The constraint-based approach

Nontransformational, constraint-based theories (Lexical Functional Grammar, Head-Driven Phrase Structure Grammar, Construction Grammar, Simpler Syntax ...):

Different aspects of linguistic structure are realised by different but related linguistic representations. Movement/transformations do not play a role.

“Semantic roles, syntactic constituents, and grammatical functions belong to parallel information structures of very different formal character. They are related not by proof-theoretic derivation but by structural correspondences, as a melody is related to the words of a song. The song is decomposable into parallel melodic and linguistic structures, which jointly constrain the nature of the whole. In the same way, the sentences of human language are themselves decomposable into parallel systems of constraints – structural, functional, semantic, and prosodic – which the whole must jointly satisfy.” (Bresnan, 1990)

What theoretical architecture best reflects this view?

Theories and frameworks

Formal linguistic framework: A set of linguistic objects, rules, and/or processes, and a formal vocabulary for talking about them. Example: X-bar theory: phrase structure rules and trees.

Formally explicit: Provides a way of making systematic, clear, and testable claims about phrase structure.

Embodies some assumptions about how language works: phrases (like VP) have heads (like V), but general enough to encompass a range of different theories of phrase structure.

Theories and frameworks

Linguistic theory: A set of claims about the structure of language(s), which may (or may not) be stated with reference to a particular formal framework.

Example: The claim that all maximal X-bar projections have bar level 2 (there is no N‴ or V‴‴). A well-designed formal framework guides development of theory by providing explicit representations and theoretical vocabulary, and aids the linguist in developing better intuitions about language and (hence) better theories of linguistic structure.
Theories and frameworks: Other views

- Alternative view (NOT LFG): the formal framework should not allow the linguist to formulate rules or describe constructions that are linguistically impossible.

- This is a very strong view; e.g. disallows standard phrase structure rules, since impossible languages can be characterised with (unconstrained) phrase structure rules (e.g., a language where every sentence is at least 3000 words long).

- The LFG view (also HPSG, other constraint-based theories): use a simple, clean formal framework, and formulate linguistic theory as a set of claims stated with reference to the framework.

- Advantage: No need to throw away or reformulate the framework when revisions are needed to the theory.

LFG framework

Formal framework of LFG:

- Different aspects of linguistic structure are represented in different ways, and are related to one another by piecewise correspondence (parts of one structure are related to parts of another structure).

- The core of the formal framework of LFG has remained remarkably stable since its beginnings in the late 1970s.

- LFG-based theories of linguistic phenomena have evolved substantially since that time, and continue to evolve as new areas are explored and new theoretical proposals are formulated and evaluated.

LFG

Two aspects of syntactic structure:

- Functional structure is the abstract functional syntactic organisation of the sentence, familiar from traditional grammatical descriptions, representing syntactic predicate-argument structure and functional relations like subject and object.

- Constituent structure is the overt, more concrete level of linear and hierarchical organisation of words into phrases.
LFG’s c-structure and f-structure

In GB/Principles and Parameters/Minimalism:
- C-structure = PF or Spellout?
- F-structure = S-Structure or LF?

Other linguistic levels
Since the inception of the theory, there has been much work on other linguistic levels and their relation to c-structure and f-structure:
- Argument structure and argument linking (Bresnan & Zaenen, 1990; Butt, 1995)
- The syntax-semantics interface: “glue” semantics (Dalrymple, 1999, 2001; Asudeh, 2004): interesting relations to categorial approaches, though with different assumptions about the relation to syntactic structure
- Information structure and its relation to syntax and semantics (Butt & King, 2000; Dalrymple & Nikolaeva, 2010)
- Prosodic structure and its relation to syntax and semantics (Mycock, 2006)
**LFG as a component of other approaches**

LFG has also been adopted as a component of OT and DOP:

- OT-LFG: Optimality-theoretic syntax with an LFG base (Bresnan, 2000)
- LFG-DOP: Data-Oriented Parsing with an LFG base (see http://www.nclt.dcu.ie/lfg-dop/publications.html)

**F-structure**

What information does functional structure represent?

- Abstract syntactic relations (familiar from traditional grammar) like subject, object, adjunct
- Locus of subcategorisation
- Criteria: anaphoric binding patterns, long-distance dependencies, control, honorification, agreement, casemarking, ...
- F-structure vocabulary is universal across languages

**Functional structure**

\[
\begin{array}{c}
\text{PRED} & \text{GO(SUBJ)} \\
\text{TENSE} & \text{PAST} \\
\text{SUBJ} & \begin{array}{c}
\text{PRED} \ '\text{DAVID}' \\
\text{NUM} & \text{SG}
\end{array}
\end{array}
\]

- PRED, TENSE NUM: **attributes**
- \'GO(SUBJ)\', **DAVID**, SG: **values**
- PAST, SG: **symbols** (a kind of value)
- \'BOY\', \'GO(SUBJ)\': **semantic forms**
F-structures

\[
\begin{array}{c}
\text{PRED} & \text{GO(SUBJ)} \\
\text{TENSE} & \text{PAST} \\
\text{SUBJ} & \begin{array}{c}
\text{PRED} \\
\text{‘DAVID’} \\
\text{NUM} & \text{SG} \\
\end{array} \\
\text{ADJ} & \{[\text{PRED} \ ‘QUICKLY’]\} \\
\end{array}
\]

An f-structure can be the value of an attribute. Attributes with f-structure values are the grammatical functions: \text{SUBJ}, \text{OBJ}, \text{OBJ}_0, \text{COMP}, \text{XCOMP}, ... 

A set of f-structures can also be a value of an attribute.

Sets of f-structures

\[
\begin{array}{c}
\text{PRED} & \text{GO(SUBJ)} \\
\text{TENSE} & \text{PAST} \\
\text{SUBJ} & \{[\text{PRED} \ ‘DAVID’]\} \\
\text{ADJ} & \{[\text{PRED} \ ‘QUICKLY’]\} \\
\end{array}
\]

Sets of f-structures represent:

- adjuncts (there can be more than one adjunct) or
- coordinate structures (there can be more than one conjunct)

Describing F-structures

\[(f \text{ NUM}) = \text{SG}\]

is a \text{functional equation}.

\[(f \ a) = v\] holds if and only if \(f\) is an f-structure, \(a\) is a symbol, and the pair \((a, v)\) ∈ \(f\).

A set of formulas describing an f-structure is a \text{functional description}.
More Complex Descriptions

\[
(f \text{ SUBJ NUM}) = (g \text{ NUM}) = \text{SG}
\]

\[
f \begin{bmatrix}
\text{PRED} & \text{GO(SUBJ)} \\
\text{SUBJ} & g \begin{bmatrix}
\text{PRED} & \text{DAVID}' \\
\text{NUM} & \text{SG}
\end{bmatrix}
\end{bmatrix}
\]

Finding the Right F-structure

Hindi verbs show person, number, and gender agreement:

\[
\text{Ram} \quad (g \text{ PRED}) = \text{‘Ram’} \\
(g \text{ CASE}) = \text{NOM} \\
(g \text{ PERS}) = 3 \\
(g \text{ NUM}) = \text{SG} \\
(g \text{ GEND}) = \text{MASC}
\]

\[
\text{Ram calegaa} \quad (f \text{ PRED}) = \text{‘GO(SUBJ)’} \\
(f \text{ SUBJ CASE}) = \text{NOM} \\
(f \text{ SUBJ PERS}) = 3 \\
(f \text{ SUBJ NUM}) = \text{SG} \\
(f \text{ SUBJ GEND}) = \text{MASC}
\]

\[
(f \text{ SUBJ}) = g
\]

F-description and its solution

\[
(g \text{ PRED}) = \text{‘Ram’} \\
(g \text{ CASE}) = \text{NOM} \\
(g \text{ PERS}) = 3 \\
(g \text{ NUM}) = \text{SG} \\
(g \text{ GEND}) = \text{MASC}
\]

\[
f \begin{bmatrix}
\text{PRED} & \text{GO(SUBJ)} \\
\text{SUBJ} & g \begin{bmatrix}
\text{PRED} & \text{Ram'} \\
\text{CASE} & \text{NOM} \\
\text{PERS} & 3 \\
\text{NUM} & \text{SG} \\
\text{GEND} & \text{MASC}
\end{bmatrix}
\end{bmatrix}
\]

Lexical Functional Grammar – 21 / 80
Formal descriptions: LFG vs HPSG

- HPSG takes a different view of formal descriptions from LFG. The HPSG view goes back to Functional Unification Grammar (Kay, 1984), where unification (an operation on structures) was used to combine structures:
  - in HPSG, the constraints look (as much as possible) like the structures.
  - That is why you sometimes see a set of instructions in what looks like a representation – it is actually a constraint or description in the (apparent) form of a structure.

Formal descriptions: LFG vs HPSG

HPSG’s Argument Realisation Principle (Sag et al., 2003, 432):

```
word:
SYN  VAL
    [SPR A]
COMPS
    [B ⊖ C]
GAP
    A ⊕ B
ARG-STR
```

Θ: list subtraction
⊕: list addition

Generalisations and constructions

- Expressing generalisations over functional descriptions: templates (Dalrymple et al., 2004; Asudeh et al., 2008)
  - Templates are names for bundles of functional equations that characterise a construction.
  - Templates can be defined in terms of other templates, giving something like the inheritance hierarchy of HPSG (but involving relations among descriptions rather than linguistic objects).
  - Templates can be associated with words or with units that are bigger than words, and are used to describe constructions in the Construction Grammar sense.
  - This is a relatively recent area of exploration in LFG.
**Semantic Forms**

Subcategorisation requirements are imposed at f-structure (not c-structure) – a predicate specifies a set of grammatical functions, and the phrase structure grammar of the language determines where in the tree these functions can appear. Subcategorisation requirements are specified by **semantic forms**:

\[(f \text{ PRED}) = \langle \text{GO(SUBJ)} \rangle\]

Semantic forms have **argument lists** that list the arguments they require.

---

**Grammatical functions**

<table>
<thead>
<tr>
<th>Non-argument</th>
<th>TOPIC</th>
<th>FOCUS</th>
<th>Discourse function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argument (governable)</td>
<td></td>
<td>SUBJ</td>
<td></td>
</tr>
<tr>
<td>Core</td>
<td>OBJ</td>
<td>OBJθ</td>
<td>Non-discourse function</td>
</tr>
<tr>
<td>Non-core</td>
<td>OBLθ</td>
<td>COMP</td>
<td></td>
</tr>
<tr>
<td>Non-argument</td>
<td>ADJ(unct)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(from Börjars & Vincent 2004)

---

**Completeness**

**Completeness** requires: All arguments which are listed in the semantic form must be present.

\[(f \text{ PRED}) = \langle \text{GO(SUBJ)} \rangle\]

“Go” must have a SUBJ.

---

**Coherence**

**Coherence** requires: No arguments which are not listed in the semantic form may be present.

\[(f \text{ PRED}) = \langle \text{GO(SUBJ)} \rangle\]

“Go” may not have a OBJ.

Completeness and coherence are the equivalent (more or less) of the Theta Criterion of GB theory, or the Valence Principle and Root Condition of HPSG.
**Semantic Forms and Uniqueness**

*wati ka parnka-mi karnta*

man.ABS PRES run-NONPAST woman.ABS

‘The man runs the woman.’ (Warlpiri)

\[
\begin{align*}
\text{wati} \quad (g \text{ PRED}) &= \text{'MAN'} \\
\text{karnta} \quad (g \text{ PRED}) &= \text{'WOMAN'}
\end{align*}
\]

Each use of a semantic form is **unique**.

---

**Conflicting Semantic Forms**

\[
\begin{array}{l}
\text{wati} \quad (g \text{ PRED}) = \text{'MAN'} \\
\text{karnta} \quad (g \text{ PRED}) = \text{'WOMAN'}
\end{array}
\]

Ill-formed f-structure:

\[
\begin{bmatrix}
\text{PRED} & \text{RUN(SUBJ)} \\
\text{TENSE} & \text{PRES} \\
\text{SUBJ} & g[\text{PRED} \quad \text{'MAN'/'WOMAN'}]
\end{bmatrix}
\]

---

**Optionality**

*njuchí zi-ná-lúm-a alenje*

bees SUBJ-PAST-bite-INDICATIVE hunters

‘The bees bit the hunters.’ (Chichewa)

\[
\begin{align*}
\text{zi-ná-lúm-a} & \quad \text{alenje} \\
\text{SUBJ-PAST-bite-INDICATIVE hunters}
\end{align*}
\]

‘They bit the hunters.’

\[
\begin{align*}
\text{zi-ná-lúm-a:} & \quad ((f \text{ SUBJ PRED}) = \text{'PRO'}) \\
\text{zi-ná-lúm-a} \quad \text{optionally} \quad \text{contributes a PRED for its SUBJ.}
\end{align*}
\]
Overt subject

njúchi zi-ná-lúm-a alenje
bees SUBJ-PAST-bite-INDICATIVE hunters
'The bees bit the hunters.'

\[
\begin{align*}
\text{PRED} & \quad \text{BITE}(\text{SUBJ,OBJ}) \\
\text{SUBJ} & \quad \text{PRED} \quad \text{BEES} \\
& \quad \text{NOUNCLASS} \quad 10 \\
\text{OBJ} & \quad \text{PRED} \quad \text{HUNTERS} \\
& \quad \text{NOUNCLASS} \quad 2
\end{align*}
\]

No overt subject

zi-ná-lúm-a alenje
SUBJ-PAST-bite-INDICATIVE hunters
'They bit the hunters.'

\[
\begin{align*}
\text{PRED} & \quad \text{BITE}(\text{SUBJ,OBJ}) \\
\text{SUBJ} & \quad \text{PRED} \quad \text{PRO} \\
& \quad \text{NOUNCLASS} \quad 10 \\
\text{OBJ} & \quad \text{PRED} \quad \text{HUNTERS} \\
& \quad \text{NOUNCLASS} \quad 2
\end{align*}
\]

Optionality: Clitics

Juan vió a Pedro.
Juan saw PREP Pedro
'Juan saw Pedro.' (Spanish)

Juan lo vió.
Juan ACC.MASC.SG.CLITIC saw
'Juan saw him.'

Juan lo vió a Pedro.
Juan ACC.MASC.SG.CLITIC saw PREP Pedro
'Juan saw Pedro.'
Optionality: Clitics

Pedro  $(f \text{ pred}) = \text{Pedro}'$
      $(f \text{ gend}) = \text{masc}$
      $(f \text{ num}) = \text{sg}$

lo  $(f \text{ pred}) = \text{pro}'$
     $(f \text{ gend}) = \text{masc}$
     $(f \text{ num}) = \text{sg}$

lo optionally contributes a pred.

Optionality: Clitics

Juan lo vió a Pedro.
Juan ACC.MASC.SG.CLITIC saw PREP Pedro
'Juan saw Pedro.'

Optionality and clitic doubling

Juan lo vió.
Juan ACC.MASC.SG.CLITIC saw
'Juan saw him.'
C-structure and f-structure

Motivating Constituent Structure

What information does constituent structure represent?

- Represents hierarchical phrasal groupings
- Criteria depend on surface syntactic properties, not semantic intuitions or facts about abstract functional syntactic structure
- Varies greatly across languages

Constituent Structure

- Some theories (GB/Principles and Parameters, NOT LFG): Subjects always appear in the specifier of IP.
- LFG does not assume that subjects are defined in terms of phrase structure position, or that subjects must always appear in a particular position in the tree.
- However, there are structure-function mapping generalisations which state that phrases with particular functions tend to appear in particular phrase structure positions.
- In English, the specifier of IP is associated with the subject function; in other languages, it is associated with TOPIC or FOCUS. More below.
Lexical Integrity

Lexical Integrity (Bresnan, 1982): Morphologically complete words are leaves of the c-structure tree, and each leaf corresponds to one and only one c-structure node.

English: cause to run

Japanese: hasirasetarun.CAUS.PAST

Words in one language can express the same f-structure as phrases in another language: Lexical Integrity holds at c-structure, not f-structure.

Economy of Expression

Economy of Expression (Bresnan, 2001): All syntactic phrase structure nodes are optional, and are not used unless required by independent principles (completeness, coherence, semantic expressivity).
C-structure and f-structure

C- and F-Structure

φ function relates c-structure nodes to f-structures.

(Function: Every c-structure node corresponds to exactly one f-structure.)

Many Corresponding Nodes

Many c-structure nodes can correspond to the same f-structure.

No Corresponding Node

Some f-structures have no corresponding c-structure node.

These are formal, mathematical facts about the c-structure/f-structure relation. What are the linguistic facts?
Mapping regularities

C-structure heads are f-structure heads:

\[
\begin{array}{c}
\begin{array}{c}
\text{VP} \\
\text{V'} \\
\text{V}
\end{array}
\end{array}
\xrightarrow{\phi}
\begin{array}{c}
\begin{array}{c}
\text{PRED} \quad \text{‘GREET(SUBJ, OBJ)’} \\
\text{TENSE} \quad \text{PAST}
\end{array}
\end{array}
greeted
\]

Lexical Functional Grammar – 48 / 80

Mapping Regularities

Specifiers are filled by grammaticized discourse functions SUBJ, TOPIC, FOCUS.

Specifier of IP in English: SUBJ

\[
\begin{array}{c}
\begin{array}{c}
\text{IP} \\
\text{NP} \\
\text{N} \\
\text{VP}
\end{array}
\end{array}
\xrightarrow{\phi}
\begin{array}{c}
\begin{array}{c}
\text{PRED} \quad \text{‘YAWN(SUBJ)’} \\
\text{SUBJ} \quad \text{PRED} \quad \text{‘DAVID’}
\end{array}
\end{array}
yawned
\]

Lexical Functional Grammar – 49 / 80

Mapping regularities

Specifier of IP in Russian: Topic or Focus

\[
\begin{array}{c}
\begin{array}{c}
\text{IP} \\
\text{NP} \\
\text{N} \\
\text{VP}
\end{array}
\xrightarrow{\phi}
\begin{array}{c}
\begin{array}{c}
\text{PRED} \quad \text{‘WRITE(SUBJ,OBJ)’} \\
\text{TOPIC} \quad \text{PRED} \quad \text{‘EUGENE ONEGIN’} \\
\text{SUBJ} \quad \text{PRED} \quad \text{‘PUSHKIN’} \\
\text{OBJ}
\end{array}
\end{array}
\end{array}
\]

Lexical Functional Grammar – 50 / 80
Mapping regularities
Specifier of IP in Bulgarian: Focus; Specifier of CP: Topic

Mapping regularities
Specifier of CP in English: Focus

Mapping regularities
Specifier of CP in Finnish: Focus
Complements: Functional Categories

Complement of functional category is f-structure co-head:

\[
\text{IP} \rightarrow \begin{bmatrix}
\text{PRED} & \text{‘YAWN(SUBJ)’} \\
\text{SUBJ} & \left[ \text{PRED} & \text{‘DAVID’} \right]
\end{bmatrix}
\]

Complements: Functional Categories

\[
\text{IP} \rightarrow \begin{bmatrix}
\text{PRED} & \text{‘READ(SUBJ,OBJ)’} \\
\text{TENSE} & \text{FUTURE} \\
\text{TOPIC} & \left\{ \left[ \text{PRED} & \text{‘ANNA’} \right] \right\} \\
\text{SUBJ} & \left[ \text{PRED} & \text{‘BOOK’} \right]
\end{bmatrix}
\]

Complements of Lexical Categories

Complement of lexical category is f-structure complement (non-subject argument):

\[
\text{IP} \rightarrow \begin{bmatrix}
\text{PRED} & \text{‘GREET(SUBJ,OBJ)’} \\
\text{SUBJ} & \left[ \text{PRED} & \text{‘DAVID’} \right] \\
\text{OBJ} & \left[ \text{PRED} & \text{‘CHRIS’} \right]
\end{bmatrix}
\]
Complements of Lexical Categories

```
IP
  NP I'
    N VP
      V NP NP
        OBJ THEME
          SPEC
            PRED 'A'

V PRED 'GIVE(SUBJ,OBJ,OBJ THEME)'
  SUBJ
    PRED 'DAVID'

OBJ
  PRED 'CHRIS'

NP
  DET N'
    N book

V gave

NP
  N Chris

V NP NP
  OBJ THEME
    SPEC
      PRED 'BOOK'
```

Constraining the c-structure/f-structure correspondence

```
V' \phi

\[ \text{PRED 'YAWN(SUBJ)'} \]
\[ \text{TENSE PAST} \]

yawned

V' \rightarrow V
```

Local F-Structure Reference

```
V' \phi

\[ \text{PRED 'YAWN(SUBJ)'} \]
\[ \text{TENSE PAST} \]

yawned

V' \rightarrow V

the current c-structure node ("self"): *
the immediately dominating node ("mother"): *
the c-structure to f-structure function: \( \phi \)
```

Rule Annotation

```
V' \phi

\[ \text{PRED 'YAWN(SUBJ)'} \]
\[ \text{TENSE PAST} \]

yawned

V' \rightarrow \text{V}

\( \phi(\hat{\ast}) = \phi(*) \)

mother's (V'') f-structure = self's (V's) f-structure
```
Simplifying the Notation

\[ \phi(\hat{*}) \text{ (mother's f-structure)} = \uparrow \]
\[ \phi(*) \text{ (self's f-structure)} = \downarrow \]

\[ V' \xrightarrow{\phi} \]
\[ V \xrightarrow{\text{PRED 'YAWN(SUBJ)'} \atop \text{TENSE PAST}} \]
\[ \text{yawned} \]
\[ V' \rightarrow \]
\[ \uparrow=\downarrow \]
mother's f-structure = self's f-structure

Using the Notation

\[ V' \rightarrow \]
\[ V \uparrow=\downarrow \]
mother's f-structure = self's f-structure

More rules

\[ V' \rightarrow \]
\[ V \quad \text{NP} \]
\[ \phi(*) = \phi(*) \]
\[ (\phi(\hat{*}) \text{ OBJ}) = \phi(*) \]
mother's f-structure's OBJ = self's f-structure

In simpler form:

\[ V' \rightarrow \quad \text{NP} \quad \uparrow=\downarrow \]
\[ (\uparrow \text{ OBJ}) = \downarrow \]
Terminal nodes

\[
\begin{array}{c}
V \\
yawned
\end{array}
\]

Expressible as:

\[
V \rightarrow yawned
\]

\[
(\uparrow \text{PRED}) = \text{YAWN(SUBJ)}' \\
(\uparrow \text{TENSE}) = \text{PAST}
\]

Standard form:

\[
yawned \text{ V } (\uparrow \text{PRED}) = \text{YAWN(SUBJ)}' \\
(\uparrow \text{TENSE}) = \text{PAST}
\]

Phrase structure rules: English

\[
\begin{align*}
\text{IP} & \rightarrow (\text{NP} \quad (\uparrow \text{SUBJ}) = \downarrow) \quad (\downarrow) \\
\text{I'} & \rightarrow (\uparrow) \\
\text{VP} & \rightarrow (\text{V} \quad (\uparrow = \downarrow) \\
\text{NP} & \rightarrow (\text{N} \quad (\uparrow = \downarrow)
\end{align*}
\]

Lexical entries: English

\[
yawned \text{ V } (\uparrow \text{PRED}) = \text{YAWN(SUBJ)}' \\
(\uparrow \text{TENSE}) = \text{PAST}
\]

\[
\text{David} \text{ N } (\uparrow \text{PRED}) = \text{DAVID}'
\]

(Standard LFG practice: include only features relevant for analysis under discussion.)
Analysis: English

Solving the Description

Final result
Warlpiri

\[
\text{GF} \equiv \{\text{SUBJ} \mid \text{OBJ} \mid \text{OBL}_\theta\}
\]

\[
\begin{align*}
\text{IP} &\rightarrow \left( \begin{array}{c}
\text{NP} \\
\text{GF} = \downarrow
\end{array} \right) \left( \begin{array}{c}
\text{I' } \\
\text{F} = \downarrow
\end{array} \right) \\
\text{I'} &\rightarrow \left( \begin{array}{c}
\text{I} \\
\text{F} = \downarrow
\end{array} \right) \left( \begin{array}{c}
\text{S} \\
\text{F} = \downarrow
\end{array} \right) \\
\text{S} &\rightarrow \{ \begin{array}{c}
\text{NP} \\
\text{V} \end{array} \}^* \\
\end{align*}
\]

Warlpiri verbs

\[panti-rni \ V \ (\uparrow \text{PRED}) = \text{‘SPEAR(SUBJ,OBJ)’} \]
\[\ (\uparrow \text{SUBJ PRED}) = \text{‘PRO’} \]
\[\ (\uparrow \text{OBJ PRED) = ‘PRO’} \]
\[\ (\uparrow \text{OBJ CASE}) = \text{ABS} \]

Warlpiri

\[
\begin{array}{c}
\text{PRED ‘SPEAR(SUBJ,OBJ)’} \\
\text{FOCUS} \\
\text{SUBJ} \\
\text{OBJ} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘MAN’} \\
\text{CASE} \\
\text{ERG} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘KANGAROO’} \\
\text{CASE} \\
\text{ABS} \\
\end{array}
\]

\[
\begin{array}{c}
pantiri \\
\text{SPEAR-NONPAST} \\
\text{kangaroo.abs} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘SPEAR(SUBJ,OBJ)’} \\
\text{F} = \downarrow \\
\text{SUBJ} \\
\text{OBJ} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘MAN’} \\
\text{CASE} \\
\text{ERG} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘KANGAROO’} \\
\text{CASE} \\
\text{ABS} \\
\end{array}
\]

\[
\begin{array}{c}
pantiri \\
\text{SPEAR-NONPAST} \\
\text{kangaroo.abs} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘SPEAR(SUBJ,OBJ)’} \\
\text{F} = \downarrow \\
\text{SUBJ} \\
\text{OBJ} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘MAN’} \\
\text{CASE} \\
\text{ERG} \\
\end{array}
\]

\[
\begin{array}{c}
\text{PRED ‘KANGAROO’} \\
\text{CASE} \\
\text{ABS} \\
\end{array}
\]

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Chichewa

\[
S \rightarrow \begin{cases} 
\text{NP} & (\uparrow \text{SUBJ} = \downarrow), \\
\text{NP} & (\uparrow \text{TOPIC} = \downarrow), \\
\text{VP} & (\uparrow = \downarrow) 
\end{cases}
\]

\[
\text{VP} \rightarrow \begin{cases} 
\text{V} & (\uparrow = \downarrow) 
\end{cases}
\]

\[
\text{V} \rightarrow \begin{cases} 
\text{NP} & (\uparrow \text{OBJ} = \downarrow) 
\end{cases}
\]

Comma between daughters in S rule: daughters of S are unordered

Chichewa verbs

\[zi-ná-wá-lum-a \quad V \quad (\uparrow \text{PRED}) = \text{‘BITE(SUBJ,OBJ)’} \]

\[((\uparrow \text{SUBJ PRED}) = \text{‘PRO’}) \]

\[\text{NP} \quad (\uparrow \text{OBJ PRED}) = \text{‘PRO’} \]

\[\text{NB} \quad (\uparrow \text{OBJ NOUNCLASS}) = 2 \]

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For more information

- For more on LFG, visit the LFG website:
  http://www.essex.ac.uk/linguistics/LFG/


- SOAS, Essex, and Oxford hold student-oriented meetings each term for discussion of issues in LFG, including student presentations:
  http://se-lfg.tk/
Bibliography

References


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