Wackernagel clitics in Wolof

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[Draft; comments welcome!]

1 Introduction

Since their first mention in the generative literature, *special clitics* (in the sense of Zwicky 1977) have stubbornly resistant to analyses employing the standard array of linguistic devices both in the syntax and in the phonology. The main issues have to do with defining their exact position in the clause, motivating their movement there, and understanding the properties of this movement. Much work on clitics proposes that they target a particular position in the clause, or that their position is tied to the position of the verb. Such an analysis is standard for Romance, which ties clitic movement to verb movement since Kayne (1975). So-called *second position* or Wackernagel clitics, whose position is generally independent of that of the verb, have seen all sorts of analyses over the years – syntactic, phonological, and everything in between, especially when it comes to clitics in South Slavic languages.

Wolof clitics exhibit some familiar properties of Wackernagel clitics. Even though they do not consistently surface in the second position, Wolof clitics cluster high, immediately following overt complementizer-like elements present in every finite indicative clause, as shown in (1).[1]

(1)   *Wolof Wackernagel clitics*[2]
      Da=**ma=ko=fa**   gis.
      do.C=1SG=3SG.OBJ=LOC see
      'I saw him/her/it there.'

In non-finite clauses, however, clitics occupy a variety of positions, depending on the presence of other clausal material. They can follow the embedded verb, as in (2a), flank the verb, as in (2b), follow the auxiliary *di*, in (2c), or cluster together at the edge of the non-finite clause, in (2d).

(2)   *Wolof clitics in non-finite clauses*

    a.   Da=ma   ñ̈ëw   [togg=**ko**   ].
             do.C=1SG come [cook=3SG.OBJ]
             'I came to cook it.'

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[1] Abbreviations: AND = andative; CM = class marker; INF = infinitive; IPFV = imperfective, LOC = locative clitic; NEG = negation; OBJ = object clitic; OPT = optative; PL = plural; POSS = possessive; SG = singular; STR = strong pronoun.

In glossing, I mark subject clitics only with person and number, and object clitics with OBJ in addition to person and number marking. I follow the Leipzig Glossing Rules in using '=' to separate cliticized elements and '-' for affixal elements.

[2] Unless otherwise noted, all data were collected by me in St-Louis, Senegal, and Ndombo, Senegal, during five field trips between 2014 and 2019.

   b.   Da=ma   aaye   Faatu [**mu**=togg=**ko**   ].
       do.C=1SG prevent Fatou [3SG=cook=3SG.OBJ]
       'I prevented Fatou from cooking it.'

   c.   Da=ma   ñëw   [di=**ko**   togg].
       do.C=1SG come [IPFV=3SG.OBJ cook]
       'I came to cook it.'

   d.   Da=ma   aaye   Faatu [**mu**=**ko**   di (>koy) togg].
       do.C=1SG prevent Fatou [3SG=3SG.OBJ IPFV   cook].
       'I prevented Fatou from cooking it.'

This paper has two main goals. First, I show here that Wolof clitics target the highest functional head in the extended projection of the verb, as previously proposed by Dunigan (1994). Analyses along similar lines can be found in Ouhalla 1989 for Berber, and Franks 1998/2010 for (some) South Slavic clitics. Several later analyses of Wolof have challenged this idea, and argued for either a mixed syntax-prosody account (Zribi-Hertz and Diagne 2002), or a number of different, clitic projections in the clausal spine where clitics are base-generated (Torrence 2012). In this paper I affirm Dunigan's original proposal and argue that clitic placement in Wolof is purely syntactic and that it involves movement. We shall see that Clitic Movement in Wolof cannot straightforwardly be attributed to some type of "deficiency" or the need for clitics to be licensed in a particular postion (e.g. Cardinaletti and Starke 1999; Déchaine and Wiltschko 2002; Franks 2012): Wolof has no agreement, and clitics move to a variety of positions, depending on the size of the extended projection of the verb. Clitic Movement therefore appears more similar to other movements to domain edges (such as *wh*-movement and possibly verb movement in V2, the latter being Wackernagel's (1982) original insight). Although a detailed analysis of non-finite clauses is not the purpose of this paper, I show how cliticization helps diagnose clause size, contributing to a better understanding of non-finite complementation.

The second goal of this paper is spelling out the details of Clitic Movement. I argue that clitics have a feature that is activated and results in movement only if the clitic is the c-command domain of its trigger; if the clitic is higher than the trigger, the feature remains inactive and there are no special requirements with respect to the clitic's placement. This will account for the ability of the subject clitic to be initial in examples such as (2b), and explain why it behaves as other clitics when there is a higher head that attracts it, as in the finite clause in (1). I also argue that the best analysis of Clitic Movement is one that involves right-adjunction (e.g. Pesetsky 2013).

The paper proceeds as follows. In section 2 I illustrate the basic properties of Wolof clause structure and clitic placement in finite clauses. Section 3 introduces data from non-finite complements and shows that the patterns of cliticization indicate that they differ in size. I argue that the puzzling differences in clitic placement can be understood if (i) clitic placements is purely syntactic, and (ii) clitics always target the highest head inside the extended projection of the verb. I tackle the specific properties of Clitic Movement and develop an account that captures them in section 4. Section 5 concludes.

2   Clitics in Wolof clause structure

I start this section with a brief look at pronominal elements in Wolof, and then give an overview of Wolof clause structure and clitic placement in finite monoclausal structures.

Personal and locative pronouns in Wolof have a *strong* and a *weak* paradigm, exemplified in Table 1 and Table 2. Locative weak forms carry a proximal/distal distinction, which is also the case with determiners in Wolof (*-i* = proximal marker, *-a* = distal marker).[3] Strong pronouns do not exhibit case distinctions, while weak subject and object pronouns differ in form. There is only one series of object pronouns, for both goal and theme objects (i.e. there is no distinction in Wolof between dative and accusative clitics).

	Strong	*Weak subject*	*Weak object*
1SG	man	ma	ma
2SG	yow	nga	la
3SG	moom	mu	ko
1PL	ñun	nu/ñu	nu/ñu
2PL	yeen	ngeen	leen
3PL	ñoom	ñu	leen

Table 1: Strong and weak personal pronouns in Wolof

	Strong	*Weak*
	foofu	fa/fi
	coocu	ca/ci

Table 2: Strong and weak locative pronouns in Wolof

In languages with multiple series of pronouns, as noted by Cardinaletti and Starke (1999) (C&S), strong and weak/clitic pronouns surface in different environments. This is also the case in Wolof, where only strong pronouns can be coordinated, focused, dislocated, and be complements of prepositions. Unlike in most languages in C&S's sample, however, Wolof strong pronouns cannot surface in argument positions; a pronominal clause-internal argument can only be a clitic. Weak object and locative pronouns always behave like *special clitics* in the sense of Zwicky 1977.[4] The behavior of weak subject pronouns, on the other hand, depends on the syntactic environment that they find themselves in. If they are not initial (i.e. in the highest position) in the movement domain of clitics, they cluster with object and locative clitics in a higher position. They can, however, also be initial in their domain. In that case they still form a prosodic unit with the phonological word that follows them, but they are not displaced. I investigate the difference between the subject and non-subject clitics throughout the paper and argue that they should not be treated as distinct

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[3]There are two forms of locative markers, one with the consonant *f-* and the other one with *c-*. The difference between the two in their pronominal use is not entirely clear to me. *Ci* is also the form of the only real preposition in Wolof, and it also functions as a partitive clitic.

[4]Zwicky (1977) described *special* clitics, in opposition to *simple* clitics, as clitics that have special syntactic properties. I use this term for those clitics that tend to occupy a syntactic position different from that of a corresponding non-clitic element.

types of pronouns, but that the seemingly peculiar behavior of subject clitics is straightforwardly explained under a purely syntactic account of clitic placement in Wolof.

Wolof is an SVO language with a rigid clause-internal word order and several left-peripheral positions for focused and topicalized elements. All finite indicative clauses in Wolof contain a high projection which hosts complementizer-like elements – *sentence particles* (Dunigan 1994; Martinović 2015, 2017a, 2020). There are two types of finite indicative clauses in Wolof, illustrated in (3): those in which a verbal element precedes the sentence particle (examples of a *Neutral affirmative* and *Predicate focus* sentence), and those in which an XP A′-moves in front of the particle, and the verb remains below it (examples of an *Exhaustive Identification* sentence and a *Relative clause*).

(3)   a.   Xale yi   lekk-**na**=ñu gato bi.
           child the.PL eat-C=3PL   cake the.SG
           "The children ate the cake."   **Neutral affirmative**
      b.   Xale yi   **da**=ñu   lekk gato bi.
           child the.PL do.C=3PL eat cake the.SG
           "The children ATE the cake."   **Predicate focus**
      c.   Gato bi   **la**=ñu lekk.
           cake the.SG C=3PL eat
           "It's the cake that they ate."   **Exhaustive Identification**
      d.   gato b-**u**=ñu   lekk
           cake CM-C=3PL eat
           'a cake that they ate'   **Relative clause**

Following Dunigan (1994), I have argued extensively that sentence particles all occupy the same position in the clause (Martinović 2015, 2017b, 2020). They are in complementary distribution with one another, they appear to carry clause-typing information, and a sentence particle is obligatory in order for the clause to have tense and negation (Njie 1978, 1982). Elements to the left of sentence particles behave as if they were in the left periphery. I therefore identify this position as a (low) C head.[5]

There are a number of syntactic differences between the two clause types in (3). Most strikingly, in clauses in which a verbal head is in C, as in (3a) and (3b), an optional non-clitic subject can only be to the left of the sentence particle (*xale yi* 'the children') and is obligatorily doubled by a clause-internal clitic (*ñu*). It is not possible for the non-clitic subject to occur to the right of the sentence particle, nor can the subject clitic be omitted, shown in (4). This makes it appear that the element encoding the φ-features of the subject is actually agreement. Other clause-types in Wolof show that this is not the case. In Martinović (2015, 2017a, 2020) I call sentences as in (3a) and (3b) *V-raising* clauses.

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[5]Wolof also has a high embedding complementizer, which can embed all clauses with sentence particles, therefore, in a more articulated left periphery à la Rizzi (1997), C would be closest to Fin, which is how Zribi-Hertz and Diagne (2002) and Torrence (2003) label the V-raising particle *na*. Given that *na* is incompatible with particles that occur in A′-movement (subject and non-subject focus and relative clauses), which are traditionally considered to be complementizers, I label this head as C.

(4) a. *Lekk-[na](=ñu) xale yi   gato bi.
         eat-C(=3PL)   child the.PL cake the.SG
         intended: *'The children ate the cake.'*
     b. *[Da](=ñu) xale yi   lekk gato bi.
         do.C(=3PL) child the.PL eat   cake the.SG
         intended: *'The children ATE the cake.'*

In A′-movement constructions (*Wh-raising*) the clause-internal subject can either be a clitic, as in (3c) and (3d) above, or a non-clitic, as in (5). The clitic and non-clitic subject cannot co-occur to the right of the sentence particle, but one is obligatory. Therefore, despite the optionality of the non-clitic subject to the left of C in V-raising clauses, Wolof is not a *pro*-drop language.

(5) a. Gato bi   la(=*ñu) xale yi   lekk.
         cake the.SG C(=*3SG) child the.PL eat
         'It's the cake that the children ate.'
     b. gato b-u(=*ñu)   xale yi   lekk
         cake CM-C(=*PL) child the.PL eat
         'a cake that the children ate'

The comparison between the two clause-types shows that the subject clitic to the right of C should not be treated as agreement (contra Torrence 2005, 2012; Zribi-Hertz and Diagne 2002). I propose in Martinović 2015, 2020 that V-raising clauses involve a type of Clitic Doubling/Clitic Left Dislocation. In the remainder of the paper I ignore the differences between different finite clause-types, as clitic placement is uniform across them: if A′-movement clauses contain a pronominal subject, it occurs in the same position as in V-raising clauses, which only allow pronominal subjects.

In finite matrix clauses, clitics target the position to the immediate right of the sentence particle, clustering in the order SUBJ>OBJ>LOC, as in (6).

(6) a. Xale yi   lekk-[na]=ñu=ko=fi.
         child the.PL eat-C=3PL=3SG.OBJ=LOC
         "The children ate the cake."
     b. Xale yi   lekk-ul-[∅]=ñu=ko=fi.
         child the.PL eat-NEG-C=3PL=3SG.OBJ=LOC
         "The children didn't eat the cake."
     c. Xale yi   [da]=ñu=ko=fi   lekk.
         child the.PL do.C=3PL=3SG.OBJ=LOC eat
         "It's that the children ate the cake."
     d. Demb   [la]=ñu=ko=fi   lekk.
         yesterday C=3PL=3SG.OBJ=LOC eat
         "It's yesterday that they ate it."

The position of the clitics is higher than the structural subject position, which can be seen if the subject is not pronominal (in A′-movement clause-types, where this is possible). Compare (7a), which has a clitic subject, and (7b), with a non-clitic subject.

(7)　　a.　Yow `la` =ñu=ko=fa　　　wax.
　　　　　you　C=3SG=3SG.OBJ=LOC say
　　　　　'It's you that they said it to there.'
　　　b.　Yow `la` =ko=fa　　　**jigéen yi**　wax.
　　　　　you　C=3SG.OBJ=LOC woman the.PL say
　　　　　'It's you that the women said it to there.'

The examples above show that clitics always occupy the same position when a sentence particle is present, independently of the position of any other element in the clause (the verb, for example). The fact that there is no variation in the position of clitics in finite clauses makes it appear that they specifically target C. Even though clitics must move to a position immediately following the sentence particle when one is present in the clause, the availability of this position is not what licenses them; clitics can occur in structures of any size. For example, there are clauses that have been argued to be the size of a vP, occurring in running narrative contexts (story-telling) or in proverbs, which I call *minimal clauses* (Sauvageot 1965; Church 1981; Dialo 1981; Robert 1991; Zribi-Hertz and Diagne 2002), exemplified in (8). They are independent, but they cannot contain any inflectional morphology (tense, aspect, negation); they must acquire temporal reference from context, or be directly preceded by a temporal adverbial phrase.

(8)　　*Minimal clause*
　　　Xale yi　　lekk gato bi.
　　　child the.PL eat　cake the.PL
　　　'The children eat/ate/will eat/... the cake.'

Clitics can occur in such structures, both in the subject position and in lower positions, as in (9). Strong pronouns are banned from minimal clauses, just as they are from argument positions in finite clauses.

(9)　　*Clitics inside minimal clauses*
　　　a.　Ñu=lekk=ko.
　　　　　3PL=eat=3SG.OBJ
　　　　　'They eat it.'
　　　b.　*Ñoom　lekk moom.
　　　　　3PL.STR eat　3SG.STR

As expected, Wolof clitics form a phonological word with the material that they cliticize to. This can be seen from the application of vowel harmony to the clitic cluster, shown in (10). Wolof has ATR-harmony, which spreads from roots to affixes and clitics.

(10)　　a.　Lekk-na=∅=leen=fa.
　　　　　　eat-C=3SG=3PL.OBJ=LOC
　　　　　　'He ate them there.'　　　　　　　　　　　　　　-ATR verb, -ATR clitics
　　　　b.　*Lekk-në=∅=léen=fë.
　　　　　　eat-C=1SG=3PL.OBJ=LOC
　　　　　　intended: *'He ate them there.'*　　　　　　　　　　-ATR verb, +ATR clitics

c. Dóor-në=∅=léen=fë.
    hit-C=3SG=3PL.OBJ=LOC
    'He hit them there.'   +ATR verb, +ATR clitics
d. *Dóor-na=∅=leen=fa.
    hit-C=3SG=3PL.OBJ=LOC
    intended:*'He hit them there.'*   +ATR verb, -ATR clitics

In the remainder of the paper, I do not represent vowel harmony but consistently use the -ATR spelling for clitics and affixes.

Additionally, subject clitics have different form depending on the sentence particle they are adjacent to. For example, the 1*st* person subject clitic surfaces as *a* in Neutral affirmative clauses (with the sentence particle *na*), but as *ma* if negation is on the verb, in which case the sentence particle is phonologically null.

(11)   a. Lekk-⌐na⌐=a ceeb.
            eat-C=1SG   rice
            'I ate rice.'
        b. Lekk-u(l)-⌐∅⌐=ma ceeb.
            eat-NEG-C=1SG   rice
            'I didn't eat rice.'

This kind of variation in form is present in most persons, but not all – for example, the 1*st* and 3*rd* person plural pronouns remain the same in all environments. The phonological form of object and locative clitics does not change depending on the morphosyntactic context. It is possible that subject clitics incorporate into C, whereas other clitics do not. This will not be relevant for the discussion of clitic movement.

Clitics are blocked from occurring in the left periphery, which is consistent with Cardinaletti & Starke's observation that, in languages which make the distinction between strong and weak/clitic pronouns, strong pronouns are the ones that surface in focus and topic positions. At first glance, Wolof appears to be a counterexample to this generalization. Namely, subject pronouns in Spec,CP of A′-movement constructions actually appear to be clitics, and not strong pronouns. An object pronoun in Spec,CP can only surface in its strong form, as shown in (12). In case of subject extraction, it appears that the weak version of the pronoun surfaces in Spec,CP, as in (13), contrary to what we expect.[6]

(12) *A′-extraction of object pronoun*   (13) *A′-extraction of subject pronoun*
      a. Ñoom   la Usmaan gis.   a. Ñu-a (>ñoo) gis Usmaan.
          3PL.STR C Oussman see   3PL-C   see Oussman.
          "It's them who Oussman saw."   *"It's them who saw Oussman."*
      b. *Leen   la Usmaan gis.   b. *Ñoom-a gis Usmaan.
          3PL.STR C Oussman see   3PL.STR- see Oussman.

The asymmetry between subject and object pronouns in extraction is, however, only apparent.

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[6]The A′-movement complementizer in Wolof exhibits a subject/non-subject asymmetry, surfacing as *a* in subject extraction and as *la* in extraction of any other constituent.

They key clue comes from 2*nd* person singular and plural, where there is no phonological similarity between weak and strong pronouns (see Table 1). In case of second person subject extraction to Spec,CP, the pronoun does not surface in its weak form, as *nga/ngeen*, but as the first syllable of the strong form, *ya*, in the singular, and as the full strong pronoun *yeen* in the plural.

(14)   *2nd person subject pronouns in Spec,CP*

    a.   Ya-a   gis Usmaan.
         2SG.STR-C see Oussman
         "It's you(sg) who saw Oussman."

    b. *Nga-a gis Usmaan.
         2SG-C see Oussman

    c.   Yeen-a   gis Usmaan.
         2PL.STR-C see Oussman
         "It's you(pl) who saw Oussman."

    d. *Ngeen-a gis Usmaan.
         2PL-C   see Oussman

C&S's generalization that Spec,CP is a position in which only strong pronouns can surface therefore holds for Wolof as well, and subject pronouns in Spec,CP are reduced versions of the strong forms. This is important, as the assumption that subject pronouns in Spec,CP are clitics has introduced complications into previous analyses of cliticization in Wolof (in Dunigan 1994 and Zribi-Hertz and Diagne 2002). Another argument in favor of this analysis are pronouns in fragment answers. Fragments have been argued to have full sentential structures, to account for their propositional character. Merchant (2004) proposes that the fragment moves to the specifier of a left-peripheral head, with the TP elided. There is evidence that this leftward movement has the properties of focus movement (Brunetti 2003; Arregi 2010), and fragment answers in Wolof, which can be followed by the complementizer *(l)a*, support this. Only strong pronouns can be fragment answers, as shown in (16), regardless of whether or not they are followed by the complementizer *(l)a*, and regardless of their grammatical relation. The fragments in (16) can both be answers to either of the questions in (15).

(15)   a.   Kan-a gis Aali?   (16)   a.   Man/*Ma.
         who-C see Ali   1SG.STR/1SG
         'Who saw Ali?'   *'Me'.*

      b.   Kan la Aali gis?   b.   {Man/*Ma}   (l)a.
         who C Ali see   1SG.STR/*1SG C
         'Who did Ali see?'   *'(It was) me.'*

    The data from fragment answers show that the form of the pronoun that surfaces in Spec,CP is indeed the strong form, which becomes reduced in subject extraction when the CP-layer is followed by overt material. This prosodic restructuring seems to be a phonological phenomenon, and it occurs not only in Spec,CP, but also in coordination, where the subject pronoun that is the first conjunct ends up being phonologically reduced in the same way as subject pronouns in Spec,CP.[7]

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[7]Wolof is therefore a counterexample to Cardinaletti & Starke's (1999) generalization that strong pronouns cannot

It is here important to note that the overt subject pronoun in clauses smaller than the CP is *not* a prosodically restructured strong pronoun, as the *2nd* person pronoun surfaces in the clitic form *nga*, and not the reduced strong pronoun form *ya*:

(17)   a.   Nga=gis=ko.
                   2SG=see=3SG.OBJ

                   'You see it.'
       b.   *Ya=gis=ko.
                   2SG.STR=see=3SG.OBJ

The ban on clitic pronouns in left-peripheral positions is a long-standing puzzle. Prosodic reduction of focused subject pronouns in Wolof makes it unlikely that this is due to some prosodic requirement (e.g. that focused element must bear stress). It also makes an analysis that reduces the difference between strong and weak pronouns to contextual allomorphy, where the same bundle of features is spelled out by a different exponent in different structural positions, unattractive, as two prosodically weak forms must be posited: one for subject pronouns in Spec,CP, and another one for other clitic positions. The relevant generalization that needs to be captured is that clitics cannot move out of the extended projection of the verb, a property they, to a certain extent, share with verbs.[8] I will not offer an explanation for this here, but leave it aside as a bigger question of why some movements, such as word-forming head movement and Clitic Movement, are clause-bound, whereas others are not.

My goal in this paper is to show that clitics move to the highest functional head in the extended projection of the verb, and consequently, that clitics can be a useful tool for identifying the amount of functional structure in a clause. I show that clitics follow a variety of syntactic heads, and that the subject clitic can stay in situ, meaning that clitics do not move in order to be licensed, as is often claimed. I shall propose that clitic movement is triggered by an EDGE-feature ([EF]), which is always found on the highest head in the extended projection of the verb.
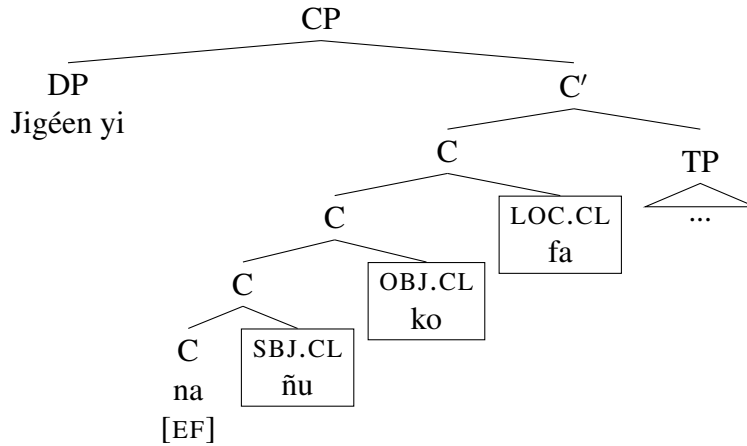
I represent the moved clitics as in (18), right-adjoined to the head that they target, and discuss the details of this movement in section 4.

(18)   a.   Jigéen yi   gis na=ñu=ko=fa.
                woman the.PL see C=3PL=3SG.OBJ=LOC

                'The women saw her/him/it there.'

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prosodically restructure (p.55).

    [8]Verbs, unlike clitics, appear to be able to move to a focus position in so-called participle fronting in some Balkan languages. It is generally assumed that this phenomenon involves head movement that violates the Head Movement Constraint and is therefore 'long' (e.g. Rivero 1991, 1993; Rivero and Terzi 1995; Harizanov 2019). It has been argued that clitics also undergo long head movement, and this is the position I take in this paper as well. Clitics, however, cannot move to focus positions.

b.

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                              CP
               ┌───────────────┴───────────────┐
              DP                               C′
           Jigéen yi                  ┌─────────┴─────────┐
                                      C                   TP
                             ┌────────┴────────┐         ╱╲
                             C            ┌─────────┐   ...
                    ┌────────┴────┐       │ LOC.CL  │
                    C         ┌───────┐   │   fa    │
              ┌─────┴───┐     │OBJ.CL │   └─────────┘
              C     ┌───────┐ │  ko   │
             na     │SBJ.CL │ └───────┘
            [EF]    │  ñu   │
                    └───────┘
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3 Clitics in non-finite clauses

In this section I show that clitics in non-finite complements follow the highest functional head in the extended projection of the verb if they are initially merged lower than that head, or precede this head if they are initially merged above it, or land there due to an independent movement operation. I start with an overview of the basic properties of Wolof non-finite clauses in §3.1, then review the patterns of clitic placement in §3.2, and argue that their positioning is crucially syntactic in §3.3 and §3.4. I do not offer a complete analysis of non-finite complementation here, but only sketch out some general properties of those infinitives that are relevant for the present discussion, and show how they help us better understand Wolof cliticization, and how, in turn, the position of clitics can help identify some properties of the syntactic structure of infinitives. A detailed analysis of these constructions, however, is beyond the scope of this paper.

3.1 Non-finite complements in Wolof

Wolof non-finite clauses are characterized by the following properties: none of them contain an overt sentence particle/complementizer, they cannot contain negation, and overt subject pronouns are generally obligatory whenever the matrix verb takes an NP object, but prohibited otherwise (under a control interpretation). Examples of non-finite clauses with and without an embedded pronominal subject are given in (19).

(19)   a.   Jéem na=nu [(*nu)   may miskin yi   xaalis].
              try   C=1PL [(*1PL) give poor   the.PL money]
              'We tried giving money to the poor.'
        b.   Aaye   na=a   samay wayjur [*(ñu)   may xale yi   tangal].
              prevent C=1SG my.PL parents [*(3PL) give child the.PL candy]
              'I prevented my parents from giving candy to the children.'

Clauses as in (19a) have the properties of typical control constructions: the embedded subject is unpronounced, control is obligatory, and only sloppy reading is available under ellipsis. In (20), the meaning of the elided clause can only be that Astou's husband was the one who tried to leave early.

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(20) Astu jéem na=∅ dem teel, jëkër-am   itam.
     Astou try   C=3SG leave early, husband-POSS.3SG also
     'Astou tried to leave early, her husband also.'

Clauses with overt subject pronouns do not bear the control signature: control is not obligatory, and even when the matrix and the embedded subject are coreferential, ellipsis results in strict reading. In (21), the elided clause only means that Binta asked Fatou's parents that the referent of *mu* leave early.

(21) Faatu$_i$ ñaan na=∅   wayjur-am   [mu$_{i/j}$ dem teel], Binta itam.
     Fatou ask C=3SG parent-3SG.POSS [3SG   leave early], Binta also
     'Fatou$_i$ asked her parents that she$_{i/j}$ leave early, Binta too.'

Complement clauses as in (21) have been called *subjunctive* in the literature (e.g. Torrence 2005, 2012), but this seems to be solely due to the fact that an overt subject pronoun occurs in them. These clauses do not have some other common properties of subjunctive mood. For example, subjunctives are in many languages selected by desideratives (*want, wish, desire*) directives (*order, ask, request*), permissives or interdictives (*allow, forbid*), emotives (*regret, be sad*). Many of these verbs in Wolof do indeed select for a complement that has an overt subject pronoun, but only those that also have an NP complement do so obligatorily. Another typical property of subjunctives is that an overt pronominal subject triggers subject obviation (not always and not with all verbs though), which does not occur in Wolof if the matrix verb has an object, as can be seen from (19b) and (21).[9] The main reason for distinguishing these clauses from what we typically call a subjunctive has to do with the fact that they do not appear to have a CP-layer, which is an important part of my analysis. Other non-indicative moods in Wolof are CPs: they have overt sentence particles in at least some forms, and allow negation, as illustrated in optative and imperative clauses in (22) and (23).

(22) a. Na Omar lekk gato.   (23) a. Bu(l)   ñu lekk gato.
          C Omar eat cake   C.OPT.NEG 3PL eat cake
          'Let Omar eat cake.'   *'May they not eat cake.'*
      b. Lekk-al   gato!   b. Bul   lekk ceeb!
          eat-2SG.IMP cake   C.IMP.NEG eat   cake
          'Eat cake!'   *'Don't eat cake!'*

There is no evidence that the head hosting the sentence particles and Mood are separate positions in Wolof. Therefore, it would be expected that subjunctive mood also involves a CP-layer. Non-finite complements as in (19b), however, do not have an overt sentence particle, and crucially, they cannot contain negation. Negation is a verbal suffix in Wolof, and NegP has been argued to be in a high position in the clause, above the TP (Torrence 2005, 2012; Martinović 2015, 2019). No

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[9]The use of an overt subject pronoun with verbs that do not take an NP object does trigger obviation, as in (i):

(i) Daf-a=∅$_i$ bëgg [mu$_{*i/j}$ dem].
     do-C=3SG want [3SG   leave]
     'He$_i$ wants that he$_{*i/j}$ leave.'

clause without an overt sentence particle can contain negation (Njie 1978); the only way to express this meaning is with the verbs *bañ* 'refuse' or *ñakk* 'lack'. This is illustrated for the infinitives with embedded subjects in (24).

(24) a. *Ñaan na=a   xale yi   [ñu lekk-ul   tangal].
          ask   C=1SG child the.PL [3PL eat-NEG   candy]
          intended: *'I asked the children not to eat candy.'*
      b. Ñaan na=a   xale yi   [ñu bañ   [lekk tangal]].
          ask   C=1SG child the.PL [3PL refuse [eat candy]
          'I asked the children not to eat candy.' *(lit. 'I asked the children to refuse to eat candy.')*

The ban on negation is straightforwardly accounted for if the presence of negation is tied to the presence of C, and non-finite structures are smaller. I shall argue that clitics offer additional evidence for the claim that non-finite complements in Wolof are always smaller than a CP.

One functional element that Wolof infinitives can contain is the auxiliary *di*, which is in finite clauses imperfective aspect that carries present, habitual, or future meaning, as illustrated in (25).[10]

(25) a. Xale yi   da=ñu   lekk ceebujën.
          child the.PL do.C=3PL eat   ceebujen
          'The children ate ceebujen.'
      b. Xale yi   da=ñu   di (>dañuy) lekk ceebujën.
          child the.PL do.C=3PL IPFV   eat   ceebujen
          'The children are eating/will eat /eat (habitually) ceebujen.'

It is not always clear that *di* also has aspectual meaning in infinitives; the following pair of examples has generally been judged to be equivalent by most of my speakers (i.e. a context implying that the embedded event is repeated or habitual is compatible with both (26a) and (26b)):

(26) a. Da=ma   tere   sama-y   wayjur [ñu may xale yi   tangal].
          do.C=1SG forbid POSS.1PL parent [3PL give child the.PL candy]
          'I prevented my parents from giving candy to the children.'
      b. Da=ma   tere   sama-y   wayjur [ñu di (>ñuy) may xale yi   tangal].
          do.C=1SG forbid POSS.1PL parent [3PL IPFV   give child the.PL candy].
          'I prevented my parents from giving candy to the children.'

The morpheme *di* is not an imperfective marker in all finite clauses either. It also occurs as a copula in clauses with nominal predicates, though only in finite copular clauses, and not in non-finite ones, so it cannot be analyzed as some sort of a low default verbal/Pred head either. I continue to gloss *di* as imperfective aspect in non-finite clauses, but given that it appears to be able to occur in a variety of positions, it is possible that it is some other, lower functional head (e.g. irrealis) in some infinitives.[11] Defining its exact position is not crucial; *di* is here relevant only to the extent in which it interacts with clitic placement.

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[10]Which meaning is available depends on the structural height of *di*; see Bochnak and Martinović 2018 for details.
[11]This would be consistent with the view of auxiliaries advocated in Bjorkman 2011, where they are analyzed as default elements inserted in various positions in the clause.

In this subsection I have argued that non-finite complement clauses in Wolof are smaller than CPs. Cliticization inside those complements is explored in the following section and offers additional support for this claim.

3.2   Clitic movement inside non-finite complements

We have seen that clitics in finite clauses cluster in one position, following the sentence particle. As in many other languages, clitics in Wolof also climb to C in restructuring constructions, which have generally been argued to be monoclausal (Wurmbrand 2001; Cinque 2004, 2006; Grano 2012, 2015). The following is an example with the modal auxiliary *war*:

(27)   *Clitic climbing with modals*
    a.   War na=ñu [dimbale miskin yi   ].
           must C=1PL [help   poor   the.PL]
           'We must help the poor.'
    b.   War na=ñu=**leen**   [dimbale].
           must C=1PL=3PL.OBJ [help   ]
           'We must help them.'
    c. *War na=ñu [dimbale=**leen**].
           must C=1PL [help=3PL.OBJ]

We will not be interested in these kinds of clauses here. My main focus in this paper are constructions out of which clitics do not climb. They are primarily the non-finite complements with overt subjects discussed above, but also complements of motion verbs, which are amongst the most typical restructuring verbs cross-linguistically. Interestingly, clitics do not climb to C in such constructions, as shown in (28).

(28)   a.   Da=ma   dem [seet-i   sama   mam   ].
           do.C=1SG go   [visit-AND POSS.1SG grandmother]
           'I went to visit my grandmother.'
    b.   Da=ma   dem [seet-i=**ko**   ].
           do.C=1SG go   [visit-AND=3SG.OBJ]
           'I went to visit her.'
    c. *Da=ma=**ko**   dem [seet-i   ].
           do.C=1SG=3SG.OBJ go [visit-AND]

As the main focus of this paper is not to offer an analysis of Wolof control and restructuring constructions, I will not have much to say here about why there is no clitic climbing with motion verbs. It is possible that their non-finite complements are adjuncts,[12] and that clitics cannot climb out of adjuncts. These constructions, however, will be relevant in the discussion of clitic movement.

In all structures smaller than the finite CP, the subject clitic (if present) behaves differently than the lower clitics: it is initial and it never moves anywhere. I postpone the discussion of the subject clitic until §4.1. We here focus on the behavior of the lower clitics.[13] There are three positions in

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[12]This would make sense semantically, as there is an *in order to* component of the meaning with motion verbs.

[13]I use only one object clitic to illustrate clitic position, but all generalizations are also applicable to the locative

which they can find themselves, depending on the amount of functional material in the non-finite complement: (i) following the verb, (ii) following the auxiliary *di*, or (iii) following the subject clitic. (29) schematizes the three patterns of clitic placement in infinitival complements:

(29)   a.   (S) V=CL: the lower clitics follow the verb.
      b.   *di*=CL V: the lower clitics follow *di*.
      c.   S=CL *di* V: the lower clitics follow the subject clitic.

    The first ordering, **(S) V=CL**, in which the lower clitics follow the verb, is found in all cases in which there is no clitic climbing to the matrix clause and the infinitival complement does not contain *di*, regardless of the presence or absence of the embedded subject pronoun. Examples with motion verbs are in (30), and with ditransitives in (31).

(30)   *V=CL: Motion verbs*
      a.   Da=ma   ñew   [(*ma) may xale yi   tangal].
          do.C=1SG come [1SG   give child the.PL candy].
          'I came to give the children candy.'
      b.   Da=ma   ñew   [(*ma) may=ko   xale yi   ].
          do.C=1SG come [1SG   give=3SG.OBJ child the.PL].
          'I came to give it to the children.'
      c.   *Da=ma   ñew   [(*ma) may xale   yi=ko].
          do.C=1SG come [1SG   give child the.PL=3SG.OBJ].

(31)   *V=CL: Ditransitives*
      a.   Da=ma=leen   aaye   [ñu may xale yi   tangal].
          do.C=1SG=3PL.OBJ prevent [3PL give child the.PL candy]
          'I prevented them from giving candy to the children.'
      b.   Da=ma=leen   aaye   [ñu may=ko   xale yi   ].
          do.C=1SG=3PL.OBJ prevent [3PL give=3PL.OBJ child the.PL]
          'I prevented them from giving it to the children.'
      c.   *Da=ma=leen aaye   [ñu   may xale yi=ko   ].
          do.C=1SG   prevent [3PL give child the.PL=3PL.OBJ]
      d.   *Da=ma=leen   aaye   [ñu=ko may xale yi   ].
          do.C=1SG=3PL.OBJ prevent [3PL   give child the.PL]

Two important observations are that the position of the object clitic is not consistent in terms of the distance from the left edge (it is 2*nd* if there is no subject, 3*rd* if there is a subject), and that the lower clitics in these examples the cannot follow the subject clitic (if there is one). Note that the lower clitics in these structure do move: regardless of the object's status as the goal or theme, the clitic must always follow the verb.[14] The locative clitic must move to the same position, and cannot follow the object.

    The second ordering, **di=CL V**, is found when *di* is present in the non-finite complement,

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clitic and clitic cluster consisting of the object clitic(s) and the locative clitic.

   [14]There is a strong preference for most of my speakers for the goal to precede the theme when the arguments are non-clitics.

there is no embedded subject, and clitics do not climb. The first environment where this is found is in infinitival complements of motion verbs, as in (32). The clitic cannot stay behind the embedded verb, and it cannot immediately precede *di*.

(32)   <u>*di=CL V: Motion verbs*</u>

      a. Da=ma   ñew [di   may miskin yi   ndugu   mi   ].
          do.C=1SG come [IPFV give poor   the.PL provisions the.SG]
          'I came to give the poor provisions.'

      b. Da=ma   ñew [di=**ko**   may miskin yi   ].
          do.C=1SG come [IPFV=3SG.OBJ give poor   the.PL]
          'I came to give it to the poor.'

      c. *Da=ma ñew [di   may=**ko**   miskin yi   ].
          do.=1SG come [IPFV give=3SG.OBJ poor   the.PL]

      d. *Da=ma   ñew [**ko**   di   may miskin yi   ].
          do.C=1SG come [3SG.OBJ IPFV give poor   the.PL]

The unexpected ordering given what we have seen thus far, **S=⟨CL⟩ di V**, arrises when both an overt subject and *di* are present. Recall that in the absence of *di*, the lower clitic cannot follow the subject clitic and follows the verb, however, when *di* is there, the clitic does not follow it, as we might expect given (32), but moves in front of it, to now follow the subject clitic.

(33)   a. Da=ma=leen   aaye   [ñu di (>ñuy) jox xale yi   tangal].
          do.C=1SG=3PL.OBJ prevent [3PL IPFV   give child the.PL candy]
          'I prevented them from giving candy to the children.'

      b. Da=ma=leen   aaye   [ñu=**ko**   di (>koy) jox xale yi   ].
          do.C=1SG=3PL.OBJ prevent [3PL=3PL.OBJ IPFV   give child the.PL]
          'I prevented them from giving it to the children.'

      c. *Da=ma=leen aaye   [ñu di=**ko**   jox xale yi   ].
          do.C=1SG   prevent [3PL IPFV=3PL.OBJ give child the.PL]

The relevant comparison to make is between (31b) and (33b). The position of the object clitic there depends on the presence of *di*: if there is no *di*, the clitic follows the verb, if there is *di*, the clitic does not follow it, but is surprisingly found after the subject pronoun. Note that there is no problem with the object clitic following *di* when there is no overt subject, as we saw in (32). Table 3 summarizes the patterns once more.

Subject \ Verb	V	*di*
No	V=CL	*di*=CL V
Yes	S V=CL	S=CL *di*

Table 3: Position of lower clitics in infinitives

In the remainder of this section I show that we can understand the data if we accept the following assumptions:

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1. Non-finite complements are smaller than a CP, their size varying depending on the amount of functional material present.

2. The clitics target the highest functional head in the non-finite complement.

3.3 Movement to the highest head

I start by comparing the key structures: ditransitives with an obligatory embedded pronominal subject, which differ in the presence or absence of *di*. I repeat the relevant examples in (34), and give a schematic representation of the ordering in (35).

(34) a. Da=ma=leen   aaye   [ñu jox=**ko**   xale yi   ].
          do.C=1SG=3PL.OBJ prevent [3PL give=3PL.OBJ child the.PL]
          'I prevented them from giving it to the children.'
      b. Da=ma=leen   aaye   [ñu=**ko**   di (>koy) jox xale yi   ].
          do.C=1SG=3PL.OBJ prevent [3PL=3PL.OBJ IPFV   give child the.PL]
          'I prevented them from giving them to the children.'

(35) a. [$_{CP}$ C V Obj [$_{INF}$ Sbj V=$\boxed{CL}$]]
      b. [$_{CP}$ C V Obj [$_{INF}$ Sbj=$\boxed{CL}$ di V]]

We start with (34a), where the object clitic follows the verb. I assume that the infinitival complement in this construction is a vP. It is not crucial for us to determine the exact size of this infinitive; what will be relevant is the difference in size between (34a) and (34b). I ignore the subject clitic for now and place it in Spec,vP. The verb is in v.[15] The object clitic moves to the position to the immediate right of the verb. I represent this as right-adjunction to v, and discuss this movement in more detail in §4.

(36)
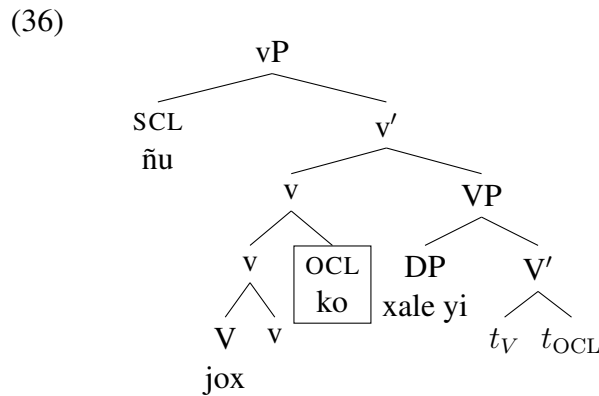
The evidence that the structure of the infinitival complement in this case is smaller than the infinitival complement in (34b), which contains *di*, comes from the position of the object clitic in (34b).
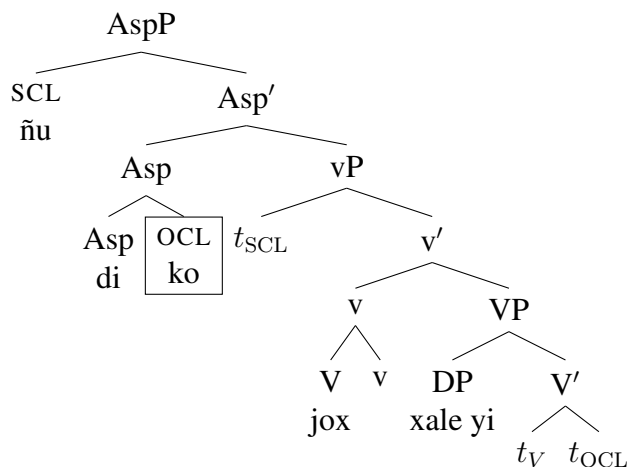
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[15]The verb always precedes low adverbs in Wolof, regardless of clause size, as shown in (i).

(i)   Da=ma=leen   ñaan [ñu   dawal ndank oto bi.   ]
       do.C=1SG=3PL.OBJ ask   [3PL drive slowly car the.SG]
       'I asked them to drive the car slowly.'

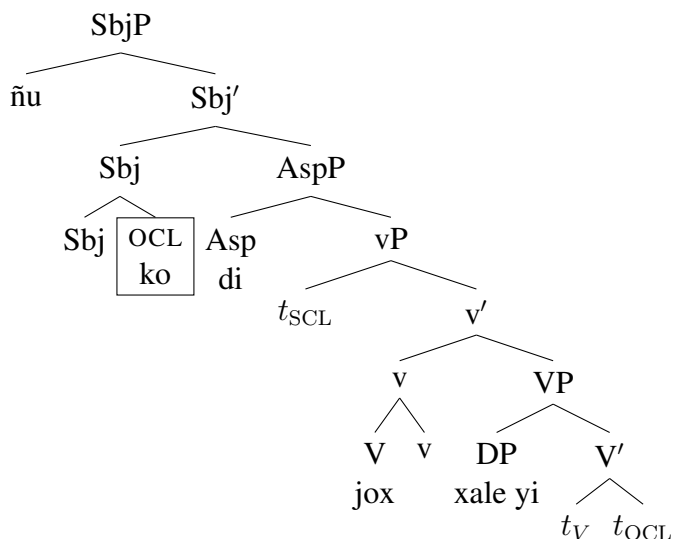Under the hypothesis that low adverbs adjoin to VP, the verb is outside of the VP.

In this unexpected pattern, the lower clitics suddenly cluster with the subject. This tells us several things. First, if *di* were in the highest head in the infinitival complement, we would expect the lower clitics to follow it, as in the hypothetical structure in (37).

(37) *

```
                      AspP
                   /        \
               SCL          Asp′
               ñu         /       \
                       Asp          vP
                     /      \      /    \
                  Asp [OCL] t_SCL      v′
                  di [ ko ]          /     \
                                    v         VP
                                  /   \     /    \
                                 V     v   DP      V′
                                jox       xale yi  /  \
                                                  t_V  t_OCL
```

This is not what happens. If I am correct in proposing that clitics climb to the highest functional head inside the infinitival complement, this means that there must be another, phonologically null head, above *di*, to which the clitics move. I label this head as Sbj here, and propose that the correct representation of the infinitival clause in (34b) is something as in (38). I place the subject in Spec,SbjP and discus its behavior in detail in §4.1.

(38)

```
                   SbjP
                /         \
             ñu           Sbj′
                        /        \
                     Sbj          AspP
                   /      \      /       \
                Sbj [OCL] Asp         vP
                [ ko ]    di       /      \
                               t_SCL      v′
                                         /     \
                                        v         VP
                                      /   \     /    \
                                     V     v   DP      V′
                                    jox       xale yi  /  \
                                                      t_V  t_OCL
```

An analysis in which the ordering of the clitic is phonological, or a combination of syntax and phonology, could not account for this difference. If the lower clitic was, for example, always targeting the edge of the embedded complement, and then being ordered after the first element or prosidic word just in case that edge was phonologically null (see, e.g. Bošković 2001 for Serbo-Croatian), its position should be constant with respect to the subject clitic and *di* or the verb.[16]

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[16]I explore phonological reordering in more detail in §3.4.

Another possibility would be that *di* is reordered after the object clitic, due to some phonological requirement. This is slightly more plausible, as *di* generally does phonologically cliticize onto pronominal clitics and is pronounced as *-y*[17]. The phonological constraint that would force this metathesis would then require *di* to always follow all clitics. We have, however, already seen that *di* precedes clitics whenever it is present in the non-finite complements which do not contain the subject clitic, as is the case with motion verbs:

(39) a. Da=ma   ñew [di=**ko**   jox xale yi   ].
          do.C=1SG come [IPFV=3SG.OBJ give child the.PL]
          'I came to give it to the children.'
      b. *Da=ma   ñew [**ko**   di (>koy) jox xale yi.
          do.C=1SG come [3SG.OBJ IPFV   give child the.PL]

The contrast between (34a) and (34b) also excludes an analysis according to which such embedded clauses are always CPs. If this were the case, given that clitics obviously do move inside infinitival clauses, there is no reason why they would not all cluster following C. It could be argued that C is not overt, and clitics only attach to overt elements, but seeing how the subject clitic is already at the edge of the infinitival clause, and seeing how the object clitic *can* cluster with it, the presence of other functional material in the clause should not determine where the lower clitics land. Since the position of the lower clitics is not consistent, I consider this strong evidence that non-finite complements in Wolof are never CPs, and that they can vary in size.

Can we then say that what we see is (more-or-less) what we get, when it comes to the size of all infinitival complements? This would mean that the infinitive in (34b)/(38) must be a larger structure (what I here call a SbjP), and cannot be only an AspP. On the other hand, the clitic in complements of motion verbs, repeated in (40), follows *di*, but can we therefore conclude that this non-finite complement is smaller, an AspP (presuming that *di* is in Asp)?

(40) Da=ma   ñew [di=**ko**   jox xale yi   ].
      do.C=1SG come [IPFV=3SG.OBJ give child the.PL]
      'I came to give it to the children.'

If there is more structure above *di* in (40), we would need to allow for some type of post-syntactic readjustment after all, which would move the object clitic behind the first overt element just in case it finds itself in initial position. This could be something along the lines of Local Dislocation (Embick and Noyer 2001), also proposed by Legate (2008) to account for the placement of some clitics in Warlpiri. I argue against this based on two facts.

First, motion verbs are cross-linguistically one of the most common restructuring verbs. According to most analyses, this involves a smaller non-finite complement. It is entirely plausible then that *di* in complements of motion verbs does not imply a bigger structure, as I have claimed that it does in complements of ditransitives above. The definitive answer to this question will depend on the position of *di* in such structures and a detailed analysis of infinitives in Wolof.

A more convincing argument against any kind of a postsyntactic reordering component to clitic placement comes from the behavior of the subject clitics, discussed in the next subsection.

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[17]It does not cliticize in that way onto any other element.

3.4 Clitic movement is not movement to a specifier

In §4.1, I will show that the subject clitic needs to be allowed to be generated in a specifier position, and to move for EPP. Coupled with the proposal that clitics move to the edge of a domain, this makes an analysis in which clitics move to the specifier of the highest head, and then get reordered to follow that head, an attractive option. This could potentially unify clitic movement with A′-movement, passing on the derivation of the final surface order of the clitics to a post-syntactic mechanism. PF reordering has featured prominently in the literature on clitics, and appears to be necessary for at least some second position clitics (e.g. the South Slavic variety, but also Warlpiri, as argued in Legate 2008). Additionally, some other instances of Long Head Movement have been reanalyzed as movement to a specifier position, most famously participle fronting in some Slavic languages, where the verb skips over intervening auxiliaries (Harizanov 2019). A strong argument for treating participle fronting on a par with phrasal movement are its A′-like properties: it can apply across clausal boundaries, it is sensitive to islands, and it can have interpretive consequences, all hallmark properties of A′-movement.

Unlike A′-movement, clitic movement is clause-bound and has no interpretive consequences. Wolof generally does not allow multiple specifiers (e.g. there is no multiple *wh*-movement), so even if we could reduce clitic movement to A′-movement, we would still have to say something special – that clitics can create multiple specifiers, whereas other phrases that A′-move cannot. Finally, the biggest obstacle to this analysis is the post-syntactic reordering that would need to apply in order to move the clitics from the specifier of a head into a position to the right of the head. Let us explore what exactly this reordering would need to look like, starting with a finite clause where the clitics follow C. An example is given in (41).

(41)   (Xale yi)   lekk-na=ñu=ko=fi.
        child the.PL eat-C=3PL=3SG.OBJ=LOC
        '(The children)/They ate it there.'

Suppose that the clitics move to the specifier of the C-head, as in (42), ignoring for the moment that the non-clitic subject may also occupy that specifier. I here assume that the movement proceeds in such a fashion so as to result in the correct clitic order, but abstract away from how exactly this is accomplished for the purposes of illustrating this analysis. In order to now displace the clitics behind C, the first thing we need to ensure is that their order stays unchanged. I assume an operation of Morphological Merger (Marantz 1988; Halle and Marantz 1993) that creates something as in (43).
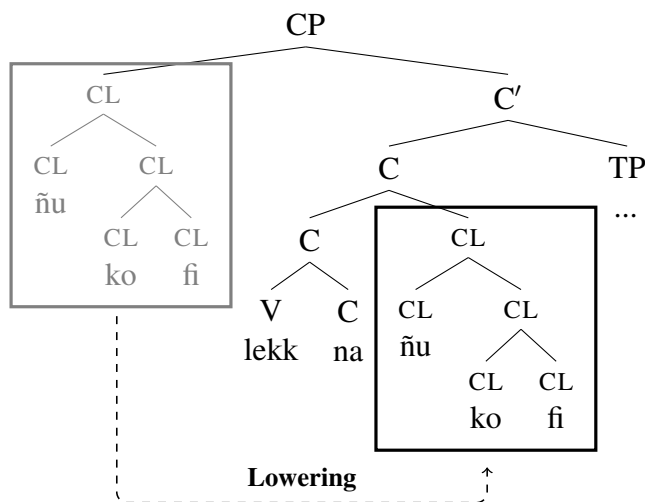
(42)

CP
CL ñu C′
CL ko C′
CL fi C′
C TP
V lekk C na …

(43)

CP
CL C′
CL ñu CL C TP
CL ko CL fi V lekk C na …

The clitics can now be displaced as a single chunk, via an operation akin to postsyntactic Lowering (Embick and Noyer 2001).

(44)

CP
CL C′
CL ñu CL C TP
CL ko CL fi C CL …
V lekk C na CL ñu CL
CL ko CL fi

Lowering

This analysis can derive the position of clitics in simpler cases, in which clitics all follow a functional head: they A′-move to the specifier of that head, they are merged, and then lowered to follow the head. We have, however, seen more complicated examples in non-finite clauses, in which the subject clitic and the object and locative clitics do not always form a cluster. In the absence of aspect the subject clitic is initial, whereas the other clitics follow the verb. In the presence of aspect, the clitics do cluster, and at the beginning of the non-finite clause no less. The relevant examples are repeated in (45).

(45) a. Da=ma=leen aaye [ñu jox=ko xale yi].
do.C=1SG=3PL.OBJ prevent [3PL give=3SG.OBJ child the.PL]
'I prevented them from giving it to the children.'

  b. Da=ma=leen aaye [ñu =ko di (>koy) jox xale yi].
do.C=1SG=3PL.OBJ prevent [3PL=3SG.OBJ IPFV give child the.PL]
'I prevented them from giving it to the children.'

The first problem these examples introduce into the analysis proposed above is that clitics seem to have no issue with being initial and not following a functional head.[18] This is true not only of the subject clitic (as we might argue that it has some special status here), but also of the object clitic in (45b). Now, if clitics move into specifiers and can be initial, there should be no reason for the lowering operation in (44); the clitics should be able to stay in Spec,CP. Second, if the clitics always move into the specifier of the highest head, we would expect them to always cluster together. There should be no reason why the object clitic in (45a) would not be able to follow the subject clitic, if it can do so in (45b). I take the behavior of clitics in non-finite clauses as in (45) to be a strong argument against the analysis discussed in this section, or any analysis that involves postsyntactic reordering.

In this section, I have shown that the variable position of clitics inside non-finite complement clauses can be understood if clitics target the highest head in their domain. I have also shown how this assumption can elucidate certain properties of non-finite clauses – that they are smaller than CPs, and that they can be of different sizes, depending on the presence of certain functional heads in them. This speaks in favor of Wurmbrand's (2001) view of non-restructuring infinitives, which can be of different sizes, and against analyses which assume that they are always CPs (e.g. Landau 2000 et seq., Grano 2012, 2015).

The following section is concerned with the properties of Clitic Movement.

4   Clitic movement

Different types of triggers have been proposed for Clitic Movement. It has been argued that clitics are defective elements, not just prosodically, but in every domain (Sadock 1991), and this deficiency has often been given as an argument for their special syntactic behavior (e.g. Cardinaletti and Starke 1999; Déchaine and Wiltschko 2002; Franks 2012). In such accounts Clitic Movement is triggered by their need to in some way be licensed, so they are generated in or move to agreement projections, or to a position where they can be case-licensed. The problem for any such approach is that Wolof clitics end up in a variety of positions. In Wolof in particular we have seen that clitics can occur in fairly small structures, and that even in those structures clitics that can move do so. DPs with lexical nominals can also occur as subjects in non-finite clauses, meaning that DPs do not need to be case-licensed in the same way as is assumed for, for example, subjects in English. Wolof does not have overt agreement either, so positing anything like different AgrPs (or fixed CliticPs, for that matter) as positions where clitics move to or are generated in does not seem warranted, and would be difficult to defend in very small non-finite complements. Wolof clitics do not appear to move to any specific position; they move to the edge of their domain.

Movement of clitics to the highest head in a particular domain has been proposed by Ouhalla (1989) for Berber, and Dunigan (1994) advocates for a similar analysis for Wolof clitics. She proposes that clitics move as heads to the highest functional head in the extended projection of the verb (in the sense of Grimshaw (1991), who defines the extended projection as composed of a lexical head and its projection plus all of the functional heads that represent features of the lexical head, and their projections).[19] The goal of this paper is to affirm this analysis of Wolof cliticization.

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[18]In this case they are initial in an embedded clause, however, the subject clitic can also be initial in *minimal clauses*, in which case there is no preceding clausal material whatsoever – see section 2.

[19]There is another analysis of Wolof cliticization in Zribi-Hertz and Diagne 2002 (ZHD), which criticizes Duni-

Franks (1998/2010), while arguing that Bosnian/Croatian/Serbian clitics do move to appropriate Agr positions for case-checking purposes, notes that they show up as high in the tree as possible, specifically, in the highest head position. He proposes a variation of Wackernagel's traditional insight connecting the V2 phenomenon with second position clitics, in the sense that whatever triggers verb movement is also responsible for clitic movement (see also Anderson 1993, 1995, 2005). Given that the clitics and the verb in BCS are not always next to the verb, Franks proposes that all languages are V2 at LF and that the verb always undergoes head movement, but in some cases does not reach the highest position overtly. Clitics move because they are "looking for their verbs", "knowing" that the verb must be high. Since clitics do not actually know where the verb ends up being pronounced overtly, they just move as high as they can.

Saying that clitics are moving to higher positions because verbs are also moving to higher positions is simply restating the generalization that some elements gravitate towards the clausal edge.[20] Another type of element that tends to move very high are of course *wh*-words. We accept that certain elements move to higher positions in the clause, and we have developed formal machinery to capture the relationship between the trigger of movement and the moving element, but we seem to be less concerned with the *why* when it comes to, for example, verb movement or *wh*-movement. Verb movement has been tied to, for example, the high position of Tense (e.g. Den Besten 1989), or inflectional morphology in general, but in a language like Wolof where there is barely any inflectional morphology to speak of and the verb still moves fairly high, the trigger must be more abstract. *Wh*-movement has been linked to the high position of focus in the clausal architecture (e.g. Rudin 1988), but focused elements do not always move in languages in which *wh*-words move. I am here therefore not concerned with "why" clitics move, in that I do not consider it to be

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gan's purely syntactic account, and purports to offer a mixed syntax/prosody analysis. The issue that ZHD take with Dunigan's analysis has to do mostly with their disagreement of her treatment of subject pronouns as clitics. They choose to treat them as agreement in clauses which I here referred to as V-raising, forcing them to divorce the behavior of subjects from other clitics. This means that, when talking about object clitics, they must account for cases in which they cliticize to elements when the subject clitic is not present, and cases in which it is present. In other clauses, of course, subject clitics cannot be agreement, so ZHD take a peculiar view of Wolof clausal structure in which only some clauses exhibit subject-verb agreement, whereas other ones do not. They are also troubled by their apparent occurrence in Spec,CP in A′-movement constructions, which forced Dunigan to treat clitics as phrases in just those cases, but as heads in all other instances. I have shown here that subject pronouns in Spec,CP are prosodically restructured strong pronouns, and not clitic, so this complaint is moot. Ultimately, the definition of cliticization that ZHD offer is almost identical to Dunigan's, but with an added prosodic component:

(i)   ZHD definition of clitic placement
          Attach object and locative clitics to the prosodic word which contains the topmost head of their extended V domain.

The prosodic component is needed because ZHD sometimes treat subject clitics as agreement in a separate head, which first must incorporate in the highest head (in my analysis C), and they argue that this incorporation is postsyntactic. Since other clitics follow and not precede the subject clitic, their placement must now also be postsyntactic. However, we can see from their definition that the actual clitic placement is syntactic – it references a syntactic position. The PF then needs to know what the "topmost head" in the extended domain of the verb is, even though the structure has already been linearized and prosodic words have been formed. Ultimately, I believe that it is exactly clitics that show that their complicated view of Wolof clausal structure is not correct. Finally, ZHD do not address the data discussed in §3.3, where the position of the lower clitics differs depending on the presence or absence of *di*, and it appears to me that their analysis cannot straightforwardly account for this.

[20]On arguments agains unifying clitic movement with V2, and against a unified trigger for all verb movement to C, see e.g. Migdalski 2010.

the right question, or even a relevant one.

I propose that the movement of clitics is just another movement triggered by the domain edge, specifically an EDGE-feature on the highest head. Various movements to the edge differ in non-trivial ways: in case of V2 (to the extent that this is one of such movements), only one verb moves to C, whereas in case of *wh*-movement some languages can move multiple phrases to the edge. When it comes to clitics, it appears to be an all-or-none situation; I have not been able to find a language in which only the highest clitic moves to a special position. Ultimately, we need to be able to account for the difference between these three movements to the edge, but I will leave this aside as a larger question.

In the remainder of this section we investigate the properties of Clitic Movement in more detail. In §4.1 I discuss the potentially problematic behavior of subject clitics, and show that they are not unusual under the purely syntactic account of clitic placement advocated in this paper. I then argue that the only type of movement that can account for clitic placement in Wolof is one where clitics right-adjoin to the highest head in §4.2. Finally, in §4.3 I provide a way for the EDGE-feature that attracts the clitics to be associated with whichever head is highest in the extended projection of the verb.

4.1 The subject clitic

Clitics often show mixed behavior, in that they appear have properties of both heads and phrases, so they standardly treated as simultaneously minimal and maximal projections (e.g. Sportiche 1996). I stay agnostic as to the validity of this position. I show in this section that the subject clitics *can* move into Spec,SbjP, but if we accept the existence of head movement into specifiers (as in Harizanov 2019), clitics do not need to have phrasal status in order to move into specifiers. However, I shall argue that when they move to the edge of the domain, they attach as heads. Different types of movement then differ because of the movement trigger, and not the moving element.

I start with non-finite clauses in which the subject clitic is always initial. I have proposed that such structures are vPs, but nothing hinges on their exact size. The non-finite complement in (46) has the structure in (47), with the object clitic moving to attach to v.

(46)   Da=ma=leen   aaye   [ñu jox= ko   xale yi   ].
       do.C=1SG=3PL.OBJ prevent [3PL give=3SG.OBJ child the.PL]
   *'I prevented them from giving it to the children.'*

(47)
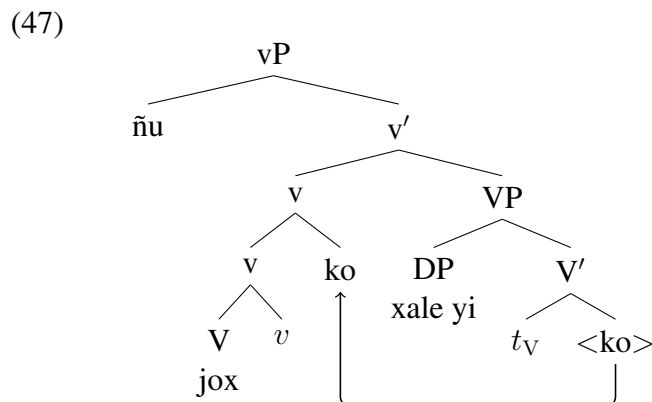
The preverbal position of the subject clitic is straightforwardly accounted for if it is generated in Spec,vP. If the subject clitic were a head attached to v, we would expect its position to be tied to the position of the verb in the remainder of the derivation. We have seen that this is not the case. Base-generating the subject clitic in Spec,vP also explains why it does not move – there is no higher head that could trigger its displacement. In other words, clitic movement is not the result of the clitic's inherent need to be in a specific position in the clause, in particular, clitics do not *have* to follow the highest head in the domain.

Next, I have proposed that, in the presence of the aspectual auxiliary, the embedded clause does not contain only an AspP, given that the object clitic now precedes *di*, repeated in (48).

(48) Da=ma=leen   aaye   [**ñu** = **ko**   di (>koy) jox xale yi   ].
      do.C=1SG=3PL.OBJ prevent [3PL=3SG.OBJ IPFV   give child the.PL]
      '*I prevented them from giving it to the children.*'

There are two possible derivations here. First, we can assume that both clitics now move regularly, and adjoin to the highest head, which I proposed is Sbj. This can explain why clitics form a cluster in this case, but not in the absence of Sbj. The resulting structure would need to look as in (49).

(49)
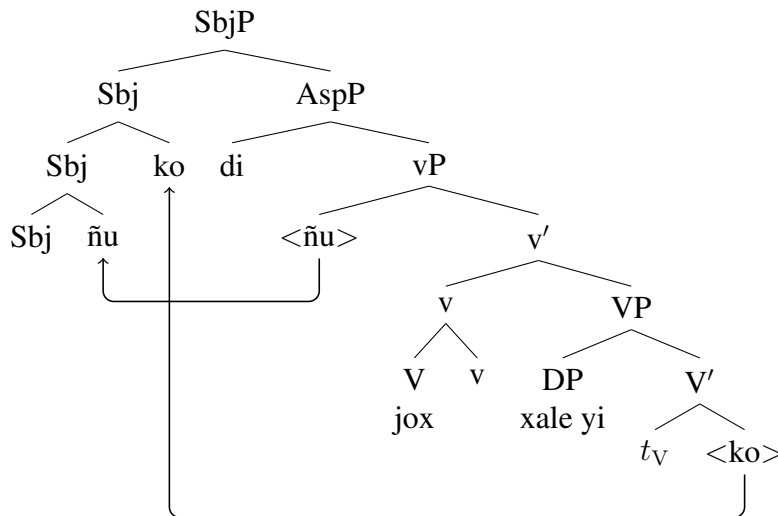
The problem with this derivation is that a non-clitic DP in non-finite clauses cannot stay in-situ, as shown in (50). In this structure there is tense concord between the matrix and the embedded tense. The element that can carry the tense morpheme is only *di*, never the verb. By hypothesis, *doon*, carrying tense morphology, is higher than the external argument position.

(50) Da=ma   gis-oon [xale yi   d(i)-oon lekk gato].
      do.C=1SG see-PST [child the.PL IPFV-PST eat   cake]
      '*I often see children eating cake.*'

Subjects in Wolof always appear to move to a higher position, suggesting that the EPP is active, and that the subject clitic must be allowed to move to Spec,SbjP. I turn to finite clause for additional evidence.

We saw in section 2 that finite indicative clauses in Wolof can be divided into two groups,

which I called V-raising and Wh-raising clauses. In the former, the verb is in C, the only possible clause-internal subject is the clitic, and an optional non-clitic subject can only occur to the left of the sentence particle. An example is repeated in (51).

(51) *V-raising clause*
      Ndongo yi   jàng na=ñu téere bi.
      student the.PL read C=3PL book the.SG
      'The students read the book.'

In Wh-raising clauses the verb does not raise to C, and the clause-internal subject can either be a clitic or a non-clitic DP, as in (52).

(52) *Wh-raising clause*
      Lan la {ñu/ndongo yi}   jàng?
      what C {3SG/student the.PL} read
      'What did {they/the students} read?'

In Martinović 2015, 2020, I argue that V-raising clauses do not have a structural subject position below C, and that the subject to the left of C is not a structural subject. Clitics ultimately land in a position higher than the structural subject position in finite clauses, which is why they are the only possible clause-internal subject in these structures, which I argue are a type of Clitic Doubling construction. I therefore do not discuss them further here.

A′-movement constructions can have non-clitic clause-internal subjects, meaning that the structural subject position is present. This position must be occupied. First, subjects can never be null, and they can also not stay in situ. (53) illustrates this by showing that low adverbs are always below the verb, meaning that the verb is outside the VP. The presence of the auxiliary, which the subject must precede, places the subject higher in the structure.

(53) a. Oto bi   la Musaa di   dawal ndank.
          car the.SG C Moussa IPFV drive slowly

          'It's the car that Moussa drives slowly.'
      b. *Oto bi   la Musaa (di)   ndank (di)   dawal.
          car the.SG C Moussa (IPFV) slowly (IPFV) drive

Given that the clause-internal subject can be a non-clitic, I propose in Martinović 2015, 2020 that C and Sbj are separate positions in Wh-movement constructions, and that Spec,SbjP is the structural subject position.[21] Since the clause-internal subject can also be a clitic, this means that the clitic must be able to check the EPP in the structural subject position, under the hypothesis that this is the trigger for subject raising. So, if the clitic is base generated in Spec,vP, we also need it to be able to move to Spec,SbjP in (54). The movement of the clitic to Spec,SbjP is be followed by Clitic Movement to C, as we have seen that in A′-movement constructions the clitics are higher than the structural subject (see (7b)).

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[21]In Martinović 2015, 2020 I call the head below C T or Infl. I here refer to the highest head that can occur in non-finite structures as Subj in order to stay agnostic as to the exact structure of non-finite clauses, and the presence of different heads in the inflectional layer.

(54)

```
                              CP
                         /          \
                       DP            C'
                      ceeb        /       \
                      rice       C          SubjP
                               /   \      /        \
                              C    ñu   <ñu>        Subj'
                              la  they           /        \
                                              Subj          vP
                          Clitic movement    /    \       /    \
                                            v    Subj  <ñu>    v'
                                          /  \   [EPP]        /   \
                                         V    v             t_v   t_DP
                                        lekk
                                         eat
                                    EPP-movement
```
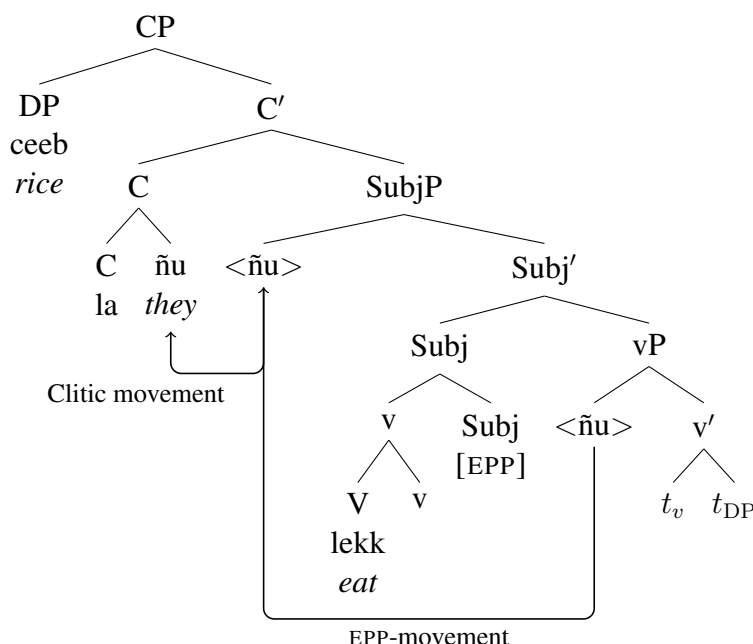
The subject clitic illustrates the mixed properties of clitics: it clusters with other clitics if there is a functional head above its derived (Spec,SbjP) position, but behaves as a non-clitic otherwise, in that it can be initial and apparently move to satisfy the EPP. The fact that only the subject clitic can do this, and therefore that only the subject clitic can be initial, is expected, since it is the closest DP to Sbj and therefore the only one that can be attracted under Relativized Minimality (Rizzi 1990).

4.2 Clitic movement and ordering

Consider the surface order of clitics in the clitic cluster, repeated in (55). Recall that there is only one series of object clitics, used for both goal and theme arguments.

(55)   *The ordering of clitics*
        SUBJ > OBJ > LOC

Object clitics are also ordered between themselves along two dimensions: person features and vowel length, as in (56). Examples (57)-(59) illustrate the orderings (from Zribi-Hertz and Diagne 2002).

(56)   a.   1st person > 2nd person > 3rd person
        b.   long vowel > short vowel

(57)   bi=ñu=ma=ko=ci   wan-ée...
        C=3PL=1SG.OBJ=3SG.OBJ=LOC show-APPL
        (i) '*When they showed me to {him/her} there...*'
        (ii) '*When they showed {it/him/her} to me there...*'

(58)   Xale yi   wan   na=ñu=ma=la.
        child the.PL show C=3PL=1SG.OBJ=2SG.OBJ
        (i) '*The children have shown me to you.*

(ii) *'The children have shown you to me.'*

(59)   Xale yi   wan na=ñu=leen=ko.
        child the.PL show C=3PL=3PL.OBJ=3SG.OBJ

(i) *'The children have shown them to him/her/it.'*
(ii) *'The children have shown him/her/it to them.'*

All object clitics can freely co-occur with each other, as long as they follow the order in (56). I assume that the ordering of object clitics is determined post-syntactically via a template (e.g. Bonet 1991) and do not discuss this further.

The ordering of clitics within clitic clusters has been extensively discussed, though mostly focusing on the ordering between various types of object clitics, as subjects pronouns are often either not clitics (e.g. in Serbo-Croatian), or if they are, they exhibit distinct syntactic behavior.[22] We have seen that subject pronouns in Wolof behave like other clitics if they are in a syntactic configuration where this is possible (i.e. if there is a higher head that attracts them). When subjects can be clitics, they rarely seem to be affected by the ordering algorithm responsible for object clitic ordering – I have not found examples of subject clitics being ordered inside object clitics or in peripheral positions.[23] I therefore consider the ordering between the subject, object and locative clitics to be derived syntactically. I shall propose that clitic ordering respects the Minimal Link Condition, and that the ordering of clitics reflects their c-command relations before movement.

If the order between the object and the locative is determined syntactically, then the object clitic would need to be attracted before the locative clitic, meaning that it should be in a structurally higher position. Harris (2016) shows that theme objects c-command locative objects in applicative constructions based on the fact that quantified themes can bind the anaphor in locative objects, but not the other way around, as in (60) (p.149).[24] The linear order of the theme and the locative object is fixed in applicatives.

(60)   a.   Gunge   na=a   [góor gu nekk]$_i$ kër-am$_i$.
              accompany C=1SG man   C exist   house-3SG.POSS

              'I accompanied every man$_i$ to his house$_i$.'
        b.   Gunge   na=a   dawalkat-am$_{*i/j}$ [oto bu nekk]$_i$.
              accompany C=1SG driver-3SG.POSS car   C exist

---

[22]For example, in the Northern Italian Friulian dialect of Forni di Sotto the both the subject and the object pronouns cliticize, as in (i). However, the subject clitic can occur in different positions with respect to the verb, whereas the object clitic's position is consistent (example from Calabrese and Pescarini 2014):

(i)   a.   Ai=la=mange.
              SBJ.3PL=OBJ.F=eat.3PL

              'They eat it.'
        b.   La=mangi=ai?
              OBJ.F=eat.3PL=SBJ.3PL

              'Do they eat it?'

[23]Clitic co-occurrence restrictions on the other hand can affect both the subject and the object clitics, as in Kashmiri (Nevins 2011), though this also appears to be less common.

[24]The verb *gunge* 'accompany' is a ditransitive verb that Harris calls a 'valency-preserving applicative', which takes two DPs as arguments. The same c-command relations hold in structures where an applicative morpheme occurs on an otherwise monotransitive verb.

'I accompanied its$_{*i/j}$ driver to every car$_i$"

In non-applicative structures with PP locatives, the order of the theme and the locative can be reversed, though the preferred order is theme > locative.

(61)   a.   Gis na=a   xale bi   ci neeg bi.
           see C=1SG child the.SG in room the.SG
           'I saw the child in the room.'
       b.   Gis na=a   ci neeg bi   xale bi.
           see C=1SG in room the.SG child the.SG
           'I saw the child in the room.'

The locative in these structures also appears to be lower than the theme, since the anaphor in the theme cannot be bound by the quantifier in the locative, as shown in (62).

(62)   a.   Gis na=a   [xale bu nekk]$_i$ ci neeg-am$_i$.
           see C=1SG child C exist   in room-3SG.POSS
           'I saw every child$_i$ in his$_i$ room.'
       b.   Gis na=a   ci neeg-am$_{*i/j}$ [xale bu nekk]$_i$.
           see C=1SG in room-3SG.POSS [child C exist].
           'I saw every child$_i$ in his$_{*i/j}$ room.'

A quantifier in pre-theme locatives can bind an anaphor in the theme argument, as in (63). I take this higher position of the locative PP to be a derived position.

(63)   a.   Gis na=a   ci [kër gu nekk]$_i$ borom-am$_i$.
           see C=1SG in house C exist   owner-3SG.POSS
           'I saw its$_i$ owner at every house$_i$.'

Given that the locative clitic can never precede the object clitic in clitic clusters, I propose that cliticization always proceeds from the base position of the locative. This will remain a stipulation in this paper, as further research is needed to better understand the syntax of PP adjuncts.

There are two possible structures that could capture the ordering in (55), a right-branching one, as in (64) and a left-branching one, in (65).
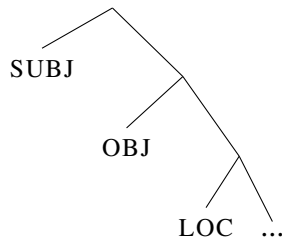
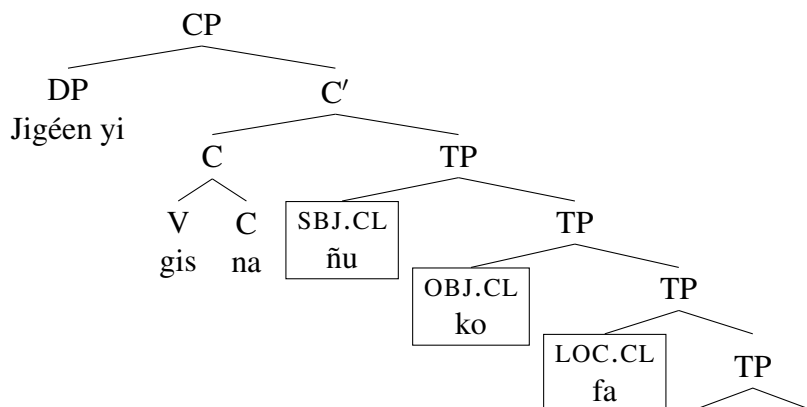(64)   (65)
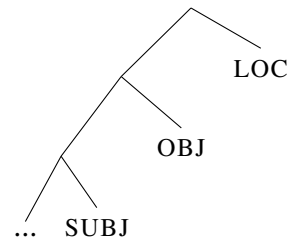
I have argued that clitics are attracted by the head that they end up following, and excluded the possibility that clitics first move to the left of this head, and are then reordered by some postsyntactic mechanism to its right. Therefore, if clitics are to land to the right of the attracting head, (64) would have to involve a structure as in (66).

(66)   a.   Jigéen yi   gis na=ñu=ko=fa.
            woman the.PL see C=3PL=3SG.OBJ=LOC
            'The women saw her/him/it there.'

       b.

```
                        CP
              ┌─────────┴─────────┐
             DP                   C′
           Jigéen yi        ┌─────┴─────┐
                            C           TP
                         ┌──┴──┐   ┌─────┴─────┐
                         V   C  ┌──────┐       TP
                        gis  na │SBJ.CL│  ┌─────┴─────┐
                                │  ñu  │ ┌──────┐     TP
                                └──────┘ │OBJ.CL│ ┌────┴────┐
                                         │  ko  │┌──────┐   TP
                                         └──────┘│LOC.CL│  ╱──╲
                                                 │  fa  │
                                                 └──────┘
```

This is a very odd-looking type of movement that tucks in *under* the attracting head, adjoining the attracted elements to its sister.[25] Furthermore, if the subject clitic moves first (under the Minimal Link Condition), then the object clitic and the locative clitic must tuck in not under the attracting head, but under the subject clitic and object clitic, respectively. I therefore dismiss a right-branching structure for clitic clusters.

I propose that the correct structure is the left-branching one in (65). This means that, if clitics move as heads, they must adjoin to the *right* of the highest head in the extended projection of the verb, as I have been assuming throughout this paper. Pesetsky (2013) argues for the need for such movement, which he calls *Undermerge*. He investigates head movement which results in Undermerge, but points out that numerous arguments for complement-forming phrasal movement exist in the literature – see McCloskey (1984) on the movement of P in Irish, Sportiche (2005) on D of the object DP being generated as a higher head and joining with the NP via complement-forming movement, Johnson (2000) and Lin (2000) on determiner sharing, Kratzer (1995) and Penka (2001) on Undermerge of an NP to Neg in the construction of negative DPs, and most famously Rosenbaum (1967) and Postal (1974) on "Raising to Object". I do not claim here that clitics in all languages adjoin to the right, but I hope to have shown that we have reason enough to promote this analysis for Wolof. A pending question is of course why some elements move to specifiers/adjoin to the left, and other move to complementizer positions/adjoin to the right, but since this movement appears to not be exclusive to clitics, it is a broader question that I do not address here.[26] Additionally, this means that we have to allow for the existence of Long Head

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[25]A version of this analysis is found in Russell 2006, who proposes that the subject clitic in finite clauses first moves to Spec,TP, and that the object and locative clitic tuck in underneath the subject clitic. The clitics are then displaced at PF as a cluster, so that they end up immediately following C. I hope to have shown here that this kind of an analysis would be difficult to extend to all environments in which clitics occur, most importantly due to the fact that the trigger of clitic movement for her must be T in finite clauses, meaning that clitics would have to be attracted to its specifier. This cannot be maintained in other environments in which clitics occur.

[26]Given that clitics can move into specifiers, the general existence of Undermerge for both head and phrasal movement opens up the possibility that Clitic Movement is also phrasal movement. In this case we would end up with something as in (i): the subject clitic would become the complement of C, but each subsequent clitic would need to be a right specifier.

Movement, extensively defended elsewhere (Rivero 1991, 1993; Rivero and Terzi 1995; Roberts 2010; Preminger 2019).

The next question has to do with how exactly the probe-goal relationship between the trigger of movement and the clitic can be captured. I have proposed that clitics are attracted by an EDGE-feature on the highest head in the extended projection of the verb. I discuss how we could ensure that this feature gets associated with any head, as opposed to, for example, only phase heads such as C or v, in the next section. I here give more details on the relationship between the EDGE-feature and the clitics.

I have rejected the possibility that clitics in Wolof move for licensing or agreement purposes. We have also seen that the subject clitic sometimes does not move anywhere. Any formulation of clitic placement that requires them to be in a particular position (e.g. *Clitics must follow the highest head in the extended projection of the verb*) cannot be correct. The relationship between the probe and goal in this case therefore cannot be such that the probe needs to be valued or in some way checked by the goal. If the probe is the EDGE-feature, it would require that there always be a clitic in the structure to check it. We would also have to account for the fact that all clitics move, and would need a probe that keeps probing for the exact number of clitics that are in the structure.[27] If the clitics were the ones with a probe that searched for a goal, then the question becomes how this feature is checked on the subject clitic when it does participate in Clitic Movement. One possibility is that the feature is checked in a head-spec configuration in that case, introducing questions about why different elements land in different position in the first place, if a feature can be checked in any kind of a configuration (head adjunction, head-specifier, head-complement).

I would like to propose something different. Suppose that clitics have a switch that has an ON and an OFF position. When the derivation is sent to PF the switch has to be OFF. It gets turned ON if it is in the c-command domain of the EDGE-feature, and turned OFF by adjoining to the right of the head carrying the EDGE-feature. If clitics are not in the c-command domain of the EDGE-feature, the switch never gets turned ON and the clitic does not participate in Clitic Movement. (70) shows the derivation for an embedded non-finite clause the size of a vP. The edge feature on v turns the switch on the object and the locative clitic ON, and they move. The subject clitic's switch stays in the OFF position.

(i)
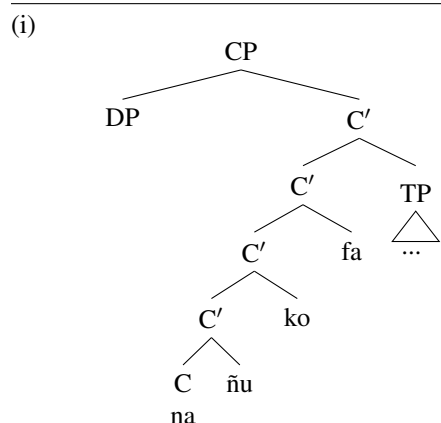
As already mentioned, Wolof does not otherwise allow for multiple specifiers, so clitics would have to be treated as special by syntax. I believe that makes this structure a less plausible option.
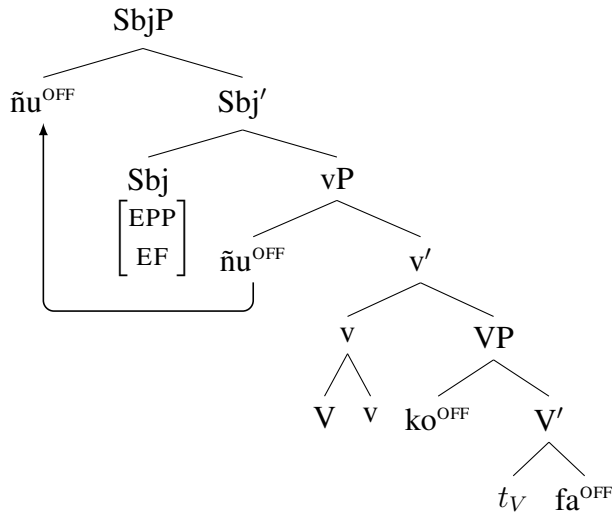
[27]A similar problem of course arises with multiple *wh*-movement to the same specifier position, as in, for example, Bulgarian.

(67)

vP
ñu$^{\text{OFF}}$ v′
v VP
v fa$^{\text{OFF}}$ <ko$^{\text{ON}}$> V′
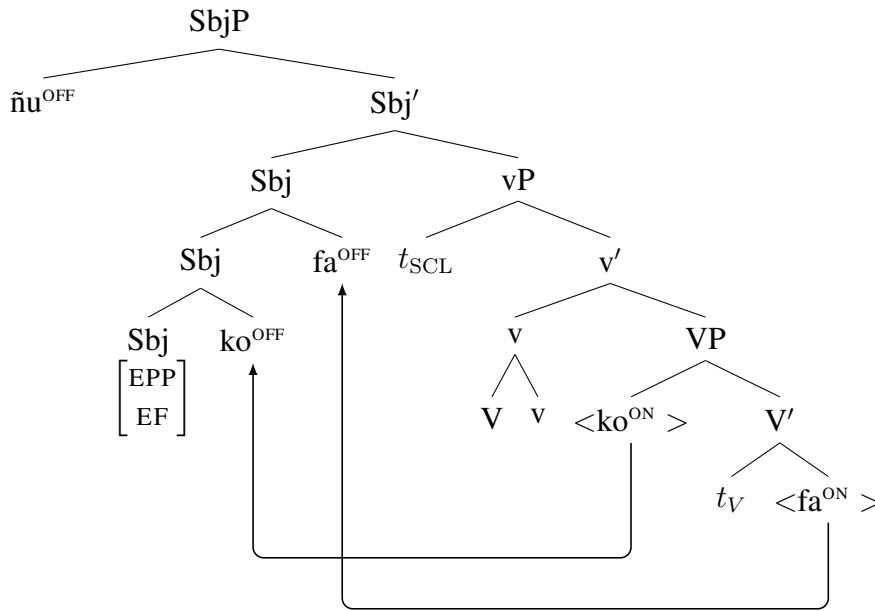V v ko$^{\text{OFF}}$ t_V <fa$^{\text{ON}}$>
[EF]
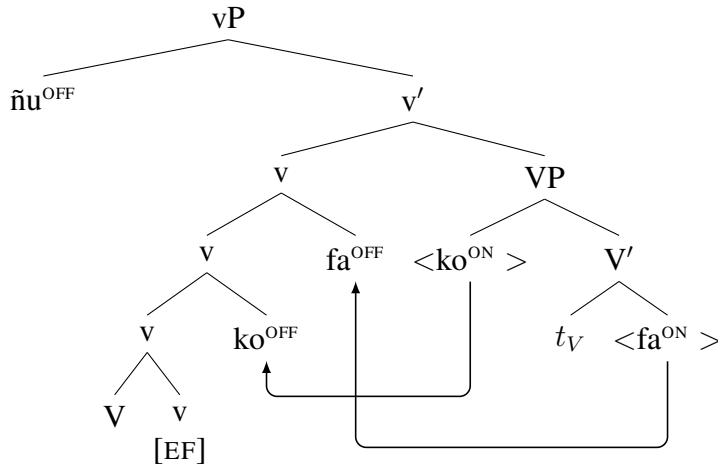
Consider next the derivation of the larger non-finite structure, which contains the auxiliary *di*. I have argued in §3.3 that clitic placement indicates that there must be an additional head above *di* to which the lower clitics adjoin. I have also proposed that Wolof has a structural subject position with an EPP-feature, therefore, the subject clitic must be able to move there. In (68), the Sbj head has both [EPP] and [EF]. The features are accessible in a fixed order, from the highest to the lowest in the stack (Manetta 2006, 2011; Georgi and Müller 2007, 2010; Müller 2010; Martinović 2015, 2020). The subject clitic's switch is in the OFF position in Spec,vP, and it is first attracted by [EPP] to Spec,SubjP.

(68)

SbjP
ñu$^{\text{OFF}}$ Sbj′
Sbj vP
$\begin{bmatrix} \text{EPP} \\ \text{EF} \end{bmatrix}$ ñu$^{\text{OFF}}$ v′
v VP
V v ko$^{\text{OFF}}$ V′
t_V fa$^{\text{OFF}}$

Then [EF] activates the switch on the object and the locative clitic, and they move to Sbj. The subject clitic is again unaffected.

(69)

SbjP
├─ ñu^OFF
└─ Sbj′
   ├─ Sbj
   │ ├─ Sbj
   │ │ ├─ Sbj [EPP, EF]
   │ │ └─ ko^OFF
   │ └─ fa^OFF
   └─ vP
      ├─ t_{SCL}
      └─ v′
         ├─ v
         │ ├─ V
         │ └─ v <ko^ON>
         └─ VP
            └─ V′
               ├─ t_V
               └─ <fa^ON>

Finally, in full CPs [EF] is on C. Given that all clitics are now in its c-command domain, they are all switched on, and they all move to adjoin to C.

(70)

CP
├─ C
│ ├─ C
│ │ ├─ C
│ │ │ ├─ C [EF]
│ │ │ └─ ñu^OFF
│ │ └─ ko^OFF
│ └─ fa^OFF
└─ SbjP
   ├─ <ñu^ON>
   └─ Sbj′
      ├─ Sbj [EPP]
      └─ vP
         ├─ t_{SCL}
         └─ v′
            ├─ v
            │ ├─ V
            │ └─ v <ko^ON>
            └─ VP
               └─ V′
                  ├─ t_V
                  └─ <fa^ON>
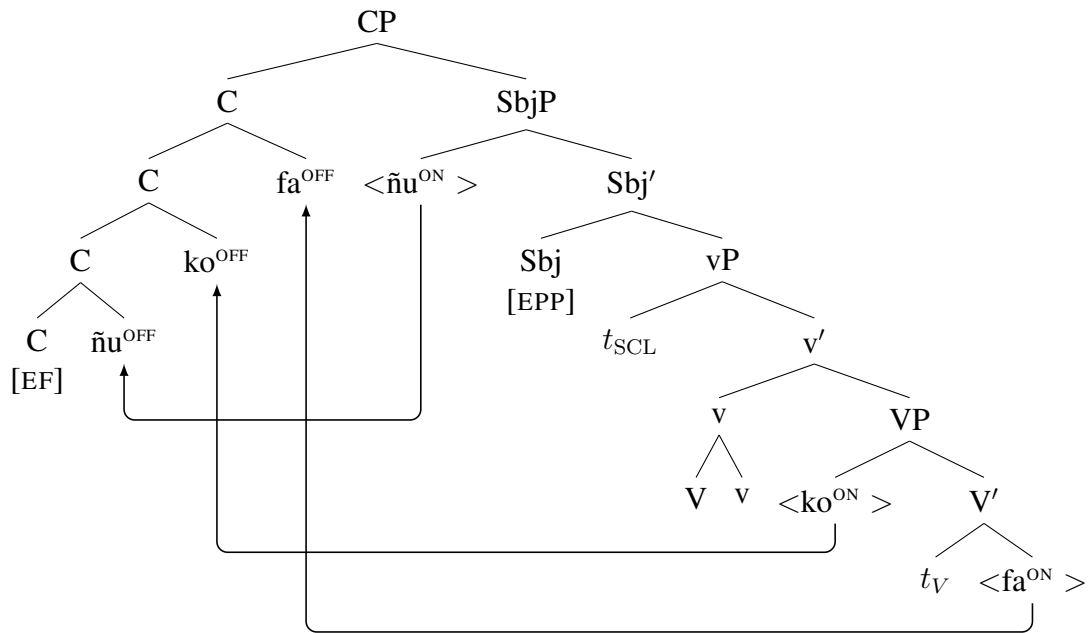
C is the highest head that clitics can attach to – they cannot move to the edge of the left periphery, to follow the highest topicalized element, for example:

(71) a. Xale yi   Usmaan a=**leen**=**fa**   gis.
          child the.PL Oussman C=3SG.OBJ=LOC see
          'The children, it's Oussman who saw them there.'

*Xale yi=**leen**=**fa**　　　Faatu a gis.
　　　child　the.PL=3PL.OBJ=LOC Fatou C see

Rizzi (1997) observes that the heads in the left periphery do not seem to be an extension of the verbal system in the same way that the inflectional system is (in Graimshaw's (1991) sense), given that left-peripheral heads do not, at least in the languages he is concerned with, encode "inflectional" properties in the same way that the IP-layer does (in the form of verbal morphology). The EDGE-feature of the extended projection of the verb must be able to be only associated with the heads belonging to the inflectional layer.[28] Clitics generally do not appear to occur in the left periphery without being carried there by movement of another element that they are cliticized to (as, for example, Legate (2008) proposes is the case in Warlpiri). In the following section, I propose a way to derive the association of the EDGE-feature only with heads in the extended projection of the verb. I leave the question of why clitics cannot cross into the left periphery aside here.

　　One final question to consider is whether the EDGE-feature that attract clitics could be a property of all phase heads, and not just of the highest head in the extended projection of the verb. This would make Clitic Movement and *wh*-movement even more similar, and possibly give additional support for the "movement to the edges" analysis, though we would have to ensure that the same type of EDGE-feature is present on all phase heads in the extended projection of the verb. There is no evidence in Wolof that clitics move in a cyclic fashion.[29] If clitics adjoin to heads, we would have to allow them to either excorporate after adjoining to the lower phase head, or to skip it altogether. I do not further consider this possibility here.

　　In the final part of this paper I propose a way to associate the EDGE feature with any head,

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[28]The head hosting sentence particles in Wolof therefore must be part of the extended projection of the verb.

[29]In their work on the infinitive marker *a*, which can occur at the edges of some infinitival complements, Yadaw Gowda and Danfeng Wu (p.c.) have found examples in which it appears to be pied-piped with the object clitic out of the embedded clause to the matrix C, as in (i):

(i)　　a.　　Astu daf-a=∅　　bëgg [a togg ganaar yi　　].
　　　　　　Astou do.C=3SG want [*a* cook chicken the.PL]
　　　　　　'*Astou wants to cook the chickens.*'
　　　b.　　Astu daf-a=∅=**leen**=**a**　　　bëgg [togg].
　　　　　　Astou do-C=3SG=3PL.OBJ=*a* try　　[cook]
　　　　　　'*Astou wants to cook them.*'

If this is possible, it would be evidence that the clitic does not move in one fell swoop, but makes stops along the clausal spine. Gowda and Wu also report that the pied-piping of *a* is not obligatory for their speaker, meaning that we would need the clitic to be able to skip over *a* as well.

　　I have been unable to confirm that the apparently pied-piped *a* in these kinds of examples is in fact the infinitive marker. Such morpheme does indeed exist, and it is a variant of the imperfective auxiliary *di*, more commonly used in Mauritanian Wolof (Dialo et al. 1984). Some of my speakers can still use this form of the infinitive. For example, the addition of *a* in the following clause triggers a future meaning for my speakers:

(ii)　　Astu　daf-a=∅=leen=a　　　　togg.
　　　　Astou do-C=3SG=3PL.OBJ=IPFV cook
　　　　'*Astou will cook them.*'

Note that this is a finite clause, therefore *a* here cannot be the infinitive marker. For my speakers, (ib) also involves a future meaning (comment: "it means it will happen soon"). Furthermore, my speakers can use *a* in (ib) both following *leen*, and at the edge of the infinitival complement, preceding *togg*, making it unlikely that *a* has been pied-piped. For my speakers, *a* in (i) is a less common variant of *di*.

provided it is the highest head in the domain. The view of the building of the clausal structure proposed in the next section also accounts for the fact that the head that clitics follow is in fact the highest head in the structure, and that there are no higher null heads. This is an important component of the analysis, as we want to avoid having to posit a postsyntactic reordering mechanism that would affect object and locative, but not subject clitics.

4.3   Bundled heads

In Martinović 2015, 2020 I propose that the features of C and T/Infl in Wolof are sometimes bundled on one head and sometimes split over two heads. I argue for this because the clause-internal subject position appears to not be available in one clause-type in Wolof (the structures that I called *V-raising*), as discussed briefly in §4.1. More generally, it is a well-established fact that the same parts of the structure are in some languages bundled on a smaller number of heads and in another language spread over a bigger chunk of syntactic structure (see, e.g. Bobaljik and Thráinsson 1998 on the Split-IP parameter in Icelandic and Norwegian). In Martinović 2015, 2020 I develop a mechanism I call *Head-Splitting*, which allows parts of the feature-bundle to split off and remerge in a higher position, thus creating a new head with a new specifier position. This is illustrated in (72)-(73). Features F1 and F2 are in a bundle and need to be checked (signified here with *). Suppose that features are checked in a hierarchical fashion, one by one. Only when the highest unchecked feature is checked can the head probe for the next highest unchecked feature to be checked. Suppose now that the feature F1 was checked via an Agree/Move operation (not shown here), and the head probes for F2 to be checked, but checking for some reason fails. Another option in structure building is to split off the part of the structure with unchecked features and remerge it in a higher position as a new head.

(72)
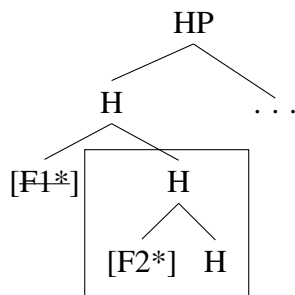
(73)
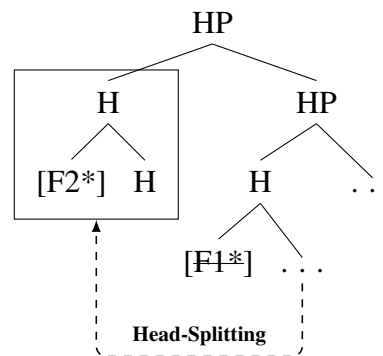
Suppose now that the entire clause is built in this way, from a feature bundle. The clause would start out as a bundle as in (74). I present a simplified version of the clause, with the common labels of heads as stand-ins for (a subset of) features that they contain; I assume all functional features contained in the numeration would be present in the complex head. Suppose also that this bundle initially merges with the verb.

34

(74)

```
V
  [v*]
     [Asp*]
        [Sbj*]   [C*]
```
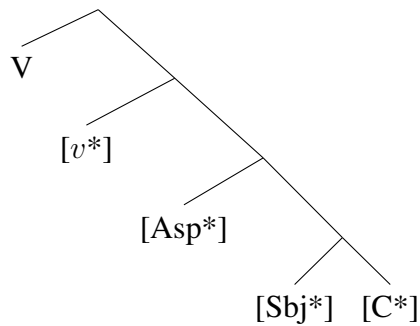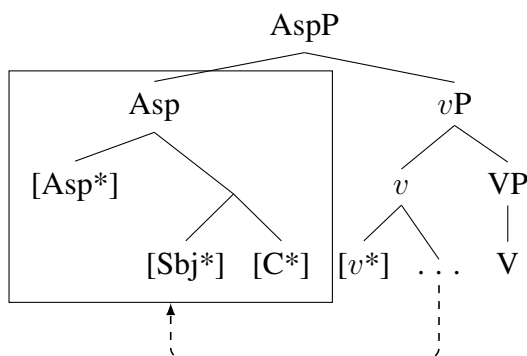
Now suppose that the feature bundle reprojects to a higher position. The verb merges with its internal arguments and projects a VP. We also need for the features to at some point form elements we know as 'heads' with particular labels, and to project phrases with those labels. I leave the details of how this happens aside in this crude illustration.
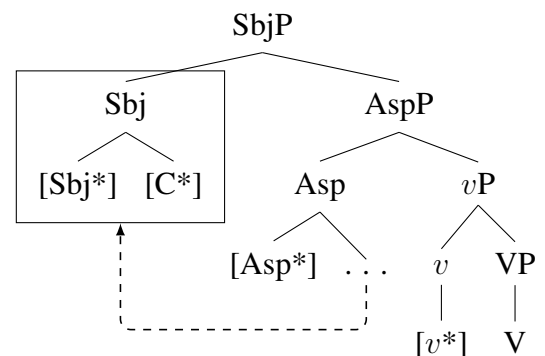
(75)

```
                vP
        v              VP  . . .
    [v*]                V
       [Asp*]
          [Sbj*]   [C*]
```
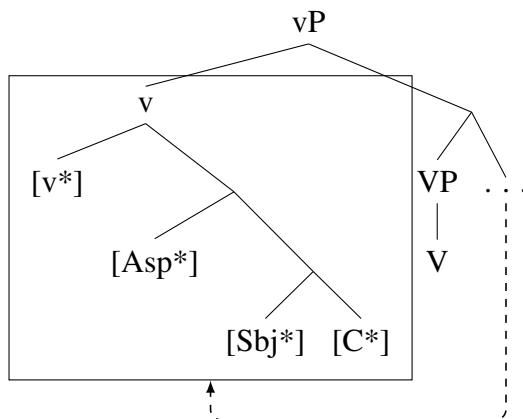
This process continues until the structure is built, so that chunks of the complex head split off and remerge in a higher position, as in (76)-(78).
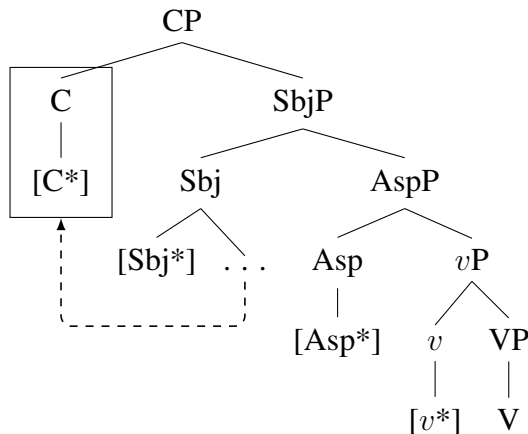
(76)   (77)

```
        AspP                                    SbjP
    Asp        vP                        Sbj           AspP
 [Asp*]      v    VP              [Sbj*]  [C*]      Asp      vP
    [Sbj*] [C*] [v*] . . . V                    [Asp*] . . . v    VP
                                                            [v*]  V
```

(78)

```
              CP
          ┌────┴────┐
        ┌─┐        SbjP
        │C│      ┌───┴────┐
        │ │     Sbj       AspP
        │[C*]│  ┌─┴──┐   ┌──┴───┐
        └─▲─┘ [Sbj*] ... Asp    vP
          ┊          │    │    ┌─┴─┐
          ┊         [Asp*] v   VP
          └┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄│   │
                           [v*]  V
```

What could be the trigger for Head-Splitting? In Martinović 2015, 2020, Head-Splitting occurs due to the nature of feature checking. I propose that features are checked in a hierarchical manner in such a way that only the topmost feature in the hierarchy is able to probe for a goal. If the feature is checked, then the next lower unchecked feature in the hierarchy probes for a goal, and so on. The features that get checked remain bundled, but when a feature cannot be checked, the part of the complex head dominated by the unchecked feature splits off and remerges in a higher position. Feature checking might fail because a goal is not found in the c-command domain of the head, or because the position into which the element with the goal feature would need to move is unavailable. The option to further unfold the structure is the only one that does not crash, given that Head-Splitting creates new head and specifier positions.[30]

This approach makes it possible to capture the observation that the highest head in the bundle carries a special property that attracts the clitic. We want this property, which I here called an [EDGE]-feature, to be able to appear on essentially any functional head in the clausal spine. This is easily accomplished if this feature is part of the feature-bundle of every clause, and is the lowest feature in the bundle. Suppose then that the feature-bundle for a non-finite clause with Aspect looks as in (79), and the feature bundle for a finite clause as in (80).
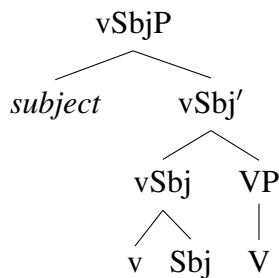
(79)

```
[v*]
   \
   [Asp*]
       \
     [Sbj*]   [EDGE]
```

(80)

```
[v*]
   \
   [Asp*]
       \
     [Sbj*]
          \
        [C*]   [EDGE]
```
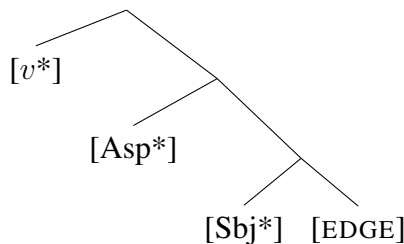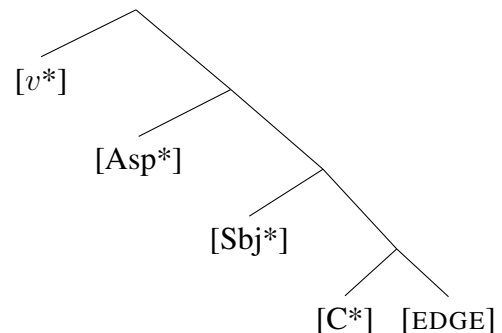
Suppose also that the [EDGE]-feature does not need to be checked, but stays bundled with the

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[30]A similar kind of structure building mechanism was also proposed in Shimada (2007), who argues that the clause is generated as a bundle of heads, and that head movement is actually the movement of heads out of that bundle in a way similar to the one I illustrated above. For Shimada, this happens because heads are quantifiers and must move due to a semantic type mismatch. For the motivation for the clause to start as such a bundle, see the original work.
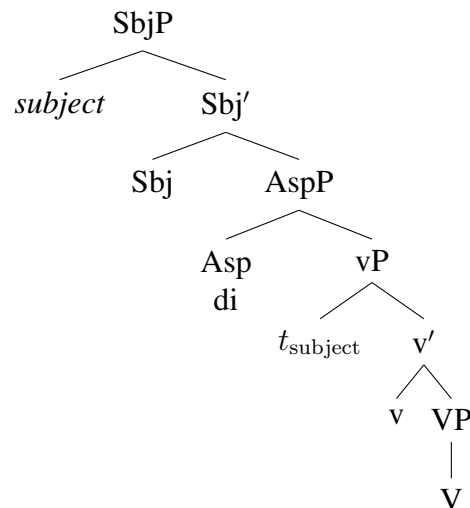
features on the last projected head. So when (79) and (80) unfold, [EDGE] will be bundled with Sbj in the former, but with C in the latter case. Divorcing this feature from particular heads permits us to capture the fact that the highest head in a domain, no matter what the domain is, acts as an attractor.[31]

An additional benefit of the proposed structure-building mechanism is being able to account for different sizes of non-finite complements without assuming different selectional requirements for the matrix verb. I proposed that the non-finite clause which does not contain *di* is smaller than the one that does (vP vs. SbjP). If we adopt Head-Splitting, we can say that both vP-sized and SbjP-sized infinitives contain Sbj, but that it is projected as a separate head only if Aspect is present, and remains bundled with v otherwise. The two structures are in (81) and (82). I label the head on which v and Sbj are bundled as vSbj for clarity.

(81)

```
          vSbjP
         /     \
    subject    vSbj′
              /     \
          vSbj       VP
          /  \        |
         v   Sbj      V
```

(82)

```
          SbjP
         /    \
    subject   Sbj′
             /    \
          Sbj      AspP
                  /    \
               Asp      vP
               di      /   \
                  t_subject  v′
                            /  \
                           v   VP
                                |
                                V
```

The key insight here is that the fact that a specific head is not projected does not mean that the features associated with this head are not present in the structure. Regardless of the implementation, the observation that there is cross-linguistic variation in how much structure features are spread across is uncontroversial. The matrix verb that selects for both (81) and (82) is therefore selecting for one and the same thing; the internal structure of the complement may differ for independent reasons.

5 Conclusion

This paper explored the properties and placement of Wackernagel-like clitics in the Niger-Congo language Wolof. I have shown that Wolof clitics follow the highest head in the extended projection of the verb, as argued in Dunigan 1994, and that their placement is purely syntactic. The main argument for the absence of any kind of a post-syntactic component that readjusts the position of clitics comes from the behavior of the subject clitic, which can be initial in the extended projection of the verb if there is no higher functional head that could attract it, but patterns with other clitics when such a head is present. I have additionally argued that clitics in Wolof do not move

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[31]In order to exempt the heads in the left periphery from being associated with this feature, we need to posit that they are generated as a separate bundle.

to specialized positions for licensing purposes; their movement is triggered by an EDGE-feature on the highest head in the domain so that the goal feature on the clitics becomes activated in the c-command domain of the EDGE-feature, and stays inactive otherwise. This allows the subject clitic to be unaffected by Clitic Movement if it is in the highest position in the extended projection of the verb. Finally, following previous work, I have proposed a way for the EDGE-feature to be associated with any head, by arguing that the extended projection of the verb is generated as a bundle of features, unfolding to the extent that is required by the nature of the features involved. The EDGE-feature ends up being associated with the highest head automatically through the unfolding process.

Wolof clitics confirm an important property of Wackernagel-like clitics: that their movement is primarily syntactic, as argued by Ouhalla (1989) for Berber and Franks (1998/2010) for BCS. And while final clitic placement in languages such as BCS does appear to involve postsyntactic readjustment, Clitic Movement of this type looks similar to other types of movement to the edges of domains. To the extent that such movements are syntactically motivated, so then is the movement of Wolof-type clitics.

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