

## The Role of PRED in LFG+Glue

Adding glue semantics to LFG raises significant questions about the role of PRED-features. Most radically, Kuhn (2001) suggests that they can be entirely eliminated, with the linear logic properties of glue taking over the roles of Predicate Instantiation and the Completeness and Coherence constraints, as well as the informal role of specifying the meaning. This is possible with the standard formulation of glue, because the meaning-constructors are introduced in ordinary lexical entries along with the PRED and other features.

In this talk I will explore an alternative, proposed in Andrews (2007), where PRED-features are still essential, because rather than being co-introduced with f-structure features in standard lexical entries, meaning-constructors are introduced by a second ‘Semantic Lexicon’, which pairs meaning-constructors with feature-combinations, and works by consuming the latter in the f-structure in order to introduce the constructors. Two sample entries in the Semantic Lexicon are:

- (1) a.  $(f \text{ TENSE}) = \text{PAST} \Leftrightarrow \lambda P. \text{Past}(P) : f_t \multimap f_t$
- b.  $(f \text{ PRED}) = \text{‘Go’}, (f \text{ SUBJ}) = g \Leftrightarrow \lambda x. \text{Go}(x) : g_e \multimap f_t$

In spite of its non-standard status, this idea is more in accord with other recent proposals for semantic interpretation in LFG, which are based on the processing of f-structures by some sort of resource-sensitive process that consumes f-structures and produces semantic structures (Wedekind and Kaplan (1993), Crouch and King (2006), and the glue implementation in XLE (Crouch, p.c.)).

In such approaches, the existence of PRED as a special kind of feature can be motivated by various properties, such as:

- (2) a. PRED is (at least by default) uniquely instantiated, while other features aren’t (although perhaps they may be, as a marked option).
- b. only PRED has an ‘open’ set of values, extensible without ‘changing the grammar of the language’ (implicit in LFG practice)
- c. every f-(sub)structure must have a PRED-value. (XLE)
- d. the PRED-value determines the inflectional stem (Andrews 2007)

In the talk, I will focus on a different constraint, which applies to situations where more than one feature-value is consumed by a Semantic Lexicon Entry (SLE). This occurs with idiomatic constructions, *pluralia tanta*, and other situations where the interpretation of the whole structure can’t be derived compositionally from the standard interpretations of its feature-values.

Andrews proposes such rules, for example (3) below for one of the senses of the verb-particle idiom *go off*; but suggests no constraints on their form:

- (3)  $(f \text{ PRED}) = \text{‘Go’}, (f \text{ XCOMP PRED}) = \text{‘Off’}, (f \text{ SUBJ}) = g,$   
 $\Leftrightarrow \lambda x. \text{become\_unpalatable}(x) : g_e \multimap f_t$   
 (Example (6) in formal rather than informal notation).

Here I will suggest some constraints, focussing on one that involves PRED. Note that although the original proposals were developed for OT-LFG, they also work for standard LFG+glue, and it is plausible to hope that the constraints can

be adapted to apply to other approaches that consume f-structure to produce semantic form.

The most basic constraint I propose is that the l.h.s. must be expressible as a finite disjunction of a finite number of deterministic paths starting with the same f-structure variable. The intent is to allow GF-variables that range over single GF's, needed for OT-LFG, but not paths of unbounded length, iofu, nor involvement of features in arbitrarily distant locations. Application of the rule consumes the material in the disjunct that applies, but not the others.

Given this constraint, we can formulate a more specific one that ascribes a special role to PRED:

- (4) If a disjunct consumes the value of a path of the form  $(f \text{GF}_1 \dots \text{GF}_n)$ , then it must consume the values of all paths of the form  $(f \text{GF}_1 \dots \text{GF}_i \text{PRED})$  for  $0 \leq i \leq n$  (taking the case where  $i = 0$  to designate the path  $(f \text{PRED})$ ).

The effect is to allow an SLE to consume the PRED and NUM values of the object for an idiom such as *keep tabs on*, or just the PRED of the object in a (somewhat marginal, but not, I think, completely impossible) example such as *In the pact, they buried several outstanding hatchets*, but not just for example the main PRED and the number of the object, leaving PRED and therefore lexical head of the object free to vary.

We will also examine a potential counterexample involving the analysis of idiomatic prepositional object constructions such as *depend on*, arguing that these can be dealt with by a 'two level' analysis that makes them structurally similar to semantically compositional PPs such as directionals.

By proposing and motivating some constraints on feature-consumption by SLEs, we provide at least the beginning of an argument that the features exist after all, and that the original intuition about the intermediary position of f-structure between overt form and meaning is correct.

## References

- Andrews, A. D. 2007. Generating the input in OT-LFG. In J. Grimshaw, J. Maling, C. Manning, and A. Zaenen (Eds.), *Architectures, Rules, and Preferences: A Festschrift for Joan Bresnan*, 319–340. Stanford CA: CSLI Publications.
- Crouch, R., and T. H. King. 2006. Semantics via f-structure rewriting. In M. Butt and T. King (Eds.), *Proceedings of LFG 2006*. Stanford, CA: CSLI Publications.
- Kuhn, J. 2001. Resource sensitivity in the syntax-semantics interface and the German split NP construction. In W. D. Meurers and T. Kiss (Eds.), *Constraint-Based Approaches to Germanic Syntax*. Stanford CA: CSLI Publications.
- Wedekind, J., and R. M. Kaplan. 1993. Type-driven semantic interpretation of f-structures. In *EACL-1993*, 404–411.