Long Distance Dependencies

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Look at the sentences below. What problem do they cause for us?

1. Lilly Fido visited.
2. Lilly Fido has visited.
3. Lilly Fido will have been visiting.
4. Her Fido has been speaking to.
5. The letter Fido will give to the cat.
6. To Fido I have spoken.

The Present Structure of the Sign

$$\begin{bmatrix} \textit{sign} & \\ \text{PHON} & \textit{list(phonstring)} \\ \text{SYNTAX} & \begin{bmatrix} \textit{syntax} & \\ \text{COMPS} & \textit{list} \\ \text{HEAD} & \textit{head} \\ \text{SPR} & \textit{list} \end{bmatrix} \end{bmatrix}$$

So far, all of our signs had a non-empty list as its PHON value. But now we also want to allow the following kind of word:

$$\begin{bmatrix} \textit{word} & \\ \text{PHON} & \langle\rangle \\ \text{SYNTAX} & \begin{bmatrix} \textit{syntax} & \\ \text{COMPS} & \textit{list} \\ \text{HEAD} & \textit{head} \\ \text{SPR} & \textit{list} \end{bmatrix} \end{bmatrix}$$

The motivation for this change is that we want to be able to build "incomplete" constituents like the following:

The Gap

A gap is phonologically empty and makes its local information also available non-locally. It does so by "putting" its *syntax* value into the value of the new feature GAP:

$$\begin{bmatrix} \textit{word} & \\ \text{PHON} & \langle\rangle \\ \text{SYNTAX} & \boxed{1}\begin{bmatrix} \textit{syntax} & \\ \text{COMPS} & \langle\rangle \\ \text{HEAD} & \textit{noun} \\ \text{SPR} & \langle\rangle \end{bmatrix} \\ \text{GAP} & \left\langle \boxed{1} \right\rangle \end{bmatrix}$$

All other lexical entries differ from the gap in the following 2 ways:

- They have a non-empty phonology.
- Their GAP value is the empty list.

Making the GAP information travel up the tree

Next, we need to add information about the value of GAP to all phrases and their daughters.

Head-Specifier Rule

Add the information to your rule that the mother and both its daughters contain no gaps.

Head-Complement Rule

Add the following information to your rule:

1. The head daughter's value for GAP is the empty list.
2. The mother's and the non-head daughter's value for GAP are identical.

The Sentence Rule

Add the following information to your rule:

1. The non-head daughter's value for GAP is the empty list.
2. The mother's and the head daughter's value for GAP are identical.

The Head-Filler Rule

We need to add one rule to the grammar to make sure that every gap is filled:

1. The mother is a sentence with empty COMPS, SPR, and GAP lists.
2. The second daughter is a sentence with one element in GAP.
3. The first daughter (the filler) is a sign whose SYNTAX value is identical to the second daughter's element in GAP. Its own GAP value is the empty list.