

# Relative clauses in Wolof: An LFG account

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## Abstract

This paper provides a description of the syntax of relative clauses in Wolof and presents a formal analysis of the facts described building on existing LFG work on relatives. The paper explores the distribution of the resumption and gap relativization strategies, providing a discussion of the status of the kinds of resumptive pronouns found in Wolof.

## 1 Introduction

This paper presents an analysis of Wolof relative clauses in the framework of Lexical Functional Grammar (LFG) (Bresnan 2001, Dalrymple 2001). Wolof is a West Atlantic language, an important branch of the Niger-Congo language family (Sapir 1971). Building on existing LFG work on relatives (Dalrymple 2001, Asudeh 2004, Camilleri and Sadler 2011a,b), I propose a uniform analysis for the types of relative clauses found in Wolof and show how such constructions can be accommodated in LFG quite straightforwardly. The analysis will also give a particular focus on the distribution of the resumption and gap relativization strategies. I will try to provide evidence for the status of the resumptive pronouns found in that language. I hope that this contribution will also lay the groundwork for a comparison to pronoun resumption in LFG.

This paper is organised as follows. Section 2 outlines and illustrates the basic morphosyntactic characteristics of relative clauses in Wolof. Section 3 provides a brief introduction to work on relative clauses in LFG which we build on. Section 4 presents a basic LFG analysis of the Wolof relative clauses. Section 5 discusses recent work on pronoun resumption in LFG, and section 6 presents the analysis proposed for Wolof resumptive pronouns. Section 7 concludes the discussion.

## 2 General properties of Wolof relative clauses

Similar to Bantu languages, Wolof has noun classes (McLaughlin 2010, Torrence 2013, Dione 2014b): 8 singular classes, and 2 plural classes. The indexes (or markers) for singular noun classes are: *b*, *g*, *j*, *k*, *l*, *m*, *s*, *w*, and for plural noun classes are: *y* and  $\tilde{n}$ .<sup>1</sup> Unlike Bantu languages, in Wolof, class membership is typically expressed by a class index on nominal dependents such as determiners and relative pronouns rather than on the noun itself.

Wolof has three types of determiners, as illustrated in (1). Morphologically, each determiner consists of a noun class index (CL) and a vowel, yielding the following patterns: *CL-i*, *CL-a*, and *CL-u*. Determiners with the *CL-i* pattern are interpreted as definite and proximal (DFP). Likewise, determiners with the *CL-a*

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<sup>1</sup>Although the *k* and  $\tilde{n}$  classes are associated with humans, while *l* and *y* are typically non-human classes, the Wolof noun class system generally lacks semantic coherence (McLaughlin 2010).

pattern are interpreted as definite and distal (DFD). In contrast, determiners that exhibit the *a-CL* pattern are indefinite (IND). Definite determiners invariably follow the noun, while the indefinite determiner invariably precedes the noun.<sup>2</sup>

- |     |    |                 |    |                  |    |                |
|-----|----|-----------------|----|------------------|----|----------------|
| (1) | a. | <i>jën w-i</i>  | b. | <i>jën w-a</i>   | c. | <i>a-w jën</i> |
|     |    | fish CL-DFP     |    | fish CL-DFD      |    | IND-CL fish    |
|     |    | “the fish here” |    | “the fish there” |    | “a/some fish”  |

Furthermore, Wolof has three basic types of relative clauses (Torrence 2005, 2013), as illustrated in (2). These are distinguished by their ‘relative markers’ (as underlined). The relative markers are identified by their form which is strikingly similar to the determiners. The interpretation of the antecedent varies according to the form of the relative marker. In relative clauses like (2a) where the relative marker has the *CL-i* pattern, the antecedent is interpreted as definite and proximal (spatially, temporally, or in the discourse). On the other hand, the antecedent of relative markers that have the *CL-a* pattern, as in (2b), is interpreted as definite and distal. In contrast, when the relative marker occurs in the *CL-u* pattern, the antecedent is interpreted as indefinite, as in (2c). Also note the difference between the indefinite relative marker and the indefinite determiner. The former has the *CL-u* pattern, while the latter exhibits the *a-CL* pattern.

- |     |    |                                    |             |                          |
|-----|----|------------------------------------|-------------|--------------------------|
| (2) | a. | <i>jën <u>w-i</u> janq b-i</i>     | <i>lekk</i> | <i>i-Relative Clause</i> |
|     |    | fish CL-i girl CL-DFP eat          |             |                          |
|     |    | “the fish here that the girl ate”  |             |                          |
|     | b. | <i>jën <u>w-a</u> janq b-i</i>     | <i>lekk</i> | <i>a-Relative Clause</i> |
|     |    | fish CL-a girl CL-DFP eat          |             |                          |
|     |    | “the fish there that the girl ate” |             |                          |
|     | c. | <i>jën <u>w-u</u> janq b-i</i>     | <i>lekk</i> | <i>u-Relative Clause</i> |
|     |    | fish CL-u girl CL-DFP eat          |             |                          |
|     |    | “some fish that the girl ate”      |             |                          |

As examples (3) show, determiners may co-occur with the relative markers. The optionality brackets in (3) denote the fact that the determiner should be interpreted as true optionality. As Torrence (2013) pointed out, this is presumably because it is possible to recover the content of the determiner from the form of the relative marker. Moreover, relative markers and determiners (if present) obligatorily agree both with the relativized NP in noun class (otherwise the clause becomes ungrammatical). In (3), the relative markers and the determiners agree with the noun *jën* ‘fish’ in the *w* class.

<sup>2</sup>Abbreviations in the glosses: APPL: applicative; CL: noun class; COP: copula; DFP: definite proximal; DFD: definite distal; +F: finite; IPFV: imperfective; NDF: indefinite; NSFOC: non-subject focus; O: object; PFV: perfective; PL: plural; POSS: possessive; REL: relative; SUBJ: subject; SG: singular; 1, 2, 3: first, second, third person.

- (3) a. *jën w-i janq b-i lekk (w-i) i-Relative Clause*  
 fish CL-i girl CL-DFP eat CL-DFP  
 “the fish here that the girl ate”
- b. *jën w-a janq b-i lekk (w-a) a-Relative Clause*  
 fish CL-a girl CL-DFP eat CL-DFD  
 “the fish there that the girl ate”
- c. *(a-w) jën w-u janq b-i lekk u-Relative Clause*  
 IND-CL fish CL-u girl CL-DFP eat  
 “some fish that the girl ate”

In contrast to English (4) and many other languages, in Wolof, the relative markers must be overt. Dropping them would make the clause ungrammatical (5).

- (4) the fish \_\_ the girl ate
- (5) *\*jën \_\_ janq b-i lekk*  
 fish \_\_ girl CL-DFP eat  
 FOR: “some/the fish the girl ate”

The three types of relative markers may be used both in short or immediate distance dependencies (IDD) and in long distance dependencies (LDD) for relativization on all clause internal grammatical functions (GF). Thus, for Wolof, there seems to be no accessibility hierarchy effects (Keenan and Comrie 1977). It is possible to relativize subject, direct and indirect objects, possessors, as well as obliques and adjuncts. Examples (6b-6e) illustrate cases involving relativization of SUBJ. Example (6a) gives the base sentence.<sup>3</sup> In (6b), because the subject is in highest position, only a gap is allowed; a resumptive pronouns (RP) is not available. In contrast, in cases involving LDDs (6c-6e), pronoun resumption (e.g. using *mu-a*, *na* or *mu*) is obligatory. Thus, Wolof seems to be subject to the familiar Highest Subject Restriction (HSR)(Borer 1984, McCloskey 1990). This principle prohibits RPs in the highest subject position in unbounded dependencies. Many languages have been reported to be subject to this constraint, including Irish (McCloskey 1990), Hebrew (Shlonsky 1992) and Maltese (Camilleri and Sadler 2011a).

- (6) a. *Janq b-i jox na góor g-i caabi j-i.*  
 girl CL-DFP give 3SG man CL-DFP key CL-DFP  
 “The girl gave the key to the man.”
- b. *janq b-i jox (\*na) góor g-i caabi ji*  
 girl CL-REL give (\*3SG) man CL-DFP key CL-DFP  
 “the girl that gave the man the key”

<sup>3</sup>The examples in (6) involve relative markers with the *CL-i* patterns, but relativization based on the *CL-a* or *CL-u* pattern would give similar constructions (thus, examples with the other types of relative markers may be omitted for lack of space). Also, to avoid confusion between the determiners and the relative markers, I will use the gloss (CL-REL) for relative markers in the rest of the paper.

- c. *janq b-i ñu wax ni \*(mu-a) jox góor g-i caabi*  
 girl CL-REL 3PL say that \*(3SG-SFOC) give man CL-DFP key  
*j-i*  
 CL-DFP  
 “the girl that they said that it’s her who gave the man the key”
- d. *janq b-i ñu wax \*(mu) jox góor g-i caabi j-i*  
 girl CL-REL 3PL say \*(3SG) give man CL-DFP key CL-DFP  
 “the girl that they said that she gives the man the key”
- e. *janq b-i ñu wax ni jox \*(na) góor g-i caabi j-i*  
 girl CL-REL 3PL say that give (3SG) man CL-DFP key CL-DFP  
 “the girl that they said that she gave the man the key”

In Wolof, relativization from embedded clauses typically involves embedded clefts (6c). There are three types of clefts in the language (Robert 1991, Torrence 2005, Dione 2012): subject, non-subject, and verb clefts. Clefting can be used to put the subject (6c), the predicate, or any constituent which is neither subject nor main verb into focus (non-subject cleft). For instance, the embedded clause in (6c) is a subject cleft, as indicated by the focus marker *mu-a*, which expresses 3SG subject (*mu*) and the subject focus (SFOC) copula *a*. As examples (6d-6e) show, it is also possible to have other embedded complement clause types such as narrative clauses (6d) and neutral perfective clauses (6e).<sup>4</sup>

The examples in (7) illustrate the relativization of primary objects (OBJ).<sup>5</sup> Here also, in short distance dependencies, only a gap is permitted, excluding an RP from the highest OBJ positions (7a). However, when extracting from the object position in long paths, there are two possibilities. If the embedded clause is a non-subject cleft non-subject cleft (NSC) (7b) or a non-finite complement clause (7d), then a gap and RP are freely interchangeable. Otherwise, in all other embedded clauses (including the other types of clefts), pronoun resumption is compulsory, as in (7c). In (7b), the embedded clause is a non-subject cleft, as indicated by *la*, which consists of the non-subject focus (NSFOC) copula *la* and an empty 3SG morph. Also, note that resumptive pronouns in non-subject clefts are typically strong pronouns (e.g. *moom*). These are very similar to French emphatic pronouns (e.g. *moi, toi, lui,..*) in the sense that they are only used in isolation, in emphatic positions, as objects of preposition, in dislocated positions, and cleft sentences, but otherwise never as direct or indirect objects (Zribi-Hertz and Diagne 2002). Object clitics, e.g. *ko* (3SG.O = third singular object) as in (7d), appear in object positions instead. Relativization on secondary objects (OBJ-TH) and applied objects (OBJ-APPL)<sup>6</sup> occur in a similar way to relativization of primary objects.

<sup>4</sup>For a detailed discussion of Wolof clause types, see Torrence (2005), Dione (2020).

<sup>5</sup>Wolof is a symmetrical language. The status of primary vs. secondary object is determined by word order (see Dione (2014a) for more details).

<sup>6</sup>For a more detailed discussion of applicative structures in Wolof, see e.g. Dione (2013), Harris (2015). Dione (2013) provided an LFG-based analysis of these constructions.

- (7) a. *góor g-i janq b-i jox (\*ko) caabi j-i*  
 man CL-REL girl CL-DFP give (\*3SG.O) key CL-DFP  
 “the man that the girl gave the key”
- b. *góor g-i Awa foog ni (moom) la janq b-i*  
 man CL-REL Awa think that (him) NSFOC.3SG girl CL-DFP  
*jox caabi j-i*  
 give key CL-DFP  
 “the man that Awa thinks that the girl gave the key”
- c. *góor g-i Awa foog ni janq b-i jox na \*(ko)*  
 man CL-REL Awa think that girl CL-DFP give 3SG \*(3SG.O)  
*caabi j-i*  
 key CL-DFP  
 “the man that Awa thinks that the girl gave the fish”
- d. *góor g-i xale y-i bëgg janq b-i jox (ko) caabi*  
 man CL-REL child CL-DFP want girl CL-DFP give (3SG.O) key  
*j-i*  
 CL-DFP  
 “the man that the children want that the girl give him the key”

Relativization of obliques (OBL) and adjuncts (ADJ) is quite complex. In contrast to term functions (i.e. SUBJ, OBJ, OBJ-TH), relativization on OBL and ADJ typically requires valency change in terms of an applicative construction. This requirement holds for short distance dependencies (8b), but also for LDDs where the domain of extraction is a non-subject cleft (8c). For the other LDD cases, the valency change seems to be compulsory for the extraction of ADJ only (not OBL).

For instance, relativization of the oblique argument (i.e. *góor gi* ‘the man’) in (8a) triggers applicative derivation (8b-8c) with the suffix *-al*, by virtue of which an OBL argument is typically promoted to an applied object (OBJ-APPL) with the semantic role of beneficiary, recipient, or comitative (8). Here too, the RP is excluded in IDD (8b), but may alternate with a gap in LDDs that involve non-subject clefts (8c). As (8d) shows, if the domain of extraction in long paths is a clause other than an NSC, then the applicative derivation is prohibited (i.e. there is no valency change) and the presence of a (strong) resumptive pronoun is required.

- (8) a. *Janq b-i wax na ak góor g-i ci kër g-i.*  
 girl CL-DFP talk 3SG to man CL-DFP in house CL-DFP  
 “The girl talked to the man in the house.”
- b. Oblique → Applied Object (IDD)  
*góor g-i janq b-i wax-\*(al) (\*ko) ci kër g-i*  
 man CL-REL girl CL-DFP talk-APPL (\*him) in house CL-DFP  
 “the man that the girl talked to in the house”
- c. Oblique → Applied Object (LDD, non-subject cleft)

*góor g-i ñu foog ni (moom) la janq b-i*  
 man CL-REL 3PL think that (him) NSFOC.3 girl CL-DFP  
*wax-\*(al) ci kër g-i*  
 talk-APPL in house CL-DFP

“the man that they think that the girl talked to in the house”

- d. Oblique → Oblique (LDD, neutral)

*góor g-i ñu foog ni janq b-i wax-\*(al) na ak*  
 man CL-REL 3PL think that girl CL-DFP talk-(\*APPL) 3SG to  
*\*(moom) ci kër g-i*  
 \*(him) in house CL-DFP

“the man that they think that the girl talked to in the house”

Likewise, relativization of a locative adjunct, as in (8a), triggers applicative derivation by which the adjunct is promoted to a special kind of oblique (9a-9b), i.e. OBL-LOC (for locative oblique). Here, the applicative derivation is compulsory (both in IDD and LDD) and occurs by means of the suffix *-e*, which introduces participants with an instrumental (10b), locative (9a), or manner role. The distribution of gap and RP is similar to what we observed for relativization of OBL.

- (9) a. Locative adjunct → OBL-LOC (IDD)

*kër g-i janq b-i wax-\*(e) (\*fa) ak góor g-i*  
 house CL-REL girl CL-DFP talk-APPL (\*there) with man CL-DFP

“the house where the girl talked to the man”

- b. Locative adjunct → OBL-LOC (LDD, non-subject cleft)

*kër g-i ñu foog ni \*(fa) la janq b-i*  
 house CL-REL 3PL think that \*(there) NSFOC.3 girl CL-DFP  
*wax-\*(e) ak góor g-i*  
 talk-APPL with man CL-DFP

“the house where they think that the girl talked to the man”

As with locative adjuncts, relativization of instrumental adjuncts, as in (10), also triggers an obligatory applicative process (with the *-e* form). However, in the latter case, the instrumental becomes an applied object rather than an oblique (10b-10d). Here again, RP is prohibited in IDD (leaving a gap) as in (10b), but required in LDD if the domain of extraction is not a non-subject cleft, e.g. as in (10d), which is a perfective affirmative clause; otherwise, the RP may alternate with a gap (10c).

- (10) a. *Janq b-i ubbi na bunt b-i ak caabi j-i.*

girl CL-DFP open 3SG door CL-DFP with key CL-DFP

“The girl opened the door with the key.”

- b. Instrumental adjunct → Object (IDD)

*caabi j-i janq b-i ubb-\*(e) (\*ko) bunt b-i*  
 key CL-REL girl CL-DFP open-APPL (\*it) door CL-DFP

- “the key that the girl opened the door with”
- c. Instrumental adjunct → Object (LDD, non-subject cleft)
- caabi j-i ñu foog ni (moom) la janq b-i*  
 key CL-REL 3PL think that (it) NSFOC.3 girl CL-DFP  
*ubb-\*(e) bunt b-i*  
 open-APPL door CL-DFP
- “the key that they think that the girl opened the door with”
- d. Instrumental adjunct → Object (LDD, neutral perfective)
- caabi j-i ñu foog ni janq b-i ubb-\*(e) na \*(ko)*  
 key CL-REL 3PL think that girl CL-DFP open-APPL 3SG \*(it)  
*bunt b-i*  
 door CL-DFP
- “the key that they think that the girl opened the door with”

Finally, a gap is not licensed as POSS (11).

- (11) a. *xale b-i ma xam yaay-\*(am)*  
 child CL-REL 1SG know mother-POSS.3SG  
 “the child whose mother I know”
- b. *xale b-i ñu foog ni xam naa yaay-\*(am)*  
 child CL-REL 3PL think that know 1SG mother-POSS.3SG  
 “the child that they think I know his mother”

Table (1) summarises the distribution pattern for the Wolof relative clauses in both IDD and LDDs. For IDDs, only gap is allowed, except for relativization of POSS (which always requires pronoun resumption). For LDDs, gap is typically permitted only if the domain of extraction is a non-subject cleft (NSC) or a non-finite complement clause; otherwise only RPs are allowed. Furthermore, relativization of OBL in IDD requires applicative derivation. In contrast, extraction of OBL from a long path triggers applicative if the domain of extraction is a non-subject cleft; otherwise the OBL remains in situ and applicative derivation is not permitted. Relativization of locative or instrumental ADJ triggers both non-subject clefting and valency change in terms of applicative derivation. This distribution raises some interesting issues that will be discussed below.

GF	IDD	LDD	Restriction	GF	IDD	LDD	Restriction
SUBJ	Gap	RP		OBL	Gap	Gap/RP	+APPL in IDD/LDD with NSC, otherwise -APPL
OBJ	Gap	Gap/RP		Loc. ADJ	Gap	Gap/RP	+APPL
OBJ-TH	Gap	Gap/RP		Ins. ADJ	Gap	Gap/RP	+APPL
OBJ-APPL	Gap	Gap/RP	+APPL	POSS	RP	RP	

Table 1: Summary for Wolof Relatives.



### 3 Analysis of relative clauses in LFG

In LFG, relative clauses, like topicalization and wh-questions, are instances of long-distance dependencies (LDD) (Dalrymple 2001, Bresnan 2001). LDDs are constructions where “a displaced constituent bears a syntactic function usually associated with some other position in the sentence” (Dalrymple 2001, p. 389).

Unlike constructions such as topicalization, relative clauses involve two long-distance dependencies. The first dependency holds between the displaced (or fronted) constituent (also called filler), e.g. the NP *kër* ‘house’ in (12a-12c), and the within-clause grammatical (GF) it fills (e.g. OBJ). The filler plays two roles simultaneously: it bears the syntacticized TOPIC function (Bresnan and Mchombo 1987) and the within-clause GF it fills. The relation between the two positions must be controlled according to the Extended Coherence Condition (Dalrymple 2001, p. 390), which basically states that, in order for the f-structure to be coherent, the TOPIC must be linked to a GF within the clause. The second dependency holds between the relative pronoun and its position within the fronted phrase. Following previous works (Butt et al. 1999, Dalrymple 2001, Falk 2001), the relative pronoun is analyzed at the f-structure level as contributing to the RELPRO feature within the relative clause.

As examples (12a-12c) show, in relative clauses, the distance between the fronted material and the within-clause GF can be local (12a) but also potentially unlimited (12b-12c), hence the name *long-distance dependencies*. In Wolof, similar to English (Dalrymple 2001) and many other languages, the path can pass through any number of COMP (12b) or XCOMP (12c) clauses with some restrictions.

- (12) a. *kër g-i jigéen j-i tabax (\*ko)*  
house CL-REL woman CL-DFP build (\*it)  
“The house that the woman built”
- b. *kër g-i ñu wax ni Awa foog na ni jigéen j-i*  
house CL-REL 3PL say that Awa think 3SG that woman CL-DFP  
*tabax na \*(ko)*  
build 3SG \*(it)  
“The house that they said that Awa thinks that the woman have built”
- c. *kër g-i ñu wax ni Awa foog na ni jigéen j-i*  
house CL-REL 3PL say that Awa think 3SG that woman CL-DFP  
*bëgg na \*(ko) tabax*  
want 3SG \*(it) build  
“The house that they said that Awa think that the woman wants to build”

Furthermore, while in (12a-12c), the TOPIC also bears the OBJ function, it might be the SUBJ or OBL, and so on in other examples. In LFG, this situation is accounted for in terms of “functional uncertainty” (Dalrymple 2001, Austin 2001) about the grammatical function of the TOPIC. This is typically expressed in terms

of equations like (13) which links the TOPIC to a grammatical function as specified by the symbol GF which represents a disjunction of all relevant grammatical functions (i.e. SUBJ, OBJ, OBJ-TH, OBL, and so on).

$$(13) \quad (\uparrow \text{TOPIC}) = (\uparrow \{\text{COMP} \mid \text{XCOMP}\}^* \text{GF})$$

There are typically restrictions on the relation between the filler and the within-clause GF in long-distance dependency constructions. These restrictions are defined in terms of island constraints (Falk 2001), including complex noun phrase constraints (CNPC), adjunct constraints and *wh*-island constraints. To satisfy such constraints, resumptive pronouns might provide the possibility (not always as discussed below) to fill the gaps in the domain of extraction. The analysis of resumptive pronouns in LFG in general and in Wolof in particular will be addressed in sections 5 and 6, respectively. Before that, section 4 presents the basic analysis of Wolof relative clauses I propose within the LFG framework.

#### 4 Basic Analysis of Wolof Relative Clauses in LFG

To account for the relative clauses in Wolof, I will draw on the analysis of English restrictive relative clauses provided in Dalrymple (2001). This approach has inspired the analysis of relative clauses for languages like Modern Greek (Chatsiou 2010) and Maltese (Camilleri and Sadler 2011a,b). In the same spirit, I propose the following c-structure rules in (14-15) for the analysis of Wolof relative clauses. The rule in (14) states that a relativized noun phrase (NP) consists of nominal head (NOM)<sup>7</sup> and *CP* adjuncts. The f-structure of the *CP* is assumed to be a member of the set of modifiers of the noun phrase, i.e.  $\downarrow \in (\uparrow \text{ADJ})$ .

$$(14) \quad \text{NP} \quad \rightarrow \quad \begin{array}{cc} \text{NOM} & \text{CP}^* \\ \uparrow = \downarrow & \downarrow \in (\uparrow \text{ADJ}) \end{array}$$

The rule for the *CP* relative is given in (15), which states that the *CP* consists of an obligatory relative phrase constituent *RelP* and an *IP*.

$$(15) \quad \text{CP} \quad \rightarrow \quad \begin{array}{l} \text{RelP} \\ (\uparrow \text{TOPIC}) = \downarrow \\ (\uparrow \text{TOPIC}) = (\uparrow \text{RTOPICPATH}) \\ (\uparrow \text{RELPRO PRON-TYPE}) =_c \text{rel} \\ @\text{REL-FEAT} \end{array} \quad \begin{array}{l} \text{IP} \\ \uparrow = \downarrow \end{array}$$

For Wolof, *RelP* is the specifier of *CP* and consists just of a relative marker, which is analyzed as a relative pronoun. In previous work, the Wolof relative markers have received different analyses, including connectives (Voisin-Nouguier 2002)

<sup>7</sup>NOM includes a wide variety of nominals: common nouns, proper names, quantifiers (e.g. *ñépp* ‘everybody’) and strong pronouns (e.g. *moom* ‘him’ as in *moom mi Awa gis* ‘him who Awa saw’).

and complementizers (Torrence 2013). On my analysis, however, the relative markers are relative pronouns. This is because, in most of the Wolof relative clauses examples we discussed so far, there is clearly a gap. For instance, in (16), the gap in the relative clause shows the absence of relativized *meew* ‘milk’. Here, *mi* is the only word which can reasonably contribute the f-structure required for the verb to find an OBJ-TH argument. A different analysis for (16), for example one wherein *mi* is some kind of complementizer which introduces topic and certain agreement features, but does not contribute a semantic predicate on its own, would create a real problem in terms of the LFG wellformedness principles (Bresnan 2001). Furthermore, there do not appear to be cases that clearly rule out the pronominal nature of *mi* (and similar relative markers). It seems like the relative marker must be a relative pronoun. From the perspective of LFG they contribute a PRED ‘pro’.

- (16) *meew m-i      janq b-i      jënd-al      góor g-i      —*  
 milk CL-REL girl CL-DFP buy-APPL man CL-DFP  
 “the milk which the girl bought for the man”

The fact that *RelP* consists just of a relative pronoun contrasts with the situation in languages like English where several phrases (e.g. NPs, PPs, APs, and AdvP) can instantiate *RelP* (Dalrymple 2001, p. 404). This is because, in English, the relative pronoun lures some additional material (e.g. *whose book*; *whose brother’s book*; *a friend of whose brother*; *in which*;...) along with it when moving to the front of the sentence. This phenomenon, known as pied piping (Ross 1967), does not seem to occur in Wolof relative clauses. Thus, the possible instantiations of *RelP* are basically relative pronouns.

The first equation ( $\uparrow$  TOPIC)= $\downarrow$  in (15) constrains the f-structure associated with *RelP* to bear the TOPIC role in the f-structure. Subsequently, the second equation ( $\uparrow$  TOPIC)=( $\uparrow$  RTOPICPATH) ensures that the TOPIC function also fills a within-clause GF, as required by the Extended Coherence Condition. RTOPICPATH represents the long-distance path relating these two positions and is defined for Wolof as given in (18). The third constraint ( $\uparrow$  RELPRO PRON-TYPE) =<sub>c</sub> rel requires the value of the RELPRO attribute to be a relative pronoun.

The definition of @REL-FEAT is given in (17). This contains constraints that enforce agreement between the head noun and the relative pronoun. These constraints unify all class, number, and person information. In other words, the annotations ( $\uparrow$  RELPRO NUM)=( $\uparrow$  NUM) and ( $\uparrow$  RELPRO PERS)=( $\uparrow$  PERS) state that RELPRO must have a relative pronoun, and its NUM and PERS must match the NUM and PERS of the relativized NP. The annotation ( $\uparrow$  RELPRO CLASS) = ( $\uparrow$  NOUN-CLASS) puts similar constraints regarding noun class agreement. The symbol DIRGF (19) encodes the direct (nominal) grammatical functions.

- (17) REL-FEAT  $\equiv$  ( $\uparrow$  RELPRO NUM) = ( $\uparrow$  NUM)  
 ( $\uparrow$  RELPRO PERS) = ( $\uparrow$  PERS)  
 ( $\uparrow$  RELPRO CLASS) = ( $\uparrow$  CLASS)

(18)  $\text{RTOPICPATH} \equiv \{\text{COMP} \mid \text{XCOMP}\}^* \text{DIRGF} \mid \text{OBL-LOC}$   
@APPL-FEAT

(19)  $\text{DIRGF} \equiv \text{SUBJ} \mid \text{OBJ} \mid \text{OBJ-APPL} \mid \text{OBJ-TH}$

As we saw in section 2, extraction of a locative adjunct triggers applicative derivation with the argument being promoted to OBL-LOC. This requirement is encoded in @APPL-FEAT, which is defined as shown in (20). This additional condition ensures that the f-structure of the domain of extraction contains the attribute APPLICATIVE with value ‘+’, but also that the morphological form of the derivation suffix be *-e* to avoid ambiguity with other types of applicatives.

(20)  $\text{APPL-FEAT} \equiv (\uparrow \text{APPLICATIVE}) =_c +$   
( $\uparrow \text{APPL-FORM}$ ) =<sub>c</sub> e

The c- and f-structure representations associated with example (21) are given in Figure 1 (some minor morphosyntactic features are omitted for lack of space). As the f-structure shows, the TOPIC function is coindexed with OBJ expressing the dependency between the filler and the grammatical function from which it has been extracted. The other dependency, which involves the relative pronoun and its position is also made visible through co-indexation of TOPIC with RELPRO. Agreement (in number, person, and noun class) between the relativized NP and the relative pronoun is ensured by the constraints given in (17). Otherwise, the resulting f-structure would be deemed ungrammatical.

(21) *kër g-i xale y-i tabax*  
 house CL-REL child CL-DFP build  
 “the house that the children built”

The lexical entry for the relative pronoun *gi* is shown in (22). The relative pronoun specifies number, person, noun class and deixis features of the fronted material. It also indicates the type of pronoun (here relative). A different pronoun such as *ba* would have almost identical features, except for the DEIXIS attribute, which would have the value *distal*. In contrast, the relative pronoun *bu* would lack the DEIXIS attribute.

(22) *gi* PRON ( $\uparrow \text{PRED}$ )=‘pro’  
( $\uparrow \text{NUM}$ )=sg  
 ( $\uparrow \text{PERS}$ )=3  
 ( $\uparrow \text{CLASS G}$ )=+  
 ( $\uparrow \text{DEIXIS}$ )=prox  
 ( $\uparrow \text{PRON-TYPE}$ )=rel  
 @ANTPROAGR

Another important constraint that needs to be handled is agreement between the antecedent, the relative pronoun and the determiner (if present). As mentioned above, all these three elements must agree in number, person, definiteness, and noun class. For instance, the c-structure and f-structure of the determiner phrase *DP house gi* ‘the house’ are given in Figure 2. The determiner introduces a *DET*

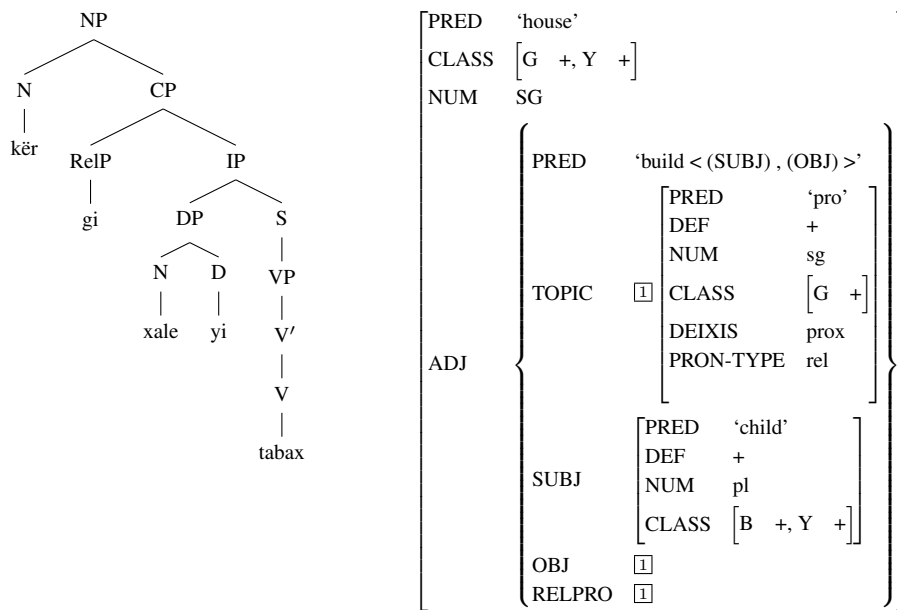


Figure 1: C- and f-structure of example (21)

feature under *SPEC* that indicates the semantic predicate *gi*, the deixis (proximal) and the type of the determiner (e.g. definite). It also specifies the person and number of the structure. Agreement between the determiner and the noun is controlled via a constraining equation — not displayed here — which, for instance, makes sure that the determiner *gi* agrees with the noun *kër* in the *G* class, i.e. a noun with the f-structure [G +].

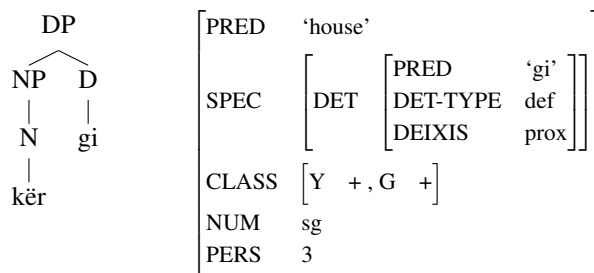


Figure 2: C-structure and f-structure of the DP *kër gi* ‘the house’

The constraints defined in ANTPROAGR as shown in (23) enforce agreement between the antecedent and the relative pronoun (and indirectly agreement between the antecedent and the determiner).

- (23) ANTPROAGR  $\equiv$  ((ADJ  $\in$  PATH\*  $\uparrow$ ) SPEC DET DET-TYPE) = def  
 ((ADJ  $\in$  PATH\*  $\uparrow$ ) SPEC DET DEIXIS) = prox  
 ((ADJ  $\in$  PATH\*  $\uparrow$ ) CLASS G) = +  
 ((ADJ  $\in$  PATH\*  $\uparrow$ ) NUM) = sg  
 ((ADJ  $\in$  PATH\*  $\uparrow$ ) PERS) = 3
- (24) PATH = {COMPIXCOMP}

## 5 Resumptive Pronouns in LFG

As one of the earliest work on pronoun resumption in LFG, Falk (2002) considers resumptive pronouns as elements that are not licensed in the normal way by functional uncertainty equations, but rather by establishing a referential (anaphoric) identity between the two positions. He considered that this analysis is able to account for the similarities and differences between gaps and resumptive pronouns. Other subsequent works in LFG, including (Asudeh 2011, Camilleri and Sadler 2011a), make a key distinction between (i) true resumptive pronouns (TRP), (ii) gaps and (iii) ‘false’ resumptive (or intrusive) pronouns (FRP). TRPs are bound pronouns whereas gaps are bound variables: both are bound elements. TRPs are grammatically licensed bound pronouns, while FRPs are not grammatically licensed (but rather a processing or performance phenomenon). These two types of pronouns display different properties that can be summarized as follows. True resumptives permit binding by a quantifier resisting an e-type interpretation (*every*, *each*, *no*) as in (25a), support a list answer (25b), and support functional answers to questions. In contrast, intrusive pronouns do not support any of the aforementioned properties. These examples are taken from Camilleri and Sadler (2011a).

- (25) a. I’d like to review every book that Mary couldn’t remember if she’d read TRP/\*FRP before.  
 b. Which of the linguists do you think if Mary hires TRP/\*FRP everyone will be happy? (— Chris, Daniel or Bill).

Asudeh (2011) (building on McCloskey (1990)) made a distinction between two types of true resumptive pronouns: syntactically active resumptives (SAR) and syntactically inactive resumptives (SIR). SARs do not behave like gaps and are instances of anaphorically bound pronouns in the syntax. These are the types of RPs found in languages like Irish and Hebrew (Asudeh 2011). On the other hand, SIRs display gap-like properties, meaning that they are functionally controlled. The resumptive pronoun is treated as the bottom of a filler-gap dependency by restricting out the pronominal PRED value. According to Asudeh (2011), Swedish and Vata exemplify languages with resumptive pronouns of this type. He proposed five main syntactic diagnostics to distinguish SARs from SIRs: syntactic islands, weak crossover, across-the-board (ATB), parasitic gaps (PG) and reconstruction. The most robust diagnostics are syntactic islands and weak crossover (WCO). SIRs

but not SARs are island sensitive, subject to WCO, reconstruction licensed, allow ATB extraction and license PG. SARs are anaphorically bound, but SIRs are syntactically gap-like (i.e. absent in f-structure) and hence not anaphorically bound. This next section explores the status of resumptive pronouns in Wolof.

## 6 Wolof resumptive pronouns

Building on previous works in LFG (Asudeh 2011, Camilleri and Sadler 2011a), I will address two fundamental questions regarding resumptive elements in Wolof relative clauses. The first question is whether these elements are true resumptive pronouns or not, according to the diagnostics discussed in section (5). The second question is whether they are syntactically active (SAR) or syntactically inactive (SIR) pronouns. My investigation will closely mirror the methods used by Camilleri and Sadler (2011a,b) for Maltese, as that language shows striking similarities to Wolof in some extent.

To answer the first question, I provide data for the comparison between Wolof and English. The patterns in (26) are strikingly similar to the English examples in (25), suggesting that these elements are indeed true resumptives and not intrusive pronouns. (26a) shows that a resumptive pronoun may be bound by a quantifier (e.g. *bépp* ‘every’) resisting an e-type interpretation. (26b) shows that the pronoun in question supports a list answer (and so is a resumptive), and (26c) demonstrates that it supports a functional answer to a *wh*-question. Together, these examples seem to provide evidence that Wolof has true resumptives rather than intrusive pronouns in these contexts.

- (26) a. *bépp tééré b-u Samba fàtte ni jàng na ko/\*FRP démb*  
 every book CL-u Samba forget that read 3SG it/\*\_\_ yesterday  
 “every book that Samba forgot that he has read it yesterday”
- b. *Ban jàngalekat nga foog ni su ko/\*FRP Awa jëlee*  
 which teacher 2SG think that if 3SG.O/\*\_\_ Awa employ-PFV  
*ñépp di-na-ñu bég?*  
 everyone IPFV-+F-3pl be.happy  
 “Which teacher do you think that if Mary succeeds in employing (him), everyone will be happy?”  
 “Omar, Faatu wala Birane” (= Omar, Faatu or Birane)
- c. *K-an mu-a-y jigéen j-i bépp góor xam*  
 CL-an 3SG-COP-IPFV woman CL-i every man know  
*yaay-\*(am)*  
 mother-3SG.POSS  
 “Which is the woman<sub>i</sub> whom every man knows her<sub>i</sub> mother?”  
 – “Awa” (=Awa)  
 – “jabaram” (=his wife)  
 – \*Samba, Awa ak Omar Faatu (= Samba, Awa and Omar, Faatu)

Now to answer the second question, we will use the five diagnostics as proposed by Asudeh (2011), starting with syntactic islands. Example (27) illustrates the Complex Noun Phrase Constraint (CNPC), with a (second) relative dependency into a CNP created by relativisation. Although the relativised position is one which is normally accessible to the gap strategy, the resumptive is obligatory here as a gap would cause a syntactic constraint violation.

- (27) *kër g-i ma xam góor g-i \*(ko) tabax*  
 house CL-i 1SG know man CL-DFP \*(it) build  
 “the house that I know the man who built it”

Relativization out of adjuncts (e.g. the bracketed constituent in (28a)) leaves a gap. Crucially, as (28b-28c) show, it appears that, for Wolof, both gaps and resumptive pronouns obey the adjunct island constraints.<sup>8</sup>

(28) Adjunct island

- a. *Samba xam na Awa [laata góor g-i tabax kër g-i]*  
 Samba know 3SG Awa before man CL-DFP build house CL-DFP  
 “Samba knew Awa before the man built the house.”
- b. *\*góor g-i Samba xam Awa [laata (mu) tabax kër g-i]*  
 man CL-i Samba know Awa before 3SG build house CL-DFP  
 “the man that Samba knew Awa before he built the house”
- c. *\*kër g-i Samba xam Awa [laata góor g-i tabax (ko)]*  
 house CL-i Samba know Awa before man CL-DFP build (it)  
 “the house that Samba knew Awa before the man built (it)”

Example (29) illustrates a *wh*-island where a *wh*-expression, *k-an* ‘who’, has been clefted into an embedded CP. As can be seen, with the RP, the construction is not subject to the *wh*-island constraint. However, without the resumptive pronoun, the long-distance dependency would be subject to island constraints.

(29) *wh*-Island

- a. *Samba xam na [k-an mu-a tabax kër g-i]*  
 Samba know 3SG CL-an 3SG-SFOC build house CL-DFP  
 “Samba knows who built the house.”
- b. *kër g-i Samba xam [k-an mu-a \*(ko) tabax]*  
 house CL-REL Samba know CL-an 3SG-SFOC \*(it) build  
 “the house that Samba knows who it was that built it”

The examples about complex noun phrase constraints (CNPC) and *wh*-island constructions seem to provide evidence that TRPs (unlike gaps) are felicitous within

<sup>8</sup>Palauan (Georgopoulos 1991) shows similar to Wolof in that extraction from an adjunct is ungrammatical, even with a resumptive pronoun.



these kinds of syntactic islands. However, both TRP and gap seem to be subject to the Adjunct Island Constraint, which appears to be too strong in Wolof.

Besides syntactic islands, weak crossover is the most robust SAR/SIR diagnostic. Let us consider (30), which is an instance of relativisation on the OBJ. The dependency between the antecedent *góor* (or the TOPIC) and the TRP ‘crosses over’ the possessive in *jabar-am*, but the sentence is perfectly well-formed. By contrast, and although both gap and TRP are generally available for relativisation on the OBJ, employing a version of (30) with a gap rather than a TRP is ungrammatical.

- (30) *góor<sub>i</sub> g-i ma xam ni jabar-\*(am<sub>i</sub>) bàyyi na ko*  
 man CL-REL 1SG know that wife-3SG.POSS leave 3SG 3SG.O  
 “the man that I know that his wife left him”

The Wolof data seem to provide support that the RPs found in that language are SARs (i.e. they should be treated as anaphoric pronouns at f-structure). On the basis of this evidence, the basic analysis of Wolof relative clauses given above can be extended by substituting (15) with (31). The only change is the addition of an anaphoric dependency ( $\uparrow$  TOPIC) = (( $\uparrow$  RRPPATH $\sigma$ ) ANTECEDENT) to allow for the use of a resumptive, and adding the resumptive path definition in (32).

- (31) CP  $\rightarrow$  RelP IP  
 $\uparrow = \downarrow$   
 ( $\uparrow$  TOPIC) =  $\downarrow$   
 { ( $\uparrow$  TOPIC) = ( $\uparrow$  RTOPICPATH) }  
 ( $\uparrow$  TOPIC) = (( $\uparrow$  RRPPATH $\sigma$ ) ANTECEDENT) }  
 ( $\uparrow$  RELPRO PRON-TYPE) =<sub>c</sub> rel  
 @REL-FEAT

- (32) RRPPATH  $\equiv$  { ARGF } \* GF  
 GF  $\equiv$  { SUBJ, OBJ, OBJ-APPL, POSS }  
 ARGF  $\equiv$  { SUBJ, OBJ, OBL, XCOMP, COMP }

As in Maltese (Camilleri and Sadler 2011a), the general impossibility of using a resumptive in the highest subject position may be captured by an anti-locality condition, as proposed in Asudeh (2004).

- (33) Anti-Locality Condition:  
 ( $\uparrow \sigma$  ANTECEDENT)  $\neq$  (( $\uparrow$  SUBJ) TOPIC) $\sigma$

The SAR/SIR diagnostic based on parasitic gaps is somewhat difficult to verify, as Wolof does not seem to have parasitic gap-like constructions (Torrence 2013). An example of parasitic gaps is illustrated for English in (34) where the second “gap” (marked with a p-subscript) appears to be dependent on the first “gap”. The second gap is “parasitic” in the sense that it can appear only by virtue of the appearance of the first gap. As can be seen in (36), there are two possible scenarios that

would give a grammatical sentence for these kinds of constructions: (i) a gap licenses an RP or an RP licenses another RP. In any case, a second gap is impossible (as a TRP is required instead). Thus, a gap cannot license another gap. Likewise, a resumptive pronoun cannot license a gap. If the embedded clause in (36) were a non-subject cleft instead, the first gap would be prohibited. We conclude, then, that the parasitic gap diagnostic is not exactly applicable in Wolof.

(34) Awa saw the car you bought \_\_\_ in order to fix \_\_\_<sub>p</sub> up.

(35) *Awa gis na nga jënd woto b-i ngir defar ko*  
 Awa see 3SG 2SG buy car CL-DFP in.order.to fix.up 3SG.O  
 “Awa saw the car you bought in order to fix it up.”

(36) *woto b-i Awa gis nga jënd (ko) ngir defar \*(ko)*  
 car CL-REL Awa see 2SG buy 3SG.O in.order.to fix.up 3SG.O  
 “the car Awa saw you bought in order to fix it up”

Furthermore, let us consider the distribution of gaps and resumptive pronouns in across-the-board (ATB) constructions. According to this diagnostic, SARs should not mix with gaps in ATB constructions. Example (37) involves an instance of ATB constructions in form of coordination of IPs (i.e. the TOPIC is outside the coordination). This example shows coordination under the relative pronoun with a gap in the first conjunct and an obligatory RP in the second conjunct. A gap would not be possible in the second conjunct. Conversely, a RP is not permitted in the first conjunct. The ATB data suggest that gap and TRP not only mix up, but that configuration is the only possible one. Following the approach developed in Asudeh (2011), the ATB data might suggest that Wolof also has SIRs (i.e. functionally controlled RPs or audible gaps). The result of this diagnostic would then be inconsistent with the results of the previous diagnostics. Camilleri and Sadler (2011b) faced a similar issue for Maltese and could not draw any conclusion about the interaction of TRPs with ATB phenomena in relation to the SIR/SAR status of Maltese resumptives. Here too, we will leave this analytic issue for further work.

(37) *tééré b-i Awa jënd te Samba jàng \*(ko)*  
 book CL-REL Awa buy and Samba read 3SG.O  
 “the book that Awa bought and Samba read”

Our final SAR/SIR diagnostic concerns the distribution of gaps and TRP in reconstruction contexts. As Camilleri and Sadler (2011b) pointed out, in such contexts the fronted material shows a range of (interpretive) behaviours appropriate for its *in situ* position or function. In the standard LFG’s approach to LDDs (with gaps), the unbounded dependency between the filler and the gap is captured via functional control. This allows a prediction of the “reconstruction” properties by associating the filler with both the discourse function (e.g. TOPIC) and the within-clause function (e.g. SUBJ, OBJ, OBJ-TH, ..). The Wolof examples in (38) show instances of *scope reconstruction*: a gap is under the scope of a quantifier. As (38a)

shows, the TRP is required in long paths if the clause is not a non-subject cleft (the gap being prohibited). If otherwise, the filler is extracted from a non-subject cleft, as in (38b), the TRP is not allowed (only gap is permitted).

- (38) a. *kër g-u ñu wax ni xale b-u nekk bëgg na \*(ko)*  
house CL-REL 3PL say that child CL-REL exist love 3SG (3SG.O)  
“a house which they said that every child loves”
- b. *kër g-u ñu wax ni la xale b-u nekk bëgg*  
house CL-REL 3PL say that NSFOC.3 child CL-REL exist love  
(\*ko)  
(3SG.O)  
“a house which they said that every child loves”

Examples (39) illustrate binding reconstruction (e.g. of reflexive pronouns). The patterns are similar to what we found for scope reconstruction with respect to the distribution of gaps and RPs and the impact of the clause type.

- (39) a. *nataalu-u yaay-am b-u ñu wax ni [doom j-u*  
picture-of mother-3SG.POSS CL-REL 3PL say that child CL-u  
*nekk] bëgg na \*(ko)*  
exist love +F-3SG (3SG.O)  
“a picture of his mother which they said that every child loves”
- b. *nataalu-u yaay-am b-u ñu wax ni la*  
picture-of mother-3SG.POSS CL-REL 3PL say that NSFOC.3  
*doom j-u nekk bëgg (\*ko)*  
woman CL-u exist love (3SG.O)  
“a picture of his mother which they said that every child loves”

According to Asudeh (2011), reconstruction would provide an evidence for SIR status. This is because reconstruction itself is a phenomenon that distinguishes gaps from pronouns. These Wolof data seem to suggest it is not possible to reconstruct into a resumptive in Wolof when extracting from the immediate position or from a long path where the in situ position was located in a non-subject cleft construction. Otherwise, it seems to be possible to reconstruct into a resumptive in Wolof. If reconstruction is indicative of SIR status, then this data set show (in part) inconsistencies with the results of other diagnostics, which support SAR status for Wolof resumptives. However, as Camilleri and Sadler (2011b) indicated, the status of the reconstruction diagnostic itself may be open to question.

## 7 Conclusion

This paper has provided a description of the syntax of relative clauses, which constitute a major source of linguistically interesting constructions in Wolof. I have

provided an analysis of these structures in LFG, building on previous LFG work on relatives. The discussion raised a number of issues on how to account for the status of Wolof resumptive pronouns at the functional level. On the basis of two major diagnostics (concerning islandhood and weak crossover) developed in Asudeh (2011), I have argued that the resumptive pronouns found in Wolof are syntactically active pronouns. The Wolof data show striking similarities to the observations made in other languages such as Maltese (Camilleri and Sadler 2011a,b). In Wolof too, islandhood and weak crossover seem to be quite robust, while the remaining diagnostics (ATB extraction, parasitic gaps, reconstruction) seem to be less robust because it is less clear that the relevant property is entirely syntactic.

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