Linear adjacency and clitic climbing in Wolof

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1   Introduction

- Clitic climbing (movement of a clitic pronoun out of an embedded infinitive) has long been considered a hallmark property of restructuring. (Rizzi (1978), i.a.)

- Restructuring constructions involve a select (and relatively cross-linguistically stable) class of verbs and modals which embed verbal infinitives, and which seem to behave as though they form a single clause.

- Here, we see an example of clitic climbing in Spanish, with the verb *querer* 'to want'. Clitic climbing is blocked for verbs such as *odiar* 'to hate.'

  (1) **Clitic climbing in Spanish restructuring constructions** (de Andrade & Bok-Bennema, 2017)
     a.   Juana quiere ver=lo.
          Juana wants see.INF=it
     b.   Juana lo=quiere ver
          Juana it=wants   see.INF
          Juana wants to see it.

  (2) **Non-restructuring constructions**
     a.   Juana odia   ver=lo
          Juana hates see.INF=it
          Juana hates to see it.
     b.   * Juana lo=odia ver
          Juana it=hates see.INF

- An additional, more nebulous property associated with restructuring is *verb clustering*. Verb clustering refers to a constellation of phenomena such as linear adjacency of verbal heads, reordering of verbal heads, and morphology sharing.

- Verb clustering is predominantly attested in West Germanic languages. In (3), we see the Dutch restructuring modal *mogen* 'may, to be allowed' embedding *zien* 'to see'. We can have one of two orders, the strictly head final order *zien mag*, or the 'inverted order' *mag zien*.

  (3) **Verb clustering in Dutch** (data from Barbiers (2005), cited in Wurmbrand (2017))
     ... dat jij   het ook niet $zien_2$ mag_1 / mag_1 $zien_2$
          that you it   also not see.INF may   may   see.INF
     ... that you may not see it either.

- The relationship between these verb clustering phenomena and restructuring remains unclear (see Wurmbrand (2017) for a recent overview of this problem).

- Some have argued that verb clustering phenomena arise because restructuring involves the formation of a complex V-V predicate through head movement, and that this is, at least sometimes, reflected on the surface with verb clustering phenomena. (Jacobs, 1992; Saito & Hoshi, 1998; Haider, 2003; Baker, 2014)

- Here, we present data from Wolof, a Senegambian (Niger-Congo) language mostly spoken in Senegal, which attests restructuring constructions with robust clitic climbing phenomena reminiscent of Romance clitic climbing.

- We will show that clitic climbing in Wolof requires strict linear adjacency between the matrix and embedded verbs, which we might be tempted to analyze as involving head movement.

- However, we will show that this linear adjacency is not in fact derived by head movement.

- We argue instead that restructuring infinitives in Wolof are bare VPs (following Wurmbrand (2001)) which are selected by a restructuring verb, and that this selectional relationship forces linear adjacency as a result of Selectional Contiguity (Richards, 2016).

2   Background on Wolof

- Data for this talk comes primarily from fieldwork in Boston with a single native Wolof speaker from Kaolack, Senegal.

- Wolof is, in general, a head-initial non-pro-drop language.[1]

  (4)   Xale yi   lekk=na=ñu gato bi
        child DEF.PL eat=NA=3PL.S cake DEF.SG
        The children ate the cake.

- Wolof has a rich clitic system, with subject and object clitics appearing clustered in a strict order based on a template.

  (5)   **Ordering in Wolof clitic clusters**
        a. Xale yi   lekk=na(=ñu=ko/*=ko=ñu)
            child DEF.PL eat=NA=3PL.S=3SG.O
            The children ate it.
        b. Xale yi   jox=na=ñu(=leen=ko/*=ko=leen)
            child DEF.PL give=NA=3PL.S=3PL.O=3SG.O
            The children gave it/him/her to them / gave them to it/him/her.

        c. Xale yi   jox=na=ñu(=ko=ci/*=ci=ko) ñett
            child DEF.PL give=NA=3PL.S=3SG.O=PART 3
            The children gave him/her three of them.

- Clitic clusters in Wolof appear attached to a specific set of particles which vary depending on the focus that a sentence carries.

- These particles vary as to whether they appear before or after the matrix verb and subject. *na*, the neutral focus particle, appears after the matrix verb, while *da(fa)*, the verbal focus particle, and *la*, the object focus particle appear before the matrix verb.

  (6)   **Wolof focus particles**
        a. Xale yi   lekk=**na**=ñu=ko
            child DEF.PL eat=NA=3PL.S=3SG.O
            The children ate it. (neutral focus)
        b. Xale yi   **da**=ñu=ko   lekk
            child DEF.PL VFOC=3PL.S=3SG.O eat
            The children *ate* it. (Verb focus)
        c. Gato bi   **la**=ñu=ko   xale yi   jox
            Cake DEF.SG OFOC=3PL.S=3SG.O child DEF.PL give
            The children gave *the cake* to him/her. (Object focus)

2.1   Restructuring in Wolof

- Wolof exhibits widespread restructuring – in general, any verb which can embed bare subjectless infinitives[2] is able to appear in a restructuring construction – this includes the prototypical subject raising (e.g. *tambali* 'start') and subject control verbs (e.g. *bëgg* 'want', *jéém* 'try').

- Bare subjectless infinitives seem to be smaller than full CPs, or even small clauses – for instance, they lack subjects:

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[1]DEF = definite determiner, BENF = benefactive, NA = neutral focus particle, OFOC = object focus particle, PART = partitive clitic, VFOC = verbal focus particle

[2]Previous work (Torrence, 2013; Gowda & Wu, 2018) notes the occurrence of a clitic infinitival marker =a in restructuring contexts. The distribution of this marker is still unclear, and, at least for the speaker we worked with, it can be optionally dropped. For now we will ignore this wrinkle.

(7) **Subjectless infinitives**

    a. Roxaya bëgg=na [*(mu)   taw]
        Roxaya want=NA *(3SG.S) rain
        Roxaya wants it to rain. (non-restructuring, small clause)

    b. Roxaya tambali=na [(*mu)   togg]
        Roxaya start=NA   (*3SG.S) cook
        Roxaya started to cook. (subjectless infinitive)

- Additionally, they cannot embed separate tense[3]:

(8) Demb,   Roxaya bëgg-oon=na   [woy (*tey)]
     yesterday Roxaya want-REC.PAST=NA sing   today
     Yesterday, Roxaya wanted to sing (*today).

- Crucially, we can clitic climb out of subjectless infinitives, but not out of small clauses or full CPs.

(9) **Clitic climbing only allowed out of subjectless infinitives**

    a. Daf=leen$_i$ tambali [togg t$_i$]
        VFOC=3PL.O start   cook
        She started to cook them.

    b. Daf=leen$_i$ fatte [togg t$_i$]
        VFOC=3PL.O forget cook
        She forgot to give Kadeer three of them.

    c. Daf(*=leen)   bëgg [ma   togg (leen)]
        VFOC(*=3PL.O) want 1SG.S cook (3PL.O)
        She wants me to cook them. (small clause)

    d. Daf(*=leen)   bëgg [ne   togg=na=a(=leen)]
        VFOC(*=3PL.O) want that cook=NA=1SG.S(=3PL.O)
        She wants that I cook them. (full finite CP)

- Clitic objects don't have to climb. They can also remain within the embedded infinitive[4]:

(10) Dafa tambali [togg leen]
      VFOC start   cook 3PL.O
      She started to cook them.

3   Clitic climbing requires linear adjacency between verbal heads

- In this section, we will show that clitic climbing requires linear adjacency between the embedded verb and the matrix verb.

- Specifically, we claim the following is a necessary condition on clitic movement:

(11) **V-V Adjacency**:
     In order to move a clitic across an embedded verb and a matrix verb, the matrix verb and the embedded verb must be linearly adjacent.

- First, we consider the verb *dig* 'to promise'. *dig* is a subject control verb, but it can optionally take an object, the promissee.

- When the promissee is present and is a full DP (in (12), *Kadeer*), we do not see clitic climbing occur:

(12) Roxaya dig=na(*=ci)   **Kadeer** [butti [(ci) ñett]]
      Roxaya promise=NA(=PART) Kadeer gut   (PART) three
      Roxaya promised Kadeer to gut three of them.

- When the promissee is absent, clitic climbing can occur:

(13) Roxaya dig=na=ci$_i$ [butti [t$_i$ ñett]]
      Roxaya promise=NA=PART gut   three
      Roxaya promised to gut three of them.

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[3]Note that *bëgg* 'want' embeds subjectless infinitives for subject control and small clauses for object control.

[4]This seems to be subject to some speaker variation – some always clitic climb when it is available, while others can optionally keep the clitic in its base position.

- Wurmbrand (2001) notes similar facts hold for German – when *versprechen* 'to promise' takes a promissee object, it seems to act as a non-restructuring verb, and when it does not, it acts as a restructuring verb.

- However, this story does not seem to apply in full to Wolof – for one, if we cliticize the promissee, we see clitic climbing occur.

(14) Roxaya dig=na**=ko**=ci$_i$ [butti [t$_i$ ñett]]
Roxaya promise=NA=3SG.O=PART gut   three
Roxaya promised him/her to gut three of them.

- There are other ways that we can get the promissee argument 'out of the way' – it can be extraposed, or fronted in the object focus construction, and when this is done, clitic climbing is again allowed.

(15) **Moving promissees out of the way feeds clitic climbing**

  a. Roxaya dig=na=ci$_i$ t$_j$ [butti [t$_i$ ñett]] **Kadeer**$_j$
Roxaya promise=NA=PART   gut   three Kadeer
Roxaya promised Kadeer to gut three of them.

  b. **Kadeer**$_j$ la=ci$_i$ dig   t$_j$ [butti [t$_i$ ñett]]
Kadeer   OFOC=PART promise   gut   three
She promised *Kadeer* to gut three of them.

- Applied arguments of matrix verbs act similarly to promissees:

(16) **Intervening applied matrix arguments block clitic climbing**

  a. Daf(*=ko)   tambali-lal **Kadeer** [togg (ko)]
VFOC=3SG.O start-BENF   Kadeer   cook 3SG.O
She started for Kadeer to cook it. (...*so Kadeer could finish.*)

  b. Daf=ko$_i$ tambali-lal t$_j$ [togg t$_i$] **Kadeer**$_j$
VFOC=3SG.O start-BENF   cook   Kadeer
She started for Kadeer to cook it. (...*so Kadeer could finish.*)

  c. Roxaya tambali-lal=na**=leen**=ko$_i$ [togg t$_i$]
Roxaya start-BENF=3PL.O=3SG.O   cook
Roxaya started for them to cook it. (...*so they could finish.*)[5]

- Matrix adverbials also act as interveners:

(17) a. Daf(*=ko) tambali **demb**   [togg (ko)]
VFOC=3SG start   yesterday cook
She started to cook it yesterday.

  b. Daf=ko$_i$ tambali t$_j$ [togg t$_i$] **demb**$_j$
VFOC=3SG start   cook   yesterday
She started to cook it yesterday.

(18) a. Dama(*=leen) di   fatte **lu bari**   [woo (leen)]
VFOC.1SG=3PL   IPFV forget ADV plenty   call
I often forget to call them.

  b. Dama=leen$_i$ di   fatte t$_j$ [woo t$_i$] **[lu bari]**$_j$
VFOC.1SG=3PL IPFV forget   call   ADV plenty
I often forget to call them.[6]

3.1 Against (defective) intervention

- An alternative way to explain the facts so far: perhaps the badness of these sentences is not due to intervention between the matrix and embedded verbs, but due to intervention in clitic movement.

- Here we consider **Defective Intervention** (Chomsky, 2000) and similar accounts.

- Defective Intervention rules out A-raising of an embedded subject across an experiencer in Romance. Specifically, the relation between a probe and a goal is disrupted by an intervener that carries inactive features sought by the goal.

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[5]Note that this only gets a reading where *ko* 'him/her/it' is the embedded argument, it cannot mean *Roxaya started for him to cook them*. It's not clear why this is, given that this clitic order is ambiguous in other cases (cf. (5b)).

[6]This word order is also compatible with the meaning "I forget to often call them."

(19) **Defective intervention in Italian** (McGinnis, 1998)
Gianni$_i$ sembra (*a Piero) t$_i$ fare il suo dovere.
Gianni seems   to Piero do.INF the his duty
Gianni seems (*to Piero) to do his duty.

- This does not happen in Wolof, as the intervener can be any XP including adverbs like *demb* 'yesterday' and *lu bari* 'often'. These adverbs are unlikely to carry the features that the probe seeks.[7]

- Still, suppose that when clitics move, they are subject to a stricter ban:

(20) **Clitic Movement Intervention**:
Clitics cannot cross any XP.

- This generalization is challenged by the following example, where the clitic movement does cross an XP:

(21) **Clitic movement within a clause can cross an XP**
Roxaya daf=ci$_i$ jox Kadeer [t$_i$ ñett]
Roxaya VFOC=PART give Kadeer   three
Roxaya gave Kadeer three of them.

- Perhaps, then, we should say the Clitic Movement Intervention condition only applies in multi-clausal constructions.

- However, even this will not work. Only XPs between the matrix and embedded verbs cause intervention, but not XPs above the matrix verb (the matrix subject in (22a)), or XPs (the DP object of embedded verb in (22b)) below the embedded verb:

(22) **XPs above and below V-V do not intervene**
a. Demb   la=leen$_i$ **Roxaya** fatte [togg t$_i$]
Yesterday OFOC=3PL Roxaya forget cook
It was yesterday that Roxaya forgot to cook them.

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[7]These data are reminiscent of data concerning intervention in cases of raising and tough-movement presented by Bruening (2014), who also uses them to argue against Defective Intervention. Thanks to an anonymous LSA reviewer for pointing out this connection.

b. Roxaya daf=ci$_i$ fatte [jox **Kadeer** [t$_i$ ñett]]
Roxaya VFOC=PART forget give Kadeer   three
Roxaya forgot to give Kadeer three of them.

- The most plausible account of these facts, therefore, is that the condition on clitic climbing is really about adjacency between verbal heads, and not about intervention.

4   Deriving linear adjacency

- We have established that V-V Adjacency, repeated here, is active in Wolof:

(23) **V-V Adjacency**:
In order to climb a clitic across an embedded verb and a matrix verb, the matrix and embedded verbs must be linearly adjacent.

- We are, of course, far from the only people to argue for V-V adjacency requirement for restructuring – similar requirements have been proposed for Gbadi (Kru; Niger-Congo) (Koopman, 1984), West Germanic (Riemsdijk, 1998), Japanese (Miyagawa, 1987; Takahashi, 2012), Quechua (Lefebvre & Muysken, 1988), Assamese (East Indo-Aryan) (Nath, 2015).

- However, the way that linear adjacency is argued to be derived in these languages is varied.

- Here, we will argue that linear adjacency in Wolof restructuring constructions does **not** involve head movement.

4.1   Linear adjacency not derived through head-movement

- As mentioned previously, linear adjacency of verbal heads is one of the properties associated with *verb clustering* phenomena. Some accounts of verb clustering phenomena argue that they involve head movement of the lower verb to the higher verb.

- Here, we will argue that despite the link between verb clustering and adjacency, linear adjacency of verbal heads in Wolof is not derived through head-movement.

4.1.1 No reordering of verbal heads

- Reordering of verbal heads in verb clusters has been taken to be evidence for head movement, given that head movement can in theory adjoin to the left or right of a higher head. Recall the data from Dutch restructuring verb clusters:

(3) **Verb clustering in Dutch**
… dat jij het ook niet zien$_2$ mag$_1$ / mag$_1$ zien$_2$
 that you it also not see.INF may may see.INF
… that you may not see it either.

- However, we see no such reordering phenomena in Wolof. Order of verbal heads strictly follows the Mirror Principle.

(24) Roxaya daf=ci$_i$ (fatte jox / *jox fatte) Kadeer [t$_i$ ñett]
Roxaya VFOC=PART forget give give forget Kadeer three
Roxaya forgot to give Kadeer three of them.

4.1.2 Placement of affixes and clitics

- Derivational affixes attach to the verb that they modify, suggesting that the matrix and embedded verb do not act as a complex head, assuming that head movement does not operate counter-cyclically.

(25) Demb la=leen tambali-**lal** togg Kadeer
Yesterday OFOC=3PL.OBJ start-BENF cook Kadeer
Yesterday, s/he started for Kadeer to cook them (…*so that Kadeer could finish cooking them.*)

(26) Demb la=leen tambali togg-**al** Kadeer
Yesterday OFOC=3PL.OBJ start cook-BENF Kadeer
Yesterday, s/he started to cook them for Kadeer.

- In the neutral focus construction, the clitic *na* attaches to the matrix verb, and any pronominal clitics also attach to the matrix verb:

(27) Roxaya dig**=na=ko=ci**$_i$ [butti [t$_i$ ñett]]
Roxaya promise=NA=3SG.O=PART gut three
Roxaya promised him/her to gut three of them.

- Again, given that these are clitic elements, this suggests that the two verbal heads are not acting as a single complex head in the narrow syntax.

4.1.3 Interpretation of adverbials

- If we assume that the embedded verb head moves up to the matrix verb, we should expect that matrix adverbials would be able to appear linearly between the embedded verb and the remnant embedded infinitival phrase.

- However, this is not borne out. Adverbials which appear immediately to the right of the embedded verb head are interpreted as modifying the embedded verb, not the matrix verb:

(28) Daf=ci$_i$ fatte [jox **lu bari** Kadeer t$_i$ ñett]
VFOC=PART forget give ADV plenty Kadeer three
She forgot to often give Kadeer three of them. (**not**: She often forgot to give Kadeer three of them.)

4.1.4 Keine & Bhatt (2016)'s diagnostics for head movement

- The data in (28) also go against a diagnostic for head-movement in verb clustering argued for by Keine & Bhatt (2016), based on the interpretation of adverbials in German long passivization.

- They point out the following asymmetry between active *vergessen* clauses, which are in principle ambiguous between restructuring and non-restructuring, and long passive *vergessen* clauses, which are uniformly restructuring:

(29) **Semantic consequences of head movement**

    a. Gestern   hat er diesen Knopf   fünfmal   zu drücken
       yesterday has he this   button.ACC five.times to press
       vergessen.
       forgotten
       Yesterday he forgot to press the button five times. [5.times(forget); 5.times(press)]

    b. Gestern   wurde dieser Knopf   fünfmal   zu drücken
       yesterday was   this   button.NOM five.times to press
       vergessen
       forgotten
       Yesterday it was forgotten to press the button five times. [5.times(forget); *5.times(press)]

- What we see is that when restructuring is forced using the long passive, the adverbial *fünfmal* 'five times' can only be interpreted as modifying the matrix predicate, *vergessen* 'forget'.

- Keine & Bhatt's claim: V to V head movement, as we see in this case of restructuring, is interpreted as functional composition – in effect, we create an semantic atom *forget ∘ press*, of which the inner parts are inaccessible.

- Thus, we cannot modify *press* with an adverbial, because it is within the atom *forget ∘ press*.

- However, as we see in (28), we only interpret *lu bari* 'often' as modifying the embedded verb, and not the matrix verb, suggesting that head movement does not occur in this case.

4.2 No one way to derive linear adjacency

- We could take the above data as evidence that, because head movement cannot derive linear adjacency in Wolof, it should not derive linear adjacency in other languages.

- Another perspective we would like to put forward is instead that linear adjacency is a *conspiracy* driven by interface conditions.

- That is, the narrow syntax has many different strategies that it can use to generate linear adjacency – the interfaces only care that at the end of the day linear adjacency is satisfied.

- One such interface condition which applies here straightforwardly is Richards 2016's **Selectional Contiguity**.

(30) **Selectional Contiguity** (modified from Richards 2016): Given two syntactic objects α and β that are related via Selection, α and β must be linearly adjacent.

- Previous work on restructuring has argued that in some languages, restructuring involves a verb selecting directly for a lower verbal projection, a VP or a vP (Wurmbrand 2001).

- From this, it follows directly that if we want to satisfy Selectional Contiguity, the verbal heads in a restructuring construction need to be adjacent.

- Selectional Contiguity does not specify any specific syntactic operations required to satisfy this condition – it is a condition on the syntax-phonology interface.

5 Conclusion

- **Main point**: Wolof exhibits a linear adjacency requirement on restructuring which cannot be accounted for in terms of head movement. We suggest that, in lieu of arguing for specific narrow syntactic operations to derive this linear adjacency, we treat it as a consequence of an interface condition.

- **Broader consequences**: Treating this requirement as an interface condition allows us to account for a larger array of languages.

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b. * Gli=ho   cominciato **[un anno fa]** a scrivere lunghe
    him=have begun   one year ago to write   long
    lettere.
    letters

c. Gli=ho   cominciato a scrivere lunghe lettere **[un
    him=have begun   to write   long   letters one
    anno fa]**.
    year ago
    I began to write him long letters a year ago.

- Similar facts are described in Richards (2016) for cases of selection – he argues that in cases of adverbial intervention between two heads in a selectional relationship, that the adverbial element adjoins to one of the heads, and so Selectional Contiguity is satisfied recursively.

A   Linear adjacency in Romance restructuring

- Adverbial elements are able to intervene between the matrix and embedded verb in Romance restructuring constructions.

(31) **Some adverbials may intervene in Italian** (Rizzi, 2013)
Lo=verrò   **subito** a scrivere
it=come.FUT.1SG at.once to write
I will come at once to write it.

- However, larger adverbials do seem to count as intervenors:

(32) **Larger adverbials cannot intervene** (Rizzi, 1976)
a. Ho   cominciato **[un anno fa]** a scriver=gli lunghe
    have begun   one year ago to write=him long
    lettere.
    letters