} & \mathrm{N} \\ \uparrow = \downarrow & \uparrow = \downarrow \end{array}$$

$$\mathrm{VP} \rightarrow \begin{pmatrix} \mathrm{NP} \\ (\uparrow \textsc{obj}_\theta){=}\downarrow \\ (\downarrow \textsc{case}){=}\ \textsc{dat} \end{pmatrix} \begin{pmatrix} \mathrm{NP} \\ (\uparrow \textsc{obj}){=}\downarrow \\ (\downarrow \textsc{case}){=}\ \textsc{acc} \end{pmatrix} \begin{array}{c} \mathrm{V} \\ \\ \uparrow = \downarrow \end{array}$$

Some common errors

- Many solutions for the XCOMP analysis used annotations such as ($\uparrow$OBJ) = $\downarrow$. Careful! If NP is an immediate daughter of S (or

MF/VF) the NP will become object of the auxiliary (i.e. placed in the main f-structure) rather than that of XCOMP 'verkaufen'. **Make sure you understand why this is the case, and why** XCOMP **need not be specified when the object is daughter of VP** (see the last PS-rule)

  - Again: alternative solutions are possible as well: as long as c-structure can be derived from the ps-rules and f-structure from the c-structure.

- **Task III (30 points)**: Consider the examples (3)-(6), given a perfect grammar and lexicon for English: what happens if we analyze these sentences? Please make sure your answer is precise for each individual example.

  (3) * Peter slept the dog to the cat

  (4) * Peter gave the girl

  (5) * Peter to the girl gave the puppy

  (6) * Him gave the girl a puppy

  Sample solution

  (3) An f-structure that is **incoherent** will be derived for this sentence. The verb *sleep* is intransitive and does not accommodate the OBJ argument 'the dog' or OBL argument 'the cat'

  (4) An f-structure that is **incomplete** will be derived for this sentence. The verb *give* either needs an additional OBL or OBJ$_\theta$ argument

  (5) Two correct answers for this sentence. There should be no phrase structure rule S → NP PP VP for English, so (correct answer 1) it is not possible to get a c-structure for this sentence. Or (correct answer 2) *to the girl* will be analyzed as modifier of *Peter* and the result will be an incomplete f-structure (as for example (4))

  (6) The c-structure will make *him* SUBJ of the sentence, but this will result in a case clash: the subject must have nominative case, and *him* bears accusative case. The f-structure will thus be **inconsistent** (two different values are assigned to the feature SUBJ CASE) (Note that according to most linguistic analyses English does not have datives, but this is a detail).