Head-Splitting in the Wolof Clausal Periphery

Martina Martinović

1. Introduction

It is a long-standing observation that languages differ in the amount of structure over which functional features are distributed. For example, inflectional features, such as Tense and Agreement, are divided into one or more Agreement Phrases and a Tense Phrase in some languages, and contained on one head (e.g. InflP) in others (see, e.g. Bobaljik & Thráinsson 1998). We shall call the former case, in which features are spread out over a larger amount of structure, a *cartographic* structure, referencing the large body of work within the Cartographic project, aimed at creating detailed maps of syntactic configurations, especially with respect to the inventory and hierarchy of functional categories (e.g. Rizzi 1997, 2002, 2004; Cinque 1999, 2006), and the latter case a *non-cartographic* structure.

This paper looks at two clause-types in the Niger-Congo language Wolof differing primarily in the syntactic shape of their CP and TP layers, which I refer to as the *clausal periphery*. In one clause-type, the clausal periphery appears to contain only one projection (CTP), with one specifier position, while the other clause-type exhibits the more commonly seen separation into two projections (CP and TP), with two specifier positions. I therefore argue that the features traditionally associated with C and T are in some clause-types in Wolof spread over a larger amount of structure, and in other types condensed on one head, yielding cartographic and non-cartographic effects, respectively.

Since cartographic and non-cartographic effects here occur in the same part of the structure in one language, they crucially need to be derived, and cannot be captured by, for example, a parameter setting. The main purpose of this paper is to introduce a mechanism, *Head-Splitting*, which accomplishes just that, by partial head reprojection that allows for parts of heads to be split off and remerged in a higher position.

The paper is structured as follows. In section 2, I lay out the basic empirical facts concerning the structure of the Wolof clausal periphery. Section 3 introduces the Head-Splitting mechanism and illustrates how it derives cartographic and non-cartographic effects in the two clause-types in Wolof. Section 4 contains a brief discussion, and concludes the paper.

2. The CP and TP layers in Wolof

Wolof has a large number of clause types with different syntactic properties (Dunigan 1994; Torrence 2005, 2012; Martinović 2015). Each finite indicative clause contains a different complementizer-like element—*sentence particle*—occupying one and the same high position in the clause (Dunigan 1994; Martinović 2015), as evidenced by their complementary distribution, their clause-typing function, and the uniform behavior of pronominal clitics with respect to them, which always cluster to the right of each sentence particle.[1] All clauses syntactically fall into two types, which I call V-raising and Wh-raising, illustrated with a Neutral clause in (1) and a Wh-question in (2). In V-raising clauses the verb (*lekk*) raises to C, the non-clitic subject (*xale yi*) can only occupy a position to C's left, and is obligatorily doubled by a pronominal clitic (*ñu*) to C's right. In Wh-raising the verb does not raise to C, an A′-moved element (*lan*) occurs to C's left, and, crucially, a non-clitic subject (*xale yi*) can occupy a position to its right, where it is in complementary distribution with a pronominal clitic subject (*ñu*).

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[1] For details and more evidence that all sentence particles are the same category, see Martinović 2015, Ch. 2.

 Proceedings of the 34th West Coast Conference on Formal Linguistics, ed. Aaron Kaplan et al., 364-371. Somerville, MA: Cascadilla Proceedings Project.

(1) *V-raising: Neutral clause*

Xale yi	lekk-**na**	ñu	(*xale yi)	gato bi.
child DEF.PL	eat-C_V	3PL.SBJ	(*child DEF.PL)	cake DEF.SG

"The children ate the cake."

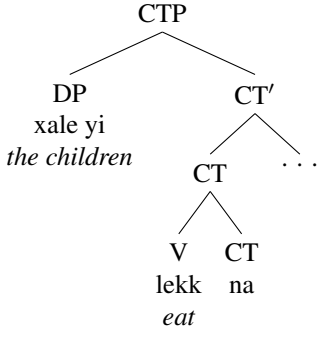
(2) *Wh-raising: Wh-question*

Lan	**la**	{ñu	/ xale yi}	lekk?
what	C_{Wh}	3PL.SBJ	/ child DEF.PL	ate

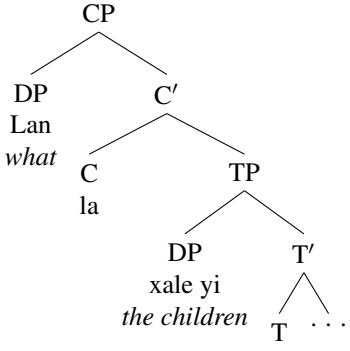
"What did {the children/they} eat?"

(1) and (2) lead us to make the following generalizations. The head C in V-raising is doing double duty: it has a C-like property, in that it hosts the complementizer *na* (which types the clause as neutral affirmative), and a T-like property, in that it hosts the subject in its specifier.[2] In Wh-raising clauses, there are two separate heads, a higher one (C-like) that hosts the *wh*-complementizer (Martinović 2015, 2016) and a *wh*-word in its specifier, and a lower one (T-like) that can host a non-clitic subject in its specifier. The main claim of this paper is therefore that in Wolof the features of C and T are sometimes contained in one head (non-cartographic effects, in (3)), and other times split over two heads (cartographic effects, in (4)), as evidenced by the absence of a subject position to the right of C in (3), and its availability in (4).

(3) *V-raising*



(4) *Wh-raising*



I propose that all features of C and T start out on one head (CT) (c.f. Feature Inheritance; Chomsky 2005, 2008; Richards 2007, 2011), which can in the course of the derivation remain compact, or be split into two heads via a mechanism of *Head-splitting*, discussed in detail in the following section.

3. Head-splitting in deriving cartographic and non-cartographic effects

This section lays out the mechanism which derives the non-cartographic effects in V-raising, in which all features are contained on one head, and the cartographic effects in Wh-raising, where features are distributed over two heads. I first present the formal details, and then apply Head-Splitting to derive the two Wolof clause-types.

[2]The subject to the left of C is not topicalized, as evidenced by the fact that it can be a nonspecific indefinite, or a bare quantifier; the latter is shown in (i):

(i) Kenn lekk-na-∅ gato bi.
someone eat-C_V-3SG cake DEF.SG
"Someone ate the cake."

Furthermore, there is a prosodic difference between topicalized elements and subjects to the left of C, in that a pause obligatorily follows a topic, but cannot follow an out-of-the-blue subject.

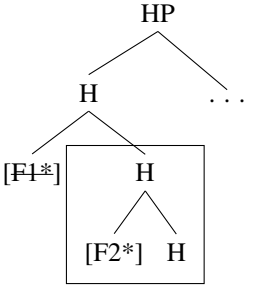
3.1. Head-internal geometry and Head-Splitting

First, I propose that all Probe-features on a head are hierarchically organized in a type of a feature-geometry, in which each feature is realized as a separate node. We are presently only concerned with Probe-features on a head H which must be checked via Agree and Move ([F*]), by elements with matching Goal-features in H's c-command domain. Crucially, features must be checked in a strict hierarchical order (Stabler 1997; Manetta 2006, 2011; Georgi & Müller 2007, 2010; Müller 2010), with only the highest unchecked feature available for checking at any given moment.[3] If a feature cannot be checked, Head-Splitting may apply, as defined in (5):

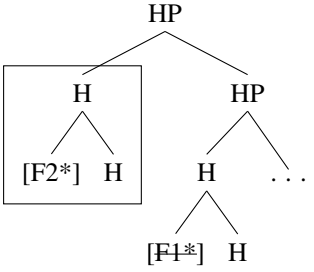
(5) Head-Splitting
The smallest projection of the head H that dominates all unchecked features splits off and moves to a higher position, adjoining to HP.

The trees in (6) and (7) illustrate the geometrical feature organization on the head H, and the splitting mechanism. In (6), [F1*] is checked first by agreement with, and movement of, some element in H's c-command domain (not shown). When the turn comes for [F2*] to be checked, this fails (one reason for feature-checking failure is discussed below). In this case, [F2*] and the projection immediately dominating it split off and remerge above H, thus creating a new head.

(6)



(7)



Head-splitting is similar to head reprojection (e.g. Pesetsky 1985; Ackema et al. 1993; Koeneman 2000; Haider 2000, 2005; Bhatt 2002; Hornstein & Uriagereka 2002; Fanselow 2003; Surányi 2005; Georgi & Müller 2010), except that here only parts of heads reproject – those that carry unchecked features. The Head-Splitting mechanism therefore allows us to derive both non-cartographic and cartographic effects, by assuming that features start out bundled together, and can either all remain on the head, or get distributed over multiple heads, as I argue is the case the two clause-types in Wolof and show in the remainder of this section. The relevant properties of V-raising and Wh-raising are repeated in Table 1.

V-raising	**Wh-raising**
verb in C	no verb in C
subject in Spec,CP	Wh-phrase in Spec,CP
obligatory subject clitic to C's right	subject to C's right

Table 1: Syntactic properties of V-raising and Wh-raising clauses in Wolof

3.2. Non-cartography in V-raising

I assume the structure of the CT head in V-raising to be as in (8). The [EPP*] feature is responsible for subject movement to Spec,CTP, and the [V*] feature is responsible for verb movement to CT.

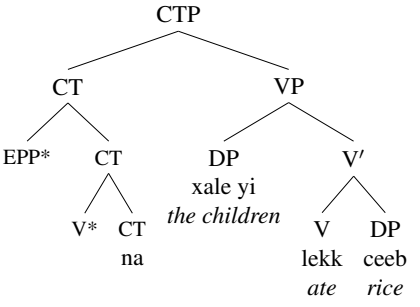
[3]Meaning that two Probe-features on one head cannot be checked by the same element, even if this element carries both of the Goal-features in question.

(8) $[_{CT}\ [_{CT}$ EPP* $[_{CT}$ V* CT]]]

The simplified structure of the V-raising clause in (9) (omitting functional projections irrelevant for the analysis) when CT is merged is in (10).[4]

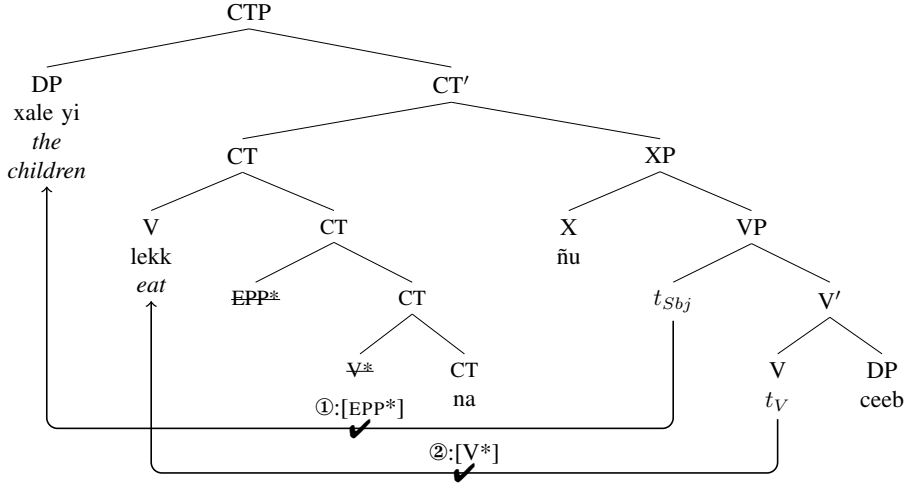
(9) Xale yi lekk-na-ñu céeb.
child DEF.PL eat-C_V-3PL rice
"The children ate rice."

(10)



First, the subject *xale yi* moves to Spec,CTP to check [EPP*] on CT, and the verb *lekk* then moves to check [V*], as in (11). The CT head in V-raising stays compact, because all its features can be checked on the same head.

(11)



The successful convergence of this derivation also involves the obligatory presence of a pronominal subject clitic, *ñu*, right-adjoined to the sister of CT.[5] I propose this to be due to the fact that Spec,CTP in V-raising is not an argument position, resulting in the inability of the subject DP to receive nominative case. I propose that nominative case in Wolof is assigned by CT to a DP it locally c-commands, meaning that nothing can intervene between CT and the subject. Wolof has a number of aspectual projections between CT and the VP, which always intervene between CT and the subject's in situ position in Spec,vP (see Martinović 2015, Ch. 7, for more details). Since there is no other, closer position for the subject to move into, it can never receive nominative case.[6] The subject clitic is therefore obligatorily present, in order to absorb nominative case, either because it, being a special clitic in the sense of Zwicky (1977), raises to a position where it is locally c-commanded by CT, or because clitic pronouns have inherent case (Platzack & Holmberg 1995). I leave this detail for future work.

[4] I use smaller font to distinguish the internal syntax of the CT head from the remainder of the clausal structure.

[5] Wolof clitics generally adjoin to the highest functional projection in the clause. For more details and different analyses, see Dunigan 1994, Russell 2006, and Martinović 2015.

[6] Support for the fact that elements in Spec,CTP do not have nominative case comes from the fact that strong pronouns, which are in Wolof only found in positions not receiving structural case (as complements of prepositions and in the topic position) can be out-of-the-blue subjects in V-raising clauses.

3.3. Cartography in Wh-raising

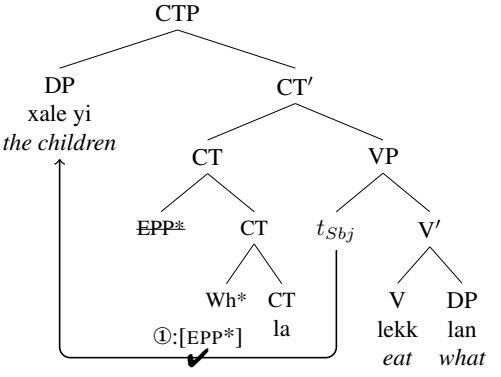
The CT in Wh-raising clauses has the structure in (12). The [EPP*] feature is again responsible for subject movement to Spec,CTP, and the [Wh*] feature for the movement of the *wh*-phrase to Spec,CTP.

(12) $[_{CT}\ [_{CT}$ EPP* $[_{CT}$ Wh* CT]]]

The Wh-raising clause in (13) has the structure in (14) after the subject moves to check [EPP*].

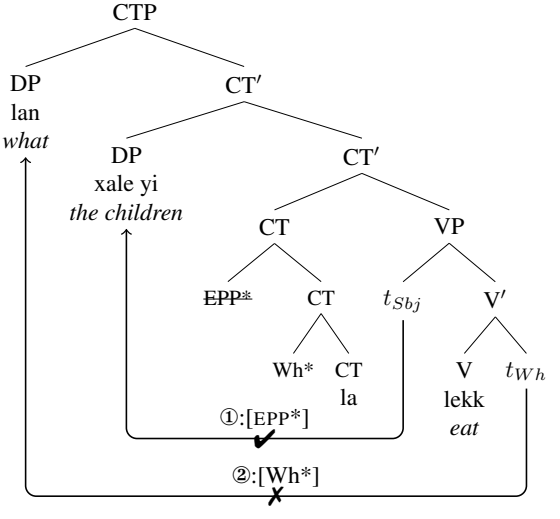
(13) Lan la xale yi lekk?
what C_{Wh} child DEF.PL eat
"What did the children eat?"

(14)



The next feature to be checked is [Wh*], which also requires a DP with the corresponding feature to move to Spec,CTP. This, however, is an illicit construction in Wolof; an object *wh*-question can have neither the form in (15), nor for example one in which the *wh*-phrase tucks in between the subject and CT, in the sense of Richards (1997, 1999). I therefore argue that (at least) the CT head in Wolof does not allow for two specifier positions.

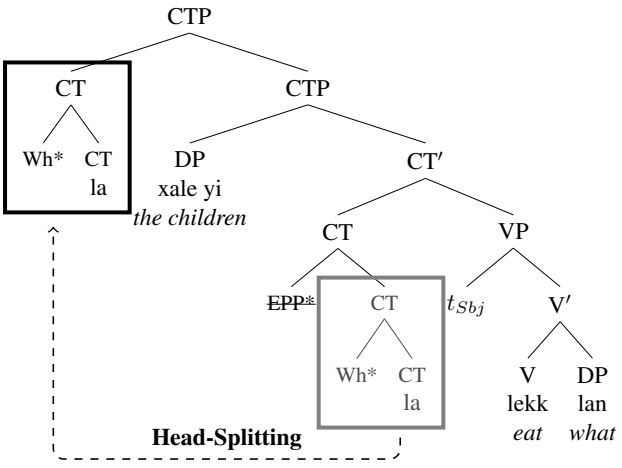
(15) *



There is, however, another way to derive the desired structure, and this is to split off the node dominating [Wh*], and remerge it in a higher position, thus forming a new head, as in (16).[7]

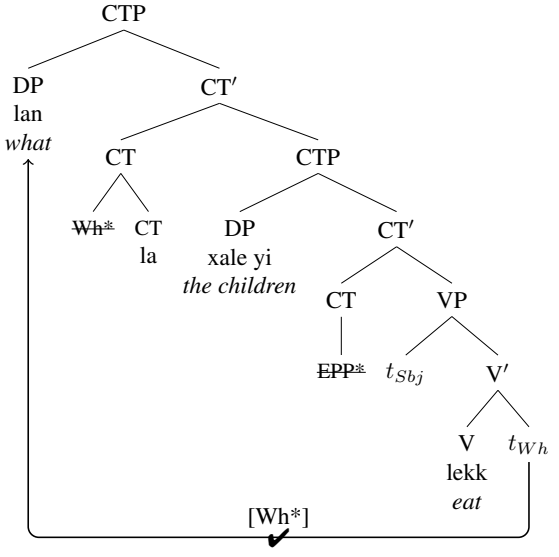
[7]There is a worry that Head-Splitting as it is presented here necessarily involves some type of look-ahead, because an attempt to check [Wh*] must first be made, and be filtered out by the ban on two specifiers. Head-Splitting would then be a last-resort, repair mechanism, which would entail undoing the illicit *wh*-movement step. One way to get around this would be to allow Head-Splitting to apply at any point in the derivation, meaning that every feature may split off and reproject. Derivations containing unwarranted instances of Head-Splitting (i.e. those that are not licensed by a failure in the derivation), would then be filtered out by a general Economy condition, favoring phrase markers that check as many features as possible in the smallest span of structure.

(16)



[Wh*] now probes again, from its new position, and can be checked by the movement of the object *wh*-phrase *lan*:

(17)



Wh-raising clauses then contain a split CT head, yielding the traditional C-T separation. Head-splitting in this case occurs because of a feature-checking failure; namely the [Wh*] feature on CT cannot be checked because there is no available position for the Wh-phrase to move into, since the subject is already moved into Spec,CTP to check [EPP*].

Several remarks are in order at this point. First, recall that no subject clitic co-occurs with a non-clitic subject in Wh-raising clauses. I propose this to be the result of Head-Splitting itself. Namely, when part of the CT splits off and remerges by adjoining to CTP, it now locally c-commands the subject DP, located in Spec,CTP where it checked [EPP*]. Under my assumption that nominative case is assigned in precisely this configuration, the subject DP can now receive it and clitic doubling does not take place. This readily explains the availability of a subject position below CT in Wh-raising clauses, as opposed to V-raising ones.

Second, for the analysis to go through it is crucial to assume the problematic difference between head movement and phrasal movement. As we saw, both V-raising and Wh-raising clauses involve two movement operations, but with different consequences – phrasal movement and head movement to the same projection are allowed, but two phrasal movements are not. I do not take up this question here, but adopt the standard assumption that heads adjoin to heads when moving, and that phrases move to specifier positions.

4. Discussion and conclusions

In this paper we investigated two Wolof clause-types that differ in the amount of structure over which features of C and T are distributed: they are contained on one head, yielding non-cartographic effects, or spread over two heads, resulting in cartographic effects. I proposed a novel mechanism, Head-Splitting, which derives both clause-types, relying on the mechanism of strictly ordered feature-checking and cyclic partial head-reprojection.

The proposal laid out here addresses the fundamental question of how a syntactic structure is built, and is as such highly relevant for one of the central questions resulting from the work on cartography – whether all functional elements are always present in the functional spine in all languages, or not. A strong version of the cartographic approach assumes that all functional heads are always in the structure, and cross-linguistic variation results from the presence or absence of Merge and/or Move and the overt or covert nature of functional heads and their specifiers. According to a weaker version of the cartographic approach, all functional projections are not necessarily always present in the functional structure, but if they do appear, they do so in a particular hierarchical order. Some proposals, such as the one laid out in Bobaljik & Thráinsson 1998, argue that the same features are in some languages spread over more functional heads, and in others bundled on fewer heads, as a point of parametric variation. My analysis takes a middle position, in that it assumes that the hierarchy of functional projections is transferred into a feature hierarchy inside a head, which may, via Head-Splitting, result in a hierarchy of projections. In other words, constructions that on the surface have less structure do have fewer projections, but the functional hierarchy may be preserved inside the head in the feature geometry.

This work also adds a novel perspective to the long-standing discussion on the nature of the connection between C and T. It has long been noted that C and T are not completely independent of one another, but share a host of properties. This is often captured via selection, however, the overwhelming cross-linguistic evidence for this connection makes such an analysis, reserved for idiosyncratic behaviors, unlikely. Wolof data show that there are languages in which C and T appear to be separate heads in some structures, and one head in other structures, pointing to their unified origin. The analysis advocated in this work allows us to capture the C-T link in a new way.

Finally, the analysis advocated here relates to the proposal that all features start on one head and are then spread over a larger amount of structure – the Feature Inheritance (FI) approach (Chomsky 2005, 2008; Richards 2007, 2011; Ouali 2008; Miyagawa 2010). In FI, all features that may trigger syntactic operations are initially located on phase heads, and present on other heads only by being passed down via some type of inheritance mechanism. One of the more obvious problems with FI is that the downward inheritance is at variance with strict cyclicity, in that it assumes that featureless heads are merged into the derivation, inherit features from a higher head, after it is merged, and then trigger syntactic operations which may lead to countercyclic Move or Merge. The present proposal in terms of partial head reprojection, on the other hand, is strictly cyclic and proceeds upward, offering an alternative to FI.

This analysis has potential repercussions for a variety of phenomena resting on the observation that there is cross-linguistic variation in the correspondence between the number of functional features and heads, most notably in the verbal inflectional layer and the left periphery, and for phenomena in which a certain element is sometimes instantiated in one position, and other times in another, in one and the same language (e.g. affixation vs. periphrasis inside one paradigm; definiteness marking in DPs in Scandinavian, etc.).

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