**Chapter 4, Problem 6: A Lexical Analysis**

First we remind ourselves that all nouns, and hence the NPs that they are the heads of, are specified for CASE – either nominative or accusative. Further, all of our verbs, prepositions, etc. select for the NPs they go with (via SPR or COMPS).

All we have to do is add further information to the current lexical entries that select NPs. Instead of selecting NP, i.e.

$$\begin{bmatrix} \text{HEAD} & \textit{noun} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix}$$

they can select for an NP with a particular CASE specification, e.g.:

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{noun} \\ \text{CASE} & \text{acc} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix}$$

We'll use NP[acc] as an abbreviation for a category like this; also NP[nom].

In order to properly constrain the distribution of the different pronouns, we'll need to modify the lexical entries for both pronouns and words that select NPs (e.g., verbs and prepositions). Here are a few examples:

$$\left\langle \text{they} , \begin{bmatrix} \textit{word} \\ \text{HEAD} & \begin{bmatrix} \textit{noun} \\ \text{CASE} & \text{nom} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

$$\left\langle \text{us} , \begin{bmatrix} \textit{word} \\ \text{HEAD} & \begin{bmatrix} \textit{noun} \\ \text{CASE} & \text{acc} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

$$\left\langle \text{like} , \begin{bmatrix} \textit{word} \\ \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AGR} & \textit{non-3sing} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{NP[nom]}\ \rangle \\ \text{COMPS} & \langle\ \text{NP[acc]}\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

$$\left\langle \text{with} , \begin{bmatrix} \textit{word} \\ \text{HEAD} & \textit{prep} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \text{NP[acc]}\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

In this way, all of these words contribute case constraints to the trees that they build using our grammar rules. The constraints on *us* make it incompatible with the SPR requirement of *like*, but perfectly compatible

with the COMPS requirement of *like* or *with*.

Note that non-pronominal NPs (e.g., *the cat*) in English can appear in any NP position, so they must have CASE values compatible with both nom and acc. The simplest way to accomplish this is to leave the CASE values of non-pronominal Ns unspecified.