Frank Richter:
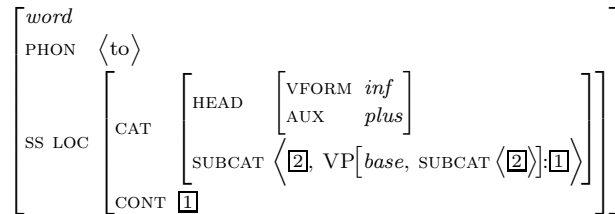## Grammatikformalismen für die Computerlinguistik

Aufgabenblatt 8

Exercise 1. [4 points]
Sketch the lexical entries of *advised* and *believed* and justify them using the data
in (1) and (2).

(1) a. She advised me to be smart.

   b. * She advised it to be late.

(2) a. She believed me to be smart.

   b. She believed it to be late.

Exercise 2. [4 + 2 points]
In (124) on page 143 of their book Pollard and Sag give us the following infor-
mation about their idea of the lexical entry of the auxiliary verb *to*:

$$
\begin{bmatrix}
word \\
\text{PHON} \quad \langle \text{to} \rangle \\
\text{SS LOC} \begin{bmatrix}
\text{CAT} \begin{bmatrix}
\text{HEAD} \begin{bmatrix} \text{VFORM} & inf \\ \text{AUX} & plus \end{bmatrix} \\
\text{SUBCAT} \left\langle \boxed{2},\ \text{VP}\left[base,\ \text{SUBCAT}\ \langle \boxed{2} \rangle\right] \big| \boxed{1} \right\rangle
\end{bmatrix} \\
\text{CONT} \quad \boxed{1}
\end{bmatrix}
\end{bmatrix}
$$

With the lexical entry for the infinitival auxiliary *to* they intend to license sen-
tences such as the one shown in (3a). However, if we only consider the principles
of grammar as Pollard and Sag list them in their appendix, the principles and
the lexical entry above also license (3b) as a saturated verbal projection of
English.

(3) a. John seems to run.

   b. * To John run.

 1. Draw an AVM with the tree description notation for (3a) and (3b) which
    indicates the constituent structure the grammar assigns to the two ex-
    pressions. Mention the following facts about the two expressions in your
    description: Number of the ID SCHEMA by which each phrase is licensed;
    elements on the SUBCAT lists of each sign, and identities with elements on
    other SUBCAT lists; identities caused by the SUBCATEGORIZATION PRIN-
    CIPLE and the HEAD FEATURE PRINCIPLE.

2. How can the grammar be changed in order to exclude the expression in (3b)? You may want to consider what Pollard and Sag say on page 41 about inverted structures in English. Any other simple solution compatible with the major facts of English grammar is also welcome. Please keep your modification small and simple.

Exercise 3. [4 points]
Sketch the constituent structure of (1). Add descriptions of the INHERITED SLASH, TO-BIND SLASH and LOCAL values at the relevant nodes. Explain how the properties of the trace, the NONLOCAL FEATURE PRINCIPLE and ID SCHEMA 6 interact, so the restrictions of the lexical entry of *admire* (shown in (2)) are respected in sentence (1).

1. Who does she think that he admires?

2.
$$
\begin{bmatrix}
word \\
\text{PHON } \langle \text{admires} \rangle \\
\text{SYNS}
\begin{bmatrix}
synsem \\
\text{LOC}
\begin{bmatrix}
\text{CAT SUBCAT } \left\langle \text{NP}_{\boxed{1}}[nom], \text{NP}_{\boxed{2}}[acc] \right\rangle \\
\text{CONTENT}
\begin{bmatrix}
admire \\
\text{ADMIRER } \boxed{1} \\
\text{ADMIRED } \boxed{2}
\end{bmatrix}
\end{bmatrix} \\
\text{NONLOC}
\begin{bmatrix}
nonlocal \\
\text{INHERITED}
\begin{bmatrix}
nonlocal1 \\
\text{SLASH } \{\} \\
\text{QUE } \quad \{\} \\
\text{REL } \quad \{\}
\end{bmatrix} \\
\text{TO-BIND}
\begin{bmatrix}
nonlocal1 \\
\text{SLASH } \{\} \\
\text{QUE } \quad \{\} \\
\text{REL } \quad \{\}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$