Valency Change and Complex Predicates in Wolof: An LFG Account

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This paper presents an LFG-analysis of Wolof valency-changing affixes, focusing on those morphemes found in the applicative and causative constructions, as respectively exemplified by (1-2) and (3-4).

(1) Applicative *-al*

Faatu togg-**al** Gàllaay jën wi.
Faatu cook-APPL Gàllaay fish the.

'Faatu cooked the fish for Gàllaay.'

(2) Applicative *-e*

Faatu togg-**e** jën wi diw-tiir.
Faatu cook-APPL fish the oil-palm.

'Faatu cooked the fish with palm oil.'

(3) Causative *-al*

Faatu daw-**al** woto bi.
Faatu run-CAUS car the.

'Faatu made the car run.'

(4) Causative *-e*

Faatu génn-**e** jën wi.
Faatu go.out-CAUS fish the.

'Faatu let/made the fish go out.'

Valency-changing affixes in Wolof are extensively discussed in (Nouguier-Voisin, Sylvie, 2002; Buell and Sy, 2006), yet their precise linguistic analysis from a computational point of view has not been investigated in detail until now. Also, there is a lack of computational analysis addressing the issues of applicative-causative polysemy (e.g. *–al* in (1) and (3); *-e* in (2) and (4). As a way of satisfying this need, this paper proposes an linguistically motivated analysis integrated into an implementation of an existing computational grammar. Similar to the work for Indonesian (Arka et al., 2009), I adopt an LFG-based predicate composition approach of complex predicate formation (Alsina, 1996; Butt, 1993), and extend it to handle the Wolof data. However, the present approach does not propose a unified a(rgument)-structure to handle applicative and causative polysemy. It rather postulates an a-structure for each derivation type (applicative and causative) by analyzing polysemous affixes like *-al* and *-e* suffixes as carrying their own PRED(ICATE) argument structure which they share with another affixes of the same derivation type. Hence, the same a-structure is used for *-al* and *-e* causative as well as for all other causative suffixes (e.g. *-loo*, *-lu* and *-le* which are not shown here). Formally, the applied/causative verb is assumed to basically take two arguments. Both derivation type trigger a complex predicate composition with an a-structure consisting of a matrix and an embedded predicate, as respectively shown in (5a) and (5b).

(5) a. A-structure for applicative

'PRED_1 <PRED_2 <_,(_),(_)>, ARG_2 >'
arguments of PRED_2 (OA)
i.e. arguments OA: any roles
of the nonapplied verb introduced by the applicative

b. A-structure for causative

'PRED_1 <ARG_1, PRED_2 <_,(_),(_)> >'
(A) arguments of PRED_2
i.e. the arguments
of the underived verb

The a-structures in (5) assume that both applicative affixes (*-al* or *-e*) introduce the applicative object (OA) as a second argument ARG2 in the matrix predicate. In contrast, causative derived structures introduce an agent-like participant identified with ARG1 which bears the subject function prior to the causative derivation. The current analysis is implemented using the XLE parsing tool. The relevant components of the system include a tokenizer, a finite-state morphological analyzer, annotated phrase structure and sub-lexical rules. The implementation makes use of the restriction operator (Kaplan and Wedekind, 1993; Butt et al., 2003). Example (6) shows the c-structure rule proposed for the *-al* applicative suffix.

(6) *Vappl* → V-S_BASE: ↓\PRED\OBJ-TH\OA = ↑\PRED\OBJ-TH\OA

(↓ PRED) = (↑ PRED ARG2)
(↓OBJ)
(↓OBJ)=(↑ OBJ);
(V-AL_BASE).

Morphosyntactic and semantic information (e.g. verb base form, Part-of-Speech tags, semantic PRED) is encoded in the lexicon. Instead of having different categories for polysemous affixes, the grammatical category is rather shared between suffixes which have the same morphological form. Thus, the applicative-causative suffix *-al* shares a unique grammatical category, i.e. V-AL, as exemplified by the lexical entry in (7). The f- and c-structure for the applicative construction in (1) is respectively exemplified by (8) and (9). The proposed analysis serves as evidence that LFG motivated computational grammars and lexicons can be used to handle polysemous affixes, like those found in Wolof.

(7) Lexical entry for the polysemous affix *-al*

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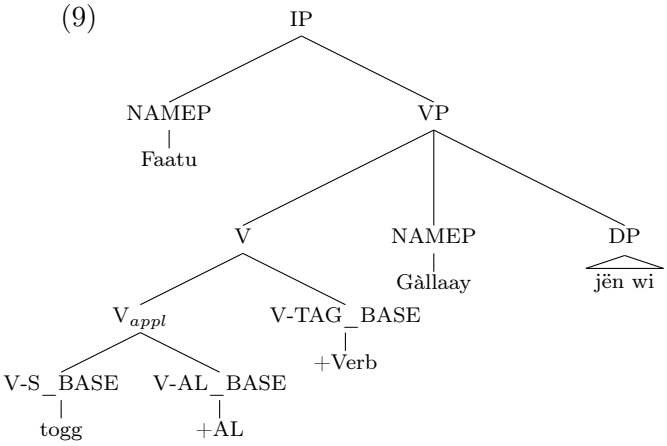
+AL   V-AL   XLE    {   (↑ PRED)='appl<%ARG1 (↑ OBJ)>'        #Applicative
                       (↑ APPLICATIVE)= + |
                       (↑ PRED)='caus<(↑ SUBJ) %ARG2         # Causative
                       (↑ CAUSATIVE)= +
                   }
```

(8)

PRED	**'appl** ⟨ 'togg ⟨ [faatu], [jën] ⟩', [gàllaay] ⟩'
SUBJ	[PRED 'faatu'; NTYPE [NSYN proper]; ANIM +, NUM sg, PERS 3]
OA	[PRED 'gàllay'; ....]
OBJ	[PRED 'jën'; NTYPE [NSEM [COMMON count]; NSYN common]; SPEC [DET [DET-TYPE def; DEIXIS prox]]; ANIM +, NUM sg, PERS 3]
TNS-ASP	[MOOD indicative]
APPLICATIVE	+
GLOSS	cook
CLAUSE-TYPE	decl

(9)



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