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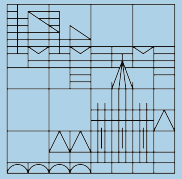


Grammar Development with LFG and XLE

Miriam Butt
University of Konstanz

Last Time

- Integration of a Finite-State Morphological Analyzer
  - Sublexical Rules
  - Sublexical Entries
  - The -unknown entry
- The XLE Lexicon Lookup Model

This Time: Lesson 8

1. Verbal Complements: COMP and XCOMP
   - Finite Complements (COMP)
   - Non-finite Complements (XCOMP)
   - Control Verbs
   - Theory of Control and Complementation
2. Regression Testing (Testsuites) and Debugging

Types of Arguments

- So far we have been working with the following grammatical functions (GFs):

  `SUBJ, OBJ, OBJ2, OBL`

- But there are also GFs corresponding to clausal arguments:

  `XCOMP, COMP`

- COMP is generally used for finite *that*-clauses
- XCOMP is generally used for non-finite embedded clauses.

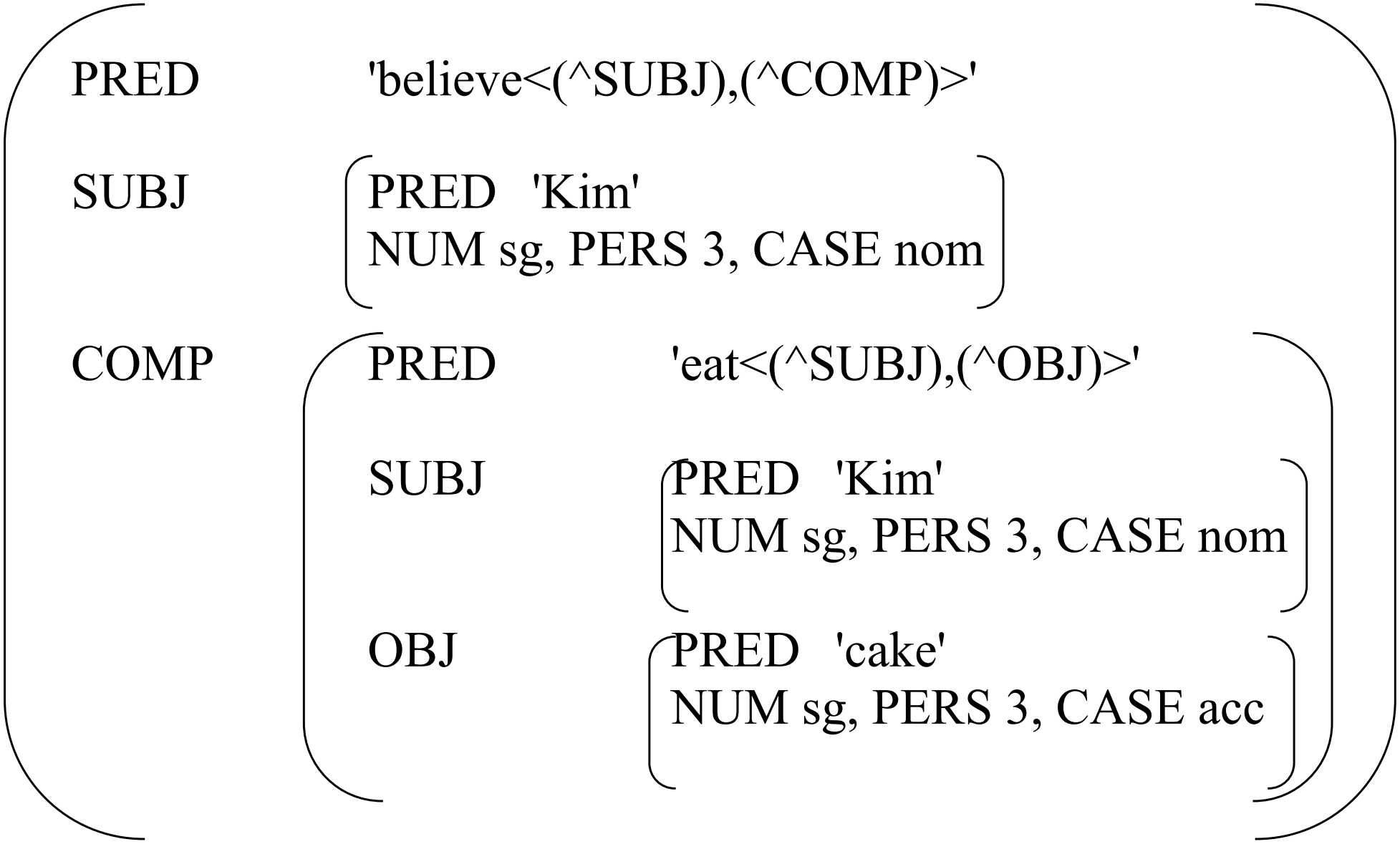
Types of Arguments

- You can read up on grammatical functions in LFG and how to test for them in the Dalrymple book, Ch. 2.

Complements: COMP

- Some verbs require finite clausal arguments:
  - *think*: Kim thinks [that the gorilla ate the bananas].
  - *say*: Kim said [that the gorilla ate the bananas].
  - believe: Kim believes [that the gorilla eats cake].
  - ...
- These arguments are treated as COMP in LFG at f-structure and as a CP at c-structure.
- Note that they are recursive
  - Kim thinks that Sandy said that the gorilla ate the bananas.
  - Kim thinks that Sandy said that the dog believes that the gorilla ate the bananas.

A (simplified) f-str with COMP



Complements: XCOMP

- Some verbs require non-finite clausal arguments:
  - *persuade*: Kim persuaded the gorilla [to eat cake].
  - *promise*: Kim promised the gorilla [to eat cake].
  - *want*: Kim wanted [to eat cake.]
  - *want*: Kim wanted the gorilla [to eat cake.]

- These arguments are treated as XCOMP in LFG at f-structure and generally as a VP at c-structure.

Complements: XCOMP

- Note that they are recursive as well
  - Kim wanted to persuade Sandy to eat cake.
  - Kim wanted to persuade Sandy to promise the gorilla to eat cake.
  - ...
- They also interact with the COMPs
  - Kim thinks that Sandy wants to persuade Peter to believe that the gorilla ate cake.
  - Kim promised Sandy to believe that Peter persuaded the gorilla to eat cake.
  - ...

XCOMP: Functional Control

- The non-finite clauses are called XCOMPs in LFG because the embedded clause contains a open SUBJ argument that is **controlled** by an argument in the matrix clause.

- Which argument controls the embedded SUBJ is *lexically* determined.
- Who is doing the eating? – Sandy

  Kim persuaded Sandy [__ to eat cake].

- Who is doing the eating? – Kim

  Kim promised Sandy [__ to eat cake].

Open Functions

- XCOMP is considered to be an **open** GF because one of its arguments is not specified within the clause.

- XADJUNCT is its adjunct counterpart.

  [__ Having eaten the cake], Kim ordered some tea.

- The subject of the embedded non-finite adjunct is controlled by an entity outside of the clause.

XCOMP: Functional Control

- Each control verb needs to specify in the lexicon whether it is a subject or an object control verb (*want* does both).

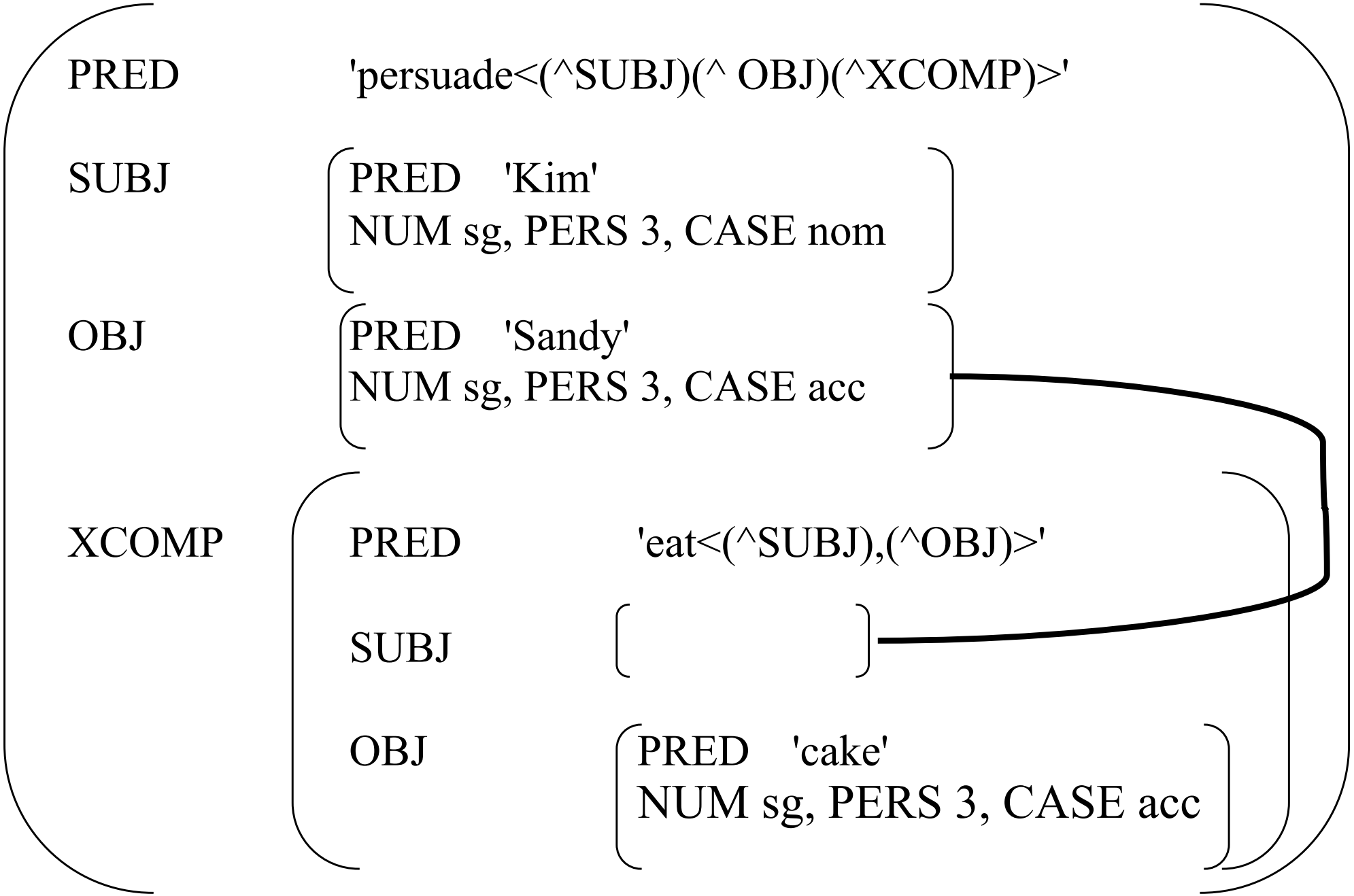
- Object control verb: *persuade*

  Kim persuaded Sandy [__ to eat cake].

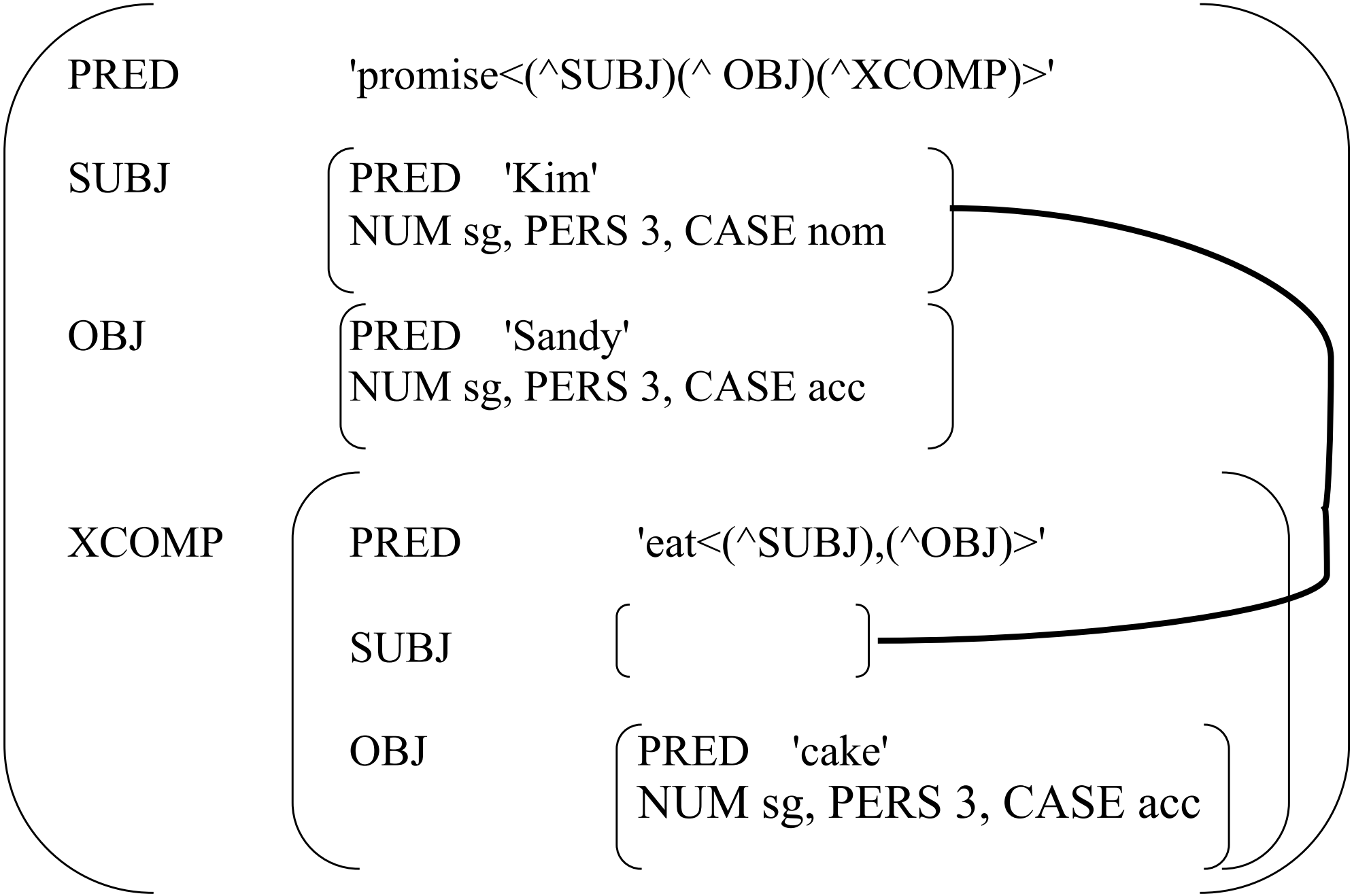
- Subject control verb: *promise*

  Kim promised Sandy [__ to eat cake].

A (simplified) f-str with XCOMP – OBJ control



A (simplified) f-str with XCOMP – SUBJ control



XCOMP: Functional Control

- The lexical specification is done by means of a **control equation**.

- Object control verb: *persuade*

  `(^ XCOMP SUBJ) = (^ OBJ)`

  Kim persuaded Sandy [__ to eat cake].

- Subject control verb: *promise*

  `(^ XCOMP SUBJ) = (^ SUBJ)`

  Kim promised Sandy [__ to eat cake]

Control and Complementation

- The basic theoretical concepts for understanding control and complementation in LFG were worked out in the early 1980s.
- Classic article:
  - Bresnan, Joan. 1982. Control and Complementation. In *The Mental Representation of Grammatical Relations*. The MIT Press.
  - Reprinted in: Bresnan, Joan. 1982. Control and Complementation. *Linguistic Inquiry* 11(3):343-434.

Demo

grammar7.lfg
testsuite7.lfg

Grammar Engineering: Testsuites and Debugging (morphological analyzer) COMP and XCOMP

Practical Work

- This concludes Lesson 8.
- The practical work you should do now is detailed in Exercise 8.
- You will practice with
  - integrating verbal complements (COMP, XCOMP)
  - writing entries for control verbs
  - learn about raising verbs