Chapter 8, Problem 6: Arguments in Japanese

A. The Head-Specifier Rule requires no modification for Japanese. Within NPs, the determiners precede the noun (as in the NPs of example (i)) and the subject NPs (whose head noun is marked by *-ga*) precede the VP head. The Head-Complement Rule requires revision, however, in order to account for the fact that the head daughter of such a phrase comes at the end, rather than at the beginning.

(1) $\begin{bmatrix} phrase \\ \text{COMPS} \quad \langle \, \rangle \end{bmatrix} \rightarrow \boxed{1} \ \ldots \ \boxed{m} \ \text{H} \begin{bmatrix} word \\ \text{COMPS} \quad \langle \boxed{1},...,\boxed{m} \rangle \end{bmatrix}$

Note that we don't really have enough evidence yet to know how the order of the complements corresponds to the order of elements on the head daughter's COMPS list. Such evidence would relate binding facts to the order of complements in sentences. Here, somewhat arbitrarily, we have hypothesized that complement order is the same as the order of elements on the head daughter's COMPS list, as indicated in (1).

B. Rather than provide a hierarchy of lexeme types for Japanese, we have encoded all of the information in the lexical entries and assumed they are all of type *lexeme*. We have not specified any agreement information as the data given in the problem do not show any agreement facts. (Japanese doesn't in fact have subject-verb agreement.) We also assume that the ARP applies in Japanese, as in English, to *word*s that are the outputs of inflectional rules, and that these rules also add information such as [FORM fin]. On the other hand, we are showing all of the case constraints (including nominative on the first argument) as encoded in the *lexeme*s.

1.
$$\left\langle \text{yonda,} \begin{bmatrix} lexeme \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad verb \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \langle \, [\,] \, \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} \quad \langle \text{NP[nom]}_i , \text{NP[acc]}_j \rangle \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \\ \text{RESTR} \quad \left\langle \begin{bmatrix} \text{RELN} & \text{read} \\ \text{SIT} & s \\ \text{READER} & i \\ \text{READ} & j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

2.
$$\left\langle \text{ageta,} \begin{bmatrix} lexeme \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad verb \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \langle \, [\,] \, \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} \quad \langle \text{NP[nom]}_i , \text{NP[dat]}_k , \text{NP[acc]}_j \rangle \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \\ \text{RESTR} \quad \left\langle \begin{bmatrix} \text{RELN} & \text{give} \\ \text{SIT} & s \\ \text{GIVER} & i \\ \text{GIFT} & j \\ \text{RECIPIENT} & k \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

3.

$$\left\langle \text{kita,} \begin{bmatrix} lexeme \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} & verb \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,[\,]\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} \quad \langle \text{NP[nom]}_i \rangle \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & arrive \\ \text{SIT} & s \\ \text{ARRIVER} & i \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

C. 1.

$$\left\langle \text{Taroo,} \begin{bmatrix} lexeme \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} & \begin{bmatrix} noun \\ \text{AGR} & [\text{NUM} \; sg] \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} \quad \langle\,\rangle \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} & i \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & name \\ \text{NAMED} & i \\ \text{NAME} & Taroo \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

2.

$$\left\langle \text{hon,} \begin{bmatrix} lexeme \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} & noun \\ \text{VAL} & \begin{bmatrix} \text{COMPS} & \langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} \quad \langle \text{(DP)} \rangle \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} & i \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & book \\ \text{INST} & i \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

3. *sensei* and *otoko* are like *hon*; *Hanako* is like *Taroo*

D. Accusative Inflection LR:

$$\begin{bmatrix} i\text{-}rule \\ \text{INPUT} \quad \left\langle \boxed{2}\,, \begin{bmatrix} \text{SYN} & [\text{HEAD} \quad noun] \end{bmatrix} \right\rangle \\ \text{OUTPUT} \quad \left\langle \text{F}_o(\boxed{2})\,, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & [\text{CASE acc}] \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$