

## WHY EIGHT CAUSATIVE SUFFIXES IN WOLOF?

*Stéphane Robert*

LLACAN (CNRS-InaLCo & EPHE)  
stephane.robert@cnrs.fr

*Sylvie Voisin*

Aix Marseille University & CNRS-DDL  
sylvie.voisin@univ-amu.fr

**Abstract:** Like other Atlantic languages, Wolof has a large inventory of verbal derivation suffixes, but is exceptionally well endowed for causative derivation with no less than eight different causative suffixes. This article analyzes the different values of these suffixes and reveals firstly a double gradient of distinctions concerning the degrees of involvement of the causer and the causee. Among these causative suffixes, two show a typologically rare specialization, one being specialized in sociative (assistive) causation, the other in the expression of indirect causation with obligatory omission of the causee. Three causative suffixes, rarely analyzed, combine a direct causation value with indications of the modalities of realization of the process, namely, incomplete, completing and corrective causation. Several of these causative suffixes are clearly complex but cannot be described as multiple suffixation in synchrony. Various reconstruction hypotheses are nonetheless presented attesting to multiple derivation in the Atlantic family. Finally, this derivational abundance is compared with the general morphosyntactic strategies of Wolof.

**Key words:** causation, verbal derivation, valency, Wolof, Atlantic, reconstruction, typology

## POURQUOI HUIT SUFFIXES CAUSATIFS EN WOLOF?

*Stéphane Robert*

LLACAN (CNRS-InaLCo & EPHE)  
stephane.robert@cnrs.fr

*Sylvie Voisin*

Aix Marseille University & CNRS-DDL  
sylvie.voisin@univ-amu.fr

**Résumé :** Comme les autres langues atlantiques, le wolof dispose d'un large inventaire de suffixes de dérivation verbale mais présente un raffinement exceptionnel pour la dérivation causative avec pas moins de huit suffixes causatifs différents. Cet article analyse l'ensemble des valeurs de ces suffixes et révèle d'abord un double gradient de distinctions concernant les degrés d'implication respectifs du causateur et du causataire. Parmi ces causatifs, deux présentent une spécialisation assez rare typologiquement, l'un pour la causation sociative assistive, l'autre pour l'expression d'une causation indirecte avec un effacement obligatoire du causataire. Trois causatifs, rarement analysés, combinent à une valeur de causation directe, des indications sur les modalités de réalisation du procès à savoir, une causation incomplète, parachevante ou corrective. Plusieurs de ces suffixes causatifs sont clairement complexes, mais ne peuvent être décrits comme une suffixation multiple en synchronie. Diverses hypothèses de reconstruction sont néanmoins présentées attestant de figement de dérivations multiples que l'on peut retrouver dans la famille atlantique. Enfin, ce foisonnement dérivationnel est mis en parallèle avec les stratégies morphosyntaxiques générales du wolof.

**Mots-clés :** causation, dérivation verbale, valence, wolof, Atlantique, reconstruction, typologie

*A Konstantin Pozdniakov, incomparable comparatiste, atlantiste de profession et universel décrypteur par passion, cet énigmatique bouquet de suffixes soumis à sa sagacité, en témoignage de notre indéfectible complicité scientifique*

## 1. Introduction

Wolof is Senegal's main language, and is also spoken in the Gambia and Mauritania. It belongs to the Atlantic branch of the Niger-Congo phylum.

Like most Atlantic languages, Wolof has a large inventory of verbal derivation suffixes, the various sources mentioning up to forty. Wolof makes remarkable distinctions between suffixes for a single type of derivation, using for example two applicatives and three reciprocals, without counting the suffixes expressing coparticipation (Voisin 2002; Creissels & Voisin 2008). As far as the causative is concerned, the internal distinctions are quite exceptional. Our various studies and research have led us to identify no fewer than eight causative suffixes (Table 1). Some of these causatives, showing little productivity, are not mentioned as such or are simply not listed in existing grammars. The suffix *-antal* is mentioned neither in the grammar by Diouf (2009), nor in reference works on verbal derivation (Ka 1981; Voisin 2002), nor in the study of the verbal system by Church (1981). The derivations *-ali* and *-anti* are inventoried under a variety of denominations, such as, respectively, “achievement” and “corrective” in Ka (1981) and “completive” and “corrective” in Church (1981). None of these three derivations had ever been analyzed as causative markers before Robert (2017a) for *-ali* and *-antal* and the present article for *-anti*. These causative suffixes, presented in Table 1, reflect morphological complexity which is variable but often transparent, although none of them can be strictly segmented in synchrony as a combination of suffixes used independently elsewhere, either for morphological reasons or because the semantic compositionality is not clear.

Table 1

## List of causative suffixes in Wolof

CAUS 1	<i>-e</i>	CAUSATIVES
CAUS 2	<i>-al</i>	
CAUS 3	<i>-le</i>	
CAUS 4	<i>-lu</i>	
CAUS 5	<i>-loo</i>	
CAUS 6	<i>-antal</i>	COMPOSITE CAUSATIVES
CAUS 7	(ALT <sup>1</sup> )- <i>ali</i>	
CAUS 8	(ALT)- <i>anti</i>	

In typology, the distinction between the various meanings of causative constructions is well known (see §2). Such distinctions are usually covered by a single construction or distributed over several causative constructions. The values conveyed by Wolof causative suffixes will be detailed below. However, the Wolof data impose an initial distinction, seldom described, between, on the one hand, the first five suffixes listed above where all components denote causation and which we will simply call causatives, and, on the other hand, the last three which express a combination of causation and other values, referring to how a process is carried out, and which we will call composite causatives. We will come back to the question of morphological complexity (see §5) after presenting all the suffixes.

Furthermore, Wolof shows homophony between suffixes encoding different types of derivations (Voisin 2003; to appear a & b; Creissels & Voisin 2008), with, for example, two *-al*, two *-le*, three *-u* and six *-e* suffixes for verbal derivation alone, without including cases involving combinations with reduplication. These isomorphisms complicate the overall table of derivation in the language but do open up interesting perspectives for diachronic analysis, including for causative derivation.

The goal of the present article is to detail this surprising causative derivational system, highlighting the typological singularities and

---

<sup>1</sup> Suffixation triggers alternation of the final verb base consonant.

rarities, and to provide some diachronic hypotheses on the origins of the various causative suffixes so as to, in fine, attempt to understand why such a system has emerged in Wolof. This article is structured as follows: after a brief overview of the meanings involved in causation and the main types of causatives distinguished by typology (§2), §3 presents the five (simple) causative suffixes, and §4 the three composite causatives. The last section (§5) provides a general synthesis of the analyses and some diachronic hypotheses to explain the origins and emergence of these derivations. Lastly, the conclusion (§6) provides some perspective for this exuberance of causative morphemes within the Wolof system as well as in that of other Atlantic languages and beyond, specifying the typological particularities.

This study builds mainly on work presented by Voisin (2002; 2018), supplemented by Robert (2017a; 2017b). Unless indicated otherwise, the data presented here are from standard Wolof and are written in the official orthography. Our study is grounded in our own unpublished corpora (recordings of folk tales, life stories, plays and television shows) as well as two dictionaries, Fal et al. (1990) and Diouf (2003), supplemented by first-hand data elicited from native speakers during various field trips. For ease of processing, priority is given to the two above-mentioned dictionaries when providing illustrative examples.

## 2. Causative constructions and their semantics

Typologically, three types of causatives are distinguished: lexical causatives, morphological causatives and syntactic causatives.<sup>2</sup> These three types of constructions serve to add a causer argument to a caused

---

<sup>2</sup> Complex predication causative constructions are sometimes considered a fourth type of causative construction (Dixon 2000) or are subsumed under morphological causatives (cf. the *stricto-sensu* causatives in Kulikov 2001). Given the wealth of morphological causatives in Wolof and the fact that complex predication causatives utilize the same verb as syntactic causatives, we will not subsume them under what we label here morphological causative constructions. They are grouped together here (without distinctions) under syntactic causative constructions; for more information on these constructions, see Voisin (2002; 2018).

event. These various strategies have been detailed in a number of works (Nedjalkov & Silnitsky 1973; Shibatani 1975; Comrie 1976, 1985; Song 1996; Dixon 2000; Kulikov 2001).

On a syntactic level, the causer is invariably added in subject function. In lexical and morphological causatives, the syntactic function to which the causee<sup>3</sup> is demoted depends (a) on the transitivity characteristics of the non-derived verb, (b) on the behavior of the object of the non-derived construction, and (c) on whether the language allows (or not) ditransitive constructions. Thus, on intransitive bases, the causative invariably leads to a transitive construction whereas on transitive bases, the causative does not necessarily give rise to a ditransitive construction: the causee (first argument of the non-derived verb) is not necessarily demoted to direct object function and can receive a variety of markings. The various possible causative constructions on transitive bases are summarized in Table 2 below, excerpted from Dixon (2000). In this table, A refers to the subject function and O to the direct object. Thus, in French, the causative created with the auxiliary *faire* ‘make’ on a transitive base leads to a transitive construction where the causee is demoted to a non-core syntactic function (1b).

- (1) a. Les enfants regardent la télé.  
 DEF.PL children watch:PRST DEF.F TV  
 ‘The children are watching the TV.’
- b. *Pierre fait regarder la télé aux*  
 Peter make.PRST.S.3SG watch:INF DEF.F TV PREP.DEF.PL  
*enfants.*  
 children  
 ‘Peter makes the children watch the TV.’

---

<sup>3</sup> This denomination serves to designate the first argument of the non-derived verb, which can play various semantic roles depending on the verb.

Table 2

**Transitive verb causatives** (Dixon 2000: 48)

Type	causer	original A (causee)	original O	languages
(i)	A	special marking	O	Nivkh
(ii)	A	retains A-marking	O	Kabardian (Caucas.)
(iii)	A	has O-marking	has O-marking	Tariana
(iv)	A	O	non-core	Javanese, Swahili
(v)	A	non-core	O	Finnish, French

Wolof shows relatively rigid SVOX constituent order. It is quite simple to distinguish between subject, object and adjunct using clearly identifiable syntactic and morphological criteria. Constructions with two objects are possible and frequent, with only discursive hierarchy between the two object phrases. Hierarchy appears when both arguments are pronominalized, in which case the hierarchy is based on number and person rather than on semantic roles or degree of animacy, see for example Voisin (2002). Wolof allows ditransitive constructions, both for derived and non-derived trivalent verbs. In consequence, according to Dixon, Wolof is a type (iii) language, as illustrated in the examples below. In (2), the verb *jox* ‘give’ is a trivalent verb with three core arguments, the subject *baay* ‘father’ (A) and the two objects *ma* and *ko* which denote the receiver (R) and the theme (T). In (3), the transitive verb *gor* ‘fell’ derived through the causative *-loo* contains the subject causer argument *ku* ‘who’, the causee (who felled the house) *la* of which the syntactic object function is visible through pronominalization, and the direct patient object (*suma dëkku* ‘my compound’) retains the characteristics of a noun phrase in object position, a function recognizable by the post-verbal position of the phrase and the absence of preposition.

- (2) *Baay* =*a*      *ma*      *ko*      *jox-oon...*  
 father =FOCS    o.1SG    o.3SG    give-PST  
 ‘Father had given it to me...’ (Kesteloot et al. 1983: 105)

- (3) *Ku la gor-loo suma dëkku ?*  
 who O.2SG fell-CAUS5 POSS1SG compound  
 ‘Who made you fell my compound?’ (Kesteloot et al. 1983: 155)

Semantically, various types of causation can be distinguished depending on the implication of the causer in triggering the action caused: this can correspond to different degrees of volition, control and physical involvement in the realization of the action. There is thus a distinction between direct and indirect causatives based mainly on the physical involvement of the causer in the realization of the caused event. As, for example, in the two possible interpretations of *She had the child eat*: by nursing, direct causation, vs. by preparing food and seating the child at the table, indirect causation. In turn, indirect causatives can further be divided into permissives *let V*, obligatives *make V*, curatives *ask to V*, among others. The caused event can also have been triggered by the volition of the causer or not. Sociative meaning can also be expressed in syntactic causative constructions of the type *help to*. This meaning can furthermore be attributed to causative morphemes which also express direct or indirect causation. Very few languages have specific causative morphemes to encode this meaning; we will see nonetheless that Wolof has a derivation reserved for the expression of sociative causation.

Before presenting in detail the morphological causatives which are at the heart of this article, let us observe that Wolof, unsurprisingly, also has lexical causative and syntactic (analytical) causative constructions. Lexical causatives are attested for both intransitive and transitive verbs. Again, the causative counterpart of a transitive verb gives rise to a ditransitive construction.

intr. > tr.	<i>dee</i> > <i>rey</i>	‘die’ > ‘kill’
tr. > ditr.	<i>gis</i> > <i>won</i>	‘see’ > ‘show’

Analytical causative constructions in Wolof are formed with the verbs *tax* ‘cause something’, *def* ‘make’ and *bàyyi* ‘leave, abandon’. They all express indirect causation and differ in the degrees of intentionality and

control on the part of the causer in the realization of the caused event. Among the *tax* causatives one may further distinguish complex predication causatives and syntactic causatives with a (bi-propositional) subordinate clause. For more details, see Voisin (2002; 2018).

### 3. Wolof causatives

The first five causative suffixes from Table 1 (§1) serve to construct the causative equivalent of various types of verbs. In addition to the verb base to which these derivations may be suffixed, they differ in the type of causation they express. These differences pertain, among others, to the causer's degree of physical involvement in the realization of the action caused. Contrary to composite derivations which we will present in §4, these causative derivations do not provide additional information. The distinctive properties of each of these five suffixes shall be described in turn in the following sub-sections.

#### 3.1. Direct (and joint-action) causation, *-e* CAUS1 and *-al* CAUS2

The suffixes *-e* and *-al* serve to express direct causation, i.e. causation where the expressed causer acts volitionally and is fully involved in the realization of the event caused. Verbs which take both of these derivations are intransitive verbs: the causative counterpart which obtains is a transitive construction. Most of these verbs are in fact derived using *-al*, only a handful of verbs allow derivation in *-e* without any apparent semantic link between them. In §5.2, we will propose an explanation for the restrictions on the transitivity and lexical aspect of all verbs subject to causative derivation in Wolof.

The suffix *-e* expresses direct causation, as in example (4). The verb *génn* is an intransitive verb (4a), the subject of the construction realizes the action 'go out'. The causative derivation *-e* adds a causer (subject) who initiates the caused action. The causer is also fully agentive, intervening physically in the caused event, which impacts the causee (patient object), whether inanimate (4b) or animate (4c). In this last case (4c), the causee is also physically involved in the caused event

(takes part in the action), therefore the direct causation takes on sociative meaning, that of a joint-action.

- (4) a. *Génn na ci dig-u kër.*  
 go.out PRF.S.3SG PREP middle-GEN house  
 ‘He went out into the courtyard.’ (Creissels & Voisin 2008: 295)
- b. *...nit ñ-i génn-e seen komfi.*  
 ...people CLñ-PROX take.out-CAUS1 POSS.3PL preserves  
 ‘...the people take out their preserves.’ (Fal et al. 1990: 111)
- c. *K-u fi yuuxu, ma génn-e la.*  
 who here yell S.1SG put.out-CAUS1 O.2SG  
 ‘Anyone who shouts, I will kick them out.’ (Fal et al. 1990: 275)

The suffix *-e* can be considered lexicalized given that it only appears with a few verbs which, moreover, cannot take any of the other causative suffixes inventoried. The list below gives all the verbs we have come across in our research which can be considered derived using the *-e* causative.

Table 3

**List of causative verbs in *-e***

<i>génn:</i> go out	<i>génn-e:</i> put something or someone out
<i>àgg:</i> arrive	<i>àgg-e:</i> convey, make news arrive
<i>wàcc:</i> descend	<i>wàcc-e:</i> bring s.t. down / humiliate s.o.
<i>yéeg:</i> go up	<i>yéeg -e:</i> put s.t. up
<i>dellu:</i> turn around	<i>dello-o:</i> bring s.t., s.o.
<i>tasaar:</i> be scattered	<i>tasaar-e:</i> disperse, scatter s.t.
<i>wesar:</i> be scattered	<i>wesar-e:</i> scatter
<i>aay:</i> be forbidden	<i>aay-e:</i> forbid s.t.
<i>aññan:</i> be jealous	<i>aññan-e:</i> envy

In contrast, the suffix *-al* is highly productive despite being mostly restricted to intransitive verbs.<sup>4</sup> It serves to create the causative

<sup>4</sup> We will see below that this causative derivation in *-al* is possible for a small group of transitive verbs with experiencer subjects.

equivalent of most stative verbs, i.e. which do not imply any internal changes, prototypically verbs of quality such as *weex* ‘be white’ vs. *weex-al* ‘whiten (tr.)’, *fees* ‘be full’ vs. *fees-al* ‘fill (tr.)’.

As can be seen in example (5), causation with *-al* denotes, as with *-e*, direct causation. The causer subject triggers and fully participates in the realization of the caused event. The causee of these verbs is a prototypical patient undergoing and being modified by the action of the subject (causer agent).

- (5) a. *Ndox m-i bax na,*  
 water CLM-PROX be.boiling PRF.S.3SG  
*sotti ko ci termoos b-i!*  
 introduce O.3SG PREP thermos CLB-PROX  
 ‘The water is boiling, put it in the thermos!’ (Fal et al. 1990: 39-40)
- b. *Bax-al na ñebbe j-i.*  
 be.boiling-CAUS2 PRF.S.3SG bean CLJ-PROX  
 ‘She boiled the beans.’ (Fal et al. 1990: 40)

Some non-stative transitive verbs can also be derived in the causative using *-al*. These include motion verbs such as *dugg* ‘enter’, *dug(g)al* ‘make enter’ (6).

- (6) a. *Ñu dugg ci néeg b-i...*  
 S.3PL enter PREP room CLB-PROX  
 ‘They entered the room...’ (Kesteloot et al. 1983: 49)
- b. *Moo-y defar baag, ñow ci teen b-i*  
 FOC.S.S.3SG-IPFV fashion bucket come PREP well CLB-PROX  
*dugg-al ko...*  
 enter-CAUS2 O.3SG  
 ‘He would fashion a bucket, come to the well, put it (in the well)...’ (Kesteloot et al. 1983: 163)

Depending on verbal semantics, this direct causation may take on various conditioned nuances. Thus when the causee is not a prototypical

patient, i.e. a participant undergoing an action performed by an agent, the causee may take part in the realization of the caused action. The causer retains control over the caused action, and realizes the action with limited participation from the causee. In this case, the derivation has sociative meaning, that of joint-action or assistive causation depending on the verb and situation, as in (7). The direct involvement of the causer in the joint-action prevents any coercive or jussive reading for this causation, which can only be expressed using the indirect derivation in *-loo* (see §3.4).

- (7) *Bul toog-al liir b-i!*  
 OBL.NEG.S.2SG sit-CAUS2 infant CLB-PROX  
 ‘Do not hold the infant in sitting position!’ (elicitation)

This extension into the expression of sociative causation explains why some transitive verbs with an experiencer subject such as *laal* ‘touch’, *ñam* ‘taste’ (8) can also derive their causative counterpart utilizing *-al*. The causer is the initiator of the caused event (8b). However, the causee is the primary participant (experiencer) of the caused event, the one tasting the meat under the control and at the initiative of the causer.

- (8) a. *Maa ngi ñam ceebu jën b-i.*  
 PRST.S.1SG taste rice-GEN fish CLB-PROX  
 ‘I am tasting the fish rice.’ (elicitation)
- b. *Dafa ma-y ñam-al yàpp b-i.*  
 FOCV.S.3SG O.1SG-IPFV taste-CAUS2 meat CLB-PROX  
 ‘He is making me taste the meat.’ (elicitation)

The *-e* derivation can also have joint-action meaning. In example (9), if the causee *ko* is animate, the meaning of the construction can trigger joint-action interpretation, both participants, causer and causee, coming back home without the causer having to physically move the causee. When the causee is inanimate, the only possible interpretation is that of direct causation.

- (9) *Delloo* (<dellu-e)    *ko*    *ca*    *kër*    *g-a!*  
 return-CAUS1    o.3SG    PREP    house    CLg-DIST  
 ‘Bring him/it home!’ (Diouf 2003: 100)

The two derivations *-e* and *-al* share the same meaning of direct causation and can extend to the expression of sociative causation situations, as described by Shibatani & Pardeshi (2002): joint-action causation (for *-al* and *-e*) and assistive causation (for *-al*) in specific constructions. Both of these derivations apply essentially to intransitive verbs and have mainly direct causation interpretation. It is not however possible to distinguish a particular verb class to which each would apply. The list of verbs expressing direct causation with the *-e* derivation seems to be a closed list, with cases of lexicalization. The other intransitive verbs which express direct causation through derivation take *-al*.

### 3.2. Specialized assistive causation, *-le* CAUS3

Contrary to the two causatives presented above, the suffix *-le* applies to both intransitive (10) and transitive (11) verbs, but never to stative verbs.

- (10) a. *Dafa*    *ko*    *xamb*    *ba*    *mu*    *xeex.*  
 FOCV.S.3SG    o.3SG    poke    until    s.3SG    fight  
 ‘He hassled him so much that he ended up fighting.’ (Fal et al. 1990: 250)
- b.    *Kaay*    *xeex-le*    *ma!*  
 come    fight-CAUS3    o.1SG  
 ‘Come help me fight!’ (Church 1981: 170)
- (11) a. *Yëg*    *na*    *xabaar*    *b-i.*  
 know    PRF.S.3SG    news    CLb-PROX  
 ‘He knows the news.’ (Fal et al. 1990: 270)
- b.    *Dem*    *nanu*    *fépp*    *yëg-le*    *xabaar.*  
 leave    PRF.S.1PL    everywhere    know-CAUS3    news  
 ‘We went everywhere to announce the news.’ (Fal et al. 1990: 75)

As can be seen in these examples, the suffix *-le* serves to indicate that a person is providing assistance to another person to carry out an event, e.g. *root* ‘draw (water)’ vs. *root-le* ‘help someone draw (water)’, *yenu* ‘carry on the head’ vs. *yenu-le* ‘help someone put on the head’, *ruuj* ‘clear (land)’ vs. *ruuj-le* ‘help someone clear (land)’ (Church 1981: 170). In other words, the causative derivation *-le* serves to introduce in subject position a causer providing assistance for an action also being performed by the causee. In some aspects, this type of causation resembles direct causation since the causer physically participates in carrying out the caused event. One should note however that the *-le* causative cannot be used to express sociative causation of joint-actions. The meaning of assistance provided by the causer is systematically present in these constructions.

Typologically, the expression of sociative causation is generally associated in languages with a construction used primarily to express another type of causation, as is the case with *-al* derivation (see §3.1). Dedicated sociative causative derivations are rare and, until their description in Wolof (Voisin 2002), were considered to be restricted to Amerindian languages (Kulikov 2001). Since then, descriptions of other Atlantic languages have shown that dedicated sociative causative derivation is attested in other languages of the Atlantic family (Dieye 2010: 215; Renaudier 2012: 154; Wane 2017: 140).

### **3.3. Indirect (benefactive) causation with omission of the causee, *-lu* CAUS4**

The causative *-lu* expresses indirect causation. The causer initiates realization of the action caused but does not participate physically or directly. The causer orders and controls the action caused which is carried out by someone else.

This suffix applies to transitive verbs denoting activities. It has a dual property which can at first appear paradoxical. Contrary to all other causatives, while this causative indeed serves to add a causer, it does not increase the verb’s syntactic valence since it entails deletion

of the causee. Indeed, the causee who carries out the action caused is never mentioned and cannot appear in the causative construction. This characteristic corresponds to what Kittilä (2009: 75) describes for other languages, and dubs covert causation. Buell & Sy (2006: 220) refer to the Wolof suffix *-lu* as an impersonal causative, involving a silent causee argument. In our view, this omission of the causee correlates with the fact that the action caused is carried out to the causer's benefit, more or less markedly depending on the context, but nevertheless always present, indicating that the causee is not important from a discursive standpoint. This is confirmed by the fact that this construction cannot be used with a predicate which does not express some benefit to the subject (Church 1981: 170). These three properties are visible in the contrast between (12a) vs. (12b) and (13a) vs. (13b).

- (12) a. *Ñaw naa roob.*  
 sew PRF.S.1SG dress  
 'I sewed a dress.' (Creissels & Voisin 2008: 301)
- b. *Ñaw-lu naa roob.*  
 sew-CAUS4 PRF.S.1SG dress  
 'I had a dress sewn for me.' (Creissels & Voisin 2008: 301)
- (13) a. *Xool naa xale b-i.*  
 watch PRF.S.1SG child CLB-PROX  
 'I watched (over) the child.' (elicitation)
- b. *Xool-lu naa xale b-i.*  
 watch-CAUS4 PRF.S.1SG child CLB-PROX  
 'I had the child watched.' ~ 'I asked for the child to be watched in my stead.' (elicitation)

We have also found some cases of derivations of a verb base which is dynamic but nonetheless intransitive, such as *ree* 'laugh' and *daw* 'flee, run'. They always appear in focusing constructions (focus on the subject or the verb). This restriction is quite unexpected and further investigation is needed to be able to generalize it. However, it is not

necessarily surprising, at least where subject focus is concerned since, with the *-lu* derivation, the causer is highlighted through omission of the causee (14), and discursive salience can be naturally reinforced by focus on the subject.

- (14) a. *Waa dëkk b-a di ree.*  
 inhabitants village CLb-DIST IPFV laugh  
 ‘The people of the village rolled with laughter.’ (Kesteloot et al. 1983: 71)
- b. *Colin-am =a jëkk-a ree-lu...*  
 way.of.dressing-POSS.3SG FOCs come.first-LINK laugh-CAUS4  
 ‘Even his way of dressing is comical...’ (litt. It is his way of dressing which first makes laugh...). (Fal et al. 1990: 179)

In §5.2 we will return to the diachronic composition of several causative derivations, but may already specify, as previously indicated by Church (1981) and Voisin (2002), that the compounding of the roles of causer and beneficiary is probably due to the *-u* component of this derivation. In Wolof, the suffix *-u* (~*-ku*) marks the middle voice which serves, for example with verbs expressing grooming activities, to indicate that the subject agent is performing the action on themselves, as can be seen with the opposition *sang* ‘wash someone’ vs. *sang-u* ‘wash oneself’. In this hypothesis of freezing of a multiple suffixation, the origin and function of the first component raises additional difficulties which will be examined in §5.2.

### 3.4. Indirect causation, *-loo* CAUS5

The causative *-loo* is the final derivation expressing simple causation. Like the derivation *-lu* above, it indicates indirect causation. This time, valence is increased as expected. In (15a), the verb *gis* ‘see’ is a transitive verb which, with the *-loo* derivation (15b), governs three core arguments due to the addition of the causer (present in the subject marker *na*) which is at the origin of the caused action ‘see’. The caused

action is carried out by the causee-object *ma* and is undergone by the patient-object *këram* ‘his house’.

- (15) a. *Gis naa ko dèmb ca ja b-a.*  
 see PRF.S.1SG O.3SG yesterday PREP market CL-DIST  
 ‘I saw him yesterday at the market.’ (Fal et al. 1990: 87)
- b. *Gis-loo na ma kër-am.*  
 see-CAUS5 PRF.S.3SG O.1SG house-POSS3SG  
 ‘He showed me his house.’ (elicitation)

The expression of indirect causation marked by the derivation *-loo* can also have coercive, obligative causation meaning. This derivation indicates that the causer causes or triggers the event realized by the causee, whatever the means used to obtain such realization, the crucial point being that the causer is not the agent of the caused action. Thus, sentence (16) can take on the meaning of a prayer, a request or an order.

- (16) *Dafa toog-loo xale y-u sob y-i.*  
 FOCV.S.3SG sit-CAUS5 child CLY-GEN be.turbulent CLY-PROX  
 ‘He made the turbulent children sit.’ (elicitation)

Contrary to derivation with *-lu*, derivation with *-loo* is not strictly reserved for activity verbs, as can be seen in the following example.

- (17) *Daf ma dee feebar-loo.*  
 FOCV.3SG O.1SG HAB be.sick-CAUS5  
 ‘It makes me feel sick.’ (Becher 2003: 52)

#### 4. Composite causatives

The three other identified causative suffixes *-antal*, *-ali* and *-anti* differ from those studied above in their semantic complexity. The direct

causation they express is always combined with other indications which, for these three suffixes, bears on how the process is realized.<sup>5</sup> These suffixes show low productivity and are not always mentioned in grammars. The suffixes *-antal* and *-ali* can be grouped together from a semantic standpoint and will thus be presented one after the other.

#### 4.1. Incomplete causation, *-antal* CAUS6

This suffix does not appear to be very productive. Out of all of our corpora and dictionaries consulted, we were only able to find 11 occurrences (see table 4 below). However, the contrast with *-al* illustrated in (18) came up spontaneously during an elicitation session. It is found with intransitive verbs, where it serves to express a transitive counterpart expressing direct causation. We find tokens of this derivation with verbs of quality such as *set* ‘be clean’, *sett-antal* ‘purge, cleanse’, *suufe* ‘be low’, *suufeental* (< *suufe-antal*) ‘cut s.o. in public’ which, contrary to *suufeel* (< *suufe-al*) ‘lower s.t.’, can only apply to humans. It has furthermore been attested with the dynamic verb *jéem* ‘try, attempt to do s.t.’, *jéem-antal* ‘train, train s.o. (in an activity)’.

The direct causation expressed by *-antal* differs from *-al* in that the transformation caused by the causer on the causee is unfinished, incomplete (compare (18b–c)). We have chosen the term *incomplete causative* to distinguish it from the imperfective aspect, which in our view is not relevant here as with *-antal* the incompleteness bears on the lexical value of the verb and concerns the modality of the process’s unfolding.

- (18) a. *Xale b-ii, dafa reew.*  
 child CLb-DEM FOCV.S.3SG be.rude  
 ‘This child is rude.’ (elicitation)

<sup>5</sup> To the best of our knowledge, this cumulative meaning has never been described for other Atlantic languages. However, even with its five (simple) causatives, Wolof is among the exceptional languages on this point within the Atlantic family.

- b. *Dafa*            *reew-al*            *doom* *j-i*.  
 FOCV.S.3SG    be.rude-CAUS2    child    CLJ-PROX  
 ‘He made his child rude.’  
 i.e. ‘He made it that his child is impolite.’ (elicitation)
- c. *Dafa*            *reew-antal*            *doom* *j-i*.  
 FOCV.S.3SG    be.rude-CAUS6    child    CLJ-PROX  
 ‘He spoiled his child **a little**.’  
 i.e. ‘He made it that his child is a little bit rude (but not completely).’ (elicitation)

Because of the loss of productivity of this derivation, some verbs appear to bear the suffix without it being possible to isolate it because the verb base is not or is no longer attested (19a–b) or its derivation cannot be clearly established. Derivation with causative meaning is not always identifiable because the derived form is not a transitive verb (19a) or forms a nominal derivative ((20) and (21)), even if in these cases the action takes on incomplete meaning. These examples and the variants provided in (19a-b) also show that this derivation, which can be difficult to isolate, has variants with quite different forms.

- (19) a. *fenantal*<sup>6</sup>            variants    *fenetal*, *fēnētal*, *féléti* (intr.)  
 ‘digress’
- b. *ñeemantal*            variants    *ñiimantu*, *ñiiramtu* (tr.)  
 ‘eat slowly to not finish what one is eating quickly’
- (20) *mujj*            *mujj g-*            *mujj-antal*  
 ‘be the last’    ‘finish, ending’    ‘finish’

---

<sup>6</sup> *Fenantal* can be compared to the verb *fen* ‘lie’. One finds the incomplete meaning ‘not say what is expected/tell a white lie’, however one cannot establish *-antal* as a causative here since it does not serve to increase the valence of the derived verb.

- (21) *fer*                      *fer-al*      *per-antal*<sup>7</sup>  
       ‘be weaned’      ‘wean’      ‘a child during the weaning period’

Finally, we will mention the particular case of *baaxantal* which appears to be formed on the noun *baax* ‘tradition’<sup>8</sup> rather than on the verb *baax* ‘be good’ (*baax-al* ‘make something good, positive’), even if the two may be etymologically related. One can nevertheless detect the meaning of the causative *-antal*: indeed *baax-antal* (~ *baax-ental*) means ‘commemorate s.t.’, which is to say ‘make a tradition (*baax*) to be repeated’ (22).

- (22) *Dañu*              *ko*      *def* *ngir* *baax-ental*              *suñu*  
       FOCV.S.1PL    O.3SG    do    to      tradition-CAUS6    POSS1PL  
       *moom-sa-réew.*  
       independence  
       ‘We did it to commemorate our independence.’ (Diouf 2003: 58)

With the suffix *-antal*, the event caused can be incomplete not only from a qualitative standpoint (see ‘make someone a little bit rude’ (18c)), but also from a temporal one. In the latter case, it takes on the frequentative meaning of a caused event which is repeated or distributed over time with no defined end (cf. *baaxantal* ‘commemorate s.t.’ and *jéemantal* ‘train s.o.’ < *jéem* ‘try’). This also appears to be the meaning of *-antal* in the noun *perantal* mentioned above which denotes an infant during an (incomplete) period of weaning. One could perhaps also establish a similar link between the term *fenantal* ‘digress’ and *fen*

<sup>7</sup> Word initial consonant alternation between strong and weak consonants is an ancient and well documented derivational process in Wolof indicating alternation between verbs and nouns, as in this example or between *fo* ‘play’, *po* ‘game’ (see Robert, in press).

<sup>8</sup> This is also a particularity of the suffix *-al* CAUS1 which, directly suffixed to a noun base, serves to express the verbal causative counterpart, such as *tumma* *j-* ‘accusation’, *tumma-al* ‘accuse someone of’.

‘lie’: in which case the digression would be considered a form of white lie distributed over time with no established end. But this is more speculative. Table 4 presents all forms identified in our investigations and lists the problems they raise.

Table 4

Identified forms in *-antal*

Verbs	Transitive dynamic verbs	<	Intransitive stative verbs
<i>reew-antal</i>	‘make a little rude’	<	<i>reew</i> ‘be rude’
<i>sett-antal</i>	‘purge, cleanse’	<	<i>set</i> ‘be clean’
<i>suufe:ental</i>	‘cut s.o. in public’	<	<i>suufe</i> ‘be low’
<b>Dynamic verb</b>			
<i>jéem-antal</i>	‘train s.o. at’	<	<i>jéem</i> ‘try to do s.t.’
<b>Questionable derivations</b>			
<i>ñeemantal</i>	‘eat slowly to not finish too quickly’	<	—
<i>baax-antal</i>	‘commemorate s.t.’	<	<i>baax</i> ‘tradition’ <b>noun</b> (verb ‘be good’)
<i>sanjantal</i>	‘let hang’ <b>meaning?</b>	<	—
<i>fenantal</i>	‘digress’ <b>intr.</b>	<	? <i>fen</i> ‘lie’ <b>dynamic</b>
<i>dàkk-antal-e</i>	‘call by a nickname which	<	? <i>dàkk</i> 1 ‘glue’ <b>dynamic</b>
~ <i>dàkk-ental</i>	disambiguates homonyms’	<	? <i>dàkk</i> 2 ‘aim’
~ <i>dàkk-ental-e</i>	NB. <i>-e</i> instrumental appl.	<	? <i>dakk</i> ‘shorten, abbreviate’
<i>dàkkantal</i>	‘distinctive nickname’		
<hr/>			
Nouns		<	Intransitive stative verbs
<i>mujj-antal</i>	‘finish’	<	<i>mujj</i> ‘be the last’ (noun ‘end’)
<i>per-antal</i>	‘infant during weaning’	<	<i>fer</i> ‘be weaned’

Even though this causative morpheme is not very productive (and is perhaps in the process of freezing), it is interesting for its similarities in form with *-anti* CAUS8, and in meaning with the causative *-ali* CAUS7.

#### 4.2. Completing causation, *-ali* CAUS7

This causative presents specific morphological complexity, which is also found in the causative *-anti* (§4.3), since the suffixation of the causative morpheme is accompanied by consonant alternation of the verb base final consonant. This morphophonological process is quite complex as the transition of the base final consonant from a weak degree to a strong degree can also be accompanied by modification of the base vowel.<sup>9</sup> This process is well known for its role in forming the reversive, e.g. *fas* ‘tie’, *fecc-i* ‘untie’ (Ka 1994: 68). While the reversive *-i* only applies to action verbs, with no change in valence, *-ali* in contrast always increases the verb’s valence and mostly, but not exclusively, applies to stative and intransitive verbs of quality, e.g. *yaa* ‘be wide’, *yakkali* ‘widen’. It thus introduces causative meaning corresponding to direct causation. The difference in meaning between the two causative suffixes *-al* and *-ali* is the fact that *-ali* indicates direct causation consisting in completing a process, bringing it to its final term (23).

(23) <i>fees</i>	<i>fees-al</i>	<i>fecc-ali</i>
‘be full’	‘fill’	‘finish filling’
<i>mat</i>	<i>mat-al</i>	<i>mott-ali</i>
‘be mature, complete’	‘complete’	‘finish what was unfinished’

It is through this completion dimension that *-ali* forms a semantic pair with *-antal* which, for its part, indicates incomplete causation. The completing dimension of *-ali* is illustrated in (24) through the contrast between *jekk* ‘be suitable, well done’ and its derivative *jekk-ali* ‘finish something already started’, which is to say ‘correctly bring something to its term’.

---

<sup>9</sup> For a description of the realization of this base final alternation in verbal derivation, see e.g. Church (1981: 156 sqq) and, for a nonlinear analysis, Ka (1994: 66 sqq).

- (24) a. *Lem na ko ba mu jekk.*  
 bend PRF.S.3SG O.3SG until s.3SG be.suitable  
 ‘He folded it properly.’ (lit. He folded it until it was well done)  
 (Diouf 2003: 166)
- b. *Xaar-al ba jekk-ali sa liggéey!*  
 wait-IMP.S.SG until be.suitable-CAUS7 POSS2SG work  
 ‘Wait until having [properly] finished your work!’ (Diouf  
 2003: 166)

As already indicated, this causative is not restricted to intransitive stative verbs but can also be used with intransitive and even transitive dynamic verbs. Thus, the verb *àgg* ‘arrive somewhere; be finished’ has a causative counterpart *àggali*<sup>10</sup> ‘bring to term, finish off’. With transitive verbs, this completing causation produces a ditransitive construction (25b). The derivation *-ali* adds a causer subject, who is making someone receive something.

- (25) a. *Jot naa leetar tey.*  
 receive PRF.S.1SG letter today  
 ‘I received a letter today.’ (Fal et al. 1990: 229)
- b. *Lépp lu fi ay, na leen wóor ne*  
 everything REL here happen OBL.S.3SG O.3PL be.sure COMPL  
*dina ko ko jott-ali.*  
 FUT.S.3SG O.3SG O.3SG receive-CAUS7  
 ‘Be sure that he will recount to him everything that is happening here.’ (Diouf 2003: 55)

As is very often the case in Wolof, alongside the causative suffix *-ali* one also finds a derivation with the same form which does not modify the verbal valence. In this case, *-ali* has augmentative / meliorative meaning, which is a quite transparent semantic expansion

<sup>10</sup> This causative counterpart is also sometimes given with a variant *-ale*.



- b. *Moo*                    *tàgg-anti*                    *mbaxana*    *m-i*.  
 FOC.S.3SG    be.hanging-CAUS8    cap                    CLM-PROX  
 ‘He’s the one who took down the cap.’ (Fal et al. 1990: 216)

In the list of verbs inventoried (Table 5), the reversive suffix *-i* is clearly identifiable and is probably the origin of the meaning “reestablishment, correction” attributed to this derivation (see §5.2). In the table below, only the verb *jubbanti* ‘straighten’ does not present the reversive meaning of the non-derived verb ‘be straight’.

As for the other composite causatives, this derivation’s weak productivity correlates with a higher degree of lexicalization of the derived forms and, in the case of *-anti*, the deletion of the root, as can be seen for the last verbs in the list provided in Table 5. While some comparisons can be made with basic forms, they are problematic on several fronts.

The three composite causatives described and included for the first time with the other causative derivations share the expression of direct causation and a specific mode in carrying out a process. The processes caused are considered incomplete (*-antal*), completed (*-ali*) or corrective (*-anti*). One can assume that this composite causation is the result of double derivation which includes a marker of direct causation and another suffix which modifies the process realization mode. From a formal standpoint, these three suffixes can be grouped together as follows: *-ant-al*, *-al-i* and *-ant-i*, although the identification of the functions of each of these elements is never fully satisfactory. While the identification of this *-i* with the reversive suffix is strongly suggested by the (identical) morphophonological effects which it triggers on the base, the reversive meaning of this *-i* is not clear for the corrective *ant-i* and presents at least one exception. In contrast, the suffix *-al* can be compared to CAUS2, but is not present in *-ant-i*. In addition, *-ant* is never found outside of these combinations. All of which prevents any segmentation in synchrony, although we will offer some diachronic hypotheses in §5.2.

Table 5

Identified derivations in *-anti*

	<b>Transitive dynamic</b>		<b>Intransitive stative verb</b>
<i>gàgg-anti</i>	‘whisper to s.o. the word or idea they’re looking for’	<	<i>gag</i> ‘have a memory loss’
<i>joyy-anti</i>	‘straighten s.t. which is tilted’	<	<i>joy</i> ‘be slanted, tilted’
<i>jubb-anti</i>	‘straighten s.o. or s.t. which isn’t straight’	<	<i>jub</i> ‘be straight; proper’
<i>lijj-anti</i>	‘tease apart, untangle a situation’	<	<i>lëj</i> ‘be tangled, mixed up’
<i>rucc-anti</i>	‘reassure s.o. who was shameful after a fault’	<	<i>rus</i> ‘be shameful, be embarrassed (to do)’
<i>tàgg-anti</i>	‘get (a hanging object), take down, get s.o. out of trouble’	<	<i>tag</i> ‘be perched, hung, stay stuck up high’
<i>tóll-anti</i>	‘make even, renew’	<	<i>tóol</i> ‘be uneven; be incomplete, lack’
	<b>Transitive dynamic</b>		<b>No identified base verb</b>
<i>wogganti</i>	‘adjust (shoes or clothes)’	<	— <sup>11</sup>
<i>fóbbanti</i>	‘adjust the position of a child being carried on the back by bouncing it slightly’	<	—
<i>jàjjanti</i>	‘motivate, stimulate’	<	—
<i>biddanti</i>	‘wake up late in the morning’	<	—
<i>bijjanti</i>	‘show a visitor out’	<	—
<i>ηàddanti</i>	‘smoothen’	<	—
<i>rogganti</i>	‘cover up (the baby being carried on the back) with a second cloth’	<	—

<sup>11</sup> We have been unable to find in any dictionary a verb base *wog*, only *wogas* is given in Diouf (2003) and Kobès & Abiven (1922: 363), having, respectively, the meanings “pull up the hem of a piece of clothing” and “raise up glass beads”. However, no *-as* derivation has been attested in Wolof. No clear link may be established between these two verbs.

## 5. General synthesis and diachronic hypotheses

### 5.1. Synthesis

The functions and characteristics of the suffixes inventoried in our analyses are summarized in Table 6 below. In this table, the suffixes and type of causation they express are organized depending on the implication of the causer in carrying out the caused event, from most to least direct (see §2). In terms of implication, the highest degree is represented in direct causation through physical participation of the causer in carrying out the caused event, volitionally and in full control.

Table 6

The 8 causative suffixes in Wolof and their specific functions

		Type of causation	Type of verb	Degree of productivity
CAUS1	<i>-e</i>	<b>direct causation</b> + joint-action	intransitive (closed list)	lexicalized
CAUS2	<i>-al</i>	<b>direct causation</b> + sociative (dyn.)	mostly intransitive stative + transitive with experiencer	productive
CAUS6	<i>-antal</i>	<b>direct incomplete causation</b>	intransitive stative (1 dynamic)	low productivity
CAUS7	<i>-ali</i>	<b>direct completing causation</b>	(in)transitive	productive
CAUS8	<i>-anti</i>	<b>direct corrective causation</b>	intransitive stative	low productivity
CAUS3	<i>-le</i>	<b>assistive causation</b>	(in)transitive dynamic	productive
CAUS4	<i>-lu</i>	<b>indirect causation benefit</b> (*causee)	dynamic transitive (some intransitive)	productive
CAUS5	<i>-loo</i>	<b>indirect causation</b> + coercion	all types of verbs	productive

In consequence, composite causatives as derivations expressing direct causation are directly placed under the causatives 1 and 2, *-e* and *-al*. According to the causation typology suggested by Shibatani & Pardeshi (2002), the meaning of sociative causation lies in between direct and indirect causation, the latter being at the bottom of the table. The implication of the causee in carrying out the process is inversely proportionate to that of the causer.

Alongside the meanings of direct, sociative (i.e. joint-action or assistive causation), and indirect causation conveyed by Wolof causatives, we have also seen how some may take on extensions in meaning (indicated by + in the above table). Only causatives 1 and 2, *-e* and *-al* can extend their scope from direct causation to sociative causation. The indirect causation conveyed by the causative 5 *-loo* can express coercive meaning. All other derivations denote more specific meanings which reduce scope. These are indicated in the table in the derivation characterizations. It can be a case of adding semantic distinctions (concerning how an action is carried out for the three composite causatives or the fact that it is carried out to the benefit of the causer for the suffix *-lu*) or, on the contrary, the expression of narrower causation (as for *-loo*, *-lu*, and *-le*). As compared to other languages, the latter appear highly specialized. We have thus shown that indirect causation with *-lu* is only used when the causer is the initiator of the event caused without taking part in it but nonetheless deriving a certain benefit, with impossibility of mentioning the primary agent (causee).

Restrictions on verb classes are listed in the table's third column. In addition to those which can be explained by the suffix origins (see §5.2 below), these restrictions are generally motivated and reflect the specialization of these various suffixes. These specializations explain for example why a given verb cannot be derived with CAUS2 *-al* (mostly used with stative verbs for indicating direct causation) and CAUS5 *-loo* (restricted to dynamic verbs as expected for indirect causation), with the exception of a few dynamic verbs taking on sociative meaning with *-al* (see (7) and (16)). We have also illustrated

that verbs deriving their causative counterpart with *-e* cannot be derived in *-al* and inversely. In this case the restriction cannot be explained by the semantics of the suffixes, a diachronic explanation is provided in the §5.2. In contrast, given that the other (composite) direct causation derivations convey other types of information besides causation, a single verb can be derived by *-al* and *-antal*, *-ali* or *-anti*. Similarly, transitive verbs accepting derivation in *-loo* can also be derived by *-lu* due to the semantic specificity of this indirect causative. Finally, it is worth noting that the assistive sociative suffix *-le* is not found with stative verbs, while the double derivation *-al-le* is attested, e.g. *bax* ‘be boiling, boil’, *bax-al* ‘make boil’, *bax-al-le* ‘help make boil’ (Sauvageot 1965: 149). This might be due to diachronic factors (see §5.2).

On a typological level, when languages have the three types of causative constructions presented in the introduction, namely lexical, morphological and syntactic, there is a general tendency for the various types of causative meanings to be distributed across these constructions. In terms of distribution, in general the more complex the morphosyntactic constructions are, the more the causation expressed is indirect (see e.g. Dixon 2000). Wolof partly follows this trend as the morphological causatives mainly serve to encode direct causation (five suffixes out of eight), while the three syntactic causatives express indirect causation (see §2). However, indirect causation is also expressed using morphological causatives (two suffixes out of eight), which is typologically rare. Furthermore, while sociative causation is a possible extension of direct causation (as for *-e* and *-al*), Wolof also has a dedicated marker for sociative causation of the assistive type, applicable to both transitive and intransitive verbs, which is also singular. In contrast, Wolof rarely employs derivations which do not link the expression of causation to another type of information, such as how the process is carried out or that it is to the benefit of the causer (four suffixes out of eight). How to explain such a high degree of structural complexity in the expression of causation?

## 5.2. Diachronic hypotheses

As mentioned in the introduction (§1) and in the discussion on composite causatives (§4), all of the suffixes presented in this article are morphemes which, in synchrony, cannot be considered complex suffixes which could be broken down into multiple suffixes. This segmentation is unfeasible either because the language has no corresponding simple suffix or because the semantic composition is unclear: the function of the simple suffix is never fully captured in the composite forms. Furthermore, segmentation is complicated by the numerous cases of homophony and syncretism between Wolof suffixes, with an *-al* which can serve either as a causative or an applicative, and an *-e* which can serve as an applicative or take on many other functions (Voisin 2002; 2003; to appear a).

To better understand this complexity, in this section we will examine all of the Wolof causative suffixes in the light of Wolof-internal comparison (based on the semantics of the suffixes), comparison with other Atlantic languages and with reconstructed forms in this language family. We will present the various elements which seem to confirm that all causative derivations, with the exception of causatives 1 and 2, *-e* and *-al*, are the result of the freezing of stacking suffixes, and will return to the main arguments explaining why it is impossible to segment them synchronically.

The causative derivations reconstructed for Proto-Niger-Congo are two simple causative derivations *\*CI* and *\*TI*, which apply to intransitive bases and express direct causation (Voeltz 1977). In Proto-Atlantic, two causative markers are reconstructed, *\*IT/\*IL* and *\*AN* (Doneux 1975; 1978; 1991). The first is directly inherited from the Proto-Niger-Congo *\*TI* and the second is an Atlantic innovation which Pozdniakov (p.c.) reconstructs as *\*EN/\*EL*. The Wolof suffix *-al* is thus a reflex of this Atlantic innovation, as are the *-An* of Tenda languages and the *-en* of the Jóola language sub-group. The reflexes of the *\*IT/\*IL* derivation (inherited from Proto-Niger-Congo *\*TI*) are found in Atlantic in the Laalaa *-el* (~ *-il*) and, more residually, which is to say non-

productively, in the Sereer *-il* and the Ndut *-il* (Voisin to appear a). As far as Wolof is concerned, Voeltz provides interesting arguments to also link the suffix *-e* to the \*IT/\*IL derivation inherited from Proto-Niger-Congo. The Wolof suffix *-e* shows remarkable polyfunctionality (Voisin 2002). This functional wealth, as well as the suffix's current form, make it difficult to determine its origin. However, the hypotheses formulated by Voeltz on the meanings of the Proto-Niger-Congo suffix which gave rise to causative derivation in these languages make it a plausible source for the suffix *-e* in Wolof. Voeltz (1977: 63) indeed indicates that the reflexes of \*TI allow for comparable polyfunctionality in the reconstruction of this suffix, with causative as well as frequentative-intensive meanings. This reconstruction hypothesis would also explain the current distribution of the two direct causatives in Wolof. The derivation *-e*, directly inherited from Proto-Niger-Congo \*TI (which only applied to intransitive bases) was progressively replaced by *-al*, reflex of the Proto-Atlantic innovation \*EN/\*EL or \*AN depending on the proposal. These two derivations thus fulfilled more or less the same functions for causation and today the causative function of *-e* only appears with a sprinkling of intransitive verbs: this derivation has become lexicalized in its causative function.

All of the other causative suffixes described here are innovations not found throughout the family, with some being specific to Wolof. The most common way that grammatical morphemes emerge in languages is through grammaticalization. This is not the case in Wolof: in general, derivational suffixes are almost never the result of grammaticalization in this language and none of these six verbal causative derivations are due to grammaticalization in the strict sense of the term, i.e. arising from a lexical element. The only possible explanation for these derivations in diachrony is that they stem from frozen stacking suffixes. Given that, in synchrony, these derivations cannot be rigorously segmented into a sequence of several existing suffixes, the identification we propose for some of the elements making up these complex markers, informed by comparison with what is found in other Atlantic languages, remains open. It is synthesized in Table 8 below, following discussion of the various possible hypotheses.

One may first of all suppose that the diachronically complex causatives which all bear a form *-(a)l* include in their composition the (direct) causative *-al* inherited from the Proto-Atlantic innovation. This hypothesis is quite plausible, both morphologically and semantically, for the composite causatives *-ali* and *-antal* which indeed express direct causation combined with other semantic values. As concerns the suffix *-ant* in *-antal*, it is never found on its own in Wolof in synchrony. It is however found in other derivations, such as the reciprocal *-ante* and the simulative *-antu*, and even the corrective causative *-anti* (see 4.3), which are also clearly the result of multiple suffixation freezing. Several elements seem to indicate that *\*-ant* served to express incompleteness. The attested pair *rew-antal* ‘spoil a little’ (18c) and *rew-antu* ‘pretend to be rude, act spoiled’ show that *-antu* and *-antal* both indicate a form of incompleteness or limitation in the accomplishment of a dynamic process. With *-antu*, this process applies to the subject (the incomplete action is carried out on or by oneself, which explains the presence of the middle suffix *-u*), whereas with *-antal*, incomplete causative, the process applies to a causee patient (which explains the presence of the causative suffix *-al*). In the case of the corrective causative *-anti*, one could posit that *\*-ant* signals the incompleteness of the causation produced by the reversive *-i* or, more precisely, the limitation of the causer agent role in the process applied to the causee/patient: the modification affecting the causee is not entirely attributed to the causer since the latter is only bringing the causee back to an initial state (this derivation applies only to stative verbs, e.g. *joy* ‘be inclined’, *joyyanti* ‘straighten s.t.’), the reversal is thus only corrective. The role played by the reversive would then explain the absence of the causative *-al* in this form. We have however mentioned at least one case of derivation with *-anti* with no reversive meaning (§4.3). However, despite the presence of consonant alternations typical of the reversive, this analysis cannot apply to *-ali* for semantic reasons (completing rather than corrective causative). We have no hypothesis to offer for this *-i* in *-ali*. The identification of the causative *-al* does however appear relevant, as for *-antal*.

In contrast, the presence of the direct causative *-al* in the segmentation of complex suffixes is difficult to extend to the causatives encoding indirect and sociative causation, i.e. the suffixes *-lu*, *-loo* and *-le*. This difficulty is mainly due to Wolof-internal factors. Comparison with closely related languages will make it possible to support alternative hypotheses.

If one posits that the suffixes *-lu*, *-loo*, and *-le* are also composed of CAUS2 *-al*, it becomes necessary to explain why in the same position *-al* is reduced to *-l-* but stays whole in *-ali*. One explanation could be that *-ali* is a more recent freezing which still follows the rules of multiple suffixation, such as illustrated in *bax-al-le* ‘help make boil’ (§5.1).

Other hypotheses are also possible. The composition of some causative morphemes in other Atlantic languages very clearly follows the same pattern as in Wolof, but this comparison offers two distinct origins for the component *-l* in these derivations. As can be seen in Table 7, in Laalaa, the indirect causative (+benefit) has the form *-elok*. It can be described as being composed of the direct causative *-el/-il* inherited from Proto-Niger-Congo, and the middle marker *-ok*.

Table 7

### Causative morphemes in Laalaa (adapted from Dieye 2010)

Suffixes	Function	Isomorphism	Function(s)
<i>-el/-il</i>	direct causation (intr., stative verbs)		
<i>-id'</i>	direct causation (intr. & tr.)	<i>-id'</i>	BAPPL
<i>-elok/-iluk</i>	indirect causation (+benefit)	<i>-el</i> <i>-ok</i>	CAUS.DIR MID
<i>-eroh/-iroh</i>	sociative causation	<i>-id'</i> ( <i>-er</i> ~ <i>-ir</i> ) <i>-oh</i>	BAPPL IAPPL/REC <sup>12</sup>

<sup>12</sup> Many verbal derivations in the Atlantic languages are identical in form. The ‘/’ separates the various functions borne by the same form in the language. In the absence of a reconstruction of the verbal system, the question is to know whether the proto-morpheme was polyfunctional, whether the isomorphism is due to haphazard convergence in form or to syncretism, and remains open for numerous verbal derivations in this family.

That being said, one cannot consider that the indirect causative (+benefit) *-lu* in Wolof is composed of the middle *-u* combined with this causative inherited from Proto-Niger-Congo because, as seen earlier, its reflex in Wolof is *-e* and not *-l*. We must therefore retain here the initial hypothesis of a direct causative *-al* (stemming from Proto-Atlantic innovation). This is not however the only possible hypothesis, as we shall see below.

As far as *-loo* is concerned, we must first stress that no Atlantic language has several indirect causation suffixes: either they have a suffix of the *-loo* type, or one equivalent to *-lu*, which is to say an indirect causative with omission of the causee and entailing benefit for the causer (cf. *-elok* in Table 7). In these languages, the expression of the causee is enabled by adding an applicative suffix to the causative suffix. The Wolof *-loo* cannot however be segmented this way in synchrony, on one hand because multiple derivation with the instrumental applicative *-e-loo* is attested (see Buell & Sy 2006: 214), and on the other hand because one can establish a semantic opposition between *-loo* (CAUS5) and *-loo* stemming from the merging of *-lu* (CAUS4) and the applicative-instrumental *-e* (see Church 1981: 170, ‘he had a cloth bought by Doudou (we don’t know whom for)’ vs. ‘he had a cloth bought for himself by Doudou’). This suffix *-loo* is thus frozen in synchrony. That being said, from a diachronic standpoint, it is generally considered to stem from the freezing of the causative *-lu* followed by the instrumental applicative *-e*. Coming back to the segmentation proposed above for *-lu* (into *\*-l-MIDDLE*), one thus obtains, for *-loo*, a segmentation into three suffixes *\*-l-MIDDLE-IAPPL*.

However, for the sociative (assistive) causative *-le*, comparison with Laalaa suggests a different reconstruction for the initial *\*-l*. In this language, the sociative causative has the form *-eroh* (see Table 7), which authorizes the following segmentation: *-er-oh* BAPPL-IAPPL/REC, where BAPPL refers to the benefactive applicative, IAPPL to the instrumental applicative, and REC to the reciprocal. In Wolof, the verbal derivation *-al* has two functions: (i) causative expressing direct

causation (§3.1), (ii) applicative enabling, among others, addition of an object beneficiary argument. Similarly, the highly polyfunctional derivation *-e* serves namely as an instrumental applicative and reciprocal. This double isomorphism thus allows the interpretation of *-le* following the same pattern as Laalaa with an *-(a)l* BAPPL followed either by the instrumental applicative (IAPPL) or the reciprocal (REC) *-e*. The hypothesis of the benefactive applicative being at the origin of the *-l-* could also apply to the reconstruction of *-lu* (supported here by its benefactive meaning) and therefore also of *-loo*. This applicative suffix reconstruction would explain why *-lu* and *-le* are used with dynamic rather than static bases and why *-lu* and *-loo* express indirect causation. Reconstruction involving the causative *-al* is more problematic as this causative derivation applies to intransitive verb bases, usually static (see §3.1), to express direct causation. The indirect causation meaning of *-lu* and *-loo* would then have to be ascribed to a combination between *-al* and other suffixes present in these forms, which is far from evident. For *-lu* namely, we saw that this suffix contains a middle marker which explains its specific benefactive meaning but does not serve to explain its indirect causation meaning. The use of *-loo* with all types of verbs could indicate, once again, more advanced freezing.

For the reconstruction of the initial of these non-composite causatives, we are not in a position to decide between the two hypotheses, i.e. that of the causative *-al* and that of the benefactive applicative *-al*. In both cases, the absence of an *a* in the initial morpheme (in contrast to *-ali*) remains an issue. Nevertheless, the second hypothesis has the merit of aligning Wolof with a pattern found in another Atlantic language as well as accounting for the restriction of the non-composite causatives to dynamic verbs. This hypothesis also opens up a possible diachronic explanation for the morphological differences between the composite and non-composite causatives, since the source of the BAPPL morpheme still needs to be reconstructed. What is perfectly clear is that the *-al* of the composite causatives *-ali* and *-antal* is indeed the Wolof CAUS2, reflex of the Proto-Atlantic causative.

The reconstruction hypotheses proposed for Wolof causatives are summarized in Table 8.

Table 8

**Hypotheses on the multiple suffixation  
at the origin of the Wolof causative markers**

<i>-ali</i>	<	<i>-al-i</i>	CAUS2-REVERSIVE/-i <sup>13</sup>
<i>-antal</i>	<	<i>-ant-al</i>	*INCOMPL-CAUS2
<i>-anti</i>	<	<i>-ant-i</i>	*INCOMPL-REVERSIVE
<i>-lu</i>	<	<i>-al-u</i>	(CAUS2/)BAPPL-MIDDLE
<i>-le</i>	<	<i>-al-e</i>	CAUS2/BAPPL-POLY <sup>14</sup>
<i>-loo</i>	<	<i>-al-u-e</i>	(CAUS2/)BAPPL-MIDDLE-POLY

The suggestions which have just been made to explain the emergence of the numerous causative derivations in Wolof through the freezing of multiple suffixes must be bolstered and specified. Only comparison with other languages and advances in the reconstruction of the system of verbal derivations in the family will clarify the issue and make it possible to abandon unfruitful leads. This does not counter however the fact that Wolof and, to a lesser degree, other languages in the Atlantic family, construct and develop their already rich systems of verbal derivation through typologically unexpected means, such as

<sup>13</sup> This suffix, which has the same form as the reversive (i.e. the morpheme *-i* accompanied by consonant alternation of the verb base), is, at this stage, simply a means to indicate that the semantics of the reversive cannot explain the semantic compositionality of *-al-i*. This hypothetical suffix does not correspond to any form attested in synchrony nor is it reconstructed in diachrony.

<sup>14</sup> The POLY abbreviation is used when a single morpheme has more than two functions. Comparison with the other Atlantic languages shows that, in the same position as the suffix *-e*, (which has a total of six functions in Wolof, five of which pertain to valence (voice) modifications, including the applicative and reciprocal), one finds similar suffixes displaying, to a lesser degree, the same polyfunctionality. This convergence casts doubt on accidental homonymy for the polyfunctionality of *-e*. Thus it is not possible to identify a clear function for this element in the causative derivations.

stacking suffixes, evidenced here in frozen form. In the final section we will return to this particularity, attested in an extreme form in Wolof, by placing it in the context of the language's broader morphosyntactic strategies.

## 6. Conclusion

This plethora of markers to express causation goes well beyond the number of distinctions found in other Atlantic languages; to the best of our knowledge, these amount to between one and four causatives, with three being the norm. With the exception of *-lu*, the causative suffixes in Wolof do not encode functions considered as non-prototypical according to Kittilä (2009). This unusual multiplicity stems (i) from the encoding in specialized markers of certain functions used for causative derivation; on this point we stress the singularity of the suffixes *-le* and *-lu*, the first as a marker specialized in sociative (assistive) causation, and the second in the expression of indirect causation with deletion of the primary agent; (ii) from the combination of the expression of direct causation with other semantic components than those entailed by causation, and bearing on the modalities of the process realization (incomplete, completing or corrective causation). With the exception of *-e* and *-al*, all of these suffixes have their origins in compounds: they clearly stem from the combination of several suffixes, but can no longer be segmented in synchrony, either because they stem from suffixes which do not or no longer exist in isolation (*\*-ant*), or, above all, because the combination of the initial suffixes has a meaning which cannot be directly deduced from the meaning of each on its own. In other words, the original morphological composition of these suffixes is not always transparent nor does it coincide with any semantic composition.

This Wolof system where one can reconstruct the merging of various affixes can be considered an extreme manifestation of the constant recycling of an older system of verbal affixes as posited for Proto-Niger-Congo by Voeltz (1977). The particular recombinations

of derivational suffixes presented here certainly reflect more general and specific structural tendencies which are particularly marked in this language and, to a lesser degree, in other languages of the northern branch. Let us first note that, in the expression of causation and elsewhere, morphology has no iconic use in Wolof. Thus, root reduplication never has intensive, durative or verbal plurality value (such values are provided by grammatical morphemes); this process is used in Wolof as a derivational means to form deverbal nouns (e.g. *xam* ‘know’, *xam-xam* ‘knowledge’). As for suffixes, not only is indirect causation not expressed by causative suffix reduplication, as is the case in Turkish and Quechua for example (Kulikov 1993: 124, 126), but, more generally, in Wolof suffixes cannot be reduplicated: additional nuances are provided by specific suffixes or a combination thereof (cf. *-anti*, *-antal*, *-ante*) which often bring into play changes in valency. The specifications brought by these specific suffixes can bear not only on the semantic roles of the arguments but also on the process modality, as shown for composite causatives but which is also true for other suffixes such as, for example, those which indicate coparticipation (see Creissels & Voisin 2008) or the subject’s behavior (see Robert 2017b).

This morphosyntactic characteristic partakes in a more general tendency in Wolof concerning the central role played by the verb in the language’s morphosyntax. This is visible in the numerous semi-auxiliaries utilized to specify various process circumstances (e.g. *teel* ‘carry out an action early’, *naaj* ‘do late in the morning’) or in the frequent use of qualifying relatives in adverbial function (e.g. *bu baax* ‘(that) which is good’ for ‘well’, *lu bare* ‘(that) which is numerous’ for ‘a lot’), in corollary of a small number of primary adverbs (e.g. *lool* ‘very’). This central role of the verb is made possible by the richness of its morphology, also visible in Wolof verbal inflections. These are largely fusional and notably include three focusing conjugations (Robert 2000) attesting to the grammaticalization of the informational structure. At the level of discourse and not only clauses, the semantic wealth of the conjugations favors the paratactic expression

of interpositional links, frequent despite the existence of subordinating morphemes (see Robert 2010).

The surprising proliferation of causative suffixes in Wolof thus completes the strategy of synthetic encoding of intra- and interpositional syntactic relations in the language, thereby participating in its propensity to grammaticalize in the verbal morphology both the semantic and syntactic roles of participants and modalities of process realization and the informational structure of utterances.

### Acknowledgements

Financial assistance for the translation of this article was received from the Institut National des Langues et Civilisations Orientales. Our deep thanks go to Margaret Dunham for her precious help in translating this paper into English and to Jean-Léopold Diouf for sharing his deep knowledge of Wolof.

### Abbreviations

1, 2, 3 – 1 <sup>st</sup> , 2 <sup>d</sup> , 3 <sup>d</sup> person	FUT – future
APPL2 – instrumental applicative, I-APPL	GEN – genitival suffix
AUGM – augmentative, meliorative	HAB – habitual marker
CAUS1 – direct causation	IMP – imperative (conjugation)
CAUS2 – direct causation	INCOMP – incompleteness
CAUS3 – assistive causation	IPFV – imperfective
CAUS4 – indirect causation with omission of causee	INDF – indefinite
CAUS5 – indirect causation	LINK – verbal linker
CAUS6 – incomplete direct causation	NEG – negative
CAUS7 – completing direct causation	O – object clitic
CAUS8 – direct corrective causation	OBL – obligative
CAUS.DIR – direct causative	PL – plural
CL – noun class marker	POSS – possessive
COMPL – complementizer	PREP – preposition
DEF – definite article	PRF – perfect

DEM – demonstrative	PROX – proximal
DIST – deictic, distal	PRST – presentative (conjugation)
F – feminine	PST – past (suffix)
FOCS – subject focus (conjugation)	S – subject index
FOCV – verb focus (conjugation)	SG – singular

## References

- Becher, Jutta. 2003. Experiencer Constructions in Wolof. *Hamburger Afrikanistische Arbeitspapiere* 2. 1–83.
- Buell, Leston & Sy, Mariame. 2006. Affix ordering in Wolof applicatives and causatives. In Mugane, John et al. (eds.), *Selected Proceedings of the 35<sup>th</sup> Annual Conference on African Linguistics*, 214–224. Somerville, MA: Cascadilla Proceedings Project.
- Church, Eric. 1981. *Le système verbal du wolof*. Dakar: Université de Dakar. (Documents linguistiques 27.)
- Comrie, Bernard. 1976. The syntax of causative constructions: cross-language similarities and divergences. In Shibatani, Masayoshi (ed.), *Syntax and semantics of causative constructions*, 261–312. New-York: Academic Press.
- Comrie, Bernard. 1985. Causative verb formation and other verb-deriving morphology. In Shopen, Timothy (ed.), *Language typology and syntactic description*. Vol. 3 *Grammatical categories and the lexicon*, 309–348. Cambridge: Cambridge University Press.
- Creissels, Denis & Voisin, Sylvie. 2008. Valency-changing operations in Wolof and the notion of co-participation. In König, Ekkehard & Gast, Volker (eds.), *Reciprocals and reflexives: Theoretical and typological explanations*, 289–305. Berlin: Mouton de Gruyter.
- Dieye, El Hadji. 2010. *Description d'une langue cangin du Sénégal : le laalaa (léhar)*. Dakar: Université Cheikh Anta Diop & Paris: Institut National des langues et civilisations orientales. (Ph.D. dissertation.)
- Diouf, Jean-Léopold. 2003. *Dictionnaire wolof-français et français-wolof*. Paris: Karthala.
- Diouf, Jean-Léopold. 2009. *Grammaire du wolof contemporain*. Paris: L'Harmattan.

- Dixon, Robert M. W. 2000. A typology of causatives: form, syntax and meaning. In Dixon, Robert M. W. & Aikhenvald, Alexandra (eds.), *Changing valency: Case studies in transitivity*, 30–83. Cambridge: Cambridge University Press.
- Doneux, Jean Léonce. 1975. Hypothèse sur la comparative des langues atlantiques. *Africana Linguistica* 6. 41–130.
- Doneux, Jean Léonce. 1978. Les liens historiques entre les langues du Sénégal. *Réalités africaines et langue française* 7. 6–55.
- Doneux, Jean Léonce. 1991. *La place du buy dans le groupe atlantique de la famille Kongo-Kordofan*. Bruxelles: Université Libre de Bruxelles. (Thèse d'état.)
- Fal, Arame & Santos, Rosine & Doneux, Jean Léonce. 1990. *Dictionnaire wolof-français suivi d'un index français-wolof*. Paris: Karthala.
- Ka, Omar. 1981. *La dérivation et la composition en wolof*. Dakar: CLAD.
- Ka, Omar. 1994. *Wolof phonology and morphology*. Lanham: University Press of America.
- Kesteloot, Lylia & Chérif, Mbodj. 1983. *Contes et mythes wolof*. Abbeville: Les Nouvelles Editions africaines.
- Kittilä, Seppo. 2009. Causative morphemes as non-valency increasing devices. *Folia Linguistica* 43(1). 67–94.
- Kobès, Aloys & Abiven, O. 1922. *Dictionnaire volof-français*. Dakar: Louis Le Hunsec, Vicaire apostolique de la Sénégalie.
- Kulikov, Leonid I. 1993. The “second causative”: A typological sketch. In Comrie, Bernard & Polinsky, Maria (eds.), *Causatives and transitivity*, 121–154. Amsterdam: John Benjamins.
- Kulikov, Leonid I. 2001. Causatives. In Haspelmath, Martin & König, Ekkehard & Oesterreicher, Wulf & Raible, Wolfgang (eds.), *Language typology and language universals: An international handbook*, vol. 2, 886–898. Berlin: Walter de Gruyter.
- Nedjalkov, Vladimir P. & Silnitsky, Georgij G. 1973. The Typology of Morphological and Lexical Causatives. In Kiefer, Ferenc (ed.), *Trends in Soviet theoretical linguistics*, 1–32. Dordrecht: Springer Netherlands.
- Renaudier, Marie. 2012. *Dérivation et valence en sereer*. Lyon: Université Lumière Lyon2. (Ph.D. dissertation.)
- Robert, Stéphane. 2000. Le verbe wolof ou la grammaticalisation du focus. In Caron, Bernard (ed.), *Topicalisation et focalisation dans les langues africaines*, 229–267. Louvain: Peeters.

- Robert, Stéphane. 2010. Clause chaining and conjugations in Wolof: a typology of parataxis and its semantics. In Brill, Isabelle (ed.), *Clause hierarchy and clause linking: syntax and pragmatics*, 469–498. Amsterdam: John Benjamins.
- Robert, Stéphane. 2017a. *Seven causative suffixes for one language: the case of Wolof*. A paper presented at 47<sup>th</sup> Colloquium on African Languages and Linguistics (CALL 47, 28–30 August 2017), Leiden University.
- Robert, Stéphane. 2017b. Predication in Wolof (Atlantic, Niger-Congo). In Mettouchi, Amina & Frajzyngier, Zygmunt & Chanard, Christian (eds.), *Corpus-based cross-linguistic studies on Predication*. <http://cortypo.huma-num.fr/Publication>.
- Robert, Stéphane. In press. Wolof: A grammatical sketch. In Lüpke, Friederike (ed.), *The Oxford guide to the Atlantic languages of West Africa*. Oxford: Oxford University Press.
- Sauvageot, Serge. 1965. *Description synchronique d'un dialecte wolof: Le parler du Dyolof*. Dakar: IFAN.
- Shibatani, Masayoshi. 1975. *A linguistic study of causative constructions*. Bloomington, IN: Indiana University Press.
- Shibatani, Masayoshi & Pardeshi, Prashant. 2002. The causative continuum. In Shibatani, Masayoshi (ed.), *The Grammar of causation and interpersonal manipulation*, 85–126. Amsterdam: John Benjamins.
- Song, Jae Jung. 1996. *Causatives and causation: A universal-typological perspective*. London: Longman.
- Voeltz, Erhard. 1977. *Proto Niger-Congo extensions*. Los Angeles: University of California at Los Angeles. (Ph.D. dissertation.)
- Voisin, Sylvie. 2002. *Relations entre fonctions syntaxiques et fonctions sémantiques en wolof*. Lyon: Université Louis Lumière Lyon 2. (Ph.D. dissertation.)
- Voisin, Sylvie. 2003. Le syncrétisme causatif/applicatif. In Sauzet, Patrick & Zribi-Hertz, Anne (eds.), *Typologie des langues d'Afrique et universaux de la grammaire*, 185–203. Paris: L'Harmattan.
- Voisin, Sylvie. 2018. Le factitif dans les langues atlantiques et les langues bantoues. In Thibault, André & Duval, Marc & Lo Vecchio, Nicholas (eds.), *Travaux de linguistique romane*, 227–252. Strasbourg: ELiPhi.

- Voisin, Sylvie. To appear a. Applicatif, isomorphisme et réanalyse dans les langues atlantiques. In Do-Hurinville, Danh Thành & Dao, Huy-Linh & Petit, Daniel (eds.), *L'applicatif dans les langues: Regard typologique*. Paris: Éditions de la Société de Linguistique de Paris.
- Voisin, Sylvie. To appear b. Verbal extensions of Atlantic languages. In Lüpke, Friederike (ed.), *The Oxford guide to the Atlantic languages of West Africa*. Oxford: Oxford University Press.
- Wane, Mohamadou Hamine. 2017. *La grammaire du noon*. Leiden: Universiteit Leiden. (Ph.D. dissertation).