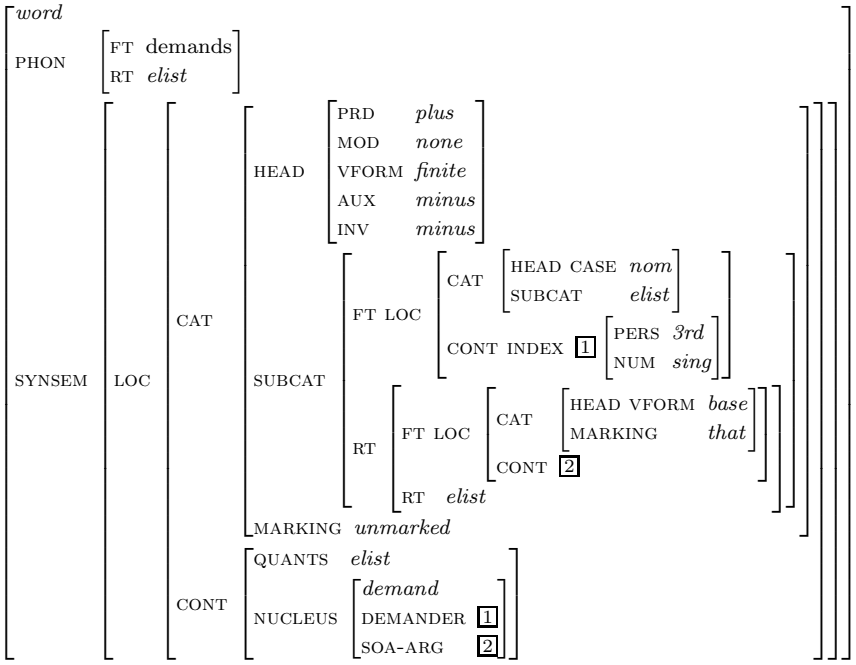
Frank Richter:
Grammatikformalismen für die Computerlinguistik

Homework Assignment 7 — Due: June 16th

Exercise 1. [1 + 3 + 2 points] Assume that a lexical entry for a particular form of the verb *demands* looks like this:



1. Write a MoMo description of all possible complement clauses of *demands*. The description should be as small as possible, but it should not be satisfied by anything which is not permitted as a complement clause of *demands* by the lexical entry above.

   An example of an admissible complement clause can be found in (34) on page 44 of the HPSG book.

2. Consider the sentence *I demand that he leave*. Draw an AVM description using the abbreviatory tree notation to show the constituent structure. Annotate each phrase with the number of the licensing ID schema (1–6).

   Indicate the structural identities caused by the Spec Principle, the Marking Principle and the Head Feature Principle with appropriate tags, and explain which tag you use for which principle.

3. Consider the following data which illustrate which complement clauses are permitted by the verb *thinks*.

(1) a. Mary thinks that Peter is totally silly.
b. Mary thinks Peter will come.
c. * Mary thinks that Peter give her the book.
d. * Mary thinks Peter give her the book.

Write an appropriate lexical entry of *thinks*. Give a very short explanation of why your lexical entry fits the given data.

Exercise 2. [2 + 1 + 2 +2 points] In this exercise we think about the sentence *Could you give Sandy the book?*

1. Write a description of the sentence *Could you give Sandy the book?* which is consistent with the grammar of Pollard and Sag and which indicates the constituent structure. In particular, pay attention to which words first have to project to phrases before they can be combined syntactically with other signs.
2. Indicate at each phrasal node in your description which schema (1–6) of the IMMEDIATE DOMINANCE PRINCIPLE describes the phrase.
3. Make clear which identities there are between the HEAD values and between the MARKING values of the signs in the sentence by adding the necessary tags to your description.
4. Add a short description of the SUBCAT list to each sign. Make sure to indicate all identities of elements between different SUBCAT lists.

Exercise 3. [Extra Credit: 3 points] Download the MoMo file `extra-credit7.mmp` from the seminar page. The file contains a description which defines the meaning of the `append` symbol in a standard way, and a feature structure representing a list with one element. This feature structure is missing the necessary triples in the `append` relation that would turn it into a model of the APPEND PRINCIPLE.

1. Add those triples to the append relation in the feature structure that turn it into a model of the APPEND PRINCIPLE.
2. For each triple in the append relation, paraphrase in a short sentence which concatenation of lists in the structure it represents.
3. What happens intuitively if we remove the conjunct `Y:list` from the last line of the APPEND PRINCIPLE?