A UNIFIED OPERATOR MOVEMENT ANALYSIS FOR ADVERBIAL CLAUSES AND RELATIVE CLAUSES IN SWAHILI

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Abstract

This study addresses structural similarities and differences between adverbial clauses and relative clauses in Swahili and proposes a unified operator-movement for both. Its main contributions are twofold: first, it supports numerous theoretical hypotheses with facts from Swahili, including the operator movement analysis of adverbial clauses as well as relative clauses, and a truncated left periphery of adverbial clauses. Second, it challenges some of the previous analyses of Swahili relative clauses and provides a novel account with insights gained from adverbial clauses.

1 Introduction

The type of adverbial clause in Swahili analyzed in this paper is introduced by a so-called *subordinator* (*-vyo* and *-po* in the examples below). The kinds of adverbial meaning that are available in this construction are the coincidence of time (1a, 1b), location (1b), and manner (1c)[2].

[1] This paper was completed during my master's degree at the Department of Linguistics, University of Rochester

[2] Abbreviations in this paper:
SG - Singular; SM - Subject Marker; OM - Object Marker; PST - Past Tense; FUT - Future Tense; SUB - Subordinator; REL - Relative Marker; IND - Indicative; APPL - Applicative; PERF - Perfective; DEM - Demonstrative; PASS - Passive; NEG - Negation

(1) a. ni-li-pig-a chafya Baraka a-li-**vyo**-kat-a ki-tungu
1SG-PST-hit-IND sneeze Baraka 1SM-PST-**SUB**-cut-IND 7-onion
I sneezed when Baraka cut the onion.

b. ni-li-pig-a chafya Baraka a-li-**po**-kat-a ki-tungu
1SG-PST-hit-IND sneeze Baraka 1SM-PST-**SUB**-cut-IND 7-onion
I sneezed when/where Baraka cut the onion.

c. ni-ta-m-pend-a huju m-bwa Baraka a-li-**vyo**-m-pend-a
1SM-FUT-3OM-like-IND 3-DEM 3-dog Baraka 1SM-PST-**SUB**-3OM-like-IND
I will love this dog as Baraka loved him.

The surface position of the subordinator is noteworthy. It looks like this morpheme is responsible for clause subordination, which suggests it is a type of C. However, it appears to be located closer to the verb stem than tense, seemingly violating the Mirror Principle (Baker, 1985). Similar phenomenon is also found in Swahili relative clauses (2), where the relative marker also appears between tense marker and verb stem.

(2) si-ku-ki-pend-a ki-tungu a-li-**cho**-kat-a Baraka
NEG.1SG-NEG.PST-7OM-like-IND 7-onion 1SM-PST-**7REL**-cut-IND Baraka
I don't like the onion which Baraka cut.

The similar distribution of subordinator and relative marker has been noticed in previous literature as a similarity between adverbial clauses and relative clauses in Swahili (Thompson et al. (1985); Lindfors (2004); Ermisch (2012); Ashton (1947)). In fact, structural similarity between adverbial clauses and relative clauses is not uncommon across different languages (Hetterle (2015); Thompson et al. (1985); Declerck (2003)), and for this reason, these two clause types have received a unified account. For adverbial clauses there is a line of work following the hypothesis that they are derived by moving an operator (such as *when* and *where*) to the left periphery (Geis (1970); Demirdache and Uribe-Etxebarria (2004); Bhatt and Pancheva (2017) among others in Haegeman (2012)). Similarly, the operator movement analysis for relative clauses assumes that the CP is adjoined to the relativized NP, and an operator, generated in the subordinate clause, moves to Spec,CP. However, for these two clause types in Swahili, no previous literature has given a unified derivational account.

This study aims to develop and argue for such a unified account. This paper is organized as follows. In section 2, I present data showing that there are more similarities between these two clause types in Swahili, but there is also a key difference in word order. In section 3, I will sketch my proposal for this type of adverbial clause. Specifically, I will propose that the subordinator is actually the operator, and three different positions in which it appears are results of post-syntactic cliticization with phonological constraint on the destination. In section 4, I will show that this analysis can be extended to relative clauses. I will also defend the key proposal that the relative marker is the operator in relative clauses against previous alternative analysis that it is the complementizer. Finally in section 5, I will address the word order asymmetry between relative clauses and adverbial clauses and account for the fact that post-verbal subject is obligatory in some

relative clause constructions while it is not in adverbial clauses. I will argue that the root cause of the word order asymmetry is the truncated left periphery of adverbial clauses. Unless otherwise noted, all data in this paper come from original fieldwork.

2 Adverbial clauses and relative clauses: similarities

Relative clauses in Swahili have characteristic properties. To explore the similarities between Swahili adverbial clauses and relative clauses, we must diagnose whether adverbial clauses also have such properties. A property of Swahili relative clauses is their three different formation strategies recognized in many previous works (Ermisch (2012); Ngonyani (2006); Barrett-Keach (1980); Schadeberg (1989) among others), as shown in (3).

(3) Three relative constructions in Swahili (Ngonyani (2006)).

a. vi-tabu [$_{CP}$ amba-**vyo** Juma a-li-nunu-a] ni ghali
8-book [$_{CP}$ amba-**8REL** Juma 1SM-PST-buy-IND] be expensive
The books Juma bought are expensive.

b. vi-tabu [$_{CP}$ a-li-**vyo**-nunu-a Juma] ni ghali
8-book [$_{CP}$ 1SM-PST-**8REL**-buy-IND Juma] be expensive
The books Juma bought are expensive.

c. vi-tabu [$_{CP}$ a-nunu-a-**vyo** Juma] ni ghali
8-book [$_{CP}$ 1SM-buy-IND-**8REL** Juma] be expensive
The books Juma buys are expensive

In these constructions, the class 8 relative marker (*-vyo*) has three different surface positions. In (3a), *-vyo* attaches to the complementizer *amba*. In (3b), it appears between the tense marker and the verb stem. In (3c), where the tense marker is absent, it is attached at the end of the complex verb after the final vowel. Interestingly, subordinators in adverbial clauses can appear in the exact same three positions, as shown in (4).

(4) a. ni-li-pig-a chafya [$_{CP}$ amba-**po** Baraka a-li-kat-a ki-tungu]
1SG-PST-hit-IND sneeze [$_{CP}$ amba-**SUB** Baraka 1SM-PST-cut-IND 7-onion]
I sneezed where Baraka cut the onion

b. ni-li-pig-a chafya [$_{CP}$ Baraka a-li-**po**-kat-a ki-tungu]
1SG-PST-hit-IND sneeze [$_{CP}$ Baraka 1SM-PST-**SUB**-cut-IND 7-onion]
I sneezed when Baraka cut the onion

c. ni-ta-pig-a chafya [$_{CP}$ Baraka a-kat-a-**po** ki-tungu]
1SG-FUT-hit-IND sneeze [$_{CP}$ Baraka 1SM-cut-IND-**SUB** 7-onion]
I will sneeze when Baraka cuts the onion.

Beside the common positions of the relative marker and the subordinator, another similarity is observed in the morphology of relative markers and subordinators. Notice that both relative markers and subordinators have an *-o* ending. Barrett-Keach (1986) points out that the *-o* ending is characteristic of pronominal clitics in Swahili. As shown in (5), pronominal clitics in Swahili consist of a noun class agreement prefix and the *-o* morpheme.

(5) Kata nyama kwa-cho
cut meat with-7o
Cut the meat with it
(Barrett-Keach (1986))

The relative markers (*-vyo* and *-cho*) and the subordinators (*-vyo* and *-po*) that we have seen so far can also be decomposed in this way. Notice that in the relative clauses in (2) and (3), relative markers have the same noun class feature as the relativized NPs. On the other hand, the subordinators *-vyo* and *-po* have the same forms as the known class 8 and class 16 relative markers respectively. Thus, both relative markers and subordinators can be analyzed as the exponent of a pronominal clitic *-o* with a noun class feature.[3]

The third similarity is that adverbial clauses can actually act as relative clauses, modifying an overt NP denoting time, place and manner (6).

(6) a. ni-li-pig-a chafya **mda** [CP Baraka a-li-**po**-kat-a ki-tungu]
1SG-PST-hit-IND sneeze time [CP Baraka 1SM-PST-SUB-cut-IND 7-onion]
I sneezed at the time when Baraka cut the onion.

b. ni-me-li-on-a gari **mahali** [CP Baraka a-li-**po**-li-on-a
1SG-PERF-5OM-see-IND car place [CP Baraka 1SM-PST-SUB-5OM-see-IND
jana]
yesterday]
I have seen the car at the place where Baraka saw it yesterday

c. ni-ta-m-pend-a huju m-bwa **jinsi** [CP amba-**vyo** Baraka
1SG-FUT-3OM-like-IND 3-DEM 3-dog manner [CP amba-SUB Baraka
a-li-m-pend-a]
1SM-PST-3OM-like-IND]
I will love this dog the way Baraka used to love him.

Thus, the collected data demonstrate that this type of adverbial clause in Swahili shares most of the recognized characteristic properties of relative clauses, except for the order of the subject and the complex verb in the *amba*-less constructions: In relative clauses, the subjects must appear after the verb, while this order is not obligatory in adverbial clauses. This phenomenon will be accounted for in section 5. For now, I conclude that adverbial clauses of this kind have more similarities with relative clauses in Swahili than previously recognized, and this level of similarity is sufficient to motivate a unified analysis for these two clause types.

[3] The pronominal status of relative markers is also suggested by some early descriptive work which categorized them as relative pronouns (Zwart (1997); Gregersen (1967) among others)

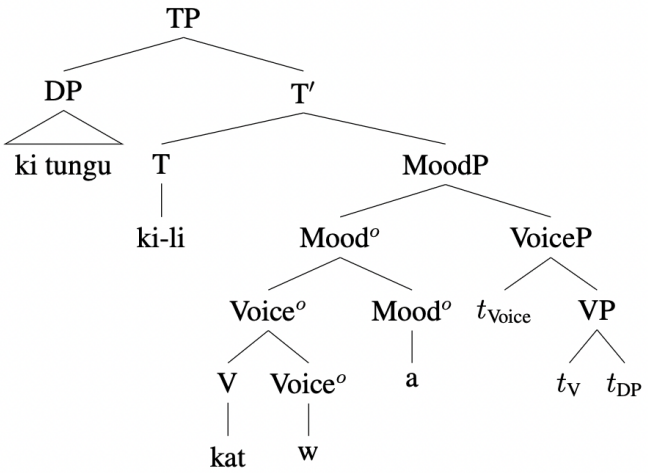
3 Proposed analysis for adverbial clauses

In this section, I firstly present an operator movement analysis for the three constructions of adverbial clauses presented in the previous section. I then extend this analysis to relative clauses in section 4. I start with specifying some assumptions about the Swahili clause structure.

For the structure of Swahili verbal morphology, I adopt the analysis of Kilega in Carstens (2005). Like Kilega, The Swahili verb consists of a set of prefixes and suffixes. The prefixes include morphemes for subject agreement and tense, and the suffixes include morphemes indicating mood, passivization and so on. In the case of Kilega, Kinyalolo (2003) argues that the suffixes are attached via V-raising through various functional projections, assuming left head adjunction (Kayne, 1994). This head raising terminates in a position lower than T, which is identified as Mood, and prefixes stay in their base generated positions. Additionally, T is assumed to have an unvalued *Phi*-feature bundled with an EPP feature that agrees with the closest DP in noun class and moves it to the Spec-TP position. Thus, the sentence (7a) has the structure in (7b). In this case, T agrees with the class 7 DP *ki-tungu*, is phonologically realized as *ki-li*, and moves the DP to the Spec,TP position.[4]

(7) a. ki-tungu ki-li-kat-w-a
7-onion 7SM-PST-cut-PASS-IND
the onion was cut

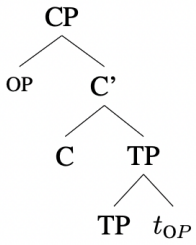
b.



For my analysis, I follow the hypothesis that adverbial clauses are derived by moving an operator to the left periphery (Geis (1970) among others). Thus, another assumption to specify is the extraction position of the operator. Since expressions of time, location and manner of events are syntactically realized as TP or VP adjuncts, it's reasonable to assume that the extraction positions of operators in these adverbial clauses are TP or VP adjunct positions. I only demonstrate my analysis on time and location adverbial clauses, and I assume that the extraction position of the operator in this case is the TP adjunct position. Thus, I assume the following abstract structure for temporal adverbial clauses.

[4] Movement is indicated by trace

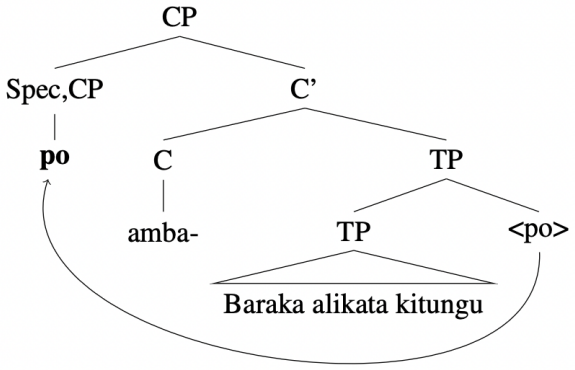
(8) Abstract structure for temporal adverbial clauses



With necessary assumptions specified, I propose that in Swahili adverbial clauses, the subordinator is the exponent of the operator which is base generated with a noun class feature. This proposal is motivated by the fact that in the operator movement analysis for English relative clauses and adverbial clauses, the operators in both cases are wh-words, and wh-words are a type of pronoun. In Swahili adverbial clauses and relative clauses, the pronominal elements that have the similar *-o* form are the subordinator and the relative marker, as discussed in the previous section. Thus, it is reasonable to analyze them as operators. The operator is then raised to Spec,CP by C. The analysis so far is illustrated in (9).

(9) a. ...[CP amba-**po** Baraka a-li-kat-a ki-tungu]
...[CP amba-**SUB** Baraka 1SM-PST-cut-IND 7-onion]
... Where baraka cut the onion.

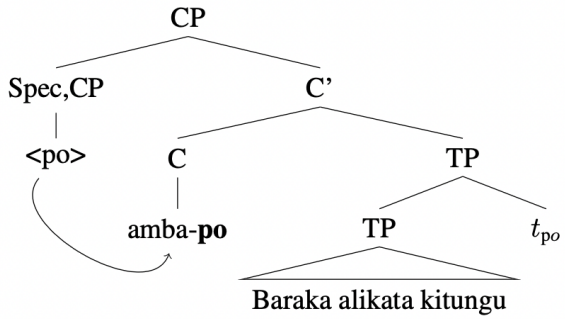
b. The operator *-o* generated with a class 16 feature, realized as *po*.



Notice that the word order in (9b) is not yet the surface order in (9a), and I proposed that the three surface positions of the operator is derived by post-syntactic movement. Specifically, after all movements in syntax, the operator cliticizes onto the right of some head (C, T or Mood) through m-merger (Matushansky, 2006). I propose that there is a phonological constraint on the destination of cliticization, where the head that the operator cliticizes onto should have more than one syllable. In other words, the operator always cliticizes onto the highest head that is neither empty nor monosyllabic, skipping any empty or monosyllabic heads. Thus, in (9b), *po* cliticizes onto C, since it is the highest head with more than one syllable.

(10) a. ...[CP amba-**po** Baraka a-li-kat-a ki-tungu]
...[CP amba-**SUB** Baraka 1SM-PST-cut-IND 7-onion]
... Where baraka cut the onion.

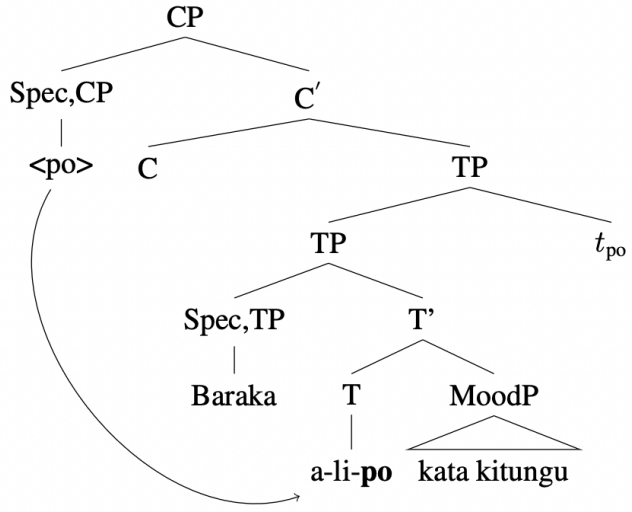
b. The operator *po* cliticizes onto *amba-*



For the second construction without *amba* (4b), since C is phonologically empty, the next available head for the cliticization is T, which is realized with two syllables as *a-li* (11) (Recall that there is no V to T movement in Swahili).

(11) a. ...[CP Baraka a-li-**po**-kat-a ki-tungu]
...[CP Baraka 1SM-PST-**SUB**-cut-IND 7-onion]
... where Baraka cut the onion

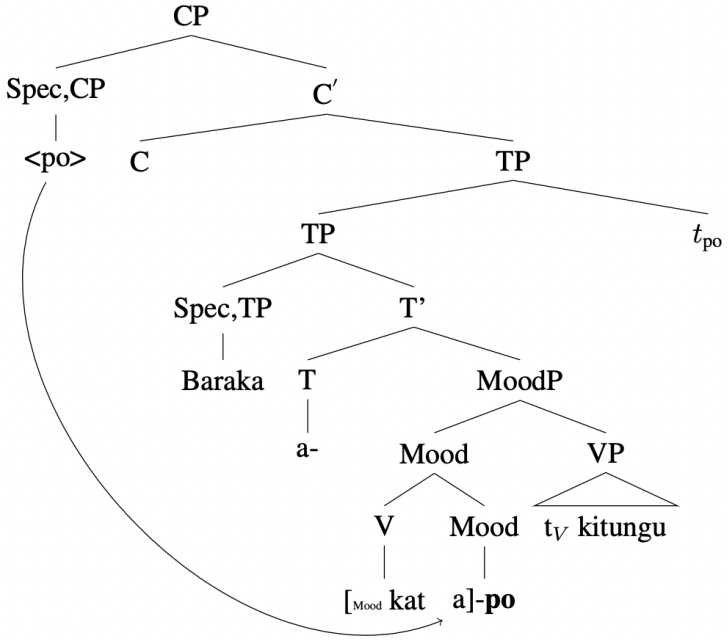
b. The operator *po* cliticizes onto T.



Finally, in the tenseless case (4c), C is empty and T is monosyllabic. For this reason, C and T are not possible destinations for cliticization, and the operator cliticizes all the way onto Mood.

(12) a. ...[CP Baraka a-kat-a-po ki-tungu]
...[CP Baraka 1SM-cut-IND-SUB 7-onion]
... When Baraka cuts the onion

b. The operator *po* cliticizes onto Mood



In summary, my analysis for adverbial clauses proposes that the subordinator is in fact base generated as an operator with a Φ-feature of a noun class, and raised to Spec,CP. This operator is then post-syntactically cliticizes onto the highest head pronounced with more than one syllables. However, it is unclear why the noun class features of the operators are class 8 and 16 in these cases. A partial explanation is that class 16 is the noun class for *place*, thus the class 16 operator is used in locative adverbial clauses (Ermisch (2012); Ashton (1947); Mpiranya (2014)). But it is not clear why the class 16 operator can also be used in temporal adverbial clauses, and the class 8 subordinator can be used in both temporal and manner ones. A possible explanation is that the class 16 operator can be alternatively interpreted as *time* in semantics, depending on the context, and similarly the class 8 operator can be interpreted as both *time* and *manner* in appropriate contexts.

4 A unified analysis for adverbial and relative clauses

In this section, I will show that the analysis proposed in the previous section can also apply to relative clauses. I argue that relative markers should receive the same analysis as subordinators in adverbial clauses that they are relative operators, and thus the operator movement analysis of relative clauses instead of the raising analysis should be adopted.

4.1 Previous analyses of Swahili relative clauses

Some previous analyses of relative clauses in Swahili propose that the relative marker is the exponent of an agreeing relative C, which has an unvalued Φ-feature that agrees with the Φ-feature

of the relativized NP (Ngonyani (2006); Henderson (2004); Henderson (2006)). Ngonyani (2006) argues for the complementizer status of the relative marker with the following sentence (13). He argues that relative markers are complementizers because they cannot co-occur with conditional markers, which he assumes are also complementizers.

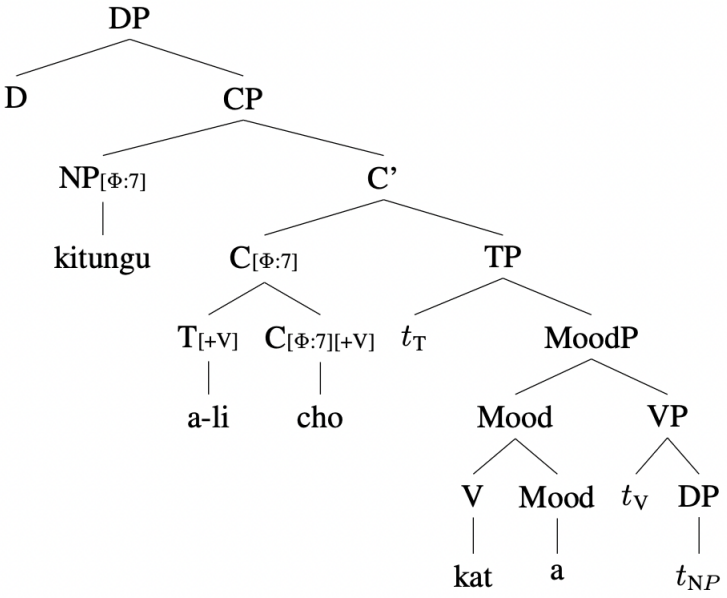
(13) *a-si-**po**-**vyo**-nunu-a vi-tabu, h-a-ta-som-a
1SM-NEG-**COND**-**8REL**-buy-IND 8-book, NEG-1SM-FT-read-IND
If she/he does not buy books, she/he will not read.
Ngonyani (2006)

Subsequently, they proposed that the relativized NP is raised to the left periphery of the relative clause by the EPP-feature in C, and thus Ngonyani (2006) argues for a raising analysis of relative clauses (Kayne (1994); Bianchi (2011)). Below I will demonstrate Ngonyani (2006)'s analysis.

The raising analysis for relative clauses assumes that the relative CP is the complement of D, and the overt NP is raised to Spec,CP. In Ngonyani (2006)'s implementation, C has a [+V] feature in addition to the Φ-feature. According to the *Attract F* operation (Chomsky, 1995), C attracts the closest syntactic object α with the same [+V] feature, causing it to merge with C. Then it agrees with and raises the relativized NP to the Spec,CP position. Finally, the complex C is post-syntactically lowered to attach to the verb stem.

(14) a. [$_{CP}$ ki-tungu a-li-**cho**-kat-a]
[$_{CP}$ 7-onion 1SM-PST-**7REL**-cut-IND]
Onion which he cut.

b. The raising analysis of Swahili relative clauses (Ngonyani, 2006)



Specifically, as shown in (14), in the tensed *amba*-less construction, T is proposed to bear the [+V] feature, thus it is attracted by C to merge with it. C also agrees with the class 7 NP *kitungu*

and raises it to Spec,CP. C with the class 7 feature is then pronounced as *cho*. Finally, the complex C *alicho* is lowered to attach to the verb stem, forming the complex verb *alichokata* [5].

Ngonyani (2001) provides some facts as supporting evidence for a head raising analysis. These facts show that the head of the relative clause is connected to a lower position within the clause, suggesting that the head is based generated under the relative clause. Example (15) is a case where the possessive pronoun *chake* (his/her) inside the head of the relative clause is bound by the quantified noun phrase (QNP) *kila mwandishi* (every writer), while the quantifier is generally assumed to take scope over its c-command domain. Thus, for the QNP to take scope over the head, the head must be base generated below the QNP and be reconstructed to that position at the LF level.

(15) ki-tabu **ch-ake**$_i$ ch-a kwanza [amba-cho **kila** **mw-andishi**$_i$ hu-ji-vun-i-a
7-book 7-3SG.POSS 7-CON first [amba-7REL every 3-writer HAB-RFL-proud
] hu-w-a ki-zuri sana
] HAB-be-IND 7-good very
Her/his first book for which the writer is very proud is usually very good
(Ngonyani, 2001)

Furthermore, example (16) shows that when the nominal part of an idiomatic expression is relativized, the idiomatic meaning is preserved. In Swahili, the expression "*to hit water*" in (16a) means "*to drink alcohol*". (16b) shows that when the nominal component of the idiom, *ma-ji* (water), is the relative head, with a gap inside of the idiom, the idiomatic meaning is preserved. Since idiomatic interpretation is carried by constituents, this fact also suggests that the head noun in (16b) is reconstructed to its base generated position within the relative clause, as the complement of the verb.

(16) a. komba a-li-pig-a ma-ji sana.
1.bushbaby 1SM-PST-hit-IND 6-water much
Bushbaby drank much beer.

b. ma-ji amba-yo komba a-li-ya-pig-a ya-li-ku-w-a
6-water amba-6REL 1.bushbaby 1SM-PST-6OM-hit-IND 6SM-PST-INF-be-IND
ma-kali.
6-fierce
The beer that Bushbaby drank was very strong.
(Ngonyani, 2001)

These facts serve as strong evidence for the head raising analysis of relative clauses. Since the operator movement analysis proposed in this work assumes an externally generated head of the relative clause, it is not able to account for these connectivity effects. However, there is also evidence that challenges the head raising analysis, which I will present below. The existence of this contradictory evidence might point to the conclusion that Swahili allows two different derivations of relative clauses — a raising derivation (responsible to the connectivity effects seen above) and

[5] See Ngonyani (2006) for detailed analyses of the other two relative constructions

an operator movement derivation (which produces relative clauses of the type discussed in this article). This would predict that connectivity effects, while available more generally, should not be found in the kind of relative clauses discussed here. I leave verifying this prediction for future research.

4.2 Evidence against the raising analysis

There is a piece of data that challenges the proposal for the relative marker made by Ngonyani (2006) and others that it resides in C and its noun class prefix is the result of agreement with the relativized NP. Consequently it challenges the raising analysis for relative clauses implemented by Ngonyani (2006). As shown in (17a) in which the relativized NP is *mda* (time), the relative marker (*po-*) doesn't agree with the relativized NP. *mda* has the noun class 3 indicated by its own noun class prefix (*m-*), the object agreement marker (*u-*) and the noun class prefix of the demonstrative (*u-*) in the matrix clause, but the relative marker *po* has the noun class 16.

(17) a. Si-ku-u-pend-a u-le m-da a-li-**po**-kat-a
NEG.1SG-NEG.PST-3OM-like-IND 3-DEM 3-time 1SM-PST-**16REL**-cut-IND
Baraka ki-tungu.
Baraka 7-onion
I didn't like that time when Baraka cut the onion

b. Si-ku-u-pend-a u-le m-da a-li-**o**-kat-a
NEG.1SG-NEG.PST-3OM-like-fv 3-DEM 3-time 1SM-PST-**3REL**-cut-IND
Baraka ki-tungu.
Baraka 7-onion
I didn't like that time when Baraka cut the onion

Note that it's not likely that *po-* is ambiguous between class 3 and class 16, especially when there is a relative marker specific to class 3 (17b). Another possible analysis for relative markers left under the raising analysis is that the relative markers are *relative determiners*. The relative determiner is the analysis that wh-words in English receive under the raising analysis. It is the determiner of the raised DP that raises the NP to the Spec,DP position, resulting in the following structure in English (18).

(18) The [CP [DP picture$_i$ [D which [t$_i$]] [C' ...

If the relative markers in Swahili were analyzed as relative determiners, then (17a) would have the following analysis in (19). However, *po* raising *mda* to the Spec,DP position also implies that it enters an agree relation with *mda*, unless we propose that this determiner is generated with a valued Φ-feature and an EPP feature, but such bundle of features is not testified in Bantu languages.

(19) ... [CP [DP mda$_i$ [D <po> [t$_i$]] [C' ali-**po**-kata...

Thus, given this piece of evidence, the raising analysis of Swahili relative clauses is challenged. In contrast, the operator movement analysis, proposed above for adverbial clauses, can derive this mismatch in Φ-features. When the relative markers are analyzed as operators base generated with

their own Φ-features, they can still have the same semantic denotations as the relativized NPs and be coindexed with them, while having different Φ-features.

Finally, the operator-movement analysis of relative clauses is compatible with fact that the relative marker can't co-occur with conditional markers, as shown in (13). It is entirely possible that conditional marker can be alternatively analyzed as operator. In fact, it has been argued in Bhatt and Pancheva (2017) that conditional clauses likely involve clause-internal operator-movement to Spec,CP. Thus the ungrammatically of (13) likely stems from two operators competing for the Spec,CP position. In other words, the complementary distribution of the two markers is not because they are both complementizers but rather because they are both operators.

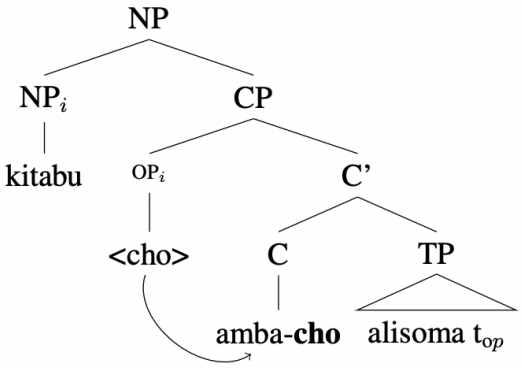
4.3 An operator movement analysis for Swahili relative clauses

Having established the operator status of relative markers, I will demonstrate in this section that the operator movement analysis for adverbial clauses proposed in section 3 can also apply to relative clauses. In relative clauses, the *-o* final relative marker is the relative operator base generated in the argument position for the relativized NP, most of the time with the same Φ-feature as the relativized NP (except for the cases like (17a)). It is then raised to Spec,CP by C and post-syntactically cliticizes onto the highest head with more than one syllables.

In the *amba* construction, after the operator is raised to Spec,CP, it cliticizes onto C (*amba*) which is the highest head with more than one syllables.

(20) a. ki-tabu [CP amba-**cho** a-li-som-a]
7-book [CP amba-**7REL** 1SM-PST-read-IND]
the book that he read

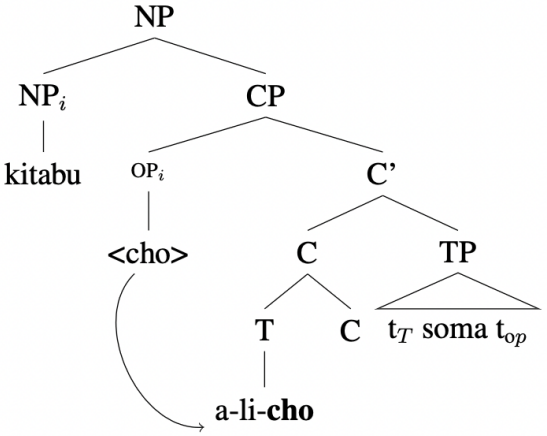
b. Proposed syntax of *amba*-relatives (final)



In the tensed *amba*-less construction, following Ngonyani (2006)'s analysis, T moves to C (Later I will show that T doesn't move to C in adverbial clauses), forming a complex C (T-C). In this case the highest head with more than one syllables is also C (*a-li*), onto which the raised operator cliticizes.

(21) a. ki-tabu a-li-**cho**-som-a
7-book 1SM-PST-**7REL**-read-IND
the book that he read

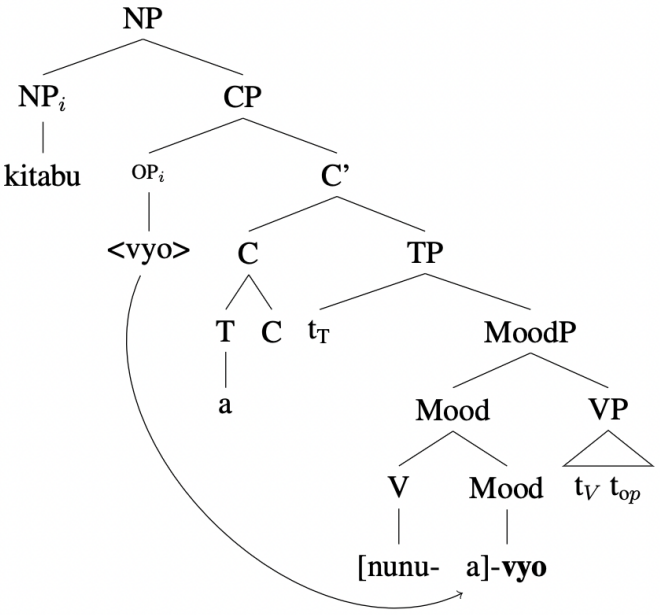
b. Proposed syntax of tensed relative (to be revised in section 5)



Finally, in the tenseless *amba*-less construction, I propose that T also moves to C, and the verb stem stays in situ, contrary to Ngonyani (2006)'s analysis that the verb stem moves to C. In this case, T is monosyllabic because it only bears the subject marker, thus after T moves to C, C is also monosyllabic. Then the highest head with more than one syllables is Mood. Thus, the raised operator cliticizes onto Mood.

(22) a. vi-tabu a-nunu-a-vyo
8-book 1SM-buy-IND-8REL
The books he buys

b. Proposed syntax of tenseless relatives (to be revised in section 5)



Note that derivations in (21b) and (22b) don't account for the cases where an overt subject is present in the relative clause. Since overt subject situates in Spec,TP, and T has moved to C, the overt subject will intervene between the T-C complex and the verb stem, resulting in the following ungrammatical morpheme order.

(23) Ungrammatical morpheme order when overt subject is present

a. *ki-tabu a-li-cho Juma som-a
7-book 1SM-PST-7REL Juma read-IND

b. *vi-tabu a Juma nunu-a-vyo
8-book 1SM Juma buy-IND-8REL

This problem is related to the treatment of post-verbal subjects in relative clauses and the word order asymmetry between relative clauses and adverbial clauses. I return to this issue in section 5, where I revise the analysis slightly the derive the correct position of overt subjects in relative clauses.

4.4 Accounting for additional facts

In this section, I demonstrate that the analysis proposed here derives two additional facts about relative clauses, discussed in Ngonyani 2006. The first is that in tenseless negative relative clauses, instead of attaching to the end of the verb, the relative operator actually attaches to the end of the negative marker, before the verb stem.

(24) a. *ki-tabu tu-si-som-a-**cho**
7-book we-NEG-read-IND-**7REL**

b. ki-tabu tu-si-**cho**-som-a
7-book we-NEG-**7REL**-read-IND
the book which we do not read.
Ngonyani (2006)

Since there is no tense marker in (24b), the position of the relative marker seemingly violates the generalization that the operator attaches to the end of the verb in tenseless relative clauses. My proposal states that the position of the operator is actually determined by the phonological property of the target of cliticization. Thus, if we posit that *tu-si* is a single disyllabic head for NEG, we can explain why the operator cliticizes onto this position even though the clause is tenseless.

Another fact is that some verbs only allow the *amba-* construction of relative clauses. An example is the verb "to have" in the present tense given in Ngonyani (2006).

(25) a. m-toto a-na ki-tabu
3-child 1SM-with 7-book
the child has the book

b. *ki-tabu a-na-cho m-toto
7-book 1SM-with-7REL 3-child

c. ki-tabu amba-cho m-toto a-na-cho
7-book amba-7REL 3-child 1SM-with-7OM
the book that the child has
Ngonyani (2006)

Notice that the present tense of this verb doesn't have a tense marker, thus T only bears a monosyllabic subject marker, and the verb stem is also monosyllabic. Notice that although *a-na* itself is disyllabic, it is formed by two separate monosyllabic heads, thus there is no available head in the CP domain for the operator to cliticize onto. Therefore, the *amba* construction is the only possible option.

5 Word order asymmetry between relative clauses and adverbial clauses

A difference between Swahili relative clauses and adverbial clauses is that in *amba*-less constructions, the subject must be post-verbal in relative clauses, while in adverbial clauses it can be pre-verbal. Relevant examples are repeated below.

(26) ni-li-pig-a chafya [CP **Baraka** a-li-po-kat-a ki-tungu]
1sg-PST-hit-IND sneeze [CP **Baraka** 1SM-PST-SUB-cut-IND 7-onion]
I sneezed when Baraka cut the onion

(27) a. vi-tabu [CP a-li-vyo-nunu-a **Juma**] ni ghali
8-book [CP 1SM-PST-8REL-buy-IND **Juma**] be expensive
The books Juma bought are expensive.

b. *vi-tabu [CP **Juma** a-li-vyo-nunu-a] ni ghali
8-book [CP **Juma** 1SM-PST-8REL-buy-IND] be expensive

While there are cases in which subject follows the verb in adverbial clauses, later in this section I show that this is not the same kind of phenomenon as the post-verbal subject in *amba*-less relative clauses.

(28) ni-li-pig-a chafia [a-li-po-kat-a **Baraka** ki-tungu]
1SG-PST-hit-IND sneeze [1SM-PST-SUB-cut-IND **Baraka** 7-onion]
I sneezed when Baraka cut the onion

In this section, I adopt and extend Ngonyani (2006)'s MoodP topicalization analysis to account for the obligatory post-verbal subject in *amba*-less relative clauses, and argue that the word order asymmetry between these two clause types is caused by the truncated left periphery of adverbial clauses. Finally, I provide a separate account for post-verbal subjects in adverbial clauses, which is actually a general phenomenon in Swahili clauses.

5.1 MoodP topicalization in relative clauses

Recall that the partial operator movement analysis proposed in section 4.3 was not able to derive the correct morpheme order for relative clauses with overt subjects. Since T always moves to C in *amba*-less relative clauses, and the overt subject situates in Spec,TP, the overt subject intervenes between the T-C complex and the verb stem (29).

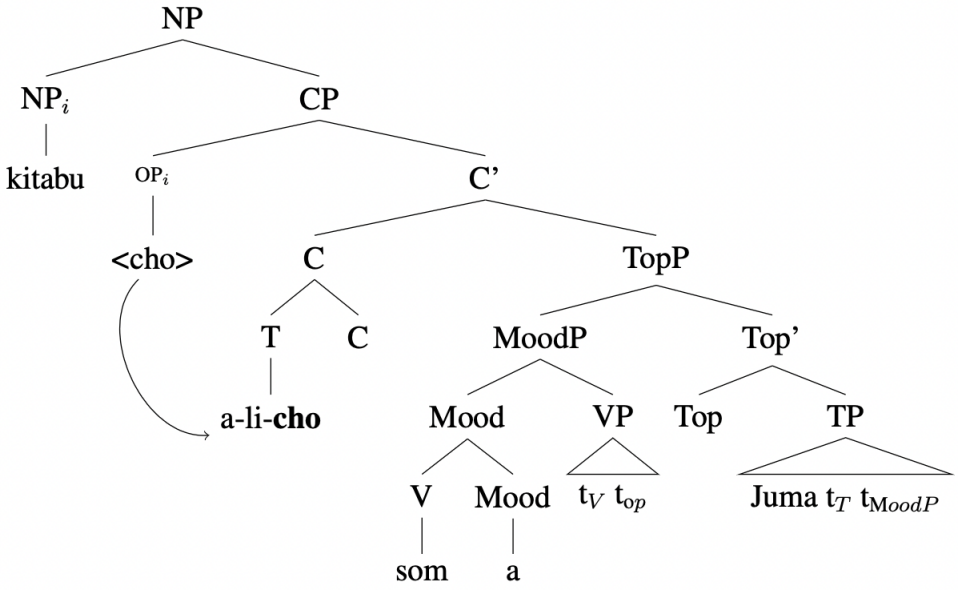
(29) Ungrammatical morpheme order when overt subject is present

a. *ki-tabu a-li-cho Juma som-a
7-book 1SM-PST-7REL Juma read-IND
b. *vi-tabu a Juma nunu-a-vyo
8-book 1SM Juma buy-IND-8REL

To address this issue, Ngonyani (2006) proposes MoodP topicalization, where the MoodP is moved to Spec,TopP, a position higher than TP and lower than C. Applying this movement to (21b), the correct morpheme order of (30a) is derived.

(30) a. ki-tabu a-li-**cho**-som-a Juma
7-book 1SM-PST-**7REL**-read-IND Juma
the book that Juma read
Ngonyani (2006)

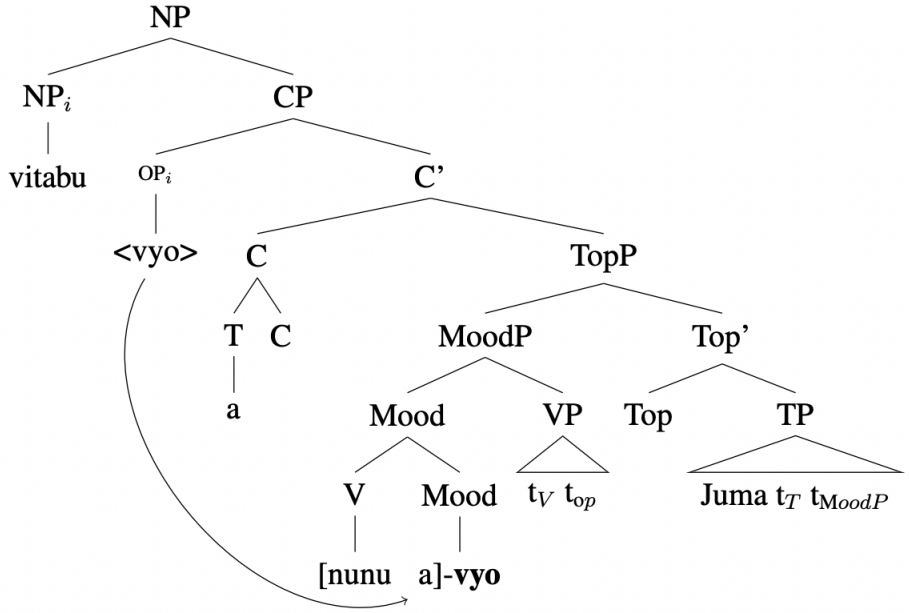
b. Proposed syntax for tensed relatives (final)



Ngonyani (2006) only proposes this movement for **tensed** *amba*-less relative clauses, since in his analysis of **tenseless** *amba*-less relative clauses, the verb itself moves to C and consequently precedes the subject, rendering MoodP topicalization unnecessary. Recall, however, that under the account proposed here, tensed and tenseless relatives have a more uniform derivation — in particular, the both involve T to C movement, and neither involves movement V to T movement. (See (21b) and (22b)). For this reason, MoodP topicalization is necessary in both to derive the post-verbal subject position. The complete derivation of a tenseless relative under my account is given in (31b).

(31) a. vi-tabu a-nunu-a-**vyo** Juma
8-book 1SM-buy-IND-**8REL** Juma
The books Juma buys
Ngonyani (2006)

b. Proposed syntax of tenseless relatives (final)



At this point, I conclude that the obligatory post-verbal subject in *amba*-less relative clauses is the result of two obligatory movements in these constructions: T to C movement followed by MoodP topicalization. These two movements cause both T and Mood to precede the subject, while still adjacent to each other, manifested as the subject following the verb.

5.2 Obligatory clustering of T to C movement and MoodP topicalization

As shown previously, because T moves to C in *amba*-less relative clauses, MoodP topicalization is required to derive the correct morpheme order. In this section I argue that in Swahili clauses, T to C movement and MoodP topicalization are actually obligatorily clustered, meaning that it is impossible for one movement to take place while not the other.

It has been shown that in *amba*-less relative clauses, since T moves to C, MoodP must move to Spec,TopP in order to derive the correct morpheme order.

(32) T to C movement requires MoodP topicalization.

a. *kitungu a-li-cho Baraka [$_{MoodP}$ kat-a]
onion 1SM-PST-7REL Baraka [$_{MoodP}$ cut-IND]
(+T to C, -MoodP top.)

b. kitungu a-li-cho-kat-a Baraka
onion 1SM-PST-7REL-cut-IND Baraka
The onion which Baraka cut
(+T to C, +MoodP top.)

On the other hand, in the *amba* construction of relative clauses, since C is already occupied, T doesn't move to C (20b). In this case, if MoodP moves to Spec,TopP, ungrammatical morpheme order will be derived.

(33) Absence of T to C movement precludes MoodP topicalization.

a. *ki-tabu amba-cho [$_{TopP}$ [$_{MoodP}$ som-a] [$_{TP}$ Juma [$_{T}$ a-li]]]
7-book amba-7REL [$_{TopP}$ [$_{MoodP}$ read-IND] [$_{TP}$ Juma [$_{T}$ 1SM-PST]]]
(-T to C, +MoodP top.)

b. ki-tabu amba-cho Juma a-li-som-a
7-book amba-7REL Juma 1SM-PST-read-IND
the book Juma read.
(-T to C, -MoodP top.)

Thus, I propose the following generalization for Swahili clauses.

(34) *T to C movement and MoodP to Spec,TopP movement mutually entail each other in Swahili clauses: The presence of one requires the other and the absence of one precludes the other.*

In the next section, I show that this generalization is responsible for the word order asymmetry between relative clauses and adverbial clauses.

5.3 Accounting for the word order asymmetry

In this section, I show that the word order asymmetry is caused by the truncated left periphery of adverbial clauses. It has been noticed for English that adverbial clauses resist argument fronting.

(35) a. *When her regular column she began to write again, I thought she would be OK.

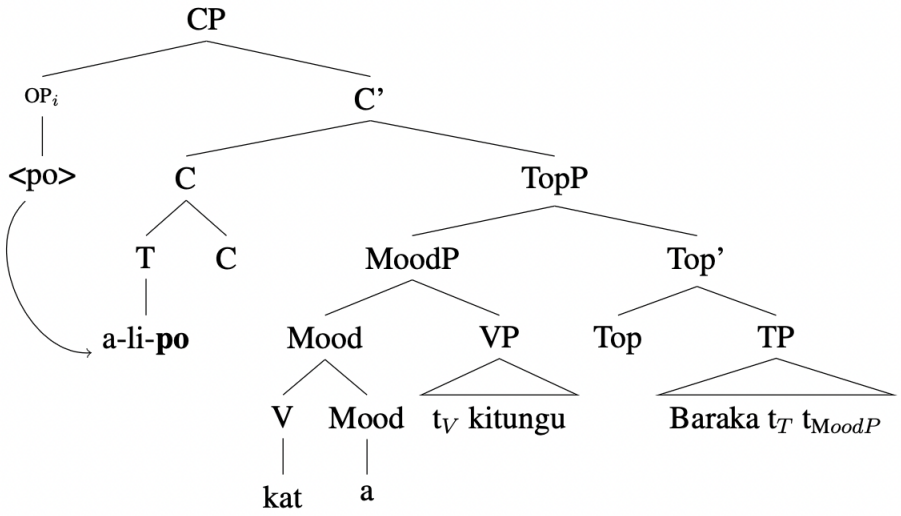
b. When she began to write her regular column again, I thought she would be OK.

Haegeman (2010) accounts for this fact by proposing that the left periphery of adverbial clauses is truncated. It states that several functional projections, including TopP, don't exist in the left

periphery of adverbial clauses. I argue that this is true for Swahili adverbial clauses as well: that there is no Topic project in Swahili adverbial clauses. For this reason, MoodP topicalization is impossible in adverbial clauses. Since MoodP movement is absent, T doesn't move to C because of (34). Thus, T and MoodP have to stay in situ in adverbial clauses. The following example demonstrate this fact by showing that if MoodP is topicalized and T moves to C in adverbial clauses, the sentence will be ungrammatical.

(36) a. *ni-li-pig-a chafya [CP a-li-po-kat-a ki-tungu **Baraka**]
1SG-PST-hit-IND sneeze [CP 1SM-PST-SUB-cut-IND 7-onion **Baraka**]
Intended: I sneezed when Baraka cut the onion.

b. When MoodP is topicalized and T moves to C in adverbial clauses, the sentence will be ungrammatical.



Notice that when an object is present in the subordinate clause, MoodP topicalization will result in the order such that the verb precedes the object, and the object precedes the subject (VOS). (36) shows that this order is not allowed in adverbial clauses. However, Ngonyani (2006) shows that this order is allowed in relative clauses.

(37) wa-toto [CP a-li-o-wa-nunul-i-a vi-tabu Juma] wa-me-furahi
2-child [CP 1SM-PST-2REL-2om-buy-APPL-IND 8-book Juma] 2SM-PERF-happy
The children for whom Juma bought books are happy
(Ngonyani, 2006)

In the relative clause in (37) in which the indirect object *watoto* is relativized, the direct object *vitabu* stays inside the relative clause, and it is moved with MoodP to a higher position than TP, preceding the subject *Juma*, resulting in the VOS order. Similarly, when the ungrammatical adverbial clause with the VOS order in (36a) acts as a relative clause, it becomes acceptable.

(38) si-ku-u-pend-a u-le m-da [CP a-li-po-kat-a
NEG.1SG-NEG.PST-3OM-like-IND 3-DEM 3-time [CP 1SM-PST-16REL-cut-IND
ki-tungu Baraka]
7-onion Baraka
I didn't like the time when Baraka cut the onion.

Thus, (37) and (38) serve as additional evidence for the MoodP topicalization and T to C movement analysis for the post-verbal subject in relative clauses, and the contrast between (36a) and (38) is evidence that TopP is absent in Swahili adverbial clauses, which results in the word order asymmetry between adverbial clauses and relative clauses.

5.4 Another kind of post-verbal subject phenomenon

As mentioned earlier, post-verbal subjects are also found in adverbial clauses, with example repeated below.

(39) ni-li-pig-a chafia a-li-po-kat-a **Baraka** ki-tungu
1SM-PST-hit-IND sneeze 1SM-PST-SUB-cut-IND **Baraka** 7-onion
I sneezed when Baraka cut the onion

However, this is a fundamentally different phenomenon than the post-verbal subject in *amba*-less relative clauses which has been discussed. Post-verbal subject in *amba*-less relative clauses is analyzed with MoodP topicalization clustered with T to C movement, but this analysis cannot derive the word order in (39). As shown previously, this analysis would result in a VOS order whenever object is present in the subordinate CP, but (39) has the VSO order.

In fact, the VSO order is not only found in Swahili adverbial clauses. It is allowed in other kinds of Swahili clauses as well. The example below shows that matrix clauses also allow the VSO order.

(40) a. Baraka a-li-kat-a ki-tungu
Baraka 1SM-PST-cut-IND 7-onion
Baraka cut the onion

b. a-li-kat-a Baraka ki-tungu
1SM-PST-cut-IND Baraka 7-onion
Baraka cut the onion

On the other hand, Ngonyani (2006) pointed out an unexplained fact that in *amba* relative clauses, post-verbal subject is also allowed. This kind of post-verbal subject is also not the same kind as in *amba*-less relatives, because the analysis for the previous kind cannot apply here: T doesn't move to C in this case because C is occupied with *amba*. Thus, I posit that the relative clause in this case also has the VSO order, with the object relativized.

(41) a. ki-ti amba-cho Juma a-li-nunu-a
7-chair amba-7REL Juma 1SM-PST-buy-IND
the chair that Juma bought

b. ki-ti amba-cho a-li-nunu-a Juma
7-chair amba-7REL 1SM-PST-buy-IND Juma
the chair that Juma bought

I propose that the VSO order in these cases stems from the optionality of the EPP feature on T, disagreeing with an existing proposal that Φ-features in Bantu must be associated with an EPP feature (Carstens, 2005). VSO order is derived whenever EPP is absent on T and the subject stays in situ.

Since the VSO order is available in all clause types, including relative clauses, it does not constitute an asymmetry between different clause types. Thus, I conclude that the word order asymmetry between adverbial clauses and relative clauses is solely caused by the truncated left periphery of adverbial clauses.

6 Conclusion

In this study, I have shown that Swahili adverbial clauses are very similar to relative clauses, a connection that is also observed in other languages. They are similar in the following ways: i) three characteristic constructions of relative clauses are all available in adverbial clauses. ii) the subordinator and the relative marker share the same form and iii) they can both modify an overt NP. This level of similarity motivates a unified analysis of these two clause types. I proposed that the subordinator and the relative marker are the same in nature, that they are operators base-generated in the position of the relativized constituent. The operator is raised to Spec,CP and cliticizes onto the highest head with more than one syllables, resulting in its three different surface positions. Notably, the operator is base-generated with its own Φ-feature, and in relative clauses, this Φ-feature isn't always the same as the Φ-feature of the relativized NP. This mismatch is a key piece of evidence that challenges previous analyses of the relative marker as an agreeing complementizer, as well as the head raising analysis of Swahili relative clauses proposed by Ngonyani (2006).

I also account for the word order asymmetry between relative clauses and adverbial clauses. Specifically, I adopt and extend Ngonyani 2006's proposal that the obligatory VS and VOS word order in *amba*-less relative clauses result from MoodP topicalization clustered with T to C movement. I also show that the word order asymmetry is caused by the fact that adverbial clauses have a truncated left periphery (Haegeman, 2012). Since the Topic projection does not exist in the truncated left periphery of adverbial clauses, MoodP topicalization and T to C movements are impossible, resulting in the preference of SVO order in adverbial clauses.

While the proposed analysis in this work captures the similarity between Swahili relative clauses and adverbial clauses, as well as many other important facts, it fails to account for the ones presented in Ngonyani (2001) which support a raised head of the relative clause. Thus, a natural next step in this research is to attempt to understand the conflicting evidence for the derivation of

relative clauses in this language, and in particular, to test the hypothesis that both derivations are available.

Acknowledgement

This work was advised by Dr. Asia Pietraszko, and it marks the start of my exciting journey of becoming a Linguist. I would like to thank Asia for her instructions, guidance, feedback and encouragements, especially for introducing me to the world of linguistic puzzles. Being her student was the luckiest thing happened to me during my difficult time. I would also like to thank Drusilla Talawa, my language consultant, for sharing her beautiful language and patiently answering my endless questions. Additionally, I'd like to thank our imaginary friend Baraka, who has cut excessive amount of onions in this study.

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