

OT-LFG

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CLDG, 26 June 2003

1.2 F-structure

- f-structure in LFG is a representation of grammatical relations and morphosyntactic features.
- f-structure is in principle language-independent and universal.
- f-structure is constructed by unifications of f-descriptions of each lexical item.
- The main attributes are:
 - PRED (a kind of semantic representation with argument structure information)
 - GF (SUBJ, OBJ, ADJUNCT) and DF (TOPIC, FOCUS)
 - other morphosyntactic features (TENSE, ASPECT, PERSON, NUMBER, GENDER, CASE, DEF etc.)

(3) a. Completeness Condition

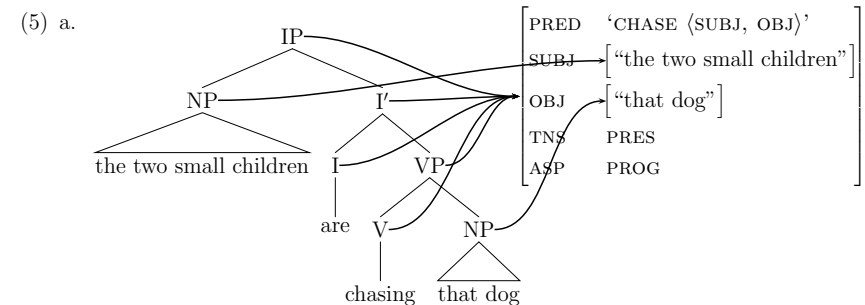
All argument functions specified in the value of the PRED feature must be present in the local f-structure.

b. Coherence Condition

All argument functions in an f-structure must be selected by their local PRED.

(4) a. The two small children are chasing that dog.

- b. wita-jarra-rlu ka-pala wajili-pi-nyi yalumpu kurdu-jarra-rlu maliki
small-DUAL-ERG PRES-3DUSUBJ chase-NONPAST that.ABS child-DUAL-ERG dog.ABS
'The two small children are chasing that dog.'



1 The basics of LFG

LFG is a parallel constraint-based grammar where c(onstituent)-structure (surface phrase structure), f(unctional)-structure (grammatical feature structure), a(rgument)-structure and s(emantic)-structure – sometimes p(rosodic)-structure (Butt and King 1998), m(orpho-logical)-structure (Frank and Zaenen 1998, Sadler and Spencer 2001) and i(nformation)/d(iscourse)-structure (King 1997, Butt and King 1998, to appear, Otaguro 2003), are linked: the function ϕ between c-structure and f-structure, Lexical Mapping Theory between a-structure and grammatical functions (Levin 1986, Bresnan and Kanerva 1989), and Glue semantics (function σ) between f-structure and s-structure (Dalrymple 2001).

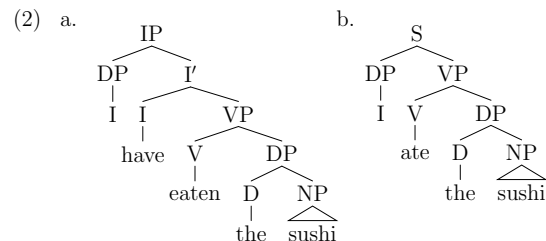
1.1 C-structure and extended X'-theory

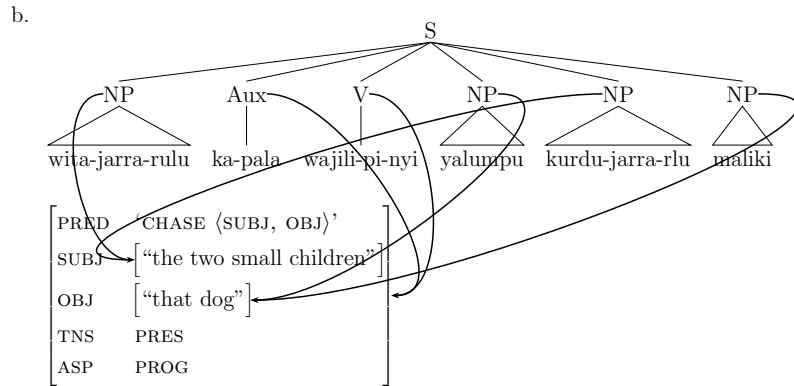
- c-structure in LFG is represented as a familiar phrase structure tree.
- c-structure is surface-oriented. Following Economy of Expression, empty categories or similar sorts are not used unless required:

(1) Economy of Expression (Bresnan 2001:91)

All syntactic phrase structure node are optional and are not used unless required by independent principles (completeness, coherence, semantic expressivity).

- A c-structure tree is not derivational. Every lexical item is base-generated, so even functional categories (I, C) must be filled by lexical items (i.e. no V-to-I or SpecVP-to-SpecIP movement etc.).



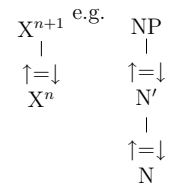


1.3 C-to-F

(6) c-structure and f-structure correspondence (Bresnan 2001:102):

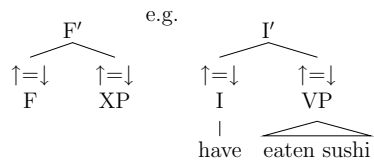
a. Head principle

C-structure heads are f-structure heads.



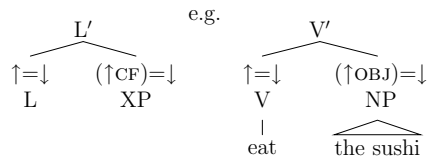
b. Co-head principle

Complements of functional categories are f-structure co-heads.



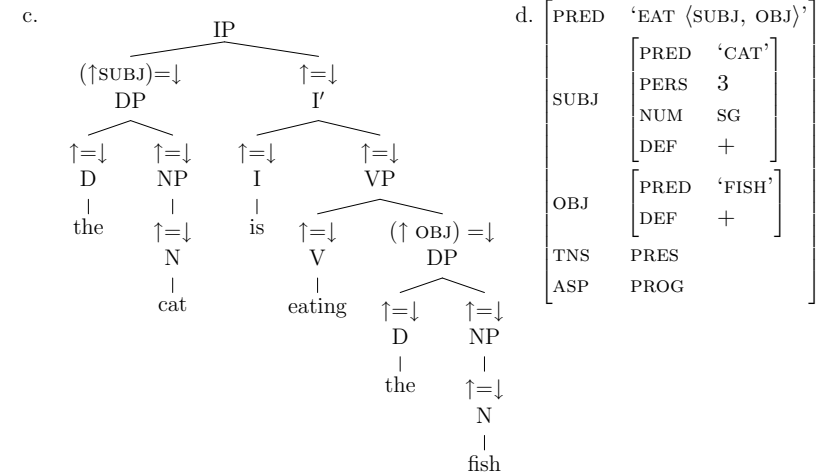
c. Complement principle

Complements of lexical categories are the non-discourse argument functions CF.



- (7) a.
- the*: D (↑DEF)=+
 - cat*: N (↑PRED)='CAT'
 - fish*: N (↑PRED)='FISH'
 - is*: I (↑TENSE)=PRES
(↑SUBJ)=↓
(↓PERS) = 3
(↓NUM) = SG
 - eat*: V (↑PRED)='EAT (...)'
 - ing*: *Infle*_V (↑ASPECT)=PROG

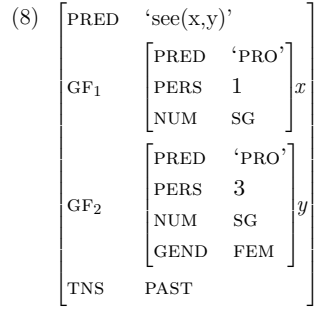
- b.
- IP → DP I'
 - I' → I VP
 - VP → V DP
 - DP → D NP
 - ...



2 Optimality-Theoretic LFG

2.1 The input

- “the INPUT must represent morphosyntactic content in a universal, language independent form.” (Bresnan 1998:8) = (partially specified) f-structure

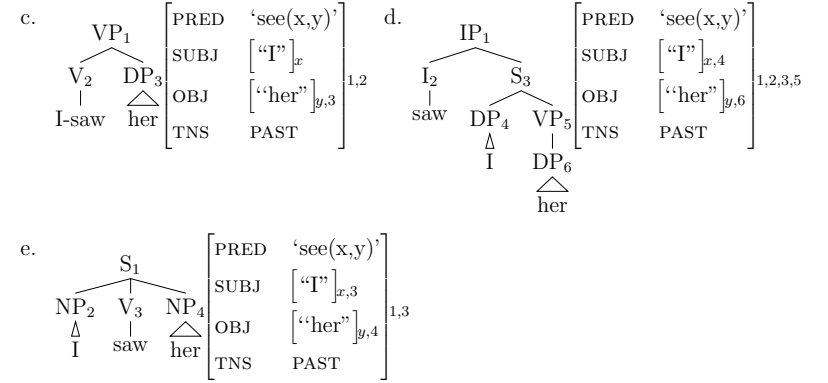
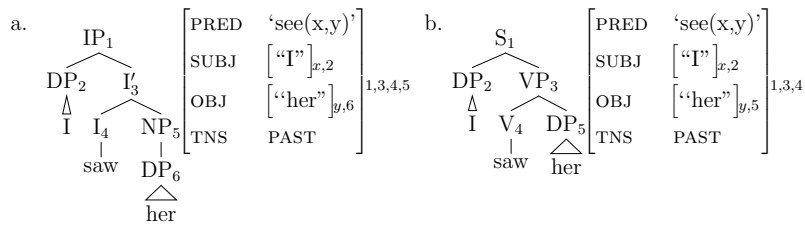


- the relations of the lexical heads “see”, “I” and “she” to each other. The main lexical head has the function PRED(icator) and “I” and “she” have underspecified grammatical functions GF.
- specifiers and clausal property of tense.
- structural sets of abstract features representing their morphosyntactic content in a language-independent format.

2.2 Gen

- (9) Restricted definition of *Gen* (Kuhn 2001[2000:10])
 For a given input representation Φ_{input} , the set of candidate analyses $Gen(\Phi_{input})$ is the set of LFG (c- and f-structure) analyses $\langle T, \Phi' \rangle$ generated by G_{inviol} (= an LFG grammar encodes certain basic inviolable principles – RO), such that $\Phi_{input} \sqsubseteq \Phi'$, i.e., those analyses whose f-structure is subsumed by the input f-structure.
- “although the resulting grammar is formally an LFG grammar, it is certainly unusual since it ‘overgenerate’ vastly, producing all universally possible c-structure-f-structure pairings.” (Kuhn 2001[2000:11])

(10) For the input (8),



- “Being infinite, the universal candidate set includes many more realizations of the given content than are illustrated here (= (10)), as well as many unfaithful candidates with different morphosyntactic content. It is the job of the constraint ranking to select those belonging to a given language.” (Bresnan 1998:18)

2.3 Constraints

- (11) Constraint ranking (Bresnan 1998:26)
 $\text{CC} \gg \text{OP-SPEC} \gg * \text{LEX-F} \gg \text{OB-HD} \gg \text{AGR} \gg \text{FULL-INT} \gg \text{STAY}$
- (12) a. OP-SPEC
 “an operator must be the value of a DF in the f-structure”
- b. *LEX-F
 “no lexical heads in functional categories”
- c. OB-HD
 “every projected category (X' , X'') has a lexically filled (extended) head”
- d. AGR
 “a subject and its predicate in c-structure agree”
 (i.e. a c-structure subject requires that its sister constituent have an agreeing extended head)
- e. FULL-INT
 “PRED values must be parsed” (RO)
- f. STAY
 “categories dominate their extended heads”

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