

# Morphology in LFG

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## 1 Introduction

Keywords for ‘morphology in LFG’:

- “Morphology competes with syntax”
- Lexical (Morphological) Integrity
- Principle of Economy of Expression

## 2 Words are special

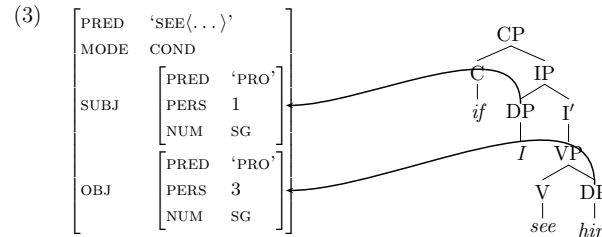
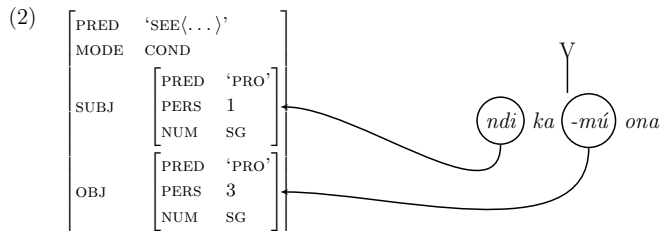
### 2.1 Morphology competes with syntax

- (1) [A]cross languages, there often appears to be an inverse relation between the amount of grammatical information expressed by words and the amount expressed by phrases. Languages rich in word structure (morphology) may make more or less use of fixed phrase structure forms (syntax). But languages poor in morphology overwhelmingly tend to have rigid, hierarchical phrase structures. [...] We can summarize this generalization with the slogan, “Morphology competes with syntax.” (Bresnan 2001:6)

For the same “grammatical content”, the surface manifestations differ among languages.

- LFG’s treatment of those surface variations:  
 if the object is one word, morphology is responsible for that; if the object is multiple words, syntax is responsible for that.

cf. minimalism: all are the results of “syntactic” derivational process

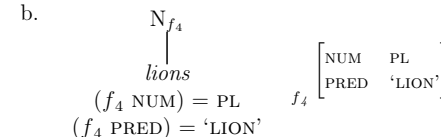


(4) **Lexical Integrity:**

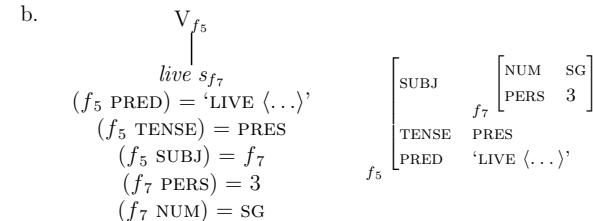
Morphologically complete words are leaves of the c-structure tree and each leaf corresponds to one and only one c-structure node. (Bresnan 2001:92)

- “The rules of English inflectional morphology combine this information [(5a, 6a)] when the inflected noun *lions* [and the inflected verb *lives*] is formed”. (Bresnan 2001:54-5)

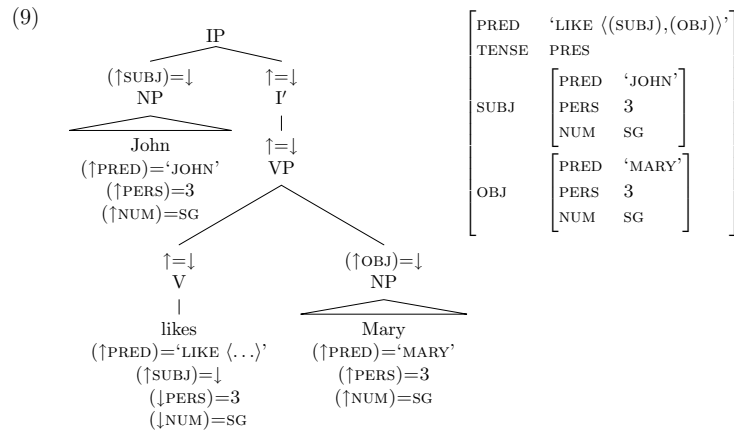
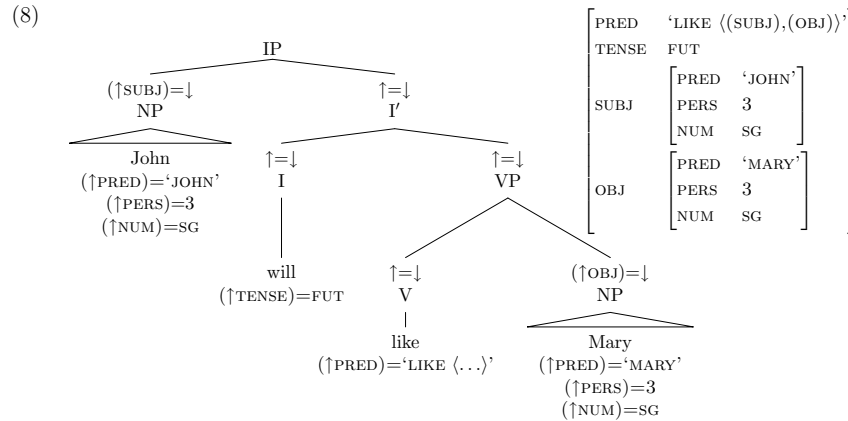
- (5) a. *lion*: N (↑ PRED) = ‘LION’  
 -s: *Inf<sub>N</sub>* (↑ NUM) = PL



- (6) a. *live*: V (↑ PRED) = ‘LIVE (. . .)’  
 -s: *Inf<sub>V</sub>* (↑ TENSE) = PRES  
 (↑ SUBJ) = ↓  
 (↓ PRES) = 3  
 (↓ NUM) = SG



- (7) *will*: I (↑ TENSE) = FUT



(10) **Economy of Expression:**

All syntactic phrase structure nodes are optional and are not used unless required by independent principles (completeness, coherence, semantic expressivity). (Bresnan 2001:91)

- Syntax has constraints (as a form of PS rules, or ID/LP rules) to regulate the phrase structure distributions. The over-generations are blocked by Economy of Expression, e.g. I' dominates VP without I in (9).
- English syntax (PS rules etc.) allows an auxiliary to be placed in I and take VP complement, e.g. 'I' → I, VP' and 'X<sup>0</sup> initial (I < VP)'.
- One of the c-structure and f-structure correspondence rules licenses (11c) the functional head and its complement (lexical projection) to be mapped onto the same f-structure. The idea of functional head is introduced into LFG by Kroeger (1993).

- (11)
- C-structure heads are f-structure heads.
  - Specifiers of functional categories are the grammaticalized discourse functions DF.
  - Complements of functional categories are f-structure coheads.
  - Complements of lexical categories are the nondiscourse argument functions CF.
  - Constituents adjoined to phrasal constituents are nonargument functions  $\overline{AF}$  or not annotated. (Bresnan 2001:102)

## 2.2 More competitions

Morphology seems to compete with syntax everywhere. In English (Marantz 2001):

- (12)
- John **cried**. (past)
  - Did** John cry? (past, interrogative)
  - John is **bigger**. (comparative)
  - John is **more** intelligent. (comparative)
  - John **took a leap**. (light verb construction)
  - John **leapt**. (simple one verb expression)

And cross-linguistically (Ackerman and Webelhuth 1998:10-12):

- (13)
- Je le **verrai**.  
I him will see  
'I will see him.' (future, French)
  - weil ich ihn **sehen werde**  
because I him see-INF will  
'because I will see him' (future, German)
  - por-nĕn ań nĕwram **tot-wes**.  
Por-woman.LAT now child.NOM take-PASS.3SG/PAST  
'The child was taken away now by the Por-woman.' (passive, Vogul)
  - weil die Blumen dem Mann **geschenkt wurden**.  
because the flowers the man given were  
'because the flowers were given to the man.' (passive, German)
  - a fiń **elvonszoltatta** Jńnost a hńlgyvel/ a hńlgy  
the boy away drag.CAUS.3SG/DEF John.ACC the lady.INSTR/ the lady  
ńtal.  
by  
'The boy had Janos dragged away (by the lady).' (causative, Hungarian)
  - a fiń **hagyta** Jńnost **elvonszolni** (a hńlgy ńtal)  
the boy let.PAST.3SG/DEF John.ACC away drag (the lady by)  
'The boy let Janos be dragged away (by the lady).' (causative, Hungarian)

LFG treats those pairs differently, i.e. morphologically and syntactically. On the syntax side, however, there is a problem in facing complex predicates where syntactically two

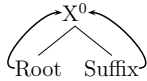
words are combined into a single predicate. It is impossible to capture complex predicates under the standard LFG co-headness due to the violation of Uniqueness (each has different PRED values). See Alsina (1996) for Romance, Butt (1995) for Urdu, Matsumoto (1996) for Japanese, Andrews and Manning (1999) for Romance and Tariana and papers in Alsina et al. (1997).

### 3 Exploring below $X^0$

In simple cases like *likes* and *lions*, we don't bother to think about morphological operations (combining root and morphemes). But, of course, the situation is not always straightforward. There are some works on morphology in LFG (e.g. Selkirk (1982), Shimpson (1991), Sells (1995), Cho and Sells (1995), Andrews (1996), Nordlinger (1998)).

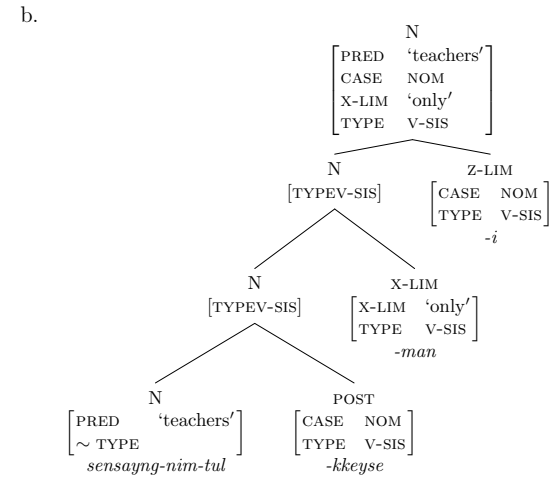
#### 3.1 Sells (1995) and Cho & Sells (1995)

- (14) a.  $N_{root}$  - Postposition - Conjunctive  
 b.  $V_{root}$  - Honorific (V2) - Tense (V2) - Mood (V3) - Discourse (V4)  
 c. X - Delimiter (X-LIM) - Delimiter (Z-LIM)

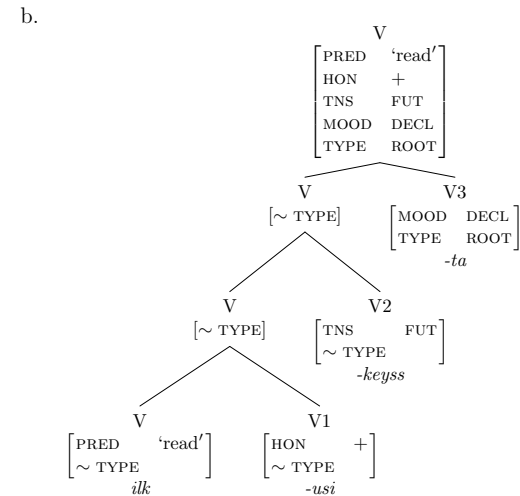
- (15) categorial information (what heads select for)  combinatoric information (what can be X's right sister)

Information concerning semantics, case, and so on, is inherited from all morphemes.

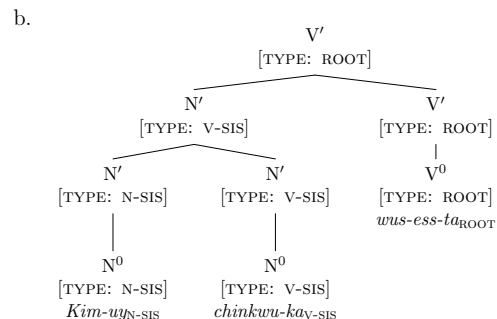
- (16) a. *-man*: Aff ( $\uparrow$ X-LIM) = 'only'  
 SLOT: X-LIM  
 TYPE: V-SIS  
 b. *-i/ka*: Aff ( $\uparrow$ CASE) = NOM  
 SLOT: Z-LIM  
 TYPE: V-SIS
- (17) a. *sensayng-nim-tul-kkeyse-man-i kulen il-ul*  
 teacher-HON-PL-HON.SUBJ.NOM-only-NOM that kind work-ACC  
*ha-si-pnita*  
 do-HON-Formal.DECL  
 'Only teachers do such work.'



- (18) a. *ilk-usi-keyss-ta*  
 read-HON-FUT-DECL  
 '(someone (hon.)) will read.'



- (19) a. *Kim-uy chinkwu-ka wus-ess-ta*  
 Kim-GEN friend-NOM smile-PAST-DECL  
 'Kim's friend smiled.'



### 3.2 Constructive Morphology (Nordlinger 1998)

Nordlinger (1998) proposes ‘Constructive Morphology’ by using Inside-Out Functional Uncertainty (IOFU) (Halvorsen and Kaplan 1995[1988], Dalrymple 1993).

(20) a. For any f-structure  $f'$  and attribute  $a$ ,  $(af')$  designates the f-structure  $f$  such that  $(fa) = f'$ .

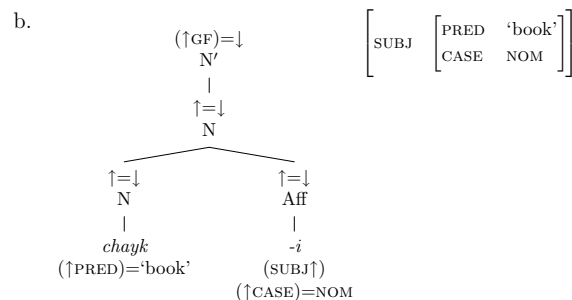
b.  $f$  [SUBJ  $f'$  [ ]]

(21) -ni (SUBJ↑)  
(↑CASE) = ERG

cf. Bresnan (2001):  $(\downarrow\text{CASE}) = \kappa \Rightarrow (\uparrow\text{GF}) = \downarrow$ ,  
e.g.  $(\downarrow\text{CASE}) = \text{ERG} \Rightarrow (\uparrow\text{SUBJ}) = \downarrow$

(22) a. -i/ka (SUBJ↑)  
(↑CASE) = NOM

...



(Lee 1999:212)

- Item and arrangement approach.
- Morphemes carry c-structure/f-structure dependency information.
- Feature percolation indicate that root (head) and morphemes are co-head ( $\uparrow=\downarrow$ ).

## 4 Discussion – towards the realisation morphology in LFG

Exercise for everyone.

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