The Prosody of Relative Clauses in Chewa*

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This paper tests three current theories of the phonology-syntax interface – Truckenbrodt (1995), Pak (2008) and Cheng & Downing (2007, 2009) – on the prosody of relative clauses in Chewa. Relative clauses, especially restrictive relative clauses, provide an ideal data set for comparing these theories, as they each make distinct predictions about the optimal phrasing. We show that the asymmetrical phase-edge based approach developed to account for similar Zulu prosodic phrasing by Cheng & Downing also best accounts for the Chewa data.

1 Introduction

Chewa (N30) is one of the three native national languages of Malawi. (The other two are Tumbuka and Yao.) While many aspects of Chewa are relatively well described – see, e.g., Kanerva (1990), Mchombo (2004), and Watkins (1937) – complex constructions like relative clauses have not been described in detail. Further, while Kanerva's (1990) study of Chewa phrasal prosody has been reanalyzed in subsequent theories of the phonology-syntax interface (Truckenbrodt 1995, Selkirk 2000, Seidl 2001), these theories have not been thoroughly tested on complex constructions like relative clauses.

We have undertaken a research project to fill these gaps. The goal of this paper (which expands on parts of Downing & Mtenje, to appear) is twofold: to illustrate the morphosyntactic properties of relative clauses, in section 2; and to

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provide a prosodic analysis, which tests three different theories of the phonology-syntax interface – Truckenbrodt (1995), Pak (2008) and Cheng & Downing (2007, 2009) – on the relative clause data, in section 3. We will show that the asymmetrical phase-edge based approach developed to account for Zulu prosodic phrasing by Cheng & Downing also best accounts for the Chewa data.

2 Morphosyntactic properties of relative clauses

2.1 Relative morphemes, word order within

Relative clauses are potentially signaled by two segmental relative markers: *-méné*, which occurs at the beginning of the relative clause, and the enclitic *-o*, which occurs at the end of the relative clause or following the first relative *v*P-internal Phonological Phrase.[1] The relative morphemes, *-méné* and *-o*, can co-occur and they can also both be omitted. The distribution of the two relative morphemes is illustrated by the data in (1a-d); (1e) provides an example of *-o* in non-final position:[2]

(1) a. with *-mene* only
([M-balá *i-méné* í-ná-bá n-dalámá z-àángá])
CL9-thief CL9-REL 9SUBJ-PST1-steal CL10-money CL10-my
(i-ku-tháawa.)
9SUBJ-PROG-run.away
'The thief who stole my money is running away.'

b. with *-o* only
([M-baálá) í-ná-bá n-dalámá z-angáa-*yo*]) (i-ku-tháawa.)

c. with both *-mene* and *-o*
([M-balá *i-méné* í-ná-bá n-dalámá z-angáa-*yo*]) (i-ku-tháawa.)

d. omitting both *-mene* and *-o*
([M-baálá) í-ná-bá n-dalámá z-àángá]) (i-ku-tháawa.)

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[1] As Nsuka-Nkutsi's (1982) comprehensive survey of relative clause morphology in Bantu languages notes, the likely historical source of the relative pronoun, *-méné***,** in Chewa is the homophonous emphatic demonstrative: e.g., **nyumbá zi-ménee-zo** 'those very houses'. As we can see in this example, the *-o* relative enclitic is homophonous with the remote demonstrative. (See Watkins 1937: 129 for agreement paradigms.)

[2] In the data, parentheses indicate prosodic phrase edges, while square brackets highlight the syntactic constituent under discussion. Evidence for the prosodic phrasing includes penult vowel length and tonal alternations (compare, e.g., the length and tone of the penult vowel of the first word in (1a) vs. (1b)). The phonological evidence for the phrasing is discussed in detail in Kanerva (1990), and in Downing & Mtenje (to appear).

e. with *-mene* and non-final *-o*
([A-lendó *a-méné* á-ná-mú-óná Bándaa-*wo*)
CL2-visitor CL2-REL 2SUBJ-PST1-1OBJ-see CL1.Banda-CL2.REL
(dzuulo])
yesterday
(a-piitá.)
2SUBJ/PERF-go
'The visitors who saw Banda yesterday have gone.'

2.2 Relativization out of different positions, use of resumptive OM

The examples in (1) are of subject relatives: i.e., the head of the relative clause is the subject of the relative clause. Other positions can also be freely relativized, with the same relative morphemes, with the same canonical SVO word order in the relative clause as in main clauses *except in possessive relatives*. Indirect object relatives, including some non-human ones, generally require resumptive Object Marking (OM) on the relative verb. These points are illustrated in the data below; the resumptive morphemes are underlined:

(2) Direct object relatives
a. (M-waná wá súkúlú a-ná-lémba [káláta i-méné
CL1-child CL1.of CL9.school 1SUBJ-PST2-write CL9.letter CL9-REL
m-phunzitsi á-ná-weléenga]) (kwá á-nyúuzi.)
CL1-teacher 1SUBJ-PST2-read for CL2-newspaper
'A student wrote the letter which the teacher read for the newspaper.'
b. ([Káláta i-méné m-phunzitsi á-ná-weléenga])
CL9.letter CL9-REL CL1-teacher 1SUBJ-PST2-read
(í-ma-néná m-fúumu.)
5SUBJ-HAB-criticize CL9-chief
'The letter which the teacher read criticizes the chief.'

(3) Indirect object relatives – note resumptive OMs (underlined)
a. ([Mw-aná a-méné Bándá á-ná-<u>mu</u>-pátsá m-pháatso])
CL1-child CL1-REL CL1.Banda 1SUBJ-PST2-1OBJ-give CL9-gift
(a-ku-mú-thókòózá.)
1SUBJ-PROG-(1OBJ-)thank
'The child who Banda gave gifts to thanks him.'

b. (A-ná-kwíyá ndí [m-phunzitsi a-méné a-lendó
2SUBJ-PST2-get.angry with CL1-teacher CL1-REL CL2-visitor
á-ná-mu-gulílá zóóváala].)
2SUBJ-PST2-1OBJ-buy.for CL10.clothes
'They got angry at the teacher for whom the visitors bought clothes.'

c. ([Sukúlú i-méné a-lendó á-ná-i-pátsá ma-búuku])
CL9.school CL9-REL CL2-visitor 2SUBJ-PST2-9OBJ-give CL6-book
(i-li ku-Zoómbá.)
9SUBJ-is LOC-Zomba
'The school that the visitors gave the books to is at Zomba.'

(4) IO possessive relative – note resumptive possessive and word order
([M-tsíkána a-méné njingá yáké mú-ná-bweréeka])
CL1-girl CL1-REL CL9.bicycle CL9.her you.plSUBJ-PST2-borrow
w-a-ngo-dútsá pompano.)
1SUBJ -PERF-just-pass by recently
'The girl whose bicycle you borrowed just walked past.'

(5) Head of RC is locative, temporal, instrumental or adjunct
– note, no resumptive morpheme

a. ([Tsíkú li-méné mw-aná wángá á-ná-baádwá])
cl5.day cl5-rel cl1-child cl1.my 1SUBJ-PAST-be born
(ndi-ná-gwíra ntchíito) (m'-maáwá.)
I.SUBJ-PAST.HAB-catch cl9.work in-morning
'On the day my child was born I worked in the morning.'

b. ([M'-méné á-ma-imbírá nyímbó iiyi])
in-rel 1SUBJ-HAB-sing cl9.song cl9.this
(zí-ma-ndi-kumbútsá mu-dzi wáanga.)
10SUBJ-HAB-me.OBJ-remind cl3-village cl3.my
'The way she sings this song reminds me of my home village.'

c. ([Sitóló i-méné mú-nga-gúlé má-búukhu]) (i-li
cl9.shop cl9-rel you.pl.SUBJ-can-buy cl6-book 9SUBJ-be
pafúpí ndí-pókwéléra ma-báasi.)
near with-where.catch cl6-bus
'The shop where you can buy books is next to the bus stop.'

d. ([Chi-fukwá chi-méné á-ná-bwéléra kuuno])
(cl7-reason) cl7-rel 1SUBJ-PST-come here
(chi-ku-ndí-dándaulíitsa.)
7SUBJ-PROG-me.OBJ-worry
'The reason that she came here for worries me.'

e. ([N-dówá i-méné tí-ma-tungírá maádzí])
cl9-bucket cl9-rel we.SUBJ-HAB-fetch with cl6.water
(y-a-onongeéká.)
9SUBJ-PERF-be broken
'The bucket with which we fetch water has broken.'

2.3 Similarity in form of restrictive, free, non-restrictive and clefted RCs

Other relative clause constructions have similar morphosyntax. (See Downing & Mtenje, to appear, for details.) One finds the same relative morphemes in the same positions and the relative morphemes are often optional (except in non-restrictives); one finds the same conditions on the use of resumptive object marking. We also find a similarity in the prosody: all relative clause constructions are followed by a prosodic phrase break. However, as shown in the data below, we find some differences in the prosody: clefts and non-restrictive relative clauses phrase separately from their heads:

(6) Subject headless (free) relative
([A-méné á-ná-mu-óná Báanda) (dzuulo]) (a-piítá.)
(CL2-REL) 2SUBJ-PST2-1OBJ-see CL1.Banda yesterday 2SUBJ.PERF-go
'The ones who saw Banda yesterday have gone.'

(7) Subject cleft
Q: ([A-méné á-ná-gulá nyama y-ówóola]) (ndi ndàání)?
(CL1-REL) 1SUBJ-PST2-buy CL9.meat CL9.of-spoiled (COP) CL1.who
'The one who bought the spoiled meat is who?'
A: (Ndi m-fúmú yá í-ngóono) ([i-méné í-ná-gulá
COP CL9-chief CL9.of CL9-young (CL 9-REL) 9SUBJ-PST2-buy
nyama y-ówóola].)
CL9.meat CL9.of-spoiled
'It's the young chief who bought the spoiled meat.'

(8) Subject non-restrictive relative
(A-Báanda) [a-méné á-ná-gulá nyama y-ówóola])
CL2-Banda CL2-REL 2SUBJ-PST2-buy CL9.meat CL9.of-spoil
(á-ma-khálá pa-fúpí ndí m-siika.)
2SUBJ-HAB-live LOC-close to CL3-market
'Mr. Banda, who bought the spoiled meat, lives near the market.'

2.4 Some morphosyntactic puzzles

It is beyond the scope of this paper to take up a morphosyntactic analysis of the relative clause data. Before moving to the prosodic analysis which is the central concern of the paper, though, we would like to briefly point out a couple of issues for future research.

The first concerns the use of the object marker in the relative verb phrase. According to Mchombo (2004), resumptive object marking is always required for an IO (indirect object) relative. Human IO relative heads do consistently require object marking. At least some non-human IO heads also do, as shown in (3c) but, as we can see in (5e), heads of instrumental relatives, at least, do not. Indeed, human direct object relative heads often occur with object marking on the relative verb (underlined), as shown below, though this appears to be optional:

(9) (Galú wá-m-kúluu-yo) (a-ná-lúma [m-balá
cl1.dog cl1.of-cl1.big-cl1.that 1SUBJ-PST2-bite cl9.thief
i-méné tí-ná-<u>yí</u>-pírikítsá ndí kú-yí-gwíírá].)
cl9-rel we.SUBJ-PST2-9.OBJ-chase and INF-9.OBJ-catch
'That big dog bit the thief who we chased and caught.'

A second problem concerns the prosody of optional *-méné*. As we can see in comparing (10a) with (10b), when *-méné* is omitted, there is an obligatory phrase break following the head of the relative clause, giving it the same phrasing as a non-restrictive relative:

(10) Restrictive RC – no phrase break with *-méné*; can omit it
a. ([A-lendó a-méné á-ná-mú-óná Báanda) (dzuulo])
CL2-visitor CL2-REL 2SUBJ-PST1-1OBJ-see CL1.Banda yesterday
(a-piítá.)
2SUBJ.PERF-go
BUT – omitting *-méné* requires a phrase break!
b. ([A-leéndó) (á-ná-mú-óná Báanda) (dzuulo]) (a-piítá.)
'The visitors who saw Banda yesterday have gone.'

(11) Non-restrictives – cannot omit *-méné* and preceding phrase break required
   a. (A-leéndó) ([a-méné á-ná-mú-óná Bándaa-wo)
      CL2-visitor CL2-REL 2SUBJ-PST1-1OBJ-see CL1.Banda-(CL2.REL)
      (dzuulo]) (a-piitá.)
      yesterday 2SUBJ.PERF-go
   b. *(A-leéndó) ([á-ná-mú-óná Bándaa-wo) (dzuulo]) (a-piitá).
      'The visitors, who saw Banda yesterday, have gone.'

The problem is to explain why simply omitting *-méné* in a restrictive relative clause changes the prosodic phrasing, as there is no obvious difference in the syntactic structure.[3] To understand better why it is problematic for there to be a mismatch between prosodic phrasing and syntax, we need to know more about prosodic phrasing in Chewa. This is the topic of the next section.

3 Prosodic analysis

3.1 Basic facts of Chewa phonological phrasing in simple clauses

Chewa is a tonal language, like most Bantu languages (Kisseberth & Odden 2003). As demonstrated in Kanerva (1990) and Bresnan & Kanerva (1989), the realization of lexical and grammatical High tones is conditioned by phonological processes which take the Phonological Phrase as their domain. Kanerva (1990) shows that two main factors define the parse into Phonological Phrases: syntax and focus. Syntax determines the prosodic phrasing under neutral (or broad) focus.[4]

In the analyses of Bresnan & Mchombo (1987), Bresnan & Kanerva (1989), Kanerva (1990) and Mchombo (2004), sentences (S) in Chewa have three main XP subconstituents, which can be freely ordered: an optional subject NP, an obligatory VP (i.e., the verb and all its complements), and an optional topic NP. As shown in the data below, each of these three constituents is parsed into its own Phonological Phrase.

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[3] We would like to thank the audience members at the workshop for proposing two plausible explanations for this phrasing. One is that, without the phrase break, a relative clause which omits *-méné* is often identical to a non-relative clause. The prosodic break serves to identify the string following the head as a relative. The other is that omitting *-méné* in fact gives a non-restrictive interpretation to the following relative, to match the similarity in phrasing with non-restrictives. More research is required to evaluate these proposals.

[4] We do not take up here the effect of focus on prosodic phrasing. See Kanerva (1990), Truckenbrodt (1995, 1999) and Downing & Mtenje (to appear) for discussion and analysis.

(12) Subject, Topic and VP are minimal XPs

a. (Subj) (VP) – Kanerva (1990: 102, fig (112))
(Fíisi]) (a-na-dyá m-káango].)
CL1.hyena 1SUBJ-PST1-eat CL3-lion
'The hyena ate the lion.'

b. (Subj) (VP) (Top) – (Kanerva 1990: 107, fig (123b))
(Mwaána]) (a-na-m-pézá kú-dáambo]) (gaálu].)
CL1.child 1SUBJ-PST1-1OBJ-find LOC-CL5.swamp CL1.dog
'The child found it at the swamp, the dog.'

c. (Top) (VP) (Subj) – (Kanerva 1990: 102, fig (110c))
(A-leenje]) (zi-ná-wá-luuma]) (njúuchi].)
CL2-hunter 10SUBJ-PST2-2OBJ-bite CL10.bees
'The hunters, they bit them, the bees [did].'

In the data in (12), where the subjects and topics consist of single nouns, and the VPs consist of a verb plus a single complement, Phonological Phrases appear to right-align with minimal XPs. Kanerva (1990) demonstrates that minimal XP edges and Phonological Phrase edges do not always coincide, however. Both complements of the verb in a [V DP XP] verb phrase are parsed with the verb into a single Phonological Phrase. We do not find a phrase break after the first XP complement when the entire VP is in broad focus:

(13) VPs containing two verbal complements

a. ([V XP XP])(Kanerva 1990: 98, fig. (101a))
([A-na-ménya nyumbá ndí mw-áála].)
s/he-PST1-hit CL9. house with CL3-rock
'S/he hit a house with a rock.'

b. (Subj) ([VP]) Kanerva (1990: 103, fig (114b))
(Mwaána)([a-na-pézá galú kú-dáambo].)
CL1.child 1SUBJ-PST1-find CL1.dog LOC-CL5.swamp
'The child found the dog at the swamp.'

c. (Subj)([VP]) Kanerva (1990: 103, fig. (114a))
(Mfúumu) ([i-na-pátsá mwaná zóóváala].)
CL9.chief 9SUBJ-PST1-give CL1.child CL10.clothes
'The chief gave the child clothes.'

d. ([V XP XP])
(Ma-kóló [a-na-pátsá mwaná ndalámá zá
CL6-parent 6SUBJ-PST1-give CL1.child CL10.money CL10.of
súkúulu].)
CL9.school
'The parents gave the child money for school.'

e. ([V XP XP])
(Ma-kóló [a-na-pátsíra mwaná ndalámá zá mú-longo
CL6-parent 6SUBJ-PST1-give CL1.child CL10.money CL10.of CL1 sister
wáake.)
CL1.her
'The parents gave the child money for her sister.'

This is the essential problem to be accounted for in any analysis of Chewa prosodic phrasing. The Phonological Phrase which includes the VP is bigger than we expect because there is no phrase break following the first complement of the verb. The prosodic algorithm must optimize a Phonological Phrase break following subject and topic DPs, yet it must not optimize a Phonological Phrase break following DPs internal to the VP. In the next section, we present three recent theories which have been proposed to account for this phrasing.

3.2 Three phrasing algorithms optimizing: (S) ($_{VP}$V XP XP) (Topic)

3.2.1 Truckenbrodt (1995, 1999, 2005, 2007)

Truckenbrodt (1995, 1999) reanalyzes Kanerva's (1990) data, formalizing Selkirk's (1986, 1995, 2000) End-based approach to phonological phrasing in terms of Optimality Theory (OT) Alignment constraints (McCarthy & Prince 1993). He proposes that the following constraints, ranked in the order given, optimize the phrasing illustrated in the preceding section:

(14) a. WRAP XP: An XP_{max} is contained in a (single) PhP.
That is, a maximal XP cannot be split into more than one PhP.

b. ALIGNR(XP, PP):
Align the right edge of each XP with the right edge of a PhP.

The basic asymmetric Edge-based alignment constraint ALIGNR (14b) optimizes aligning the right edge of each XP with the right edge of a Phonological Phrase: (S) (V XP) (XP). WRAP (14a) optimizes parsing each maximal XP into a single Phonological Phrase. Ranking WRAP above ALIGNR (14b) optimizes parsing an

entire maximal VP into a single Phonological Phrase and penalizes a phrase break after each VP-internal XP complement:

(15) a. √ (S) ([V XP XP]) satisfies WRAP
b. * (S) ([V XP) (XP]) violates WRAP

WRAP thus has the effect of minimizing the number of prosodic phrases that a maximal XP is parsed into, allowing a VP to be parsed as a single Phonological Phrase.

3.2.2 Pak (2008); Selkirk (2009)

Phase-based syntax provides new ways of thinking about the relation between syntax and prosodic phrasing. Phases – *v*P and CP – define derivationally 'cyclic' spell-out domains which can map symmetrically to prosodic domains (Kratzer & Selkirk 2007; Ishihara 2007; Pak 2008; Selkirk 2009), and phases also provide a new type of constituent edge for prosodic domains to align with (Cheng & Downing 2007, 2009; Downing & Mtenje, to appear).

Pak (2008) exploits the first possibility in accounting for the domain of what she calls High Tone Anticipation (HTA) in Luganda. According to Pak, the domain for HTA is equivalent to the domains parsed into Phonological Phrases in Chewa. Subject DPs and Topics form a separate prosodic domain from the verb and its complements, which are parsed together into a single prosodic domain. Her proposal (very simplified) is that subjects and topics occur in Spec, CP. This leaves the verb and its complements in the (bolded) spell-out domain of CP: [$_{CP}$ Subj ([$_{C'}$ V XP XP])]. That is, the verb and all its complements are parsed together into a separate prosodic domain from subjects and topics because they occur together in a syntactic spell-out domain which excludes subjects and topics. As Selkirk (2009) points out, Pak's proposal is consistent with a theory that symmetrically maps syntactic constituent edges with prosodic phrase edge. In this case, the relevant prosodic constraint would be MATCH-CLAUSE: both edges of the clause coincide with the edges of an Intonation Phrase.

3.2.3 Cheng & Downing (2007, 2009)

Cheng & Downing (2007, 2009) and Downing & Mtenje (to appear) pursue an alternative way of incorporating phase-based syntax into prosodic phrasing algorithms, namely, they propose that in Zulu and Chewa, prosodic phrase breaks asymmetrically coincide with the right edges of syntactic phases, *v*P and CP: [$_{CP}$ Subj [$_{vP}$ V XP XP]]). As we can see, this proposal optimizes phrasing

the subject with the VP (*v*P), and, indeed, this is commonly found in Al Mtenje's variety of Chewa, as shown in (13d, e), for example.

To account for the data where the subject is followed by a phrase break, we propose that the subject is topicalized, adjoined to CP, as illustrated in (16). Note the similarity in the syntactic structure and prosodic phrasing of topicalized subjects and non-restrictive relative clauses:

(16) a. Topicalized subject: [Topic] ([$_{CP}$
b. Non-restrictive relative: [$_{DP}$ head N] ([$_{DP\text{-}REL}$ [$_{CP}$

Recall from (8) and (11), above, that in non-restrictive relative clauses, there is a phrase break separating the head from the relative clause. Following Cheng & Downing (2007, 2009), we appeal to the argument (complement)–adjunct distinction which work like Chen (1987) has shown can play a role in conditioning prosodic phrasing to account for the similarity in phrasing of topicalized subjects and non-restrictive relative clauses. Adopting typical X-bar theoretic terminology (see Jackendoff 1977, Chomsky 1981, among others), the difference between an adjunct and a complement rests upon the fact that an adjunct is not syntactically selected by a head, while a complement is. There are two constructions in which CPs are selected: a sentential complement selected by a verb, and a restrictive relative clause. These two contrast with other CPs, which are not selected: e.g., non-restrictive relative clauses, other adjunct clauses, and CPs following left-dislocated topics.

To sum up this approach, the general 'match' between prosodic phrases and syntactic phases is asymmetrical: the right edge of phrases and phases always match. The left edge of phrases and phases only match when the phase is not selected by what precedes it.

3.3 Testing the approaches on Chewa relative clause prosody

Relative clauses provide an ideal testing ground for these theories, as they each make very distinct predictions about the optimal prosodic phrasing. WRAP (Truckenbrodt 1995, 1999) predicts that the VP should be parsed into a single Phonological Phrase no matter how internally complex it might be. A relative clause modifying the first XP complement within VP should have no effect on prosodic phrasing, as an entire maximal VP is optimally WRAP-ed. MATCH-CLAUSE (Pak 2008; Selkirk 2009) predicts that relative clauses should be preceded and followed by a prosodic phrase break, *iff* a relative clause contains a CP (as is usually assumed), as each CP spell-out domain symmetrically coincides with a prosodic phrase. The asymmetrical ALIGNR-PHASE/ALIGNL-NON-SELECTED PHASE (Cheng & Downing 2007, 2009; Downing & Mtenje, to

appear) approach predicts that all relative clauses should be followed by prosodic break, but only non-restrictive relatives (non-selected) should be preceded by a prosodic break; restrictive relatives (selected) should not be.

The facts of Chewa support the asymmetrical alignment of prosodic phrases with phases. In the data set in (17), we find minimal pairs of sentences containing [$_{vP}$ V DP XP] constituents. In the second member of each pair, (17b, d, f), the first verbal complement is not modified by a relative clause; in the first member of each pair, (17a, c, e), it is. As we see, when the first verbal complement is modified by a relative clause, it is consistently followed by a prosodic phrase break, even though this phrase break violates WRAP. It is never preceded by a prosodic phrase break (when *-méné* occurs), even though MATCH-CLAUSE predicts a break:

(17) a. (M-waná wá súkúlú [$_{vP}$ a-ná-lémba [$_{DP}$ káláta i-méné
CL1-child CL1.of CL9.school 1SUBJ-PST2-write CL9.letter CL9-REL
m-phunzitsi á-ná-weléenga]) ([$_{PP}$ kwá á-nyúuzi]].)
CL1-teacher 1SUBJ-PST2-read for CL2-newspaper
'A student wrote [the letter which the teacher read] for the newspaper.'

cf.

b. (M-waná wá súkúlú [$_{vP}$ a-ná-lémba [$_{DP}$ káláta]
CL1-child CL1.of CL9.school 1SUBJ-PST2-write CL9.letter
[$_{PP}$ kwá á-nyúuzi]].)
for CL2-newspaper
'A student wrote the letter for the newspaper.'

c. (Ma-kóló [$_{vP}$ a-na-pátsíra [$_{DP}$ mwaná a-méné
CL6.parent 6SUBJ-PST1-give CL1.child CL1-REL
á-ná-wa-chezéera]) ([$_{DP}$ ndalámá zá mú-longo wáake]].)
1SUBJ-PST2-6OBJ-visit CL10.money CL10.of CL1-sister CL1.her
'The parents gave [the child who visited them] money for her sister.'

cf.

d. (Ma-kóló] a-na-pátsíra mwaná ndalámá zá
CL6-parent 6SUBJ-PST1-give CL1.child CL10.money CL10.of
mú-longo wáake].)
CL1-sister CL1.her
'The parents gave the child money for her sister.'

e. (Ti-ku-gániza kutí m-nyamatá [$_{vP}$ á-pézá [$_{DP}$ galú
we-PROG-think that CL1-boy 1SUBJ.FUT-find CL1.dog
a-méné á-ná-<u>mu</u>-sowéetsa]) ([$_{PP}$ ku-dáambo]].)
CL1-REL 1SUBJ-PST2-1OBJ-lose LOC-CL5.swamp
'We think the boy will find [the dog which he lost] at the swamp.'

cf.

f. (Subj) (VP) Kanerva (1990: 103, fig (114b))
(Mwaána]) (a-na-pézá galú kú-dáambo].)
CL1.child 1SUBJ-PST1-find CL1.dog LOC-CL5.swamp
'The child found the dog at the swamp.'

Pak (2008), in fact, acknowledges that her analysis incorrectly predicts that relative clauses form a separate domain for HTA from a preceding main clause in Luganda. To account for their phrasing, she proposes that in Luganda relative clauses are reduced clauses and so do not contain a CP. Their phrasing is then like other reduced clauses (e.g., infinitival complements). Only non-reduced embedded clauses, like *think/say* clauses, form a separate HTA domain.

Proposing that relative clauses in Chewa are reduced clauses would not save the analysis, however. As Kanerva (1990) and our work shows, all embedded complement clauses, including of *think/say* clauses, phrase with what precedes:

(18) Embedded and recursive (relative) clauses (underlined)

a. ([$_{CP}$ [$_{CP}$ Mu-nthu a-méné á-ná-bweréká [$_{CP}$ búkhú
CL1-man CL1-REL 1SUBJ-PST2-borrow CL5.book
<u>li-méné ndí-ná-gulá ku-Liloongwe</u>]]) (w-a-pita ku-Mzúuzu].)
5-REL I-PST2-buy LOC-Lilongwe 1SUBJ-PERF-leave LOC-Mzuzu
'The man who borrowed the book which I bought in Lilongwe has moved to Mzuzu.'

b. (Ti-ku-fúná [$_{CP}$ sitóló i-méné í-ma-gulítsá
we-PROG-look.for CL9.shop CL9-REL 9SUBJ-HAB-sell
[$_{CP}$ n-sápato <u>zi-méné zí-ma-chokérá ku-Mangoochi</u>]].)
CL10-shoes CL10-REL 10SUBJ-HAB-come.from LOC-Mangochi
'We are looking for the shop which sells shoes which come from Mangochi.'

c. ([$_{CP}$ [$_{CP}$ Mu-nthu a-méné á-ná-néná kutí <u>m-balá</u>
CL1-man CL1-REL 1SUBJ-PST1-say that CL9-thief
<u>i-ná-bá ndaláama</u>]) (a-ná-thaawa].)
9SUBJ-PST2-steal CL10.money 2SUBJ-PST2-run.away
'The man who said that the thief stole some money ran away.'

d. ([$_{CP}$ Mu-nthu a-na-néná kutí m-balá i-méné
CL1-man 1SUBJ-PST1-say that CL9-thief CL9-REL
í-ná-bá ndaláama]) (i-na-tháawa].)
9SUBJ-PST1-steal CL10.money 9SUBJ-PST1-run.away
'The man said that the thief who stole the money ran away.'

e. Kanerva (1990: 117)
(Mavúuto) ([$_{vP}$ a-ku-gániza kutí mw-alá úu-gwa]].)
cl1.Mavuto 1SUBJ-PRES-think that cl3-rock 3SUBJ-fall
'Mavuto thinks that the rock will fall.'

It is syntactically implausible to account for this phrasing by proposing that all embedded clauses of Chewa are reduced clauses. It follows straightforwardly from the ALIGNR-PHASE analysis, though, that all embedded clauses – whether reduced or not – would phrase with what precedes. Prosodic phrase breaks always align with the first right phase edge, and no prosodic break is expected at the left phrase edge unless it is not selected.

4 Conclusion

As we have seen, the morphosyntax of Chewa relative clauses is straightforward. A noun playing any role can be relativized. All relative clauses types contain the same range of relative morphology.

The prosody of Chewa relative clauses is also straightforward. All relative clause types are followed by a prosodic break; only non-restrictive relatives (and clefts) – i.e., non-selected CPs – are preceded by a prosodic break. These generalizations hold true of other embedded clause types. This prosody falls out from an asymmetric Edge-based analysis, aligning the right edge of a Phonological Phrase with the right edge of a syntactic phase (*v*P or CP). It is problematic for non-phase based approaches (like Truckenbrodt 1995) or symmetrical phrasing approaches (like Pak 2008).

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