

Celebrating 50 years of ACAL

Selected papers from the 50th
Annual Conference on African
Linguistics

Edited by

Akinbiyi Akinlabi, Lee Bickmore,
Michael Cahill, Michael Diercks,
Laura J. Downing, James Essegbe,
Katie Franich, Laura McPherson &
Sharon Rose

Contemporary African Linguistics 7



Contemporary African Linguistics

Editors: Akinbiyi Akinlabi, Laura J. Downing

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Laura J. Downing, James Essegbe, Katie Franich, Laura McPherson &
Sharon Rose (eds.). 2021. *Celebrating 50 years of ACAL: Selected papers from the
50th Annual Conference on African Linguistics* (Contemporary African
Linguistics 7). Berlin: Language Science Press.

This title can be downloaded at:

<http://langsci-press.org/catalog/book/293>

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ISBN: 978-3-96110-309-6 (Digital)

978-3-98554-005-1 (Hardcover)

ISSN: 2511-7726

DOI: 10.5281/zenodo.5578772

Source code available from www.github.com/langsci/293

Collaborative reading: paperhive.org/documents/remote?type=langsci&id=293

Cover and concept of design: Ulrike Harbort

Typesetting: Hazel Mitchley, Matthew Faytak, Eduard Lukasiewicz, Felix
Kopecky

Proofreading: Amir Ghorbanpour, Andreas Hözl, Annie Zaenen, James Gray,
Jeroen van de Weijer, Marten Stelling, Rehana Omardeen, Tihomir Rangelov,
Yvonne Treis

Fonts: Libertinus, Arimo, DejaVu Sans Mono

Typesetting software: X_EL_AT_EX

Language Science Press

xHain

Grünberger Str. 16

10243 Berlin, Germany

langsci-press.org

Storage and cataloguing done by FU Berlin



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Chapter 1

A note on *wh*-questions in Avatime

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This paper examines *wh*-question constructions in Avatime, an endangered Ghana Togo Mountain language. We focus on the different *wh*-strategies and island constraints and discuss these in relation to left peripheral elements such as question particles and complementizers.

1 Introduction

In this paper, we present some initial results of an investigation into interrogative constructions in Avatime. We focus on description of the morpho-syntax of *wh*-question formation.

1.1 Background

Avatime is an endangered Kwa language spoken in several towns and villages in the Volta Region of Ghana. More precisely, most Avatime speakers live in an area to the east of Lake Volta approximately 30 miles to the north of Ho, the regional capital. It is also known as *Siya* and *Sideme*. There are approximately 24,000 native speakers (Ethnologue).

Avatime is classified as a Ghana-Togo Mountain language (also referred to as “Central Togo” or “Togo Remnant” languages). The group consists of 15 languages, all of which are spoken in the Volta Region of Ghana and neighboring regions of Togo and Benin.¹ Within the Ghana-Togo Mountain language group, Avatime belongs to the Ka-Togo branch.

¹Whether the Ghana-Togo Mountain languages constitute a true genetic unit has been debated, with some suggesting instead that they are a geographical, socio-cultural or typological group (Ameka 2017).



Avatime is a tone language, with three or four level tones (Ford 1971; Dakubu & Ford 1988; Schuh 1995; Defina 2009; van Putten 2014). (In this paper, we assume three tone levels.²)

Avatime has basic SVO word order:

- (1) Âyapè a-klà ke-plekpà
Ayape 3SG.PERF-read CL-book
'Ayape read the book.'³

Like other GTM languages, Avatime has an active noun class system. In (1), the singular direct object, *ke-plekpà* 'book' has a noun class prefix, *ke-*. Overall, Avatime has 13 noun classes, with the difference between singular and plural typically indicated by a change in the noun class prefix (e.g., *á/bá-dzε* 'woman/women', *ʒɪt̪-ha* 'pig/pigs', *ki/bi-kù* 'yam/yams', *ku/bè-dè* 'road/roads').

1.2 Interrogatives in Avatime

Yes/no questions in Avatime can be marked by the presence of a clause-final question particle *na* (Ford 1971):

- (2) a. εé-dɔ srasè
3SG.PROG-sleep sleep Declarative
'He is sleeping.'
- b. εé-dɔ srasè (na)?
3SG.PROG-sleep sleep Q Yes/No
'Is he sleeping?'

When the overt question particle is absent, a yes/no question may be indicated by the presence of a right-edge falling tone, a characteristic of a number of West African languages (Downing & Rialland 2017).⁴ It is not clear what semantic or

²The three levels correspond to Low, High, and Extra High from Ford (1971) and van Putten (2014). Unmarked vowels have high tone. Low tone is indicated by a grave accent and Extra High tone is indicated by an acute accent.

³The orthography used here is based on that used in the Avatime New Testament (Ghana Institute of Linguistics, Literacy, and Bible Translation 2017).

⁴Thanks to Laura Downing (p.c.) for pointing this out. However, van Putten (2014: 62–63) notes, "Polar questions without final *na* can sometimes be distinguished from statements by intonation as they may end with a high boundary tone. This is only audible when the sentence ends in a low tone and it is optional; there are also cases of polar questions that cannot be distinguished from statements based on intonation." We have found that there are also cases where there is a high right boundary tone that is realized on the final syllable of the constituent that immediately precedes *na*. We leave precise characterization of the tone and intonation of polar questions for future research.

pragmatic differences correlate with questions that have the question particle versus those that lack it. Like yes/no questions, the question particle may optionally appear on the right edge of a *wh*-question:

- (3) a. wò-zulu ke-plekpà
 2SG.PERF-steal CL-book
 'You stole the book.'
 b. egé wò-zulu (na)?
 what 2SG.PERF-steal Q
 'What did you steal?'

Just as in yes/no questions, if the question particle is absent, there is a falling tone on *ege* ‘what’ or whatever element occurs on right edge of the clause. (See the examples in (4–6).) In addition, the semantic or pragmatic import of the optional question particle is not clear. In elicitation, the particle can be used with echo questions. However, the particle does not, by itself, indicate an echo question given that speakers use it in out-of-the-blue contexts and it can be absent in echo questions. Anticipating the following section, Avatime *wh*-expressions are given in Table 1.1 below.

Table 1.1: Avatime *wh*-expressions

wh-expressions	
nyà(ŋ)we, amwe	'who'
ègè	'what'
wolì	'which'
nifò	'where'
lipolì, lípoè wólì	'when'
kite	'how'
ege loso, kite loso	'why'
kíté tú(wá)sè	'how much, how many'

Morphologically, *wh*-items appear to be somewhat eclectic. There does not seem to be a truly monomorphemic word corresponding to *when* if *lipoli* ‘when’ is really a contracted or shortened form of *lipoe woli* ‘when (lit. ‘which time’). Similarly, the two expressions for *why* are complex, with one form corresponding to ‘what reason’ (*ege loso* ‘why’) and the other corresponding to ‘how reason’ (*kite loso* ‘why’). In addition, the word for *where* seems to be built from the general

preposition (“P”) *ní* (*nifɔ* ‘where’).⁵ We also note that we have been unable to detect any distributional difference between the two forms for *who*. While an individual speaker may have a preference for using one of the forms, all of our consultants accepted all of the forms.

2 Main clause *wh*-questions

Avatime main clause *wh*-questions allow for the *wh*-item to appear in the left periphery of the clause and for *wh* in-situ (with or without question particle):

- (4) a. *egé wɔ-ŋà* (na)
what 2SG.PERF-eat Q
'What did you eat?' *what* Ex-situ
- b. *wɔ-ŋà egè* (na)
2SG.PERF-eat what Q
'What did you eat?' *what* In-situ
- (5) a. *lipolí Áyapè a-yɔ* *ní kisà* (na)
when Ayape 3SG.PERF-wake.up P ? Q
'When did Ayape wake up?' *when* Ex-situ
- b. *Áyapè a-yɔ* *ní kisà lipoli* (na)
ayape 3SG.PERF-wake.up P ? when Q
'When did Ayape wake up?' *when* In-situ
- (6) a. *tuàsè ki-mímí ónyime e-dzi* (na)
how.much rice man-DEF 3SG.PERF-buy Q
'How much rice did the man buy?'⁶ *how much* Ex-situ
- b. *ónyime e-dzi tuàsè kimimì* (na)
man-DEF 3SG.PERF-buy how.much rice Q
'How much rice did the man buy?' *how much* In-situ

Avatime does not seem to have a segmental focus marker (Ford 1971; van Putten 2014). Instead, a constituent (whether a *wh*-expression or not) focused to the left edge of the clause has an extra high tone on its right edge, as can be seen in the examples above.

While all of the other *wh*-expressions can appear in-situ, *why* patterns differently. *Why* can't appear in-situ:

⁵If this is on the right track, we still do not know what the *fɔ* corresponds to.

⁶Note that in this example the high tone that indicates left peripheral focus is realized on the final vowel of *ki-mimi* 'rice', the rightmost word in the fronted constituent.

- (7) a. ege losó wo-tsyi mángo-e (na)
 what reason 2SG.PERF-peel mango-DEF Q *why* Ex-situ
 ‘Why did you peel the mango?’

b. * wo-tsyi mángo-e ege losò (na)
 2SG.PERF-peel mango-DEF what reason Q **why* In-situ
 Intended: ‘Why did you peel the mango?’

Similar asymmetries involving *why* have been documented in other Kwa languages (Krachi: Torrence & Kandybowicz 2015), distantly related Niger-Congo languages (Bakweri: Marlo & Odden 2007; Zulu: Buell 2011; Lubukusu: Wasike 2007) and in languages unrelated to Avatime (Italian: Rizzi 2001; Romanian: Shlonsky & Soare 2011; New Testament Greek: Kirk 2012; Persian: Karimi 2008; English: Hornstein 1995; Korean & Japanese: Ko 2005; Chinese: Lin 1992).

The idea that *why* is syntactically different from the other *wh*-items is supported by the interaction of predicate clefting (and other left peripheral foci) and *why* questions. (8b) is an example of a predicate cleft, which involves a nominalized copy of the verb in the left periphery of the clause. (8c) shows that a predicate cleft is compatible with a *wh*-question, but only when the *wh*-item does not occur on the left edge. (The curly bracketed strings indicate different places where the *wh*-item might appear.) (8d) shows that an adjunct *wh*-item like *nifɔ* ‘where’ patterns identically to an argument:

- (8) a. be-dzi ke-plekpà kè-dzya mè
 3PL.PERF-buy CL-book CL-market P
 ‘They bought a book at the market.’

b. [ki-dzí] be-dzi ke-plekpà kè-dzya mè
 NOM-buy 3PL.PERF-buy CL-book CL-market P
 ‘They BOUGHT a book at the market (as opposed to, say, selling one).’

c. {*ege} [ki-dzi] {*ege} be-dzi {✓ege} kè-dzya mè
 what NOM-buy what 3PL.PERF-buy what CL-market P
 ‘What did they BUY at the market (as opposed to sell there)?’

d. {*nifɔ} [ki-dzi] {*nifɔ} be-dzi ke-plekpla {✓nifɔ}
 where NOM-buy where 3PL.PERF-buy CL-book where
 ‘Where did they BUY the book (as opposed to sell it)?’

This pattern can be made sense of if the clefted predicate and the *wh*-items compete for the same left peripheral focus position. Surprisingly, left peripheral *why* is compatible with a predicate cleft:

- (9) {ege losó} [ki-dzi] {* ege losó} be-dzi ke-plekpà kè-dzia
what reason NOM-buy what reason 3PL.PERF-buy CL-book CL-market
mɛ
P
'Why did they BUY a book at the market (as opposed to, say, selling one)?'

First, these data suggest that *why* occupies a distinct position in the left periphery from other expressions. In addition, the data in (9) show that *why* must occur to the left of the clefted predicate, which suggests that *why* occupies a position higher than the left peripheral focus position.

3 Embedded *wh*-questions

All *wh*-expressions can appear in the left periphery of an embedded question or in situ (except for *why*), with or without a right edge question particle:

- (10) a. me-ví Kòfi sì {egé} be-dzi {ege} (na)
1SG.PERF-ask kofi COMP what 3PL.PERF-buy what Q
'I asked Kofi what they bought.'
- b. me-ví Kòfi sì {nífɔ} be-dzi lí-mwε-nè {nífɔ}
1SG.PERF-ask kofi COMP where 3PL.PERF-buy CL-orange-DET where
(na)
Q
'I asked Kofi where they bought the oranges.'
- c. me-ví Kòfi sì {kité} be-dzi lí-mwε-nè {kité} (na)
1SG.PERF-ask kofi COMP how 3PL.PERF-buy CL-orange-DEF how Q
'I asked Kofi how they bought the oranges.'

As with matrix questions, it is unclear how the presence or absence of the question particle affects the interpretation of embedded questions. We note, impressionistically, that the question particle is offered much more frequently in elicitation with embedded questions than matrix questions.⁷

⁷ Avatime also allows for embedded yes/no questions that look like their matrix clause counterparts. A reviewer points out that many Kwa languages lack true embedded *wh*-questions and employ a relative clause-like structure instead (see, for example, Torrence & Kandybowicz 2015 on Krachi, a North Guang (Kwa) language of Ghana). Interestingly, Ikpana, a member of the Na-Togo branch within the GTM group, also has true embedded *wh*-questions and a relative clause-like construction, as reported in Kandybowicz et al. (2020). At this point, we can say that true embedded *wh*-questions are found in at least one language in both branches of the Ghana-Togo Mountain languages.

The embedded questions in (10) are all introduced by the complementizer *sì*, which is homophonous with a verb meaning ‘say’. The *sì* complementizer also introduces embedded propositions:

- (11) Åyapè e-bù sì Mérì e-dzi lì-mwε-nè
 ayape 3SG.PERF-think COMP mary 3SG.PERF-buy CL-orange-DEF
 ‘Ayape thinks that Mary bought oranges.’

It is also possible for embedded *wh*-questions to exhibit “double complementizers”:

- (12) a. me-ví Kòfi sì egé sì Åyapè e-ye
 1SG.PERF-ask Kofi COMP what COMP ayape 3SG.PERF-kill
 ‘I asked Kofi what Ayape killed.’⁸
 b. me-ví Kòfi sì nifɔ̄ sì be-dzi o-kò-lɔ
 1SG.PERF-ask Kofi COMP where COMP 3PL.PERF-buy CL-chicken-DEF
 ‘I asked Kofi where they bought the chicken.’

In (12), the *wh*-expression is sandwiched between two instances of the complementizer. This is immediately reminiscent of the so-called “CP recursion” structures found in colloquial English varieties. McCloskey (2006) analyzes English clauses where multiple complementizers appear:

- (13) a. I don’t think that he should contend that just because he makes
 a promise that it becomes a responsibility of the United States.⁹
 b. It is useful to know that once you have mastered the chosen
 dialect that you will be able to pick up a news paper and read it.

In Avatime, just as in English, it is unclear if there is a semantic or pragmatic difference between the “simple” and “recursive” CP structures. Some speakers do report that the multiple COMP construction adds a flavor of emphasis, but this response is inconsistent. Thus, we leave it here as an open question.

4 *Wh*-items from embedded clauses

Wh-items associated with argument/adjunct positions in embedded clauses that take matrix scope exhibit three patterns. A *wh*-item from an embedded clause can exhibit full movement and surface on the left edge of the matrix clause (14b).

⁸To our knowledge, the existence of cases like (12a) is first noted in van Putten (2014: 113).

⁹These are adapted from McCloskey (2006: (69d) and (69e)).

(14c) shows that Avatime also allows for partial *wh*-movement, in which the *wh*-item surfaces on the left edge of the embedded clause. Finally, the *wh*-item in (14d) can surface in-situ in its base position in the embedded clause.

(14) *Direct object*

- a. Kòfi e-bù sì Àyapè e-ye o-kò-lɔ kí
Kofi 3SG.PRES-think COMP Ayape 3SG.PERF-kill CL-chicken-DEF P
Kwamè
Kwame
'Kofi thinks that Ayape killed a chicken for Kwame'
- b. egé Kòfi e-bù sì Àyapè e-ye kí Kwamè
what Kofi 3SG.PRES-think COMP Ayape 3SG.PERF-kill P Kwame
'What does Kofi think that Ayape killed for Kwame?'
- c. Kòfi e-bù sì egé Àyapè e-ye kí Kwamè
kofi 3SG.PRES-think COMP what Ayape 3SG.PERF-kill P Kwame
'What does Kofi think that Ayape killed for Kwame?'
- d. Kòfi e-bù sì Àyapè e-ye egé kí Kwamè
kofi 3SG.PRES-think COMP Ayape 3SG.PERF-kill what P Kwame
'What does Kofi think that Ayape killed for Kwame?'

(15) shows a similar pattern for subjects. The embedded *wh*-subject can surface in its scope position (15a) or in the embedded clause (15b). Because a partially moved *wh*-item surfaces to the right of the complementizer, it is not clear whether (15b) is a case of partial *wh*-movement or an in-situ *wh*-item. Note too that (15a) shows that there is no *that-t* effect (as pointed out by a reviewer):

(15) *Subject*

- a. nyàwé Kòfi e-bù sì e-ye o-kò-lɔ kí
who Kofi 3SG.PRES-think COMP 3SG.PERF-kill CL-chicken-DEF P
Kwamè
Kwame
'Who does Kofi think killed the chicken for Kwame?'
- b. Kòfi e-bù sì nyàwé e-ye o-kò-lɔ kí
Kofi 3SG.PRES-think COMP who 3SG.PERF-kill CL-chicken-DEF P
Kwamè
Kwame
'Who does Kofi think killed the chicken for Kwame?'

The data in (16) show that locative adjuncts pattern like arguments. (16b) shows full movement of the adjunct, while (16c) is an example of partial movement. In (16d), the *wh*-item occurs in its postverbal base position.

- (16) a. Kofi e-bù sì Ayapè e-ye o-kò-lò kí
 Kofi 3SG.PRES-think COMP Ayape 3SG.PERF-kill CL-chicken-DEF P
 Kwamè ní kè-dzia mè
 Kwame LOC CL-market P
 'Kofi thinks that Ayape killed a chicken for Kwame at the market'
 b. nifɔ́ Kofi e-bù sì Ayapè e-ye o-kò-lò
 where Kofi 3SG.PRES-think COMP Ayape 3SG.PERF-kill CL-chicken-DEF
 kí Kwamè
 P Kwame
 'Where does Kofi think that Ayape killed a chicken for Kwame?'
 c. Kofi e-bù sì nifɔ́ Ayapè e-ye o-kò-lò
 Kofi 3SG.PRES-think COMP where Ayape 3SG.PERF-kill CL-chicken-DEF
 kí Kwamè
 P Kwame
 'Where does Kofi think that Ayape killed a chicken for Kwame?'
 d. Kofi e-bù sì Ayapè e-ye o-kò-lò kí
 Kofi 3SG.PRES-think COMP Ayape 3SG.PERF-kill CL-chicken-DEF P
 Kwamè (ní) nifɔ́
 Kwame LOC where
 'Where does Kofi think that Ayape killed a chicken for Kwame?'

Note that in the non-interrogative (16a) the locative PP has both a prepositional element, *ní* 'LOC' and a postposition *mè* (see Ford 1971). Neither of these occurs with a moved *wh*-item (16b, 16c), although the preposition is optional when the locative *wh* is in-situ.

5 The relative type of *wh*-interrogation

The cases examined up to this point have all been ones in which all of the clauses involved have the form of ordinary root clauses. A second class of *wh*-question strategies involves structures akin to relative clauses (RCs). To see this, we first consider headed relative clauses:

- (17) a. ma-mò kà-druí kà(-kɔ)-lɔ **gì/*sì** wɔ-kpɔ́ *(ɛ)
 1SG.PERF-see CL-dog CL-DEM-DET REL/*COMP 2SG.PERF-praise CDET
 'I saw the dog that you praised.'
- b. ma-mò kà-druí kà-tɔ **gì/*sì** wɔ-kpɔ́ *(ɛ)
 1SG.PERF-see CL-dog CL-DET REL/*COMP 2SG.PERF-praise CDET
 'I saw a dog that you praised'
- c. ma-mò kù-druí kù-tɔ **gì/*sì** wɔ-kpɔ́ *(ɛ)
 1SG.PERF-see CL.PL-dog CL.PL-DET REL/*COMP 2SG.PERF-praise CDET
 'I saw some dogs that you praised'

Moving from left to right, in Avatime RCs, the left edge of RC (underlined in (17) has a noun class agreement marker, potentially followed by a demonstrative element (if the head is definite), followed by a determiner. The underlined string in the definite headed RC in (18) indeed occurs independently as a demonstrative:

- (18) kpɔ́ ka-druí kà-kɔ-lɔ
 praise.IMPER CL-dog CL-DEM-DEF
 'Praise that dog!'

The left-edge class markers and determiners are followed by the relative clause complementizer, *gi* (in bold). This complementizer also occurs on the left edge of a subset of temporal and conditional clauses. As indicated in (17) too, the *sì* complementizer, which introduces embedded propositions and questions, cannot be used to introduce a relative clause. Verbs in Avatime relative clauses do not carry any special morphology and inside of the relative clause, the normal SVO word order is observed.

The right edge of RCs is indicated by an obligatory *clausal determiner*, *CDET*. As van Putten (2014) notes, the clausal determiner assimilates to height and ATR value of a preceding vowel.¹⁰ The clausal determiner is homophonous with one of the definite determiners, for example, the vowel lengthening that distinguishes some definite from indefinite nouns:

- (19) a. ó-nyime '(a) man'
 b. ó-nyime-è 'the man'

While it has the form of a definite determiner, the clausal determiner has no obvious relationship to specificity/definiteness, as it occurs with both definite and indefinite headed RCs. Overall, headed RCs are structured as below:

¹⁰While van Putten notes that the clausal determiner is *often* used, our consultants consistently used it in headed relative clauses.

- (20) N CL-(DEM)-DET [TP SVO] CDET

There are two types of relative interrogative structures. The first involves only the relative marker *gi*:¹¹

- (21) a. nyàwé **gi** a-dà li-mwε-nè (*ε)
 who REL 2SG.PERF-sell CL-oranges-DEF CDET
 'Who sold the oranges?'¹²
- b. nifó **gi** be-dzì li-mwε-nè (*ε)
 where REL 3PL.PERF-buy CL-oranges-DEF CDET
 'Where did they buy the oranges?'
- c. egé **gi** be-ye (*e)
 what REL 3PL.PERF-kill CDET
 'What did they kill?'

As indicated, unlike ordinary headed RCs, the clause-final determiner is ungrammatical in the *wh*-question construction.

The RC type of *wh*-interrogative does not allow for *wh* in-situ:

- (22) (*gi) wo-dzì li-mwε-nè nifó
 REL 2SG.PERF-buy CL-oranges-DEF where
 'Where did you buy the oranges?'

It is important to note that there is no inherent problem with *gi* occurring by itself on the left edge of a clause. This configuration can be found in some temporal clauses, with the right edge clausal determiner:

- (23) me-tá-dó srasè [**gi** Kòfi e-dzì i]
 1SG-FUT-sleep sleep REL Kofi 3SG-arrive CDET
 'I will sleep when Kofi arrives.'¹³

¹¹At this point, we do not know whether there is an interpretive or pragmatic difference between the relative types of *wh*-question and the non-relative types discussed earlier. We leave this as a topic for future research.

¹²There are other contexts where *gi* occurs without the final determiner:

be-bù sì **gi** wo-dzì ke-plekpà
 3PL-think.PRES COMP REL 2SG-buy.PERF CL-book
 'They think that you bought a book.'

¹³Some temporal/conditional clauses may also involve the relative complementizer and *whether*:

The second type of RC-related *wh*-interrogative clause involves the RC complementizer and the noun class agreeing markers. In (24a), the left-edge *wh*-expression is immediately followed by the string *class marker + (demonstrative) + determiner*. This complex is followed by the relative marker *gi*. As before, the clausal determiner is not permitted. (24b) shows that the *wh*-expression cannot be in-situ in this construction. (24c–24e) show this type of relative clause *wh*-construction for other *wh*-expressions in matrix and from embedded clauses:

- (24) a. egé ka(-kɔ)-lò gi be-dzi (*i)
what CL-DEM-DET REL 3PL.PERF-buy CDET
'What did they buy?'
- b. *ka(-kɔ)-lò gi be-dzi (*i) egé¹
CL-DEM-DET REL 3PL.PERF-buy CDET what
'What did they buy?'
- c. bi-kù wòlí bε-(wɔ)-lò gi be-dzi (*i)
CL.PL-yam which CL-DEM-DET REL 3PL.PERF-buy CDET
'Which yams did they buy?'
- d. nifɔ lε-(wɔ)-lò gi be-dzi li-mwε-nè (*ɛ)
where CL-DEM-DET REL 3PL.PERF-buy CL.PL-oranges-DEF CDET
'Where did they buy the oranges?'
- e. bi-kù wòlí bε-lò gi be-bù sì be-dzi
CL.PL-yam which CL-DET REL 3PL.PRES-think COMP 3PL.PERF-buy.PERF
(*i)
CDET
'Which yams do they think that they bought?'

It is also possible to form complex chains with multiple relative markers. (25a) gives the base case, with a *wh*-phrase on the left edge. (25b) shows the relative *wh*-construction. In (25c), the higher clause looks the same as in (25b), but the left edge of the embedded clause is marked by the presence of noun-class agreeing pronominal (*ka*) and a *class marker + determiner* string, which looks very similar to what occurs on the left edge of a headed relative clause. In (25d), the matrix

maá-dɔ srasè [xé gi Kofi o-dzi i]
1SG.FUT-sleep sleep whether REL kofi 3SG-arrive CDET
'I will sleep when Kofi arrives.'

It is not clear whether the clausal determiner always appears in conditional or temporal clauses.

clause has none of the left edge material found in relative clauses, but embedded clause has the pronominal *ka* and the *class marker + determiner* string found in (25c).

- (25) a. **ka-druì wòlí** be-bù sì Àyape a-kpò (*ε)
 CL-dog which 3PL.PRES-think COMP Ayape 3SG.PERF-praise CDET
 ‘Which dog do they think that Ayape praised?’
- b. **ka-druì wòlí ka-lò** gì be-bù sì Àyape
 CL-dog which CL-DET REL 3PL.PRES-think COMP Ayape
 a-kpò (*ε)
 3SG.PERF-praise CDET
 ‘Which dog do they think that Ayape praised?’
- c. **ka-druì wòlí ka-lò gì** be-bù sì kaá-ka-lò %(gì)
 CL-dog which CL-DET REL 3PL.PRES-think COMP CL-CL-DET REL
 Àyape a-kpò (*ε)
 Ayape 3SG.PERF-praise CDET
 ‘Which dog do they think that Ayape praised?’¹⁴
- d. **ka-druì wòlí** be-bù sì kaá-ka-lò %(gì) Àyapè
 CL-dog which 3PL.PRES-think COMP CL-CL-DET REL Ayape
 a-kpò (*ε)
 3SG.PERF-praise CDET
 ‘Which dog do they think that Ayape praised?’

Note that the class-agreeing element *ka* in (25b–25d) can also appear in simple *wh*-questions, but only in pre-subject position:

- (26) a. ***ka-druì wòlí wɔ-mò** ká
 CL-dog which 2SG.PERF-see CL
 ‘Which dog did you see?’
- b. **ka-druì wòlí ká wɔ-mò**
 CL-dog which CL 2SG.PERF-see
 ‘Which dog did you see?’

¹⁴The “%” used here and in (25d) indicates that some speakers consistently judged the presence of the relative marker as grammatical, while other speakers consistently rejected sentences where the relative marker was present in this position.

6 Islands

Turning to islands (Ross 1967), there cannot be an island boundary between the surface position of a *wh*-item and its base position. We first consider the complex noun phrase constraint (CNPC), cases like relative clauses, such as (27a). A case like (27b) represents an attempt to move the *wh*-item out of the RC, yielding ungrammaticality. Note too that the presence of a resumptive pronoun (*wa*) does not alleviate the ungrammaticality:

- (27) a. be-kpò ó-nyime lε-kɔ-lò [gì a-dà ki-mimì-ε ε]
 3PL.PERF-praise CL-man CL-?-DET REL 3SG.PERF-sell CL-rice-DEF CDET
 'They praised the man who sold the rice.'
 b. *egé be-kpò ó-nyime lε-kɔ-lò [gì a-dà Ø/wa
 what 3PL.PERF-praise CL-man CL-?-DET REL 3SG.PERF-sell Ø/CL.PRON
 e]
 CDET

However, if the *wh*-item is left inside of the island, the result is grammatical:

- (28) be-kpò ó-nyime lε-kɔ-lò [gì a-dà ege e]
 3PL.PERF-praise CL-man CL-?-DET REL 3SG.PERF-sell what CDET
 'What thing is such that they praised the man who sold it?'

A similar pattern holds for adjunct clauses. In (29a), the (bracketed) *before* clause has two elements, *xε* 'whether' and *able* 'before', on the left edge. The ungrammatical (29b) results from attempting to move the *wh*-item out of the adjunct island. Note that the presence of a resumptive pronoun, *yε* 'CL.1SG.PRON' or a gap has no effect on the ungrammaticality. (29c) shows that if the *wh*-item is left inside of the island, the result is fine.

- (29) a. be-dzì [xε áblé Áyapè a-kpò Kòfi]
 3PL.PERF-arrive whether before Ayape 3SG.PERF-praise Kofi
 'They arrived before Ayape praised Kofi.'
 b. *nyàwé be-dzì [xε áblé Áyapè a-kpò
 who 3PL.PERF-arrive whether before Ayape 3SG.PERF-praise
 yε/_]
 CL1.SG.PRON
 c. be-dzì [xε áblé Áyapè a-kpò nyàwè]
 3SG.PERF-arrive whether before Ayape 3SG.PERF-praise who
 'They arrived before Ayape praised who?'

We next look at coordinate structures like (30a), where objects are conjoined. (30b), (30c), both ungrammatical attempts to move a single conjunct out, immediately suggest that the coordinate structure constraint is active in Avatime. These examples also show that the presence of a class-agreeing resumptive pronoun or a gap both result in ungrammaticality:

- (30) a. *be-dà* [ke-plekpà nì ð-mwε-nò]
 3PL.PERF-sell CL-book and CL-orange-DEF
 ‘They sold a book and an orange.’
- b. **ègé be-dà* [ke-plekpà nì lɔ/∅]
 what 3PL.PERF-sell CL-book and CL2.SG.PRON
 ‘What did they sell the book and?’¹⁵
- c. **ègé be-dà* [ka/∅ nì ð-mwε-nò]
 what 3PL.PERF-sell CL6.SG.PRON and CL-orange-DEF
 ‘What did they sell and the orange?’¹⁶

As with the other island cases, if the *wh*-item is in-situ in either conjunct, the result is grammatical:

- (31) a. *be-dà* [ke-plekpà nì egè]
 3PL.PERF-sell CL-book and what
 ‘They sold a book and what?’
- b. *be-dà* [ège nì ð-mwε-nò]
 3PL.PERF-sell what and CL-orange-DEF
 ‘They sold what and an orange?’

The cases that we have looked at so far, RCs, adjuncts, and conjoined structures are known to be strong islands. The second case covered by the CNPC is CP complements to nouns. While degraded in English, argument extractions from CP complements to nouns is permitted (*?/?What did you hear the rumor that John stole at the store?). On the other hand, adjunct extraction is ungrammatical (*Where_k did you hear the rumor that John stole the book *t_k*?), in which, informally, the ‘where’ is construed in the embedded clause and the request is for the location of the stealing event.) In Avatime, in contrast, apparent CP complements to nouns are transparent for extraction for both arguments (32b) and

¹⁵This sentence can only have the meaning ‘By using what did they sell the book?’ Also, the pronoun *lɔ* is drawn from noun class 2, hence the gloss.

¹⁶This can only have the meaning ‘What did they sell by means of/using an orange?’

at least some adjuncts (32c). However, unlike English, these do not look like relative clauses because there is no relative complementizer (*gi*) or clause-final determiner.

- (32) a. me-nú liwɔlɛmè sì Àyape a-dà ke-plekpà ní
1SG.PERF-hear rumor COMP Ayape 3SG.PERF-sell CL-book LOC
kè-dzia mè
CL-market P
'I heard the rumor that Ayape sold a book at the market.'
- b. ègé wo-nú liwɔlɛmè sì Àyape a-dà ní
what 2SG.PERF-hear rumor COMP Ayape 3SG.PERF-sell LOC
kè-dzia mè
CL-market P
'What did you hear the rumor that Ayape sold at the market?'
- c. nifjwo-nú liwɔlɛmè sì Àyape a-dà ke-plekpà
where 2SG.PERF-hear rumor COMP Ayape 3SG.PERF-sell CL-book
'Where did you hear the rumor that Ayape sold a book?'

While cases like (32b) and (32c) are the translational equivalents to the English, it is very likely that they are not direct structural analogues of the English cases. Note that the noun *liwɔlɛmè* 'rumor' is followed by the *sì* complementizer, which is banned in headed relative clauses. Further, as the examples show, both arguments and adjuncts can be A-bar extracted, which is unlike what is found in English.¹⁷

7 Summary

In the preceding sections, we have reviewed *wh*-question strategies in Avatime and some of their syntactic and morphological properties. Like other Kwa languages such as Krachi (Torrence & Kandybowicz 2015), Avatime allows for *wh*-movement, *wh*-in-situ, and for partial *wh*-movement. The Avatime data are particularly interesting because they highlight the cross-linguistic question of exactly what semantic or pragmatic differences (if any) are encoded in different morpho-syntactic *wh*-strategies, a topic that must be left to future investigation. Zooming out, we have also shown that, while Avatime does exhibit island sensitivity, the in-situ strategy allows formation of genuine questions from inside islands. This calls for further investigation of the parameters of variation in these effects crosslinguistically.

¹⁷Thanks to a reviewer for suggesting this discussion.

Acknowledgments

The research is supported by a grant from the National Science Foundation (BCS-1748590). We thank our Avatime native speaker consultants: Gifty Amu, Peace Awunyama, Vincent Azafokpe, Wisdom Ekissi, Jones Kwame, Philomena Kumatse, Paul Kwawu, Akos Mawulorm and Agbenya Wisdom. Many thanks to Dr. Kofi Dorvlo, who was critical to the success of the project. We greatly appreciate the comments and suggestions from two anonymous reviewers and community proofreaders.

References

- Ameka, Felix K. 2017. The Ghana-Togo Mountain languages: Introduction. *Language Typology and Universals* 70(2). 239–244.
- Buell, Leston. 2011. Zulu *ngani* ‘why’: Postverbal and yet in CP. *Lingua* 121(5). 805–821.
- Dakubu, Mary Esther Kropp & Kevin C. Ford. 1988. The central-Togo languages. In Mary Esther Kropp Dakubu (ed.), *The languages of Ghana*, 119–154. Milton Park: Routledge.
- Defina, Rebecca. 2009. *Aspect and modality in Avatime*. Leiden University. (Doctoral dissertation).
- Downing, Laura J. & Annie Rialland. 2017. Introduction. In Laura J. Downing & Annie Rialland (eds.), *Intonation in African Tone Languages*, 1–16. Berlin: De Gruyter.
- Ford, Kevin C. 1971. *Aspects of Avatime syntax*. Legon: University of Ghana. (Doctoral dissertation).
- Ghana Institute of Linguistics, Literacy, and Bible Translation. 2017. *Kunyanya Vuvu Yɔ: The New Testament in Sideme*. 1st edn. Tamale, Ghana: Ghana Institute of Linguistics, Literacy, & Bible Translation.
- Hornstein, Norbert. 1995. *Logical form: From GB to minimalism*. Oxford: Blackwell Oxford.
- Kandybowicz, Jason, Bertille Baron, Philip Duncan & Hironori Katsuda. 2020. Documenting the Ikpana Interrogative System. *Journal of African Languages and Linguistics*. (under review).
- Karimi, Simin. 2008. *A minimalist approach to scrambling: Evidence from Persian*. Berlin: Walter de Gruyter.

- Kirk, Allison. 2012. Word Order Variation in New Testament Greek *wh*-Questions. In Ans M.C. van Kemenade & Nynke de Haas (eds.), *Selected papers from the 19th international conference on historical linguistics, nijmegen, 10-14 august 2009*, vol. 320 (Current Issues in Linguistic Theory), 293–314. John Benjamins.
- Ko, Heejeong. 2005. Syntax of why-in-situ: Merge into [Spec, CP] in the overt syntax. *Natural Language & Linguistic Theory* 23(4). 867–916.
- Lin, Jo-Wang. 1992. The syntax of *zenmeyang* ‘how’ and *weishenme* ‘why’ in Mandarin Chinese. *Journal of East Asian Linguistics* 1(3). 293–331.
- Marlo, Michael R. & David Odden. 2007. The exponence of TAM in Bakweri. *Bantu in Bloomsbury, SOAS Working Papers in Linguistics* 15. 19–31.
- McCloskey, James. 2006. Questions and questioning in a local English. In vol. 87, 87–126. *Crosslinguistic Research in Syntax, Semantics: Negation, Tense, & Clausal Architecture*.
- Rizzi, Luigi. 2001. On the position “Int(errogative)” in the left periphery of the clause. In Guglielmo Cinque & Giampaolo Salvi (eds.), vol. 59, 287–296. Leiden, The Netherlands: Brill.
- Ross, John Robert. 1967. *Constraints on variables in syntax*. MIT. (Doctoral dissertation).
- Schuh, Russell G. 1995. Aspects of Avatime phonology. *Studies in African Linguistics* 24(1). 32–67.
- Shlonsky, Ur & Gabriela Soare. 2011. Where’s ‘Why?’ *Linguistic Inquiry* 42(4). 651–669.
- Torrence, Harold & Jason Kandybowicz. 2015. Wh-question formation in Krachi. *Journal of African Languages and Linguistics* 36(2). 253–285.
- van Putten, Saskia. 2014. *Information structure in Avatime*. Radboud University Nijmegen. (Doctoral dissertation).
- Wasike, Aggrey. 2007. *The left periphery, wh-in-situ and A-bar movement in Lubukusu and other Bantu languages*. Cornell University. (Doctoral dissertation).

Chapter 2

Morphologically conditioned phonological variation in Nobiin

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This paper provides an account of a morphophonological phenomenon of Nobiin (Nile-Nubian; Egypt, Sudan), in which assimilation occurs at two morpheme boundaries, but the assimilation patterns are different for each of the two affixes. Additionally, there are two possible surface forms with one affix but not with the other. We capture these facts in an analysis based on cophonologies, in which each affix is associated with its own ranking of the same phonological constraints.

1 Introduction

This paper presents original data from Nobiin, an underdocumented Nile-Nubian language (North Eastern Sudanic, Nilo-Saharan) indigenous to southern Egypt and northern Sudan. We show that progressive forms (1a) and accusative forms (1b) in Nobiin both have consecutive consonants in the input, but the phonological interactions that produce the attested output forms of these sequences are different for each of the two affixes.

- | | | |
|-----|--|--|
| (1) | a. Progressive marking:
[ammirin] ~ [aamirin]
/ag-mirin/
PROG-run.3SG.PRS
'is running' | b. Accusative marking:
[egetta] (*[egeeta])
/eged-ka/
sheep-ACC
'sheep (acc.)' |
|-----|--|--|

We propose that a Cophonology Theory analysis accounts both for the presence of variation with progressive prefixation (1a) and the absence of variation



with accusative suffixation (1b), and also for the different assimilation patterns attested at the different morpheme boundaries.

In the following section, we provide background on Nobiin, and specifically on the aspects of Nobiin phonology relevant to the phenomena described and analyzed here. In §3 we present the empirical facts and in §4 we provide an analysis of the data. In §5 we discuss why our proposed analysis is superior to other potential analyses, and also point out areas for future research. Finally, in §6, we conclude.

2 Background

2.1 Nobiin

Nobiin (ISO 639-3 fia; also called Mahas) is a Nile-Nubian language of the North Eastern Sudanic branch of the Nilo-Saharan language family. The language is native to southern Egypt and northern Sudan in the area along the Nile River, known as Nubia. Geopolitical circumstances over the past several centuries have led to the displacement of Nobiin speakers; of the approximately 545,000 current speakers, about 45,000 live outside of Nubia in diaspora communities. The language is under-documented and is considered endangered.

2.2 Nobiin phonology

Table 2.1 shows Nobiin’s consonant inventory. There are plosives at the bilabial, alveolar, and velar places of articulation, with the voiceless bilabial plosive missing from the inventory. This lack of /p/ is a property common to many languages spoken in northeastern Africa and the Arabian peninsula. There is one underlying affricate and voiceless fricatives at the bilabial, alveolar, and palatal places of articulation. The inventory also contains a series of four nasal stops, at the bilabial, alveolar, palatal, and velar places of articulation, respectively. The Nobiin rhotic can surface as a tap or a trill, and is listed as a liquid along with the lateral as these two sounds pattern together in the language; neither appears word-initially in Nobiin, and they are both variably epenthesized at the beginning of some prosodic phrases (Barzilai 2019).

Consonants in Nobiin can be underlyingly singleton or geminate. As described throughout the paper, geminates can also be derived by phonological processes across morpheme boundaries.¹ Word-medial consonant clusters containing ei-

¹Phonetic work has shown that underlying and derived geminates have the same duration on average, both lasting about twice as long as singleton consonants (Barzilai 2018). Based on this finding, long consonants derived at morpheme boundaries are analyzed here as geminates.

Table 2.1: Nobiin consonant inventory

	Bilabial	Alveolar	Palatal	Velar
Stop	b	t d		k g
Affricate		dʒ		
Fricative	f	s	ʃ	
Nasal	m	n	n	ŋ
Liquid		l r		

ther an obstruent and a liquid or a plosive and a fricative are also permitted in Nobiin, though all of these can be analyzed as heterosyllabic. Nobiin contrasts between H and L tones,² and also shows contrastive vowel length.

3 The data

The following sections show the empirical data on which our analysis is based. The data comes from a Nobiin speaker currently living in the Washington, D.C. area. The data is supplemented by the native-speaker judgements of the second author and checked against Werner (1987) where possible.

3.1 Assimilation in progressive marking

Progressive forms of verbs in Nobiin are formed with the /ag-/ prefix (2).

- (2) a. [agárjin]
 /ag-árjin/
 PROG-sneeze.3SG.NPST
 ‘is sneezing’

b. [aggónill]
 /ag-gópill]
 PROG-build.3SG.NPST
 ‘is building’

This prefixation triggers assimilation at the morpheme boundary when the verb begins with a consonant. This assimilation results in a derived geminate as in the forms in (3).

- (3) a. [ammirin]
/ag-mirin/
PROG-run.3SG.PRS
'is running'

b. [akkabin]
/ag-kabin/
PROG-eat.3SG.PRS
'is eating'

²High tones are marked with an acute accent mark in transcriptions throughout; low tones are unmarked.

- | | |
|--|---|
| c. [assokkílokkom]
/ag-sokkílokkom/
PROG-lift.2PL.PRS
'are lifting' | d. [abbeésir]
/ag-beésir/
PROG-comb.1SG.PRS
'am combing' |
|--|---|

These geminates are derived via complete regressive assimilation, surfacing as a geminate version of the stem-initial consonant.

3.2 Variable forms of the progressive

The surface realization of progressive forms described in §3.1 is variable. Geminated forms derived from progressive affixation are in free variation with forms comprised of a long vowel and a singleton consonant at the same morpheme boundary. Example (4) repeats the forms in (3), including for each example the other possible surface form.

- | | |
|--|--|
| (4) a. [ammirin] ~ [aamirin]
/ag-mirin/
PROG-run.3SG.PRS
'am/are running' | c. [assokkílokkom] ~
[aasokkílokkom]
/ag-sokkílokkom/
PROG-lift.2PL.PRS
'am/are lifting' |
| b. [akkabin] ~ [aakabin]
/ag-kabin/
PROG-eat.3SG.PRS
'am/are eating' | d. [abbeésir] ~ [aabbeésir]
/ag-beésir/
PROG-comb.1SG.PRS
'am/are combing' |

3.3 Assimilation in accusative marking

The suffix /-ka/ marks accusative case in Nobiin (5) (Khalil in preparation). When the accusative suffix is added to nouns ending with a consonant,³ the final consonant of the root sometimes assimilates to the initial consonant of the accusative suffix, depending on the identity of that consonant (6–7). This assimilation results in a derived geminate that surfaces at the morpheme boundary. The system of assimilation seen at this morpheme boundary is more complex than the patterns described above in §3.1; whether assimilation occurs, and the type of assimilation that occurs, is dependent upon the identity of the root-final consonant.

³The accusative marker may surface as either [-ka] or [-ga] when affixed to a word-final vowel, in an alternation possibly based on the tonal patterns of the noun. We leave a full description of accusative marking on vowel-final nouns to future work.

2 Morphologically conditioned phonological variation in Nobiin

- | | | |
|---|---|---|
| (5) a. [fuulkha] /fuul-ka/
fava_beans-ACC
‘fava beans (acc.)’ | b. [kadísska] /kadíss-ka/
cat-ACC
‘cat (acc.)’ | c. [gisirka] /gisir-ka/
bone-ACC
‘bone (acc.)’ |
| (6) a. [egetta] /eged-ka/
sheep-ACC
‘sheep (acc.)’ | b. [ditʃtʃa] /dítʃ-ka/
five-ACC
‘five (acc.)’ | c. [fákka] /fág-ka/
goat-ACC
‘goat (acc.)’ |
| (7) a. [simsimka] /simsim-ka/
sesame-ACC
‘sesame (acc.)’ | b. [ámáŋŋja] /ámán-ka/
water-ACC
‘water (acc.)’ | c. [soríŋŋja] /soríŋ-ka/
nose-ACC
‘nose (acc.)’ |

If the root-final consonant is a stop or affricate, the place of articulation of the derived geminate is that of the root-final consonant; this occurs via progressive assimilation (6a–6b) and applies vacuously in cases with a root-final velar consonant (6c). The geminates surfacing in these cases are always voiceless, which is unsurprising given the cross-linguistic tendency to avoid voiced geminates (Ohala 1983).⁴

Assimilation at the accusative morpheme boundary can also be bidirectional, when the final consonant of the noun is a nasal. Whereas final /m/ does not trigger assimilation (7a), alveolar and velar nasals trigger both progressive manner assimilation and regressive place assimilation, resulting in a surface geminate [ŋŋ] at the morpheme boundary. (7b–7c).⁵

Crucially, accusative forms exhibiting a long vowel and singleton consonant, similar to those in (4), are illicit with accusative nouns, as revealed in (8).

- | | |
|---|--|
| (8) a. [fákka] (*[fáaka]) /fág-ka/
goat-ACC
‘goat (acc.)’ | b. [egetta] (*[egeeta]) /eged-ka/
sheep-ACC
‘sheep (acc.)’ |
|---|--|

⁴While voiced geminates are avoided in this derived environment, the language does not ban voiced geminates entirely, as evidenced by the assimilation at the progressive boundary. Additionally, there are some instances of underlying geminate /dd/ in monomorphemes, which surface as voiced [dd], as in /hiddo/ ‘where’ and /oddi/ ‘illness’. There appear to be relatively few of these words across the lexicon and at least one, /eddi/ ‘hand’, is a borrowing from Arabic.

⁵We believe that the surface accusative forms of words that end with the palatal nasal /ŋ/ before a velar also trigger place assimilation for a surface geminate [ŋŋ], but further phonetic analysis is necessary to confirm this.

The fact that two forms are possible in (4), but only one in (8), shows that the variation between geminate consonants and a sequence of a long vowel followed by a single consonant is morphophonologically constrained.

3.4 Assimilation at morpheme boundaries

Table 2.2 summarizes the different assimilation patterns that surface at the progressive and accusative morpheme boundaries, as described above.

Table 2.2: Summary of assimilation patterns. Gray cells: no assimilation in surface form. -: consonant not possible word-initially in Nobiin. (?) : consonant not possible word-initially for verbs in Nobiin (confirmed by native-speaker intuitions of the second author).

Consonant C	Progressive /ag-C/	Accusative /C-ka/
/b/	[abb]	[ppa]
/d/ /t/	[add] [att]	[tta]
/g/ /k/	[agg] [akk]	[kka]
/dʒ/	[adʒdʒ]	[tʃtʃa]
/f/ /s/ /ʃ/	[aff] ^a [ass] [aʃʃ]	[fka] [ska] [ʃka]
/m/	[amm]	[mka]
/n/ /ɲ/ /ŋ/	[ann] (-)	[ŋŋa]
/l/ /r/	- -	[lka] [rka]

^a[agf] is marginally acceptable here.

Table 2.2 shows that geminates at the boundary between a progressive suffix and a verb have all of the same features as the initial consonant of the verb. The final /g/ of the progressive suffix assimilates entirely to the following consonant.

On the other hand, assimilation at the boundary between a noun and an accusative marker, shown in the Accusative column, is slightly more complex. When the final consonant of the noun is a liquid, a fricative, or /m/, it surfaces faithfully with a following /k/, yielding a heterosyllabic surface cluster. When the final consonant of the noun is a nasal other than /m/, accusative suffixation results in a geminate velar nasal, [ŋŋ]. Finally, when the final consonant of the noun is a stop or an affricate, accusative suffixation results in a surface voiceless geminate that has the same place of articulation as the underlying root-final consonant.

4 Analysis

In this section we present our analysis, which accounts for the variation in progressive forms by arguing that surface forms must be faithful to their input forms with respect to their moraic structure. We model the differences in assimilation patterns in the two affixation processes in a cophonologies framework, showing that assigning different constraint rankings to the different affixes yields the attested output forms.

4.1 Mora faithfulness

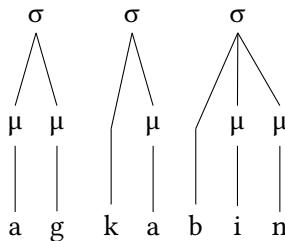
The variation shown in (4) is in line with historically and typologically common patterns of compensatory lengthening (Hayes 1989; Davis 2011), in which the deletion or shortening of a surface segment is counteracted by a lengthening of an adjacent or local segment. It is interesting to note that equivalent sequences (i.e. combinations of short vowel with geminate or long vowel with singleton) are contrastive elsewhere in the language, as evidenced by the possessive pronouns in (9). This further strengthens the claim, suggested above, that the variable compensatory lengthening processes seen in Nobiin progressive formation are specific to that morphosyntactic context and do not represent a general phonological process in the language.

- | | |
|--|---|
| (9) a. [uuní]
/uu-ní/
1PL-POSS
‘our’ | b. [unní]
/ur-ní/
2PL-POSS
‘your (pl)’ |
|--|---|

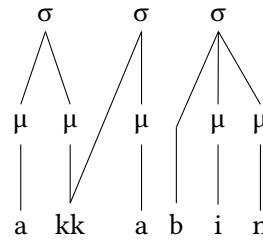
The variable compensatory lengthening in the forms in (4) is supported by a moraic analysis of geminates (McCarthy 1986; Schein & Steriade 1986). The patterning seen here is evidence that codas are moraic in Nobiin, and that long

vowels are bimoraic. Intervocalic geminates are syllabified as the moraic coda of the first syllable and as the (non-moraic) onset of the following syllable. Therefore, the progressive marker /ag-/ contains two moras underlyingly, one from its nucleic vowel and the second from its coda. These moras may surface either as a vowel followed by a geminated consonant (10b), or as a long vowel (10c); in either case, the output is faithful to the input with respect to its moraic structure. The moraic structure of the input, along with the two possible output forms, are shown in the example in (10).

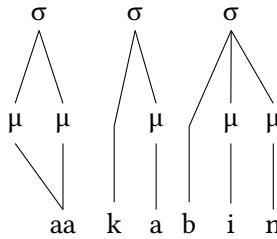
- (10) a. /ag- kabin/



- b. [akkabin]



- c. [aakabin]



The faithfulness constraint in (11a), adapted from Davis (2003), militates for the mora faithfulness that is maintained in both possible output forms in (10).⁶ This constraint interacts with the faithfulness constraint in (11b).

- (11) a. MAX_μ: Every mora in the input must have a corresponding mora in the output.
- b. IDENT: Segments in the output must have the same features as the corresponding segments in the input.

⁶There are other documented phonological processes in Nobiin that have been analyzed as preserving input prosodic structure in the output. In a phonological process independent from the assimilation analyzed here, liquids are epenthized before vowel-initial words, even when the preceding word ends in a consonant and therefore epenthesis results in a consonant cluster. This, similarly to the phenomenon described here, has been analyzed as prosodic faithfulness: epenthetic liquids ensure that syllable boundaries coincide with the prosodic boundaries between morphosyntactic constituents (Barzilai 2019).

We model the variation in surface progressive forms with partially-ordered constraints (POC, Coetzee 2006; Anttila 2006), with Max_μ (11a) outranking MAX_{SEG} and IDENT (11b), which are in turn unranked with respect to each other.⁷

Table 2.3: Mora faithfulness with POC

/ag + kabin/	MAX_μ	MAX_{SEG}	IDENT
a. a.ka.bin	*!	*	
b. a.ga.bin	*!	*	
c. ak.ka.bin			*
d. aa.ka.bin		*	

In Table 2.3, candidates a. and b. are both eliminated as a result of a MAX_μ violation; in each one, there are fewer moras in the output than in the input. The two winning candidates in this derivation are both licit, as neither one violates the undominated MAX_μ constraint. In this analysis, candidates c. and d. are evaluated as equally optimal, though we do not at this point make any claims about their relative optimality or about which form surfaces more frequently in Nobiin speech.

4.2 Cophonologies analysis

The generalization that variable compensatory lengthening is seen in progressive formation but not in accusative formation can be modeled in Cophonology Theory (Anttila 2002; Inkelaas & Zoll 2007). In this type of analysis, each affix is associated with its own cophonology, which is comprised of a unique ranking of phonological constraints.

Though compensatory lengthening in accusative contexts would be faithful to the underlying moraic structure, these forms are nonetheless illicit, as shown in (8). Therefore, in the cophonology associated with the accusative suffix, MAX_{SEG} is reranked so that it strictly outranks IDENT , as opposed to these two constraints remaining unranked with respect to each other as they do in the cophonology of the progressive affix. This reranking rules out candidates similar to candidate d. in Table 2.3.

⁷This synchronic variation could also be modeled with weighted constraints, as in, e.g., Harmonic Grammar (Legendre et al. 1990). An analysis of this sort could also account for the relative frequencies of the two possible output forms. Given that we do not have the data on these relative frequencies, we leave this analysis to future work.

Table 2.4: Accusative marking

/fág + ka/	MAX _μ	MAX _{SEG}	IDENT
a. fá.ka	*!	*	
b. fá.ga	*!	*	
c. fák.ka		*	
d. fáa.ka		*!	

In Table 2.4, candidates a. and b. are eliminated because they are not faithful to the input moraic structure, like in Table 2.3. Though candidate d. does not incur a similar MAX_μ violation, it loses to candidate c. because it violates MAX_{SEG}, deleting an input consonant. Therefore, in this derivation, c. is the only harmonic candidate.

The constraint rankings associated with the respective cophonologies of the progressive and accusative affixation processes are summarized in (12). By reranking MAX_{SEG} above IDENT in the cophonology associated with the accusative marker, we correctly rule out an output form with compensatory lengthening, such as the one in d. in Table 2.4.

- (12) Progressive ranking: MAX_μ »MAX_{SEG} , IDENT
 Accusative ranking: MAX_μ »MAX_{SEG} »IDENT

4.3 Assimilation patterns with cophonologies

Having shown how a cophonologies analysis can account for the differences in variability between the two affixation processes discussed, we now complete the analysis by incorporating constraints that account for the specific assimilation patterns observed. In order to capture the assimilation patterns associated with each affix discussed here, we propose the following additional constraints:

- (13) a. ASSIM: Assign one violation for each surface consonant cluster in which the two segments differ in at least one feature.
 b. IDENT_L: Output segments at the left edge of a morphological constituent must have the same features as the corresponding segments at left edges in the input.
 c. *DD: Assign one violation for every geminate voiced obstruent in the output.
 d. IDENT_{NAS}: Nasal features in the input must have a corresponding nasal feature in the output.

- e. IDENT₂: Assign one violation for every segment in the output that differs from its corresponding input segment in two or more features.

Before showing that these constraints capture the attested data, we first elaborate upon two of the constraint formulations in (13). First, the ASSIM constraint in (13a) is intended to stand in for two individual constraints that each militate against specific surface clusters. One of these constraints is a markedness constraint that prohibits sequences of consecutive plosives. Another markedness constraint prohibits /TN/ sequences, where T stands for any obstruent and N stands for any nasal. Given that all word-initial consonants in Nobiin are either obstruents or nasals (the liquids /l/ and /r/ are restricted to non-word-initial positions, as shown in Table 2.2), these two constraints together militate against any surface [g#C] clusters at the progressive boundary. These constraints are also compatible with the observation that all morpheme-internal consonant clusters Nobiin are either sequences of a plosive and a fricative (e.g., /makfa/ ‘table’, /túskó/ ‘three’) or of an obstruent and a liquid (e.g., /sarbee/ ‘finger’, /afri/ ‘beautiful’).⁸ The data present no evidence for the ranking of these two markedness constraints with respect to each other. Therefore, the constraint ASSIM here represents these constraints for simplicity and clarity.

Second, the IDENT₂ constraints in (13e) militates against output forms with segments that differ from their corresponding input segments in two or more features. Candidates that do not violate this constraint are those in which input segments have undergone assimilation in order to form a surface geminate, but this assimilation has been derived by changing no more than one of the input features. This result is related to the typological generalization that segments participating in an agreement relationship, such as one that results in assimilation, are highly similar to each other (Rose & Walker 2004). In the Rose & Walker (2004) long-distance consonant agreement (LDCA) model, agreement relationships are not established if the segments in question are too featurally dissimilar to one another. Similarly, in the current analysis, IDENT₂ prevents assimilation between consonants in a way that alters too many of the input features of these consonants.

The IDENT₂ constraint, and the phonological generalization that it captures, could also be modeled with local conjunction (Smolensky 1993 et seq.); in this type of analysis, two separate IDENT constraints would be locally conjoined such that a simultaneous violation of both would result in a less harmonic candidate

⁸There are very rare exceptions to the prohibition of plosive-plosive clusters found in loan words from English, e.g., /akteivist/ ‘activist’. These claims are based on a corpus of just under 3,000 unique words and about 2,350 sentences in Nobiin.

than a violation of just one or the other. In a local conjunction analysis, the active conjoined constraint would differ depending on the identity of the consonants in the input cluster. If the input consonant is a stop or affricate, the active conjoined constraint would be [IDENT_{PLACE} & IDENT_{VOT}], ensuring that the place of articulation of the root consonant, as well as the voicelessness of the suffix consonant, are maintained. On the other hand, if the input consonant stop is a nasal (other than /m/), the active constraint would be [IDENT_{PLACE} & IDENT_{MANNER}], which would result in a surface nasal with the same place of articulation as that of the suffix onset /k/. Crucially, the domain of locality in this analysis would have to be the segment (Łubowicz 2005), such that a given candidate could only incur a violation if both conjoined IDENT constraints are violated by the same output segment.

Similarly, a weighted constraints analysis such as Harmonic Grammar (Legendre et al. 1990), in which constraints have relative weights as opposed to strict relative weightings, could also capture the cumulative effects of multiple IDENT constraints. Given that one of the benefits of Harmonic Grammar accounts is capturing relative frequencies of variable output forms, and since our data set does not include such frequency information, we leave this type of account to future work.

An alternative analysis in which locally conjoined IDENT constraints operating on an individual segment correctly derive the attested geminates in accusative forms, or one in which constraints are weighted and not strictly ranked, could be equally successful as the one presented here. Though local conjunction has been argued to make incorrect typological predictions, including over-generation (e.g., see discussion in Farris-Trimble 2008), Shih (2017) has nonetheless shown that in a weighted constraints analysis, conjoined constraints are necessary to capture superadditive gang effects. Therefore, we acknowledge that both a constraint conjunction analysis and a weighted constraints analysis could be as theoretically satisfactory as our current analysis.

Having motivated the constraints in (13), we turn now to our proposed analysis. Tables 2.5 and 2.6 (pages 31 and 32) show the derivation of two progressive forms, incorporating the constraints in (13) to account for the identity of the geminate consonants in the winning forms in e. In both derivations, candidates a. and b. are eliminated for violating MAX_μ, candidate c. is eliminated because of its illicit cluster, and candidate d. is eliminated because of an IDENT_L violation. For each of the two input forms, candidates e. and f. are equally optimal, as they avoid violating the high-ranked ASSIM and IDENT_L constraints, and maintain the moraic structure of the input form.

Table 2.5: Progressive /ag-/ marking in Nobiin (níl 'drink.1SG.NPST')

/ag + níl/	MAX _μ	ASSIM	IDENT _L	MAX _{SEG}	IDENT	*DD	IDENT _{NAS}	IDENT ₂
a. a.níl	*!	-	-	*	-	-	-	-
b. a.gíl	*!	-	*	*	-	-	-	-
c. ag.níl	-	*!	-	-	-	-	-	-
d. ag.gíl	-	-	*!	-	*	*	*	*
e. an.níl	-	-	-	-	*	-	*	-
f. aa.níl	-	-	-	*	-	-	-	-

Table 2.6: Progressive /ag-/ marking in Nobiiñ (daáril 'sit.1SG.NPST^R)

/ag + daáril/	MAX _u	ASSIM	IDENT _L	MAXSEG	IDENT	*DD	IDENT _{NAS}	IDENT ₂
a. a.daa.ril	*!	-	-	-	-	-	-	-
b. a.gaá.ril	*!	-	-	-	-	-	-	-
c. ag.daa.ril	-	*	!	-	-	-	-	-
d. ag.gaá.ril	-	-	*	!	-	*	-	-
e. ad.daa.ril	-	-	-	-	*	*	-	-
f. aa.daa.ril	-	-	-	*	-	-	-	-

By reranking the same set of constraints, we derive the attested output of accusative forms, shown in Tables 2.7 and 2.8 (pages 34 and 35). Here, *DD and IDENT_{NAS} ensure the correct assimilation pattern, depending on the identity of the first consonant in the input cluster. Additionally, IDENT₂ allows forms that change one feature for each of two input segments, but not those that change two features of a single input segment. This constraint allows for forms in which assimilation is bidirectional, and the surface geminate takes, for instance, its place features from the underlying suffix onset /k/ and its manner features from the underlying root-final nasal.

In addition to deriving the correct assimilation patterns, the difference in the rankings between Tables 2.5–2.8 also captures the difference in variability: there are two possible output forms in progressive /ag-/ affixation, but only one possible form for each root when the accusative /-ka/ suffix is added.

The complete constraint rankings associated with the cophonologies of each of the affixes discussed here are summarized in (14).

(14) Progressive ranking:

MAX _{μ} , ASSIM, IDENT_L » MAX_{SEG}, IDENT » *DD, IDENT_{NAS}, IDENT₂

Accusative ranking:

MAX _{μ} , ASSIM, *DD, IDENT_{NAS}, IDENT₂, MAX_{SEG} » IDENT, IDENT_L

5 Discussion

In this section we show how our proposed cophonologies analysis of the empirical data is preferable to an indexed constraint analysis. Second, we discuss the prefix/suffix asymmetry in our data and its implications, and finally we suggest directions for future work on Nobiin morphophonology.

5.1 Indexed constraints analysis

An alternative analysis to the one we present here is one that uses indexed constraints (Beckman 1995; 1997). Under this type of analysis, constraints refer to the morphological properties of the input and not just its surface phonological properties. In some views of phonological and morphophonological theory, phonological derivations should not directly refer to morphological structure, even if morphology and phonology can be shown empirically to interact. Regardless of this theoretical debate, we show here that even if an indexed constraints analysis were preferred, it could not account for the Nobiin assimilation data.

Table 2.7: Accusative /-ka/ marking in Nobiin (aman ‘water’)

/aman + ka/	MAX _μ	ASSIM	*DD	IDENT _{NAS}	IDENT ₂	MAX _{SEG}	IDENT	IDENT _L
a. a.ma.ka	*!	-	-	-	-	*	-	-
b. a.ma.na	*!	-	-	-	-	*	-	-
c. a.man.ka	-	*!	-	-	-	-	-	-
d. a.man.na	-	-	-	-	*!	-	**	*
e. a.mak.ka	-	-	*!	-	*!	-	**	-
f. a.mat.ta	-	-	*!	-	-	-	**	*
g. a.maj.ŋa	-	-	-	-	-	-	**	*
h. a.maa.ŋa	-	-	-	-	*!	-	*	*

Table 2.8: Accusative /-ka/ marking in Nobiin (eged 'sheep')

/eged + ka/	MAX _μ	ASSIM	*DD	IDENT _{NAS}	IDENT ₂	MAX _{SFG}	IDENT	IDENT _L
a. e.ge.ka	*!					*		
b. e.ge.da	*!					*	*	
c. e.ged.ka		*!				*		
d. e.ged.da		*!			*		*	
e. e.gek.ka					*!			
f. e.egg.ga					*!		*	
g. e.get.ta						**	*	
h. e.gee.ta						*		

In an indexed constraints analysis of the data presented here, an indexed constraint such as the high-ranking one in (15) could be used in an analysis of the Nobiin data presented here. Candidates would incur a violation of this constraint only if it is a root segment that is not faithful to its input. By ranking this indexed constraint above a non-indexed faithfulness constraint, at least some of the features of the root consonant in both assimilation contexts would be preserved. The variation in surface forms of the progressive would be as straightforwardly accounted for in an indexed constraints analysis as it is in the present cophonologies analysis.

- (15) $\text{IDENT}_{\text{ROOT}} \gg \text{IDENT}$

However, the patterns of assimilation in Nobiin accusative formation would lead to a ranking paradox in this type of analysis. When the noun ends in a nasal (16a), the place of articulation of this root consonant changes, but not its voicing or manner. On the other hand, when the nouns ends in a voiced stop or an affricate (16b), the voicing of the root changes but not its place of articulation. Each assimilation pattern would require a different relative ranking of $\text{IDENT-VOI}_{\text{ROOT}}$ and $\text{IDENT-PLACE}_{\text{ROOT}}$, as demonstrated in (16).

- (16) a. /aman-ka/ → [amaŋŋa]
 $\text{IDENT-VOI}_{\text{ROOT}} \gg \text{IDENT-PLACE}_{\text{ROOT}}$
b. /eged-ka/ → [egetta]
 $\text{IDENT-PLACE}_{\text{ROOT}} \gg \text{IDENT-VOI}_{\text{ROOT}}$

Therefore, though the data reveals an apparent generalization that the root consonant always determines the identity of a geminate that results from assimilation across a morpheme boundary, the details of this pattern cannot actually be modeled as a unified phonological process, even when leveraging the morphologically-specific power of indexed constraints.

5.2 Prefix/suffix asymmetry

The cophonologies analysis of the Nobiin data presented above assigns a different ranking of the proposed constraint set to each of the two morphemes in question, thereby deriving the attested assimilation and variation patterns. This analysis captures the generalizations in the data without making reference to morphological information; rather, the difference between the two morphemes falls out of the phonological constraints and their rankings. While we believe that deriving morphophonological patterns using only phonological constraints can

be considered theoretically desirable, as mentioned above, we acknowledge that our approach does not directly address the fact that one morpheme in question here is a prefix while the other is a suffix.

It is a well-established typological generalization that prefixes and suffixes, as well as left and right word edges, behave differently from each other (e.g., Bye & De Lacy 2000; Hyman 2008; Pycha 2015). Specifically, suffixation is more cross-linguistically common than prefixation. When both affix types are present in a language, left edges are more resistant to neutralization than right edges (Bye & De Lacy 2000). In other words, suffixes are more “cohering” than prefixes; phonological processes at a suffix boundary are often bidirectional, whereas at the prefix boundary phonological processes tend to be unidirectional, dictated solely by the segments in the root (Hyman 2008). These typological facts align with the Nobiin data presented here: the phonological alternations seen at the prefix boundary are different from those at the suffix boundary, such that assimilation at the prefix boundary is unidirectionally anticipatory whereas the assimilation at the suffix boundary is bidirectional. One proposal for a theoretical account of this typological asymmetry is the edge-asymmetry hypothesis (EAH), which asserts that no constraint may refer to the right edge of a constituent (Bye & De Lacy 2000). By employing the IDENT_L constraint (13b), and by avoiding constraints that conversely refer to the right edges of constituents, we abide by the EAH and contribute to the body of morphophonological analyses that capture edge asymmetries.

5.3 Future work

The data and analysis shown here present several directions for future work. First, the speaker who provided the bulk of the data presented here occasionally mentioned instances in which Nobiin speakers from other dialectal regions may have different output forms. For instance, there are varieties of Nobiin in which /ag + kabin/ might surface as [a.ga ka.bin], with a vowel being epenthized to avoid a surface consonant cluster as opposed to the assimilation patterns discussed throughout this paper. It is likely, then, that the constraints on consonant assimilation have a different ranking with respect to other active faithfulness constraints in such varieties. Future work is required to determine whether the phonological patterning of these dialects can shed light on the processes that are described here.

Our analysis also raises several theoretical questions about Nobiin phonology in general. For instance, we do not at this point posit a default phonological

grammar based on which the constraints in the morpheme-specific cophonologies are reranked. Further research on the language more broadly is needed to determine which of the rankings active in the derivations presented here are pervasive in the Nobiin phonology. We believe that a more thorough understanding of independent phonological processes in the language may further inform the assimilation patterns we show.

As mentioned above in §5.2, the data analyzed here reveals a clear difference in phonological patterning between one prefix and one suffix in Nobiin. Future work will investigate phonological processes taking place at other morpheme boundaries, with the specific aim of determining whether the edge asymmetries seen here hold across the morphophonology of the language. If this is the case, future theoretical models of Nobiin morphophonology should address these edge asymmetries more explicitly than the analysis presented here.

Finally, though tone is peripheral to the consonant assimilation processes described here, there is very little work on the tonal phonology and morphophonology of Nobiin at this point. Future work on Nobiin will examine phonological processes involving tone, including whether they are morphophonologically constrained like the alternations described throughout this paper.

6 Conclusion

We have argued for a Cophonology Theory analysis of progressive and accumulative affixation in Nobiin. We show that the variation in output progressive forms can be modeled as faithfulness to input moraic structure. Our proposed cophonologies analysis can account for the presence of variation in the surface forms resulting from one type of affixation but not the other. This account also models the differences in assimilation patterns between two affixes: one triggers bidirectional assimilation while the other triggers complete regressive assimilation. Finally, we show that though an indexed constraints analysis seems well-suited to capture the surface facts, cophonologies are needed in order to provide a unified phonological account of the various processes presented.

Acknowledgements

We are grateful to Tanutamon Gerais for providing the grammaticality judgements on which this work is based. Thanks also to Hannah Sande, Maddie Oakley, Ruth Kramer, and the audience at ACAL50 for feedback on previous versions of this work.

References

- Anttila, Arto. 2002. Morphologically conditioned phonological alternations. *Natural Language & Linguistic Theory* 20(1). 1–42.
- Anttila, Arto. 2006. Variation and opacity. *Natural Language & Linguistic Theory* 24(4). Springer, 893–944.
- Barzilai, Maya L. 2018. *Phonetics & phonology of Nobiin geminates*. Manuscript, Georgetown University.
- Barzilai, Maya L. 2019. *Phonologically non-optimizing prosodic faithfulness in Nobiin*. Paper presented at the Segmental Processes in Interaction with Prosodic Structure workshop.
- Beckman, Jill N. 1995. Shona height harmony: Markedness and positional identity. *University of Massachusetts Occasional Papers in Linguistics* 18. 53–75.
- Beckman, Jill N. 1997. Positional faithfulness, positional neutralisation and Shona vowel harmony. *Phonology* 14(1). 1–46.
- Bye, Patrik & Paul De Lacy. 2000. Edge asymmetries in phonology and morphology. In Ji-Yung Kim & Masako Hirotani (eds.), *Proceedings of north east linguistics society*, vol. 30, 121–135.
- Coetzee, Andries W. 2006. Variation as accessing ‘non-optimal’ candidates. *Phonology* 23(3). 337–385.
- Davis, Stuart. 2003. The controversy over geminates and syllable weight. In Ruben van de Vijver Caroline Féry (ed.), *The syllable in optimality theory*, 77–98. Cambridge: Cambridge University Press.
- Davis, Stuart. 2011. Quantity. In Alan C. L. Yu John Goldsmith Jason Riggle (ed.), *Quantity*, chap. 4, 103–140. Hoboken, NJ: John Wiley & Sons Ltd.
- Farris-Timble, Ashley W. 2008. *Cumulative faithfulness effects in phonology*. (Doctoral dissertation).
- Hayes, Bruce. 1989. Compensatory lengthening in moraic phonology. *Linguistic Inquiry* 20(2). 253–306.
- Hyman, Larry M. 2008. Directional asymmetries in the morphology and phonology of words, with special reference to Bantu. *Linguistics* 46(2). 309–350.
- Inkelas, Sharon & Cheryl Zoll. 2007. Is grammar dependence real? A comparison between cophonological and indexed constraint approaches to morphologically conditioned phonology. *Linguistics* 45(1). 133–171.
- Khalil, Nabantood. In preparation. *The accusative marker /-ka/ in Nobiin*. https://www.academia.edu/37659466/The_Accusative_Marker_-ka_in_Nobiin.
- Legendre, Géraldine, Yoshiro Miyata & Paul Smolensky. 1990. Harmonic grammar: A formal multi-level connectionist theory of linguistic well-formedness: Theoretical foundations. *Computer Science Technical Reports*. 447.

- Lubowicz, Anna. 2005. Locality of conjunction. In John Alderete, Chung-hye Han & Alexei Kochetov (eds.), *Proceedings of the 24th West Coast Conference on Formal Linguistics*, 254–263. Cascadilla Proceedings Project. DOI: 10.7282/T3833VZN.
- McCarthy, John J. 1986. OCP effects: Gemination and antigemination. *Linguistic Inquiry* 17(2). 207–263.
- Ohala, John J. 1983. The origin of sound patterns in vocal tract constraints. In P. F. MacNeilage (ed.), *The production of speech*, 189–216. New York, NY: Springer.
- Pycha, Anne. 2015. Listeners perceive prefixes differently: Evidence from a noise-rating task. *Word Structure* 8(1). 53–83.
- Rose, Sharon & Rachel Walker. 2004. A typology of consonant agreement as correspondence. *Language* 80(3). 475–531.
- Schein, Barry & Donca Steriade. 1986. On geminates. *Linguistic Inquiry* 17(4). 691–744.
- Shih, Stephanie S. 2017. Constraint conjunction in weighted probabilistic grammar. *Phonology* 34(2). 243–268.
- Smolensky, Paul. 1993. Harmony, markedness, and phonological activity. Paper presented at the Rutgers Optimality Workshop.
- Werner, Roland. 1987. *Grammatik des Nobiin (Nilnubisch): Phonologie, Tonologie und Morphologie*. Hamburg: Buske.

Chapter 3

Object marking in Lubukusu: Information structure in the verb phrase

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Object marker (OM) doubling (i.e. clitic doubling) in Lubukusu has previously been argued to necessarily generate a verum (focus) reading of the clause. We argue for a new empirical generalization: OM-doubling is licit when there is focus in/on the verb phrase, and verum results when that is not otherwise possible (as an elsewhere case). We demonstrate these patterns with a large range of novel empirical data, providing a fuller picture of clitic doubling in Lubukusu.

1 Background and summary of core contributions

The properties of object markers/clitics (OMs) have long been areas of deep syntactic interest. This paper addresses Lubukusu (Bantu, Luyia subgroup, Kenya), building on Sikuku, Diercks & Marlo (2018) and falsifying some key details of their proposals.¹ Example (1b) illustrates the OM in Lubukusu, showing that it generally cannot co-occur with a transitive object in neutral pragmatic contexts.²

- (1) a. N-á-βon-a Weekesa. Lubukusu
1SG.SM-PST-see-FV 1Wekesa
'I saw Wekesa.' (Sikuku et al. 2018: 360)

¹Lubukusu is a (Luyia) Bantu language; it has been estimated that there are at least 23 different Luyia varieties spoken in Western Kenya and Eastern Uganda (Marlo 2009). Lewis et al. (2016) list the number of Lubukusu speakers at 1,433,000 based on the 2009 census. Originally classified as E31c, an earlier edition of the Ethnologue reclassified it to J30, and Maho (2008) to JE31c.

²Examples cited from Sikuku et al. (2018) have tone marking as provided by Michael Marlo, a co-author on that paper; new data in this paper are not marked for tone.



- b. N-á-[mu-] βon-a (#Weekesa). No OM-doubling
 1SG.SM-PST-1OM-see-FV (#Wekesa)
 ‘I saw him.’ (*licit in a context where Wekesa is salient in the discourse*)
 *‘I saw Wekesa.’ (Sikuku et al. 2018: 360)

Investigations of OMs in Bantu languages have usually centered on whether they can co-occur with (i.e. *double*) overt objects (and, if so, under what conditions), how they come to occur in the positions that they occur in, and therefore whether OMs are pronominal forms, or agreement markers, or fall under some more nuanced designation. These alternatives center on a core diagnostic of whether or not the OM is in complementary distribution with an overt, *in situ* lexical object.³

OMs in Lubukusu monotransitives can co-occur with a postverbal object, but that object obligatorily occurs after a clearly discernable prosodic break (marked by a comma below) and receives an afterthought topic reading, both of which are typical characteristics of right-dislocated phrases, suggesting that the lexical object in (2) is right-dislocated (Riedel 2009, among many others).

- (2) N-á-[ki-] βon-a #(), [ée-m-bwa].
 1SG.SM-REM-9OM-see-FV 9-9-dog
 ‘I saw it, the dog.’ (Sikuku et al. 2018: 366)

This suggests a pronoun analysis of the OM, as the OM and the *in situ* lexical object are in complementary distribution, and Sikuku et al. (2018) confirm this pattern with various diagnostics.

There are, however, some systematic exceptions to Lubukusu’s restrictions on OM-doubling, as illustrated in (3):

- (3) n-aa-[βu-] l-íilé [βúu-suma].
 1SG.SM-PST-14OM-eat-PFV 14.14-ugali
 ‘I *did* eat the ugali!’ (Sikuku et al. 2018: 360)

Sikuku et al. (2018) show that co-occurrence of an OM and an object (OM-doubling) is in fact available, but only in pragmatic contexts that license VERUM

³A host of relevant references lay behind these core syntactic proposals in the Bantu syntax literature. See Marten & Kula (2012) and Marten et al. (2007) for broad typological overviews; Bresnan & Mchombo (1987), Jelinek (1984), Baker (2003), van der Spuy (1993), Zeller (2009), Zerbian (2006), Byarushengo et al. (1976), Marlo (2014), Marlo (2015a,b), Duranti & Byarushengo (1977), Tenenbaum (1977), Riedel (2009), Henderson (2006), Zeller (2012; 2015; 2014), Letsholo (2013), Marten & Ramadhani (2001), Keach (1995), Woolford (2001), Bax & Diercks (2012), Diercks et al. (2014), among others.

FOCUS, similar to English emphatic *do*. Sikuku et al. (2018) propose that the doubling OM and non-doubling OM in Lubukusu have distinct syntactic derivations: non-doubling OMs are incorporated pronouns, and doubling OMs are agreement morphemes arising on an Emphasis head, which introduces a verum focus reading. Centrally for our concerns here, this analysis predicts that OM-doubling should always require a verum reading. We have recently discovered, however, that the empirical generalizations reported in Sikuku et al. (2018) are incomplete. Notably, there are additional contexts where OM-doubling is licensed without a verum reading:

- (4) Q: W-a-teekh-a ka-ma-kanda o-rieena ?
 2SG.SM-PST-cook-FV 6-6-beans 2SG-how
 'How did you cook the beans?'
 A: N-a-[ka-] teekh-a [ka-ma-kanda] bwaangu
 1SG.SM-PST-6OM-cook-FV 6-6-beans quickly
 'I cooked the beans *quickly*' (not: 'I *did* cook the beans quickly.')

This shows that the analysis from Sikuku et al. (2018) cannot be correct in a strict sense. The purpose of this paper is to clarify the conditions under which OM-doubling is possible in Lubukusu (and its various syntactic/pragmatic correlates). In this brief paper we do not give an explanatory analysis – more research is necessary before that is within reach. But we are able to demonstrate a broader set of generalizations licensing OM-doubling in Lubukusu, concluding that the verum doubling analyzed in our previous work reflects only a subset of the possible OM-doubling contexts. The new set of generalizations suggests that the reason that (4) is acceptable without verum is that OM-doubling triggers conjoint/disjoint-like effects within the verb phrase: doubling creates a focal effect in vP that requires focused material in the verb phrase.⁴ In the absence of such material, verum focus results (which is the set of patterns described by Sikuku et al. 2018). §2 shows that focus licenses OM-doubling, and §3 shows that the focused material must be vP-internal to do so. §4 gives some initial data on the interpretation of OM-doubling. §5 points out an empirical parallel in conjoint/disjoint constructions that heavily factors into the informal analysis that we offer in §7. §7.3 and §8 show OM-licensing conditions that are predicted by the informal analysis that we present.

⁴ As we will show in §7 and §8, this is a mild simplification.

2 Focus licenses OM-doubling

In this section we illustrate the generalization that focused material licenses OM-doubling on a distinct object in the verb phrase.

2.1 New information focus licenses OM-doubling

We saw in (4) that when a manner adverbial is focused, OM-doubling the direct object is licensed (without a verum reading). Likewise, when a temporal adjunct is questioned or bears new information focus, OM-doubling an object is licit without a verum reading:

- (5) Q: Ba-ba-ana ba-a-(ka)- kes-a ka-ma-indi liina?
2-2-children 2SM-PST-6OM-harvest-FV 6-6-maize when
'When did the children harvest the maize?' *OK without verum*
- A: Ba-ba-ana ba-(ka)- kes-ile ka-ma-indi likolooba.
2-2-children 2SM-6OM-harvest-PFV 6-6-maize yesterday
'The children harvested the maize yesterday.' *OK without verum*

For the sake of space we don't include the data here, but similar patterns arise with lexical ditransitives, with instrumental, benefactive, and causative double object constructions, and with reason adjuncts. In all of these instances, OM-doubling an object is licit in the event that some other constituent in the verb phrase (argument or adjunct) is interpreted as focused.⁵

2.2 Focus with *-ong'ene* 'only' licenses OM-doubling

OM-doubling is licensed if you put focus on a constituent using *-ong'ene* 'only':

- (6) Ba-ba-ana ba-a-(ba)- rer-er-a ba-b-ebusi ka-m-echi
2-2-children 2SM-PST-(2OM)-bring-APPL-FV 2-2-parents 6-6-water
k-*ong'ene*.
6-only
'The children brought their parents only water.' *OK without verum*

Additional instances of this 'only' pattern appear throughout the rest of the paper.

⁵All of these data are being compiled in our ongoing work (Sikuku & Diercks 2021).

2.3 Contrastive focus licenses OM-doubling

Contrastive focus shows the same effects as the patterns shown above. When a vP-internal constituent is contrastively focused (here diagnosed by a continuation that clarifies which constituent is contrastively focused), OM-doubling is natural without a verum reading.

- (7) Ba-ba-ana ba-a-[bu-] ly-a [bu-suma] bwangu, se-li kala
 2-2-children 2SM-PST-14OM-eat-FV 14-ugali quickly NEG-be slowly
 ta.
 NEG

‘The children ate the ugali QUICKLY, not slowly.’ *OK without verum*

3 Focused phrases must be overtly vP-internal for doubling

We have seen that OM-doubling is facilitated by focused material without the need for a verum reading; that said, the structural position of the focused material is relevant. The preceding examples are all instances of focused phrases that are likely internal to the verb phrase. Here, we show that material that is external to the verb phrase cannot license OM-doubling.

3.1 *Ex situ* focus does not license OM-doubling

It is the surface positions of focused phrases that is relevant for licensing doubling. To illustrate, the *in situ* questions in (8) license OM-doubling (8a), but doubling an object that occurs inside a wh-cleft (with nothing else in the verb phrase apart from the doubled object) results in a verum reading of the clause (8b).

- (8) a. Ba-ba-ana ba-a-[ka-] kes-a [ka-ma-indi] liina?
 2-2-children 2SM-PST-6OM-harvest-FV 6-6-maize when
 ‘When did the children harvest the maize?’ *Does not require verum*
 b. Liina ni-lwo ba-ba-ana ba-a-([#ka]-) kes-a [ka-ma-indi] ?
 when COMP-11 2-2-children 2SM-PST-6OM-harvest-FV 6-6-maize
 ‘When did the children harvest the maize?’ *Requires verum*

A parallel set of facts emerges in the answers to the questions in (8). Either sentence in (9) can answer either question in (8), but only the *in situ* focused

temporal adjunct licenses OM-doubling (9a). As with the questions, focus on an object via a cleft construction when nothing else remains postverbal with the doubled object necessarily results in a verum reading (9b).

- (9) a. Ba-ba-ana ba-[ka]- kes-ile [ka-ma-indi] li-kolooba.
 2-2-children 2SM-6OM-harvest-PFV 6-6-maize 11-yesterday
 'The children harvested maize yesterday.' *Does not require verum*
- b. Li-kolooba nilwo ba-ba-ana ba-[#ka]- kes-ile [ka-ma-indi].
 11-yesterday COMP11 2-2-children 2SM-6OM-harvest-PRF 6-6-maize
 'It was yesterday that the children harvested maize.' *Requires verum*

3.2 Subject focus does not license OM-doubling without verum

Focus on preverbal subjects is incapable of licensing OM-doubling an object. (10) shows that subject questions and answers cannot contain OM-doubling without verum:

- (10) Q: Naanu w-a-[#ka]- kes-ile [ka-ma-indi] ?
 1who 1SM-PST-6OM-harvest-PFV 5-5-maize
 'Who harvested the maize?' *Doubling requires verum*
- A: Ba-ba-ana ba-a-[#ka]- kes-ile [ka-ma-indi]
 2-2-children 2SM-PST-6OM-harvest-PFV 6-6-maize.
 'The children harvested the maize.' *Doubling requires verum*

Likewise, *-ong'ene* 'only' on the subject does not license doubling without verum:

- (11) Ba-ba-ana b-ong'ene ba-a-[#ba]- rer-er-a [ba-b-ebusi]
 2-2-children 2-only 2SM-PST-2OM-bring-APPL-FV 2-2-parents
 ka-m-echi.
 6-6-water
 'Only the children brought their parents water.' *Doubling requires verum*

And in the same way, contrastive focus on the subject does not license OM-doubling without verum:⁶

⁶Note that subject focus does not *exclude* OM-doubling an object; rather, subject focus itself cannot license doubling. OM-doubling may occur with subject focus if the conditions for doubling are met independently of the subject focus.

- (12) Ba-ba-ana ba-a-(#bu)- ly-a [bu-suma], se-li ba-b-ebusi ta.
 2-2-children 2SM-PST-14OM-eat-FV 14-ugali NEG-be 2-2-parents NEG
 ‘The children ate ugali, not the parents.’ (i.e. the parents didn’t eat ugali)
Doubling requires verum

3.3 Locative adjuncts do not license doubling

In addition to subjects, focus on locative adjuncts is insufficient to license OM-doubling an object without verum focus.

- (13) Q: Ba-ba-ana ba-a-(#ka)- kes-a [ka-ma-indi] wae?
 2-2-children 2SM-PST-6OM-harvest-FV 6-6-maize where
 ‘Where did the children harvest maize?’ *Doubling requires verum*
 A: Ba-ba-ana ba-a-(#ka)- kes-a [ka-ma-indi] mu-mu-kunda.
 2-2-children 2SM-PST-6OM-harvest-FV 6-6-maize 18-3-shamba
 ‘The children harvested maize in the shamba.’ *Doubling requires verum*

Locative adjuncts are clearly not within the domain where focus licenses OM-doubling. A broad range of postverbal focused material *does* qualify, including manner adjuncts, temporal adjuncts, themes, recipients, benefactives, causees, and instruments: all of these are plausibly vP-internal. Locative adjuncts consistently occur to the right of all of these, suggesting that locative adjuncts are outside the vP (see §6 for additional evidence in this regard). Given this and the subject facts, we therefore assume the relevant domain for focus to license OM-doubling is vP.

4 On the interpretation of OM-doubled objects

We have not yet arrived at a formal analysis of the interpretation of OM-doubling; that said, we can report a broad range of relevant empirical facts, some of which are very familiar from clitic-doubling constructions cross-linguistically.

4.1 OM-doubling yields specific readings

As is common for clitic doubling cross-linguistically, OM-doubled objects in Lubukusu are interpreted as *specific*:

- (14) a. N-a-w-a o-mw-aana ka-ma-beele.
 1SG.SM-PST-give-FV 1-1-child 6-6-milk
 'I gave a child milk.' (could be any child)
- b. N-a-[mu-] w-a [o-mw-aana] ka-ma-beele.
 1SG.SM-PST-1OM-give-FV 1-1-child 6-6-milk
 'I gave a specific child milk.' (i.e. it is known who the child is)
 Assuming focus conditions are met to license doubling

As would be expected based on the observation above, an object DP that contains a demonstrative allows OM-doubling much more naturally than a bare nominal object:

- (15) n-a-[ba-] bon-a [ba-ba-ana] ?(abo)
 1SG.SM-PST-2OM-see-FV 2-2-children 2DEM
 'I did see those children.' (*requires verum*)

(15) requires a verum reading to be acceptable, but the presence of the demonstrative marks a significant improvement in naturalness over its absence. Likewise, (16) shows that when the focal requirements of OM-doubling are met, OM-doubling is more natural with a demonstrative than without one:

- (16) Q: Naanu ni-ye w-a-bon-a?
 1who COMP-1 2SG.SM-PST-see-FV
 'Who did you see?'
 A: n-a-[ba-] bon-a [ba-ba-ana] ?(abo).
 1SG.SM-PST-2OM-see-FV 2-2-children 2DEM
 'I saw those children.' *OK without verum*

4.2 OM-doubling acceptable with D-linked wh-phrases

It is unacceptable to OM-double a bare wh-phrase:

- (17) Ba-ba-ana ba-a-[(*ba)-] kes-el-a [naanu] ka-ma-indi?
 2-2-children 2SM-PST-(*2OM)-harvest-APPL-FV 2who 6-6-maize
 'Who did the children harvest maize for?'

However, D-linked wh-phrases can be readily OM-doubled.

- (18) Ba-ba-ana ba-a-[ba-] kes-el-a [ba-andu siina] ka-ma-indi?
 2-2-children 2SM-PST-2OM-harvest-AP-FV 2-people 7what 6-6-maize
 'Which people did the children harvest maize for?'

4.3 OM-doubling possible with focused objects

Throughout §2 we showed that focused phrases license doubling an object. The same focus requirement continues to hold, but there is no restriction against an OM-doubled object itself being focused. (19) shows that it is possible to OM-double a RECIPIENT that bears new information focus in a benefactive double object construction:

- (19) Q: Ba-ba-ana ba-a-kes-el-a naanu ka-ma-indi?
 2-2-children 2SM-PST-harvest-APPL-FV 1who 6-6-maize
 ‘Who did the children harvest maize for?’
 A1: Ba-ba-ana ba-a-[ba-] kes-el-a [ba-b-ebusi] ka-ma-indi.
 2-2-children 2SM-PST-2OM-harvest-APPL-FV 2-2-parents 6-6-maize
 ‘The children harvested maize for (their) parents.’ *OK without verum*

The same pattern emerges in a lexical ditransitive with *-ong’ene* ‘only’ focus on the recipient, where that same recipient can be doubled:

- (20) Ba-ba-ana ba-a-[b-] okesy-a [ba-a-khaana b-ong’ene]
 2-2-children 2SM-PST-2OM-show-FV 2-2-girls 2-only
 ka-ma-reeba.
 6-6-questions
 ‘The children showed *only the girls* the questions.’ (i.e. they didn’t show the boys) *OK without verum*

And in fact, we saw above in (16) that it is possible to OM-double a monotransitive object with nothing else in the vP, as long as that object bears focus.

4.4 “Aboutness” topics require OM-doubling

OM-doubled phrases receive an “aboutness” interpretation that can be discerned by explicitly requiring an aboutness interpretation of the relevant object:

- (21) Prompt: “Tell me something about Wekesa.”
 N-a-[#?(mu)-] w-el-a [Wekesa] ba-ba-ana bi-anwa.
 1SG.SM-PST-1OM-give-APPL-FV 1Wekesa 2-2-children 8-gifts
 ‘I gave the children gifts for Wekesa.’

We see in (21) that an object that is an aboutness topic is preferably OM-doubled. In this sense there is some “topicality” to an OM-doubled phrase, but it’s

important to note that this does not exclude focused phrases and discourse-new information being OM-doubled. Sikuku et al. (2018) report that focus does not license OM-doubling on an object (in apparent contrast to what we have reported above).⁷

- (22) Lionéeli k-á-(#ku)- ly-a **kú-mú-chéele**, se-k-á-ly-á
1Leonnell 1SM-PST-3OM-eat-FV 3-3-rice NEG-1SM-PST-eat-FV
búu-sumá tá.
14.14-ugali NEG
'Leonell ate the rice, he didn't eat the ugali.' (Sikuku et al. 2018: 376)
(*OM-doubling requires verum*)
(*See comments below for alternative licensing conditions*)

Adding a demonstrative to the doubled object in (22) is not sufficient to license doubling without verum. But if (22) is a response to the prompt "Tell me about what Lionell ate," (22) becomes acceptable without verum.

Clearly specificity, aboutness, and focus are all important aspects of OM-doubling. An aboutness interpretation appears to be central to licensing OM-doubling. Specificity is also linked with OM-doubling, but it appears to be insufficient to license OM-doubling on its own.⁸ We are proposing that OM-doubled phrases are aboutness topics in a topic-comment information structure, but they are *not* topical in the sense of being necessarily discourse-old.

5 Conjoint/disjoint + OMing in Zulu (Zeller 2015)

It is well known that information structure has central grammatical effects across a range of African languages, to the extent of being a fundamental organizing principle of some grammatical systems.⁹ A relatively well-studied example of this is the conjoint/disjoint distinction that appears on verbal forms in many Bantu languages and which reflects focal properties of the clause (see van der Wal & Hyman 2017 for an overview). Conjoint forms on a verb show a closer

⁷Minor aspects of the transcriptions in (22) were altered to match our transcription conventions in this paper: following orthographic conventions in the Lubukusu-speaking community, in this paper we represent the velar fricative as ⟨kh⟩ and the bilabial fricative/stop as ⟨b⟩. And note that while we have shown in (7) that contrastive focus can license doubling, what is at issue in (22) is that the object itself is focused, as opposed to a manner adverb in (7).

⁸Our current thought is that it's an effect of OM-doubling but not a cause or licensing condition of OM-doubling.

⁹See, for example: Hyman & Watters (1984), Schwarz (2007), Abels & Muriungi (2008), Hyman (2010), Hyman & Polinsky (2010), Landman & Ranero (2018).

3 Object marking in Lubukusu: Information structure in the verb phrase

connection between the verb and what follows, and disjoint forms are used when there is a looser connection with what follows or when nothing follows the verb (van der Wal & Hyman 2017).

In Zulu, the predominant analysis is that the conjoint/disjoint distinction tracks the presence of overt morphosyntactic content inside vP and that focal effects are secondary (see Halpert 2016, Zeller 2015, and references cited therein). Conjoint is used when a constituent is inside vP; disjoint is used when vP is empty.¹⁰

- (23) a. U-mama u-phek-a i-n-yama]_{vP} (conjoint)
AUG-1a.mother 1SM-cook-FV AUG-9-meat
'Mother is cooking the meat.'
- b. *U-mama u-phek-a]_{vP} (conjoint)
AUG-1a.mother 1SM-cook-FV
Intended: 'Mother is cooking.'
- c. U-mama u-ya-phek-a]_{vP} (disjoint)
AUG-1a.mother 1.SM-DJ-cook-FV
'Mother is cooking.' (Zeller 2015)

There is a long history of research on Zulu object marking.¹¹ The data and discussion below are from Zeller (2015). In Zulu, OM-doubling in a transitive requires the disjoint verb form:

- (24) U-mama u-*(ya)-yi-phek-a]_{vP} i-n-yama.
AUG-1a.mother 1SM-DJ-9OM-cook-FV AUG-9-meat
'Mother is cooking it, the meat.' (Zeller 2015: 20)

Zulu also has "symmetrical" OMing in ditransitives, wherein either object can be OMed. The resulting word order shows that the doubled object is dislocated, as it must appear on the right edge:

- (25) a. Ngi-m- theng-el-a u-bisi]_{vP} u-Sipho. (conjoint)
1SG-1OM-buy-APPL-FV AUG-11.milk AUG-1a.Sipho
'I'm buying him milk, Sipho.'
- b. *?Ngi-m- theng-el-a u-Sipho u-bisi.]_{vP} (conjoint)
1SG-1OM-buy-APPL-FV AUG-1a.Sipho AUG-11.milk

¹⁰We follow Zeller in not marking tone or phrasal penult lengthening in the Zulu data, though these prosodic properties have also been shown to mark the edge of the verb phrase (van der Spuy 1993; Cheng & Downing 2009).

¹¹Selected references include Adams (2010); Buell (2005; 2006); Cheng & Downing (2009); Halpert (2016); van der Spuy (1993); Zeller (2012; 2014; 2015).

- c. Ngi-[lu] theng-el-a u-Sipho]_{vP} [u-bisi]. (conjoint)
 1SG-11OM-buy-APPL-FV AUG-1a.Sipho AUG-11.milk
 'I'm buying it for Sipho, the milk.' (Zeller 2015: 22)

Note that all of the examples above use the conjoint form, because the non-doubled object in each case is inside vP, creating a conjoint environment. It is possible to double an object in a ditransitive with a disjoint verb form, however, as Zeller (2015: 23) shows:

- (26) Double right dislocation: both objects dislocated:
 Ngi-ya-[m-] theng-el-a]_{vP} [u-Sipho] u-bisi. (disjoint)
 1SG-DJ-1OM-buy-APPL-FV AUG-1a.Sipho AUG-11.milk
 'I AM buying milk for Sipho.'

(26) uses the disjoint form: both objects have vacated the vP.

As indicated by the translations, constructions such as [(26)] are typically interpreted as expressing verum (polarity) focus, an interpretation that is not available for [other] right dislocation constructions. Other interpretations occasionally reported by speakers are narrow verb focus, or habituality of the activity expressed by the verb. All these interpretations fall under the category 'auxiliary focus' discussed in Hyman and Watters (1984), which is defined as focus 'placed on any of the semantic parameters which serve as operators on propositions: tense, aspect, mood, polarity.' (Zeller 2015: 236)

Zeller's analysis is that anti-focus features on a functional head F in the middlefield of the clause probe and find an anti-focus object. The agreed-with object raises to a right-facing Spec,FP, arising at the right-edge. If the vP doesn't have additional content, a disjoint form appears on the verb: the typical case of OMing. In double-right-dislocation constructions like (26) the RECIPIENT undergoes this OMing process. However, the THEME is unfocused and can't remain inside vP (a focus domain in Zulu) and therefore is right-dislocated (without interacting with the probe on F).

The pattern that we see in Zulu, then, is that OM-doubled objects move to the right edge of vP: if vP still has content, the verb appears in a conjoint form, but if vP is empty, it appears in a disjoint form. It is possible to use a disjoint form when doubling a single object in a double object construction, but Zeller analyzes both of the objects as dislocated, and a verum-like reading of the clause results. And this pattern of facts reflects common cross-linguistic patterns from related constructions, as shown in Table 3.1.

Table 3.1: Cross-linguistic properties of conjoint vs. disjoint (and similar constructions) (modified from Güldemann 2003: 328)

	Disjoint form	Conjoint form
Postverbal XP	optional	obligatory
Verb position	can be clause-final	not clause-final
Postverbal material	discourse-old	discourse-new, asserted
Complement is	anaphoric, definite, generic	indefinite
Object marking is	possible	impossible
Emphasis on	positive truth value (verum)	postverbal constituent
Focus pattern	predicate within the scope of focus, complement/adjunct extrafocal	complement/adjunct within the scope of focus, predicate extrafocal

6 Initial observations regarding word order

It is tempting to analyze Lubukusu like Zulu, correlating OM-doubling with movement out of vP. Potential evidence for this is that OM-doubling makes it sound more natural for an object to be moved to the right edge. Parenthetical judgments in the following examples are alternative positions for the doubled object.

- (27) a. Ba-ba-ana ba-a-(ka)- kes-a [ka-ma-indi] liina?
 2-2-children 2SM-PST-6OM-harvest-FV 6-6-maize when
 ‘When did the children harvest the maize?’ *Doubling OK without verum*
- b. Ba-ba-ana ba-(ka)- kes-ile [ka-ma-indi] likolooba (✓).
 2-2-children 2SM-6OM-harvest-PFV 6-6-maize yesterday
 ‘The children harvested the maize yesterday.’ *Doubling OK without verum*

The Lubukusu facts are non-identical to Zulu, however: while a doubled object can occur at the right edge of the verb phrase, the preferred position of a doubled object is the leftmost position in (28) (which in this example is the position immediately after the verb).

- (28) o-mw-alimu a-a-[mu] w-a [o-mw-aana chana] si-i-tabu
 1-1-teacher 1SM-PST-1OM-give-FV 1-1-child ABOUT 7-7-book
 sy-ong'ene (✓) bulayi (?) khu-soko (*).
 6-only well 17-9market

'The teacher gave the child (that I'm talking about) only a book well in the market.' (i.e. did a good job giving) *Doubling OK without verum*

We include a locative adjunct here because we have shown above that they behave as if they are outside *vP*: if a doubled object were to appear to the right of a locative adjunct, it would be strong evidence for dislocation of that object. The unacceptability of a doubled object outside the locative is consistent with our conclusions that locatives are structurally higher than manner adjuncts and are outside the relevant domain of OM-doubling.¹² The available positions on either side of the manner adverb are amenable to an account of a position being available at the edge of *vP*.¹³

We could attempt to maintain a Zulu-like account of OM-doubling linked with movement out of *vP* by claiming that apparent *in situ* doubling is actually movement to the left edge of *vP*. In fact, it looks like quite the opposite is happening: when a temporal adverb is included that is plausibly analyzed as being adjoined at the left edge of *vP*, the undoubled object preferably occurs to the left of it (29a), and the OM-doubled object is preferably to the right (29b).

- (29) a. Wekesa a-a-w-ele [ba-ba-ana] luno (??) bi-anwa
 1Wekesa 1SM-PST-give-PFV 2-2-children this.time 8-gifts
 bi-ong'ene.
 8-only
 'Wekesa gave the children only gifts this time.'
- b. Wekesa a-a-[ba-] w-ele (??) luno [ba-ba-ana] bi-anwa
 1Wekesa 1SM-PST-2OM-give-PFV this.time 2-2-children 8-gifts
 bi-ong'ene.
 8-only
 'Wekesa gave the children only gifts this time.'

Therefore a Zulu-like account of doubled objects vacating the *vP* appears to be unlikely. (29b) suggests that OM-doubled phrases are quite natural *in situ*.

¹²The impossibility of the object to the right of the locative adjunct does not imply that the object is not moved to a position at the right edge of *vP* that is below the locative adjunct, of course.

¹³It remains to be seen if there are interpretive distinctions between those two object positions.

7 The beginnings of an analysis

7.1 Generalizations

- (30) a. OM-doubled lexical DP objects are interpreted as *specific*.
 b. There is a link between OM-doubling and interpretation of those objects as ABOUTNESS TOPICS.
 c. OM-doubling is a generally available operation in Lubukusu, but the pragmatic interpretation of the sentence is highly dependent on the content of vP.

As noted above, the particular content of vP is central to the resulting interpretations from OM-doubling. OM-doubling is possible without verum when the vP contains a focused constituent distinct from the doubled object. If there is a constituent in the vP distinct from the doubled object, but this remaining constituent does *not* bear focus, the clause receives a verum reading. A range of patterns from Sikuku et al. 2018 demonstrate this to be the case, as well as all of the sentences marked as # in this paper. If the doubled object itself bears focus, the sentence is acceptable in (otherwise) neutral pragmatic contexts. But if the doubled object does not bear focus and there is no other focused element in the verb phrase, the sentence requires verum to be acceptable.

Table 3.2: Pragmatics of Lubukusu doubling configurations

focus on/in vP?	vP configuration	verum-like reading?
yes	[Doubled Object XP _{FOC}] _{vP}	no verum
yes	[Doubled Object _{FOC}] _{vP}	no verum
no	[Doubled Object XP] _{vP}	verum
no	[Doubled Object] _{vP}	verum

7.2 Toward an informal analysis

Informally speaking, it appears that OM-doubling activates a conjoint/disjoint-like system, in that it appears to be dependent on overt vP content and directly correlates with focus properties of the verb phrase. In this conjoint/disjoint-like system, OM-doubling appears to remove the doubled object from consideration in this system. Apart from the doubled object, then, there are similarities to conjoint/disjoint systems, such as focus on/in the vP, patterns of OM-doubling de-

pendent on *overt vP* content, and verum/predicate focus in the absence of relevant *vP* content (a common property of disjoint forms) (Güldemann 2003; van der Wal & Hyman 2017).

That said, there are important distinctions from other such systems. Elsewhere, conjoint/disjoint patterns exist independently of OMing but interact with it; in Lubukusu, the presence of the conjoint/disjoint-like system only emerges when OM-doubling occurs. Since surface *vP* constituency clearly matters in Lubukusu with respect to OM-doubling, it is tempting to claim that (like Zulu) OM-doubling removes an object from *vP*, and an empty *vP* results in verum focus. This appears to not be the case, however: verum occurs in OM-doubling with an additional *vP* constituent *if* that constituent is unfocused, doubled objects appear to be able to remain *in situ*, and the doubled object “counts” with respect to the focus requirement – a focused object can license OM-doubling on itself. A final point is that intransitive verbs don’t show this system of interpretations in Lubukusu. Conjoint/disjoint systems generalize across verbs of different valencies in other languages (i.e. intransitive verbs bear disjoint forms). But in Lubukusu, intransitive verbs don’t necessarily require verum readings – it would be difficult to draw a strict correlation between the verum properties that sometimes result from object marking and an empty *vP*. Rather, it does seem that OM-doubling somehow activates this system.

Our initial analytical thoughts are that OM-doubling is linked with a topic-comment structure inside the *vP* (using the term topic-comment relatively pre-theoretically here to refer to some version of the well-attested distinctions between presupposition and assertion, givenness and focus, theme and rheme). OM-doubling requires an aboutness topic reading of the doubled object because it is generated via Agree with Topic features at the edge of *vP* (precise position to be determined) (see Mursell 2018). However, identification of a TOPIC requires a COMMENT about that TOPIC: the content of *vP* therefore bears focus. We suggest that the focus requirement on *vP* is realized in various ways. If there is one distinct (non-topical) constituent within the *vP*, either its semantics or the discourse context must be naturally compatible with it bearing a focused interpretation; we deem this a pragmatic effect of a single constituent being the entire comment about the topic. If there is no other (non-topical) constituent within the verb phrase, however, verum focus results (interpreted here as focus on the entire predicate itself).

This approach makes several predictions. By analyzing the locus of the focus requirement as *vP* instead of individual constituents, it naturally captures how *any vP*-internal constituent can bear focus and license the OM-doubling of a separate object argument. Because there is not in fact a requirement for term focus

inside the vP, but instead a focus requirement on the vP itself, we would expect vP-level properties to be capable of licensing OM-doubling without verum. This is in fact what we find: §7.3 shows that if there are *multiple* non-topical constituents inside the vP, these constituents collectively can bear broad focus and are sufficient vP-content to license OM-doubling both without verum and without term focus on an individual constituent. §8 shows that a (structurally low) predicate focus marker licenses OM-doubling as well.

7.3 Term focus is unnecessary when vP contains sufficient material

As mentioned above, a major prediction of this preliminary analysis is that the strong focal effects on a single constituent should be mitigated if additional constituents are inside vP when an object is OM-doubled. This is because on the approach sketched here, those focal effects are only the result of a single constituent serving as the comment about the topic. This is in fact what happens. In the intuitions of the first author, the more things there are in vP, the more natural OM-doubling sounds, and term focus becomes unnecessary.

- (31) N-a-[mu-] w-el-a [Wekesa] ba-ba-ana bi-anwa.
 1SG.SM-PST-1OM-give-APPL-FV 1Wekesa 2-2-children 8-gifts
 'I gave the children gifts for Wekesa.'
OK without verum, without additional context

In general, adding more vP-level material makes an OM-doubled sentence sound increasingly natural. The following sentences are very natural with OM-doubling and without any exclusive focus on a single constituent:

- (32) a. N-a-[mu-] w-el-a [Wekesa] ba-ba-ana bi-anwa bulayi.
 1SG.SM-PST-1OM-give-APPL-FV 1Wekesa 2-2-children 8-gifts well
 'I gave the children gifts well for Wekesa.'
OK without verum, without additional context
- b. N-a-[mu-] w-el-a [Wekesa] ba-ba-ana bi-anwa
 1SG.SM-PST-1OM-give-APPL-FV 1Wekesa 2-2-children 8-gifts
 likolooba.
 yesterday
 'I gave the children gifts yesterday for Wekesa.'
OK without verum, without additional context

8 NE-focus marking licenses OM-doubling

An additional piece of evidence supporting a vP-level topic-comment approach is NE-focus. Wasike (2007: 335) documents a morpheme in Lubukusu that appears on the main verb in compound tenses which he analyzes as wh-agreement, a reflex of A'-movement:

- (33) Siina ni-syo mw-a-ba ne-mu-khol-a?
7what COMP-7 2PL.SM-PST-be NE-2PL.SM-do-FV
'What was it that you were doing?'

It is clear that N(E)- cannot itself be wh-agreement, as it readily appears in non-extraction contexts:¹⁴

- (34) Wekesa a-ba (n)-a-a-nyw-a ka-ma-lwa buli nyanga
1Wekesa 1-be NE-1SM-PST-drink-FV 6-6-alcohol every 9day
'Wekesa (certainly) used to drink alcohol everyday.'

The interpretive contribution of N(E)- is hard to pin down, but it has some kind of connection to FOCUS or EMPHASIS. With N(E)-, the speaker is more committed to the truth of (34). Without N(E)-, (34) is more or less neutral.¹⁵

8.1 OM-doubling in compound tenses with NE-

If OM-doubling results in focus on the vP, OM-doubling should be acceptable if the vP is focused independently of its internal content. OM-doubling sounds natural with the N(E)- focus morpheme in a compound tense (without verum).

- (35) a. Wekesa a-ba a-a-(#ka-) nyw-a (ka-ma-lwa) buli nyanga.
1Wekesa 1SM-be 1SM-PST-6OM-drink-FV 6-6-alcohol every 9day
'Wekesa used to drink alcohol everyday.'
Requires verum for OM-doubling to be acceptable
- b. Wekesa a-ba n-a-a-[ka] nyw-a (ka-ma-lwa) buli nyanga
1Wekesa 1-be NE-1SM-PST-6OM-drink-FV 6-6-alcohol every 9day
'Wekesa (certainly) used to drink alcohol everyday.'
Doubling OK without verum

¹⁴There certainly are interactions with extraction: even for the first author on this paper, certain extraction environments make N(E)- obligatory. So there is still work to be done to explain these patterns.

¹⁵There are a variety of complex facts related to agreement and extraction around the properties of N(E)-, but for now we focus on a few core properties relevant to OMing.

8.2 NE- and imperatives (and doubling)

The focus morpheme NE- can also occur on imperatives; this tends to have the interpretive effect of increasing the force/urgency of the speaker's command.

- (36) a. kh-o-nyw-e echai yoo
 KH-2SG.SM-drink-SBJV 9tea 9your
 'Drink your tea.'
 b. n-o-nyw-e echai yoo!
 NE-2SG.SM-drink-SBJV 9tea 9-your
 'Drink your tea!'

OM-doubling the object is acceptable but requires a verum interpretation (37a). If NE- is used, doubling does not require a verum interpretation (37b).

- (37) a. #Ki- nyw-e echai yoo !
 9OM-drink-SBJV 9tea 9-your
 'Drink your tea!' *Requires verum, i.e. 'DO drink your tea.'*
 b. n-o-ki- nyw-e echai yoo !
 NE-2SG.SM-9OM-drink-SBJV 9tea 9-your
 'Drink your tea!' *OK without verum*

8.3 Intermediate summary, NE-focus

What we see from this section, then, is that the NE-focus marker is capable of licensing OM-doubling an object independently of any other focused phrase inside the verb phrase. Like the pattern discussed in §7.3, this is another process centered on the broader verb phrase itself, rather than any particular constituent inside the verb phrase. This therefore further supports an approach where the focus requirement for OM-doubling applies to the verb phrase as a whole, despite the fact that it is often realized by term focus on an individual constituent inside the verb phrase.

9 Conclusions

9.1 Empirical generalizations

The main contribution of this paper is in expanding the empirical generalizations on the properties of OMing and OM-doubling in Lubukusu. (38) summarizes the

relevant pre-existing empirical generalizations that were arrived at in Sikuku et al. (2018), and (39) summarizes the new empirical generalizations reached in this paper.

- (38) Selected empirical generalizations from Sikuku et al. (2018)
 - a. Doubling in simple monotransitives is unacceptable in neutral discourse contexts.
 - b. Doubling in simple monotransitives requires a verum-licensing context to be acceptable.
- (39) New generalizations: Lubukusu OM-doubling
 - a. OM-doubled lexical DP objects are interpreted as SPECIFIC.
 - b. Objects that are interpreted as ABOUTNESS TOPICS require OM-doubling.
 - c. OM-doubling is a generally available operation in the language, but the pragmatic interpretation of the sentence is highly dependent on the content of vP.

As for the pragmatic effects in particular, if there are 2+ distinct constituents in the vP other than the doubled object, there are no discernible pragmatic effects (i.e. no focus effects). OM-doubling is possible without verum when the vP contains a focused constituent distinct from the doubled object. If there is a constituent in the vP distinct from the doubled object, but this remaining constituent does *not* bear focus, the clause receives a verum reading. If the doubled object bears focus, the sentence is acceptable in neutral pragmatic contexts. If the doubled object does not bear focus, the sentence requires verum to be acceptable. We have also identified one additional pathway to non-verum OM-doubling: if the verb bears the N(E)- emphatic marker, OM-doubling is natural without any additional term-level focus inside the vP (this N(E)- morpheme only appears in a compound tense or imperative). Table 3.3 sketches the core configurations of OM-doubling that we considered in this paper, including their interactions with focus effects.

9.2 Future research

There are a number of persistent analytical questions, and the work is ongoing. First, the project is still a work in progress; as we mentioned above, our current direction of analysis is to analyze OM-doubling as a result of topic agreement

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Table 3.3: Pragmatics of Lubukusu doubling configurations

focus on/in vP?	vP configuration	verum-like focus?
yes	[Doubled Object XP YP] _{vP}	no verum
yes	[Doubled Object XP_{FOC}] _{vP}	no verum
yes	[Doubled Object_{FOC}] _{vP}	no verum
no	[Doubled Object XP] _{vP}	verum
no	[Doubled Object] _{vP}	verum
yes	NE-[Doubled Object] _{vP}	no verum

or givenness agreement, but the nature of topicality/givenness puts explicit semantic requirements on the complement of the head generating this agreement. As pointed out to us by Rose Marie Déchaine, these Lubukusu patterns show a large degree of similarity to destressing patterns in English focalization (an area of particularly intense analytical and theoretical work) (Wagner 2012; Williams 1997; Schwarzschild 1999).

Wagner (2012) proposes a semantics of accent shift in English that analyzes givenness and focus as two mutually necessary sides of the same coin: marking something as given necessitates marking something else as focused. Our ongoing work looks to integrate these observations from the English destressing/focus literature with the properties of Lubukusu OM-doubling.

Beyond the analysis itself, there are a number of empirical domains to be looked into, including investigating properties of variable word order postverbally both with and without OM-doubling. The patterns are quite complex and finding reliable diagnostics of syntactic position has been a challenge, but we continue to work in this area. Likewise we continue to investigate the properties of NE-emphasis and to look for additional diagnostic contexts to specifically clarify the interpretation of the OM-doubling itself.

As raised by several reviewers, there are two important areas of research on object marking that need additional work. First, an active area of research is whether both objects in a ditransitive may be OM-doubled (and if so, under what conditions: i.e. whether object marking is (a)symmetrical). Our ongoing research suggests that structurally lower objects in Lubukusu may be OM-doubled, but that this significantly changes the focus properties of the sentence (restricting the focus to only the OM-doubled object). This intersects with another question raised by a reviewer: we have shown a few instances where an OM-doubled object itself may bear focus, rather than some other element in the verb phrase (e.g.

(16)). This does not straightforwardly translate to a topic/focus bifurcation in the verb phrase where the OM-doubled element is the topic and something else is the focus. While addressing this goes far beyond what we can accomplish in this short paper, we expect that both of these empirical areas will be central to resolving a precise analysis of Lubukusu OMing and are a part of the investigation in Sikuku & Diercks (2021).

Work is still underway, but it appears that very similar patterns appear in Wanga, Tiriki, and Logoori (which are all Luyia languages). That said, we have encountered speakers of each of these varieties who appear to lack these patterns, instead appearing to allow what looks like an incorporated pronoun analysis of OMs (doubling is always impossible). Given the deep contextual dependence of these patterns, it's impossible to rule out pragmatic licensing of some sort for those speakers, but the best we can tell, some speakers of these languages completely lack these patterns. So while we can say (based on our preliminary work in these other languages) that patterns like this are relatively broadly attested in Luyia languages, it's unclear whether it is appropriate to say they are pervasively present among all speakers of any particular language (including Lubukusu).

Abbreviations

Below are listed only those abbreviations that do not adhere to or are beyond the scope of the Leipzig Glossing Rules.

AUG	Augment	FV	Final vowel	SM	Subject marker
CJ	Conjoint	OM	Object marker		
DJ	Disjoint	REM	Remote		

Acknowledgments

This research builds on Sikuku et al. (2018), and we gratefully acknowledge the contributions of Michael Marlo in this ongoing work. We have benefited from comments and criticisms from Rose-Marie Déchaine, Travis Major, John Gluckman, Mark Baker, Vicki Carstens, Jesse Harris, Ruth Kramer, Rodrigo Ranero, Kristina Riedel, Ken Safir, Jenneke van der Wal, and Jochen Zeller. Audiences in many venues have contributed much to our understanding of these phenomena, most recently the audience at ACAL 50 at UBC. We also extend our gratitude to the two anonymous reviewers of this paper and to the editorial team

as well. Portions of this research were funded from a Doctoral Dissertation Research Improvement Grant (BCS-0843868), a Hirsch Research Initiation Grant from Pomona College, a NSF Collaborative Research Grant (Structure and Tone in Luyia: BCS-1355749), and Pomona College (including ongoing support from the Paul and Susan Efron fund and the Robert Efron Lectureship in Cognitive Science at Pomona College). The first author provided the Lubukusu data in the paper. The first and second author jointly identified the empirical generalizations, developed the (fledgling) analysis, and developed the argumentation in the paper. The second author took primary responsibility for putting these conclusions into written form.

References

- Abels, Klaus & Peter Muriungi. 2008. The focus marker in Kiitharaka: Syntax and semantics. *Lingua* 118. 687–731.
- Adams, Nikki. 2010. *The Zulu ditransitive verb phrase*. University of Chicago. (Doctoral dissertation).
- Baker, Mark C. 2003. Agreement, dislocation, and partial configurationality. In Andrew Carnie, Heidi Harley & MaryAnn Willie (eds.), *Formal approaches to function in grammar*, 107–132. Amsterdam: John Benjamins.
- Bax, Anna & Michael Diercks. 2012. Information structure constraints on object marking in Manyika. *Southern African Linguistics and Applied Language Studies* 30. 185–202.
- Bresnan, Joan & Sam Mchombo. 1987. Topic, pronoun, and agreement in Chichewa. *Language* 63. 741–782.
- Buell, Leston. 2005. *Issues in Zulu morphosyntax*. Los Angeles, CA: UCLA. (Doctoral dissertation).
- Buell, Leston. 2006. The Zulu conjoint/disjoint verb alternation: Focus or constituency? *ZAS Papers in Linguistics* 43. 9–30.
- Byarushengo, Ernest R., Larry M. Hyman & Sarah Tenenbaum. 1976. Tone, accent and assertion in Haya. In Larry M. Hyman (ed.), *Studies in Bantu tonology*, 183–205. Los Angeles: Department of Linguistics, University of Southern California.
- Cheng, Lisa Lai-Shen & Laura J. Downing. 2009. Where's the topic in Zulu? *The Linguistic Review* 26. 207–238.
- Diercks, Michael, Rodrigo Ranero & Mary Paster. 2014. Evidence for a clitic analysis of object markers in Kuria. In Ruth Kramer, Elizabeth C. Zsiga & One Tlale Boyer (eds.), *Selected Proceedings of the 44th Annual Conference on African Linguistics*, 52–70. Somerville, MA: Cascadilla Proceedings Project.

- Duranti, Alessandro & Ernest R. Byarushengo. 1977. On the notion of “direct object.” In Ernest R. Byarushengo, Alessandro Duranti & Larry M. Hyman (eds.), *Haya grammatical structure*, 45–71. Los Angeles: Department of Linguistics, University of Southern California.
- Güldemann, Tom. 2003. Present progressive vis-à-vis predication focus in Bantu: A verbal category between semantics and pragmatics. *Studies in Language* 27(2). 323–360.
- Halpert, Claire. 2016. *Argument licensing and agreement*. New York: Oxford University Press.
- Henderson, Brent. 2006. *The syntax and typology of Bantu relative clauses*. Urbana, IL: University of Illinois at Urbana-Champaign. (Doctoral dissertation).
- Hyman, Larry M. 2010. Focus marking in Aghem: Syntax or semantics? In Ines Fielder & Anne Schwarz (eds.), *The expression of information structure: A documentation of its diversity across Africa*, 95–116. Amsterdam: John Benjamins.
- Hyman, Larry M. & Maria Polinsky. 2010. Focus in Aghem. In Malte Zimmermann & Caroline Féry (eds.), *Information structure: Theoretical, typological, and experimental perspectives*, 206–233. Oxford: Oxford University Press.
- Hyman, Larry M. & John R. Watters. 1984. Auxiliary focus. *Studies in African Linguistics* 15. 233–273.
- Jelinek, Eloise. 1984. Empty categories, case, and configurationality. *Natural Language and Linguistic Theory* 2(1). 39–76.
- Keach, Camillia. 1995. Subject and object markers as agreement and pronoun incorporation in Swahili. In Akinbiyi Akinlabi (ed.), *Theoretical approaches to African linguistics* (Trends in African linguistics), 109–116. Trenton, NJ: Africa World.
- Landman, Meredith & Rodrigo Ranero. 2018. Focus marking in Kuria. In Jason Kandybowicz, Travis Major, Harold Torrence & Philip T. Duncan (eds.), *African linguistics on the prairie: Selected papers from the 45th Annual Conference on African Linguistics*, 393–412. Berlin: Language Science Press.
- Letsholo, Rose. 2013. Object markers in Ikalanga. *Linguistic Discovery* 11(1). 105–128.
- Lewis, M. Paul, Gary F. Simons & Fennig Charles D. (eds.). 2016. *Ethnologue: Languages of the world, nineteenth edition*. Dallas: SIL International.
- Maho, Jouni. 2008. NUGL online: The web version of the new updated Guthrie list, a referential classification of the Bantu languages. Version dated March 25th, 2008. Available online at <http://goto.glocalnet.net/maho/bantusurvey.html>.
- Marlo, Michael R. 2009. Luyia tonal dialectology. Handout from a talk given at the University of Nairobi, December 16.

3 Object marking in Lubukusu: Information structure in the verb phrase

- Marlo, Michael R. 2014. Exceptional patterns of object marking in Bantu. *Studies in African Linguistics* 43. 85–123.
- Marlo, Michael R. 2015a. Exceptional properties of the reflexive in Bantu languages. *Nordic Journal of African Studies* 24. 1–22.
- Marlo, Michael R. 2015b. On the number of object markers in Bantu languages. *Journal of African languages and linguistics* 36. 1–65.
- Marten, Lutz & Nancy C. Kula. 2012. Object marking and morphosyntactic variation in Bantu. *Southern African Linguistics and Applied Language Studies* 30(2). 237–253.
- Marten, Lutz, Nancy C. Kula & Nhlanhla Thwala. 2007. Parameters of morphosyntactic variation in Bantu. *Transactions of the Philological Society* 105(3). 253–338.
- Marten, Lutz & Deograsia Ramadhani. 2001. An overview of object marking in Kiluguru. *SOAS Working Papers in Linguistics* 11. 259–275.
- Mursell, Johannes. 2018. Object marking in Swahili is topic agreement. *Jezikoslovlje* 19(3). 427–455.
- Riedel, Kristina. 2009. *The syntax of object marking in Sambaa: A comparative Bantu perspective*. Leiden, The Netherlands: Universiteit Leiden. (Doctoral dissertation).
- Schwarz, Florian. 2007. Ex-situ focus in Kikuyu. In Enoch Oladé Aboh, Katharina Hartmann & Malte Zimmermann (eds.), *Focus strategies in African languages: The interaction of focus, grammar in Niger-Congo & Afro-Asiatic*, 139–160. Berlin: Mouton de Gruyter.
- Schwarzschild, Roger. 1999. Givenness, Avoid F and other constraints on the placement of accent. *Natural Language Semantics* 7(2). 141–177.
- Sikuku, Justine & Michael Diercks. 2021. Object marking in Lubukusu: At the interface of pragmatics and syntax. Ms, Moi University and Pomona College.
- Sikuku, Justine, Michael Diercks & Michael R. Marlo. 2018. Pragmatic effects of clitic doubling: Two kinds of object markers in Lubukusu. *Linguistic Variation* 18(2). 359–429.
- Tenenbaum, Sarah. 1977. Left- and right-dislocations. In Ernest R. Byarushengo, Alessandro Duranti & Larry M. Hyman (eds.), *Haya grammatical structure*, 161–170. Los Angeles: Department of Linguistics, University of Southern California.
- van der Spuy, Andrew. 1993. Dislocated noun phrases in Nguni. *Lingua* 90(4). 335–355.
- van der Wal, Jenneke & Larry M. Hyman (eds.). 2017. *The conjoint/disjoint alternation in Bantu*. Berlin: Mouton de Gruyter.

- Wagner, Michael. 2012. Focus and givenness: A unified approach. In Ivona Kučerová & Ad Neeleman (eds.), *Contrasts and positions in information structure*, 102–147. Cambridge: Cambridge University Press.
- Wasike, Aggrey. 2007. *The left periphery, Wh-in-situ and A-bar movement in Lubukusu and other Bantu languages*. Cornell University. (Doctoral dissertation).
- Williams, Edwin. 1997. Blocking and anaphora. *Linguistic inquiry* 28(4). 577–628.
- Woolford, Ellen. 2001. Conditions on object agreement in Ruwund (Bantu). In Elena Benedicto (ed.), *The UMass volume on indigenous languages* (University of Massachusetts Occasional Papers in Linguistics 20), 75–106. Amherst, MA: GLSA.
- Zeller, Jochen. 2009. On clitic left-dislocation in Zulu. In Sonja Ermisch Ruediger (ed.), *Frankfurt African studies bulletin 18: Focus and topic in African languages*, 131–156. Frankfurt: Koeppe Verlag.
- Zeller, Jochen. 2012. Object marking in Zulu. *Southern African Linguistics and Applied Language Studies* 30. 219–325.
- Zeller, Jochen. 2014. Three types of object marking in Bantu. *Linguistische Berichte* 239. 347–367.
- Zeller, Jochen. 2015. Argument prominence and agreement: Explaining an unexpected object asymmetry in Zulu. *Lingua* 156. 17–39.
- Zerbian, Sabine. 2006. *Expression of information structure in the Bantu language Northern Sotho*. Humboldt University. (Doctoral dissertation).

Chapter 4

Marking grammatical tone in orthographies: Issues and challenges

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When the concept of how to mark tone in an orthography arises, usually the first thought is to attend to the lexical tone. However, many African languages also employ grammatical tone, and how to indicate this in a practical orthography can involve entirely different approaches. These alternative approaches have significant advantages, but also traps for the unwary. Grammatical tone distinguishes constructions that are otherwise ambiguous, but unlike minimal pairs for lexical tone, contextual clues for disambiguation involving grammatical tone are often absent. Here different strategies for marking are presented, especially semiographic strategies, indicating meaning rather than the phonetics. I also present a warning about using non-Unicode characters.

1 Overview of lexical and grammatical tone

It is generally accepted that over half the world’s languages are tonal (Yip 2002). In Africa, the percentage is much higher, to the extent that the burden of proof for an Africanist is to show that the language under consideration is *not* tonal. For example, of the 97 Gur languages (Eberhard et al. 2020), only one, Koromfe, is demonstrably not tonal (Rennison 1997).

Lexical tone distinguishes one word (lexical item) from another, and this is usually the primary idea that comes to mind when the term “tone language” is used. A few examples are the following:¹

¹For explanation of tone transcription notations used here, see “Abbreviations and notations” at the end.



- (1) Mono [mn̩] (Olson 2005)
áwá ‘diarrhea’ āwā ‘road’ àwà ‘fear’
- (2) Kɔnni [kma] (Cahill 2007)
kpáánj ‘oil’ kpàánj ‘occiput’ kpa'áŋ ‘guineafowl’

So when the concept of how to mark tone in an orthography arises, usually the first thought is to attend to the lexical tone.

However, many African languages also employ *grammatical* tone, where the tone differentiates different grammatical constructions (e.g. tense and aspect in verbal paradigms, and the pronouns and verbal aspect in the paradigm below:

- (3) Lendu [led] (Kutsch Lojenga 2014: 64), with Mid being unmarked:
ma rà ră ‘I went’ mà rà ră ‘we went’
ma rá rá ‘I should go’ mà rá rá ‘we should go’
má ră ră ‘I am going’ mă ră ră ‘we are going’
má ra rá ‘I will go’ mă ra rá ‘we will go’

How to indicate grammatical tone in a practical orthography can involve entirely different approaches than marking lexical tone. These alternative approaches have significant advantages, but also traps for the unwary. The remainder of the paper is structured as follows. §2 briefly reviews lexical tone, and some methods that have been used to mark this in practical orthographies. §3, the main section of this paper, first gives a variety of examples of grammatical tone, showing the diversity of functions that can be indicated, and then surveys a multiplicity of ways that such grammatical tone has been marked in orthographies. These include well-known diacritic strategies, but also more imaginative solutions such as unused letters, punctuation, and other non-alphabetic characters. §4 brings up some challenges relating to Unicode and non-Unicode compliant characters, and §5 concludes with a few practical suggestions.

The languages discussed in this paper all have Roman-based orthographies. Some, probably all, of the same principles could be applied to Arabic-based orthographies in Africa, but that is beyond the scope of this study.

2 Review of marking lexical tone

Kutsch Lojenga (2014) gives a basic binary typology of tone languages, and notes the types of tone languages which are less likely or more likely to require lexical tone marking for a usable orthography:

Type 1 – low functional load of tone. This type of language will have few minimal tone pairs, and generally only High and Low tones. It is less likely to need lexical tone marking.

Type 2 – a high functional load of lexical tone. This type of language has many minimal tone pairs, often three or more levels of tone, plus multiple contour tones. It is much more likely to need tone marking.

Lexical tone, if marked at all in an orthography, has been marked in a number of ways.

Diacritics are often used. The most common are accent marks, especially the acute accent, e.g. ⟨bábá⟩. Note that in a practical orthography, a diacritic may not match an IPA-compliant linguistic transcription. An orthographic circumflex accent ⟨â⟩ could mark a phonetically falling tone, an extra-high tone, or perhaps something else. The principle of one symbol per sound can thus be satisfied in diverse ways. Also, diacritics other than accents, e.g. ⟨ä⟩, are possible.

Even “full marking” usually marks one tone less than the full tonal inventory (e.g. if H and L are present, only H is marked), as in Budu (Roberts 2013):

- (4) Budu [buu] (Roberts 2013), with Low being unmarked
- | | | |
|------------|------------|-------|
| ⟨takanaka⟩ | [tákànàkà] | dream |
| ⟨tákánaka⟩ | [tákánàkà] | beg |

Adding otherwise unused alphabetic characters to represent lexical tone is common in Asian languages, but not typically in African ones. In Hani of China, a word-final ⟨l⟩ marks a high tone, ⟨q⟩ marks falling, ⟨f⟩ marks rising, and unmarked is mid. This works better with languages with predominantly monosyllabic words.

Non-alphabetic characters have been used in some languages with multiple lexical tones, especially in Côte d’Ivoire. Dan would write ⟨-kwé do ’ka⟩ for [kwé dō ká] (Bolli 1978).

If tonal processes are identified, the question of underlying vs. surface tone arises (the “levels” question). Though the theory of Lexical Phonology as a total system has been largely abandoned, the division of processes into lexical and post-lexical rules is still referred to. A psycholinguistically real practice which is starting to be increasingly implemented in recent years is to mark the output of the *lexical level* of the phonology (Snider 2014; Roberts 2013; Roberts et al. 2016).

3 Marking grammatical tone

Grammatical tone distinguishes *constructions* that are otherwise ambiguous. But while minimal pairs for lexical tone can often be distinguished by the surrounding context, contextual clues for disambiguation involving grammatical tone are more often absent. Therefore, omitting grammatical tone marking can result in a much more ambiguous and thus less readable orthography.

3.1 Examples of grammatical tone

Cases in which different verb aspects are differentiated solely by tone are not uncommon, and with further typological research, may turn out to be the most common instantiation of grammatical tone. Besides the Lendu examples in (3), a few other cases:

- (5) Verb aspect Mbembe, Nigeria [mfn] (Barnwell 1969)
- | | | | |
|------|---------------|-------|-----------------|
| ʒkân | you sang | ʒkón | you should sing |
| ʒkòn | you have sung | ʒ'kón | if you sing |
- (6) Positive vs. negative command Maa (Maasai) [mas] (Payne 2019)
(Low is unmarked here)
- | | |
|-------------------|--------------------------------|
| Méísísi ɔlabánani | 'you should praise the healer' |
| Meísísi ɔlabánani | 'don't praise the healer' |

Syntactic relations may also be indicated solely by tone:

- (7) Subject vs. object, Maasai (Tucker & Ole-Mpaayei 1955)
- | | | |
|------------|------------|---------|
| nominative | accusative | |
| élòkònyá | élókónyá | 'head' |
| èncòmàtá | èncómátá | 'horse' |

Not only verbal forms, but subsets of the nominal system may also be characterized by grammatical tone:

- (8) Singular vs. plural nouns, Mada [mda] (Snider 2007)
- | SG | PL | | |
|-----|-----|--------------|------|
| tsè | tsē | guineafowl/s | L/M |
| tʃé | tʃé | leopard/s | M/H |
| rèn | rén | pot/s | L/H |
| gwǎ | gwá | snake/s | ˥H/H |

- (9) Definite vs. indefinite noun, Bamana Mali [bam] (Vydrin 2016: pc)

Note that the difference shows up on the *following* word:

jégé	'fish'
jégé té yàn	'A fish is not here.'
jégé 'té yàn	'The fish is not here.'

More cases and how they relate to orthography will be introduced in the next section.

3.2 How grammatical tone has been marked

Marking can be termed either *phonographic* (sound-based) or *semiographic* (meaning-based). See Roberts (2013) for expansion of these terms. Lexical tone marking is phonographic by definition, but grammatical tone marking may be either phonographic or semiographic. These concepts are independent of what actual symbols are used. Diacritics are one possibility for representing grammatical tone, whether following the phonetics or not:

- (10) Rangi [lag] (Stegen 2005)

[adómire]	⟨adómire⟩	'he has gone'
[ádomiré]	⟨adomiré⟩	'he went'

Other more imaginative solutions have been used in some languages: using in-line, non-alphabetic characters, e.g. ⟨#baba⟩ or ⟨//baba⟩ or ⟨:baba⟩ (Roberts 2013).

These non-alphabetic character representations have the advantage of marking the semantics of the construction directly (semiographic representation), thus avoiding the issue of phonological processes and levels altogether. When the reader sees ⟨#baba⟩, he knows it is the imperfective, for example, and the phonetics follows naturally. The Attié example below, more extended than most systems, illustrates this in some detail.

- (11) Attié [ati] (Kutsch Lojenga 2014: 64) (" is extra-High)

Phonetic	Orthographic	
hàn zè	LL	⟨-han -ze⟩ 'we have gone'
hàn zē	LM	⟨-han z⟩ 'we are going'
hán zē	HM	⟨'han z⟩ 'we should go'
hán zè	HL	⟨'han -ze⟩ 'let us go'
hàn zě	LxH	⟨-han "ze⟩ 'we didn't go'

Shimakonde uses an orthographic ⟨h⟩ to indicate the low tone of the negative (the /a-/ part of the prefix is often unpronounced and of lesser importance for word recognition, but the tone difference is crucial):

- (12) Shimakonde [kde] (Kutsch Lojenga 2014: 70)
- | | | |
|------------|------------|------------------------|
| vápáali | <vapali> | ‘they are present’ |
| (a)vapaáli | <havapali> | ‘they are not present’ |

In Ngangam, 70 percent of verb forms are differentiated only by tone, and the various verb aspects differentiated by tone are indicated by apostrophe or <h> word-finally:

- (13) Ngangam [gng] (Higdon et al. 2000)
- | Imperative | Perfective | Imperfective |
|------------|------------|------------------|
| béré | <bere> | bérè <berē> |
| ŋɔ̄ | <ŋɔ̄> | ŋɔ̄ <ŋɔ̄n> |
| cókē | <cōke> | cóké <cōke> |
| | | béré <bereh> |
| | | ŋɔ̄ <ŋɔ̄h> |
| | | cókēdē <cōkedeh> |
| | | ‘destroy’ |
| | | ‘dance’ |
| | | ‘pierce’ |

In Ngangam above, note that while the symbols <’> and <h> consistently represent the relevant syntactic category (the “meaning”), the actual tonal pronunciation varies considerably. This system was accepted by the Ngangam speakers and has aided in their reading.

Budu targets future and past tense by means of punctuation marks in the middle of the written word, after the pronominal prefix:

- (14) Budu [buu] (Bamata-Subama 1997: 8)
- | | | |
|---------|------------|----------------|
| wàbéñdà | <wabenda> | ‘you hit’ |
| wàbéñdā | <wa=benda> | ‘you will hit’ |
| wăbèñdà | <wa:benda> | ‘you have hit’ |

A proposal for Shilluk, but not implemented, would mark the plurals (which are all L-toned in this language) with a colon:

- (15) Shilluk [shk] (Gilley 2004)
- | SG | PL | |
|-----|-----|---|
| líŋ | lìŋ | <liny> <:liny> ‘war/wars’ |
| pūt | pùt | <pudh> <:pudh> ‘crippled person/people’ |
| ŋér | ŋèr | <nger> <:nger> ‘antelope/antelopes’ |

Tsamakko distinguishes perfective from imperfective by a <~> mark on the perfective construction, while perfective verbs are not marked. The tonal patterns vary in several ways, so the <~> that indicates imperfectivity marks the meaning directly. This was accepted by the community, though reading classes are still beginning, so it is too early to say definitely how this solution affects reading.

- (16) Tsamakko [tsb] (Andreas Joswig, pc)

/ufo vaare vúgi/ ⟨ufo vaare vugi⟩ ‘he drank coffee’
 /ufo vaare vúgi/ ⟨ufo vaare ~vugi⟩ ‘he is drinking coffee’

Finally, Bafanji has a system of marking several grammatical categories with arbitrary marks to show the category (where the tone is not related to any melody in the utterance). It was introduced and applied to the first published portion of Scripture, the Gospel of Luke, in 2016. Note below that grammatical tone for verb aspect is often marked before the subject noun phrase of the clause. This is because verbs themselves are marked for lexical tone, and these functions of tone are thus clearly separated.

- (17) Bafanji [bfj] (Hamm & Hamm 2016)

a. Far past/P3 (<) placed before the first element of the subject NP

Kie' <a nchwo ncháŋ nchoo ɳka' ɳgwo chit̄ la...

As P3.he was reaching at the gate of the village...

b. General future/F0 (>) placed as above

...>*mey-o ndùu.*

...your F0.child will be well.

c. Conditional marker (‐) placed *on top of* the first letter of the conditional clause

ꝝ mbi' Men Mbou'mbi,...

COND.If you are the Son of God...

d. Hortative marker (=) placed before the first element of a subject NP

=*A pt̄' kie' o chú la.*

HORT.Let it be as you said.

e. Imperfective marker (») placed directly after an imperfective verb

Yi' kintye no-a ya n:zó'» ntye-o?

What kind of thing am I hearing.IPV about you?

Even though this survey has been brief, we have seen that there is a great variety of strategies for indicating grammatical tone in a practical orthography. While some languages use a phonographic approach to marking grammatical tone, it seems to be increasingly the case that orthography developers are using a semiographic approach, as in the examples above. This takes a variety of forms, ranging from diacritic marks to otherwise unused letters like ⟨h⟩ to non-alphabetic characters such as punctuation and other marks. The semiographic strategy appears to have advantages over a phonographic representation, in that

the reader connects more directly, and presumably with less effort, to the semantics of the construction, not needing to slow down to evaluate the phonetic value of the words.

4 The challenge of Unicode

However, the use of certain non-alphabetic characters can also have drawbacks.²

Consider the symbols $\langle = : + \# / \rangle$ as representative, though not exhaustive. In terms of their characteristics in Unicode, these are not “word-forming characters.”³ That is, one of these symbols is not recognized as part of a word that it is adjacent to; it will function as a word break marker. Thus if $\langle wa:benda \rangle$ from (14) is typed with an ordinary colon, most software programs will split this into two words $\langle wa \rangle$ and $\langle benda \rangle$, not combining them as one word, as desired.

Additionally, most software programs will not recognize $\langle =baba \rangle$, using an ordinary equals sign, as a word distinct from $\langle baba \rangle$. In word searches or any other process in which the user wishes to distinguish these two, an ordinary $\langle =, +, \#, : \rangle$, or other character will not appear.

Thus, ironically, electronic applications may not always work as well in many situations as pen and paper!

However, characters have been developed, proposed, and accepted by the Unicode Consortium which resemble the standard $\langle = \rangle$ etc., but do have the property of being word-forming.

For example, though the characters designated by Unicode as U+A78A $\langle = \rangle$ and U+A789 $\langle : \rangle$ look very similar to the usual equals and colon characters, they are in fact new and different characters which are classified as *modifier letters*, rather than punctuation. They were added to the Unicode standard in version 5.1, and so are available to be used for indicating grammatical tone.

For a more thorough discussion of the issues, challenges, and various alternative strategies for inline non-alphabetic characters, see (SIL International 2018).

5 Practical implications

Many factors enter into the process of developing and using practical orthographies. Acceptability to the local language community is crucial. Actual usability

²This section owes much to the 2018 online article (SIL International 2018) “Best practice when using non-alphabetic characters in orthographies,” which I wrote together with a technically-informed committee wrote. Much more detail is included there.

³“Word-forming character” is not a technical Unicode term, but is convenient and understandable. For more technical detail, see SIL International (2018).

is also crucial. Sometimes these two general principles conflict, as when a hypothetical but realistic language in East Africa has seven vowels and lexical and grammatical tone. The usability criterion indicates that all the vowels and at least some tone should be marked in the orthography, if people are going to be able to use it. However, the language community really admires Swahili, with its five vowels and no tone, and want their orthography to look like Swahili. Usability and acceptability conflict here, and it is not always easy to come to a good solution. The issues addressed in this paper largely deal with usability issues – can people read it? But choice of individual symbols for a particular function, whether grammatical tone or any other orthographic choice, must also take into account the preferences of the local language community. Ideally, they would be in on the decision-making process from Day One.

The usability criterion can be subdivided into two parts. For ordinary printing and for everyday physical writing on paper or other material, the Unicode considerations are irrelevant. One will not be able to distinguish the normal <=› from the Unicode word-forming U+A78A <=>, though if you look closely, you may observe that the latter is slightly shorter.

And for much cell phone usage, especially casual texting, again the Unicode distinctions between non-alphabetic characters which appear almost identical are irrelevant in most cases. It is unrealistic and unnecessary to expect the average language user to use the specialized Unicode characters on their unmodified cell phones. In the broader picture, cell phones today are not limited to the normal QWERTYUIOP English/Roman characters. Keyboards are available that would use many non-Roman characters, and can be downloaded for over 1000 languages at <https://keyman.com/>.

However, the other aspect of the usability criterion relates to language-related software which needs to distinguish what is a word and what is not. In particular, SIL's FLEX software (Fieldworks Lexical Explorer) does better now than it used to in treating apostrophes as potentially word-forming characters, but it does not do so with all non-alphabetic characters. Large digital productions such as dictionaries or Bible translations will benefit from using the word-forming variants of non-alphabetic characters, should they be chosen as part of an orthography. Those working on such projects will be well advised to take the extra time necessary to input the characters that will be compatible with their software's treatment of the data. Use Unicode word-forming characters rather than the "normal" characters.

Also, the general Unicode principle extends beyond tone marking. Orthography developers and reformers should use Unicode characters whenever and wherever possible, rather than inventing new consonant and vowel graphemes.

We have established that grammatical tone is crucial to represent in the orthographies of many languages. Its very nature, distinguishing closely-related grammatical constructions, means that such tone will very often not be distinguished by context, as is sometimes the case with lexical tone. Rather, some sort of marking must be employed in the orthography to distinguish verb aspects, singular vs. plural nouns, or other categories. Such marking may take an astonishingly wide variety of forms, to accomplish the basic goal of fluent reading by speakers of that language.

Abbreviations and notations

Transcriptions used in this paper are the following:

á	extra high tone	á	rising tone
á	high tone	'á	downstepped high tone
à	low tone	[]	phonetic transcription
ā	mid tone	⟨ ⟩	orthographic transcription
â	falling tone		

Transcriptions without brackets are approximately phonetic.

Acknowledgements

Many thanks to the participants at ACAL50 at the University of British Columbia, who gave valuable observations on what started out as a poster. I also appreciate very much my SIL colleagues who provided examples and/or steered me to various data sources.

References

- Bamata-Subama, M. 1997. *Manuel d'orthographe budu*. (As cited in Roberts 2013). Democratic Republic of Congo: SIL.
- Barnwell, Katharine. 1969. *A grammatical description of Mbembe (Adun dialect): A Cross River language*. University of London. (Doctoral dissertation).
- Bolli, Margaret. 1978. Writing tone with punctuation marks. *SIL Notes on Literacy* 23. 16–18.
- Cahill, Michael. 2007. *Aspects of the morphology and phonology of Koni*. Dallas: SIL International.

- Eberhard, David M., Gary F. Simons & Charles D. Fennig (eds.). 2020. *Ethnologue: Languages of the world. Twenty-third edition*. Dallas: SIL International.
- Gilley, Leoma. 2004. Morphophonemic orthographies in fusional languages: The cases of Dinka and Shilluk. *SIL Electronic Working Papers 2004-003*. 1–13.
- Hamm, Valerie & Cameron Hamm. 2016. *Bafanji (Chufie') orthography guide (updated from 2007)*. Yaoundé: SIL Cameroon.
- Higdon, Lee, Gnanlé Lamboni, Kolani Lossoulé, Nambaré Namoni, Kodjo Pakdembè N'touame & Emanuel Tchanate. 2000. Apprendre à lire et à écrire le gangam, guide pour les scolarisés. In Comité de Langue Gangam (ed.), *Apprendre à lire et à écrire le gangam, guide pour les scolarisés*. Kara, Togo. <https://www.sil.org/resources/archives/35393>.
- Kutsch Lojenga, Constance. 2014. Orthography and Tone: A tone-system typology with implications for orthography development. In Michael Cahill & Keren Rice (eds.), *Developing orthographies for unwritten languages*, 49–72. Dallas, TX: SIL International.
- Olson, Kenneth. 2005. *The phonology of Mono*. Dallas: SIL International.
- Payne, Doris. 2019. The importance of tone in Maa. Ms, University of Oregon.
- Rennison, John. 1997. *Koromfe*. New York, NY: Routledge.
- Roberts, David. 2013. A tone orthography typology. In Susanne R. Borgwaldt & Terry Joyce (eds.), *Typology of writing systems*, 85–111. Amsterdam: John Benjamins.
- Roberts, David, Steven Walter & Keith Snider. 2016. Neither deep nor shallow: Testing the optimal orthographic depth for the representation of tone in Kabiye (Togo). *Language and Speech* 59. 1–113.
- SIL International. 2018. *Best practice when using non-alphabetic characters in orthographies: Helping languages succeed in the modern world*. https://www.sil.org/sites/default/files/best_practice_for_non-alphabetic_characters_v2_0.pdf.
- Snider, Keith. 2007. The effect of floating tones on the diminutive consonant in Mada (Nigeria). Gainesville, FL.
- Snider, Keith. 2014. Orthography and phonological depth. In Michael Cahill & Keren Rice (eds.), *Developing orthographies for unwritten languages*, 27–48. Dallas, TX: SIL International.
- Stegen, Oliver. 2005. *Tone in Eastern Bantu orthographies*. Paper presented at SIL Bantu Orthography meeting, November 7–12, 2005. Dallas. https://www.academia.edu/2155341/Tone_in_Eastern_Bantu_Orthographies.
- Tucker, Archibald & John Ole-Mpaayei. 1955. *Maasai grammar, with vocabulary*. London: Longman, Green & Co.

- Vydrin, Valentin. 2016. Tonal inflection in Mande languages: The cases of Bamana and Dan-Gwëetaa. In Enrique L. Palancar & Jean Léo Léonard (eds.), *Tone and inflection: New facts and new perspectives*, 83–105. Also at <https://halshs.archives-ouvertes.fr/halshs-01287458/document>. De Gruyter. (29 January, 2020).
- Yip, Moira. 2002. *Tone*. Cambridge, UK: Cambridge University Press.

Chapter 5

Subordinate clauses in Dadiya: Field research on the use of enclitic -I

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The author, Stephen Dettweiler, is a member of SIL International. From 1991 to 2017 he lived in Nigeria doing research on Nigerian languages. He currently functions as a remotely based linguistics consultant available to Nigerian language projects. The Dadiya project recently requested his assistance to investigate the use of a clitic -I, observed to occur frequently at the end of subordinate clauses in narrative and hortatory texts. This article shows how widespread the enclitic is for various types of subordinate clauses in three Dadiya narratives, accounting for its presence (and occasional absence) in both simple and nested clause structures.

1 Introduction

Dadiya [dbd]¹ is an Adamawa language spoken in northeastern Nigeria. A notable feature of most Dadiya subordinate clauses is the use of the harmonizing enclitic -I (realized as /i/ or /ɪ/ depending on the [ATR] value of the immediately preceding vowel) in clause-final position.²

The Dadiya proverb below, comparing a dog and a lion, is an example. Both of the animals are described using a relative clause, and both relative clauses

¹Dadiya is spoken in the area of northeastern Nigeria where Gombe, Taraba and Adamawa State boundaries meet. Its classification in the Ethnologue (Eberhard et al. 2019) is Niger-Congo, Adamawa family, Waja-Jen group.

²In general, the enclitic harmonizes with the vowel(s) of the word it follows, i.e. its host. Though this paper shows many examples of clitic-host harmony, apparent examples of disharmony were investigated by my SIL colleague, Coleen Starwalt. She discovered that there was no disharmony, but inconsistency in representing the clitic vowel due to orthographic convention. Appendix A shows a chart of the vowels and how they are represented in the orthography.



begin with a connective and end with the -I clitic. The subordinate clauses are bracketed in all lines.

- (1) səgan [ni nən d̩v̩m-i] a laa tulum [ni a bula bula-i]
dog [REL be.with life-??] 3s.PFV surpass lion [REL 3s.PFV die die-??]
'A dog [which has life] is better than a lion [which is dead].'

Work on three Dadiya narrative texts has shown that the -I clitic is used at the close of almost every subordinate clause in natural narrative. But there are a few subordinate clauses that seem to lack the clitic marking, and sometimes a clause marked with the -I clitic appears to be a main clause. Also, the same clitic (or one remarkably like it) is found in a few other places that are phrase-final but not clause-final. What then is a comprehensive description of the distribution and functions of this clitic?

Dadiya is in vigorous use orally as the first language of over 70,000 people (Eberhard et al. 2019), but its linguistic features are under-documented. Jungraithmayr (1968) includes a helpful six-page description of the Dadiya grammar and lexicon, Kleinewillinghöfer (1996) comments on it in connection with near relatives Tula and Waja, and also provides a 100-item wordlist of Dadiya alongside others in the Tula-Waja subgroup (Kleinewillinghöfer 2014). Figure 5.1 shows Dadiya in the context of its closest Adamawa relatives as given by Hammarström et al. (2019). The number of languages in each subgrouping is given in parentheses. Most Adamawa languages are as sparsely documented as Dadiya is. Figure 5.2 shows the geographic placement of the Adamawa family of languages within Nigeria, alongside other major language families (adapted with permission from Blench 2007: 45).

2 Methods

SIL translation consultant Randy Groff has worked with the Dadiya language project team since 2005. His work with them has provided the impetus for this study. Since 2013 they have collected a number of verb paradigms and a series of three narrative texts which they later entered in Fieldworks Language Explorer. These materials, particularly the narratives, were intended for the exploration of Dadiya sentence structure and verbal morphology in natural text. After discussions with Mr. Groff in early 2017, I agreed to make careful analysis of the three narratives a high priority.

The widespread use of a clitic in marking the end of Dadiya subordinate clauses had already been identified as an important focal point for the analysis of narrative structure. In the newly revised Dadiya orthography (Language

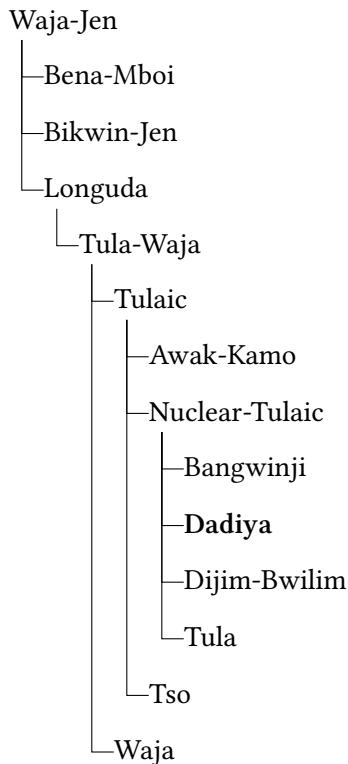


Figure 5.1: The Dadiya Language and its close Adamawa relatives

and Literacy Committee, Dadiya 2018), this enclitic is written as a suffix *-i* or *-í* on the word which it follows. Commonly³ this suffix signals the end of a clause which is subordinate to (dependent on) a main clause nearby, so that this usage has been glossed as DEP in the three narrative texts. In the body of this paper, this enclitic is often referred to as the *-I* clitic as a concise way to summarize its two forms.⁴ The Dadiya line given for each sentence example uses the current orthography throughout, except that the separation of affixes and clitics may be shown using – and = respectively, symbols which are not in the orthography.

Prior to my investigation, two of the three Dadiya narratives had been completely interlinearized using Fieldworks Language Explorer (SIL International

³The use of two other segmentally identical morphemes is discussed at the end of §3.

⁴The orthographic forms ⟨i⟩ and ⟨í⟩ have been chosen to represent the Dadiya vowels [+ATR] /i/ and [-ATR] /í/ respectively. Because of its two forms, called allomorphs, the enclitic in focus can be represented as a morphophoneme /-I/. This enclitic always harmonizes with the last vowel in the preceding word.

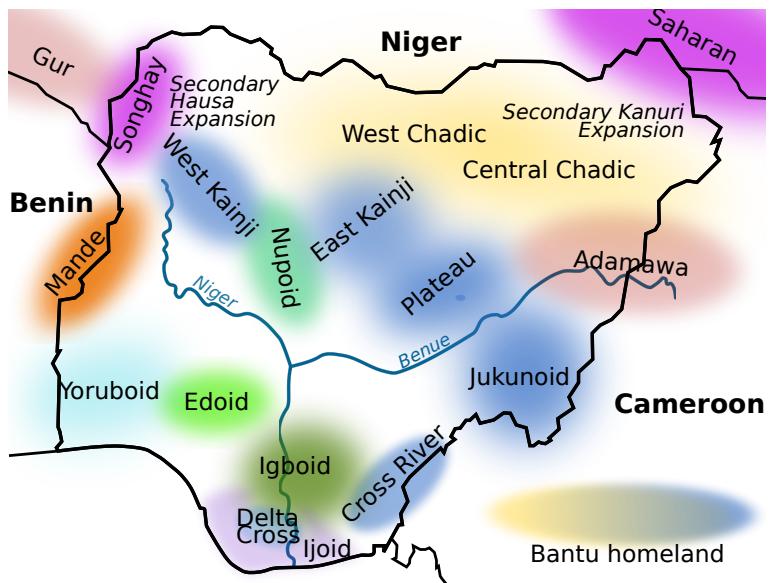


Figure 5.2: The Nigeria context of the Adamawa language family

2019). In addition to completing the interlinearization of the third narrative, I used the Fieldworks software to prepare clause constituent structure charts for all three. The three narratives are listed here in the order studied. A thematic Dadiya word from each narrative is given in uppercase as its title (with gloss italicized in the English title):

1. TAAL (A Story which Gives *Fear*) – autobiographical narrative, 28 sentences in 6 paragraphs, told by Joseph Goje.
2. DOLA (They Sat *Courtship* Together) – 3rd-person human interest story, 20 sentences in 3 paragraphs, told by Iliya Dokan.
3. KILAN (Why I Stopped *Fighting*) – autobiographical narrative, 41 sentences in 4 paragraphs, told by Jothan Joel.

Using sentence 16 of the TAAL narrative, Figure 5.3 illustrates how the phrases and clauses of a sentence are separated into the pre-nuclear, core (or nuclear) and post-nuclear columns of a chart. Patterns of morphology, syntax, and discourse structure are revealed as the analyst notes differences and similarities between the various columns. From Figure 5.3 a question arises concerning the two dependent clauses 16b and 16c (both relative, with *kaa jɔl* ‘certain thing’ as head): why

is there only one occurrence of the -I clitic in this post-nuclear part of Sentence 16 when there are two dependent clauses?

Text								
Title <i>A. Fulon keltin ni nə nəl taal le-i</i> <i>A story which gives someone fear</i>								
Info Baseline Gloss Analyze Tagging Print View Text Chart								
#	I.	Pre-nuclear items	DE	PreV	Verb	Obj/Comp/Oblq	Post-nuclear items	DEP d2
							REL give me fear PROG	DEP
16	a	Kumə win night.the one		na	kaa jəl there.was certain thing <i>[16b-16c]</i>			
16	b			I---		a bwi nən mə it happen with me		
16	c			---		mí mə twab le no I forget PROG	i J DEP	
17	a		Ba mə			a Ləluwa a daa out.Let public		

Figure 5.3: Constituent structure chart for TAAL16

For twenty-one hours of consultation spread over ten days, the Dadiya project team and I along with translation consultant Randy Groff went through the TAAL and DOLA narratives sentence by sentence. The main technique used was to encourage Dadiya speakers to unpack the meanings (both semantics and pragmatics) of various sentences and clauses to help reveal the forms, syntax, and discourse structure. Often I asked questions based on observations I had made during the preparatory sentence-by-sentence charting using Fieldworks. This method solidified our grasp of the structure and meaning of the narratives and enhanced our understanding of Dadiya grammar as revealed in the text. The third narrative, KILAN, had been glossed prior to the consultation but no free translation had been supplied. This made it difficult to prepare clause constituent charts for KILAN in advance of the consultation. However, using consultation time to go through the narrative sentence by sentence yielded an improved understanding of what underlay the forms of the text as well as an accurate free translation for each sentence.

3 Types of subordinate clauses

3.1 General remarks

Dadiya has the three major types of subordinate clauses which are found in nearly all the world's languages. A relative clause functions as modifier of a noun phrase; an adverbial clause modifies a verb phrase or an entire proposition; a complement clause functions as a "sentential expansion" of the subject or object slot of the sentence in which it is embedded (Longacre 2007: 374).

This section gives numerous Dadiya examples, drawn from the repertory of relative clauses, adverbial clauses, and complement clauses discovered in a study of the three narratives. It points out that all three types of Dadiya subordinate clauses close with the presence of the -I clitic in most cases, and investigates situations in which the clitic is absent. Finally, it considers examples of morphemes that may be confused with the -I clitic.

3.2 Relative clauses

Dadiya makes frequent use of relative clauses. These function as nominal modifiers, subordinating a proposition which identifies or describes the referent called the head of the relative clause. For example, in the noun phrase *children who are playing*, the relative clause *who are playing* modifies the head noun, *children*. The relativizer is the pronoun *who*. In the noun phrase *the children you thanked*, the head NP is *the children* and there is no relativizer present (though any of the pronouns whom, who, or that could be used immediately after the head NP). A fruitful question to ask about a language is which grammatical relations it allows to be relativized (Payne 1997: 326), so for Dadiya we particularly want to observe what grammatical roles the referent (indicated by the head NP) can take in the relative clause. The head also has a grammatical role in the sentence in which the relative clause is embedded, known as the matrix clause.

Each Dadiya relative clause presented here uses the -I clitic in one of its forms, ⟨i⟩ or ⟨i⟩, as its final morpheme. Also, every Dadiya relative clause observed is a *restrictive* or defining relative clause: this means it specifies or delimits the role of its referent in the situation described by the relative clause (Andrews 2007: 206). The relative clause frequently begins with the relativizer *ni*, glossed REL in examples (2), (3) and (5), but this morpheme is not obligatory,⁵ as shown in

⁵Other examples will show that the morpheme *ni* sometimes functions as a proximal demonstrative 'this'. It is not unusual cross-linguistically to have several related functions for a single grammatical morpheme. For example, the Dadiya distal demonstrative *go* 'that' also functions as a 3rd person singular object pronoun and as a complementizer. Grammatical structure usually makes it clear which function applies in each context.

example (4). No difference has yet been noted between the verb forms in relative clauses compared to those of matrix clauses. Example (2) shows a relative clause that modifies the noun phrase *fulon keltin* ‘story’. The kind of story specified by the relative clause is one which ‘gives a person fear’. In the matrix clause, this NP is object of the verb ‘give’, but its role in the relative clause is as subject.

- (2) Dadiya head NP *fulon keltin* ‘story’: object in matrix clause, subject of relative clause:

tuga mi gə nii fulon kəltin [ni nə nəl taal le
 grandfather my 3s.IPFV give.me news talks [REL give heart fear PROG
 =i]
 =DEP]

‘My grandfather would give me a story [that would frighten me (lit. be giving heart fear)].’ TAAL2

The matrix clause of (3) has *daa* ‘place’ as the location (marked with the preposition *a*). The relative clause gives a name to this place, and its verb *jou* ‘call’ takes two objects. The first of these is the place referred to by the head NP and the second is the name, *Dogon Dutse*. The first object slot is filled by a 3rd person singular pronoun *gɔ* – this is identified as a ‘trace’ or *resumptive* pronoun (Andrews 2007: 220).

- (3) Head NP *daa* ‘place’ is oblique in matrix clause, object of the relative clause:

Ba mə gəla ...a daa [ni jə jou le gɔ Dogon
 coming 1s.IPFV drop ...LOC place [REL 3p.IPFV call PROG 3s.OBJ Dogon
 Dutse =i]
 Dutse DEP]

‘Coming I would drop ... at a place [that they are calling it Dogon Dutse].’
 TAAL17

The relative clause of (4) has no REL at the beginning and the head NP functions in the relative clause as location. The subject of the relative clause *gə* ‘she’ refers to a highly topical participant in the DOLA narrative, the young woman with many suitors. The copula of location, *wo* ‘be there’, is most frequently observed in relative clauses (but see the response half of example (13), where *wo* occurs without the -I clitic).

- (4) Head NP *daa* ‘place’, use of copula *wo*, no relativizer:

nəb-ɔ be le a daa [gə wo =i]
 people-DEF come PROG LOC place [3s.IPFV be.there =DEP]

‘The people were coming to the place [where she was].’ DOLA3

The evidence of (5) is that a relative clause can precede its matrix clause. This relative clause contains the topic of the story, information that is old to the audience. It is expected that a relative clause preceding its matrix clause would not contain new information.⁶

- (5) Object of the matrix clause is preposed head + RC, head is subject of the relative clause:

Jv [ni a bwi nən mə a gola =i] mə kiyo
thing [REL 3s.PFV happen with 1s.OBJ LOC road =DEP] 1s.IPFV tell
gəm bɔ
3s.OBJ.P not

‘The thing [that happened to me on the road], I didn’t tell her.’ TAAL26

3.3 Adverbial clauses

Adverbial clauses “attach to constructions that are already complete propositions” (Payne 1997: 317), simply adding some information such as time, location, manner, or purpose to the proposition as an adjunct. So, unlike with relative clauses and complement clauses, there is no need to refer to a matrix clause in which the adverbial clause is embedded. The sentence in (6) shows a time clause which is subordinate to the following clause, and the enclitic is attached to the preceding word *taal* ‘fear’.⁷

- (6) Time clause (adverbial) marked with -I clitic:

Tətə mi a swi bɔ taal a bwt-ɔ mi, [na n nyuwa taal
father my 3s.PFV like not fear on body-DEF my [when 1s.PFV hear fear
=i] a jəga i.
=DEP] 3s.PFV slap me

‘My father did not want fear in my body; [when I felt fear], he slapped me.’ TAAL10

The particle *na* introduces the adverbial clauses in (6) and (7) and is glossed as a connective ‘if/when’. In these two sentences it introduces a condition or circumstance that qualifies the main clauses. In (7) it can be seen to act as a bridge between the first main clause and the second one.

⁶The object pronoun *gam*, referring to a person (P), is distinct from the one in example (3) referring to a non-person. Jungraithmayr (1968: 195–196) mentions such distinctions as a vestige of the Dadiya noun class system.

⁷In Dadiya orthography, this enclitic is always written as a suffix of the clause-final word, but I am referring to the phonological attachment which is shown by vowel harmonization.

- (7) Condition clause bridging between two main clauses:

N bøg nøl; [na ke bø ny =i] nøl a bøg i.
1s.PFV beat person; [if be.NEG not thus =DEP] person 3s.PFV beat me.

'I would beat up on somebody, or (*lit.* if it is not thus) somebody would beat up on me.' KILAN4

Example (8) shows a purpose clause which follows the main clause it modifies. The main clause is in the imperfective (as shown by the pronoun and the use of progressive signified by the *le* particle) and the purpose clause, though having the same subject, is in the perfective aspect (as indicated by its subject pronoun).

- (8) Purpose clause introduced without connective:

mí mæ mwi le [n yø nøn døm døm =i].
not 1s.IPFV be.brave PROG [1s.PFV go with closeness =DEP]

'I am not being brave [(so that) I go close]' TAAL27

3.4 Complement clauses

A complement clause is a 'notional sentence or predication' which functions as the subject or object of another 'larger' predicate into which it is embedded (Noonan 2007: 52). The larger predication is often called the matrix clause (Payne 1997: 313). An example is the English sentence, *I hoped that you would sell all the groundnuts*: the matrix clause is *I hoped X* and the complement clause which is embedded in the matrix clause as its object is *that you would sell all the ground-nuts*.

A verb in the domain of thinking, feeling, or seeing (often called a cognitive verb) frequently takes a complement clause as its direct object. Examples (9), (10) and (11) exemplify this, with verbs *ko* 'see', *swi* 'want', and *nyøm* 'know' respectively. The object complement clause for this kind of matrix verb can take a different subject from the matrix clause, as in (9) and (11), or the same subject, as in (10). Also, the verb of the complement clause is not reduced in its ability to be inflected from the verb of the matrix clause. All three complement clauses are marked with the DEP clitic.

- (9) Cognitive matrix verb *ko* 'see':

mæ ko [kaa bwø a jel a youl =i].
1s.IPFV see [certain child 3s.PFV go.out at outside =DEP].

'I saw [another child go outside]' KILAN16

- (10) Cognitive matrix verb *swi* ‘want’:
a swi bɔ [a tɔm gən nən kwaan =i]
3s.PFV want not [3s.PFV beat 3s.OBJ.P with power =DEP]
‘He did not want [to beat him hard].’ KILAN13
- (11) Cognitive matrix verb *nyəm* ‘know’:
gə nyəm [jɔ bwi lɛ =i]?
3s.IPFV know [thing happen PROG =DEP]?
‘Did she know [what was happening]?’ DOLA19

Other matrix verbs such as *təl* ‘start’ always have the same subject for matrix and complement clause, as in (12), though the subject of the complement clause does not have to be explicit (cf. example (23)).

- (12) Matrix verb *təl* ‘start’ with same subject in main and complement clauses:
nəŋɔ jə tal [jə yi dola-gɔ lɛ =i].
then 3p.IPFV start [3p.IPFV sit courting-DEF PROG =DEP].
‘Then they started [courting (*lit.* they were sitting the courting)].’ DOLA12

A speech verb also often takes a complement clause as an object. In many examples of Dadiya reported speech, an emphatic (independent) pronoun identifying who is speaking is the last element of the quote margin. Example (13), from the KILAN narrative, shows two turns in a conversation between the headmaster and the narrator (a schoolboy at the time of the story). The KILAN30 quote margin gives the headmaster as subject, includes the speech verb *bə* ‘ask’ and speech recipient *i* ‘me’ and finally refers back to the speaker subject with the emphatic pronoun *gɔ*.⁸ KILAN31, the response, has only the emphatic pronoun *məu* in its quote margin. The speech content does not close with the clitic -I in either case. Though the initiating speech is presented as a direct quote, the response may be direct or indirect. It appears that the -I enclitic is optional marking for speech complement clauses.

- (13) Question and response:
... nə dəvə gəlalantal-ɔ a bə i gɔ, [Fwal-gɔ, a
... person head school-DEF 3s.PFV ask me 3s.EMPH [friend-DEF 3s.PFV
maa nyin?] do how]
‘The headmaster asked me, [“Friend, how is it?”]’ KILAN30

⁸This particle’s role here is best understood as a 3rd person singular emphatic pronoun in parallel with the response, which is introduced with a 1st person singular emphatic pronoun.

Nəngɔ məu [mí kaa jəl wo.]
 next 1s.EMPH [not another thing be.there]
 ‘Then I (said) that [there was no problem.]’ KILAN31

In examples (14) and (15), the clitic is used at the end of the speech content. Example (14) is an unconventional speech (by gunfire) reported by a character in the narrative who is telling a story to his girlfriend. The speech content of (15) is a kind of summary report, and the complement clause is marked with the -I clitic.

- (14) Gunfire speaks!
 kəlag-ɔ jəla lə go, [pa, pa, pa, pa =i]!
 fire-DEF come.out PROG 3s.EMPH [shot.IDEO pa pa pa =DEP]
 ‘Gunfire was answering, it (said), “[Pa, pa, pa, pa!”].’ DOLA20
- (15) Summary speech report, marked with -I as a complement clause:
 ya ja suwa kaa fei [jv bwi lə =i].
 going 3p.PFV tell certain teacher [thing happen PROG =DEP]
 ‘... they went and told a certain teacher [something was happening].’
 KILAN24

Dadiya has a frequently used clause-initial connective *nəngɔ*,⁹ usually introducing a significant new action in the narrative and thus generally glossed by native speakers as ‘then’ or ‘next’. It is surprising, though, that a clause starting with *nəngɔ* quite often finishes with the -I clitic, suggesting (usually against the free translation offered) that it is a dependent clause. Two rather short sentences in the DOLA text have this property of starting with *nəngɔ* and finishing with -I. The first one is shown in (16) and a few observations are made on its function in the flow of the story.

- (16) The use of *nəngɔ* as the matrix for a complement clause (cleft construction):
 nəngɔ [nəb ni a nyuwa -i].
 next [people these 3p.PFV hear =DEP]
 ‘Then [these men each heard (the father’s command)].’ DOLA7

This is given in the narrative as a complete sentence. The previous sentence is a much lengthier one. It gives the words of the stringent demand that the father of the eligible girl is making on all her suitors, that ‘he does not want them to slap

⁹Between them the three narratives have 53 occurrences of this connective.

any mosquitos biting them (when they are talking to the girl)'. In (16) *nəngɔ* connects the previous action (which was actually a speech) to the brief predication here, giving the new information that everyone heard the command. It is a cleft construction which puts the entire action of hearing in focus.

I suggest that the likely origin of the connective *nəngɔ* is as two separate words *nən gɔ*: Dadiya speakers actually prefer that representation in a few contexts in the narratives and in translated texts (R. Groff, personal communication). Example (17) demonstrates this; it is a formulaic summary of the story at its end.¹⁰ A more complex example, (21), is shown in the next subsection.

- (17) Use of *nən* 'be with' plus complementizer *gɔ* in end-of-narrative summary:

Gə na nyɔ, nən [gɔ n fulon kel ni =i].

3s.IPFV is thus be.with [COMP it.is news talk this =DEP].

'It is thus (what you've just heard), it is [that it's this small story].'

DOLA23

3.5 Dadiya sentences as combinations of clauses

Every Dadiya sentence consists of at least one clause. Most sentences consist of a cluster of clauses, so studying a given sentence in Dadiya involves observing the cohesion of the subordinate clause(s) and the main clause(s). A form of clause cohesion that is widely used in Dadiya (as in many African languages) but often overlooked is the simple juxtaposition of the clauses, that is placing clauses side by side without any conjunction between them. According to Longacre, "the very absence of conjunction in sentences that employ juxtaposition necessitates a tighter unity" (2007: 376). He goes on to discuss the tight cohesion between clauses when the clause components of a sentence "overlap each other and are mutually dependent", as in complementation. Analysis of sentences drawn from Dadiya narratives shows how both juxtaposition and overlap of clauses is relevant to the use of the -I clitic.

The lengthy sentence of (18) occurs just before the climax of the TAAL narrative. The narrator is describing his midnight trek home over a well-known path

¹⁰The particle *nən* seems to have a copular function in the sentence. It is here glossed 'be with', indicating a link of accompaniment between the story and the comment on its size. The same particle *nən* is often glossed simply 'with' by native speakers in a preposition phrase of accompaniment or instrument. Although this sentence shows a possible origin for the *nəngɔ* connective, Dadiya speakers resist writing the connective as two morphemes in its usual usage.

and how he suddenly encounters a large snake. As in previous sections the various dependent clauses are bracketed, and a quick glance shows that we have no overlapping of dependent clauses. The sentence starts with a thrice-repeated adverbial clause which continues the last assertion of the previous sentence, that he had started the last stage of his trek home. The three are juxtaposed and only the last of the three is marked by the -I clitic.

- (18) Juxtaposed clauses indicating sequences of actions:

[Mə yɔ lε mə yɔ lε mə yɔ lε =i], n ji-m
 [1s.IPFV go PROG 1s.IPFV go PROG 1s.IPFV go PROG =DEP] 1s.PFV kill-PRF
 kəlag-ɔ; yigi mə nyuwa lε [na nəl ya jəga i lε a
 fire-DEF soon 1s.IPFV hear PROG [if person going slap me PROG at
 kəga =i]; [mə nyuwa ny =i] nəngɔ [mən wumgɔ kəlag =i],
 front =DEP] [1s.IPFV hear thus =DEP] next [1s.? open fire =DEP]
 mə ko səg-ɔ...
 1s.IPFV see snake-DEF

'[While I was going along, going, going], I had just turned off my flashlight; soon I was hearing [a sound as if a person was about to slap me in front]; [when I heard that], next it was that [I quickly turned on my flashlight] and I saw the snake ...' TAAL20

The onward progress described in the repeated clause is background to what is described in the next two clauses: first, he turned off the flashlight and second, he began hearing something. The next dependent clause is object complement, i.e. what he heard. The fact of hearing something threatening is now put in an adverbial clause as background to a new action the storyteller took, that of turning on his flashlight. The whole action is thrown into focus by being put into a complement clause after *nəngɔ* 'next' (expanded to 'next it was that' in free translation to show its function as a matrix for the complement). The final main clause included here reports his seeing of the snake. There are actually 3 more short main clauses (not shown here) that finish the sentence, describing the threatening action of the snake while the flashlight is still on.

A sentence with one dependent clause embedded in another is shown in (19). The sentence's single main clause begins it, then the object complement clause (describing what the young man does not know) starts but has an adverbial clause (purpose) embedded in it after the manner pronoun *nyin* 'how'. Because of this overlap (nesting), the two dependent clauses end together, so that only one -I is needed.

- (19) Purpose clause (adverbial) nested inside complement clause, one -I clitic only:

Bwə ni a nyəm bɔ [gə maa nyin [gə kaa
 son this 3s.PFV know not [3s.IPFV do how [3s.IPFV drive.away
 bɔt̪i ni lə a bɔt̪-ɔ gən =i]].
 mosquito DEM PROG LOC body-DEF 3s.POSS =DEP]]

'This boy didn't know [how to act [to be driving away these mosquitoes on his body]].' DOLA15

Sentences (20) and (21) show two further examples from the KILAN text. Both of these sentences involve relative clauses nested inside a complement clause. Sentence (20) has a single relative clause (with *jv* 'thing' as head) nested inside the object complement of the verb *dəg* 'cause'. Sentence (21) is a summary statement near the end of the KILAN narrative. Its main clause is quite similar in structure to that of Example (18), with a subject complement after the complementizer *gɔ*. Two nouns within the complement clause are heads of relative clauses, *jv* 'thing' and *kwama* 'time'. All three subordinate clauses overlap at the end of the sentence, so again as in (19) and (20) only one use of the -I clitic is needed.¹¹

- (20) Final clause is a relative clause embedded in object complement of *dəg* 'cause':

a dəg nən [nən suwa jv [a mərka
 3s.PFV cause 1p.EXCL.OBJ [1p.EXCL.PFV say thing [3s.PFV gather
 nən =i]].
 1p.EXCL.OBJ =DEP]]

'He caused us [to say thing [that gathered us (got us fighting)]].' KILAN34

- (21) Clause chain near end of KILAN text and marked with -I:

*Jv ni nən [gɔ fulon jv [a bwi nən məu kwama
 thing this be.with [COMP news thing [3s.PFV happen with me time
 [mə a lɔ bwesən =i.]]]
 [1s.IPFV at home small.boy =DEP]]]*

'This is [a story of something [that happened to me when [I was at home as a young boy.]]]' KILAN39

¹¹My colleague Dr. Starwalt assures me (personal correspondence) that the DEP clitic here is correctly represented in its [-ATR] form. Orthographic convention of writing schwa ⟨ə⟩ for two distinct centralized vowel phonemes, one [+ATR] and one [-ATR], is at fault for the representation *nən*, an object pronoun 'us (EXCL)' and not the copula 'be with' previously discussed. The Dadiya language committee has already been made aware of the need to correct schwa to another vowel symbol for a number of words. See Appendix A, notes after vowel chart.

3.6 Observations on three similar morphemes

Dadiya has three morphemes that can be confused with the -I clitic that marks the end of most dependent clauses. All three can come at the end of a clause:

- the 1st person object pronoun *i* ‘me’, shown in example (22)
- the genitive suffix *-i/-i*, attached to the end of a noun phrase consisting of associated nouns, shown in example (23)
- the resultative suffix *-i/-i*, attached to a reduplicated verb to indicate the resulting state after the action described by the verb is complete. (24) and (25) are examples.

(22) Unambiguous example of 1s.OBJ ‘me’:

... bwɛ ni dəgi i lɛ dəgi i.
... child this laugh 1s.OBJ PROG laugh 1s.OBJ
‘... this boy was laughing at me.’ KILAN20

There is more than one reason that the pronoun *i* ‘me’ is difficult to mistake for the -I clitic. First, the orthographic convention is to write it as a separate word, as other object pronouns are written. Second, it does not display vowel harmony with the last vowel of the word preceding it, as the -I clitic typically does. (If it was harmonic, you would expect *i* in both occurrences in (22) because of the preceding final vowel of *dəgi* ‘laugh’.) Third, in most clauses observed the object pronoun is not the final morpheme in the clause – (22) is one of the few exceptions.

(23) Unambiguous example of Genitive:

... nən təl [labə -təm kilən -i a daa [ji wo
... 1p.EXCL.PFV start [seek -NMLZ fight -GEN at place [3p.OBJ be.there
=i]].
=DEP]]]
‘...we started [looking for a fight with [those who were there]].’ KILAN7

(24) Unambiguous example of Resultative:

beti nyuwa nyuwa-i taal nənə lɛ
children hear hear-RES fear 1p.EXCL.POSS PROG
‘Children were becoming fearful of us.’ KILAN14

(25) Ambiguous example – Resultative/DEP/both?

nənə [mə gun [mə yi yi =i]].
next [1s.IPFV rise [1s.IPFV sit sit =RES.DEP]].
‘... then I got up (slowly) [until I was in a sitting position].’ KILAN29

It is fairly clear from the examples that the genitive and resultative harmonize with the last vowel of the word to which they are attached. So Dadiya actually has 3 harmonizing morphemes. Besides the -I harmonizing clitic which is in focus in this study, there are two -I suffixes that harmonize in the same way.¹² These three morphemes may have the same origin historically. Where they overlap (i.e. where they are expected in the same position) it is probable that only one will be written. It can be glossed as a portmanteau morpheme, as it is in (25).

4 Conclusion: Discoveries concerning the -I clitic

Virtually every dependent clause in a Dadiya narrative is marked with the clause-final clitic -I. The orthographic practice has been to write this enclitic as a suffix on the final word of the clause, and its phonological attachment is shown by its harmony with the host word's final vowel.

The marking with -I is optional at the end of speech complement clauses, particularly (it seems) those in which the quote is introduced by an emphatic pronoun referencing the speaker. The other exception is that a non-final clause in a chain of dependent clauses will not be marked, particularly when there is repetition or parallel structure in consecutive clauses. The case of nested clauses where dependent clauses overlap and come to an end together is common. It is not considered to be a true exception, because the final position of all the nested clauses is marked with a single token of the -I clitic.

Clauses which follow the connective *nəŋɔ* 'then, next' are consistently marked with the dependency clitic -I even though they seem to be not background but foreground – they describe significant actions of main participants in the narrative. It is argued that *nəŋɔ* is derived from copula *nən* 'be with' plus complementizer *gɔ* 'that'.¹³ Using this hypothesis, a post-*nəŋɔ* clause is marked as grammatically dependent on the *nəŋɔ* itself, presenting sometimes the next significant action in the flow of the narrative and sometimes a summary or result of the previous action or situation.

Finally, the -I clitic can be difficult to distinguish in some contexts from two other morphemes which are segmentally identical. One of these is a genitive marker attached to the final noun in a series of two or more nouns associated

¹²This study has uncovered two examples of another usage of -I which may be a marker of topic or focus. More examples are needed in order to investigate this usage fully.

¹³Matthew Harley (2017: 4) first put forth this argument from the evidence he had seen in scriptural narratives. Further study is needed to verify that the evidence from the 53 occurrences documented in the natural narratives fully supports this.

by juxtaposition in a noun phrase. The other is a resultative marker, which is a suffix attached to a reduplicated verb. Ambiguity may be introduced if the noun phrase or verb phrase so marked is also at the end of a clause. But in the economy of Dadiya it is likely that a single occurrence of the -I morpheme will suffice to indicate one or more of these grammatical meanings.¹⁴

5 Directions of further research

What we have been studying is Dadiya information structure: “Information structure, like basic grammar, can be largely presented in terms of constructions with nucleus, dependents, core, and periphery” (Dooley 2017: 26). Even more than their consultants, the Dadiya translation team needs to see how their own language structures the presentation of information as distinct from how English or other source languages have structured it in presenting coordinated and subordinated propositions.

The focus of this study has been on the various kinds of Dadiya clauses that end with the -I clitic. Here are some of the questions that remain to be investigated concerning Dadiya subordinate clauses:

- What can be said about morphemes that begin subordinate clauses (*ni*, *na*, *go*, *nəngɔ*)? Are they specially marked forms of morphemes that also occur in main clauses? When there is no such morpheme, does tone play a part in marking the beginning of the subordinate clause as -I marks its end?
- What kind of information does Dadiya allow to be subordinated? What are the purposes for which the various kinds of subordinate clauses are used?
- The kinds of narrative studied have been very limited. What other kinds of natural narrative and non-narrative texts need study?

In the end it is the Dadiya language project team, i.e. the translation team, who stand to benefit the most from this study. They are the primary developers of the language in its written form. They have shown receptivity to improved understanding of how their language works in comparison to English and other Nigerian languages they use. What approach can we now take in sharing these insights on Dadiya information structure and discussing them in our meetings with the team?

¹⁴ Again, this hypothesis needs to be verified by a more extensive look at narrative data.

Appendix A: Dadiya vowels and their representation in current orthography

Table 5.1: Dadiya Vowels and their representation

	[+FRONT]	[+BACK]
[+ATR]	i ⟨i⟩	u ⟨u⟩
[−ATR]	I ⟨i⟩*	o ⟨ɔ⟩
[+ATR]	e ⟨e⟩	ə ⟨ə⟩
[−ATR]	ɛ ⟨ɛ⟩	ɜ ⟨ə⟩**
[−ATR]		a ⟨a⟩

For the most part, each Dadiya vowel phoneme is represented in the updated orthography (Language and Literacy Committee, Dadiya 2018) using the IPA symbol corresponding to its closest phonetic value. There are two exceptions:

- * The near-close [+FRONT] [−ATR] vowel is written as barred-i, ⟨i⟩, due to the perception readers will associate the more accurate IPA symbol with the capital I widely known from English.
- ** There is considerable evidence that the orthographic symbol schwa, ⟨ə⟩, represents two centralized vowel phonemes – one of these is [+ATR] and the other is [−ATR]. Though there are plans to publish this evidence as part of a technical paper, these brief comments are based on the author’s personal correspondence with Coleen Starwalt.

Abbreviations

Abbreviations in this chapter follow the Leipzig Glossing Rules, with the following additions:

- | | |
|------|------------------|
| EMPH | emphatic pronoun |
| IDEO | ideophone |
| P | person |

References

- Andrews, Avery D. 2007. Relative clauses. In Timothy Shopen (ed.), *Language typology and syntactic description, vol. II: Complex constructions*, 2nd edn., 206–236. New York: Cambridge University Press.
- Blench, Roger. 2007. *Language families of the Nigerian middle belt and the historical implications of their distribution*. Powerpoint presented at the Jos Linguistics Circle, Jos, Nigeria.
- Dooley, Robert A. 2017. *Information structure: an introduction* (SIL Electronic Working Papers 125). Dallas, TX: SIL International.
- Eberhard, David M., Gary F. Simons & Charles D. Fennig (eds.). 2019. *Dadiya*. (25 February, 2019). Ethnologue. Dallas, TX: SIL International. <http://www.ethnologue.com>.
- Hammarström, Harald, Robert Forkel & Martin Haspelmath (eds.). 2019. *Glottolog 3.3*. Dadiya (25 February, 2019). <https://glottolog.org/resource/languoid/id/dadi1249>.
- Harley, Matthew. 2017. *Dadiya linguistic consultant report*. MS, SIL. Jos, Nigeria.
- Jungraithmayr, Herrmann. 1968. Class languages of Tangale-Waja district. *Afrika und Übersee* 52(3/4). 161–206.
- Kleinewillinghöfer, Ulrich. 1996. Relationship between Adamawa and Gur: the case of Waja and Tula. *Gur Papers/Cahiers Voltaïques* 1. 25–45.
- Kleinewillinghöfer, Ulrich. 2014. Tula-Waja group: 100-wordlist. Mainz, Germany. Ms. <https://www.blogs.uni-mainz.de/fb07-adamawa/adamawa-languages/tula-waja-group/the-languages-of-the-tula-waja-group/>.
- Language and Literacy Committee, Dadiya. 2018. *Masomin karatu da rubutun yaren Dadiya (Basics of reading and writing Dadiya)*. 2nd edn. Nigeria: Dadiya Language & Literacy Project.
- Longacre, Robert E. 2007. Sentences as combinations of clauses. In Timothy Shopen (ed.), *Language typology and syntactic description, vol. II: Complex constructions*, 2nd edn., 372–420. New York: Cambridge University Press.
- Noonan, Michael. 2007. Complementation. In Timothy Shopen (ed.), *Language typology and syntactic description, vol. II: Complex constructions*, 2nd edn., 52–150. New York: Cambridge University Press.
- Payne, Thomas. 1997. *Describing morphosyntax: A guide for field linguists*. New York: Cambridge University Press.
- SIL International. 2019. *Fieldworks language explorer*. <https://software.sil.org/fieldworks..>

Chapter 6

Subject encoding in Limbum

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This paper presents novel data from the understudied Grassfields Bantu language Limbum (Cameroon) showing three interrelated asymmetries within the realm of subject marking. The first is a dependency of overt subject marking on number and category of the subject. The second concerns the apparent absence of subject resumption for third person plural while it is obligatory in all other cases. The third asymmetry is found with focus-marked subjects where subject marking is dependent on the type of focus-marking. It will be argued that the first asymmetry can be understood in terms of differential subject marking, while the second one is due to a weak/strong distinction in pronouns. The last asymmetry is derived from the first in interaction with a structural ambiguity in subject focus constructions.

1 Introduction

It is well known that syntactic operations and processes do not necessarily have to be applicable to all kinds of arguments, nor does one and the same syntactic operation/process have to have the same effect on different kinds of arguments. In fact, examples of asymmetric behaviour of distinct kinds of arguments are abundant. There are subject/object asymmetries with regard to *inter alia* *that*-trace effects (Perlmutter 1971), sub-extraction (Huang 1982), resumption (Koopman 1983; McCloskey 1990), and many more. Direct and indirect objects behave differently with respect to scope and binding (Barss & Lasnik 1986; Larson 1990), resumption (Stewart 2001), and extraction (Bresnan & Moshi 1990; Holmberg et al. 2019). There are also asymmetries between arguments and non-arguments for island sensitivity and weak islands (Huang 1982; Engdahl 1986) and reconstruction (Freidin 1986; Lebeaux 1988).



Less well known is the fact that there can be asymmetric behaviour within one kind of argument. Thus, with focus marking, matrix subjects show one kind of encoding while embedded subjects employ a different focus marking strategy in Dagbani (Issah & Smith 2018) and in Igbo (Amaechi & Georgi 2019). The most well known case of such internal asymmetry is possibly differential object marking, where objects show a different morphological encoding depending on some inherent (and sometimes also external) properties. In the realm of subjects, the most prominent asymmetry is probably the so-called antiagreement effect (Ouhalla 1993; 2005, see also Baier 2018 for a recent overview and discussion) which distinguishes subjects that have undergone extraction from in situ subjects by a loss of agreement on the verb (antiagreement) or a different morphological encoding on the verb (alternative agreement).

In this paper, I will present and discuss three subject-internal asymmetries in Limbum, a Grassfields Bantu language spoken in North Western Cameroon, that are, to some degree, interdependent. First, Limbum shows an asymmetry in the presence of a subject marker. While this marker is obligatory for full NP and plural pronominal subjects, it has to be absent when the subject is a singular pronoun. Coupled with the fact that Limbum requires a resumptive pronoun to occur in the base position of a subject A'-dependency, this leads to an apparent anti-agreement effect (cf. Ouhalla 1993; Baier 2018). Second, there is an asymmetry of third person plural subjects vs. all other person-number combinations with regard to resumption. While, generally, subject extraction leaves a resumptive pronoun that is identical in form to the regular personal pronoun, extraction of third person plural subjects leaves a gap. However, this gap is only apparent, because, as I argue, the third person plural is the only one that has a weak pronoun variant which is null. A third asymmetry concerns the interaction of the particle *ci*, which occurs in focus constructions, and the choice of subject marker. It is shown that when *ci* is overt, there has to be a resumptive pronoun *i*, while there is optionality between the resumptive and the subject marker *à* when *ci* is absent. This optionality is analysed as stemming from a structural ambiguity between a movement and a non-movement configuration.

The data in this paper stem from a number of elicitation sessions with one native speaker from Nkambe, Cameroon, over a period of several months between August 2018 and May 2019. The sessions took place in Leipzig.

2 Subject agreement

Limbum, a Grassfields Bantu language (Niger-Congo) is spoken by about 73 000–90 000 (Fransen 1995: 21) to 130 000 speakers (according to a 2005 census, Eberhard et al. 2019) in the Northwest Region of Cameroon. Its basic word order is

SVO with tense-aspect markers appearing between the subject and the verb. Adverbs always take the clause-final position (1).

- (1) Njíjwè fɔ à mū yɛ bō fɔ nìjkòr.
 woman DET SM PST2 see children DET yesterday
 ‘The woman saw the children yesterday.’

2.1 The data

In some tenses and aspects (all three past tenses and, optionally, in the progressive aspect), a subject marker *à* obligatorily occurs with the subject (2).

- (2) a. Nfòr à mū zhé bzhí.
 Nfor SM PST2 eat food
 ‘Nfor ate food.’
 b. Nfòr à cí zhé bzhí.
 Nfor SM PROG eat food
 ‘Nfor is eating food.’

In other tenses and aspects, like the future (3a) or the habitual (3b), no such subject marker occurs. In fact, the presence of a subject marker renders the sentence ungrammatical.

- (3) a. Nfòr (*à) bí zhé bzhí.
 Nfor SM FUT1 eat food
 ‘Nfor will eat food.’
 b. Nfòr (*à) kí zhé bzhí.
 Nfor SM HAB eat food
 ‘Nfor regularly eats food.’

In this paper, I will focus on the tenses and aspects in which the subject marker is found. Interestingly, the subject marker only occurs with full NP subjects (2) and plural pronouns (4).

- (4) a. Wèr *(à) mū fà?.
 1PL.EXC SM PST2 work
 ‘We(excl) worked.’
 b. Sì *(à) mū fà?.
 1PL.INC SM PST2 work
 ‘We(incl) worked.’

- c. Yì *(à) mū fà?.
2PL SM PST2 work
'You(pl) worked.'

For third person plural subjects, both pronouns and full NPs, the subject marker appears in an exclusively plural form ó (5).

- (5) a. Wōyè *(ó) mū fà?.
3PL 3PL.SM PST2 work
'They worked.'
- b. Bō fō *(ó) mū zhé bzhí.
children DET 3PL.SM PST2 eat food
'The children ate food'

However, when the subject is a 1st, 2nd, or 3rd person singular pronoun, the subject marker à is ungrammatical (6). Thus, singular pronouns and à never cooccur in a clause.

- (6) a. Mè (*à) mū fà?.
1SG SM PST2 work
'I worked.'
- b. Wè (*à) mū fà?.
2SG SM PST2 work
'You(sg) worked.'
- c. Í (*à) mū fà?.
3SG SM PST2 work
'(S)he worked.'

Concerning the tenses that do not show the subject marker for full NPs, these also lack it if the subject is a pronoun (singular or plural). Some examples in the future tense are given in (7).

- (7) a. Wèr (*à) bí fà?.
1PL.EXC SM FUT1 work
'We(excl) will work.'
- b. Mè (*à) bí fà?.
1SG SM FUT1 work
'I will work.'

Contrary to what is reported in Fransen (1995)¹, who restricts *à* and *ó* to subjects of class 1 and 2 respectively, the subject markers for the speaker consulted here are invariant with regard to the noun class of the subject. That is, both *à* and *ó* occur across different noun classes (8). The tense restrictions are the same as discussed above.

- (8) a. Rtāā fō à mū gwē.
5.cap DET SM PST2 fall
'The cap fell.'
- b. Mtāā fō ó mū gwē.
6.cap DET 3PL.SM PST2 fall
'The caps fell.'
- c. Nā fō à mū būmī.
10.cow DET SM PST2 sleep
'The cow slept.'
- d. Mnā fō ó mū būmī.
10.pl.cow DET 3PL.SM PST2 sleep
'The cows slept.'

Concerning the restriction of *à* to past tenses, this is already noted in Fransen (1995: §10.2) albeit as restricted to class 1/1a subjects. As of now, I unfortunately have no explanation for this constraint.

In summary, the distribution of subject markers is quite asymmetric in Limbum. First, they only occur in a selection of tenses and aspects. Second, singular NPs and local person plural pronouns pattern together in requiring the presence of the *à* marker while singular pronominal subjects demand its absence. Third person plural subjects obligatorily appear with the exclusive *ó* marker. The overall pattern is given in Table 6.1.

2.2 Why is agreement absent for singular pronouns?

There are some possibilities for why agreement is impossible with singular pronouns. First, for Celtic languages, it has been argued that what looks like an agreement marker is really a pronominal argument cliticized onto the verb. Thus, in Breton, full DP subjects never trigger agreement (9a), but pronominal subjects are obligatorily dropped with "agreement" showing up on the verb (9b).

¹The speaker gave the comment that Fransen's data sound archaic to him but admitted that she might also be describing a different dialect of Limbum. Generally, his data diverge from the data presented by Fransen (1995) for several phenomena, including relativization and focus.

Table 6.1: Distribution of subject markers in Limbum past tenses and progressive aspect

		Sg		Pl	
Subjects		Pronoun	Marker	Pronoun	Marker
Pronominal	1.excl	mè	∅	wèr	à
	1.incl			sì	à
	2	wè	∅	yì	à
	3	í	∅	wōyè	ó
Nominal			à		ó

- (9) Breton (Jouitteau & Rezac 2006: 1916)

- a. Gant o mamm e karf-ent/*karf-e *pro bezañ.*
with their mother R would.love-3PL/*would.love-3SG 3PL be.INF
'They would like to be with their mother.'
- b. Gant o mamm e karf-e/*karf-ent Azenor ha
with their mother R would.love-3SG/*would.love-3PL Azenor and
Iona bezañ.
Iona be.INF
'Azenor and Iona would like to be with their mother.'

This complementarity effect has been taken as evidence that, in fact, there is no ϕ -agreement between subject and verb. If the subject is a pronoun, which is weak enough to cliticize onto the verb, it only appears as though the verb inflects (see Anderson 1982; see also Stump 1984 who rejects this analysis in favour of an agreement analysis). The facts are almost identical and have received an identical analysis in Irish (Pranka 1983; Doron 1988; Ackema & Neeleman 2003) and Scottish Gaelic (Adger 2000). Under such an approach, the Limbum subject markers, would be weak pronouns cliticizing to the verb. Their absence with pronominal subjects is then due to the fact that these subjects must be strong pronouns that cannot cliticize onto the verb. In contrast to the Celtic languages mentioned above, however, Limbum allows the subject marker to cooccur with a full NP subject. If the subject marker is indeed a pronoun, one could argue that it is the actual subject, taking the subject's argument position and theta role, similar to what has been argued to be the case for polysynthetic non-configurational languages (see Jelinek 1984; Baker 1996). What appears to be the full NP subject,

then is actually just an adjoined phrase that is somehow linked to the respective pronominal argument.

However, this analysis would leave unexplained the occurrence of the subject marker with plural pronominal subjects. In this part of the paradigm, Limbum behaves more like Welsh, where a (postverbal) pronominal subject agrees with the verb (10) while a (postverbal) full DP subject does not (11).

- (10) Welsh (Borsley 2009: 227)
 - a. Gwelodd e/hi ddraig.
see.PST.3SG he/she dragon
'He saw a dragon.'
 - b. Gwelon nhw ddraig.
see.PST.3PL they dragon
'They saw a dragon.'
- (11) Welsh (Borsley 2009: 227)
 - a. Gwelodd y bachgen/bechgyn ddraig.
see.PST.3SG the boy/boys dragon
'The boy/boys saw a dragon.'
 - b. *Gwelon y bechgyn ddraig.
see.PST.3PL the boys dragon

Thus, an account of the absence of the subject marker with singular pronominal subjects that derives it as a type of complementarity effect, as found in many Celtic languages, is not feasible.

A second possible explanation is that the subject agreement paradigm simply contains three markers *à*, *ó*, and \emptyset which are specified such that the zero marker realizes 1st, 2nd, and 3rd person singular. However, in this scenario, the zero marker would have to explicitly make reference to the (categorial) status of the subject as a pronoun (12).

- (12) Vocabulary entries for agreement markers
 - a. /ó/ \leftrightarrow [-1,-2,-sg]
 - b. / \emptyset / \leftrightarrow [pron, +sg]
 - c. /à/ \leftrightarrow []

Now, this requires that subject-verb agreement not only leads to ϕ -features being present on the verb/T, but also the categorial feature of the subject. Agreement for category, however, is a very uncommon feature in natural languages (cf. Weisser 2019).

A third option is that the subject marker is not an agreement marker but a specific past tense marker that displays subject-sensitive allomorphy. As allomorphy rules are generally able to refer to the category of an allomorphy-trigger, the fact that pronouns in the singular require the zero allomorph is easily captured (13).

(13) Allomorphs of the subject marker

- a. ó / [3pl]_
- b. Ø / [pron, sg]_
- c. à

Allomorphy is usually triggered under linear adjacency. Thus, when material linearly intervenes between the subject and the subject marker, we would expect that the default allomorph à appears. Unfortunately, adverbs in Limbum always occur clause-finally making them unusable for testing this prediction. However, we can employ coordinations where each conjunct requires a different allomorph. What we find is that the subject marker apparently references the whole conjunction. Thus, in (14a), the conjunction of a full NP *ŋwè rlɔ fɔ* ‘the reverend’ and the pronoun *wè* ‘you (sg.)’, which together resolves into a 2nd person plural subject, triggers the subject marker à despite the singular pronoun *wè* being linearly adjacent. Example (14b) shows the coordination of two different pronominal subjects *wè* ‘you (sg.)’ and *mè* ‘I’ each independently requiring the zero form of the subject marker. However, again à appears, as the whole coordination is a first person plural pronominal subject. Lastly, (14c) gives the coordination of two singular NPs each requiring the subject marker à in isolation. Instead, the plural marker ó occurs.

- (14) a. [I]wè rlɔ fɔ bá wè]_{2pl} à mū zhé bā.
person prayer the and you.SG SM PST2 eat fufu
'The reverend and you ate fufu.'
- b. [Wè bá mè]_{1pl} à mū zhé bā.
2SG and 1SG SM PST2 eat fufu
'You(SG) and I ate fufu.'
- c. [I]wè rlɔ bá yà bàá]_{3pl} ó mū zhé bā.
person prayer and my father 3PL.SM PST2 eat fufu
'The reverend and my father ate fufu.'

In sum, the examples in (14) behave as if agreement takes place with the whole coordination rather than with one of its conjuncts. Allomorphy alone can therefore not account for the pattern of subject marking. In addition, the allomorphy

rule would have to make reference to the feature [pron]. While it is possible for allomorphy to refer to category features, the general perspective on pronouns since Postal (1969) and Abney (1987) is that they are elements of category D, i.e. that there is no dedicated category Pron comprising pronominal elements.

It is thus unclear how to formally analyze the Limbum subject agreement pattern. From a functional perspective, it looks like an instance of complex differential subject marking (DSM, de Hoop & Malchukov 2008). In analogy to differential object marking (DOM), DSM occurs when the morphological encoding of subjects varies depending on some properties of the subject with less likely subjects (according to some hierarchy such as referentiality, definiteness, or person, Hale 1972; Silverstein 1976) being more marked than more likely subjects. In the Limbum case, the relevant property is a combination of definiteness and number. The definiteness and number scales are given in (15) and (16).

(15) Definiteness scale

Pro(noun) > Name (PN) > Definite > Indefinite Specific (Spec) >
NonSpecific (NSpec)

(16) Number scale

Plural > Singular

In effect, when considering these scales for subjects, a pronominal element turns out to be a more likely/expected subject than a proper name. The latter, in turn, is a more likely subject than a definite element, and so on. Now, Limbum draws the line between Pro and PN on the scale, separating pronouns from all other types of subjects. Combining the definiteness with the number scale, Limbum further distinguishes between singular pronominal subjects and plural pronominal subjects with the former being the most likely/expected subjects. As such, these do not have to be marked overtly (by an overt subject marker). In contrast, any subject deviating from the expectation (i.e. singular pronoun) has to receive a specific encoding in the form of an overt subject marker. The fact that the Limbum subject marker is absent with singular pronominal subjects only thus results from functional considerations where expectations as to what constitutes a prototypical/likely subject play a role for the morphological encoding. This, of course, leaves open the question of why the subject marker only occurs in a handful of tenses/aspect.

2.3 An apparent anti-agreement effect

The different behaviour of singular NPs and singular pronouns with regard to subject agreement gives rise to an interesting effect when the subject has under-

gone some form of displacement. When the subject is questioned (17a), focussed² (17b), or relativized (17c), the *à* marker that usually appears with full NP subjects disappears. Instead, there is a different marker *i* occurring in the clause.³

- (17) a. Á ndá₁ cí i₁ Ø mū zhé bzhí (à)?
FOC who COMP 3SG.RP SM PST2 eat food Q
'Who_F ate food?'
- b. Á Nfòr₁ cí i₁ Ø mū zhé bzhí.
FOC Nfor COMP 3SG.RP SM PST2 eat food
'Nfor_F ate food.' (new information focus)
- c. Mè rìŋ njíŋwè₁ [zhì i₁ Ø cí yē ñgwē fō].
1SG know woman REL 3SG.RP SM PROG see dog DET
'I know the woman who is seeing the dog.'

This marker *i* is in fact the regular third person singular pronoun as in (18).

- (18) Í Ø cí fà? mí ñkà?
S/He SM PROG work in garden
'S/He is working in the garden.'

In light of (18), it is plausible to treat the occurring *i*-marker in (17) as a resumptive pronoun taking the place of the displaced subject. Now at first glance, it appears as though the *à* marker has gone missing in (17) as a consequence of full NP subject displacement. This is reminiscent of the so-called anti-agreement effect (Ouhalla 1993; Baier 2018), where subject agreement is suppressed when the subject undergoes displacement. In Limbum, however, the pronoun independently cannot cooccur with the subject marker *à*, which therefore is absent from the sentence.

That one is not dealing with an anti-agreement effect can immediately be shown by comparing extraction of singular NP subjects with extraction of (local) plural pronominal subjects. Both kinds of subjects obligatorily require the subject marker *à* when in situ (19).

²The focus marked by the particle *á* here is new information focus. There is at least one other focus marking strategy with a particle *bá* which encodes contrastive/exhaustive focus (Becker et al. 2019; Driemel & Nformi 2018). As the latter does not involve displacement to the left periphery, it is of no interest here.

³See Becker et al. (2019) for arguments that the *á* construction is not a biclausal cleft but rather involves a monoclausal movement structure.

- (19) a. Nfòr *(à) mū zhé bzhí.
 Nfor SM PST2 eat food
 ‘Nfor ate food.’
- b. Wèr/sì/yì *(à) mū fà?.
 1PL.E/1PL.I/2PL SM PST2 work
 ‘We(exc)/we(inc)/you(pl) worked.’

Now, when the singular subject of (19a) is extracted, it leaves a singular resumptive pronoun *i* which independently disallows à. Consequently, à is absent (20).

- (20) Á Nfòr₁ cí í₁ Ø mū zhé bzhí.
 FOC Nfor COMP 3SG.RP SM PST2 eat food
 ‘Nfor_F ate food.’

On the other hand, extraction of the subject in (19b) should leave a plural resumptive pronoun, which requires the presence of à. We would thus expect that no “antiagreement” effect will be observed. As (21) confirms, this is indeed the case.

- (21) Á wèr/sì/yì cí wèr/sì/yì *(à) mū fà?.
 FOC 1PL.EXC/1PL.INC/2PL COMP 1PL.EXC/1PL.INC/2PL SM PST2 work
 ‘We(exc)/we(inc)/you(pl)_F worked.’

With extraction of singular pronominal subjects, we would expect a resumptive pronoun to occur but the marker à to be absent as these pronouns never cooccur with à (6). This expectation is also fulfilled (22).

- (22) Á mè/wè/i cí mè/wè/i (*à) mū fà?.
 FOC 1SG/2SG/3SG COMP 1SG/2SG/3SG SM PST2 work
 ‘I/you(sg)/(s)he_F worked.’

Third person plural subjects, in contrast, behave in a surprising way giving rise to yet another asymmetry between different kinds of subjects. Under the approach sketched so far, we would expect them to pattern with local person plural subjects, i.e. leaving a resumptive pronoun plus subject marker, with the difference that this subject marker is ó, not à. This is, because like the latter, a pronominal third plural subject requires the presence of a subject marker when in situ (5a). However, this is not what we find. When a third person plural subject is extracted it obligatorily leaves a gap with the presence of the subject marker being unaffected by extraction (23).

- (23) a. Á bō fō cí (*wōyè) ó mū zhé bzhí.
 FOC children DET COMP 3PL.RP 3PL.SM PST2 eat food
 'The children_F ate food.'
- b. Á wōyè cí (*wōyè) ó mū zhé bzhí.
 FOC 3PL COMP 3PL.RP SM PST2 eat food
 'They_F ate food.'

The pattern of resumption and subject marking under extraction is given in Table 6.2. As can be seen, to the exception of third person plural, it reflects the pattern of pronominal in situ subjects and subject markers in Table 6.3.

Table 6.2: Resumptive pronouns (RP) and SM

subject	RP	SM
singular	✓	—
1st & 2nd plural	✓	✓
3rd plural	—	✓

Table 6.3: Regular pronouns (Pron) and SM

subject	Pron	SM
singular	✓	—
1st & 2nd plural	✓	✓
3rd plural	✓	✓

With the exception of third person plural, it is thus the interaction between the pattern of agreement on one side and the requirement of subject displacements to have a resumptive pronoun in their base position on the other side that gives the impression of an anti-agreement effect for singular NP subjects.

3 The third person plural

Turning back to third person plural subjects, recall that they behave like local person plural pronominal subjects in that they obligatorily require a cooccurring subject marker when in situ as in (5), repeated below as (24), but differ from these in that they leave a gap rather than a resumptive pronoun when they are extracted (23).

- (24) a. Wōyè *(ó) mū fà?
 3PL 3PL.SM PST2 work
 'They worked.'
- b. Bō fō *(ó) mū zhé bzhí.
 children DET 3PL.SM PST2 eat food
 'The children ate food.'

Given that examples like the ones in (23) parallel examples of extraction of other pronominal subjects like in (21) and (22), this suggests that the resumptive pronoun counterpart to the third person plural pronoun is simply null. The resumptive versions of all other pronouns, in contrast, are form-identical to the ones used in non-resumptive contexts as shown in Table 6.4.

Table 6.4: Regular and resumptive pronouns

	Regular		Resumptive	
	Sg	Pl	Sg	Pl
1.exc	mè	wèr	mè	wèr
1.inc	–	sì	–	sì
2	wè	yì	wè	yì
3.anim	í	wōyè	í	∅
3.inan	í	bvī	í	bvī

Support for this line of analysis comes from subject extraction out of islands. The island-obviating effect of resumptive pronouns is well-known by now (McCloskey 1979; Borer 1984). As subject extraction of non-third person plural subject leaves an overt resumptive pronoun, islands should not have any degrading effect. Indeed, this is what we find. Examples of subject extraction from a complex NP island are given in (25a) for a second person plural subject and (25b) for a third person singular subject.⁴

- (25) a. Á yì cí mè ∅ mū yō? nsūŋ zhǐ-nē yì à mū
FOC 2PL COMP I SM PST2 hear rumour 3SG.INAN-COMP 2PL SM PST2
fà?
work
'I have heard the rumour that you(pl)_F have worked.'

⁴Note that the complementizer *nē* in (25) and (26) shows agreement (in the form of a prefix) with the embedding noun *nsūŋ* 'rumour'. This fits the general pattern of complementizer agreement in the language where the complementizer agrees with the matrix subject for person, number, and animacy in case there is no intervener (i.e. a direct object). An exploration of this phenomenon and the interesting intervention effects that are observed with it is beyond the scope of this article. I refer the interested reader to Nformi (2018), who documents the pattern in some detail.

- b. Á Nfòr cí mè Ø mū yō? nsūŋ zhǐ-nē í mū
 FOC Nfor COMP I SM PST2 hear rumour 3SG.INAN-COMP 3SG PST2
 fā?
 work

‘I have heard the rumour that Nfor_F has worked.’

Importantly, the island-obviating effect is also found with extraction of a third person plural subject despite the lack of an overt resumptive pronoun (26).

- (26) Á wōyè cí mè Ø mū yō? nsūŋ zhǐ-nē (*wōyè) ó
 FOC 3PL COMP I SM PST2 hear rumour 3SG.INAN-COMP 3PL 3PL.SM
 mū fā?
 PST2 work
- ‘I have heard the rumour that they_F have worked.’

This parallel behaviour with regard to island-sensitivity suggests that there is a silent resumptive pronoun present in (26).⁵ If this line of reasoning is correct, Limbum goes against the cross-linguistically largely valid generalization that the forms of resumptive pronouns are generally drawn from the set of regular (personal) pronouns (Asudeh 2011; 2012; Salzmann 2017; McCloskey 2017, though see Adger 2011 for counter-examples).

However, there is a further qualification to be made. As Salzmann (2017: 187) points out, “[r]esumptives are usually drawn from the unmarked series of the personal pronoun paradigm, thus usually the weak/clitic forms”. Now, there is no distinction between strong and weak pronouns in non-third person contexts. First, in the various examples throughout this paper the focussed pronoun, which is arguably strong, has the same form as the arguably weak resumptive. Second, in a weak pronominal context, such as discourse anaphora (27), the anaphoric pronoun is not different from either the supposedly strong pronoun in focus contexts or the resumptive pronoun as in (21).

- (27) a. Mè bá yà bàá à níjī. *(Wèr) à bā kōnī Nfòr à ḥgàbtfə?
 I and my father SM arrive 1PL.EXC SM PST1 meet Nfor in morning
 ‘Me and my father have arrived. We met Nfor in the morning.’

⁵It should be mentioned that this argument loses some of its strength as islands in Limbum seem to be quite liberal in general (see appendix in section 5 for data). For objects, extraction is possible from regular embedded clauses as well as from inside an island, leaving a gap in both cases. On the other hand, extraction of either the verb or the verb phrase out of an island is impossible despite this being grammatical from a simple embedded clause (for details, see Hein 2020). This indicates that islands still exist in the language and that the insensitivity of objects towards them might have a different source.

- b. Wè bá yà bàá à níjī. *(Yí) à bā kōnī Nfòr à ḥgàbtfə?.
 you and my father SM arrive 2PL SM PST1 meet Nfor in morning
 'You and my father have arrived. You met Nfor in the morning.'

However, the situation is different with third person subjects. For third person plural, both in resumption (28a) and in discourse anaphoric use (28b) (i.e. in contexts where the pronoun is expected to take the weak form) the form of the pronoun is null contrasting with the form *wōyè* that appears in focus positions (i.e. a context for a strong form). The only element that appears before the TAM-marker is the subject marker ó in both cases.

- (28) a. Á bō cí (*wōyè) ó mū zhé bzhí.
 FOC children COMP 3PL 3PL.SM PST3 eat food
 'The children_F ate food.'
- b. Bfər ó níjī. (*Wōyè) Ó kē? ā mā?shī mñkòb.
 relatives 3PL.SM arrive 3PL 3PL.SM start to open suitcases
 'The relatives have arrived. (They) have already started unpacking their suitcases.'

This suggests that there is a strong/weak distinction for third person plural pronouns and that the weak version has a null realization. In that case, Limbum complies with the abovementioned cross-linguistic generalization.⁶

Interestingly, a third person singular pronominal subject also shows distinct forms for strong and weak contexts. While it occurs as í in discourse anaphoric use (29a) and resumption (29b) it takes the form yé in focus position (29b).

- (29) a. Nfòr à níjī. *(Í) Ø bā kōnī wèr à ḥgàbtfə?.
 Nfor SM arrive he SM PST1 meet 1PL in morning
 'Nfor has arrived. He met us in the morning.'
- b. Á yé cí í Ø mū fà?.
 FOC 3SG COMP 3SG SM PST2 work
 'S/he_F worked.'

⁶There is, of course, a very obvious functional explanation for the fact that it is just the third person plural which shows a null pronoun. In contrast to all other person-number combinations, it has a unique subject marker ó, which is able to unambiguously identify the subject as a third person plural in the absence of an overt realization of the subject. The other subject markers Ø and à are ambiguous between 1st, 2nd, and 3rd person singular and 1st, 2nd person plural as well as 3rd singular NP, respectively.

In contrast to the third person plural, however, the weak form for the third person singular is not null. In addition, for third person singular the strong form is syncretic with the one found in object position (30a) while there is only a partial identity between the strong subject form *wōyè* and the object form *wō* for third person plural pronouns (30b).

- (30) a. Nfòr à níjì. Mè Ø bā yē *(yē) à ngàbtfə?.
 Nfor SM arrive I SM PST1 see 3SG.OBJ in morning
 'Nfor has arrived. I saw him in the morning.'
- b. Bfər ó níjì. Mè Ø bā yē *(wō) à ngàbtfə?.
 relatives 3PL.SM arrive I SM PST1 see 3PL.OBJ in morning
 'The relatives have arrived. I met them in the morning'

For local person pronouns, both singular and plural, the forms for subjects and objects are always entirely syncretic. The forms for subject and object pronouns are given in Table 6.5.

Table 6.5: Subject and object pronouns

	Subject		Object	
	Sg	Pl	Sg	Pl
1.exc	mè	wèr	mè	wèr
1.inc	-	sì	-	sì
2	wè	yì	wè	yì
3.anim	í	wōyè	yé	wō
3.inan	í	bvī	zhī	bvī

Note that pro-drop is not an option in Limbum neither in subject position (29a) nor in object position (30). The only case in which it looks like the pronoun has been dropped is when it is a third person plural subject (28b). Pro-drop is usually not confined exclusively to one specific person-number combination. Rather, in specific environments all pronominal elements, independent of their person-number specifications, are dropped. Thus, I argue that what is special about the third person is that it is the only person-number combination in Limbum for which there are distinct strong and weak pronouns. In particular, the weak form for the third person plural is null, which gives rise to the apparent surface asymmetry regarding resumption. Additionally, it is also the only person-number combination which exhibits a difference in form for subject and object pronouns.

4 Focus marking

Let me turn to a third asymmetry: focus marking. So far, in examples with a focussed constituent marked by *á*, this constituent has consistently been followed by an overt element *cí*, preliminarily glossed as COMP.⁷ This element, however, is in fact optional and may be left out without a difference in meaning. Interestingly, it interacts with the subject marker *à* and the resumptive pronouns *i* in the following way. In a regular declarative focus-less sentence, only *à* is possible and *cí* has to be absent (31a). In a sentence where a focussed subject is followed by *cí*, only *i* is licit, while the presence of *à* renders the sentence ungrammatical (31c). However, if the focussed subject is not followed by *cí*, both *i* or *à* may occur without any difference in interpretation (31b) (for the interpretation of focus in Limbum also see Driemel & Nformi 2018; Becker et al. 2019).

- (31) a. Nfòr *í/à mū fà?.
Nfor *3SG.RP/SM PST2 work
'Nfor worked.'
- b. Á Nfòr cí i/*à mū fà?.
FOC Nfor COMP 3SG.RP/*SM PST2 work
'Nfor_F worked.'
- c. Á Nfòr í/à mū fà?.
FOC Nfor 3SG.RP/SM PST2 work
'Nfor_F worked.'

The pattern is summarized in Table 6.6.

We have already seen that, as a resumptive pronoun, *i* only occurs when the subject has been displaced. In contrast, *á* is only licit when the subject adjacent to it is not a singular pronoun. If we now assume that *cí* is the optional overt realization of the head to whose specifier the focussed subject is displaced, the pattern in Table 6.6 falls out straightforwardly.

⁷This element is very similar to the relative marker *zhì* used to introduce relative clauses such as (i).

(i) Mè rìn̄ njíjwè [zhì i Ø cí yē ñgwē f5].
1SG know woman REL.P 3SG SM PROG see dog DET
'I know the woman who is seeing the dog.'

However, they are not identical. The relative marker's consonant is pronounced [ʒ] while *cí* is pronounced with a [ʃ]. Also, the former is low toned while the latter bears a high tone. It should thus be clear that focus constructions do not involve a relative clause.

Table 6.6: Pattern of cooccurrence of Focus, *cí*, and the subject marker/resumptive

FOCUS	<i>cí</i>	SM/RP
—	—	à
✓	—	à, í
✓	✓	í

In (31a), the subject is not focussed and not displaced. As it is a third person singular NP, it triggers the presence of the subject marker à. The structure of (31a) is sketched in (32).

- (32) [CP [TP Nfòr à mū [VP fà?]]]

In (31b), in contrast, the subject is focussed, as indicated by it being preceded by the focus particle á. Additionally, the concomitant displacement is indicated by overt material intervening between the subject and its base position, namely *cí*. As the subject is unambiguously displaced, the only material that can appear directly preceding the tense marker *mū* is the resumptive pronoun í. The element *cí* could either be a realization of the C head, under the assumption that focus displacement targets SpecCP. It could also be regarded as a realization of the Focus head, as argued by Becker et al. (2019), with the focus particle á heading its own FP projection (see also Horvath 2007; 2010; 2013; Cable 2010). These structures of (31b) are sketched in (33).⁸

- (33) a. [CP á Nfòr *cí* [TP í Ø mū [VP fà?]]]
 b. [CP [FocP [FP á Nfòr] *cí* [TP í Ø mū [VP fà?]]]]

⁸An anonymous reviewer suggests that *cí* might also indicate an underlying biclausal cleft structure. In this structure, á would serve as a copula and *cí* as a relative marker. The difference between (31b) and (31c) would then be one between a cleft and a regular fronting/in-situ focus structure. However, as pointed out above, there is no difference in meaning between a structure with *cí* and one without it. In addition, Becker et al. (2019: §3.1) present three arguments against a cleft structure. (i) A focus sentence (with and without *cí*) is compatible with non-exhaustive contexts while clefts typically have an exhaustive meaning component. (ii) The purported copula á is not modifiable with tense/aspect markers. Instead, overt tense marking forces the presence of an additional copular element *bā* giving rise to a true cleft sentence. (iii) Clefts contain a relative clause. However, *cí* cannot serve as a relative pronoun. Also, the clause-final demonstrative *nà* that optionally occurs with relative clauses cannot occur with focus sentences. It thus seems very unlikely that focus sentence with *cí* constitute clefts.

Turning to the case of optionality, I argue that this is structurally ambiguous between an in-situ (32) and a displacement structure (33). In one case, the subject is focus marked by the particle *á* but stays in situ in SpecTP (34). Here, it is not possible for *cí* to occur in between the subject and the subject marker simply because the head which it realizes precedes the subject. The subject marker *á* occurs as the subject is not displaced.

- (34) [CP [TP á Nfòr à mū [VP fà?]]]

In the other case, the subject is focus marked by *á* and displaced to SpecCP or SpecFocP just as in (33). However, the C or Foc head is not overtly realized. Therefore, there is no overt (configurational) indication of displacement (35). The resumptive pronoun *i* occurs because the subject is not in its base position.

- (35) a. [CP á Nfòr C_Ø [TP í Ø mū [VP fà?]]]
 b. [CP [FocP [FP á Nfòr] Foc_Ø [TP í Ø mū [VP fà?]]]]

Both structures (34) and (35) result in the same surface string with the only difference being that (34) features the subject marker *à* and (35) contains the resumptive pronoun *i* instead.

An indication that the absence of *cí* is not equivalent to the absence of displacement or the absence of the head that hosts *cí* comes from object focus. When an object undergoes focus fronting, *cí* is equally optional as with subject focussing (36).

The object in (36) clearly appears outside of its base position. Therefore, there must be a head that provides a specifier to host it whether *cí* is overt or not. Thus, displacement in (35) is a valid possibility despite the lack of *cí*.

5 Conclusion

In this paper, I showcased three subject-internal asymmetries in Limbum. The first asymmetry is between singular pronominal subjects and singular full NP/plural pronominal subjects. Its interaction with subject resumption gives rise to what looks like an antiagreement effect on the surface. As this effect is a direct

result of the interaction, this might lend some support to approaches to antiagreement effects that attribute it to language-specific properties (Fominyam & Georgi 2019; van Alem 2019) rather than some cross-linguistic general antiagreement rule/mechanism/operation (e.g. antilocality or A'-triggered impoverishment).

The second asymmetry obtains between third person plural vs. everything else with regard to resumption. Again, the asymmetry is only apparent as the gap left by third person plural subject extraction is not a true gap. Only the third person shows a weak vs. strong distinction in pronouns as evidenced by discourse anaphoricity. The weak version of the third person plural pronoun used in resumption contexts simply happens to be null and therefore gives the impression of a gap.

The last asymmetry concerns the cooccurrence of focus marking and the subject marker/resumptive pronoun. It was shown that the absence of focus marking is paired with the subject marker, while the presence of full focus marking with *á* and *cí* requires the resumptive pronoun. Focus marking with only *á* allows for subject marker or resumptive pronoun to be present. This optionality can be derived from an underlying structural ambiguity between ex-situ and in-situ focus marking in interaction with the optionality of overt *cí*.

Overall, the three subject asymmetries have been argued to be the result of language-specific peculiarities (i.e. absence of subject marker with singular pronouns, weak-strong distinction for third person pronouns only, optional overtness of *cí*) and their interaction with other properties of the language (e.g. obligatory subject resumption, focus movement).

Appendix

Nominal object extraction for focus leaves a gap rather than a resumptive pronoun, whether it takes place out of a regular embedded clause (37), or from a complex NP (38) or an adjunct clause (39).

- (37) Á wō(yè)/mè/yì cí Nfòr à mū lib *wō/*ó/*mè/*yì/____.
FOC 3PL/1SG/2PL COMP Nfor SM PST2 beat 3PL.RP/3PL.SM/1SG/2PL/____
'Them/me/you(pl.)_F, Nfor has hit.'

- (38) a. Á ndāp cí mè Ø mū yō? nsūŋ zhī-nē Nfòr à
FOC house COMP I SM PST2 hear rumour 3SG.INAN-COMP Nfor SM
mū bō *zhī/____.
PST2 build 3SG.INAN.OBJ/____
'I have heard a rumour that a house_F Nfor has built.'

- b. ?Á wō(yè) cí mè Ø mū yō? nsūŋ zhĩ-n̄ Nfòr à
 FOC 3PL COMP I SM PST2 hear rumour 3SG.INAN-COMP Nfor SM
 mū k̄nī *ó/*wō/__.
 PST2 meet 3PL.SM/3PL/___
 'I have heard a rumour that them_F Nfor has met.'

- (39) Á wō(yè)/mè/yì (cí) Nfòr à mū būmī ká? ànjō? í Ø mū
 FOC 3PL/1SG/2PL COMP Nfor SM PST2 sleep NEG because 3SG SM PST2
 lib *ó/*wō/*mè/*yì/___
 beat 3PL.SM/3PL/1SG/2PL/___
 'Nfor didn't sleep because them/me/you(pl.)_F he hit.'

Extraction for focus of a verbal constituent is generally possible (40a).

- (40) a. Á r-bò cí Nfòr bí bō ndāp.
 FOC 5-build COMP Nfor FUT1 build house
 'Nfor will build_F a house.'
 b. Á r-[bò ndāp] cí Nfòr bí gī.
 FOC 5-build house COMP Nfor FUT1 do
 'Nfor will [build a house]_F'.

Extraction for focus of either the verb or the verb phrase out of an island, here a complex NP, is impossible, even though arguably, the verb copy in (41a) and the dummy verb in (41b) could be regarded as resumptive elements.

- (41) a. *Á r-bò cí mè Ø mū yō? [nsūŋ zhĩ-n̄ Nfòr
 FOC 5-build COMP 1SG SM PST2 hear news 3SG.INAN-COMP Nfor
 bí bō ndāp].
 FUT1 build house
 'I heard a rumour that Nfor will build_F a house.'
 b. *Á r-[bò ndāp] cí mè Ø mū yō? [nsūŋ zhĩ-n̄ Nfòr
 FOC 5-build house COMP 1SG SM PST2 hear news 3SG.INAN-COMP
 Nfòr bí gī].
 Nfor FUT1 do
 'I heard a rumour that Nfor will [build a house]_F'.

Acknowledgments

I would like to thank Doreen Georgi, Imke Driemel, Martin Salzmann, and Philipp Weisser for discussion of various parts of this paper. I am very grateful to

Jude Nformi for providing examples and judgements. All errors are my own. This research was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – Project number 317633480 – SFB 1287, Project C05.

Abbreviations

Below are listed only those abbreviations that do not adhere to or are beyond the scope of the Leipzig Glossing Rules.

5, 6, 10	Noun classes	Pro(n)	Pronoun
DOM	Differential object marking	PST1	Near past tense
DSM	Differential subject marking	PST2	Distant past tense
FUT1	Near future tense	SM	Subject marker
HAB	Habitual	R	Breton rannig
INAN	Inanimate	RP	Resumptive pronoun
PN	Proper name		

References

- Abney, Steven Paul. 1987. *The English noun phrase in its sentential aspect*. Cambridge, MA: MIT. (Doctoral dissertation).
- Ackema, Peter & Ad Neeleman. 2003. Context-sensitive spell-out. *Natural Language and Linguistic Theory* 21. 681–735.
- Adger, David. 2000. Feature checking under adjacency and VSO clause structure. In Robert D. Borsley & Jaklin Kornfilt (eds.), *The nature and function of syntactic categories*, 79–100. San Diego, CA: Academic Press.
- Adger, David. 2011. Bare resumptives. In Alain Rouveret (ed.), *Resumptive pronouns at the interfaces*, 343–365. Amsterdam: John Benjamins.
- Amaechi, Mary & Doreen Georgi. 2019. Quirks of subject (non-)extraction in Igbo. *Glossa* 4(1). 69–136.
- Anderson, Stephen R. 1982. Where's morphology? *Linguistic Inquiry* 13. 571–612.
- Asudeh, Ash. 2011. Towards a unified theory of resumption. In Alain Rouveret (ed.), *Resumptive pronouns at the interfaces*, 121–187. Amsterdam: John Benjamins.
- Asudeh, Ash. 2012. *The logic of pronominal resumption*. Oxford: Oxford University Press.

- Baier, Nico. 2018. *Anti-agreement*. Berkeley, CA: University of California at Berkeley. (Doctoral dissertation).
- Baker, Mark C. 1996. *The polysynthesis parameter*. New York: Oxford University Press.
- Barss, Andrew & Howard Lasnik. 1986. A note on anaphora and double objects. *Linguistic Inquiry* 17(2). 347–354.
- Becker, Laura, Imke Driemel & Jude Nformi. 2019. Focus in Limbum. In Samson Lotven, Silvina Bongiovanni, Phillip Weirich, Robert Botne & Samuel Gyasi Obeng (eds.), *African linguistics across the disciplines: Selected papers from the 48th Annual Conference on African Linguistics*, vol. 5 (Contemporary African Linguistics), 219–237. Berlin: Language Science Press.
- Becker, Laura & Jude Nformi. 2016. Focus and verb doubling in Limbum. In Katja Barnickel, Matías Guzmán Naranjo, Johannes Hein, Sampson Korsah, Andrew Murphy, Ludger Paschen, Zorica Puškar & Joanna Zaleska (eds.), *Replicative Processes in Grammar*, vol. 93 (Linguistische Arbeitsberichte (LAB)), 57–84. Leipzig: Universität Leipzig.
- Borer, Hagit. 1984. Restrictive relatives in Modern Hebrew. *Natural Language and Linguistic Theory* 2. 219–260.
- Borsley, Robert D. 2009. On the superficiality of welsh agreement. *Natural Language and Linguistic Theory* 27. 225–265. DOI: 10.1007/s11049-009-9067-3.
- Bresnan, Joan & Lioba Moshi. 1990. Object asymmetries in comparative Bantu syntax. *Linguistic Inquiry* 21(2). 147–185.
- Cable, Seth. 2010. *The grammar of Q. Q-Particles, Wh-movement, and pied-piping*. Oxford: Oxford University Press.
- de Hoop, Helen & Andrej Malchukov. 2008. Case-marking strategies. *Linguistic Inquiry* 39(4). 565–587.
- Doron, Edit. 1988. On the complementarity of subject-verb agreement. In M. Barlow & C. A. Ferguson (eds.), *Agreement in natural language: Approaches, tendencies and description*, 201–218. Stanford, CA: CSLI.
- Driemel, Imke & Jude Nformi. 2018. Focus strategies in Limbum. In Elizabeth Bogal-Allbritten & Elizabeth Coppock (eds.), *Proceedings of TripleA 4: Fieldwork perspectives on the semantics of African, Asian and Austronesian languages*, 17–30. Tübingen: Universitätsbibliothek Tübingen.
- Eberhard, David M., Gary F. Simmons & Charles D. Fennig (eds.). 2019. *Ethnologue: Languages of the World*. 22nd edn. Dallas, TX: SIL International.
- Engdahl, Elisabet. 1986. *Constituent questions*. Dordrecht: Reidel.
- Fominyam, Henry & Doreen Georgi. 2019. *On the nature of subject marking in Awing*. Talk given at ACAL 50, Vancouver.

- Fransen, Margo A. E. 1995. *A grammar of Limbum: A Grassfields Bantu language*. Amsterdam, The Netherlands: Vrije Universiteit Amsterdam. (Doctoral dissertation).
- Freidin, Robert. 1986. Fundamental issues in the theory of binding. In Barbara Lust (ed.), *Studies in the acquisition of anaphora*, 151–188. Dordrecht: Reidel.
- Hale, Ken. 1972. A new perspective on American Indian linguistics. In A. Ortiz (ed.), *New perspectives on the pueblos*, 87–103. Albuquerque: University of New Mexico Press.
- Hein, Johannes. 2020. *Verb doubling and dummy verb: Gap avoidance strategies in verbal fronting* (Linguistische Arbeiten 574). Berlin/Boston: De Gruyter.
- Holmberg, Anders, Michelle Sheehan & Jenneke van der Wal. 2019. Movement from the double object construction is not fully symmetrical. *Linguistic Inquiry* 50(4). 677–722.
- Horvath, Julia. 2007. Spearating “focus movement” from focus. In Simin Karimi, Vida Samiian & Wendy K. Wilkins (eds.), *Phrasal and clausal architecture: Syntactic derivation and interpretation. In honor of Joseph E. Emonds*, 108–145. Amsterdam: John Benjamins.
- Horvath, Julia. 2010. “Discourse-features”, syntactic displacement and the status of contrast. *Lingua* 120. 1346–1369.
- Horvath, Julia. 2013. On focus, exhaustivity and Wh-interrogatives: The case of Hungarian. In Johan Brandtler, Valéria Molnár & Christer Platzack (eds.), *Approaches to Hungarian: Papers from the 2011 Lund conference*, vol. 1, 97–132. Amsterdam: John Benjamins.
- Huang, C. T. James. 1982. Move WH in a language without Wh-movement. *The Linguistic Review* 1(4). 369–416.
- Issah, Samuel & Peter W. Smith. 2018. *Subject and non-subject ex-situ focus in Dagbani*. Ms., Goethe-Universität Frankfurt.
- Jelinek, Eloise. 1984. Empty categories, case, and configurationality. *Natural Language and Linguistic Theory* 2. 39–76.
- Jouitteau, Mélanie & Milan Rezac. 2006. Deriving the Complementarity Effect: Relativized minimality in Breton agreement. *Lingua* 116. 1915–1945.
- Koopman, Hilda. 1983. Control from COMP and comparative syntax. *The Linguistic Review* 2(4). 365–391.
- Larson, Richard. 1990. Extraction and multiple selection in PP. *The Linguistic Review* 7(2). 169–182.
- Lebeaux, David. 1988. *Language acquistion and the form of the grammar*. Amherst, MA: University of Massachusetts. (Doctoral dissertation).
- McCloskey, James. 1979. *Transformational syntax and model theoretic semantics: A case study in Modern Irish*. Dordrecht: Riedel.

- McCloskey, James. 1990. Resumptive pronouns, a'-binding and levels of representation. In Randall Hendrick (ed.), *The syntax and semantics of the Modern Celtic languages*, 199–248. New York: Academic Press.
- McCloskey, James. 2017. Resumption. In Martin Everaert & Henk van Riemsdijk (eds.), *The Wiley Blackwell Companion to Syntax, Second Edition*, 1–30. Oxford: Wiley-Blackwell.
- Nformi, Jude. 2018. Complementizer agreement and intervention effects. Ms., Universität Leipzig.
- Ouhalla, Jamal. 1993. Subject-extraction, negation and the antiagreement effect. *Natural Language and Linguistic Theory* 11. 477–518.
- Ouhalla, Jamal. 2005. Agreement features, agreement, and anti-agreement. *Natural Language and Linguistic Theory* 23. 655–686.
- Perlmutter, David M. 1971. *Deep and surface structure constraints in syntax*. New York: Holt, Rinehart & Winston.
- Postal, Paul. 1969. On So-called “pronouns” in English. In David A. Reibet & Sanford A. Schane (eds.), *Modern studies in English: Readings in transformational grammar*, 201–224. Englewood Cliffs, NJ: Prentice-Hall.
- Pranka, Paula. 1983. *Syntax and word formation*. Cambridge, MA: MIT. (Doctoral dissertation).
- Salzmann, Martin. 2017. *Reconstruction and resumption in indirect a'-dependencies. On the syntax of prolepsis and relativization in (Swiss) German and beyond* (Studies in Generative Grammar 117). Berlin/Boston: de Gruyter.
- Silverstein, Michael. 1976. Hierarchy of features and ergativity. In R. Dixon (ed.), *Grammatical categories in Australian languages*, 112–171. Canberra: Australian Institute of Aboriginal Studies.
- Stewart, Osamuyimen Thompson. 2001. *The serial verb construction parameter*. New York: Garland.
- Stump, Gregory T. 1984. Agreement vs. Incorporation in Breton. *Natural Language and Linguistic Theory* 2. 289–426.
- van Alem, Astrid. 2019. *Anti-agreement on complementizers in non-standard varieties of West-Germanic*. Talk given at the SynSem Colloquium, University of Potsdam.
- Weisser, Philipp. 2019. Telling allomorphy from agreement. *Glossa* 4(1). 86. DOI: 10.5334/gjgl.803.

Chapter 7

Differential marking in Kinande

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This work presents newly-discovered data involving differential marking in the Bantu language Kinande (JD42), which affects three classes: (i) goals and sources; (ii) predicative possession; (iii) external possession. These patterns reveal important insights into the nature of differential marking in Bantu. First, typical differential marking features like animacy, definiteness, and person can involve a morphological difference on a *dependent* nominal in Kinande, and is not only restricted to the better studied agreement/concord cross-indexing on the verb, which is familiar from work on other Bantu languages. Secondly, Kinande differential marking has non-trivial syntactic correlates and provides further support for nominal licensing inside vP in Bantu languages. Thirdly, Kinande provides evidence for more than one structural source of differential marking, supporting at least three types of syntactic analyses for this phenomenon.

1 Introduction

Bantu languages are at the center of a debate concerning the universality of nominal licensing. One position in this debate is that licensing is not a universal requirement on grammars (Harford Perez 1985, Diercks 2012, a.o.) and that Bantu languages exemplify the “licensing not required” option. A second position is taken by Halpert (2013, 2015), who, focusing primarily on data from Zulu, argues that Bantu nominals require licensing in ways familiar from Case theory, but these requirements hold in domains that are different from those of Indo-European languages. She proposes that, in Bantu languages, familiar structural-Case-type licensing takes place within vP and a different type of licensing takes place in other domains.¹

¹There are additional important aspects of the licensing debate that our paper is unable to address. One is the question of information structure in formally licensing nominals (van der



We add to this discussion by introducing our newly-discovered data involving differential marking in Kinande (JD42),² which permit a two-fold theoretical contribution. On the one hand, the existence of differential marking in Kinande provides further support for nominal licensing inside vP (following Ormazabal & Romero 2013, Kalin 2018, a.o., for other languages). On the other hand, we establish that typical differential marking features like animacy, definiteness, and person can involve a morphological difference on a dependent nominal in Bantu languages, and is not only restricted to the better studied agreement/concord cross-indexing on the verb, which is familiar from work on Bantu languages such as Chichewa (Bresnan & Mchombo 1987) or Sambaa (Riedel 2009). Another important observation is that Kinande provides evidence for more than one structural source of differential marking. More precisely, the language exhibits more than one type of dependent differential marking, supporting at least three types of analyses for this phenomenon.

1.1 Differential marking

Differential marking refers to splits in the morpho-syntactic encoding of arguments regulated by features such as animacy, definiteness, specificity, topicality, etc. (Silverstein 1976, Bossong 1998, Lazard 2001, Aissen 2003, López 2012, Ormazabal & Romero 2013, a.o.). With respect to differential marking in Bantu languages, the following authors can be noted: Bentley (1994); Duranti (1979); Hawkinson & Hyman (1974); Morolong & Hyman (1977); Morolong & Hyman (1977); Mursell (2018); Seidl & Dimitriadis (1997); and van der Wal (2015).

A typical example of differential marking can be seen with animacy and specificity-based differential object marking (DOM) in Swahili (Bantu; Riedel 2009: 42, 46, adapted here), via “object agreement.” Sentence (1a) versus (1b) illustrates that an animate, specifically [+human], object must co-occur with an object marker on the verb that expresses agreement in features with that object. Sentence (1c) demonstrates that non-human/inanimate objects are subject to a different requirement such that object agreement is simply optional when such arguments occur:

Wal 2017). The other is Carstens & Mletshe’s (2016) and Pietraszko’s (2021) discussions of the role of focus in the licensing of unaugmented expressions.

²Kinande, with about 900,000 speakers per Ethnologue (2015), is spoken in eastern Democratic Republic of the Congo. Unless otherwise stated, data has been collected by Schneider-Zioga in collaboration with Phillip Ngessimo Mutaka.

(1) DOM in Swahili, human & definite object, [head marking]

- a. Ni-li-**mw**-ona mwana-we.
1SG-PST-1OM-see 1child-POSS.3SG
'I saw his child.'
- b. * Ni-li-**on**a mwana-we.
1SG-PST-see 1child-POSS.3SG
Intended: 'I saw his child.'
- c. Ni-li-(zi)-**on**a picha **hizo**.
1SG-PST-10OM-see 10picture those
'I saw those pictures.'

This pattern of differential marking makes use of head marking. That is, there is some indication of differential object marking on the head of the phrase that immediately contains the differentially marked object.

A different example of differential object marking based on animacy can be found in languages such as Spanish (Bossong 1991, Aissen 2003, López 2012, Ormazabal & Romero 2013, a.o.). Grammaticalized animacy in Spanish is encoded via a locative/dative preposition, with definite animate objects such as *niña* 'girl' in (2a) being obligatorily introduced by a locative preposition and definite inanimate objects such as *libro* 'book' in (2b) not being so introduced:

(2) Spanish DOM, grammaticalized animacy, [dependent marking]

- a. He encontrado *(a) la niña.
have.1SG found DAT=DOM DEF.F.SG girl
'I found the girl'
- b. He encontrado (*a) el libro.
have.1SG found DAT=DOM DEF.M.SG book
'I found the book.' (Ormazabal & Romero 2013: ex. 1a, b)

In this example from Spanish, we see that DOM is marked on the object which functions as an argument of the verb. In short, we see that differential marking can be expressed either through head or dependent marking. In Bantu languages, differential marking that is expressed via head-marking has been widely reported. Our work on Kinande makes a unique contribution toward the differential marking literature in Bantu in that it reveals cases of differential marking expressed as dependent marking. We will see the details of the dependent differential marking in the following discussion, where three distinct cases of dependent-marking differential marking are examined.

2 The data

2.1 Pattern 1: Differential marking of animate goals

The first differential marking pattern we consider involves animacy-based differential marking of goals and sources. Specifically, pronouns and human names are differentially marked in Kinande when they function as thematic goals and sources. Studies such as that of Aissen (2003), and others, locate pronouns and proper names as the most animate nominal expressions on a scale of animacy:

(3) Animacy Scale

- a. 1/2 >3 >proper name >human >animate... (Aissen 2003, a.o.)

This type of animacy-based differential marking requires the use of a certain form of the locative noun class marker just in case the goal is either a human proper name (4a), or a pronoun (4c). Using noun class 17 as an example, a certain form of a locative class, namely *uku*, must occur with human names and pronouns; a different form of locative noun class 17, *oko*, marks all other goals, including the names of inanimate entities such as the Jordan River in (4b):

- (4) a. Kandi omúgulu ba-híka **okó** ndeko, omundú mw-á-híka **uku**
again 3time 2-arrive 17LOC 9crowd, 1person AFF-3SG-arrive UKU
Yésu.
Jesus

'When they came to the crowd, a man approached Jesus.'

(Matthew 17: 12)

- b. Neryo Yésu... mw-á-híka **oko** Yorodáni.
then Jesus AFF-3SG-arrive 17LOC 19Jordan

'Then Jesus came to the Jordan.' (Matthew 3: 13)

[Nande Bible 1980 edition]

- c. tú-lya-byá tw-a-hiká **kú-bó**, bá-má-tú-bwira ba-ti....
1PL-TAM-be 1PL-TAM-arrive UKU-2pro 2-TAM-1PL-told 2-say
'When we reached them, they told us that....'

The data in (5) illustrate this common differential marking patterns with goals cross-linguistically. In Italian, we see that whereas inanimate goals are marked with the directional preposition *in* (5a) animate goals are not. Instead they are marked with a different directional preposition which fuses with the definite morpheme, as seen in (5b):

- (5) Italian differential marking of goals-animacy

 - a. Vado **in/*dalla** città.
go.1SG DIR/DIR=DOM.DEF.F.SG city
'I go to the city.'
 - b. Vado **dal/*in** dottore/mio amico.
go.1SG DIR=DOM.DEF.M.SG/DIR doctor/my friend
'I go to the doctor/my friend.'
(see Franco & Manzini 2017, a.o. for discussion)

Returning to Kinande, we note that the difference in morphological form we observe when goals and sources are involved corresponds to whether or not the nominal that is prefixed by the locative class marker is augmented or not. Augments are additional morphological material that is associated with most noun class markers and which usually affect the interpretation of the noun. Augments are related to reference, but have different interpretive effects in different Bantu languages (see van de Velde 2019 for overview). An augmentless nominal in Kinande is most typically associated with an interpretation of narrowest scope, similar to polarity items (see Progovac 1993). Augmented nominals, on the other hand, often get a definite or indefinite reading. However, more than the semantic notion of (in)definiteness is relevant to understanding augments as explored in the work of Gambarage (2019), Halpert (2015), Hyman & Katamba (1993), Progovac (1993), and van de Velde (2019). The general shape of Kinande nominals is (AUG)-NC-ROOT, as illustrated in Table 7.1.

Table 7.1: Nominal structure in Kinande

(Augment-)noun class marker-noun	
Augmented nouns	Augmentless nouns
o-mu-kali AUG-NC1-woman ‘the/a woman’	mu-kali NC1-woman ‘any woman’
e-ki-tabu AUG-NC7-book ‘the/a book’	ki-tabu NC7-book ‘any book’

When a nominal is placed in a locative class (class 17 and class 18), the augment of a definite or indefinite located nominal is not overtly expressed. Instead, with augmented nominals, the locative class forms 17 and 18 are *oko* and *omo* respectively. If locative nominals must be interpreted as augmentless, as, for example,

when they are negative polarity items (NPIs), then the locative class forms surface as *uku* and *umu*. In short, the augmented or augmentless status of locative nominals can be read off of the form of the locative noun class marker. This can be clearly seen when locative negative polarity contexts are examined. When a nominal occurs in a context where it must remain augmentless, as in (6a) where the NPI interpretation of the nominal indicates it must be augmentless, the locative marker is expressed as *uku*. Where the nominal is interpreted as having an augment because it is definite, for example, the locative marker is expressed as *oko*, as in (6b). This pattern is summarized in Table 7.2.

- (6) a. Maryá *sy-á-wíte* **uku** *kitábu*.
 Marya NEG-3SG-have UKU 7book
 'Mary doesn't have **any** book.'
 b. Maryá *sy-á-wíte* **oko** *kitábu*.
 Marya NEG-3SG-have OKO 7book
 'Mary doesn't have **the** book.'

Table 7.2: Kinande locatives

Augmented form	Non-augmented form
oko	uku
17LOC + AUG	17LOC(-AUG)
*oko-e- <i>bi</i> -tabu	*uku-e- <i>bi</i> -tabu
*oko-e- <i>bi</i> -tabu	*uku-e- <i>bi</i> -tabu
[17LOC+AUG]-[AUG]-NC8-book	[17LOC-AUG]-[AUG]-NC8-book
'to books'	'to (any) books'
oko- <i>bi</i> -tabu	uku- <i>bi</i> -tabu
oko- <i>bi</i> -tabu	uku- <i>bi</i> -tabu
[17LOC+AUG]-NC8-book	[17LOC-AUG]-NC8-book
'to books'	'to any books'

Thus, we see from the examples in (4) that Kinande goals (and sources) that are high in animacy are differentially marked via the augmentless form of the locative. The differential form is the one that is typically reserved to express an NPI-type, narrowest scope interpretation. But the nominals that are differentially marked here (human names and pronouns) do not have or do not need to have an

NPI interpretation.³ Following Halpert (2015), we will argue that the augmentless form needs special licensing, a point that we return to later in §5.

2.2 Pattern 2: The differential marking of predicative possession

The second differential marking pattern involves predicative possession. Predicative possession in Kinande uses a dedicated verb for ‘have’ (-wíte). Crucially, possessa are differentially marked; nominals encoding objects that can be held in the hand receive more complex morphological marking, namely the locative class 17 marker, compared to objects that are possessed in a more general way. The examples in (7) contrast possession of a holdable object (7b, ‘book’) with a non-holdable object (7a, ‘house’). Only holdable *ekitabu* ‘book’ is prefixed with a locative class marker, although this is not interpreted as a locative here.

- (7) a. Kámbale a-wíte (*oko) enyúmba.
Kambale 3SG-have 17LOC 9house
'Kambale has a house.'
- b. Kámbale a-wíte *(oko) kitábu.
Kambale 3SG-have 17LOC 7book
'Kambale has a book.'

The following examples underscore the systematic morphological distinction that is made between holdable and general possession. In (8a), we see an example

³We note that there are contexts where human names are preceded by the augmented form of locative class markers (one such case will be seen in (17)) and that sometimes the augmented form is required. The following example illustrates such a case. Note that in this example the name introduced by *oko* is no longer a goal, but rather refers to the surface upon which movement took place:

- (i) olumekeke mo-lu-ka-kululuk-ir-a **oko** Tekela
11baby AFF-11-TAM-crawl-APPL-FV 17LOC Thekla
'The baby crawled (all over) on Thekla.'

Note that this locative (in contrast to goal and source) use does not make use of differential marking because *oko* also shows up with locative inanimates as the following example demonstrates:

- (ii) olumekeke mo-lu-ka-kululuk-ir-a **oko** musesa.
11baby AFF-11-TAM-crawl-APPL-FV 17LOC 3bed
'The baby crawled (all over) on the bed.'

of general possession, where the possessum is not differentially marked. In (8b), we see an example of holdable possession:

- (8) a. A-wíte esyofarángâ.
3SG-have 10money
'He has money (in general).'
b. A-wíte **oko** farángâ.
3SG-has 17LOC 10money
'He has money (on him).'

Possession of an attribute or inalienable possession is also not differentially marked, as seen in the two examples in (9) below:

- (9) a. A-wíte ekitumaíni
3SG-have 7hope
'She/he has hope.'
b. Maryá a-wity' ámeso awûwéne.
Marya 3SG-have 6eye 6beautiful
'Mary has beautiful eyes.'

Schneider-Zioga & Mutaka (2019) observe that further examples suggest that Kinande distinguishes possession from ownership and propose that *oko* marks possession in opposition to ownership. They give the examples in (10) and (11):

- (10) Nyi-ná-wíte **okó** mútoká kw' eyíhyâ.
1SG-VER-have 17OKO 3car 17LK 24outside
'I indeed have a car outside.'
- (11) a. A-ná-wíte omútoka.
3SG-VER-have 3car
'He has (owns) a car.'
b. A-ná-wíte **okó** mútoka.
3SG-VER-have 17LOC 3car
'He has a car available.' (He might own it or just have it temporarily.)

2.3 Pattern 3: The differential marking of external possession

The third differential marking pattern involves a type of external possession. In this construction the possessor of a noun occurs in a position that is external

to the noun phrase containing the possessed noun. Moreover, that possessor behaves like an argument of the verb. This construction is sometimes referred to as possessor raising, as if a movement/raising relation holds between the external possessor and a related sentence involving phrase-internal possession. This is illustrated below for inalienable possession in Kinande where (12a) corresponds to phrase internal possession and (12b) corresponds to the related possessor “raising” construction.⁴

- (12) a. Phrase-internal possession:

Ná-kúrugut-a [omugóngó w-a Sárah]
1SG-scrub-FV 3back 3-ASSOC Sarah

‘I scrubbed Sarah’s back.’ (lit: I scrubbed the back of Sarah)

- b. Possessor raising:

Ná-kúrugut-ta [Sáráh] y’ [*(oko-)mugóngó]
1SG-scrubbed-FV Sarah LK 17LOC-3back

‘I scrubbed Sarah’s back.’ (lit: I scrubbed Sarah on the back.)

We observe that in external possession constructions, *oko* marks the inalienable *possessum*. Alienable and part/whole possessa also participate in external possession constructions, as seen in (13b) and (14b). In that case, the *possessum* is bare. Note, however, that alienable and part/whole external *possessors* in that case are marked with *oko*.

- Alienable possession:

- (13) a. Phrase-internal possession:

Ná-mat-ul-a [ezípe y-a Sárah]
1SG-fasten-REV-FV 9zipper 9-ASSOC Sarah

‘I unfastened Sarah’s zipper.’

(for example, on a dress she has, not necessarily wearing)

- b. Possessor raising:

Ná-mat-ul-a [*(oko-)Sáráh] kw’ [ezípe]
1SG-fasten-REV-FV 17LOC-Sarah LK 9zipper

‘I unfastened Sarah’s zipper.’

(she is necessarily wearing the thing with the zipper)

⁴Note that an agreeing particle, called the linker, appears in the Kinande verb phrase in most cases when there are two or more XPs within the verb phrase. This particle heads a functional projection that is immediately dominated by vP as will be evident in the trees we give illustrating structures where linkers are also involved. See Baker & Collins (2006) and Schneider-Zioga (2015b, 2015a) and Schneider-Zioga & Mutaka (2015) for discussion.

- Part/whole possession:

- (14) a. Phrase-internal possession:
 Mó-b-erír-y-e [ebíringó by-' omútoka]
 AFF-2-clean-TRANS-FV 8wheel 8-ASSOC 3car
 ‘They cleaned the wheels of the car.’
 (the wheels could be separate from the car)
- b. Possessor raising:
 Mó-b-erír-y-e [*(okó-)mútoká] kw' [ebíringo]
 AFF-2-clean-TRANS-FV 17LOC-3car LK 8wheel
 ‘They cleaned the wheels of the car.’
 (wheels are on the car)

A summary of the facts is given in Table 7.3.

Table 7.3: Summary of differential marking patterns in Kinande

Pattern I		GOALS & SOURCES	
<i>uku/oko</i>		pronouns, humans others	UKU OKO
Pattern II	PREDICATIVE POSSESSION		
<i>oko/∅</i>	possession ownership		OKO ∅
Pattern III	EXTERNAL POSSESSION		
<i>oko/∅</i>	inalienable possessum marked with non-inalienable possessum marked with possessor/whole marked with		OKO ∅ OKO

3 Differential marking in morphology or syntax?

Differential marking has received renewed attention in recent formal accounts. Starting from differential object marking, there are two important lines of reasoning into its nature, namely a morphological one and a syntactic one. Under

morphological analyses (Halle & Marantz 1993, Keine & Müller 2008, Keine 2010, Glushan 2010, a.o.), the special morphology that certain types of direct objects (such as the Spanish definite animate in (2a)) receive is simply a matter of PF, without any deep syntactic roots. In other words, differentially marked objects and the non-differentially marked ones are seen as having the same syntax (e.g., undergoing licensing for Case, etc.). Formally, the special differential marking is implemented as the result of an *Impoverishment* operation applying at the interface between syntax and morphology/PF, and which deletes certain types of features at PF, without affecting their syntax. For example, under Halle & Marantz's (1993) implementation, specifications such as animacy trigger the deletion of an (accusative) case feature on the relevant objects. Therefore, differential objects, although having been licensed as structural objects in the syntax, carry oblique morphology on the surface (i.e., the animate genitive of direct objects in Russian, oblique DOM in Romance and other languages, etc.).

Although various morphological accounts use *Impoverishment* in slightly different ways, they agree on an important prediction: the same syntactic configuration is exhibited by both differentially marked classes and the non-differentially marked ones, implying the same syntax. This is relevant for the discussion in this paper. What Kinande shows instead is that differential objects are syntactically distinct, and for this reason, syntactic accounts are better fitted to address the data at hand. Below, we illustrate various syntactic effects of differential marking, and then we proceed to the syntactic analyses.

4 Syntactic effects of differential marking

In this section we explore the syntax of nominals in the three constructions we have identified as involving differential marking: i) sentences with goals/sources; ii) predicative possession; iii) external possession (so-called possessor raising). We will see that the differentially marked nominal is not simply morphologically distinct from the unmarked form. Instead, we notice that the differentially marked nominal displays a syntactic behavior that is distinct from that of an unmarked nominal.

4.1 Animate/inanimate goal (or source) distinction

We consider first differential marking with animate goals (or sources), which are marked by the augmentless *uku* rather than the expected *oko*. Here we will see that the distribution of *oko* and *uku* is sensitive to syntactic structure. For example, we note that, whereas highly animate goals take locative differential mark-

ing when the goal is the only dependent of the verb (15a), differential marking becomes optional when an adverb is added in postverbal position, as in (15b):

- (15) a. Omundú mw-á-híka **uku/*oko** Yesu.
 1person AFF-3SG-arrive (-AUG)17LOC/*17LOC Jesus
 'Someone came to Jesus.'
 b. Omundú mw-á-híka **uku/?oko** Yésú k' omotututu.
 1person AFF-3SG-arrive (-AUG)17LOC/17LOC Jesus LK' 18morning
 'Someone came to Jesus in the morning.'

In contrast, inanimate goals are invariantly marked with *oko* regardless of the syntactic structures in which they are found. Locative *oko* is the only possibility when the goal is the sole dependent of the verb (16a), and remains the only possibility when an adverb is added in postverbal position (16b):

- (16) a. Omundú mw-á-híka ***uku/√oko** muyî.
 1person AFF-3SG-arrive (-AUG)17LOC/17LOC 3village
 'Someone came to the village.'
 b. Omundú mw-á-híka ***uku/√oko** muyî kw'omotututu..
 1person AFF-3SG-arrive (-AUG)17LOC/17LOC 3village LK'18morning
 'Someone came to the village in the morning.'

Therefore, we see that nominals that can be differentially marked by *uku*- have a different syntactic behavior. Furthermore, as an additional syntactic distinction, an animate *uku*-marked goal (or source) must be adjacent to the verb. When it is not, it is marked by *oko* rather than *uku*. This is illustrated by the contrast between (17a) and (17b), where if a direct object enclitic intervenes between the verb and the animate goal, *uku* is not possible. If the direct object pronoun precedes the verb root instead, so that the animate goal/source is immediately adjacent to the verb, then *uku* can and indeed must, mark the animate nominal. Likewise, if the object has undergone *wh*-movement as in (17c), so that the animate goal/source is string adjacent to the verb, then *uku* can and must, mark the animate nominal.

- (17) a. ...verb] enclitic] **oko/*uku**
 N-ibá-ky' **oko/*uku** Maryâ.
 1SG-steal-7CL 17LOC/(-AUG)17LOC Marya
 'I stole it from Marya.'

- b. ...procl_j-verb] ____j uku/*oko
 Ná-ki-iba *oko/✓ uku Maryâ.
 1SG-7OM-steal 17LOC/(-AUG)17LOC Marya
 'I stole it from Marya.'

c. ...WH_j-verb] ____j uku/*oko
 Ékihi_j kyó w-ibá ____j *oko/✓ uku Maryâ.
 7what 7FOC 2SG-steal 17LOC/(-AUG)17LOC Marya
 'What did you steal from Marya?'

4.2 Possession vs ownership

We have already seen semantic differences between differentially marked and non-differentially marked sentences involving predicative possession, with differentially marked sentences conveying the meaning of possession and non-differentially marked sentences conveying ownership. We further adopt the idea of Schneider-Zioga & Mutaka (2019) that *oko*-marked possessa, in contrast to non-marked possessa, can be analyzed as involving a small clause with the *oko*-marked possessum serving as subject of a small clause which has an understood predicate that can be translated as ‘with [possessor]’. We observe a further clear syntactic distinction between *oko*-marked and bare nominals when we consider word order possibilities. Specifically, we see that differentially marked nominals can either precede or follow an adverb in predicative possession constructions, as in (18a) and (18b). In contrast, unmarked nominals have a fixed word order and must remain next to the verb, as illustrated in (19a) and (19b).

- (18) a. Tu-ná-witý **oko** mukáti kó hano. **OKO****POSSESSUM-ADVERB**
 1PL-VER-have 17LOC 3bread LK 16here
 ‘We do have bread here (with us).’

b. Tu-ná-wité hanó h' **oko** mukáti. **ADVERB-OKO****POSSESSUM**
 1PL-VER-have 16here LK 17LOC 3bread
 ‘We do have here (with us) bread.’

(19) a. Tu-ná-witý enyúmbá yó hano. **POSSESSUM-ADVERB**
 1PL-VER-have 9house LK 16here
 ‘We do indeed have a house here.’

b. *[?]Tu-ná-witý hanó h' enyúmba. **POSSESSUM-ADVERB**
 1PL-VER-have 16here LK 9house
 ‘We do indeed have a house here.’

Further evidence for syntactic differences is given by the fact that bare possessa are sensitive to definiteness effects, but *oko*-marked possessa are not. See Schneider-Zioga & Mutaka (2019) for details.

4.3 External possession

4.3.1 Inalienable possession

External possession constructions also evince a syntactic distinction between differentially marked *oko*-possessa and non-marked possessa. Although usually the dependents of the verb in Kinande have flexible word order with respect to each other, *oko*-marked possessa have a fixed word order, with possessum following possessor. This is demonstrated by the contrast in (20). Moreover, while a possessor can passivize, as in (21a), an *oko*-marked possessum cannot passivize across the possessor in (21b). However, if no possessor intervenes between the (*oko*-marked) possessum and the verb, passivization is possible as long as the differential marker *oko*- is stranded and encliticizes to the verb. This is illustrated in (21c) versus (21d):

- (20) a. [POSSESSOR – *oko*POSSESSUM]
mó-na-lak-ír-y-e [Kámbalé] y’ [okó níndo].
AFF-1SG-hit-TAM-TRANS Kambale LK 17LOC 9nose
'I punched Kambale in the nose.'
- b. [*oko*POSSESSUM – POSSESSOR]
*mó-na-lak-ír-y-e [okó níndo] ko [Kámbalé].
AFF-1SG-hit-TAM-TRANS 17LOC 9nose LK Kambale.
- (21) a. [POSSESSOR_j V-PASS _____j *oko*POSSESSUM]
Kámbaléj a-lak-i-báwa _____j okó níndo.
Kambale 3SG-hit-TRANS-PASS 17LOC 9nose
'Kambale was hit on the nose.'
- b. [*POSSESSUM_j V-PASS-KO POSSESSOR _____j]
* Éníndo_j y-a-lak-i-báwá-ko Kámbale
9nose 9-TAM-hit-TRANS-PASS-KO Kambale
- c. [POSSESSUM_j V-PASS-KO _____j]
Éníndo y-a-lak-i-báwá-kô.
9nose 9-TAM-hit-TRANS-PASS-KO
'(His) nose was hit.'

- d. [^{*}_{oko}POSSESSUM_j V-PASS j]
 ***okó** níndo y-a-lak-i-báwá.
 17LOC 9nose 9-TAM-hit-TRANS-PASS
 '(His) nose was hit.'

4.3.2 Part/whole and alienable possession

Recall that part/whole and alienable possession are distinct from inalienable possession in that the possessum is not differentially marked when this type of possession is involved. The possessor, in contrast, is marked by *oko-* in these constructions but that is not relevant here as we are considering syntactic differences between a differentially marked possessum in external possession and a non-differentially marked possessum. A non-differentially marked possessum (the part in relation to the whole in the examples below) has freedom of word order within the verb phrase (as seen in 22a and 22b) and it can undergo passivization even in the presence of the intervening nominal corresponding to the whole, as in (23a). The nominal corresponding to the whole is preceded by *oko*, but unlike the differentially *oko*-marked inalienable possessum, does not have to strand *oko* to undergo passivization in (23b), although this is optionally a possibility, as shown in (23c),

- (22) a. [_{oko}WHOLE PART]
 mó-na-tuláng-ire [**oko** nyúngú] kw' [omúkóno].
 AFF-1SG-broke-TAM 17LOC 9pot LK 3handle
 'I broke the vessel's handle.'
- b. [PART_j _{oko}WHOLE j]
 mó-na-tuláng-ire [omúkóno] w' [**oko** nyúngú].
 AFF-1SG-broke-TAM 3handle LK 17LOC 9pot.
 'I broke the vessel's handle.'
- (23) a. [PART_j V-PASS _{oko}WHOLE j]
 Ébíringó by-éri-báwa **okó** mútoka.
 8wheel 8-cleaned-PASS 17LOC 3car
 'The wheels were cleaned on the car.'
- b. [_{oko}WHOLE_j V-PASS j PART]
 Okó mútoka kw-éri-báwa ébíringó .
 17LOC 3car 17-cleaned-PASS 8wheel
 'On the car was cleaned the wheels.'

- c. [WHOLE_j V-PASS-ko _____j PART]
Omútoka éri-báwa-ko ébíringó .
3car 3.clean-PASS-ko 8wheel
Literally: 'The car was cleaned on the wheels.'
'On the car was cleaned the wheels.'

Alienable possessa, which also do not undergo differential marking, behave just like part/whole possessa.

The data we have considered in this section clearly establish that in external possession, there is a difference in syntactic behavior when differentially marked possessa are compared to unmarked ones. Therefore, differential marking in this case cannot be a morphological phenomenon. We note for completeness that possessors also appear to be differentially marked. This will be addressed in the next section.

5 Differential marking in syntax

Since we see syntactic effects related to differential marking in all the cases we have considered, we have evidence that differential marking is a syntactic rather than morphological phenomenon in Kinande. In this section we show that each of the three constructions needs a separate type of syntactic account. Before proceeding with the discussion, we make an important clarification. As is well known, a very prominent account for differential (object) marking connects the special morphology with movement. It might appear that the type of Kinande differential marking found in predicative possession structures, discussed in §4.2 and (and further in §5.1 below), is dependent on movement. We noticed there that the *oko*-marked argument exhibits higher word order flexibility than the bare nominal, which must be adjacent to V (apparently signalling a type of incorporation).⁵ However, the data must be qualified and, in fact reviewed with attention. There is raising within the verb phrase in Kinande across all structures we studied, including predicative possession involving possession and ownership, whenever VP contains more than one XP. This raising is to the specifier of Linker Phrase, a functional projection that is below vP and above VP or any applied phrase that were to occur. It is very clear that either all nominals can equally target the specifier of this phrase (signaled by the linker, head of this

⁵Another observation is that, in these contexts, differentially marked arguments and non-differentially marked arguments cannot be co-ordinated, indicating that they probably occupy different positions.

phrase, immediately following the raised phrase) and thus raise equally high, or in some circumstances differentially-marked expressions cannot raise. Therefore, much more needs to be said about differential marking beyond raising.

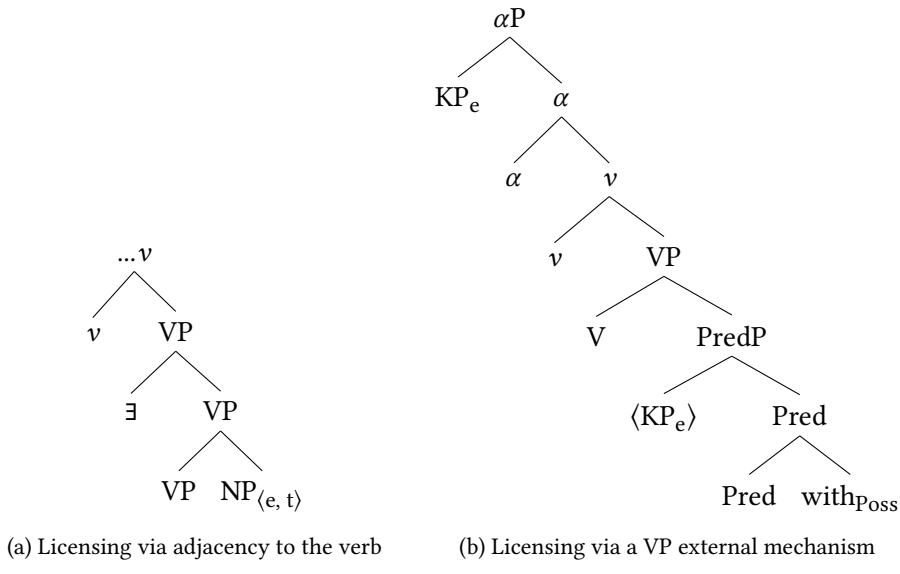
5.1 Possession vs ownership: A (Case) licensing approach to differential marking with predicative possession in Kinande

Given that raising *per se* is not sufficient, we propose an account which connects differential marking to those objects that undergo some types of (Case) licensing in the syntax. We start with predicative possession. Recall that Kinande distinguishes possession from ownership with a possessum being marked by *oko-* when possession, rather than ownership, is involved. In addition, we followed Schneider-Zioga & Mutaka (2019) in analyzing possession in Kinande as involving a small clause structure (§4.2), with the possessum as subject and a silent predicate meaning ‘with [possessor]’. Furthermore, we noted that definiteness effects are evident in Kinande when predicative possession conveys the meaning of ownership but are absent when possession is conveyed.⁶ A leading analysis of predicative possession is that it contains modal existential predicates. As widely discussed in the literature, such structures introduce ambiguity in the sense that existential predicates allow the presence of complements with a predicate nature, with which they can combine via predicate modification. This entails the need to disambiguate between existential readings of complement nominals and non-existential readings in predicative possession López (2012). The existential readings, normally connected to non-specificity, are composed when the nominals in complement position are predicates of type $\langle e, t \rangle$ and will be interpreted under existential closure (Diesing 1992). This type of licensing is illustrated in Figure 7.1a. The fact that nominals that are so interpreted must occur adjacent to the verb, as discussed in §4.2, indicates that their licensing involves (pseudo-)incorporation.

The non-existential readings correspond to differential marking of the nominals. In these cases, nominals are arguments of type e , contain structure that needs licensing, and must escape existential closure. The differentially marked possessum is the subject of a small clause, as previously discussed. It cannot be licensed via (pseudo) incorporation. It has been known at least since Baker (1988), that incorporation of subjects “downward” into the predicates that thematically introduce them is ungrammatical. Furthermore, for semantic reasons, the silent ‘with [possessor]’ secondary predicate must itself incorporate into the primary

⁶That predicative possession displays definiteness effects is well-known in the literature (Partee 1999, and others). Myler (2016) notes a division between ownership and possession with respect to definiteness effects in the languages he studies, similar to what we observe for Kinande.

predicate. It is not possible for the possessum subject of the possession small clause to also incorporate into the primary predicate. Therefore, licensing by (pseudo-)incorporation is unavailable. In this situation, differential marking can license the expression, which can be a KP, via a VP external licensing mechanism, for example a functional projection which we indicate here as α^0 (Figure 7.1b). Investigation of the exact nature of this ancillary licensing mechanism lies outside the scope of this work. We conjecture that α is related to Halpert's (2015) VP external nominal licensing projection for whose existence in Zulu she provided extensive argumentation.



(a) Licensing via adjacency to the verb (b) Licensing via a VP external mechanism

Figure 7.1: Nominal licensing strategies

5.2 External possession

A second pattern of differential marking is observed in external possession contexts. As shown earlier, we have two classes here: (i) the *oko*-marked inalienable possessum (example 12b, repeated in 24), and (ii) the non-*oko*-marked alienable (and part/whole) possessum (example 13b, repeated in 25).

- (24) Possessor raising (inalienable):

Ná-kúrugut-ta [Sáráh] y' [*(*oko*-)mugóngó]
 1SG-scrubbed-FV Sarah LK' 17LOC-3back
 'I scrubbed Sarah's back.' (lit: I scrubbed Sarah on the back.)

- (25) Possessor raising (alienable):

Ná-mat-ul-a [*(oko-)Sáráh] kw' [ezípe]
 1SG-fasten-REV-FV 17LOC-Sarah LK 9zipper

'I unfastened Sarah's zipper.'

(she is necessarily wearing the thing with the zipper)

There are significant differences between the two classes of external possession. We consider first inalienable possession and recall that in predicative possession, inalienable possessa do not receive any differential marking (see 9b). The possessa are licensed in that construction via (pseudo) incorporation into the verb. With external possession, we assume a POSS projection whose head, POSS, takes a KP possessum, which corresponds to the inalienable possessum, as illustrated in Figure 7.2. There is no local predicate into which the inalienable possessum can incorporate for licensing purposes. Here, we hypothesize a projection α , external to VP, which licenses the KP possessum. As pointed out above in §5.1, the α projection appears to be related to Halpert's (2015) VP external nominal licensing projection, as it has very nearly the same effect, although a detailed exploration of the licensing process lies outside the scope of this current work.

We next consider alienable or part/whole possession. We observe that in external possession constructions, it is the case that the part or alienable possessum is necessarily understood as actually being located on the possessor in cases of part/whole or alienable possession (see, for example, 25). We capture this interpretive fact by analyzing alienable – part/whole external possession as involving locative possession. Locative predicative possession does not use the usual *have* verb one finds in Kinande but instead the *be* copula is used and the external possessor, which is thematically locative, is morphologically marked by the locative *oko* marker (see Schneider-Zioga & Mutaka 2019). Locative predicative possession means approximately: "on X is Y", where X is the whole/possessor of something alienable. Here are illustrative examples:⁷

- (26) a. omúti a-né- kw' ehinyúnyu.
 3tree 3-be(ASSERT-) 17LOC 19bird
 'The tree has birds (on it).'
 b. etsúkudu yi-rí-ko ebíringó.
 9cart 9-be-17LOC 8wheel
 'The cart has wheels (on it).'

⁷Note that in locative predicative possession, the *oko*-locative class marker is "stranded" in post copular position. We take this property to indicate that the locative possessor was first merged below the copula, presumably in a locative phrase.

Consonant with this, we propose that alienable and part/whole external possession involves a locative phrase, identified here as LOC, which takes a DP complement, and whose specifier contains a locative possessor, which is *oko*- marked for thematic reasons.

The two constructions, which correspond to inalienable and part/whole-alienable possession respectively, are given in Figures 7.2 and 7.3.

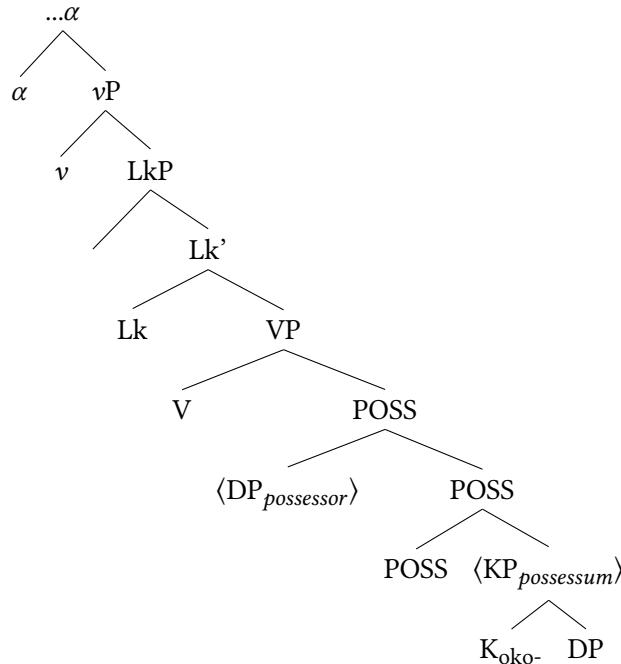


Figure 7.2: Inalienable possession

We suggest that the syntactic differences we see between these two types of external possession constructions with respect to movement within the verb phrase and passivization follow from the fact that in one construction, the possessum requires special licensing via *oko*-marking, whereas in the other, this is not the case. The special licensing behaves very much like structural Case licensing in that the so-licensed nominal is frozen in the position where it was first licensed, much like an accusative Case-marked object, which cannot move to nominative subject position once it has been licensed. Following the Case analysis of Halpert and extending it to Kinande, non-differentially marked DPs are always able to receive licensing via the prefixing of an augment, which Halpert argues can self-license DPs in the Bantu languages she studied. Such nominals are essentially unrestricted in their distribution as the self-licensing carried out by the augment

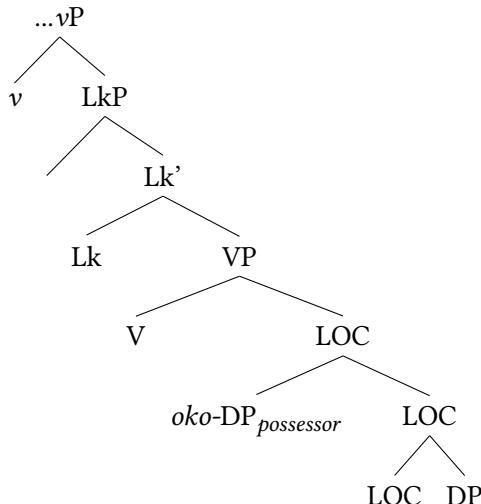


Figure 7.3: Part/whole-alienable possession

is independent of the position the so-licensed nominal occupies, in contrast to the licensing of the inalienable possessum KP which is marked by *oko*- . Therefore, the inalienable possessum KP cannot reorder with the verb phrase as illustrated in (20) by targeting the specifier of linker phrase, assuming this is Case related movement.

In contrast, the DP possessum found in locative external possession has no problem targeting the specifier of linker phrase position (22a and 22b) as Case is available through the possibility of self-licensing. The possibility of passivization is also affected due to differential marking. The data in (21a–21d) indicated that passivization of an inalienable possessum is only possible if differential *oko*- has cliticized or reanalyzed into the verb under adjacency. Under that condition, the nominal is free of its differential marking and is therefore able to move to the subject position. The intuition here is that the cliticization of *oko*- to the passive verb prevents the possibility of licensing (by the α projection), through differential marking. This is reminiscent of early accounts in the clitic-doubling literature of the occurrence of a pronominal clitic in the extended verbal complex correlating with an unavailability of Case for the argument associated with the clitic. More specifically, the clitic was seen as “absorbing the Case assigning ability of the verb”. The differentially marked specifier of locative external possession, we analyze as a thematically and morphologically locative phrase that does not require any special licensing beyond the licensing needed by locative phrases in general.

Our understanding of the licensing needs of locative phrases in Kinande is in its early stages. We do observe that they have a broader distribution than differentially marked locatives, however. The examples involving passivization in (23a–23c) illustrate that, when reflective of a thematic locative, the *oko*-marker can optionally cliticize to the passive verb. We do not yet have an account of why this optionality is possible. We do however note that the fact that passivization of an entire locative phrase, without cliticizing the locative marker, is consistent with our proposal that locative morphology in part/whole-alienable possession is not for Case licensing of the locative marked nominal, but instead is necessitated by the meaning of the construction.

5.3 Animate goal/source licensing

Kinande shows yet a third type of differential marking. Higher animates that are sources or goals occur without an augment under certain syntactic conditions we will examine in this section. This means they will require require *uku*- marking,⁸ instead of the expected *oko*- in these contexts, as exemplified in (4) and (15a). However, the augmentless licensing possibility only holds when the goal or source is adjacent to the verb. There is an additional structural requirement that becomes relevant when the adjacency licensing mechanism is considered in more detail, as we will discuss shortly. Furthermore, recall that sources and goals that are lower in animacy have no such licensing mechanism available, as seen in (16a) and (16b).

The question is what could explain the apparently “augmentless” nature of these higher animate expressions. We propose that this type of differential marking can be best explained as involving a licensing strategy beyond Case per se. Following Irimia (2018, 2020), this additional strategy is needed to license a [PERSON] specification (Richards 2008, a.o.) added to certain classes such as higher animates.⁹ In these configurations, there are two features that need licensing – the uninterpretable Case feature and the additional [PERSON]. van Urk (2020) makes a similar proposal based on his investigation of an adjacency licensing mechanism that is relevant to higher animates (names and pronouns) in Fijian. Whether the actual relevant feature here is [PERSON] or not requires additional research. It suffices for our purposes that some animacy-related feature plays a role in this differential marking.

⁸We use *uku*- to stand for any class locative marker that indicates the nominal it marks is unaugmented.

⁹The intuition here is that the additional feature [PERSON] requires a distinct type of licensing (licensing relativized to discourse). See also Miyagawa (2017) for related discussion.

We note that higher animates without augments are syntactic predicates¹⁰ and as predicates can and do incorporate into the verbal complex. This incorporation essentially takes place under adjacency. Recall the data in (17), repeated here as (27), which illustrate this generalization:

- (27) a. ...verb] enclitic] oko/*uku
 N-ibá-ky' **oko/*uku** Maryâ.
 1SG-steal-7CL 17LOC/(-AUG)17LOC Marya
 'I stole it from Marya.'
- b. ...proclj-verb ____j uku/*oko
 Ná-ki-iba *boko/✓uku Maryâ.
 1SG-7OM-steal 17LOC/(-AUG)17LOC Marya
 'I stole it from Marya.'
- c. ...WH_j-verb] ____j uku/*oko
 Ékihij kyó w-ibá ____j ***oko/✓uku** Maryâ.
 7what 2SG-steal 17LOC/(-AUG)17LOC Marya
 'What did you steal from Marya?'

As long as an expression which encodes higher animacy can incorporate into the verbal complex, it must - this appears to be the only way for its higher animacy feature(s) to be licensed. However, if it is too far away from the verbal complex (by which we mean not string adjacent), it does not incorporate. This tells us that there is an additional way for the higher animate goal/source to be licensed when licensing by adjacency is not possible.

There appears to be only one possible position available for incorporation as illustrated in (27a), where we see that the presence of an enclitic prevents the incorporation of the higher animate; but if nothing overt intervenes between the verb and the higher animate goal/source, as in the case of the object prefix preceding the verb stem (27b) or the silent extraction site between the verb and the higher animate in (27c), the incorporation licensing mechanism comes into play. Recall that non-higher animates (common nouns of various types) in the same configurations, as in (16a), are not unaugmented and therefore cannot undergo incorporation.

There is a more complex environment where adjacency is at play. It involves a configuration where a higher animate goal/source is in a specifier position within

¹⁰Non-verbal predication in Kinande also requires the predicate to surface without an augment, as discussed in Progovac (1993) and Schneider-Zioga (2018).

the larger *vP* domain. This happens when there is a second *XP* within the verb phrase as in (15b), which we repeat here, with bracketing, as (28):

- (28) Omundú mw-á-híka [uku/?oko Yésú [k' omotututu]].
1person AFF-3SG-arrive (-AUG)17LOC/17LOC Jesus 17LK' 18morning
'Someone came to Jesus in the morning.'

Note that the higher animate here occupies the specifier of the linker phrase and is indeed string adjacent to the verb. However, although the putative [PERSON] feature can be licensed via adjacency (incorporation into the verb), it is evident that it can also be licensed by occupying the specifier position within the verb phrase. Therefore, the adjacency licensing mechanism is optional in this case. We are in a preliminary stage of working out the exact details of this licensing mechanism and the full range of structures within the verb phrase and how they interact with the higher animacy feature, which we hypothesize is [PERSON]; so open questions remain. However, we have succeeded in establishing that there is a distinction in licensing based on such a feature and have demonstrated that there is an additional mechanism at play here, namely one based on licensing via verbal+nominal adjacency.

6 Conclusions

In this paper we have presented novel data involving dependent differential (object) marking in Kinande. We have supported several important conclusions. On the one hand, differential marking of dependents of the verb in Kinande shows non-trivial syntactic correlates, supporting a syntactic analysis of differential marking. On the other hand, we have also demonstrated that Kinande employs more than one mechanism for differential marking, all of which are consistent with various analyses proposed in the theoretical literature. We have shown that a movement-based approach is hard to extend to the types of differential marking discussed here. Instead, the problem reduces either to the presence of a Case feature which needs licensing (predicative and inalienable possession) or an additional [PERSON] feature beyond Case per se (unaugmented higher animates). We have left a number of issues related to differential marking for future work but have certainly established that differential marking on dependent nominals is robust in at least one Bantu language. Finally, we have endeavored to establish that the study of differential marking offers new avenues of investigating the issue of nominal licensing in Bantu languages.

Abbreviations

Below are listed only those abbreviations that do not adhere to or are beyond the scope of the Leipzig Glossing Rules.

AFF	affirmative	LK	linker
ANIM	animate	NC	noun class
APPL	applied	OM	object marker
ASSOC	associative	REV	reversive
AUG	augmented	TAM	tense-aspect-mood
CL	clitic	TRANS	transitivizer
DIR	directional	VER	verum focus
DOM	differential object marking	1, 2, 3	noun classes
FV	final vowel		

Acknowledgements

We are grateful to have this opportunity to thank Philip Ngessimo Mutaka for his comments, insights, and endless patience in discussing all the Kinande data. This paper also benefited greatly from remarks by an anonymous reviewer and the patience and generosity of the editor of this volume. We sincerely appreciate the insightful comments from and illuminating discussions with Claire Halpert, Nancy Hedberg, Larry Hyman, and the participants of the 49th Annual Conference of African Linguistics held at the University of British Columbia. We also express our gratitude to the Creteling summer school, held annually since 2017 at the University of Crete in Rethymnon, Crete which provided the co-authors with the opportunity to mutually explore differential marking in Kinande and some of the related issues. Parts of this work have been supported by a research grant from the University of Modena and Reggio Emilia awarded to Monica Alexandrina Irimia.

References

- Aissen, Judith. 2003. Differential object marking. Iconicity vs. Economy. *Natural Language and Linguistic Theory* 21(3). 435–483.
- Baker, Mark C. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Baker, Mark C. & Chris Collins. 2006. Linkers and the internal structure of vP. *Natural Language and Linguistic Theory* 24(2). 207–254.

- Bentley, Mayrene. 1994. *The syntactic effects of animacy in Bantu languages*. Bloomington, IN: Indiana University. (Doctoral dissertation).
- Bossong, Georg. 1991. Differential object marking in Romance and beyond. In Dieter Wanner & Douglas A. Kibbee (eds.), *New analyses in Romance linguistics*, 143–170. Amsterdam/Philadelphia: John Benjamins.
- Bossong, Georg. 1998. Le marquage différentiel de l'objet dans les langues d'Europe. In Jacques Feuillet (ed.), *Actance et valence dans les langues d'Europe*, 193–259. Berlin/New York: Mouton de Gruyter.
- Bresnan, Joan & Sam Mchombo. 1987. Topic, pronoun and agreement in Chicheŵa. *Language* 63(4). 741–782.
- Carstens, Vicki & Loyiso Mletshe. 2016. Negative concord and nominal licensing in Xhosa and Zulu. *Natural Language and Linguistic Theory* 34(3). 761–804.
- Diercks, Michael. 2012. Parameterizing case: Evidence from Bantu. *Syntax* 15(3). 253–286.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.
- Duranti, Alessandro. 1979. Object clitic pronouns in Bantu and the topicality hierarchy. *Studies in African Linguistics* 10. 31–45.
- Franco, Ludovico & M. Rita Manzini. 2017. *Genitive/'of' arguments in DOM contexts*.
- Gambarage, Joash. 2019. *Belief-of-Existence determiners: Evidence from the syntax and semantics of Nata augments*. Vancouver, CA: University of British Columbia. (Doctoral dissertation).
- Glushan, Zhana. 2010. *Deriving case syncretism in differential object marking*. Ms., University of Connecticut.
- Halle, Morris & Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In Kenneth Hale & Samuel J. Keyser (eds.), *The view from building 20*, 111–176. Cambridge, MA: MIT Press.
- Halpert, Claire. 2013. Structural case and the nature of vP in Zulu. *Proceedings of NELS* 42(2). 209–222.
- Halpert, Claire. 2015. *Argument licensing and agreement*. Oxford/New York: Oxford University Press.
- Harford Perez, Carolyn. 1985. *Aspects of complementation in three Bantu languages*. Madison, WI: University of Wisconsin-Madison. (Doctoral dissertation).
- Hawkinson, Anne & Larry M. Hyman. 1974. Natural hierarchies of topic in Shona. *Studies in African Linguistics* 5(2). 147–170.
- Hyman, Larry M. & Francis Katamba. 1993. The augment in Luganda: Syntax or pragmatics. In Sam Mchombo (ed.), *Theoretical aspects of Bantu grammar* 1, 209–256. Stanford, CA: Center for Study of Language & Information.

- Irimia, Monica Alexandrina. 2018. Differential objects and other structural objects. *Proceedings of the LSA 2018* 50(1). 1–15.
- Irimia, Monica Alexandrina. 2020. Types of structural objects: some remarks on differential object marking in romanian. In Andras Bárány & Laura Kalin (eds.), *Case, agreement and their interactions: New perspectives on differential argument marking*, 77–127. Berlin: De Gruyter.
- Kalin, Laura. 2018. Licensing and differential object marking: The view from Neoaramaic. *Syntax* 21(2). 112–159.
- Keine, Stefan. 2010. *Case and agreement from fringe to core: A minimalist approach*. Berlin/New York: de Gruyter.
- Keine, Stefan & Gereon Müller. 2008. Differential argument encoding by impoverishment. In Marc Richards & Andrej L. Malchukov (eds.), *Scales*, vol. 86 (Linguistische Arbeitsberichte), 83–136. Leipzig: Universität Leipzig.
- Lazard, Gilbert. 2001. Le marquage différentiel de l'objet. In Martin Haspelmath, Ekkehard König, Wulf Österreicher & Wolfgang Raible (eds.), *Language typology and linguistic universals. An international handbook*, vol. 2, 873–885. Berlin: Berlin/New York: Mouton de Gruyter.
- López, Luis. 2012. *Indefinite objects: Scrambling, choice functions and differential marking*. Cambridge, MA: MIT Press.
- Miyagawa, Shigeru. 2017. *Agreement beyond phi*. Cambridge, MA: MIT Press.
- Morolong, Malillo & Larry M. Hyman. 1977. Animacy, objects and clitics in Sesotho. *Studies in African Linguistics* 8(3). 199–218.
- Mursell, Johannes. 2018. Object marking in Swahili is topic marking. *Jezikoslovje* 19.3. 427–455.
- Myler, Neil. 2016. *Building and interpreting possession sentences*. Cambridge, MA: MIT Press.
- Ormazabal, Javier & Juan Romero. 2013. Differential object marking, case and agreement. *Borealis. An International Journal of Hispanic Linguistics* 2(2). 221–239.
- Partee, Barbara. 1999. Weak NPs in HAVE-sentences. In J. Gerbrandy, M. Marx, M. de Rijke & Y. Venema (eds.), *JFAK, a Liber Amicorum for Johan van Benthem on the occasion of his 50th birthday*, 39–57. Amsterdam: University of Amsterdam.
- Pietraszko, Asia. 2021. The coming apart of case and focus in Bantu. *Natural Language and Linguistic Theory* 34. 579–599.
- Progrovac, Ljiljana. 1993. Non-augmented NPs in Kinande as negative polarity items. In Sam Mchombo (ed.), *Theoretical aspects of Bantu grammar* 1, 257–270. Stanford, CA: Center for Study of Language & Information.

- Richards, Marc. 2008. Defective agree, case alternations, and the prominence of Person. In Marc Richards & Andrej L. Malchukov (eds.), *Scales*, vol. 86, 137–161. Universitaet Leipzig: Linguistische Arbeits Berichte.
- Riedel, Kristina. 2009. *The syntax of object marking in Sambaa*. Leiden, Netherlands: University of Leiden. (Doctoral dissertation).
- Schneider-Zioga, Patricia. 2015a. Linking, predication, and symmetry: On the syntax of the linker in Kinande. In *Proceedings of the 32nd West Coast Conference on Formal Linguistics*, 323–331. Somerville, MA: Cascadilla Proceedings Project.
- Schneider-Zioga, Patricia. 2015b. The linker in Kinande re-examined. In *Selected proceedings of the 44th Annual Conference on African Linguistics*, 264–276. Somerville, MA: Cascadilla Proceedings Project.
- Schneider-Zioga, Patricia. 2018. *Non-verbal predication in Bantu*. To appear in The Oxford Guide to the Bantu Languages. lingbuzz/004350.
- Schneider-Zioga, Patricia & Philip Ngessimo Mutaka. 2015. The linker in Kinande: A predication relation. *The Journal of West African Languages* 42(2). 101–124.
- Schneider-Zioga, Patricia & Philip Ngessimo Mutaka. 2019. Having in Kinande: Alienable and inalienable possession. Ms. California State University, Fullerton.
- Seidl, Amanda & Alexis Dimitriadis. 1997. The discourse function of object marking in Swahili. In Kora Singer, Randall Eggert & Gregory Anderson (eds.), *Chicago linguistic society 33: Papers from the main session, April 17–19*, 373–389. Chicago, IL: Chicago Linguistic Society.
- Silverstein, Michael. 1976. Hierarchy of features and ergativity. In Robert M. W Dixon (ed.), *Grammatical categories in Australian languages*, 112–171. Canberra: Australian Institute of Aboriginal Studies.
- van der Wal, Jenneke. 2015. Object clitics in comparative Bantu syntax. *41st Meeting of the Berkeley Linguistic Society* 41. 1–18.
- van der Wal, Jenneke. 2017. Flexibility in symmetry: An implicational relation in Bantu double object constructions. In Michelle Sheehan & Laura R. Bailey (eds.), *Order and structure in syntax II: Subjecthood and argument structure*, 115–152. Berlin: Language Science Press.
- van de Velde, Mark. 2019. Nominal morphology and syntax. In Mark van de Velde, Koen Bostoen, Derek Nurse & Gérard Philippson (eds.), *The Bantu languages*, 237–269. London: Routledge.
- van Urk, Coppe. 2020. Object licensing in Fijian and the role of adjacency. *Natural Language and Linguistic Theory* 38(1). 313–364.

Chapter 8

Gender and headedness in nominal compounds in Somali

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This paper examines how gender is assigned to compounds in Somali, and how this relates to the notion of headedness. When two Somali noun roots of different genders are compounded, various types of mismatches in gender cues are found: subject-verb agreement is consistently predictable from the gender of the initial member of the compound (the semantic head), suggesting that this is the member which determines compound gender. In contrast, the definite article, which is phonologically bound to the final member, shows variable gender agreement: it is either in line with the compound gender or the gender of the final member. Somali furthermore exhibits a correlation between the gender of nouns and their tone pattern. In noun-noun root compounds, it is the final member which determines the tone pattern. If the gender of this member is different from the initial member, the result is thus a mismatch between compound gender on the one hand, and the tone pattern of the compound on the other. I propose that the attested variation in definite article assignment is the result of choosing either a mismatch between definite article and tone pattern on the one hand, and on the other, a mismatch in agreement cues on the article and the verb.

1 Introduction

Compounds pose a puzzle in languages with grammatical gender: if two nouns with different genders are compounded, what is the gender of the compound? Conflicting generalizations have previously been proposed regarding compound gender in Somali (Cushitic, Horn of Africa), and for particular compounds, different genders have been reported by different scholars. The aim of the present

Nina Hagen Kaldhol. 2021. Gender and headedness in nominal compounds in Somali. In Akinbiyi Akinlabi, Lee Bickmore, Michael Cahill, Michael Diercks, Laura J. Downing, James Essegbe, Katie Franich, Laura McPherson & Sharon Rose (eds.), *Celebrating 50 years of ACAL: Selected papers from the 50th Annual Conference on African Linguistics*, 153–180. Berlin: Language Science Press. DOI: 10.5281/zenodo.5578832



paper is to arrive at a robust empirical generalization of how gender is assigned to one particular type of nominal compound, namely the one in which both members are noun roots.

In order to sort out the patterns, I investigate agreement patterns from two different agreement targets, namely the definite article and the copula verb. The agreement variation presented here suggests that the reason for the discrepancies in previous literature is that researchers have been relying too heavily on the definite article as a cue to gender. In the case of non-compounds, the definite article agrees with the noun in gender. In compounds, on the other hand, there is variation with respect to definite article assignment, and it is therefore not a reliable gender cue. In contrast, subject-verb agreement is consistent: it is predictable from the gender of the initial member, which is the semantic head, suggesting that the semantic head also determines compound gender. The difference between the two agreement targets (the definite article is variable, subject-verb agreement is consistent) leads to occasional mismatches in the gender they express. This is illustrated in (1),¹ in which a feminine-masculine compound controls masculine agreement on the definite article, but feminine agreement on the copula verb.

- (1) Wadda+hálaq-u waa fíicán tahay.
road+snake-**M**.DEF.NOM DECL good 3SG.F.COP.PRS
'The way snakes go/move is good.' cf. waddá-du (F), hálaq-u (M)

Judging from subject-verb agreement, it is the initial member which determines compound gender. I propose that there are two competing generalizations available: one of linear adjacency, in which the article agrees with the closest member, and one in which the article agrees with the compound as a holistic unit. §2 provides background on gender, agreement, tone, compounds and headedness. §3 presents the main data for the present study. In §4, gender mismatches for Somali compounds are compared to other types of gender mismatches found cross-linguistically. §5 concludes, and explanations for the variable definite article assignment are discussed, appealing to properties of the Somali system as a whole.

¹Here and in the remainder of the paper, words will be transcribed following the Somali orthography, with High tones added (marked with acute accents: á). The deviations between the orthographic symbols and the IPA symbols are as follows: Long vowels are represented with two consecutive vowels (aa). C represents a voiced pharyngeal fricative [ʕ], dh is a retroflex stop [ɖ], j is a postalveolar affricate [tʃ], kh a uvular fricative [χ], sh a postalveolar fricative [ʃ], x a voiceless pharyngeal or epiglottal fricative, [ħ] or [h], y is a palatal glide [j], and ' is a glottal stop [ʔ].

2 Background

2.1 The gender system in Somali

2.1.1 Gender and agreement

Somali has a gender system with two genders: masculine (M) and feminine (F). Some terminological background will be provided before the Somali system is illustrated. First, the following definition of gender is provided by Hockett:

Genders are classes of nouns reflected in the behavior of associated words
(Hockett 1958: 231)

The notion of *associated words* is crucial, and means that “the determining criterion is agreement” (Corbett 1991: 4). Nouns can be classified in other ways, e.g. based on their case marking or plural marking, but this is a matter of declension or nominal form-class, not gender.² This may or may not correlate with gender, but it is conceptually different from gender, and it is *agreement* which reveals the gender system (see also Güldemann & Fiedler 2019; Di Garbo 2014; 2016).³ Agreement can be defined as follows (see also Corbett 2006: 4):

The term *agreement* commonly refers to some systematic covariance between a semantic or formal property of one element and a formal property of another. (Steele 1978: 610)

This *systematic covariance* is illustrated with the Somali examples in (2–3): the gender of the noun (M or F) covaries with the form of the definite article (*ku* or *tu*)⁴ and the copula verb (*yahay* or *tahay*).

(2) Agreement with a masculine noun

Málab-ku	waa	fíicán	yahay.
honey(M.SG)-M.DEF.NOM	DECL	good	3SG.M.COP.PRS
‘The honey is good.’			

²Comprehensive analyses of such classifications of nouns in Somali are provided in Andrzejewski 1964; Banti 1988b; Saeed 1999.

³Note that the agreement-based approach to gender adopted here is largely in line with previous works on Somali by Nilsson (2016) and Güldemann & Maniscalo (2016), but differs from the assumptions in other works, such as Godon (1998); Lampitelli (2013; 2019); Lecarme (2002).

⁴These are the nominative case forms of the definite articles. The unmarked forms are *ka* and *ta*. Somali is analyzed as having a case system of the type *marked nominative*, which is common in Cushitic languages (Mous 2012) and other languages of East Africa (König 2006). The nominative case marking is realized on the final element of the noun phrase that functions as a subject. For details about the form of case, see e.g. Banti (1986; 1988b).

(3) Agreement with a feminine noun

Shimbír-tu	waa	fíicán tahay.
bird(F.SG)-F.DEF.NOM	DECL	good 3SG.F.COP.PRS
'The bird is good.'		

In order to describe the agreement relationship, it is useful to define two more concepts, namely *controller* and *target* (see Corbett 1991: 4): the nouns in (2–3) have inherent gender, and they determine the form of the definite article and the copula verb. Therefore, the nouns are the gender *controllers*: they are the elements that determine gender agreement. The definite article and the copula verb, on the other hand, do not have inherent gender, but rather, they are gender *targets*: they are the elements that have their respective forms determined by the controller.

The agreement-based approach to gender and Hockett's definition of gender as being "reflected in the behavior of associated words" (1958: 231) open up the question of what "words" are. The definite articles in Somali are phonologically bound to nouns, as evidenced by the obligatory sandhi alternations they undergo, illustrated in (4–5).⁵ Each article has four different allomorphs, predictable from the final segment of the noun (see Saeed 1999: 28 for details).

(4) Masculine nouns

- a. *dáb-ka* [dábka] 'the fire'
- b. *qálbi-ga* [gálbiga] 'the heart, spirit'
- c. *aabbá-ha* [aabhbáha] 'the father'
- d. *gó'-a* [gó?a] 'the portion'

(5) Feminine nouns

- a. *xeéb-ta* [héébta] 'the shore'
- b. *hooyá-da* [hoojáda] 'the mother'
- c. *gabádha* /gabád-ta/ – [gabáddha] 'the girl'
- d. *úsha* /úl-ta/ – [úʃa] 'the stick'

The definite articles have variously been analyzed as clitics (e.g. Green & Morrison 2016) and suffixes (e.g. Nilsson 2016). I will remain agnostic to this issue here. However, the two analyses have different consequences for how the choice between *ka* and *ta* is described: if the articles are clitics, they might be argued to be independent elements, and thus count as "associated words" – that is, possible agreement targets. If they are suffixes, they form parts of the noun itself –

⁵There is variation between and within speakers in the realization of singleton and geminate stops – see Bendjaballah & Le Gac (2019) for a discussion and a recent production experiment.

that is, they are a part of the gender controller, and therefore not agreement targets. Under such an approach, the choice between *ka* and *ta* is a matter of form-class, not gender. In line with this approach, Güldemann & Maniscalo (2016) call the initial consonant of the articles *thematic consonants* rather than agreement markers. The fact that the shape of the definite article is predictable from gender, and thus covaries with gender like subject-verb agreement does, just means that form-class and gender happen to correlate. To my knowledge, this correlation is a perfect one in root nouns. Whether this is true for compounds as well is an empirical question, and therefore, evidence from uncontroversial agreement targets (such as verbs) is necessary when determining compound gender, and thus subject-verb agreement is also investigated in the present study (see §3).⁶

2.1.2 Gender and tone

Another aspect of the gender system in Somali is that there is a correlation between gender and tone (Armstrong 1934), and there are many pairs like the ones provided in (6–7) (from Hyman 1981: 172), where the masculine member of the pair has a penultimate High tone, and the feminine member of the pair has a final High tone.⁷

- (6) Masculine nouns, penultimate H
 - a. *ínan-ka* ‘the boy’
 - b. *qaálín-ka* ‘the young he-camel’
 - c. *daméér-ka* ‘the he-donkey’
- (7) Feminine nouns, final H
 - a. *inán-ta* ‘the girl’
 - b. *qaalín-ta* ‘the young she-camel’
 - c. *dameér-ta* ‘the she-donkey’

Under the agreement-based approach adopted here, this is a matter of form-class, not gender. While tone and gender correlate, the correlation is not perfect, as the examples in (8–9) illustrate (examples from Andrzejewski 1964; Hyman 1981; Saeed 1999).

⁶A complication in the Somali case is that some nouns have different definite articles in their singular and plural forms, a notion that has been called *gender polarity* (see e.g. Lecarme 2002; Lampitelli 2013; Nilsson 2016). However, other agreement targets do not show gender distinctions for plural nouns (Nilsson 2016), and so only singular forms of compounds are investigated in the present study.

⁷The tone-bearing unit is the mora, and only vowels are moraic in Somali.

- (8) Masculine nouns with a final H

 - a. *maroodí-ga* ‘the elephant’
 - b. *abtí-ga* ‘the uncle’
 - c. *waá-ga* ‘the time, dawn’

(9) Feminine nouns with a penultimate H

 - a. *sábti-da* ‘the Saturday’
 - b. *úgax-da* ‘the egg’
 - c. *sáddex-da* ‘the three’⁸

These data illustrate that tone and gender may vary independently of another. Therefore, I assume that tone is lexical, rather than introduced via morphological rules assigning tones to nouns based on their gender (which was proposed by Hyman 1981).⁹

2.2 Compounds, gender, and headedness

2.2.1 Types of nominal compounds in Somali

Nominal compounds in Somali come in different shapes (see Banti & Jama 2016; Puglielli 1989; Saeed 1999: 154–160). In the simplest case, there are two noun roots, as in (10). Noun-noun compounds are distinguished from noun-noun genitive constructions in that the former has one High tone and a single definite article at the right edge, while the latter has two High tones and two articles (11).¹⁰

- | | |
|---|--|
| (10) Noun-noun root compound
gaari+fáras-ka
car+horse-M.DEF
'the horse cart' | (11) Genitive construction
búug-ga macállin-ka
book-M.DEF teacher-M.DEF
'the book of the teacher' |
|---|--|

The present study aims to uncover how gender is assigned to noun-noun root compounds of the type in (10). There seem to be few noun-noun root compounds in Somali. Other morphologically complex types are illustrated in (12) (examples from Zorc & Osman 1993) and include compounds in which one member ends in *-e* or *-o* (12a) (which function variously as nominalizers and thematic vowels;

⁸Numerals are nouns in Somali, and numerals from 2–8 are feminine (Saeed 1999: 69).

⁹In line with this, loanword adaptations suggest that the tone-gender correlation is not fully productive (see Kaldhol 2017; Kaldhol & Stausland Johnsen forthcoming).

¹⁰The second noun has a genitive function here although there is no overt exponent of the genitive when the noun is definite.

see e.g. Le Gac 2016: 295) or is a derived noun (12b). Some nominal constructions are nominalized forms of adjectival compounds (12c). Many nominal compounds include a heterosemous root (a root that can function as either a noun or a verb) (12d). Sometimes the final member is marked with one of the suffixes *-eed/-aad/-ood* (12e), an attributive suffix, according to Banti (1986; 1988a).

(12) Other types of nominal compounds

- a. *il+tuk-e* eye+crow ‘crow’s eye (plant sp.)’
- b. *hadal+qor-aal* talk+[write-NMLZ] ‘protocol’
- c. *madax+bannaan-i* [head+free]-NMLZ ‘independence’
cf. *madax+bannaan* head+free ‘independent’
- d. *madax+xanuun* head+pain/be in pain ‘headache’
- e. *libaax+bad-eed* lion+[sea-ATTR] ‘shark’

Compounds of these types are left aside for now because they are likely to function differently with respect to gender. For example, derivational suffixes and the vowels *-e/-o* assign their own gender and form-class (Saeed 1999). Similarly, heterosemous roots have been analyzed as nouns derived from verbs, with gender determined by the derivation process (see e.g. Saeed 1999: 149).

2.2.2 Compounds and headedness

The notion of head is often appealed to when describing gender in compounds. For example, compounds in Dutch are analyzed as right-headed because the rightmost member determines the semantic class, syntactic category, and the gender of the compound (Booij 2002: 141–142). The examples in (13) illustrate that the compound gender is the same as the gender of the right member (the head), as indicated by the preceding definite article.

(13) Right-headed nominal compounds in Dutch (Booij 2002: 142)

Common gender		Neuter gender	
de soep	‘the soup’	het vlees	‘the meat’
de vlees+soep	‘the meat soup’	het soep+vlees	‘the soup meat’

In the case of Somali, conflicting generalizations have been proposed regarding gender and headedness, as reflected in the following quotes:

From a syntactic standpoint, [NN-compounds in Somali] are [...] right-headed. The grammatical gender of the resulting compound is that of the final constituent. (Green & Morrison 2016: 15)

Its gender is determined by the head of the compound. That means that we can easily find a sequence N₁ + N₂ + Art where N₁, the head of the compound, is masculine, N₂ is feminine and the article is masculine, or vice versa. (Puglielli 1989: 7)

The notion of head is not a pre-theoretic concept: examples of authors that have argued against the notion and developed alternatives are Langacker (1987), working within the framework of Cognitive Linguistics, and Croft (2001), working within Radical Construction Grammar. Thus invoking the concept of head is not an explanation on its own, but only if it is tied to a particular framework or a set of criteria.¹¹ Bauer (2017: 40) argues that in the case of compounds, the notion splits into several subcriteria which do not apply to all compounds and do not always agree. The term of head may be useful for referring to a language-particular category (in the sense of Haspelmath 2018) in a given language if it can unify different phenomena, as is the case for compounds in Dutch. However, this is not the case for all languages, and there is a need for more in-depth research on compounds, both typologically and in particular languages (Scalise & Fábregas 2010; Guevara & Scalise 2009).

For the purposes of the present paper, I will distinguish between three phenomena with different properties: first, the LOCUS OF INFLECTION AND DERIVATION (the member to which derivational and inflectional affixes attach).¹² Second, the SEMANTIC HEAD is “the most contentful item that most closely denotes the same kind of thing that the whole constituent denotes” (Croft 2001: 259), and identified by the “IS A” criterion (Allen 1978) – for example, a *mailman* IS A *man*.¹³ Third, the MORPHOSYNTACTIC HEAD is the member which determines the morphosyntactic properties of the compound (here, only gender is relevant). The morphosyntactic head is a useful notion for compounds if it allows one to predict the form of agreement targets (and thus compound gender). Note that derivational suffixes can be morphosyntactic heads under this criterion.

¹¹The defining properties of “heads” as well as its status in different theories of both syntax, morphology, and phonology have been the debated, see Corbett et al. (1993); Zwicky (1985); Hudson (1987); and Moskal & Smith (2019).

¹²I assume that this is an edge phenomenon (Bauer 2017: 31) rather than a type of head. It is a matter of location of potential affixes, and therefore a property of a given system or construction rather than a fact about a member in a given compound.

¹³The semantic relation between the members in a compound is unstated. Many types of relations are possible, and I assume here that it cannot be reduced to one of *idiomatic* and *non-idiomatic*, or one of *endocentric* and *exocentric*. See Bauer (2008; 2017); Pepper (2020); Eiesland (2015); Jackendoff (2016) for more on this view.

Somali is largely a suffixing language, and the locus of inflection and derivation is the right edge, also in compounds. This was illustrated in (10) with the definite article: *gaari+fáras-ka* ‘the horse cart’, and in (12c) with a nominalizer: *madax+bannaan-i* ‘independence’. The position of the semantic head in compounds varies depending on the word class of the members involved. Noun-noun root compounds are semantically left-headed – for example, *gaari+fáras* ‘horse-cart’ is a type of *gaari* ‘cart’. Adjectival noun-adjective compounds are semantically right-headed: for example, *madax-bannaan* ‘independent (lit. head-free)’ is a type of *bannaan* ‘free’.¹⁴ Compounds in which the initial member is a noun and the second member is a heterosemous root are also semantically right-headed: for example, *madax+xanuun* ‘headache’ in (12d) above is a type of *xanuun* ‘pain’. See Banti & Jama (2016) for more examples and types.

Finally, the notion *morphosyntactic head* is useful if it allows us to predict the gender of the compound from a structural property (for example, you can predict the gender of compounds in Dutch from the gender of the final member). Judging from the examples in (14–15), collected from a dictionary, this does not apply to Somali. In (14), the definite article matches the gender of the final member. In (15), the definite article matches the gender of the initial member. Since all logical possibilities are attested, it is not the case that compound gender is consistently determined by either the initial or the final member, and therefore, one cannot predict the gender of the compound (indicated by the definite article) based on position.

- (14) Gender of compound = gender of final member (Zorc & Osman 1993)

<i>laf-ta</i>	F	+	<i>garab-ka</i>	M	→	<i>laf+garab-ka</i>	M
‘bone’			‘shoulder’			‘shoulder bone’	
<i>buug-ga</i>	M	+	<i>lacag-ta</i>	F	→	<i>buug+lacag-ta</i>	F
‘book’			‘money’			‘cashbook, ledger’	

- (15) Gender of compound = gender of initial member (Zorc & Osman 1993)

<i>laf-ta</i>	F	+	<i>dhabar-ka</i>	M	→	<i>laf+dhabar-ta</i>	F
‘bone’			‘back’			‘spine’	
<i>bur-ka</i>	M	+	<i>saliid-da</i>	F	→	<i>bur+saliid-ka</i>	M
‘flour’			‘oil’			‘fritter’	

A further issue in the Somali case is that for some compounds, different genders are reported by different scholars (16).

¹⁴Whether or not derivational suffixes, such as *-i* in *madax+bannaan-i* ‘independence’ can be semantic heads is less clear. It is not relevant for the present purposes and will not be discussed further here.

- (16) Different genders reported
bir ‘iron’ (F) + *danab* ‘electricity’ (M) → *birdanab* ‘magnet’
 F (Saeed 1999: 158) or M (Zorc & Osman 1993: 41)

The question is how compound gender was determined by these authors. In the next section, I present novel data suggesting that the discrepancies arise from relying on the definite article as a cue to gender. A clearer pattern emerges when we look at subject-verb agreement.

3 Gender and tone assignment to noun-noun root compounds

In order to examine the gender of compounds, noun-noun compounds were elicited from a native speaker of Somali living in San Diego. She is originally from Mustahil, Ethiopia, and thus speaks a Central variety of what is typically called Northern Somali or Maxaatiri, but she has lived in multiple places in the Horn of Africa. All the remaining examples are provided by this speaker unless otherwise noted. The compounds and their members were produced in carrier phrases of the type *the X is good* or *the X is bad*. These phrases include both the definite article (masculine *ku* and feminine *tu*) and copula verb agreement (masculine *yahay*, feminine *tahay*). Under the assumption that gender is revealed by agreement (see §2.1.1), this carrier phrase provides evidence of compound gender. Information about the word list is provided in the appendix.

3.1 Compounds in which the members have the same gender

The first question to ask is whether the gender of the members play any role at all in determining compound gender, or whether there is some other unrelated mechanism which assigns gender to compounds. Based on the agreement patterns in the following examples, the gender of the members does in fact seem to be the determining factor: when both members are masculine, the compound gender is also masculine, as in (17), and when both members are feminine, the compound gender is also feminine, as in (18).

- b. Fool+maroodí-gu waa fiicán yahay.
tooth+elephant-M.DEF.NOM DECL good 3SG.M.COP.PRS
'The ivory/elephant's tusk is good.' cf. *fóolku* (M), *maroodígú* (M)
- (18) F+F compounds = F
- a. Laf+aráx-du waa fiicán tahay.
bone+vertebra-F.DEF.NOM DECL good 3SG.F.COP.PRS
'The spine is good.' cf. *láftu* (F), *aráxdu* (F)
 - b. Kabsar+caleén-tu waa fiicán tahay.
herb+leaf-F.DEF.NOM DECL good 3SG.F.COP.PRS
'The parsley/cilantro is good.' cf. *kabsártu* (F), *caleéntu* (F)

Unattested in the present study are feminine-feminine compounds with masculine agreement, and masculine-masculine compounds with feminine agreement. Compound gender is thus not independent of the gender of its members.

3.2 Compounds in which the members have different gender

When the members of a compound have different genders, different outcomes are attested. As we will see, what all of these outcomes have in common, is that subject-verb agreement is consistently predictable from the gender of the initial member of the compound. That is, masculine-feminine compounds control masculine subject-verb agreement (19), and feminine-masculine compounds control feminine subject-verb agreement (20). These examples also illustrate the first type of outcome, in which the definite article matches the gender of the initial member, even though it is linearly adjacent to the second member.

- (19) M+F compounds = M
- a. Bur+saliíd-ku waa fiicán yahay.
cake/flour+oil-M.DEF.NOM DECL good 3SG.M.COP.PRS
'The fritter is good.' cf. *búrku* (M), *saliíddu* (F)
 - b. Daacuun+caloól-ku waa xún yahay.
cholera+stomach-M.DEF.NOM DECL bad 3SG.M.COP.PRS
'The cholera/stomach disease is bad.' cf. *daacúunku* (M), *caloóshu* (F)
- (20) F+M compounds = F
- a. Shimbir+málab-tu waa fiicán tahay.
bird+honey-F.DEF.NOM DECL good 3SG.F.COP.PRS
'The honey-bird is good.' cf. *shimbírtu* (F), *málabku* (M)

- b. Laf+gárab-tu waa fíicán tahay.
bone+shoulder-**F**.DEF.NOM DECL good 3SG.F.COP.PRS
'The shoulder bone is good.' cf. *láftu* (*F*), *gárabku* (*M*)

In other cases, the choice of definite article and the verb agreement are in conflict (21). Subject-verb agreement matches the gender of the initial member, but unlike in (19) and (20), the definite article does not. Instead, it matches the gender of the second member.

- (21) Conflicting gender agreement on definite article and verb
- a. Wadda+hálaq-u waa fíicán tahay.
road+snake-**M**.DEF.NOM DECL good 3SG.F.COP.PRS
'The way snakes go/move is good.' cf. *waddádu* (*F*), *hálaqu* (*M*)
- b. Fool+diin-ku waa xún tahay.
labor.pain+turtle.**M**.DEF.NOM DECL bad 3SG.F-COP.PRS
'The false labor pains are bad.' cf. *foóshu* (*F*), *díinku* (*M*)

One might have expected *wadda+halaq-du* (*F*) and *fool+diin-tu* (*F*) here, because of the feminine agreement on the verb. In the case of *fool+diin-ku*, there may be a separate reason for why the masculine article is assigned instead of the feminine: the final member of the compound, the masculine noun *diin-ka* 'the turtle', forms a minimal pair with a feminine noun: *diín-ta* 'the religion'. In this particular case, the form *fool+diin-ta* may be blocked to avoid the potential interpretation labor.pain+religion. However, no such explanation is available for *wadda+halaq* to my knowledge.

The consulted speaker sometimes chooses different definite articles on different instances, even for the same compound (22). This variation is not attested in subject-verb agreement, which instead is consistently predictable from the gender of the initial member.

- (22) Variable definite article, consistent subject-verb agreement
- a. Laf+sákáar -ku ~ -tu waa fíicán tahay.
bone+chest -**M**.DEF.NOM ~ -**F**.DEF.NOM DECL good 3SG.F.COP.PRS
'The breast bone/sternum is good.' cf. *láftu* (*F*), *sákáarku* (*M*)
- b. Bir+jíir -ku ~ -tu waa fiicán tahay.
iron+mouse -**M**.DEF.NOM ~ -**F**.DEF.NOM DECL good 3SG.F.COP.PRS
'The mouse trap is good.' cf. *bírtu* (*F*), *jiirku* (*M*)

The generalization is thus that for this speaker, subject-verb agreement is consistently predictable from the gender of the initial member, while the definite article assignment is variable. Under the assumption that there is such a thing as compound gender, it is the initial member of noun-noun root compounds which determines compound gender, which in turn controls subject-verb agreement.¹⁵ The initial member of noun-noun root compounds does not only determine compound gender and thus functions as a morphosyntactic head, but it is also the semantic head. Following the criteria set up in §2.2.2, *laf+sakáar* ‘breast bone’ (22a) is a type of *laf* ‘bone’, hence *laf* (F) is the semantic head. *Fool+diin* ‘false labor pains (labor.pain-turtle)’ (21b) is metaphorically a type of *fool* ‘labor pains’, hence *fool* (F) is the semantic head.¹⁶

This leaves the question of why the definite article may vary. There does not seem to be any systematic patterns determining when the article reflects the gender of the initial member, and when it reflects the gender of the final member. That is, it could have been the case that the mismatches in gender cues from the verb and the article were predictable, e.g. from the type of semantic relation between the two members. However, this does not seem to be the case, as mismatches in gender cues are found across different semantic relations, e.g. both hyponymy, as in *laf+sakáar* ‘breast bone’ (22a), and metaphors, as in *fool+diin* ‘false labor pains (labor.pain-turtle)’ (21b). The next section discusses definite article assignment in more detail.

A challenge to the study of gender in noun-noun root compounds is that the number of F+F and M+F root compounds is less than the number of M+M and F+M compounds. The reasons for this is that compounds in which the final member is feminine usually have an attributive suffix (see §2.2.1), and these compounds are left aside for now since they are not root compounds. No agreement variation is found with M+F compounds in the present study (they are always masculine), but this may just be unattested because there are few such compounds to begin with.

3.3 Definite article assignment

While subject-verb agreement suggests that it is the initial member of noun-noun compounds that determines compound gender, the choice of definite article *ku* or

¹⁵The alternative would be that it is the initial member of the compound which controls agreement directly. In this case, agreement would need to be able to see the internal structure of the compound.

¹⁶The explanation I was provided for *fool+diin*, is that turtles are slow. The idea is that after a false labor, there are still months until the baby comes.

tu varies and is not a reliable gender cue. Instead, there seem to be two competing generalizations for definite article assignment: one based on linear adjacency, in which the definite article reflects the gender of the closest member (23a), and another based on compound gender, in which it agrees with the compound as a holistic unit (23b).

(23) Competing generalizations

a. Linear adjacency

- Wadda+*hungúri-gu* waa ficán tahay.
road+throat-M.DEF.NOM DECL good 3SG.F.COP.PRS
'The esophagus (the throat-road) is good.'
cf. *waddádu* (*F*), *hungúrigu* (*M*)

b. Compound gender

- Wadda+*hungúri-du* waa ficán tahay.
road+throat-F.DEF.NOM DECL good 3SG.F.COP.PRS
'The esophagus (the throat-road) is good.'
cf. *waddádu* (*F*), *hungúrigu* (*M*)

The linear adjacency strategy reflects the relationship between the compound construction and the construction *hungúri-ga*, which co-exists with the compound. When this strategy is used, the compound is thus treated as belonging to the same form-class as its final member. Another way of putting this is that the assignment of *-gu* here involves the *internal* assignment of a definite article to the rightmost noun, as illustrated with the structure in (24). This strategy contrasts with the compound gender strategy, which can be illustrated as in (25). Note that these formalizations are meant as illustrations only (the aim of this paper is not to provide a formal analysis).

(24) Linear adjacency

- [*F* + *M-gu*]*F*
[*wadda* + *hungúri-gu*]*F*

(25) Compound gender

- [*F* + *M*]*F* -*du*
[*wadda* + *hungúri*]*F* -*du*

One may ask how and why the speaker has formed a linear adjacency generalization for definite article assignment. Unlike the copula verb, the definite article is phonologically bound to the compound (see §2.1.1). This means that even when the choice between *ku* and *tu* reflects the compound gender, determined by the initial member, the choice of allomorph is phonologically determined by the final segment of the final member, which is the one it attaches to. This is illustrated in (26).

Here, the form of the feminine article is *-du*, and not *-tu* because the final member (which is masculine) ends in *-i*, and conditions lenition. The form of the feminine article is *-tu* in *bír-tu* ‘the iron’. This illustrates that linear adjacency matters for the phonological form of the definite article even when it does not matter for agreement: these are structural generalizations paying attention to form (locally).

3.4 Tone and gender assignment

Another type of mismatch involving gender in compounds is found in their tone patterns. In non-compounds, there is a correlation between tone and gender (though not a perfect one), such that masculine nouns typically have a penultimate High tone, and feminine nouns typically have a final High tone. This was explained in §2.1.2, and illustrated in (6–7).

In noun-noun compounds, only the final member has a High tone, and the location of the tone is determined by the form-class of that member, no matter what the gender of the compound is. That is, while the initial member determines compound gender, the final member determines the tone pattern, and in M+F and F+M compounds, one therefore gets mismatches between tone and gender, as illustrated in (27–28).

- (27) Masculine compound, but feminine tone pattern
búr (M) + *saliíd* (F) → *bur+saliíd* ‘fritter’ (M)

(28) Feminine compound, but masculine tone pattern
láf (F) + *gárab* (M) → *laf+gárab* ‘shoulder bone’ (F)

What could have happened in this case, is that a new High tone is assigned to the compound based on compound gender, determined by the semantic head to the left (rendering *bursaliid* and *lafgaráb*), but this is not the case.¹⁷

The goal of the present paper is to capture the empirical generalizations relevant for how gender functions in compounds in Somali, and not to provide a

¹⁷Such shifts have been reported by Banti (2016) for nominal noun-adjective compounds such as *bád* ‘sea’ (F) + *wéyn* ‘big’ → *badweýn* ‘ocean’ (F): while *wéyn* has a penultimate High tone, *badweýn* has a final High tone, in line with its gender (feminine). The role that tone plays in marking gender on compounds thus seems to depend on the grammatical properties of the compound and its members (such as word class). Note that there seems to be variation between speakers with respect to the tone pattern in this particular compound: *badweýn* ~ *badwéyn* (personal field notes).

formal analysis of the tone patterns (see Hyman 1981; Lampitelli 2013; Le Gac 2016; Green & Morrison 2016; Downing & Nilsson 2019 for a variety of proposals couched within different frameworks). As explained in §2.1.2, I view tone as a lexical property of nouns which is independent of, but correlating with gender. For example, *maroodí-gu* ‘the elephant’ is a masculine noun, but has a High tone on the final mora (Andrzejewski’s (1964) Declension 6b). In (17b) above, we saw an example of this word occurring as the final member of a compound (*fool+maroodí-gu* ‘the elephant’s tusk’). The compound also has a final High tone – that is, the tone pattern of the compound reflects the form-class of the final member, not its gender. These generalizations are summarized in (29).

(29) Tone in noun-noun compounds

- a. In nominal compounds, only the final member bears a High tone.
Examples: *laf+gárab* ‘shoulder bone’, *fool+maroodí* ‘elephant’s tusk’
- b. In noun-noun root compounds, the location of that High tone is determined by the form class of the final member.
Examples: *gárab-ka* ‘the shoulder’, *maroodí-ga* ‘the elephant’

There is no attested variation in tone assignment in the present data set; the tone patterns of noun-noun compounds always correspond to the tone pattern of the final noun (as in *gárab* – *laf+gárab*). But as we have seen, there is variation in definite article assignment. I propose that this variation in definite article assignment reflects the article’s intermediate status as an instance of an agreement target (whose form is determined by the compound gender), and an instance of a phonologically bound element whose form is determined by the nominal form class (sensitive to the properties of the final member). If the article is assigned based on the form class of the closest member, as illustrated in (30), the choice of definite article matches the tone pattern. If the article is assigned based on compound gender, as illustrated in (31), there is a mismatch between the form class indicated by the definite article and the form class indicated by the tone pattern.

(30) Match between tone pattern and article (masculine *-ku*, penultimate H)

[F + M-*ku*]F
laf+gárab-ku

(31) Mismatch between tone pattern and article (feminine *-tu*, penultimate H)

[F + M]F -*tu*
laf+gárab-tu cf. *gárab-ku*

While the compound gender strategy for definite article assignment (31) results in a mismatch between the definite article and the tonal gender marking, it will, as

we have seen, result in a match between the article and subject-verb agreement (32).

- (32) Matching agreement, mismatching tone

<i>Laf+gárab-tu</i>	<i>waa fiicán tahay.</i>
bone+shoulder-F.DEF.NOM DECL	3SG.F.COP.PRS
'The shoulder bone is good.'	cf. <i>láftu</i> (F), <i>gárabku</i> (M)

That is, in M+F and F+M compounds, there will either be a mismatch between definite article assignment and tone pattern (a mismatch in form class), or a mismatch between definite article assignment and subject-verb agreement (a mismatch in gender). I propose that the attested variation reflects choosing between the two types of mismatches.

3.5 Summary of patterns

The agreement patterns with noun-noun root compounds presented in this section can be summarized as follows: first, when the two members of a compound have the same gender, that gender determines the form of the agreement targets, which in the present study are the definite article and the copula verb. Second, when the two members have different genders (M+F or F+M), the initial member determines compound gender (as evidenced by the subject-verb agreement), but the final member determines form class (as evidenced by the tone pattern). The definite article assignment is variable, and is either in line with the compound gender (determined by the initial member, which also is the semantic head), or in line with the form-class of the final member.

4 Gender mismatches

The gender mismatches found with compounds in Somali with respect to agreement patterns is reminiscent of other types of gender mismatches reported in other languages, such as those found with hybrid nouns and conjunct agreement. In the present section, these phenomena will be discussed in turn.

4.1 Hybrid nouns

The compounds presented in §3.2 are reminiscent of hybrid nouns, that is, nouns whose agreement value varies according to agreement target (Corbett 1991; 2006; Enger & Corbett 2012). This phenomenon is attested with different agreement

features, most notably gender and number. An example of a number hybrid is the English noun *committee*, which refers to a group of people, and can show either singular agreement (*the committee has decided...*) or plural agreement (*the committee have decided...*). Often, there is a mismatch between the formal properties of the noun and the properties of its referent. For example, the lexical gender of a noun can be in conflict with the semantic gender of its referent. A well-cited example is the German word *Mädchen* ‘girl’, which controls both neuter and feminine gender. Consider the examples in (33).

- (33) A German hybrid noun (from Corbett 1991: 228)

- a. Das Mädchen, das ich gesehen habe...
DEF.N girl that.N I seen have
'the girl I saw...'
- b. Schau dir dieses Mädchen an, wie gut sie/es Tennis spielt
look you this.N girl at how good 3SG.F/N tennis plays
'Do look at this girl, see how well she plays tennis.'

Notice that all the agreement targets are neuter, except the pronoun, which shows variation: both feminine (*sie*) and neuter (*es*) are possible. Similar patterns are found with selected nouns in many languages (see e.g. Corbett 1991: 228–232 for an overview). What these examples have in common, is that some agreement targets indicate the semantic gender of the referent (*semantic* or *referential* agreement), while others indicate the formal gender of the noun (*syntactic* or *formal* agreement), often determined by a phonological or morphological property of the noun: for example, while German words ending in the suffix *-chen* are formally neuter, the referent of *Mädchen* ‘girl’ is female, and this mismatch is argued to be what allows for the variation in agreement patterns.

Although none of the compounds in the present study have a human referent precisely to avoid effects like this, there is a parallel to be drawn between hybrid nouns and Somali compounds with variable agreement patterns. The data presented in §3.2 showed that subject-verb agreement is predictable from the gender of the initial member of the compound. This member is also the semantic head. Arguably, this is a type of semantic agreement based on referential gender, even though there is a conceptual difference between agreement with the semantic head, and agreement based on the gender of a human referent (or plural agreement with a singular noun denoting a group of people). The point is that the referent of *laf+gárab* ‘shoulder bone’ is a type of *láf* ‘bone’ (F), not a type of *gárab* ‘shoulder’ (M).

The definite article may also show semantic agreement and reflect the gender of the semantic head of the compound. However, as we have seen, it can also reflect the form-class of the final member (the linear adjacency strategy), and as a result, its gender. One can therefore think of the linear adjacency strategy as a type of formal agreement. This is comparable to the German example *Mädchen* ‘girl’ in (33), in which there is a conflict between referential gender and formal gender. There is, of course, a conceptual difference between agreement with a hybrid noun, in which the formal gender and the gender of the referent differs, and agreement with a noun-noun compound, in which both members have their own lexical gender. In this respect, conjunct agreement may be enlightening, and this is the topic of the next section. Note that conjunct agreement is different from compound agreement in another respect, namely that there are not just two nouns, but also two referents.

4.2 Conjunct agreement

Another type of gender mismatch occurs when two nouns of different genders are conjoined. This type of mismatch is resolved in different ways in different languages: agreement targets may agree with one of the conjoined nouns (typically the closest one), or all of them (for example with plural agreement or default agreement) (see e.g. Corbett 1991; 2006 for overviews of cross-linguistic data). The example in (34) illustrates both of these options within the same sentence.

- (34) Conjunct agreement in Russian (Corbett 2006: 220)

Èt-a vzyiskatel'nost', samokritičnost' tože
This-F.SG.NOM exactingness.(F.SG.NOM) self-criticalness.(F.SG.NOM) also
raspolagal-i k nemu.
disposed-PL to 3SG.M.DAT
‘This exactingness and self-criticalness also disposed me favorably
towards him.’

The demonstrative, which has scope over both nouns, is singular, and agrees with one of the conjuncts. The predicate is plural, and Corbett (2006: 220) analyzes this as number resolution, a type of semantic agreement in which the target reflects the fact that there is a plurality of referents, rather than the agreement features of any individual conjunct (here feminine singular).

The properties of conjunct agreement in Somali could in theory inform the agreement variation found with noun-noun compounds; however, this does not

seem to be the case. Based on the examples given in (35–36), subject-verb agreement with conjuncts shows semantic agreement resulting from number resolution. The verb does not reflect the agreement features of any of the conjuncts (feminine or masculine), but rather occurs in its plural form, which does not express gender distinctions. This holds true regardless of the order of the two noun phrases.¹⁸

(35) Conjunct agreement in Somali

- a. Gabádh-dha iyo wíil-ku=ba waa baahán yihiin.
girl-F.DEF and boy-M.DEF.NOM=each DECL hungry 3PL.COP.PRS
'The girl and the boy are hungry.'
- b. Wíil-ka iyo gabádh-dhu=ba waa baahán yihiin.
boy-M.DEF and girl-F.DEF.NOM=each DECL hungry 3PL.COP.PRS
'The boy and the girl are hungry.'

(36) Disjunct agreement in Somali

- a. Hálkáas báa=ay joog-een libáax-a ama abeesá-da.
there FOC=3PL stay-PST.3PL lion-M.DEF or python-F.DEF
'The lion or the python was there.'
- b. Hálkáas báa=ay joog-een abeesá-da ama libáax-a.
there FOC=3PL stay-PST.3PL python-F.DEF or lion-M.DEF
'The python or the lion was there.'

This contrasts with the genitive construction, in which the verb consistently agrees with the initial noun, which is the head of the noun phrase (37). This construction thus forms a clearer parallel to noun-noun compounds – however, no variation in definite article assignment is attested.

(37) Genitive constructions (left-headed NPs)

- a. Búug-ga macállin-ku waa adág yahay.
book-M.DEF teacher-M.DEF.NOM DECL hard 3SG.M.COP.PRS
'The book of the (male) teacher is hard/difficult.'
- b. Búug-ga macallimád-du waa adág yahay.
book-M.DEF teacher-F.DEF.NOM DECL hard 3SG.M.COP.PRS
'The book of the (female) teacher is hard/difficult.'

¹⁸Note that direct agreement with disjoint noun phrases (*the X or the Y*) seems to be avoided, and that it is difficult to elicit natural-sounding sentences of the type in (36).

- c. Warqád-da macállin-ku waa adág tahay.
paper-F.DEF teacher-M.DEF.NOM DECL hard 3SG.F.COP.PRS
'The paper of the (male) teacher is hard/difficult.'
- d. Warqád-da macallimád-du waa adág tahay.
paper-F.DEF teacher-F.DEF.NOM DECL hard 3SG.F.COP.PRS
'The paper of the (female) teacher is hard/difficult.'

Conjunct agreement could more easily be compared to agreement with noun-noun compounds if it were the case that the definite article could take scope over two conjoined nouns (as in *the mother and father*). This could potentially have formed a parallel to noun-noun compounds, as it would have the structure Noun1 *and* Noun2-DEF, similar to that of definite noun-noun compounds, Noun1+Noun2-DEF. To my knowledge, this is marginal if not impossible in Somali, as coordinated noun phrases need to either both be indefinite (in which case there is no article), or both be definite (in which case each noun has its own article) (38).

(38) The scope of the definite article

- a. hooyó iyo aabbé
mother and father
'a mother and a father'
- b. hooyá-da iyo aabbá-ha
mother-F.DEF and father-M.DEF
'the mother and the father'
- c. * hooyó iyo aabbá-ha
mother and father-M.DEF
(Intended: 'the mother and father')
- d. * hooyá-da iyo aabbé
mother-F.DEF and father
(Intended: 'the mother and father')

There is one particular type of construction that allows for this, though, which is described below, and which pertains to numerals. Numerals in Somali are considered to be nouns by syntactic and morphological criteria: for example, they can head a noun phrase and are modified by determiners, and the choice of determiner is typically considered to indicate their grammatical gender (see Saeed 1999: 69–72). For example, *labá-da* 'the two' is feminine, and *tobán-ka* 'the ten'

is masculine (39). The complication with numerals is that one cannot independently establish their gender by considering subject-verb agreement: As these examples illustrate, numerals (above one) lead to plural agreement on the verb, and as already mentioned above, there are no gender distinctions in such cases. Note that the numerals are the heads of the noun phrases in (39).

(39) Agreement with numeral nouns

- a. Labá-da nín=ba waa dheerdhéer yihiin.
two-F.DEF man.GEN=each DECL tall.PL 3PL.COP.PRS
'The two men (lit. the two of man) are tall.'
- b. Tobán-ka naagoód=ba waa dheerdhéer yihiin.
ten-M.DEF women.GEN=each DECL tall.PL 3PL.COP.PRS
'The ten women (lit. the ten of women) are tall.'

The construction of interest for the present purposes has to do with the scope of the definite article over complex numerals. Complex numerals can have either of the structures in (40), and can be analyzed as phrasal compounds: they have two High tones rather than one, and the numerals are intermediated by the conjunction *iyo* 'and', which otherwise is used for coordinating noun phrases, as in (35). Unlike the example in (35), but like noun-noun compounds, the examples in (40) crucially have a single definite article. Notice that the choice of article consistently reflects the gender of the final member in these cases.¹⁹

(40) Complex numerals

- a. labá-iyo-tobán-ka → *labíyotobán-ka*
two(F)-and-ten(M)-M.DEF
'the twelve, twelve o'clock'
- b. tobán-iyo-labá-da
ten(M)-and-two(F)-F.DEF
'the twelve, twelve o'clock'

The examples in (40) constitutes a parallel to noun-noun compounds and illustrates another type of construction in which linear adjacency matters for definite article assignment.

¹⁹The choice between the two orders in (40) reflects regional variation (Nilsson 2018). However, some speakers, including the one I worked with, produce both orders.

5 Concluding remarks

When two Somali noun roots of different genders are compounded, various types of mismatches in gender cues are found. While subject-verb agreement is consistently predictable from the gender of the initial member (the semantic head) of noun-noun root compounds, the choice of definite article varies. Two competing generalizations are available with respect to definite article assignment: one based on linear adjacency, in which the article agrees with the closest and final member (F+M-ka), and one based on compound gender, which is determined by the initial member (F+M-ta). The combination of consistent subject-verb agreement, but variable definite article assignment, results in mismatches in gender cues on these two agreement targets when the definite article is assigned in line with the linear adjacency strategy.

Since the choice of definite article varies, I argue that the gender indicated by the article is not a reliable cue to compound gender. This explains the discrepancies in previous literature (see §2). Since subject-verb agreement is consistent, and predictable from the gender of the initial member of noun-noun root compounds, I argue that it is this member which determines compound gender. In noun-noun root compounds, the initial member is also the semantic head (for example, *laf+dhábar* ‘spine, back-bone’ is a type of *laf* ‘bone’).

The agreement patterns found with noun-noun compounds in Somali when the gender of the two members do not match are reminiscent of those found with other types of gender mismatches across languages, e.g. with hybrid nouns and conjunct agreement (§4). A question that arises is what it is about Somali that allows for the variation in agreement patterns in noun-noun compounds in particular. I argue that the agreement variation is the result of at least two factors operating in conjunction: first, while the semantic head is to the left in noun-noun compounds, the locus of inflection is on the right edge, such that the definite article is phonologically bound to the final member. This means that even when the article reflects compound gender, linear adjacency matters: its allomorph is determined by the final segment of the final member (§3.3).

Future research should investigate agreement patterns with compounds in which there is a heterosemous root, such as *madax+xanuun* ‘headache’ (§2.2.1). The analysis proposed here predicts no agreement variation with such compounds: since they are semantically right-headed (§2.2.2), and since the semantic head is also the morphosyntactic head and determines compound gender, the two strategies for definite article assignment are not in conflict in these cases. Rather, the linear adjacency strategy and the compound gender strategy both target the final member when the compound is right-headed.

Second, the mismatch between subject-verb agreement and definite article assignment is paralleled by a mismatch in gender and tone pattern frequently found in compounds (§3.4). In noun roots, there is a correlation between gender and tone, such that most masculine nouns have a penultimate High tone (*gárab* ‘shoulder’), and most feminine Nouns have a final High tone (*saliíd* ‘oil’). As explained in §2.1.2, the tone pattern is a matter of nominal form-class, not gender. In noun-noun compounds, it is the initial member which determines compound gender, but the final member which determines the tone pattern. If the two members have different genders, the result is either a masculine compound with a final rather than a penultimate High tone (M+F *bur+saliid* ‘fritter’ (M)), or a feminine compound with a penultimate rather than final High tone (F+M *laf+gárab* ‘shoulder bone’ (F)). That is, there will either be a mismatch between definite article assignment and the tone pattern, or a mismatch between definite article assignment and subject-verb agreement, and as argued in §3.4, the attested variation in definite article assignment seems to reflect a choice between the two types of mismatches.

Compounds in Somali are understudied, and there are many open questions to pursue. The present study is based on data from a single speaker, and future research should include data from more speakers to investigate potential individual differences. Furthermore, to achieve a full understanding of the relationship between gender and form-class and how this relates to headedness, other aspects of form-class in compounds should be investigated as well, most notably case marking and plural marking.

Abbreviations

All abbreviations (except *H*) in the paper follow the Leipzig Glossing Rules. *H* refers to high tone.

Acknowledgements

I would like to thank my consultants and language teachers in San Diego and Oslo for sharing their time, culture and language with me, with a special thanks to the speaker who contributed the data to the present study. I am grateful to Morgan Nilsson for sharing his list of Somali compounds. For useful comments and suggestions on previous versions of this work, I would like to thank (in alphabetical order) Farrell Ackerman, Georgio Banti, Gabriela Caballero, Laura Downing, Christopher Green, Morgan Nilsson, Martin Orwin, Sharon Rose, and two

anonymous reviewers. Furthermore, the work has benefited from feedback from my colleagues at UC San Diego, and the audiences at *Somali workshop: linguistics and geography 2018*, the *50th Annual Conference on African Linguistics*, and the poster session at the *LSA Linguistic Institute 2020*. All mistakes are my own.

Appendix

The word list used for elicitation consists of 86 noun-noun root compounds which were compiled based on a list of 1000 Somali compounds courtesy of Morgan Nilsson, as well as dictionaries (Mansuur & Puglielli 2012; Zorc & Osman 1993), Saeed's (1999) grammar, Caney's (1984) work on novel words in the Somali vocabulary, and personal field notes. Only noun-noun compounds in which both members are roots were included in the present study. Certain types of compounds were left aside for the present purposes because they have semantic or grammatical properties that potentially override any structural gender assignment patterns in noun-noun compounds that the present study aims to uncover: for example, compounds that are not root compounds are left aside because derivational suffixes assign their own gender (see §2.2.1). Further examples include proper nouns (such as names of languages, e.g. *Af+Soomaali* 'the Somali language') and collective nouns (*askar+maroodi* 'poor young boys (lit. soldiers-elephant)'), and compounds in which one of the members is not a prototypical noun, such as a numeral (e.g. *afar+gees* 'square (lit. four-side)'), or a color term (e.g. *cir+guduud* 'the times of the day in which the sky is red (lit. sky-red)'). Compounds in which one of the members is a plural or collective noun were also left aside (e.g. *xoolo-madax* 'capital, money assets (lit. livestock/property-head)'). Finally, because animacy and semantic gender are likely to play a role, compounds with a human referent were also left out of the present study (e.g. *af-gaab* 'quiet, polite person (lit. language/mouth-shortness)').

References

- Allen, Margaret Rees. 1978. *Morphological investigations (Ph. D. Dissertation)*. University of Connecticut.
- Andrzejewski, Bogumil W. 1964. *The declension of Somali nouns*. London: School of Oriental & African Studies, University of London.
- Armstrong, Lilius E. 1934. The Phonetic Structure of Somali. *Mitteilungen des Seminars für Orientalische Sprachen zu Berlin* 37(3). 116–161.

- Banti, Giorgio. 1986. Review of *serzisko, ausdruck der possessivität im somali. Sonderdruck aus Kratylos* 31. 161–168.
- Banti, Giorgio. 1988a. “Adjectives” in East Cushitic. In Marianne Beckhaus-Gerst & Fritz Serzisko (eds.), *Papers from the International Symposium on Cushitic and Omotic Languages, Cologne 1986*, 204–259. Hamburg: Helmut Buske Verlag.
- Banti, Giorgio. 1988b. Two Cushitic systems: Somali and Oromo nouns. In Harry van der Hulst & Norval Smith (eds.), *Autosegmental studies on pitch accent*, 11–50. Dordrecht: Foris Publications.
- Banti, Giorgio. 2016. Tonal sandhi in Northern Somali. (Paper presented at the Colloquium on African Languages and Linguistics 2016, Leiden University).
- Banti, Giorgio & Jama Musse Jama. 2016. Compounds and Multi-word Expressions (MWEs) in Somali. Ms.
- Bauer, Laurie. 2008. Exocentric compounds. *Morphology* 18. 51–74.
- Bauer, Laurie. 2017. *Compounds and compounding*. Cambridge: Cambridge University Press.
- Bendjaballah, Sabrina & David Le Gac. 2019. The acoustics of Somali voiced stops. Workshop on Somali Grammar, University of Gothenburg.
- Booij, Geert. 2002. *The morphology of Dutch*. Oxford: Oxford University Press.
- Caney, John Charles. 1984. *The modernisation of Somali vocabulary, with particular reference to the period from 1972 to the present*. Hamburg: Helmut Buske Verlag.
- Corbett, Greville G. 1991. *Gender*. Cambridge: Cambridge University Press.
- Corbett, Greville G. 2006. *Agreement*. Cambridge: Cambridge University Press.
- Corbett, Greville G., Norman M. Fraser & Scott McGlashan. 1993. *Heads in grammatical theory*. Cambridge: Cambridge University Press.
- Croft, William. 2001. *Radical Construction Grammar: Syntactic theory in typological perspective*. Oxford: Oxford University Press.
- Di Garbo, Francesca. 2014. *Gender and its interaction with number and evaluative morphology: An intra- and intergenealogical typological survey of Africa*. Stockholm University. (Doctoral dissertation).
- Di Garbo, Francesca. 2016. Exploring grammatical complexity crosslinguistically: The case of gender. *Linguistic Discovery* 14. 46–85.
- Downing, Laura J. & Morgan Nilsson. 2019. Prosodic restructuring in Somali nominals. In Samson Lotven, Silvina Bongiovanni, Phillip Weirich, Robert Botne & Samuel Gyasi Obeng (eds.), *African linguistics across the disciplines: Selected papers from the 48th Annual Conference on African Linguistics*, 125–142. Berlin.
- Eiesland, Eli-Anne. 2015. *The semantics of Norwegian noun-noun compounds*. University of Oslo. (Doctoral dissertation).

- Enger, Hans-Olav & Greville G. Corbett. 2012. Definiteness, gender, and hybrids: Evidence from Norwegian dialects. *Journal of Germanic Linguistics* 24. 287–324.
- Godon, Elsa. 1998. *Aspects de la morphologie nominale du somali: La formation du pluriel*. Université de Paris VII. (MA thesis).
- Green, Christopher R. & Michelle E. Morrison. 2016. Somali wordhood and its relationship to prosodic structure. *Morphology* 26(1). 3–32.
- Guevara, Emiliano & Sergio Scalise. 2009. Searching for universals in compounding. In Sergio Scalise, Elisabetta Magni & Antonietta Bisetto (eds.), *Universals of language today*, 101–128. Dordrecht: Springer.
- Güldemann, Tom & Ines Fiedler. 2019. Niger-Congo “noun classes” conflate gender with deriflection. In Francesca Di Garbo, Bruno Olsson & Bernhard Wälchli (eds.), *Grammatical gender and linguistic complexity: General issues and specific studies*, vol. 1, chap. 5, 95–146. Berlin: Language Science Press.
- Güldemann, Tom & Samuele Maniscalo. 2016. A new approach to gender in Somali. Paper presented at the 22. Afrikanistentag, Humboldt Universität zu Berlin.
- Haspelmath, Martin. 2018. How comparative concepts and descriptive linguistic categories are different. In Daniël Olmen, Tanja Mortelmans & Frank Brisard (eds.), *Aspects of linguistic variation*, 83–114. Berlin: De Gruyter.
- Hockett, Charles F. 1958. *A course in modern linguistics*. New York: Macmillan.
- Hudson, Richard A. 1987. Zwicky on heads. *Journal of Linguistics* 23. 109–132.
- Hyman, Larry M. 1981. Tonal accent in Somali. *Studies in African Linguistics* 12(2). 169–203.
- Jackendoff, Ray. 2016. English noun-noun compounds in Conceptual Semantics. In Pius ten Hacken (ed.), *The semantics of compounding*, 15–37. Cambridge: Cambridge University Press.
- Kaldhol, Nina Hagen. 2017. *The Oslo dialect of Somali: Tonal adaptations of Norwegian loanwords*. University of Oslo. (MA thesis).
- Kaldhol, Nina Hagen & Sverre Stausland Johnsen. Forthcoming. There is no “one High tone per word” rule in Somali. In Björn Köhnlein & Pavel Iosad (eds.), *Synchronic and diachronic aspects of tonal accent*. Oxford: Oxford University Press.
- König, Christa. 2006. Marked nominative in Africa. *Studies in Language* 30. 655–732.
- Lampitelli, Nicola. 2013. The decomposition of Somali nouns. *Brill's Journal of Afroasiatic Languages and Linguistics* 5. 117–158.
- Lampitelli, Nicola. 2019. On nominal declensions and syntactic case. Paper presented at the Workshop on Somali Grammar, University of Gothenburg.

- Langacker, Ronald. 1987. *Foundations of cognitive grammar: Theoretical prerequisites*. Vol. 1. Stanford, CA: Stanford University Press.
- Le Gac, David. 2016. Somali as a tone language. In Jon Barnes, Alejna Brugos, Stefanie Shattuck-Hufnagel & Nanette Veilleux (eds.), *Proceedings of Speech Prosody 2016*, vol. 8, 292–296. Boston University.
- Lecarme, Jacqueline. 2002. Gender “polarity”: Theoretical aspects of Somali nominal morphology. In Paul Boucher & Marc Plénat (eds.), *Many morphologies*, 109–141. Somerville, MA: Cascadilla Press.
- Mansuur, Cabdalla Cumar & Annarita Puglielli. 2012. *Qaamuuska Af-Soomaaliga*. Rome: Rome TrE-Press.
- Moskal, Beata & Peter W. Smith. 2019. The status of heads in morphology. In *Oxford research encyclopedia of linguistics*. Oxford: Oxford University Press. DOI: 10.1093/acrefore/9780199384655.013.583.
- Mous, Maarten. 2012. Cushitic. In Zygmunt Frajzyngier & Erin Shay (eds.), *The Afroasiatic languages*, 342–422. Cambridge: Cambridge University Press.
- Nilsson, Morgan. 2016. Somali gender polarity revisited. In Doris Payne, Sara Pacchiarotti & Mokaya Bosire (eds.), *Diversity in African languages: Selected papers from the 46th Annual Conference on African Linguistics*, 451–466. Berlin: Language Science Press.
- Nilsson, Morgan. 2018. *Somaliska skriftspråket: En hundraåring som sprudlar av energi*. Bokmässan i Göteborg.
- Pepper, Steve. 2020. *The typology and semantics of binominal lexemes: Noun-noun compounds and their functional equivalents*. University of Oslo. (Doctoral dissertation).
- Puglielli, Annarita. 1989. Compounds in Somali. Manuscript.
- Saeed, John I. 1999. *Somali*. Vol. 10. Amsterdam: John Benjamins.
- Scalise, Sergio & Antonio Fábregas. 2010. The head in compounding. In Sergio Scalise & Irene Vogel (eds.), *Cross-disciplinary issues in compounding*, 109–126. Amsterdam: John Benjamins.
- Steele, Susan. 1978. Word order variation: A typological study. In Joseph H. Greenberg, Charles A. Ferguson & Edith A. Moravcsik (eds.), *Universals of human language: Syntax*, 585–623. Stanford: Stanford University Press.
- Zorc, R. David & Madina M. Osman. 1993. *Somali - English dictionary with English index*. 3rd edn. Kensington: Dunwoody Press.
- Zwickly, Arnold M. 1985. Heads. *Journal of linguistics* 21. 1–29.

Chapter 9

Artistic adaptation of Seenku tone: Musical surrogates vs. vocal music

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The tonal nature of many African languages has long raised questions about musical expression and the relationship between language and music. The two main areas of inquiry have been the relationship between tone and melody in vocal music (tonal textsetting) and the role of tone in musical surrogate languages (e.g. talking drums). However, the degree of similarity between these two genres in terms of tonal adaptation has remained an open question. In this paper, we present a case study comparing the role of tone in two musical traditions from the Sambla ethnic group of Burkina Faso: vocal music and a balafon (xylophone) surrogate language. We show that the two have different systems of tone-note correspondence and level of phonological encoding, indicating that musical adaptation of tone is not monolithic. We suggest that these different systems of tonal adaptation may stem from functional, structural, and cultural differences between the two musical genres.

1 Introduction

There has been nearly a century of scholarly interest in the role of linguistic tone in African music, which can be divided into two areas of study: vocal music and musical surrogate languages (e.g. Stern 1957; Sebeok & Umiker-Sebeok 1976). In the study of vocal music, the question is one of tonal textsetting, or tone-tune association: To what extent does linguistic tone constrain the musical melody? The literature spans a diverse range of African languages, including Bantu and Bantoid languages like Xhosa (Starke 1930), Zulu (Rycroft 1959; 1979), Shona (Schellenberg 2009), and Fe'Fe' Bamileke (Proto 2016); Chadic languages like Hausa



(Richards 1972; Leben 1983), as well as other languages of West Africa such as Ewe (Kwa; Jones 1959; von Hornbostel 1928) and Tommo So (Dogon; McPherson & Ryan 2018). The results are equally diverse, with some languages like Zulu showing very strict tone-tune matching (92% parallel movement between tone and tune) and others like Shona showing only a very small influence exerted by tone (just 53% parallel movement).

The study of musical surrogate languages looks at the way in which a language's phonological material is transposed onto the notes and rhythms of musical instruments to transmit messages. The best known musical surrogate systems are known colloquially as "talking drums", a term applied equally to tension drums (e.g. Yorùbá, Beier 1954), slit log drums (e.g. Lokele, Carrington 1949), and sets of tuned drums (e.g. Ewe, Locke & Agbeli 1981). However, musical surrogate languages are found on a variety of instruments, including trumpets (Akan, Kaminski 2008), flutes (Sambla, McPherson 2018), string instruments (Benchon, Wedekind 1983), and xylophones (Senoufo, Zemp & Soro 2010).

While each of these areas are interesting in their own right, consideration of just a single tradition on its own makes it difficult to determine similarities and differences in tonal adaptation between both different modalities for a single language (i.e. vocal music vs. surrogate languages) as well as between languages for a single modality (i.e. musical surrogate languages across languages). It thus remains an open question whether there are such things as universals in the artistic adaption of tone. In this paper, we present a case study that aims to address the first generalization by comparing tonal adaptation in Seenku (Mande, Burkina Faso) vocal music and balafon surrogate speech, drawing on data from both primary fieldwork and archival recordings.¹ We compare our results to other findings in the literature with the aim of sketching out some preliminary thoughts on the second generalization, i.e. differences across languages for a particular modality. In the end, we will show that tonal adaptation appears to be sensitive to a number of factors, including modality, instrumental constraints, and communicative function.

This paper is structured as follows: In §2, we provide a background of the Sambla people, music, and language (Seenku). In §3, we turn to the first form of tonal adaptation, balafon surrogate speech; §4 extends the discussion to vocal music and tonal textsetting. In §5, we loop back to the balafon to consider "surrogate textsetting", before concluding with a discussion of the results in §6.

¹Audio of all examples cited in this paper can be found at <https://zenodo.org/record/5219011>.

2 The Sambla

2.1 People and language

The Sambla are a Mande group of people living in southwestern Burkina Faso. The term “Sambla” is an exonym (variant spelling: Sembla), often used to refer to both the language and the people. The endonym for the ethnicity is [séɛ]², with the language known as [séɛ-kû], or Seenku. In this paper, we will refer to the people and culture as Sambla and the language as Seenku.

Seenku [ISO 639-3: sos] is a member of the Samogo group and is spoken by about 15,000 people (McPherson 2020). It has an unusually rich tone system, with four contrastive levels we refer to as super-high (S), high (H), low (L), and extra-low (X); a four-way minimal set for the level tones is shown in (1):

- (1) sí ‘tree species’
- sí ‘reciprocal (bound pronoun)’
- sì ‘first son (birth order name)’
- sǐ ‘water jar’

The primary acoustic correlate of tone is f0 (McPherson 2019a).

In addition to the level tones, the language boasts multiple contour tones, including two-tone contours like HX gɔ̄ ‘wood’, LS gɔ̄ ‘dry’, or HX ɳáá ‘yawn’, as well as three-tone contours like XHX gɔ̄ɔ̄n ‘sorrel’, LSX kàä ‘gone (perfect)’, and HXS dô̄ɔ̄n ‘child (past subject)’, among others. In contrast to the complex tone system, word structure is relatively simple, with the vast majority of Seenku vocabulary being either monosyllabic or “sesquisyllabic” (Matisoff 1990; Pittayaporn 2015), i.e. words like *məní* ‘woman’ or *səgá* ‘sheep’ consisting of a short half syllable followed by a full syllable. The only coda consonant is a nasal (McPherson 2020), and the syllable nucleus can contain either a monophthong or a diphthong, either of which may be short or long (e.g. *kùa* ‘cultivate (tr.)’ vs. *kùaa* ‘cultivate (intr.)’).

2.2 Sambla music

The oldest Sambla instruments include a tension drum known as *dənū*, a barrel drum in different sizes known as *dənī*, a whistle known as *sô*, a wooden traverse

²We mark nasality in Seenku with a tilde beneath the vowel to avoid diacritic stacking with tone. Tone is marked once per syllable, with the following conventions: super-high (S) = á, high (H) = á, low (L) = à, and extra-low (X) = à. In addition, we use the following contour tone diacritics: LS = á, HX = â, SX = à; all others, found primarily on long vowels, are written as a sequence of two diacritics, e.g. HS = áâ.

flute known as *pion*, and a horn known as *gbén*. Of these traditional instruments, only the tension drum and the whistle are seen in frequent use today. This is due in large part to the arrival in Sambla country of the balafon, a resonator xylophone, near the end of the 19th century (Strand 2009). Adapted from the neighboring Tusia ethnicity, the balafon has become the most important Sambla instrument and a strong marker of cultural identity.

Most Sambla music is based on vocal music, including praise songs, work songs, and lullabies, which also predate the arrival of the balafon. Unfortunately, much of the vocal repertoire is being forgotten.

3 Talking balafons

The Sambla balafon belongs to a family of resonator xylophones found throughout West Africa. The resonance comes from tuned gourds that hang beneath each wooden key, amplifying the sound. The traditional Sambla balafon has 23 keys and is tuned to a pentatonic scale. Table 9.1 provides the names of the notes in Seenku, along with the closest corresponding Western scale degree. There are a few interesting things to note here: First, the tonic (1) and its octave (8) have different names. Second, the third and fifth are named in reference to these notes, but the references are SPATIAL; the third is “below” the tonic, since higher notes have smaller gourds and are hence closer to the ground, with the opposite relation holding between the sixth and the octave of the tonic. In the transcriptions that follow, we will refer to both the abbreviated Seenku name as well as the Western scale degree to maximize clarity.

Table 9.1: Sambla pentatonic scale

Western	Sambla	Abbrev.	Translation
1	bâq-nâ	B	lit. ‘balafon mother’
b3	jîo-bâq-dèn	J	lit. ‘fetish balafon key’
3	bâq-nâ-gû-nñn	Bg	lit. ‘the one under balafon mother’
5	térón-térón	T	(no translation)
6	sérà-kùa-kò-nñn	Sk	lit. ‘the one above sérà-kùa
8	sérà-kùa	S	(no translation)

The balafon is found at all major village events, including marriages, funerals, large farming work parties, spiritual ceremonies, and other holidays. A single

instrument is played by three players at once, with a simple middle part, a more complex bass line, and the most advanced player acting as the soloist on the treble keys.

The Sambla balafon is notable in that it is not simply a musical instrument: It is a mode of communication, with a complex speech surrogate system. The soloist is responsible for the surrogate speech, and it is his³ job to communicate with dancers, spectators, and the spiritual world through the words of the musical language. It is this system that forms the focus of our discussion in this paper. For more in-depth discussion of cultural and musicological aspects of the Sambla balafon, see Strand (2009).

Communication on the balafon is achieved by encoding aspects of Seenku phonological structure, namely tone and word shape; segmental contrasts play no role at all. McPherson (2018) describes the grammar of the surrogate system in depth, drawing on a corpus of primary data gathered with members of the Diabaté clan on balafonists from Torosso, Burkina Faso. In this paper, we will focus on the rules of tonal adaptation in order to form a basis of comparison with tonal adaptation in vocal music.

Broadly speaking, Seenku tone gets encoded in the notes of the balafon. To illustrate, we can consider the following frame sentence played on the balafon:

- (2) nă səmâ
 PROSP dance
 ‘will dance.’

We can substitute in subject pronouns with different tones, like *mí* ‘1pl’, *mó* ‘1sg’, or *mɔ̄* ‘3sg generic’ (similar to English ‘one’ or French *on*). The balafon transcription in Figure 9.1 is organized as follows: Notes are shown down the lefthand side, both with their abbreviated Seenku names and with their corresponding Western scale degrees. The words are laid out along the bottom, with the shaded cells indicating a note strike. In this example, the horizontal stripes correspond to S-toned *mí*, the crosshatching corresponds to H-toned *mó*, and the vertical stripes correspond to X-toned *mɔ̄* (Figure 9.1).

Thus, as this example shows, surrogate tone is relative, with higher tones corresponding to higher notes.

However, it is not the case that any particular key (e.g. the *tɔrɔ́n-tɔrɔ́n*, or 5th) uniformly encodes a particular tone; rather, speech surrogate tone, like spoken tone, is relative and dependent upon the MUSICAL MODE of the song, i.e. which

³Traditionally, the balafon and other instruments are restricted to men, with women largely dominating vocal music.

	8					
	6					
	5					
	3					
	b3					
>	1					
	Words	mí mó mɔ̃	nă	səmâ		

Figure 9.1: Balafon transcription of ‘_____ will dance’

note acts as the melodic center for that particular song. The most common musical mode, and the one used as a default for surrogate speech if the musician has no other song in mind, is centered around the *bâg-pä/sərâ-küa*, hence its designation as “1”. The bias towards this mode is noticeable when we consider the distribution of tones to notes across our data corpus (consisting of around 800 words on the balafon), shown in Table 9.2.

Table 9.2: Tone-note correspondence in the balafon surrogate corpus

	1	b3	3	5	6	8
S	0	1	8	22	38	158
H	4	0	72	85	154	28
L	2	1	9	73	15	7
X	101	2	93	57	14	15

The numbers in boldface represent the most common note for that particular tone category; for instance, S is most commonly played on the *sərâ-küa* (8) in our corpus, H on the *sərâ-küa-kɔ-nɔn* (6), etc. The lowest tone, X, is split almost evenly between the *bâg-pä-gü-nɔn* (3) and the *bâg-pä* (1). These represent the most common setting of tones to notes in the mode centered on the *bâg-pä*, but in other modes, we tend to see S tied to the center of the mode (in the higher octave), with the other tones cascading down from there. To give an example, in the *tərɔn-tərɔn* mode, S would be encoded on this note, H below that on the 3rd, etc.

Looking at Table 9.2, the astute reader may notice a conspicuous absence of tone encoding on the *jio-bàa-dèn* (b3). Recall that the translation of this key name is the “fetish balafon key”, and as such, it tends to be reserved for spiritual uses and is only seldom active in surrogate speech.

Contour tones are encoded on the balafon by playing each of the component tones. For two-tone contours, these two notes are played as a flam, i.e. the two notes in rapid succession. The example in (3) contains two contour tones, an HL contour tone (indicated with a sequence of acute and grave accent to distinguish it from the more common HX ⟨â⟩) and an LS contour tone. In both cases, the component tones are clearly played on the correponding balafon notes:

- (3) a. jó-mə̄ri nă mó bö tə̄gə̄ón-tə̄gə̄ón
 water-drink.ANTIP.NOM PROSP 1SG.EMPH kill.IRR RED-completely
 ‘I am dying of thirst.’ (Lit. thirst will kill me completely)

b.

S (8)									
Sk (6)									
T (5)									
Bg (3)									
J (b3)									
B (1)									
Words	j <small>ó</small>	m <small>ə̄</small> ri	n <small>ă</small>	mó	bö	t <small>ə̄</small> g <small>ə̄</small> ón	t <small>ə̄</small> g <small>ə̄</small> ón		

The relative width of the columns reflects the amount of time between strikes; for the HL contour tone in the first word, the note on *sərà-kùa-kò-nɔ̄n* (6) encoding the H tone is shorter than the following L tone on *tərɔ̄n-tərɔ̄n* (5).

While both level and contour tones are encoded on the balafon, we must ask what level of tone is being represented. Like phonology more generally, tone is nuanced and multilayered, including (at least) lexical/underlying tone, grammatical tone, postlexical tone, and phonetic tone. One of the most interesting findings of the balafon surrogate language is that only the first two categories are encoded, i.e. lexical and grammatical tone. More surface-level effects, including the output of postlexical tone rules and details of phonetic implementation, are not encoded.

Consider the following example:

- (4) mó nă bí sá̄
 1SG.EMPH PROSP goat.PL buy.IRR
 ‘I will buy goats.’

The tonal forms shown in (4) include both lexical tone and grammatical tone, but no postlexical effects, which we will discuss shortly. The first two words, *mó* and *nă*, are both shown with only lexical tone. The object noun *bí* ‘goats’ is underlyingly H-toned /bí/, but it raises to superhigh tone due to a featural affix [+high] marking the plural (McPherson 2017a,b). This S tone then spreads onto the lexically X-toned verb /să/ ‘buy’ through the process of argument-head tone sandhi, a morphosyntactically-constrained sandhi process argued in McPherson (2019b) to be a case of allomorph selection.

When the form in (4) is pronounced, it is realized as [mó nă !bí să], with two postlexical tone processes. The first is tonal absorption (Hyman & Schuh 1974), a kind of rising tone simplification in which an LS-S sequence is simplified to L-S. After this L tone, the S of *bí* undergoes downstep, leaving it pronounced at the same level as the preceding H tone.

The transcription in Figure 9.2 shows how this phrase is realized in the balafon surrogate language.

	S (8)					
	Sk (6)					
	T (5)					
	Bg (3)					
	J (b3)					
>	B (1)					
	Words	mó	nă	bí	să	
	Duration	226	35	272	292	...

Figure 9.2: Balafon transcription of ‘I will buy goats’

As this example clearly shows, the auxiliary *nă* retains its LS rising tone on the balafon. The object noun *bí* is played on the same note as the end of the rising tone, showing that it has raised to S, which likewise spreads onto the verb. In other words, grammatical tone processes (both morphological tone and argument-head tone sandhi) are both encoded in balafon surrogate speech while postlexical tone (rising tone simplification and downstep) is not.

This result is surprising if we expect tonal adaptation in surrogate speech to resemble tonal textsetting – many studies of tonal textsetting (e.g. Hausa, Leben 1983; Yorùbá, Villepastour 2014; Kpelle, Konoshenko & Kuznetsova 2015; Tlahuapa Tù'un Sàví, Sleeper 2018) demonstrate that what is encoded is a surface level of tone rather than something closer to the underlying form. We are thus left with the following hypotheses:

1. Seenku tone is musically adapted differently from the common pattern found in other languages like those cited above, perhaps due to its level of complexity.
2. Surrogate languages adapt tone differently from sung music, perhaps because the message is reduced to simply tone (and rhythm) thus increasing the functional load of tone or because the purpose of surrogate speech is communication rather than artistic expression per se.

To probe these hypotheses, we turn in the next section to a preliminary study of tonal textsetting in Seenku vocal music. As we will see, the results lend more support to hypothesis 2 than hypothesis 1.

4 Vocal music

Here we report on the results of a pilot study looking at five Seenku songs. Three of the songs are praise songs, sung by a female griot (musician/historian caste), one is a festival song sung by a woman, and one is a spiritual song sung by a man. The corpus is currently too small to test differences in tone-tune association between genres, but anecdotally, there are no noticeable differences. The three praise songs come from a video recording of a performance in the 1980s. The other two were recorded in 2017 as part of the first author's documentation of Seenku, using a Zoom Q8 video recorder and a Shure SM-93 lavalier recorder. The corpus remains small at the moment due to a combination of available recordings and the time consuming nature of musical transcription, tonal verification, and translation.

We first transcribed the vocal melodies by hand into musicXML format along with their lyrics. We converted the lyrics to simply their tones, coding tone numerically ranging from 4 (S) to 1 (X). We then ran a python script that reads in the musicXML, with parameters set to identify the Sambla scale degrees and the number of tonal primitives. From this information, the script calculates the degree of correlation between tone and melody.

If tonal adaptation in vocal music behaved the same as surrogate speech, we might expect to see a distribution of tones and notes comparable to what we saw in Table 9.2. Instead, we find the results in Table 9.3. The octaves are collapsed into a single category here, because phrases in vocal music (unlike those in surrogate speech) are free to span multiple octaves, negating the significance of a higher and lower octave boundary.

Table 9.3: Tone-note correspondence in the vocal music corpus

	1/8	b3	3	5	6
S	35	1	18	16	24
H	64	1	76	103	34
L	26	0	15	30	7
X	70	1	41	46	33

Rather than a stepwise distribution of each tone appearing one note above the next, we find a much more even distribution across the notes of the scale; however, the avoidance of the *jîo-bàq-a-dèn* (b3) is retained.

The study of tonal textsetting tends not to consider absolute correspondences between tones and notes but rather the transitions between two notes and tones. These transitions can be classified by the extent to which the two correspond: Given tones A and B sung on notes X and Y, the transition is parallel if both go the same direction (i.e. rising tone/rising melody, falling tone/falling melody, level tone/level melody); it is contrary or opposing if the transition between A and B goes in the opposite direction as the transition from X to Y (i.e. rising tone/falling melody, falling tone/rising melody); and the transition is oblique if one pair remains level while the other rises or falls (e.g. rising tone/level melody, level tone/falling melody, etc.). See Schellenberg (2012) and Ladd & Kirby (2020) for further discussion.

If we re-examine the results in this light, we find a very strict match between tone and melody in Sambla vocal music. These results are shown in Table 9.4. In this table, parallel cells are white, oblique cells are in light gray, and contrary cells are in black. As the results show, a remarkable 75.6% of the corpus is parallel and only 2% contrary. In terms of the literature on tonal textsetting, Seenku represents a case towards the stricter end of the spectrum.

When we look closer, we find that not just the direction of the interval matters for Seenku vocal music, but the size also. First, as shown in Figure 9.3, contrary mapings are avoided more strongly in larger musical intervals, a result mirrored in other musical traditions such as Tommo So (McPherson & Ryan 2018). For instance, if we consider the falling tonal transition in the righthand column, a small number are found on musical intervals that rise by one scale degree (light orange), an even smaller number on musical intervals that rise by two scale degrees (darker orange), and none on musical intervals that rise by three scale degrees.

Table 9.4: Relationship between tonal bigrams and musical bigrams in Seenku vocal music

	Music up		Music level		Music down	
	Tone up	119 19.9%	40 6.7%	7 1.7%		
Tone level	28	4.7%	187 31.3%	37 6.2%		
Tone down	5	0.8%	29 4.9%	146 24.4%		

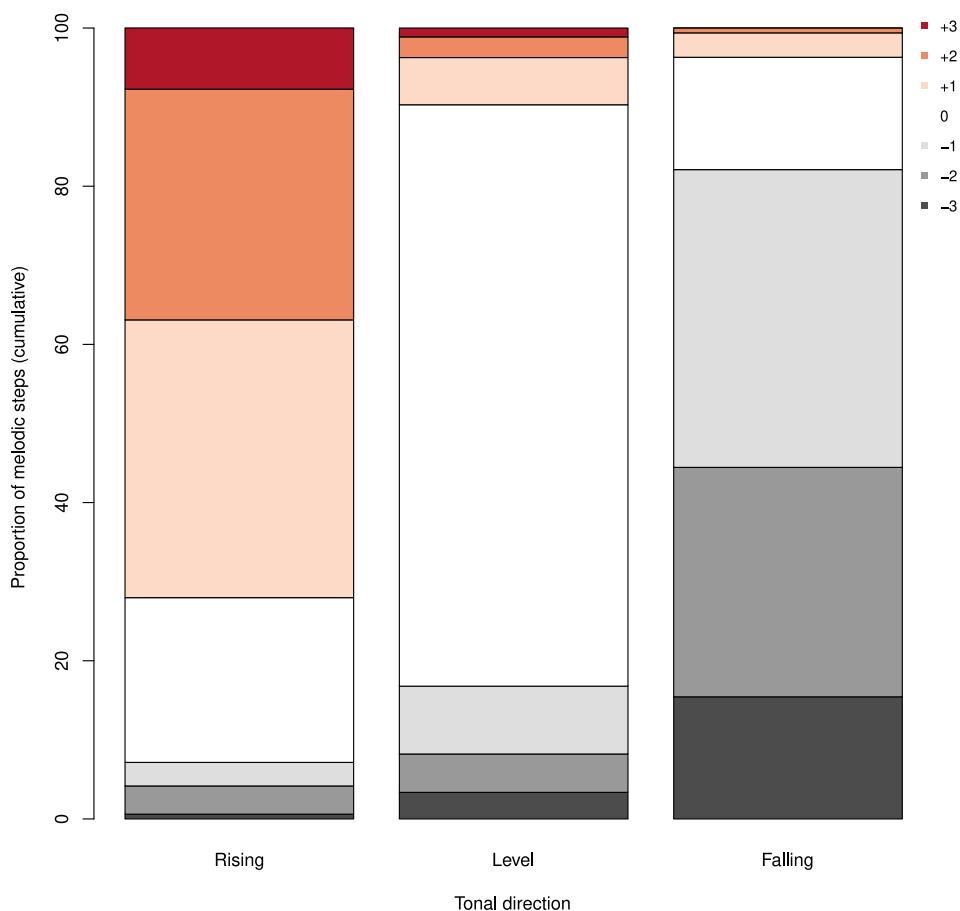


Figure 9.3: Tonal transitions by interval size

In addition to regulating the strictness of match between tone and tune, we also find that musical interval size also correlates closely with tonal interval size, such that larger tonal intervals (e.g. X to S vs. X to H) tend to be set on larger musical intervals.

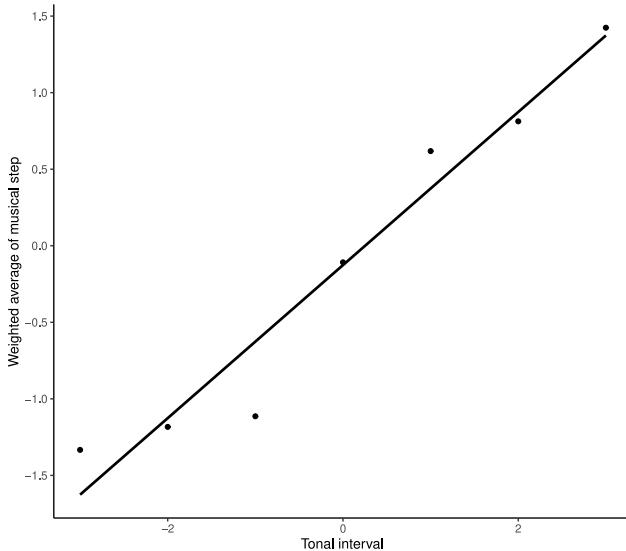


Figure 9.4: Correlation between tonal transitions and interval size

As Figure 9.4 shows, the trend is particularly apparent for rising intervals.

To summarize what we have seen so far, there are no strong tone-note correspondences in tonal textsetting as there were for balafon surrogate speech (at least within a mode). Instead, we see strict directional textsetting of the sort reported in many other tone languages. The question remains, however: What level of tone does tonal textsetting encode?

Preliminary results suggest that here too textsetting diverges from surrogate speech in that postlexical tone is encoded. Consider the following line from *The Chief of Bouendé's Song*, along with interlinear glossing:

- (5) *i wó nă wé píi gūɔ-fíɛ-nɛ̃ kɔ̃ jén ñé*
 LOG EMPH PROSP FOC be.afraid.IRR night walk.NOM in.front NEG
 'I will not be afraid to walk at night.'

When spoken, this line would undergo three postlexical tone processes: (1) The prospective auxiliary *nă* would simplify to !S; (2) The nominalized verb *kɔ̃* would undergo tonal absorption to L before *jén* (incidentally only S-toned due to

argument-head tone sandhi triggered by the S of *kɔɔ*); (3) We would find progressive downdrift across the line, with each S tone following an X or L tone lower than the preceding one. In other words, the surface form would look something like [í wó !ná wé jii gùɔ - !fɛ-né kɔɔ !jén né].

Interestingly, unlike on the balafon, all of these postlexical tone processes can be seen in the tonal textsetting. Figure 9.5 shows the musical transcription of the line in (5).



Figure 9.5: Line from *The Chief of Bouende's Song*

First, we find rising tone simplification both to !S and to L reflected in the melody. Both *ná* and *kɔɔ* are sung on a single note (rather than a melisma), with *ná* sung on a note higher than the note of the preceding and following H tones and *kɔɔ* sung on a note lower than both the preceding and following S tones. Further, each subsequent S tone in the line is sung on a note lower than the preceding one, suggesting encoding of downdrift. Of course, it may also be the case that the musical aesthetic prefers falling lines to rising ones, but it is difficult to disentangle even this fact from natural speech prosody.

To summarize what we have seen in this section, the adaptation of tone in Seenku textsetting differs considerably from what we saw in balafon surrogate speech: First, textsetting is almost entirely relational, requiring the musical and tonal bigrams to match in direction, rather than absolute in tone-to-note correspondence. Second, tone is encoded at a more surface level, including the output of postlexical tone rules such as contour tone simplification and downdrift.

Before we conclude and discuss these differences between vocal music and instrumental surrogates, we first return to the Sambla balafon one last time in §5 to discuss an intermediate case of tonal adaptation: “singing balafons”.

5 Singing balafons: Surrogate vocal music

In §3, we laid out the principles of encoding of the Sambla talking balafon, a generative speech surrogate system that allows the musician to productively communicate with those around him. In fact, the balafon has two distinct modes of surrogacy, this “speech mode” we already covered and a “sung mode”. While the speech mode is generative, the sung mode does not appear to be. It appears only

during the course of songs, with all three balafonists playing, and consists of much more fluid phrases with highly proverbial meanings. These lines provided quite a puzzle in early stages of analysis, since they often deviated substantially from the apparent rules as defined by the speech mode.

As an example, consider the line in (6):

- (6) ï ké mó n̄ jó wé ȷəmà s̄ nəḡi n̄ òo
COMP COP 1SG.EMPH 1SG say.IRR FOC blood be COW LOC EXCL
'I said there is blood in a cow.'

Rendered on the balafon, the line comes out as shown in Figure 9.6.

As we can see, there are more notes than expected. In certain places, we can anchor the words to the notes thanks to the rhythm and/or tonal pattern (e.g. *ȷəmà s̄* consists of two flams, the first on the same note for the sesquisyllabic X-toned noun and the second on two notes representing the LS contour tone). But in others, such as the long level stretches, it is unclear exactly how the words should map onto the balafon. Further, the relationship between tones and notes is less strict than we would expect if it followed the same rules laid out in §3: The initial X tone is considerably lower than that of either *ȷəmà* 'blood' or *nəḡi* 'cow', which also differ from one another; and the L at the beginning of *s̄* is played on the same note as the level H stretch of *ké mó n̄ jó wé*.

All in all, it is clear we are dealing with a different system of rules in the sung mode than the speech mode. However, as it turns out, we already have the tools for understanding these lines at our disposal as they appear to be a case of "surrogate singing" or "surrogate textsetting". In other words, the same rules of tonal textsetting and the relationship between tone and sung melody are at play in these "sung" lines of the balafon. Looking at the transcription in Figure 9.6, we see first that the melody rises from the X tone of *ï* to the H tone of *ké* then remains level. It drops going from H to X on *ȷəmà* then rises through the rising contour tone of *s̄*, before dropping again to the X of *nəḡi*. The only deviation is the falling melody moving from the X tones to the L-toned exclamative *òo*. But of course, tonal textsetting is not 100% strict, and it may also be the case that *òo* in this case is more of a vocable, an artistic flair, than a proper grammatical element with its own fixed tone.

This explanation makes sense historically, since Sambla oral history states that vocal music predates the balafon, and that when the instrument was introduced, it started playing the songs that were already being sung. In fact, in some performances, we find that the lines of a song are still passed back and forth between a singer and the balafon soloist, allowing us to directly compare the renditions and

Figure 9.6: Balafon transcription of ‘I said there is blood in a cow.’

so the tonal adaptation and answer the question of whether surrogate singing follows exactly the same rules as vocal singing.

To answer this question, let us return to some lines from the *Chief of Bouendé's Song*, shown in Figure 9.7.

From these lines, we can see that the vocal rendition and the balafon rendition are not entirely the same. In some places, for instance, such as when the singer sings *fɛ̃ ðo*, the balafon launches into a more musical flourish. In other places, the melody is almost exactly the same. Musicians have told us that in many cases, lyrics like these are learned as music first and thus are not tightly tied to language. However, this must not universally be the case, since an interesting point stands out in Figure 9.7: While the vocal line encodes postlexical tone through rising tone simplification on *nă* (bottom stave), this simplification is “undone” in the balafon rendition, placing the balafon’s version one step closer to the deep level of encoding seen in regular surrogate speech.

There may well be differences between musicians in how linguistic their surrogate singing is. The example we have provided here was played in 1985 by the master balafonist Penegue Diabate, who was the head of balafon clan at the time. It may be that younger musicians or those less familiar with the vocal tradition may not actively think of the words in the same way, leading to greater deviations from expected linguistic encoding. More in-depth investigation of this point will need to await future research.

6 Discussion

The main findings of this paper are summarized in Table 9.5.

Table 9.5: Main findings for musical adaptation of tone

	Surrogate speech	Surrogate singing	Vocal music
Tone-note correspondence	Absolute(-ish)	Relative	Relative
Contour tones	Encoded	Variable	Simplified
Grammatical tone	Encoded	Encoded	Encoded
Postlexical tone	Not encoded	Variable	Encoded

Thus, we have seen that musical adaptation of tone is not monolithic. We find differences in the level of encoding across musical modalities for even a single language like Seenku, with surrogate speech showing a tighter match between tone and note than vocal music and also a deeper level of encoding; surrogate

The image displays two staves of musical notation, one for vocal music and one for balafon, side-by-side. Both staves are in common time and use a treble clef with a key signature of three sharps. The vocal staff has lyrics written below it in a mix of English and a local language. The balafon staff uses a different set of lyrics. The vocal line begins with a sustained note followed by a series of eighth notes. The lyrics are: "á— dón bé lé nñón tð sán— ká kó té dzí". The balafon line follows a similar pattern with its own lyrics: "wé njá fé do— í wó ná wé jíi gúo-fé-né". The music consists of eighth-note patterns with various rests and dynamic markings.

Figure 9.7: Vocal and balafon renditions of lines from *Chief of Bouendé's Song*

singing falls somewhere in between. At the same time, we also find similarities in encoding across languages for a single modality, with Seenku tonal textsetting closely resembling what has been reported for other vocal traditions in Africa and beyond.

Returning to the question of level of encoding, we find that vocal music is encoded at a much more surface level than surrogate speech, which encodes lexical and grammatical tone (what could be perceived as the output of the morphological component) but no phonological or postlexical rules. Here we speculate on some possible reasons for these differences. First, there is a different function for surrogate speech vs. vocal music; the latter is a form of pure artistic expression, meant to be aesthetically pleasing, while surrogate speech is first and foremost a means of communication. This may allow artistic freedom in how tones are set to melodies in vocal music that are not afforded to surrogate speech, which must relay a message. Going further on this point, we also find different structural constraints between the two systems in terms of communicating a linguistic message. Vocal music benefits from having the full range of segmental contrasts available as the person sings, whereas in surrogate speech, the language is stripped back to simply tone and rhythm. It may be, then, that encoding something closer to the underlying form helps the listening recover the message, especially if postlexical processes are neutralizing, as is the case in Seenku. Finally, the two modalities differ in their physiology. Vocal music uses the same apparatus as speech (the vocal tract), which certainly brings it closer to regular speech production, while the linguistic content is displaced to the hands in surrogate speech.

More work must be done to begin to disentangle these effects and determine how widespread this pattern of difference is cross-linguistically. While the literature contains a good number of studies of tonal textsetting, we could still use more, especially studies that actively report on precisely which kinds of tone serve as the input (lexical, grammatical, postlexical, etc.). We are still sorely lacking in phonologically-oriented studies of musical surrogate speech, leaving only very few points of comparison with the Seenku results. Many more studies are needed to begin to identify common trends or universals in this modality. Finally, we also need more studies comparing multiple modalities within a single language, e.g. tonal adaptation in Yorùbá vocal music vs. drummed speech. These are areas ripe for discovery that stand to shed light on what it is that humans do when adapting their phonological structure to musical form.

Abbreviations

Below are listed only those abbreviations that do not adhere to or are beyond the scope of the Leipzig Glossing Rules.

EMPH	emphatic	NOM	nominal	RED	reduplicant
EXCL	exclamative	PROSP	prospective		

Acknowledgments

We would like to thank the audiences at ACAL 50, U Mass, UCSC, and NYU, as well as two anonymous reviewers, for helpful feedback on this work. We are indebted to the Sambla musicians and consultants who shared their music and language with us, especially Mamadou Diabate, Sadama Diabate, Nigo Diabate, Yacouba Konate, Emma Traore, Clement Traore, Fatou Traore, Ga Kènòn Traore, Ga Masa Traore, Go Gardi Traore, and Sadiouma Traore. This material is based upon work supported by the National Science Foundation-National Endowment for the Humanities Documenting Endangered Languages Program under National Science Foundation Award No. BCS-1664335 and by funding from the Dartmouth College Leslie Center for the Humanities.

References

- Beier, Ulli. 1954. The talking drums fo the Yoruba. *African Music* 1(1). 29–31.
- Carrington, John. 1949. *The talking drums of Africa*. London: Carey-Kingstate Press.
- Hyman, Larry M. & Russell G. Schuh. 1974. Universals of tone rules: Evidence from West Africa. *Linguistic Inquiry* 5(1). 81–115.
- Jones, A. M. 1959. *Studies in African music*. London: Oxford University Press.
- Kaminski, Joseph. 2008. Surrogate speech of the Asante ivory trumpeters of Ghana. *Yearbook for Traditional Music* 40. 117–135.
- Konoshenko, Maria & Oglia Kuznetsova. 2015. Songs in African tonal languages: Contrasting the tonal system and the melody. In P. Eismont & N. Konstantinova (eds.), *Language, music, and computing. LMAC 2015*. Vol. 561 (Communications in Computer and Information Science), 166–175. Switzerland: Springer.
- Ladd, D. Robert & James Kirby. 2020. Tone-melody matching in tone language singing. In Carlos Gussenhoven & Aoju Chen (eds.), *The Oxford handbook of language prosody*, 676–687. Oxford: Oxford University Press.

- Leben, William R. 1983. The correspondence between linguistic tone and musical melody. In *Proceedings of the ninth annual meeting of the Berkeley Linguistics Society*, 148–157. Washington, DC: Linguistic Society of America.
- Locke, David & Godwin Agbeli. 1981. Drum language in Adzogbo. *The Black Perspective in Music* 9(1). 25–50.
- Matisoff, James A. 1990. Bulging monosyllables: Areal tendencies in Southeast Asian diachrony. In *Proceedings of the 16th annual meeting of the Berkeley Linguistics Society*, 543–559.
- McPherson, Laura. 2017a. Multiple feature affixation in Seenku plural formation. *Morphology* 27(2). 217–252.
- McPherson, Laura. 2017b. Tone features revisited: Evidence from Seenku (Mande, Burkina Faso). In Doris Payne, Sara Pacchiarotti & Mokaya Bosire (eds.), *Selected Proceedings of the 46th Annual Conference on African Linguistics*, 5–21. Berlin: Language Science Press.
- McPherson, Laura. 2018. The talking balafon of the Sambla: Grammatical principles and documentary implications. *Anthropological Linguistics* 60(3). 255–294.
- McPherson, Laura. 2019a. Illustration of Seenku. *Journal of the International Phonetic Association* 50(2). 220–239. DOI: 10.1017/S0025100318000312.
- McPherson, Laura. 2019b. Seenku argument-head tone sandhi: Allomorph selection in a cyclic grammar. *Glossa* 4(1). 22. DOI: 10.5334/gjgl.798.
- McPherson, Laura. 2020. On Samogo latent nasals. *Mandenkan* (63). 68–88.
- McPherson, Laura & Kevin Ryan. 2018. Tone-tune association in Tommo So (Dogon) folk songs. *Language* 94(1). 119–156.
- Pittayaporn, Pittayawat. 2015. Typologizing sesquisyllabicity. In Nick Enfield & Bernard Comrie (eds.), *Languages of mainland Southeast Asia: The state of the art*, 500–528. Berlin/Boston: De Gruyter Mouton.
- Proto, Teresa. 2016. Methods of analysis for tonal text-setting: The case of Fe'Fe' Bamileke. In *Tonal aspects of languages*, 162–166.
- Richards, Paul. 1972. A quantitative analysis of the relationship between language tone and melody in a Hausa song. *African Language Studies* 13. 137–161.
- Rycroft, David. 1959. African music in Johannesburg: African and non-African features. *Journal of the International Folk Music Council* 11. 25–30.
- Rycroft, David. 1979. The relationships between speech-tone and melody in Southern African music. In J. P. Malan (ed.), *South African music encyclopedia*, vol. 2, 301–314. Cape Town: OUP for Human Sciences Research Council.
- Schellenberg, Murray. 2009. Singing in a tone language: Shona. In Akinloye Ojo & Lioba Moshi (eds.), *Selected Proceedings of the 39th Annual Conference on African Linguistics*, 137–144. Somerville, MA: Cascadilla Proceedings Project.

- Schellenberg, Murray. 2012. Does language determine music in tone languages? *Ethnomusicology* 56(2). 266–278.
- Sebeok, Thomas & Donna Jean Umiker-Sebeok. 1976. *Speech surrogates: Drum and whistle systems*. The Hague: Mouton.
- Sleeper, Morgan. 2018. *Musicolinguistics: New methodologies for integrating musical and linguistic data*. University of California at Santa Barbara. (Doctoral dissertation).
- Starke, Amy. 1930. *The relation between the intonation of song and of speech among the Amaxosa*. University of Cape Town. (MA thesis).
- Stern, Theodore. 1957. Drum and whistle “languages”: An analysis of speech surrogates. *American Anthropologist* 59. 487–506.
- Strand, Julie. 2009. *The Sambla xylophone: Tradition and identity in Burkina Faso*. Wesleyan. (Doctoral dissertation).
- Villepastour, Amanda. 2014. Talking tones and singing speech among the Yorùbá of Southwest Nigeria. In *Jahrbuch des Phonogrammarchivs der österreichischen Akademie der Wissenschaften*, 29–47.
- von Hornbostel, E. M. 1928. African negro music. *Africa* 1(1). 30–62.
- Wedekind, Klaus. 1983. A six-tone language in Ethiopia: Tonal analysis of Bench-non (Gimira). *Journal of Ethiopian Studies* 16. 129–156.
- Zemp, Hugo & Sikaman Soro. 2010. Talking balafons. *African Music* 8(4). 7–24.

Chapter 10

vP infinitives in Wolof: On Ā-movement to Spec vP

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This paper compares two Wolof adjunct clauses, analyzed as relative clauses and purpose clauses respectively, whose comparison is proposed to demonstrate a case of Ā-movement that terminates at the edge of vP. These adjunct clauses are very similar on the surface and have analogous Ā-dependencies. Despite this similarity, these clauses appear to be different sizes. Evidence from clitic climbing and the distribution of aspect markers suggests that relative clauses are full CPs, while purpose clauses are bare vPs in Wolof. The fact that both clause types can have Ā-chains with the same profile indicates that Ā-movement must be able to terminate at Spec vP in purpose clauses in the absence of a higher probe. This requires a theory in which Ā-movement to Spec vP is independent of further movement to Spec CP. Constituency tests further support an analysis of purpose clauses in Wolof as parasitic gap constructions.

1 Introduction

In this paper, I discuss the properties of two types of Wolof adjunct clauses that have a very similar surface form. One of these clauses has the canonical form of a relative clause in Wolof, while the other will be argued to be smaller and structurally higher. Wolof is an Atlantic language spoken primarily in Senegal and The Gambia. It is characterized by SVO word order and noun classes. The data in this paper are from original fieldwork conducted in Boston with three speakers of Wolof, who are originally from Kaolack and Dakar.

The adjunct clauses I will focus on are presented in (1), which were both elicited in a context that an English speaker would describe with an infinitival



relative clause. These examples differ on the surface only in the presence or absence of a relativizing head *bu*. Note that all examples are written in Wolof, rather than IPA.

- (1) a. Kadeer jox na ma jën [b-u ma jox Roxaya]
K give 3SG.PFV me fish CL-REL 1SG give R
'Kadeer gave me a fish to give to Roxaya.'
- b. Kadeer jox na ma jën [ma jox Roxaya]
K give 3SG.PFV me fish 1SG give R
'Kadeer gave me a fish to give to Roxaya.'

Despite the surface similarity of (1a,b), the presence or absence of *bu* has syntactic consequences. Adjuncts with *bu* require clitic arguments to move across the verb. Their *bu*-less counterparts, however, leave clitic arguments in situ. This is demonstrated in (2), which contain a clitic (in bold), whose position depends on the presence of *bu*.

- (2) a. Kadeer jox na ma jën [b-u ma ko jox]
K give 3SG.PFV me fish CL-REL 1SG her give
'Kadeer gave me a fish to give to her.'
- b. * Kadeer jox na ma jën [ma ko jox]
K give 3SG.PFV me fish 1SG her give
'Kadeer gave me a fish to give to her.'
- c. Kadeer jox na ma jën [ma jox ko]
K give 3SG.PFV me fish 1SG give her
'Kadeer gave me a fish to give to her.'

Additionally, the presence of *bu* appears to license the presence of aspectual heads in the clause. By contrast, overt aspect is ruled out in *bu*-less infinitives.

- (3) Roxaya jox na Kadeer jën [*b-u mu-y togg]
R give 3SG.PFV K fish CL-REL 3SG-IPFV cook
'Roxaya gave Kadeer a fish to cook (habitually).'

Based on these data, I will argue that the presence or absence of *bu* is not governed by true optionality, but rather correlates with a difference in clause size. Following Martinović (2015), I will assume that clitics in Wolof climb to the right of the highest functional head in their phase, which she argues is the C/T complex in finite clauses, but *v* in non-finite clauses. The fact that *bu*-less

Table 10.1: Summary of the properties of these two clauses

Clause type	<i>bu</i> -full	<i>bu</i> -less
Supports aspect	✓	*
Clitics climb	✓	*

clauses lack clitic climbing therefore suggests that these clauses are bare vPs. The presence of *bu*, however, extends the clause to a full CP and thus causes clitics to climb. This proposal also accounts for the variable behavior of these clauses with respect to hosting aspect. Full CPs are able to host aspect, but bare vPs are not.

I will ultimately argue that examples like (1a) are regular relative clauses while examples like (1b) are not, but are rather a sort of purpose clause. I assume an operator movement approach to relative clauses, taking (4) to be a baseline derivation for sentences like (1a). This derivation involves successive cyclic operator movement from the complement of V through Spec vP and finally landing in Spec CP.

(4) Proposed derivation for adjunct clauses with *bu*

Kadeer jox na ma jën_i [CP *Op_i* [*bu* ma ... [vP *t* [jox Roxaya <gap>]]]]

I will propose that examples like (1b) likewise involve Ā-movement but only to Spec vP, based on the observation that both clauses with and without *bu* contain gaps with Ā-properties. Evidence for this can be seen in two parts. The variety of Wolof discussed here has two strategies for long distance Ā-movement, one with resumption and one without. We first observe that attempting to embed the gaps in either of the examples in (1) requires resumption. However, these resumptive pronouns can be shown to be island sensitive, thus suggesting that they are nonetheless derived by movement. These facts combined argue for an analysis in which both (1a,b) have gaps derived by Ā-movement, despite the fact that the clauses in each example are different sizes.

(5) Proposed derivation for *bu*-less clauses

Kadeer jox na ma jën_i [vP *Op_i* ma [jox Roxaya <gap>]]]

This finding has a theoretical consequence regarding the nature of Ā-movement. If the above reasoning is correct, the infinitival clause in (1b) should be

analyzed as a *vP*-sized adjunct clause containing a gap derived by \bar{A} -movement. However, the only possible clause-internal \bar{A} -position is Spec *vP*. This not only supports theoretical claims and empirical findings that \bar{A} -movement is successive cyclic through *vP*, but also provides evidence that \bar{A} -movement can *terminate* at the edge of *vP*, which has consequences for theories of what drives successive cyclic movement to begin with.

The outline of this paper is as follows: §2 presents background on relative clauses and clitic climbing patterns in Wolof, showing why clitic climbing is a good diagnostic for clause size; §3 diagnoses \bar{A} -movement in both the *bu* and *bu*-less clauses; and finally, §4 presents constituency tests and suggests a possible analysis for the *bu*-less clauses as a parasitic gap construction.

2 Relative clauses and clitic climbing

Relative clauses in Wolof typically contain a relativizing head that matches the noun class of the head nominal. This can be seen in (6), where the class marker on the relativizer agrees with the class marker on the indefinite article.

- (6) (Torrence 2013: 104–106)

- a. (u-j) yàmbaa j-u ñu tóx
NDEF-CL marijuana CL-REL 3PL smoke
'some marijuana that they smoked'
- b. (u-m) pón m-u ñu tóx
NDEF-CL tobacco CL-REL 3PL smoke
'some tobacco that they smoked'

I will assume with Torrence (2013), that these relativizing heads are complementizers, which suggests that relative clauses are full CPs in Wolof. A puzzling feature of this result is that there is no overt tense morphology inside Wolof relative clauses. Despite this, they seem to carry a default past interpretation.

If a speaker wants to indicate a non-past interpretation explicitly, adding an imperfective marker gives the relative clause an infinitival interpretation, despite the lack of an overt non-finite element. However, in my elicitation sessions, speakers often accepted (7a) in contexts like (7b), suggesting that they may be truly tense-less.

- (7) a. Kadeer jox na ma jén b-u ma jox Roxaya
K give 3SG.PFV me fish CL-REL 1SG give R
Default: 'Kadeer gave me a fish that I gave to Roxaya.'

- b. Kadeer jox na ma jēn b-u ma-y jox Roxaya
 K give 3SG.PFV me fish CL-REL 1SG-IPFV give R
 Comment: ‘I haven’t given her the fish yet.’

The tense properties of Wolof relative clauses deserve much further scrutiny. In this paper, however, I want to focus on the structural relevance of the relativizing head, rather than the content of the functional projections in its scope.

Torrence argues that the relativizing head is obligatory in (6), unlike English relativizers, a conclusion which is apparently contradicted in (1). I argue, however, that this contradiction is only apparent, and that the two clauses are structurally distinct given evidence from clitic climbing.

- (1) a. Kadeer jox na ma jēn [b-u ma jox Roxaya]
 K give 3SG.PFV me fish CL-REL 1SG give R
 ‘Kadeer gave me a fish to give to Roxaya.’
- b. Kadeer jox na ma jēn [ma jox Roxaya]
 K give 3SG.PFV me fish 1SG give R
 ‘Kadeer gave me a fish to give to Roxaya.’

Wolof has what others have called both “weak” and “strong” pronouns. I’ll henceforth refer to the weak pronouns as *clitics* (Dunigan 1994; Torrence 2005; Russell 2006; Martinović 2015). We will primarily be concerned with object clitics.

Table 10.2: Full paradigm of object clitics in Wolof

Person	Singular	Plural
1st	ma	nu
2nd	la	leen
3rd	ko	leen

Wolof weak object pronouns behave like clitics in that they have positional requirements that differ from their corresponding full nominals. Sometimes they appear “in situ” to the right of the verb, but can also occur preverbally following certain tense, aspect or information structural particles. Wolof expresses subject agreement on such TMA and information structural particles, leading to some debate regarding the correct treatment of them. Our consultants referred to these particles as *subjects* so I will adopt this terminology in part and refer to them as

subject particles (henceforth SP), in order to remain agnostic about their theoretical description. In (8) and (9), we see that object clitics always surface to the right of SPs, irrespective of whether they precede or follow the verb. By contrast, full DP objects always surface to the right of the verb, regardless of where the SP is.¹

- (8) Post-verbal SP NA (perfective, neutral focus): DPs and clitics next to NA
- a. Roxaya lekk *na* **mango bi**
R eat 3SG.PFV mango DEF
'Roxaya ate the mango.'
 - b. Roxaya lekk *na* **ko**
R eat 3SG.PFV it
'Roxaya ate it.'
- (9) Pre-verbal SPs MOO, DAFA, DINA (subject focus, verb focus, future): Only clitics next to SP
- Roxaya wax *na* ma ne...
R say 3SG.PFV me that...
'Roxaya told me that...'
- | | |
|---|---|
| a. <i>moo</i> lekk mango bi
3SG.SBJ-FOC eat mango DEF
'SHE ate the mango.' | d. <i>moo</i> ko lekk
3SG.SBJ-FOC it eat
'SHE ate it.' |
| b. <i>dafa</i> lekk mango bi
3SG.V-FOC eat mango DEF
'she ATE the mango.' | e. <i>daf</i> ko lekk
3SG.V-FOC it eat
'she ATE it.' |
| c. <i>dina</i> lekk mango bi
3SG.FUT eat mango DEF
'she will eat the mango.' | f. <i>dina</i> ko lekk
3SG.FUT it eat
'she will eat it.' |

Martinović (2015) shows that the variable order of SPs and the verb can be understood if the preverbal SPs are morphologically more complex than NA. In her view, the preverbal SPs have the status of auxiliaries, which block movement of the verb to C/T. By contrast, NA does not trigger insertion of an auxiliary and allows the verb to move high.

On this view, Martinović accounts for the distribution of clitics by proposing that clitics must always adjoin to the sister of the highest phase head, which for

¹I chose to demonstrate the clitic climbing pattern in embedded clauses because the contexts were easier to isolate for the speakers this way. However, the pattern is general to matrix clauses as well (i.e. *Roxaya daf ko lekk* is also good = "R ate it", but not **Roxaya dafa lekk ko*).

her is the C/T complex. This proposal straightforwardly extends to the examples in (9). Assuming that preverbal SPs are high (either because they were generated high or moved high), clitics should have to adjoin to them and are therefore correctly predicted to appear to the left of a verb that remains in vP.

- (10) [C/TP subject [C/T *moo-ko* [... [_↑*vP t_{subj} V t_{ko}*]]]] Clitics move to C/T, i.e. SP

Provided that the verb is higher in (8) than it is in (9), clitics are likewise expected to move to the right of the SP NA, though this movement does not have apparent word order effects. Looking at ditransitives confirms that the clitic does indeed move to NA. While ditransitives typically display free word order between the two internal argument DPs, clitic arguments of ditransitives (regardless of thematic role) are required to be adjacent to the verb². This suggests that clitics move to the right of NA.

- (11) a. *jox naa* [xale yi teere bi]
give 1SG.PFV child DEF.PL book DEF
b. *jox naa* [teere bi xale yi]
give 1SG.PFV book DEF child DEF.PL
'I gave the children the book.'
c. **jox naa* [xale yi **ko**]
give 1SG.PFV child DEF.PL it
d. *jox naa* [**ko** xale yi]
give 1SG.PFV it child DEF.PL
'I gave it to the children.'

- (12) Proposed structure of NA-clauses

- [C/TP subject [C/T V-NA- *ko* [... [_↑*vP t_{subj} t_V t_{ko}*]]]] Clitics and V move to NA

Additional support for Martinović's proposal that clitics move to the right of the highest phase head comes from non-finite clauses. In non-finite clauses, clitics show sensitivity to the presence of functional structure above vP. We saw that in finite clauses, clitics always move next to the SP in the clause. In non-finite clauses however, clitics typically stay in situ, separated by the verb from the infinitival SP MU.

²Clitics also have a fixed hierarchy that determines their ordering in a cluster: 1st person > 2nd person > 3rd person plural > 3rd person singular > locative *fa/fi*, which is potentially relevant to an analysis of clitic climbing but will not bear on the proposal here.

- (13) a. Roxaya wax na Kadeer [*mu* togg-al **ko** jëñ]
 R say 3SG.PFV K 3SG cook-BEN her fish
 b. *Roxaya wax na Kadeer [*mu* **ko** togg-al jëñ]
 R say 3SG.PFV K 3SG her cook-BEN fish
 'Roxaya told Kadeer to cook her fish.'

MU is used in a variety of biclausal constructions such as control predicates, relative clauses, and subjunctive clauses. It behaves more like a subject pronoun than the other SPs in that it is in complementary distribution with an overt external argument within the clause, instead controlled by an antecedent in the superordinate clause. MU is also in complementary distribution with other SPs that carry tense information, which is what we expect for a tense-less clause.

- (14) Roxaya báyyi na Kadeer [*mu* jënd **ko**]
 R let 3SG.PFV K 3SG buy it
 'Roxaya let Kadeer buy it.'
- (15) Bëgg naa [*mu* taw]
 want 1SG.PFV 3SG rain
 'I want it to rain.'

Cticics may move next to MU in the presence of additional projections, however. If one adds imperfective aspect or negation to the infinitival clause, the clitic suddenly climbs to the right of MU, thus patterning with finite clauses.

- (16) a. Roxaya wax na Kadeer [*mu* **ko**-y togg-al jëñ]
 R say 3SG.PFV K 3SG her-IPFV cook-BEN fish
 'Roxaya told Kadeer to cook her fish (habitually).'
 b. Roxaya wax na Kadeer [*b-u(l)* *mu* **ko** togg-al jëñ]
 R say 3SG.PFV K CL-C_{NEG} 3SG her cook-BEN fish
 'Roxaya told Kadeer not to cook her fish.'

Martinović explains this pattern by concluding that MU-clauses are typically bare vPs (she calls these "minimal clauses"). In a bare vP clause, *v* is the highest head in the phase, attracting both the verb and the object clitic, and resulting in VO order. The MU SP, which acts like a subject pronoun, is argued to be projected in Spec vP as a normal subject, and is thus separated from the object clitic by the verb.

Adding additional projections such as aspect or negation extends the clause (and perhaps the phase boundary) so that the object clitic and clitic-like MU must climb past the verb, which remains in *v*.

- (17) [*mu ko* [_{XP} ... [_{vP} *t_{mu}* V *t_{ko}*]]] Clitics only climb in clauses bigger than vP
-

In summary, Martinović's approach shows that clitic climbing can be a good diagnostic for clause size in Wolof, given its sensitivity to the presence of negation/aspectual structure above vP. I therefore assume with Martinović that finite clauses in Wolof are full CPs, so clitics always move to the right of the C/T complex (which contains the SP). Non-finite clauses are bare vPs, which typically means that clitics only move a short distance to the right of the verb, thus separated from the SP MU, which is proposed to be in Spec vP. However, we see both move further in the presence of additional functional structure above the verb, such as negation or aspect.

Recalling the initial puzzle, if we construct a relative clause, we see that the presence or absence of the relativizing complementizer affects whether an object clitic in that clause climbs. Following the above assumptions about clitic climbing, this suggests that the *bu*-less clauses lack any structure above vP, as evidenced by the fact that clitic climbing is blocked.

- (2) a. Kadeer jox na ma jën [**b-u** ma ko jox]
 K give 3SG.PFV me fish CL-REL 1SG her give
 ‘Kadeer gave me a fish to give to her.’
- b. * Kadeer jox na ma jën [ma ko jox]
 K give 3SG.PFV me fish 1SG her give
 ‘Kadeer gave me a fish to give to her.’
- c. Kadeer jox na ma jën [ma jox ko]
 K give 3SG.PFV me fish 1SG give her
 ‘Kadeer gave me a fish to give to her.’

The clauses with *bu*, on the other hand, appear to be full CPs, attracting both the object clitic and MU higher.

Additionally, for many speakers the *bu*-less clauses appear to behave like restructuring predicates, disallowing the addition of aspect, which would allow the clitic to climb. Only clauses with the full CP layer (i.e. the ones with the relativizer *bu*) can host aspect.³

³One of our three speakers seemed less sure about this judgment, occasionally allowing aspect in the *bu*-less clauses and occasionally not. The other two seemed quite sure about disallowing aspect. However, some of the variation could relate to the fact that there is another type of adjunct MU clause which does allow aspect, but does not have a gap. This clause is discussed in the appendix, and behaves differently than those discussed here.

- (18) Roxaya jox na Kadeer j  n [**(b-u)* *mu-y* togg]
 R give 3SG.PFV K fish CL-REL 3SG-IPFV cook
 'Roxaya gave Kadeer a fish to cook.'

To summarize, Wolof appears to have two strategies for expressing something like an infinitival relative clause: one with a full CP headed by a relativizing complementizer (*bu*), and the other with a bare vP clause. The first strategy looks like a standard relative clause, so we might expect the gap inside these clauses to be derived by operator movement to Spec CP.

However, there is no empirical evidence that I know of for \bar{A} -movement of operators to the edge of vP that *stops* there. So how is the gap derived in the second type of clause? I will now show that this second type of clause also shows \bar{A} -properties, which is evidence that there must be an \bar{A} -probe on *v* despite there being no higher CP with one.

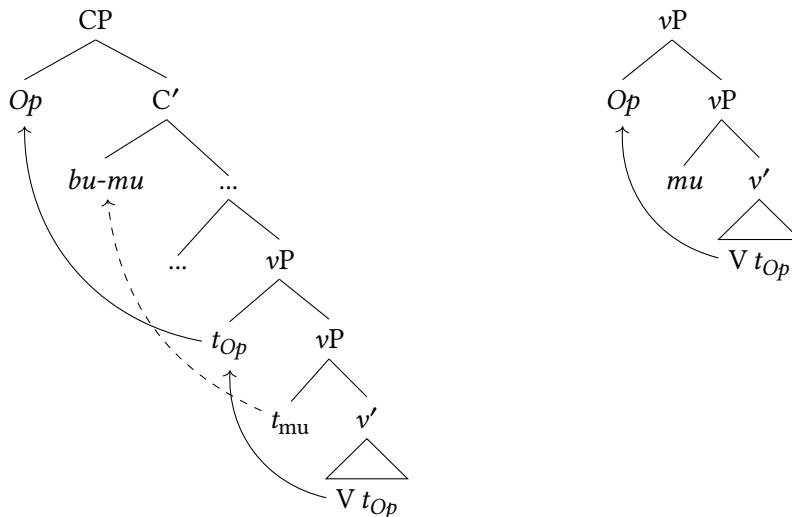


Figure 10.1: The CP relatives are plausibly derived by normal \bar{A} -movement of an operator. I will argue that the same is true for the vP-sized counterparts.

3 Diagnosing \bar{A} -movement

We hypothesized in the previous section that the gaps in the CP relatives were derived by \bar{A} -movement. We will now see that the gaps in both the CP relatives

and the *vP*-sized clauses have Ā-properties. Both require resumption when the gap is further embedded, and these resumptive pronouns are sensitive to islands. This additionally motivates a view in which Wolof resumptive pronouns spell out the tails of Ā-chains in certain contexts.

Example (19) shows that adding a layer of embedding requires a resumptive pronoun to be pronounced instead of the gap. Note that this is true for *both* clause types, as seen by the optional presence of the relativizing head *bu*. Also note that the most embedded clause is tensed, indicated by the SP *moo* rather than the infinitival SP *mu*.⁴

- (19) Further embedding: need resumptive pronoun

Jox naa Roxaya jén [(b-u) *mu* fog ne *moo* *(ko) japp]
 give 1SG.PFV Roxaya fish CL-REL 3SG pretend that 3SG.SBJ-FOC it catch
 'I gave Roxaya a fish to pretend that she caught it.'

Resumptive pronouns are not unusual in Wolof. Our language consultants offered them frequently in long distance chains of various sorts. Below is an example (p.c. Colin Davis) of a long distance wh-question with a resumptive pronoun in the most embedded clause.

- (20) Lan la suunu yaay wax ne war *nañu* **ko** jënd?

what C_{wh}.3SG our mother say that should 1PL.PFV it buy
 'What did our mother say that we should buy?'

Our language consultants also offered long distance gaps, provided we used a different complementizer *la*. There appear to be dialectal differences in whether speakers accept both examples like (20) and (21) (p.c. Martina Martinović, Harold Torrence). Our speakers showed a slight preference for examples like (20) and so all long-distance dependencies reported henceforth will show resumption. However, future research should investigate the availability of gaps in these contexts as well.

- (21) Wu ñu wax la jigéén ji bëgg?

what 3PL.PFV say C_{wh}.3SG woman the want
 'What did they say that the woman wants?'

⁴In these examples, the word for 'pretend' that our consultant offered was *fog*, which the dictionary claims means 'to think, estimate' (<http://resourcepage.gambia.dk/ftp/wollof.pdf>). Our consultants never offered *fog* to mean 'think', but offered it for sentences like *Roxaya pretended that she caught the fish*. For English sentences containing 'think' as an embedding verb, our consultants offered *xalaat*.

Resumptive pronouns have frequently been analyzed as triggered by the lack of movement. However, additional investigation of resumptive pronouns in Wolof reveals that they are island sensitive. These findings suggest that resumptive pronouns *can* be derived by movement (following Sichel 2014 among others).

Example (22) shows us that resumptive pronouns are island sensitive for both the CP and vP-sized clauses. Speakers accept example (22) only when the most embedded complementizer is *ne* ‘that’. Trying to make it *ndax* ‘if’ results in ungrammaticality, despite the fact that there is a resumptive pronoun instead of a gap. This is true both with and without *bu* in the relative clause. Example (23) shows that replacing the resumptive pronoun with a full DP makes *ndax* available, showing that only resumptive pronouns are sensitive to islands, not full DPs repeated in situ.

- (22) Resumptive pronouns are island sensitive

Jox naa Roxaya jén [(b-u) mu fog ne xam-ul *ne/*ndax* ma
give 1SG.PFV Roxaya fish CL-REL 3SG pretend that know-NEG that/*if 1SG
ko japp]
it catch

‘I gave Roxaya a fish to pretend that she didn’t know that/*if I caught it.’

- (23) Replacing the resumptive pronoun with a copy of the full DP rescues the sentence

Jox naa Roxaya jén bi [mu fog ne xam-ul *ndax* ma japp
give 1SG.PFV Roxaya fish DEF 3SG pretend that know-NEG if 1SG catch
jén bi]
fish DEF

‘I gave Roxaya a fish to pretend that she didn’t know if I caught the fish.’

I therefore propose that gaps in both of these clauses (i.e. with and without *bu*) are derived by Ā-movement, where long-distance gaps are spelled out as resumptive pronouns. I refer the reader to Sichel (2014) for a specific resumption mechanism.

If this is true, given that the clauses without *bu* were shown to be bare vPs, *v* must have an independent Ā-probe that is not dependent on a higher CP probe. This result further supports work that proposes a dedicated A/Ā-probe on *v* (van Urk & Richards 2015; Longenbaugh 2017). However, it is also a departure from the view of Spec vP as merely an intermediate landing site for Ā-movement, and not the final destination.

A restatement of the proposal is that Ā-dependencies appear to be tracked at every phase edge regardless of subsequent movement trajectories. This descrip-

tion does not require a novel theory of Ā-movement, but highlights a hole in our understanding of why such a property exists in grammar. If Ā-movement to *v* was never observable in the absence of movement to CP, we could imagine that successive cyclic movement through vP exists solely due to pressures from linearization. Fox & Pesetsky (2005) propose that movement to Spec CP cannot proceed if movement does not first target the edge of vP, or else the moving element cannot be properly linearized. Though they do not argue that this is the *only* constraint on movement, one could imagine that if it were, movement to Spec vP should be optional in the absence of further movement. The *bu*-less clauses in Wolof argue against the possibility that movement to Spec vP is generally optional, suggesting that there is still another feature of the grammar governing the distribution of Ā-probes.

An alternative approach to these facts would be to propose that the Ā-dependency between the matrix object and the gap in the *bu*-less clauses is not mediated by an operator. Such a theory might posit direct movement of the object from the adjunct clause to a position where it can be selected by a matrix verb (or a determiner in object position on a head-raising analysis of relative clauses (Kayne 1994; Bianchi 1999, among others). This proposal would avoid the above discussion about motivation for Ā-movement because there would be an independent reason for the object to move, namely so it is local to higher heads in the matrix clause.

- (24) An alternative derivation for the *bu*-less clauses

Kadeer jox na ma [_{vP} jēn_i ma [jox Roxaya t_i]]



I will argue against this alternative proposal with evidence from constituency tests. I have been comparing these *bu*-less clauses to relative clauses because of their similar meaning to the clauses with *bu*. Constituency tests, however, reveal that this is likely the wrong characterization. A better analysis might be that they are purpose or rationale clauses that adjoin to a higher position in the matrix clause. Based on these results, it would be unusual for the matrix object to be related to the gap by direct movement, given that the proposed landing position would not c-command the gap, and would also violate an adjunct island (see Figure 10.2).

4 What are the vP-infinitives?

The example in (25) shows that fronting a nominal modified by one of these adjunct clauses is only possible with *bu*. I conclude therefore, that while the *bu*-

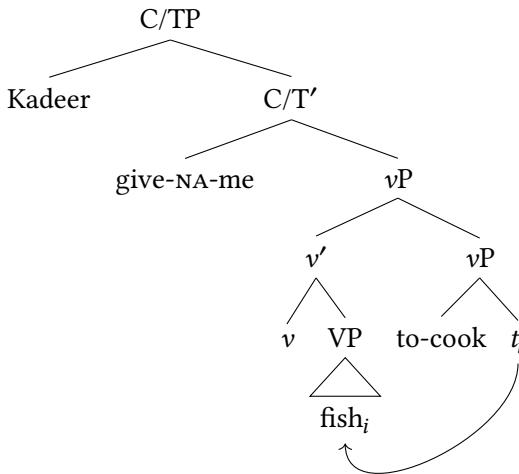


Figure 10.2: Direct movement from the complement of *cook* to the complement of *give* is impossible.

clauses are canonical relative clauses that form a constituent with the matrix object, their *bu*-less counterparts are not canonical relative clauses, and must adjoin higher than the matrix object.

- (25) Jëñ [*^b-u] mu togg mungi ci kaw tabal bi
 fish CL-REL 3SG cook 3SG.IPFV on top table DEF
 ‘A fish to cook is on the table.’

Another argument that *bu*-less clauses are not normal relative clauses is that they do not show the same sensitivity to definiteness as regular relative clauses. Wolof relative clauses cannot extrapose across any overt material if the head noun is definite (p.c. Colin Davis), which can be seen in (26).

- (26) Relative clause extraposition sensitive to definiteness

 - a. Gis naa fas démb [w-u nga sopp]
see 1SG.PFV horse yesterday CL-REL 2SG like
'I saw a horse yesterday that you like.'
 - b. Gis naa fas [w-u nga sopp] wi démb
see 1SG.PFV horse CL-REL 2SG like DEF yesterday
'I saw the horse that you like yesterday.'

- c. * Gis naa fas wi démb [w-u nga sopp]
 see 1SG.PFV horse DEF yesterday CL-REL 2SG like
 intended: 'I saw the horse yesterday that you like.'

By contrast, the *bu*-less clauses may be separated from a definite head noun by other arguments, surfacing all the way to the right of the clause, as in (27). Here, the speaker offered an optional complementizer *pur* (borrowed from French) but rejected *bu*.

- (27) Tekk naa [jén bi] ci tabal bi [(pur/*bu) mu togg]
 put 1SG.PFV fish DEF on table DEF (for/*REL) 3SG cook
 'I put the fish on the table to cook.'

I therefore conclude that the *bu*-less clauses are not relative clauses. They do not form a constituent with the head noun and can show up further to the right than normal relative clauses do. It seems they must therefore be merged higher than the object, possibly adjoining to the matrix vP as an adjunct.

Adjunct infinitives are very common in English and can have a range of meanings (Huettner 1989), including purpose or rationale interpretations. It seems that the *bu*-less clauses might therefore be analogously described as having a covert *in order to/for the purpose of*, as paraphrased in (28).⁵

- (28) Paraphrase of (1b)
 Kadeer jox na ma jén [ma jox Roxaya]
 K give 3SG.PFV me fish 1SG give R
 'Kadeer gave me a fish in order for me to give it to Roxaya.'

The fact that Wolof has adjunct infinitives is unsurprising, but the fact that these adjunct infinitives show an Ā-dependency with a nominal in the matrix clause merits further discussion. Particularly unusual about this configuration is the fact that the gap in the adjunct clause is presumably not c-commanded by the matrix object. A potential way of modeling this behavior is shown in Figure 10.3, where the gap is treated as parasitic, licensed by covert movement of the matrix object.

Treating these *bu*-less clauses as adjuncts with parasitic gaps may explain why the adjunct clause is obligatorily small. Recall that these clauses rejected aspect,

⁵It is possible that the English translation of (1a) is itself structurally ambiguous in the way that Wolof makes explicit. If so, the proposal for the *bu*-less clauses in Wolof will presumably work for its English counterpart as well, though the tests may be harder to apply in English.

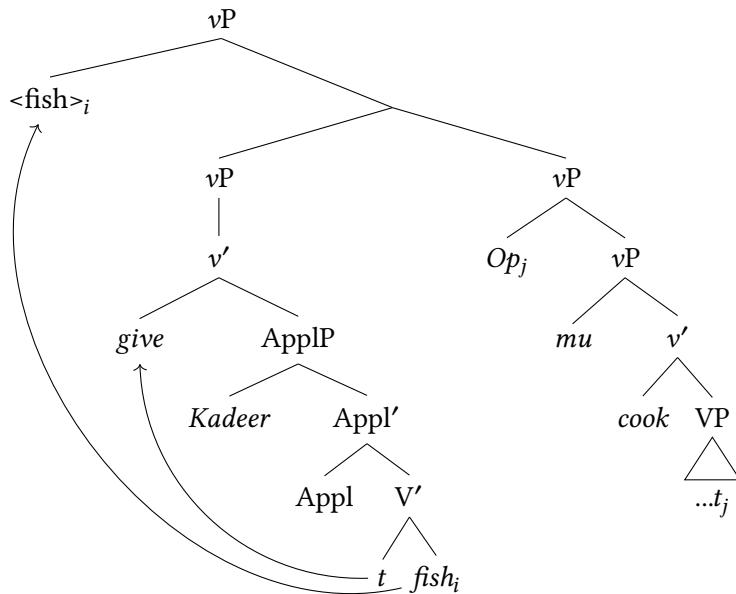


Figure 10.3: A schematic of Nissenbaum's (2000) parasitic gap configuration with the MU-clause as the parasitic gap-containing vP adjunct.

which was one piece of evidence that they are vP-sized. This may be the case because the clause has to attach at matrix vP in order for the gap to be licensed. Predicate modification should therefore require the two clauses to be of the same type.

Future research is needed to verify this analysis, given that there is no independent evidence currently available to suggest that the object moves in the matrix clause, which is theoretically necessary to license the parasitic gap. If such evidence were found, it would be further evidence in support of the proposal that covert movement can license parasitic gaps, which is independently motivated in Nissenbaum & Schwarz (2011) for English gapped degree phrases.

This analysis would suggest that infinitival clauses with parasitic gaps should be more common than has been reported. In languages such as English, which do not morphologically distinguish different kinds of infinitives, it is difficult to tell whether they exist, given their surface similarity to infinitival relatives.

German, however, has two morphologically distinct infinitival clauses in the way that Wolof does. Like in Wolof, only the morphologically more complex one can form a constituent with a nominal (p.c. Johannes Hein).

- (29) Ich hab dir einen Fisch [zu/zum kochen gegeben]
 I have you.DAT a.ACC fish to/to.DAT cook given
 'I gave you a fish to cook.'
- (30) [Ein Fisch zum/*zu kochen] liegt auf dem Tisch
 a fish to.DAT/*to cook lies on the table
 'A fish to cook is on the table.'

The *zu*-infinitives in these examples appear *prima facie* to be good candidates for parasitic gap constructions. Investigating the structural properties of these clauses in relation to the properties of the gaps inside them should be a fruitful area for future research.

5 Conclusion

In this paper, I have investigated two Wolof adjunct clauses. These two clauses are very similar on the surface, differing only in the presence or absence of a relativizing complementizer (*bu*), and can be uttered in similar situations. While many languages have constructions with optional complementizers, I argued against a unified account of these constructions by showing that the presence or absence of the complementizer has syntactic consequences, which would be unexpected if it was truly optional.

Based on evidence from clitic climbing, the availability of aspectual markers, and constituency tests, I have argued that one of these constructions (the one with *bu*) should be treated as a relative clause, while the other should be treated as an infinitival adjunct, like a purpose clause. Following Martinović, I additionally argued that the latter clause type was *vP*-sized, unlike relative clauses, which I assume to be full CPs.

Despite their difference in size, I further showed that the gaps inside both constructions show signatures of Ā-movement. Both require resumption when further embedded, but the resumptive pronouns are island sensitive, suggesting that they still participate in an Ā-chain. Given that one of these clauses was argued to be *vP* sized, this finding requires a novel theoretical assumption, which is that Ā-movement can not only move through Spec *vP* but can stop there as well.

Abbreviations

ACC	Accusative	NDEF	Indefinite determiner
BEN	Benefactive	NEG	Negation
C	Complementizer	PFV	Perfective
CL	Noun class	PL	Plural
DAT	Dative	REL	Relativizer
DEF	Definite determiner	SBJ	Subject
FOC	Focus	SG	Singular
FUT	Future	v	Verb

Acknowledgments

My thanks go to Yadav Gowda, Johannes Hein, Martina Martinović, David Pesetsky, Norvin Richards, Harrold Torrence, and the audience at ACAL 2019 for helpful insight and discussion. A very special thank you to our Wolof consultants for sharing their language and enthusiasm: Lamine Diallo, Aicha Seck, and Lamine Touré! All mistakes are my own.

Appendix: A different *bu*-less MU clause

Plugging the gap allows the *bu*-less clauses to host aspect.

- (31) Roxaya jox na Kadeer jën mu ko-y togg
R give 3SG.PFV K fish 3SG it-IPFV cook
'≈ Roxaya gave Kadeer a fish, he cooks it.'

Note the different translation, however. This construction seems to be different than those discussed so far in this paper. Additionally, the object clitic seems not to be a resumptive pronoun based on several properties.

- Cannot appear in clauses with *bu* (unlike other resumptive pronouns we saw)
- Ruled out if the matrix clause is negative
- Allowed for a different set of matrix predicates than gaps

- (32) a. * Roxaya jox na Kadeer jën b-u mu togg ko
R give 3SG.PFV K fish CL-REL 3SG cook it
'Intended: Roxaya gave K a fish to cook.'

- b. Jox-uma Roxaya jën mu togg (*ko)
 give-NEG.1SG.PFV Roxaya fish 3SG cook (*it)
 'I didn't give Roxaya a fish to cook.'
- (33) a. togg naa jën, ma lekk (ko)
 cook 1SG.PFV fish, 1SG eat (it)
 'I cooked a fish {to eat/I eat it}'
 b. sopp naa jën, ma lekk *(ko)
 like 1SG.PFV fish, 1SG eat *(it)
 'I like fish { * to eat/✓I eat it}'

This seems to be some sort of subordinate clause where the object pronoun is coreferent with the matrix object, but not derived by movement. The fact that the pronoun is sensitive to matrix negation makes sense if it is referential. In other words, if Kadeer did not give someone a fish, there is no salient fish that a pronoun can refer to.

Similarly, these pronouns show different sensitivity to the matrix predicate than gaps do. While predicates like *cook* can take an infinitival adjunct that optionally has a pronoun or a gap, *like* requires a pronoun in the adjunct clause.

References

- Bianchi, Valentina. 1999. *Consequences of antisymmetry: Headed relative clauses*. Berlin: Mouton de Gruyter.
- Dunigan, Melynda B. 1994. *On the clausal structure of Wolof*. Chapel Hill, NC: University of North Carolina at Chapel Hill. (Doctoral dissertation).
- Fox, Danny & David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31. 1–45.
- Huettnner, Alison K. 1989. *Adjunct infinitives in English*. Amherst, MA: University of Massachusetts at Amherst. (Doctoral dissertation).
- Kayne, Richard S. 1994. *The antisymmetry of syntax*. Cambridge, MA: Linguistic Inquiry Monographs 25, MIT Press.
- Longenbaugh, Nicholas. 2017. Composite A/A'-movement: Evidence from English tough-movement. Unpublished Manuscript. Cambridge, MA.
- Martinović, Martina. 2015. *Feature geometry and head-splitting: Evidence from the Wolof clausal periphery*. Chicago, IL: University of Chicago. (Doctoral dissertation).

- Nissenbaum, John. 2000. Covert movement and parasitic gaps. In Masako Hirayama, Andries Coetzee, Nancy Hall & Ji-yung Kim (eds.), *Proceedings of the North East Linguistic Society 30*, vol. 2, 541–555. <https://scholarworks.umass.edu/nels/vol30/iss2/10>.
- Nissenbaum, John & Bernhard Schwarz. 2011. Parasitic degree phrases. *Natural Language Semantics* 19. 1–38.
- Russell, Margaret A. 2006. *The syntax and placement of Wolof clitics*. Urbana, IL: University of Illinois at Urbana-Champaign. (Doctoral dissertation).
- Sichel, Ivy. 2014. Resumptive pronouns and competition. *Linguistic Inquiry* 45(4). 655–693.
- Torrence, Harold. 2005. *On the distribution of complementizers in Wolof*. Los Angeles, CA: University of California, Los Angeles. (Doctoral dissertation).
- Torrence, Harold. 2013. *The clause structure of Wolof: Insights into the left periphery*. (Linguistik Aktuell/Linguistics Today). Amsterdam: John Benjamins.
- van Urk, Coppe & Norvin Richards. 2015. Two components of long-distance extraction: Successive cyclicity in Dinka. *Linguistic Inquiry* 46(1). 113–155.

Chapter 11

Asymmetries in vowel-pair frequencies and height harmony in Bantu

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In this paper, I present an exploration of vowel-pair frequencies in the nouns of six five-vowel Bantu languages and discuss their relationship with those alternations seen in verbs due to height harmony. Of particular interest is the disparity in the frequencies of two vowel pairs disagreeing in height, specifically [e.i] and [o.u], both between themselves and with the corresponding pairs which agree in height, namely [e.e] and [o.o]. The results show that while both [e.e] and [o.o] are over-represented, [e.i] and [o.u] are generally under-represented. In addition to this, [o.u] is consistently less frequent than [e.i] and the difference in representation between [o.o] and [o.u] is larger than between [e.e.] and [e.i].

1 Introduction

It is well documented in the literature that vowel height harmony as instantiated in the Bantu languages is most often asymmetric with respect to rounding and/or backness and also often gives rise to alternations only in verbs (see e.g. Hyman 1999; for more see also §2). In this paper, I present an exploration of vowel-pair frequencies in nouns in six five-vowel Bantu languages – Chewa, Kalanga, Lozi, Makhuwa, Pende and Yao – and also discuss the results in the context of the system of height harmony found in each language. For reasons of space, I limit myself to the discussion of just four vowel pairs that are of particular interest, namely [e.e]–[e.i] and [o.o]–[o.u].

The results reveal that, in nouns, the two pairs that agree in height – [e.e] and [o.o] – consistently occur more frequently than their counterparts that do not agree in height – [e.i] and [o.u], with the differences between [o.o] and [o.u]



being starker than those between [e.e] and [e.i]. This is despite the fact that, in these languages, active alternations are only seen in verbs. Moreover, there is a trend for the pairs [e.i] and [o.u] to be relatively under-represented compared to [e.e] and [o.o] across the sample. The results also show that, though both occur at below-expected levels, the rounded back pair [o.u] is less frequent than [e.i], even taking into account the relative frequencies of the component vowels according to position.

Previous work such as Archangeli et al. (2012b) has also noted the under-representation in nouns of pairs repaired by alternations in verbs.¹ However, the difference between the two non-harmonic pairs [e.i] and [o.u] is not remarked upon, though it can be seen in their data (see e.g. Figure 2). In addition to this, the sample used by Archangeli et al. (2012b) looked only at canonical five-vowel languages.

In this chapter, I examine three non-canonical languages, including two in which alternations of front vowels in verbs do not occur. In both languages lacking front-vowel alternations, [e.e] and [o.o] are more represented than [e.i] and [o.u] respectively; however, [e.e] is found only marginally more than [e.i] in Lozi.

In sum, though alternations are only observed in verbs, the results show that there is nevertheless a preference in nouns for those pairs that agree in height.

2 Background

This exploration of vowel-pair frequencies considers a sample of six five-vowel² Bantu languages. The details of these languages are provided in Table 11.1 before vowel height harmony in particular is discussed further below.

As can be seen from Table 11.1, each language possesses a certain harmony system, with three different systems being represented in this sample. Vowel height harmony writ large is a widespread trait among the Bantu languages (Hyman 1999: 236, 2003: 46–47; Nurse & Philippson 2003: 7; Odden 2015: §1). In five-vowel languages, such as Shona (S.11; Beckman 1997), this often leads to active alternations only in verbal suffixes, excluding final vowels. Indeed, Beckman (1997: 38) comments that “[t]he distributional generalisations which apply to height features in Shona verbs apparently do not hold of Shona nouns” and that “vowel height in nouns is contrastive outside of the root-initial syllable”. In other cases, however, static generalisations analogous to the alternations found in verbs may

¹In addition, Harrison et al. (2002–2004) found that, in Swahili, verbs were highly height harmonic and that nouns were also generally height harmonic at an above-chance rate.

²That is, languages having the vowel phoneme inventory /i u e o a/.

Table 11.1: The six-language sample of five-vowel Bantu languages

Language	Guthrie code	Harmony system	Data source	Size
Chewa	M.31b	canonical	Mtenje (2001)	24,076
Kalanga	S.16	canonical	Mathangwane (1994)	8,505
Lozi	K.21	back only	Jalla (1982)	49,981
Makhuwa	P.31	back only	Kisseberth (1996)	29,802
Pende	L.11	quasi-canonical	Gusimana (1972)	38,385
Yao	P.21	canonical	Ngunga (2001)	25,954

also be seen within a majority of noun stems.³ This has previously been said, for example, of Chewa (Scullen 1992 in Downing & Mtenje 2017: 75).

The commonest variant of height harmony is the so-called “canonical” pattern (after Hyman 1999: 238). In five-vowel languages that possess canonical height harmony – such as Chewa, Kalanga and Yao – high vowels are lowered to mid vowels by preceding mid vowels whereas the low vowel /a/ neither triggers nor undergoes lowering and is opaque. In addition, as mentioned in §1, canonical height harmony is asymmetric with respect to rounding and/or backness. That is, /i/ is lowered to [e] after both /e/ and /o/ whereas /u/ is lowered to [o] only following /o/. In at least purely descriptive terms then, it is useful to talk of both front and back height harmony.

Canonical height harmony is exemplified in (1) and (2) with Chewa data taken from Downing & Mtenje (2017: 71–72).⁴

- | | |
|---|--|
| (1) a. <i>-phikila</i> ‘to cook for’ | (2) a. <i>-pitikula</i> ‘to overturn’ |
| b. <i>-khutila</i> ‘to be satisfied with’ | b. <i>-funthula</i> ‘to loosen’ |
| c. <i>-tsekela</i> ‘to close for’ | c. <i>-tsukela</i> ‘to open’ |
| d. <i>-gonela</i> ‘to sleep on’ | d. <i>-wonjola</i> ‘to spring a trap’ |
| e. <i>-valila</i> ‘to put on’ | e. <i>-sankula</i> ‘to choose out
from’ |

The majority of work on height harmony in five-vowel Bantu languages has focused on this pattern. Indeed, Chewa has been an especially popular case study

³Note also that there are Bantu languages that show alternations in nouns due to vowel harmony, such as noun class prefixes in seven-vowel Koyo (C.24; see e.g. Hyman 1999: 240).

⁴For the sake of the simplicity of exposition, the infinitive prefix, tone and effects such as penultimate lengthening have been omitted in the examples provided in this section.

(see e.g. Mtenje 1985; Scullen 1992; Harris 1994; 1997; Sandstedt 2019). A selection of other well-known languages exhibiting this are Bemba (M.42; Kula & Marten 2000; Kula 2002), Luganda (E.15; Katamba 1984), Shona (S.11; Beckman 1997) and Swahili (G.42; Marten 1996; 1997).

The “quasi-canonical” variety of harmony found in Pende differs from the pattern found in Chewa in just one instance. Specifically, in front height harmony, mid [e] is found after the low vowel /a/ rather than high [i]. This is illustrated in (3) and (4) with examples from Gusimana (1972).

- | | | | |
|-----|--|-----|---|
| (3) | a. <i>-shitila</i> ‘to close for’
b. <i>-tungila</i> ‘to build for’
c. <i>-bembela</i> ‘to leave for’
d. <i>-solela</i> ‘to clear [land] for’
e. <i>-talela</i> ‘to monitor for’ | (4) | a. <i>-jitulula</i> ‘to untie’
b. <i>-kubula</i> ‘to collapse’
c. <i>-ketula</i> ‘to make a notch’
d. <i>-logola</i> ‘to pour out’
e. <i>-batula</i> ‘to cut off, detach’ |
|-----|--|-----|---|

The final two languages in the sample – Lozi and Makhuwa – lack front height harmony, as seen in (5) and (6) with Lozi data culled from Jalla (1982).

- | | | | |
|-----|--|-----|--|
| (5) | a. <i>-pimisa</i> ‘to help avoid’
b. <i>-hupulisa</i> ‘to remind’
c. <i>-lembisa</i> ‘to put to shame’
d. <i>-longisa</i> ‘to help load’
e. <i>-tamisa</i> ‘to help tie’ | (6) | a. <i>-bihela</i> ‘to report to’
b. <i>-fuluhela</i> ‘to paddle towards’
c. <i>-lemela</i> ‘to fell for’
d. <i>-shombotela</i> ‘to catch for’
e. <i>-shamela</i> ‘to urinate in’ |
|-----|--|-----|--|

They do, however, possess back height harmony. This is shown in (7), with data once again coming from Lozi (Jalla 1982).

- | | | |
|-----|--|--|
| (7) | a. <i>-tinulula</i> ‘to undress’
b. <i>-lutulula</i> ‘to unthatch’
c. <i>-lekulula</i> ‘to resell’ | d. <i>-notolola</i> ‘to unlock’
e. <i>-pakulula</i> ‘to unbolt’ |
|-----|--|--|

3 Methodology

3.1 Sources and pre-processing

The data used in this study are taken from the Comparative Bantu Online Dictionary (CBOLD; citations for individual sources are given in Table 11.1).⁵ Each

⁵CBOLD is accessible via the following URL: <http://www.cbold.ish-lyon.cnrs.fr/>.

file was first hand-corrected for machine-readability. This consisted mainly of corrections to the tab-separation of columns and the addition of obvious missing line breaks, as well as certain minor corrections to obvious errors in transcriptions.⁶ All subsequent processing and analysis was conducted using R (R Core Team 2019).

It should be noted here that the data sets contain entries in citation forms with both simple and complex stems (for both nouns and verbs), including some instances of nouns derived from verbs. No morphemic analysis was conducted as the data sets did not indicate boundaries between roots within compounds, or between roots and suffixes. Thus, in this respect, the results presented in §4 are based on vowel pairs that occur regardless of morphological context.

Each individual data set contained multiple columns of information, the total number of which varied slightly from language to language; however, only two columns contained in the raw data – namely the word form itself and the part of speech – were ultimately used. For each word, all content after the first space in the word column was removed to reduce contamination by non-target-language material (such as misaligned English-language definitions). This was then stripped of all non-alphabetic characters such as punctuation and numbers, and converted to lower case. Next, orthographic long vowels were shortened such that *aa* became *a* and so on. This was done as the feature of interest in this study is the quality rather than quantity of vowels. What's more, in certain cases long vowels may not be consistently transcribed, if at all. Finally, the number of part-of-speech labels for each data set was reduced to just three: verb, noun and other.⁷ In the sections that follow, I concentrate predominantly on nouns.

3.2 Processing and analysis

The final data sets having been derived, the numbers of each unique vowel phoneme and pair were then computed, with each item retaining the part-of-speech label of the word in which it occurred. This yielded the raw count of each vowel phoneme and pair within a particular language. From this, the following within-language measures were derived: observed frequency, expected frequency, and observed–expected ratio.

⁶This was, however, conducted with all due caution in order to avoid introducing any potential bias into the results.

⁷The data source for Lozi, for example, contained around 70 separate part-of-speech labels, largely distinguishing various different properties of verbs which were unnecessary for the present study. In addition to this, the Lozi dictionary was unique in that it also provided the perfective forms of verbs. In order to maintain a level of consistency across the entire sample, these were actively removed.

The observed frequency of a vowel phoneme or pair is the quotient of the raw count of that particular phoneme or pair, divided by the total number of all vowel phonemes or pairs in the data set.

The expected frequency of a given vowel pair might have been derived simply by multiplying together the observed frequencies of the two constituent vowel phonemes of that pair without regard to which position in the pair the two vowels occur.⁸ However, as noted in Archangeli et al. (2012a,b), due to, for example, morphological bias, the same vowel may not necessarily be found equiprobably in both positions and so, in order to take this into account, separate observed proportions were calculated for each vowel in both first and second position, which were then multiplied together to give the expected frequency of each pair.

The observed–expected ratio of a pair is the quotient of the observed frequency of that pair divided by its expected frequency. This is used as a gauge of the level of representation. A ratio of around 1 indicates that the vowel pair occurs approximately as frequently as expected, less than 1 that it is less frequent than expected (i.e. under-represented) and a ratio of more than 1 that it is more frequent than expected (i.e. over-represented). In addition to this, the magnitude of the ratio conveys the degree to which a pair is over- or under-represented within the language.

Lastly, note that, descriptive statistics were used rather than inferential statistics due to the small sample size of the current data set.

4 Results

Firstly, the raw counts in both nouns and verbs for each of the four vowel pairs of interest in this study – i.e. [e.e], [e.i], [o.o] and [o.u] – are shown in Figure 11.1. These show that the pairs one would expect to be infrequent given the descriptions in §2 do indeed occur at very low levels in verbs but that such low levels are not found for other pairs. Somewhat similarly, although generally found in higher numbers than in verbs, within each of the six languages in the sample [e.i] is found consistently less frequently than [e.e] in nouns. Likewise, [o.u], without exception, occurs less often in nouns than [o.o].

Note that, in Figures 11.1, 11.2 and 11.3, pale blue is used to indicate those pairs that are assumed to be harmonic in that particular language and dark red signals those pairs assumed to be non-harmonic on the basis of alternations seen in verbal suffixes. This is used to illustrate how the harmony systems differ between languages with regard to these pairs. Thus, it can be seen that the above disparities between pairs are found in nouns irrespective of the harmony system of the particular language.

⁸Of course, the two component vowels of a pair may or may not be the same as one another.

11 Asymmetries in vowel-pair frequencies and height harmony in Bantu

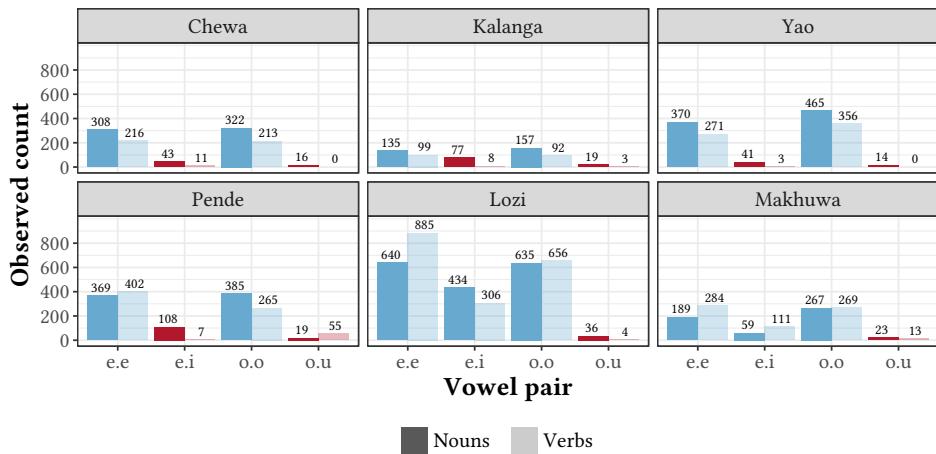


Figure 11.1: Bar chart and figures for raw counts in nouns and verbs in all six languages

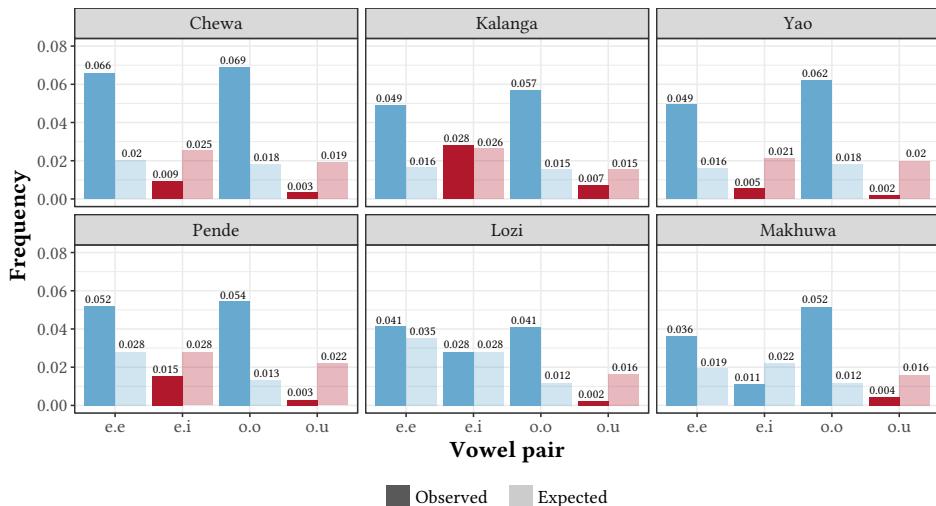


Figure 11.2: Bar chart and figures for both observed and expected frequencies in nouns in all six languages

The differences described above in nouns on the basis of the raw count data are also reflected in the observed frequencies in nouns, given in Figure 11.2. For the sake of completeness, alongside this, Figure 11.2 includes the expected frequencies for these same vowel pairs. This shows a different, much more evenly spread distribution (certain somewhat minor differences notwithstanding), indicating that these differences are not due simply to the relative frequencies in each vowel in the pair, even accounting for position.

Next, let us consider the corresponding observed–expected ratios in Figure 11.3. Firstly, this shows that the pattern seen with the raw counts and observed frequencies remains. That is, in every language, the observed–expected ratios for [e.e] and [o.o] are larger than those for [e.i] and [o.u] respectively (however, for Lozi this difference is only slight).

Secondly, those pairs that agree in height – i.e. [e.e] and [o.o] – consistently occur at expected or higher-than-expected levels whereas those pairs that disagree in height – i.e [e.i] and [o.u] – are found at much lower levels than would be anticipated in all but 2 out of 12 cases.

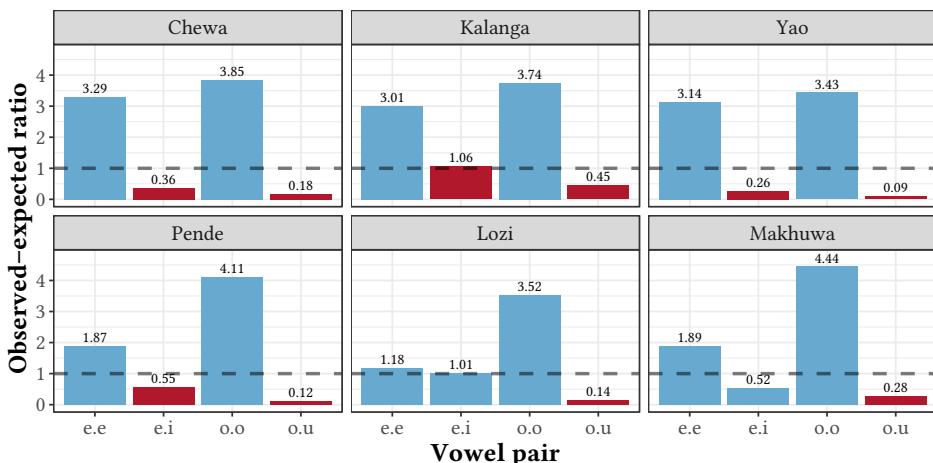


Figure 11.3: Bar chart and figures for observed–expected ratios in nouns in all six languages (the horizontal dashed line indicates a ratio of 1).

For the sake of ease of comparison, and in order to reiterate and clarify certain points made above, the observed frequencies and observed–expected ratios of relevant pairwise comparisons are pooled and re-presented in Figures 11.4, 11.5 and 11.6. Note, that, in these figures, the observed–expected ratios have been converted to log values in order to show over- and under-representation on the

same scale, with positive values indicating over-representation and negative values under-representation.

Firstly, Figure 11.4 shows the clear difference across the sample in the incidence of [e.e] and [e.i] in nouns. Likewise, Figure 11.5 demonstrates the similar but starker disparity between [o.o] and [o.u] that recurs in each language. Figure 11.6 shows that, when comparing [e.i] and [o.u] in these six languages, the latter occurs in nouns at a noticeably lower rate than the former. Lastly, comparing Figure 11.4 with Figure 11.5 shows that overall the difference in nouns between [o.o] and [o.u] is starker than between [e.e] and [e.i].

The analysis also revealed that, in nouns, back rounded [o.u] was the least common of the 25 possible vowel pairs in all six of the sample languages. This was despite the fact that [o.u] was not the vowel pair expected to be the most infrequent in any language in the sample (range 20–23; mean 21.83; median 22; standard deviation 1.17).

Front unrounded [e.i], however, varied in nouns between a rank of 13 in Kalanga and 24 in Yao (mean 20.67; median 22; standard deviation 4.03). Nonetheless, [e.i] was found to have a lower rank than expected in 5 of the 6 languages, with the sole exception being Kalanga.

5 Discussion

The first point to be acknowledged is that the under-representation of [e.i] and [o.u] and the corresponding over-representation of [e.e] and [o.o] in nouns, where alternations are absent, mirrors what is found in a great many five-vowel Bantu languages in verbs, where harmony can be seen to induce alternations.

Before discussing this any further, a related aspect of the results (especially as demonstrated by Figure 11.3) must first be addressed. This is the fact that the results do not conclusively demonstrate whether or not the harmony system of a given language, in particular the presence – as in Chewa, Kalanga, Pende and Yao – or the absence – as in Lozi and Makhwua – of front height harmony in verbs, has an influence – direct or not – on the frequencies of [e.e] and [e.i] in nouns.

In both canonical Kalanga and non-canonical Lozi, [e.i] occurs at roughly the level we would expect given random combination. However, in Kalanga [e.e] is far commoner than [e.i]. This is not the case in Lozi, where [e.e] occurs with similar frequency to [e.i], being only marginally more represented. Nevertheless, this pattern is not replicated in Makhwua, which also lacks front height harmony but matches more closely the observed–expected ratios of, for example, Pende (which of course does exhibit a form of front height harmony).

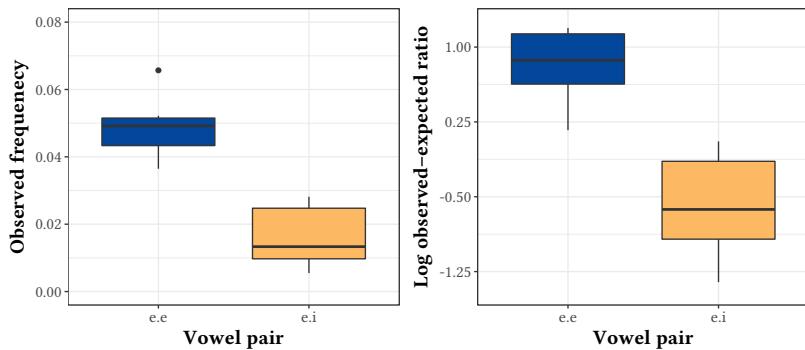


Figure 11.4: Boxplots of pooled observed frequencies (left) and log observed-expected ratios (right) in nouns for [e.e] and [e.i] only

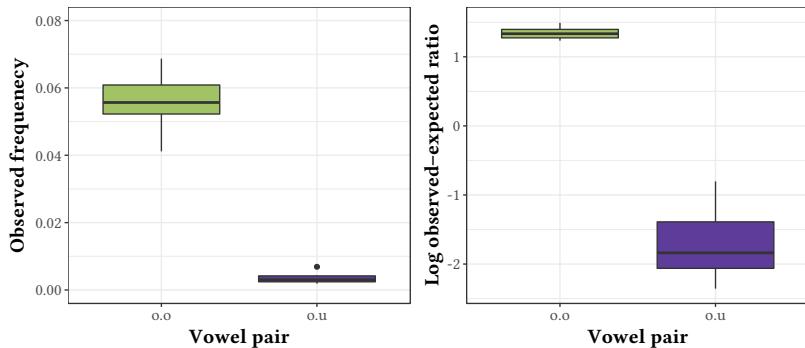


Figure 11.5: Boxplots of pooled observed frequencies (left) and log observed-expected ratios (right) in nouns for [o.o] and [o.u] only

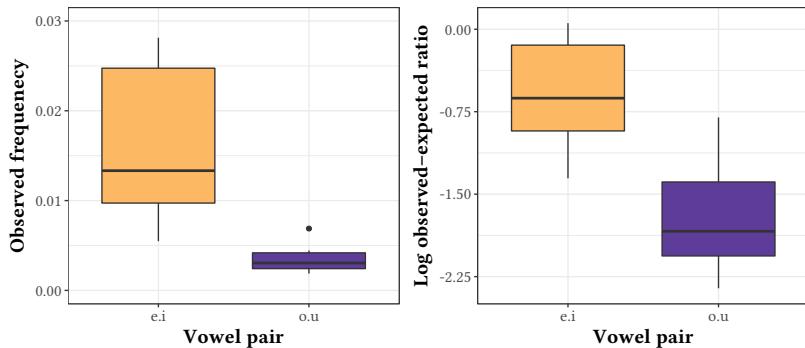


Figure 11.6: Boxplots of pooled observed frequencies (left) and log observed-expected ratios (right) in nouns for [e.i] and [o.u] only

This having been noted, the patterns seen when comparing [e.e] with [e.i] and [o.o] with [o.u] in Chewa, Kalanga, Yao and Pende and when considering the difference between the frequencies of [o.o] and [o.u] in Lozi and Makhuwa could perhaps be interpreted as a gradient counterpart in nouns to the categorical rule in verbs. This interpretation would be comparable to Martin's (2011) observations that, in English, geminates – which are prohibited tautomorphemically – are relatively under-represented in heteromorphemic items and that, in Navajo, where sibilants co-occurring within roots must agree for anteriority, compound words containing sibilants disagreeing in anteriority are likewise found less frequently than expected. On the basis of these data, Martin (2011) argues that such lexical biases arise as a compromise brought about by the competition between certain phonotactic preferences and semantic preferences.

Archangeli et al. (2012a,b) – which employed a substantially similar methodology to this paper and whose sample of six canonical five-vowel Bantu languages included Chewa, Kalanga and Yao – have also commented on the patterns of frequency found in nouns as compared to verbs. They suggest that patterns such as those observable in Chewa could be argued to be predictable simply on inductive grounds. Thus, arguing against Universal Grammar (UG) and in a favour of Emergent Grammar (EG), Archangeli et al. (2012b: 214) assert that “UG predicts an absence of an extension while EG predicts extension due to the attractor effect.”⁹

However, as Martin (2011: 757) acknowledges when considering comparable patterns in tauto- and heteromorphemic contexts in English and Navajo, such distributions “could both result from the same phonetic pressure”. This is something akin to the notion of “rule scattering” (Bermúdez-Otero 2015 after Robinson 1976). In other words, it may instead be that rather than one part of the lexicon exerting an influence over another, both share a common cause.¹⁰ In the case of English, the same pressure that gave rise to a prohibition on geminates within a morpheme also had a hand in guiding the competition in the lexicon between compounds containing geminates and those lacking geminates.

Recall also that, as noted above and as can be seen in Figure 11.3, Makhuwa, which lacks front-vowel alternations, also displays a marked difference between

⁹The “attractor effect” being the “the gradual generalization of an effect to broader classes”, such as the potential spread of vowel height harmony in verbs to nouns (Archangeli et al. 2012b: 198).

¹⁰For example, the results of the present study might be taken to suggest that the under-representation of [e.i] and [o.u] is due to the well-groundedness of their avoidance because of differences in height and that there is some sort of stronger bias against [o.u] than [e.i] (cf. however, Archangeli et al. 2012b who failed to find similar consistent effects in a sample of non-Bantu languages).

[e.e] and [e.i] in nouns. Therefore, in this particular instance at least, this cannot be due to the influence of the effect of harmony in verbs.

Moreover, it is potentially problematic for such accounts that [o.u] is much more under-represented than expected in nouns than [e.i] considering that, in four of the six sample languages, both pairs of vowels occur in extremely low levels in verbs. Thus, as [e.i] and [o.u] behave similarly in verbs in languages with both front and back height harmony, a difference in their behaviours in nouns is unexpected. This is also further reflected in a more widely cross-Bantu context by the fact that there appear to be no – or at least vanishingly few – cases of Bantu languages that possess front height harmony but lack back height harmony (Hyman 1999: 245).

6 Conclusion

In this study of six Bantu languages possessing a five-vowel inventory, I examined vowel-pair frequencies in nouns with a particular focus on [e.e]–[e.i] and [o.o]–[o.u], and considered the results of these pairs in relationship with alternations seen in verbs due to vowel height harmony.

The results show that [e.e] and [o.o], which agree in height, are generally over-represented in nouns and that [e.i] and [o.u], which correspondingly disagree in height, are generally under-represented. It was also found that the overall difference in representation of [o.o] compared with [o.u] was greater than the difference between [e.e] and [e.i]. Additionally, the back rounded pair [o.u] is without exception less frequent than front unrounded [e.i] in the current sample. This then suggests that, although there is pressure to avoid both [e.i] and [o.u], this pressure is greater regarding [o.u] than [e.i]. As for the effect of the harmony system, in three of the four languages with front height harmony [e.i] was under-represented in nouns but this was only found in one of the two languages in which front height harmony is absent.

Future work will widen the scope of this study to look at other vowel pairs that are integral to the vowel harmony systems of the Bantu language, such as [e.u] which is an important pair when considering the asymmetric manifestation of harmony in Chewa and other canonical languages. It would also be desirable not only to look at particular languages in closer detail but also to investigate a larger sample of Bantu languages and also expand out of the Bantu family, looking at a larger typologically-balanced sample, to determine whether there is any broader cross-linguistic tendency for the languages to follow patterns similar to those observed in the data presented here.

Acknowledgements

I would like to thank Wendell Kimper and Ricardo Bermúdez-Otero for supervision, Stefano Coretta for useful discussion, the audience at the 50th Annual Conference on African Linguistics in Vancouver, Canada for their questions and feedback as well as editor Laura Downing and the two reviewers of this paper for their corrections, criticisms and suggestions. Any shortcomings present in this work are my own.

References

- Archangeli, Diana, Jeff Mielke & Douglas Pulleyblank. 2012a. From sequence frequencies to conditions in Bantu vowel harmony: Building a grammar from the ground up. *McGill Working Papers in Linguistics* 22(1). 1–26.
- Archangeli, Diana, Jeff Mielke & Douglas Pulleyblank. 2012b. Greater than noise: Frequency effects in Bantu height harmony. In Bert Botma & Roland Noske (eds.), *Phonological Explorations: Empirical, Theoretical and Diachronic Issues*, 191–222. Berlin: De Gruyter.
- Beckman, Jill N. 1997. Positional faithfulness, positional neutralisation and Shona vowel harmony. *Phonology* 14(1). 1–46.
- Bermúdez-Otero, Ricardo. 2015. Amphichronic explanation and the life cycle of phonological processes. In Patrick Honeybone & Joseph Salmons (eds.), *The Oxford handbook of historical phonology*, 374–399. Oxford: Oxford University Press.
- Downing, Laura J. & Al D. Mtenje. 2017. *The phonology of Chichewa* (The Phonology of the World's Languages). New York: Oxford University Press.
- Gusimana, Barthelemy. 1972. *Dictionnaire pende-français*. Available to download from the Comparative Bantu Online Dictionary. <http://www.cbold.ish-lyon.cnrs.fr/Dico.asp?Langue=Gusimana>.
- Harris, John. 1994. Monovalency and opacity: Chicheŵa height harmony. *UCL Working Papers in Linguistics* 6. 509–547.
- Harris, John. 1997. Licensing inheritance: An integrated theory of neutralization. *Phonology* 14. 315–370.
- Harrison, K. David, Emily Thomforde & Michael O'Keefe. 2002–2004. *The vowel harmony calculator*. http://www.swarthmore.edu/SocSci/harmony/public_.html.

- Hyman, Larry M. 1999. The historical interpretation of vowel harmony in Bantu. In Jean-Marie Hombert & Larry M. Hyman (eds.), *Bantu historical linguistics: Theoretical and empirical perspectives*, 235–295. Stanford, CA: CSLI Publications.
- Hyman, Larry M. 2003. Segmental phonology. In Derek Nurse & Gérard Philippson (eds.), *The Bantu languages*, 42–58. London: Routledge.
- Jalla, Adolphe. 1982. *Database of “Dictionary of the Lozi language, vol. 1: Lozi–English”*. Available to download from the Comparative Bantu Online Dictionary. Lusaka. <http://www.cbold.ish-lyon.cnrs.fr/Dico.asp?Langue=Lozi>.
- Katamba, Francis. 1984. A nonlinear analysis of vowel harmony in Luganda. *Journal of Linguistics* 20(2). 257–275.
- Kisseberth, Charles W. 1996. *Makhua–English lexicon*. Available to download from the Comparative Bantu Online Dictionary. <http://www.cbold.ish-lyon.cnrs.fr/Dico.asp?Langue=Makhua>.
- Kula, Nancy C. 2002. *The phonology of verbal derivation in Bemba*. PhD thesis. Universiteit Leiden. (Doctoral dissertation).
- Kula, Nancy C. & Lutz Marten. 2000. Constraints and processes: Evidence from Bemba, Herero and Swahili. *SOAS Working Papers in Linguistics* 10. 91–102.
- Marten, Lutz. 1996. Swahili vowel harmony. *SOAS Working Papers in Linguistics & Phonetics* 6. 61–75.
- Marten, Lutz. 1997. Licensing constraints for Swahili vowel harmony. *Papers in Linguistics from the University of Manchester* 2. 239–255.
- Martin, Andrew. 2011. Grammars leak: Modeling how phonotactic generalizations interact within the grammar. *Language* 87(4). 751–770.
- Mathangwane, Joyce. 1994. *Kalanga lexical database*. Available to download from the Comparative Bantu Online Dictionary. <http://www.cbold.ish-lyon.cnrs.fr/Dico.asp?Langue=Kalanga>.
- Mtenje, Al D. 1985. Arguments for an autosegmental analysis of Chichewā vowel harmony. *Lingua* 66(1). 21–52.
- Mtenje, Al D. 2001. *Database of “Chewa dictionary”*. Available to download from the Comparative Bantu Online Dictionary. <http://www.cbold.ish-lyon.cnrs.fr/Dico.asp?Langue=Chewa>.
- Ngunga, Armindo. 2001. *Yao lexical database*. Available to download from the Comparative Bantu Online Dictionary. <http://www.cbold.ish-lyon.cnrs.fr/Dico.asp?Langue=Yao>.
- Nurse, Derek & Gérard Philippson. 2003. Introduction. In Derek Nurse & Gérard Philippson (eds.), *The Bantu languages*, 1–12. London: Routledge.
- Odden, David. 2015. Bantu phonology. In *Oxford Handbooks Online*. Oxford: Oxford University Press. DOI: 10.1093/oxfordhb/9780199935345.013.59.

11 Asymmetries in vowel-pair frequencies and height harmony in Bantu

- R Core Team. 2019. *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. <http://www.R-project.org>.
- Robinson, Orrin Warner. 1976. A ‘scattered’ rule in Swiss German. *Language* 52(1). 148–162.
- Sandstedt, Jade Jørgen. 2019. *A contrastivist approach to the emergence of sound inventories*. Talk given at the 27th Manchester Phonology Meeting, Manchester, UK, 23–25 May. <https://jsandstedt.hcommons.org/publications-presentations>.
- Scullen, Mary Ellen. 1992. Chicheŵa vowel harmony and underspecification theory. *Linguistic Analysis* 22. 218–245.

Chapter 12

Acoustic correlates to contrastive tone heights in two African languages

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Languages with contrastive tone may phonetically realize tonal distinctions through changes in F0, relative F0, and vowel duration, amongst other cues (Abramson 1979; Zhang 2001; Levi 2005; Brunelle & Kirby 2016; Yu 2010). It has been argued that there is a universal correlation between vowel duration and F0, where H tones correspond to short vowels, and L tones correspond to long vowels (Abramson 1979; Dreher & Lee 1968; Gandour 1977). This pilot study expands the study of acoustic correlates of tonal contrasts by examining the interaction of pitch and duration in two understudied African languages: Nobiin and Guébie. The pilot study results do not show evidence for a negative correlation between pitch and vowel duration, suggesting this presumed universal correlation may be language (or even speaker) specific. Furthermore, the acoustic correlates to tone are independent of the phonological inventories of Nobiin and Guébie, which has implications for the phonetics/phonology interface.

1 Introduction

Lexical tone contrast may have multiple acoustic correlates. Lexical tone may be realized by relative F0, changes in F0, or vowel length, amongst other phonetic cues (Abramson 1979; Zhang 2001; Levi 2005; Brunelle & Kirby 2016; Yu 2010). It has been suggested that universal phonetic properties influence the relationship between F0 and vowel duration. Many studies have found a negative correlation between F0 and vowel duration: high tones correlate to shorter vowel durations, while low tones are correlated with longer vowels in Thai, Mandarin, and Medumba (Gandour 1977; Dreher & Lee 1968; Franich 2016). Recently, however,

Madeleine Oakley. 2021. Acoustic correlates to contrastive tone heights in two African languages. In Akinbiyi Akinlabi, Lee Bickmore, Michael Cahill, Michael Diercks, Laura J. Downing, James Essegbe, Katie Franich, Laura McPherson & Sharon Rose (eds.), *Celebrating 50 years of ACAL: Selected papers from the 50th Annual Conference on African Linguistics*, 239–259. Berlin: Language Science Press. DOI: 10.5281/zenodo.5578840



the universality of this negative correlation has been questioned. Studies looking at languages with level tone have found a positive correlation between F0 and vowel duration, suggesting that the assumed universal correlation between F0 and vowel duration may be a language specific property rather than a universal phonetic constraint (Yu 2010; Mamadou 2018; Kpodo & Akpanglo-Nartey 2018). Additionally, it has been argued that the phonological system of a language will impact what phonetic units are used to cue prominence (Remijsen 2014). A language may not use vowel length to cue stress if vowel length is contrastive in the language. The present work is a pilot study that examines the relationship between vowel length and tone in two underdocumented African languages, Nobiin (Nilo-Saharan) and Guébie (Kru).

1.1 Acoustic correlates of tone

Multiple acoustic features may correlate to tone or stress, which serves to optimize the prominence of the unit. Stress is argued to be realized primarily through vowel lengthening, while tone is realized primarily through F0 (Remijsen 2014; Lunden et al. 2017). However, in languages such as Washo, Welsh, and Zapotec that have contrastive vowel length in addition to stress, other acoustic cues besides vowel lengthening will be primarily used as acoustic correlates to prominence (Remijsen 2014). If a language has contrastive vowel duration, vowel length may not be optimal to cue stress (Berinstein 1979; Remijsen 2014). This implies that the acoustic correlates to prominence may be predictable based on the phonological system of a language, as optimal phonetic correlates to prominence may be in a one-to-one relationship with phonological information. The present study expands on this work to look at the acoustics of tone, rather than stress.

1.2 Relationship between acoustic correlates of tone

Studies investigating the relationship between the acoustic correlates of tone and prominence have suggested that there may be a universal relationship between acoustic correlates and tone. H tones tend to be short, while L tones tend to be long. Evidence for a negative correlation between F0 and vowel duration comes from studies examining perception or production data from Thai, Mandarin, and Medumba, among others (Gandour 1977; Dreher & Lee 1968; Franich 2016). Thai has contrastive vowel length and contrastive tone. However, vowel length has been lost in certain Thai dialects. Gandour argues that the loss of the phonological distinction of contrastive long vowels is conditioned by tone (Gandour 1977). Gandour 1977 argues that the negative correlation between vowel duration and

average F0 of tones in Thai may be physiologically motivated, which can additionally condition sound change.

Perception studies have largely supported the claim that F0 and vowel duration are inversely related. In one such study, speakers of Medumba participated in a word identification task, and results show that vowels with short durations and low F0 were more likely to be identified as H tones than vowels with longer durations (Franich 2016). These results expand the claim that there may be a universal negative correlation between vowel duration and F0 by looking at perception data from a level-tone language. However, Medumba does not have contrastive vowel length, meaning duration is exclusively used as a cue to tonal contrasts. The present study will further address how vowel length and pitch interact, specifically by looking at a language that has contrastive vowel length and two level tones (Nobiin), and a language with no contrastive vowel length and four contrastive tones (Guébie).

The studies addressed above have found production and perception data to support the claim that vowel duration and F0 can be used as acoustic cues to tonal contrasts in both contour tone and level tone languages. However, recent studies looking at tone production in various level tone languages have shown evidence for a *positive* correlation between pitch and duration. In one such study, acoustic data from speakers of Ewe and Ga (both Kwa languages that have level and contour tones, and no contrastive vowel length) shows that F0 and vowel duration are positively correlated (Kpodo & Akpanglo-Nartey 2018). Similarly, acoustic data from speakers of Yoruba (a language with three level tones and no contrastive vowel length) finds that vowels on H tones have a longer duration than M or L tone vowels (Mamadou 2018). This calls into question whether or not the negative correlation between pitch and duration found in many languages is physiological (and thus universal).

1.3 Phonological inventory of Nobiin and Guébie

The present analysis is a pilot study, which expands on work addressing the relationship between pitch and vowel duration to two underdocumented African languages; Nobiin and Guébie. Nobiin is a Nilo-Saharan language spoken in southern Egypt and northern Sudan. Because of geopolitical reasons, many Nobiin speakers have been displaced. Nobiin has two contrastive level tones: H and Ø. On the surface, Ø is realized as L. Minimal pairs show level tone is lexically contrastive in Nobiin:

- (1) a. /dawwí/
elder
'elder'
b. /dawwi/
path
'path'

Nobiin has five short vowels and five long vowels: /i, i:, e, e:, a, a:, u, u:, o, o:/.
All of the vowels can bear a H or L tone.

Guébie is a Kru language spoken by around 7,000 speakers in southwest Côte d'Ivoire. Guébie has four contrastive level tones, labeled here as tones 1–4, 1 being the low tone and 4 being the high tone (Sande 2017). Contour tones are also contrastive in Guébie, with tone melodies 41, 31, 42, 32, 13, 23, and 24 attested. However, contour tones are not examined in the present study, as the primary goal is to compare the acoustic correlates to level tone in Nobiin and Guébie. There are 10 contrastive vowels in Guébie, /i, e, ε, u, ʊ, o, ɔ, ə, a/, and vowel length is not contrastive (Sande 2017).

This study seeks to answer the following research questions:

1. How does vowel length interact with tone?

In languages that have tone and phonemic vowel length (Nobiin), do H tones have shorter vowel durations than L tones? Do short vowels have higher F0 than long vowels?

2. What are the acoustic correlates to tone in Nobiin and Guébie?

Do languages with contrastive vowel length (Nobiin) also use vowel length to distinguish tonal contrasts? Does this differ from languages without contrastive vowel length (Guébie)?

3. Do Nobiin and Guébie show evidence for a negative or positive correlation between F0 and vowel duration?

Acoustic production data from two speakers of Nobiin and two speakers of Guébie are examined in this pilot study. Although a small number of speakers are included, both Nobiin and Guébie have very little acoustic-phonetic data available. Nobiin is classified as a threatened language (Eberhard et al. 2020), and many speakers have been displaced. Due to the political nature of this displacement, little documentation work has been undertaken. This study provides phonetic data of tone in Nobiin, which has previously not been available. Additionally, Guébie is an endangered language, with little recorded phonetic data.

Nearly all speakers of Guébie are bilingual, and learn French from an early age. Because of cultural considerations of working in the community, few recordings are available that are suitable for phonetic analysis, thus highlighting the importance of this current description, despite the small number of speakers.

2 Methods

2.1 Nobiin speakers' production task

Two Nobiin speakers were recorded in Washington, D.C. in a quiet classroom. Both speakers are male and between the ages of 40 and 60. For the production task, a word list was designed to elicit H and L tones on vowels in object position. The word list controlled for vowel quality to the extent possible. Items on the word list had all ten Nobiin vowels with H and L tone. While an effort was made to include a token of H and L vowels for every Nobiin vowel, a few gaps remain. The present study does not include L tone tokens of /o/.

Participants were given the lexical item in English and asked to translate it into Nobiin. Each word was produced in the carrier phrase shown in (2).

- (2) aj “X” igitis
 1SG “X” say.1SG
 ‘I say “X”’

The target word “X” in each carrier phrase was analyzed. Participants repeated this phrase three times, and one token of each lexical item was selected for analysis. A total of 82 vowels are included in the present study. Recordings were made using a Zoom H4n recorder and a lavalier microphone.

Acoustic measurements were made in Praat (Boersma & Weenink 2017). F0 was measured at three evenly spaced measurement points throughout the duration of the vowel: the first measurement point (T1) was taken at 1/3 of the vowel duration, the second (T2) at 1/2 of the vowel duration, and the final measurement point (T3) was taken at 2/3 of the duration of the vowel. The first third and last third of the vowel was not measured to avoid the effects of consonant voicing on F0 to the extent possible.

Pitch slope was measured over the middle 1/3 of the vowel. Slope was calculated for each vowel by subtracting F0 (in Hz) at time T1 from the F0 value (in Hz) at time T3. This value was then divided by the duration of the vowel (in ms). This measurement provides information about how pitch changes throughout the duration of the vowel.

Vowel duration of each target vowel was measured in milliseconds. In order to control for the speech rate of each utterance, vowel duration was measured as a ratio with the pronoun in the subject position. Thus, the duration of the pronoun [aj] was measured in milliseconds for each phrase, and the duration of the target vowel was divided by the duration of the pronoun. The results report duration as a ratio value.

First, pitch measurements taken across the vowel duration were compared using *t*-tests in order to describe the phonetics of tone in Nobiin. To address the first research question, a factorial ANOVA comparing vowel duration for phonemically short and long vowels, and H and L tones was conducted to both describe the phonetic correlates to vowel length, and investigate the interaction between tone and vowel duration. A separate factorial ANOVA comparing F0 at the vocalic midpoint for H and L tones, and long and short vowels, was included to further address research question 1. Next, to address research question 2 regarding the acoustic correlates to tone, a logistic mixed-effects model was run, with tone identity as the dependent variable, and pitch and vowel duration measures as fixed-effects. This analysis shows which acoustic factors distinguish contrastive tone in Nobiin. Finally, to address research question 3 regarding the relationship between acoustic correlates to tone, a correlation analysis was run for each Nobiin speaker, to see how pitch and (phonetic) vowel duration correlate. This analysis serves to examine whether the current data supports the presumed universal negative correlation between pitch and vowel duration. Results are presented in §3.

2.2 Guébie speakers' production task

Two Guébie speakers were recorded in Gnagbodougnoa, Côte d'Ivoire. Both speakers are male and between the ages of 30 and 45. Due to constraints on resources in the field work setting, recording sessions took place in quiet locations outside of homes. For the production task, target words were chosen to elicit every combination of vowel and tone pairs. The word list controlled for the voicing on the preceding and following consonants to the extent possible.

Speakers were given a phrase in French and asked to translate the phrase into Guébie. All of these phrases had the third person singular pronoun [ɔ] in the subject position. Carrier phrases were not used in elicitations because of cultural considerations of collecting data in Gnagbodougnoa. All phrases were repeated three times, and one lexical item in phrase medial position was selected for analysis. Because recordings were not made in a quiet lab-like setting, tokens were only chosen if they had minimal background noise. A total of 453 tokens are thus

included in the present analysis. Again, recordings were made using a Zoom H4n recorder and a lavalier microphone.

The same acoustic measurements described above were also analyzed for Guébie speakers in PRAAT. For vowel duration, the duration of the pronoun [ɔ] was measured in milliseconds for each phrase, and the duration of the target vowel was divided by the duration of the pronoun. All other acoustic measurements are consistent for Nobiin and Guébie speakers.

Pitch measurements taken at three points across the vowel duration were compared using ANOVAs. Next, to address research question 2, a logistic mixed-effects models was run, with tone identity as the dependent variable, and pitch and vowel duration measures as fixed-effects. The purpose of this analysis is to determine the acoustic correlates to pitch in Guébie, which has yet to be documented. Finally, a correlation analysis was run for each speaker comparing pitch and vowel duration, in order to determine whether these two phonetic measures are negatively correlated in Guébie, as predicted by previous literature.

3 Results

3.1 Nobiin acoustic results

First, F0 at three time points was measured for all vowels and compared across H and L tones. F0 at each of the three time points was averaged (see Svantesson & House 2006 for similar methods), and compared for H and L tones. Figure 12.1 and Figure 12.2 show F0 throughout the duration of the vowel for Speaker 1 and Speaker 2 respectively.

Figure 12.1 and Figure 12.2 show, as expected, that H tones have a higher average F0 at each time point compared to L tones. *t*-tests at each time point for each speaker are shown in Table 12.1, and confirm that H tones have significantly higher F0 values at T1, T2, and T3. Additionally, F0 tends to increase over the duration of the vowel for H tones (for both Speakers 1 and 2), and F0 decreases over the duration of the vowel for L tones.

Table 12.1: *t*-test results comparing average F0 of H and L tones at three different time points throughout the duration of the vowel

	T1	T2	T3
Speaker 1	$2.44 \times 10^{-6}***$	$1.16 \times 10^{-6}***$	$5.52 \times 10^{-7}***$
Speaker 2	0.018*	0.0043**	0.0048**

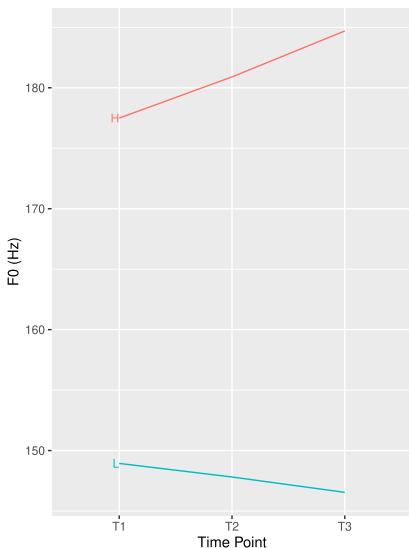


Figure 12.1: F0 measurements during the middle 1/3 of vowel duration for H and L tones produced by Nobiin Speaker 1

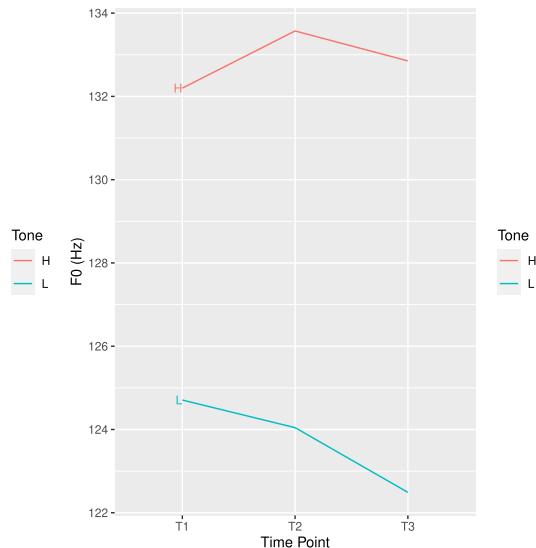


Figure 12.2: F0 measurements during the middle 1/3 of vowel duration for H and L tones produced by Nobiin Speaker 2

Next, vowel duration was compared for phonemically short and long vowels, and for H and L tones, in order to examine how phonetic vowel duration varies according to phonological tone and vowel length. A factorial ANOVA with vowel duration as the dependent variable, and tone and phonemic vowel length as independent variables was used to compare vowel length for these contrasts. Two separate ANOVAs were conducted for Speaker 1 and Speaker 2, and results can be seen in Figure 12.3 and Figure 12.4.

For Speaker 1, there is a main effect of phonemic vowel length on vowel duration ($F = 20.159; p = 5.28 \times 10^{-5}***$), and a marginal effect of the interaction between tone and vowel length on vowel duration ($F = 3.83; p = 0.056$). There is no effect of tone on vowel duration ($F = 0.30; p = 0.584$). Long vowels produced by Speaker 1 are longer in duration than short vowels (as expected). H tones also tend to be longer in phonemically short vowels than L tones, but H tones are shorter than L tones in phonemically long vowels.

For vowel duration for Speaker 2, there is a main effect of phonemic vowel length on duration ($F = 6.577; p = 0.015^*$), showing phonemically long vowels have a longer duration than short vowels. There is also a main effect of tone on vowel duration ($F = 5.179; p = 0.029^*$). H tones tend to have a longer duration than L tones, for both phonemically long and short vowels. There is no effect on

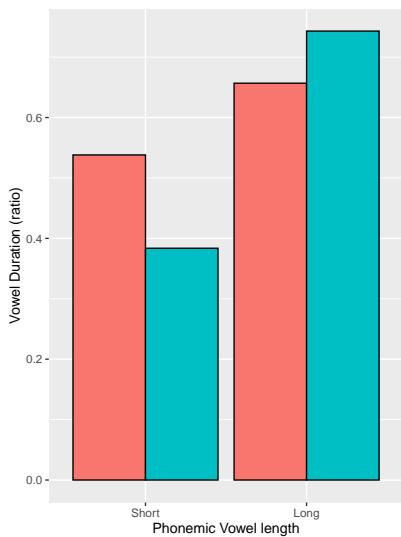


Figure 12.3: Vowel duration for phonemically short and long vowels, and H and L tones, produced by Nobiin Speaker 1

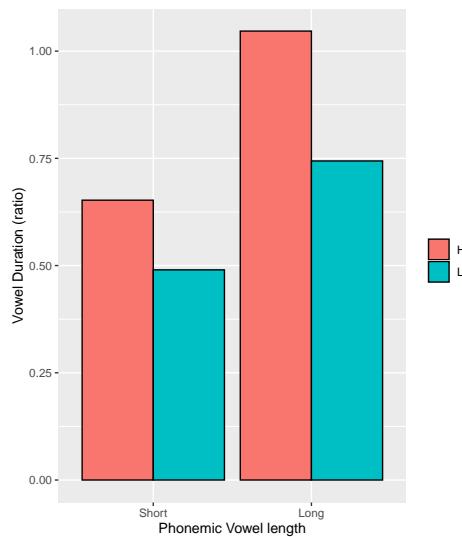


Figure 12.4: Vowel duration for phonemically short and long vowels, and H and L tones, produced by Nobiin Speaker 2

the interaction between tone and vowel length on vowel duration ($F = 0.274$; $p = 0.605$).

Having confirmed that contrastive vowel length does, in fact, correspond to longer vowel duration in Nobiin, the interaction of phonemic vowel length and tone on F0 was measured. Two factorial ANOVAs, one for each speaker, was run with F0 at the vowel midpoint as the dependent variable, and tone and vowel length as the independent variables. Results for Nobiin Speaker 1 show a significant main-effect of tone on F0 ($F = 35.26$; $p = 4.49 \times 10^{-7}***$), and no significant effect of vowel length ($F = 0.057$; $p = 0.812$) or the interaction of tone and vowel length ($F = 0.064$; $p = 0.802$). The results for Nobiin Speaker 1 are shown in Figure 12.5. Nobiin Speaker 2 shows the same pattern. There is a main-effect of tone on F0 at the vowel midpoint ($F = 8.061$; $p = 0.0079^{**}$), and no effect of vowel length ($F = 0.013$; $p = 0.91$) or the interaction between vowel length and tone ($F = 0.167$; $p = 0.685$). These results are shown in Figure 12.6.

These results show that phonemic vowel length does not effect pitch measurements. Long vowels and short vowels have very similar pitch measurements for H and L tones. Next, a logistic regression model was run in order to see the effects of *phonetic factors* on predicting tone identity.

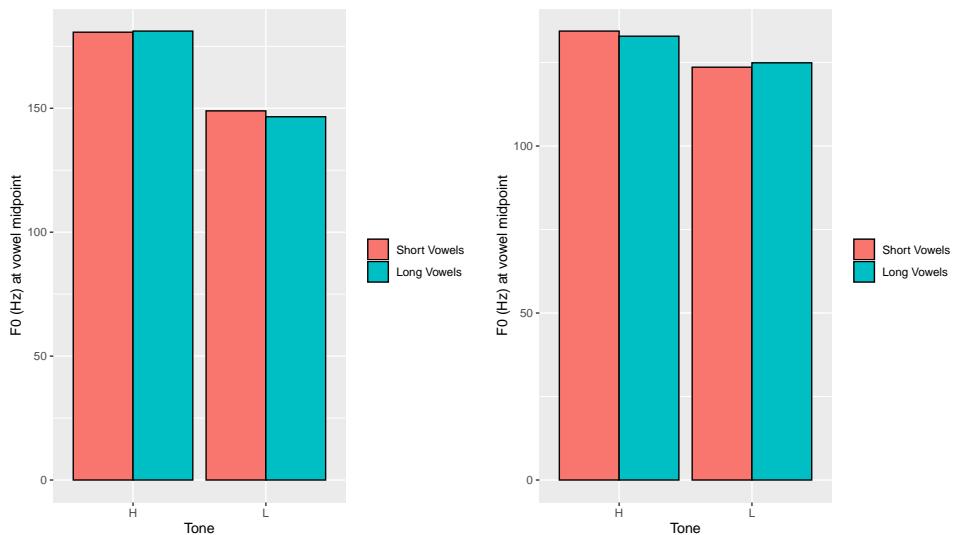


Figure 12.5: F0 of H and L tones at the vocalic midpoint, for short and long vowels, produced by Nobiin Speaker 1

Figure 12.6: F0 of H and L tones at the vocalic midpoint, for short and long vowels, produced by Nobiin Speaker 2

Two logistic mixed-effect regression models were run with tone type as the dependent variable; one model was run for short vowels, and one model was run for long vowels. Separate models were run for phonemically short and long vowels to only examine which phonetic factors are significant in predicting tone identity, while controlling for phonemic vowel length. For both models, F0 at the vowel midpoint, vowel duration, and F0 slope were included as fixed effects. F0 at the vowel midpoint was included as a measure of pitch to avoid the effects on pitch of surrounding consonants, to the extent possible. Random effects included speaker, vowel quality, and preceding consonant voicing. Table 12.2 shows the predictors that were significant from the models in predicting tone identity.

The outputs of the regression models show slightly different patterns for short and long vowels in Nobiin. Table 12.2 shows for phonemically short vowels, F0 at the vowel midpoint is a significant predictor of whether a tone is H or L. Vowel duration and pitch slope are not significant in the model as predictors of tone. For phonemically long vowels, Table 12.2 shows that F0 at the vowel midpoint is only significant at the 0.1 level in predicting whether a tone is H or L. Similar to short vowels, pitch slope and vowel duration are not significant factors in predicting tone identity for phonemically long vowels.

Table 12.2: Acoustic factors that influence tone identity; output of logistic-regression models for Nobiin speakers' productions of phonemically *short* and *long* vowels

Fixed-effect	<i>p</i>	
	short vowels	long vowels
F0 at vowel midpoint	0.017*	0.075
Pitch slope	0.844	0.352
Vowel Duration	0.132	0.483

Finally, Pearson's correlation was used to examine the relationship between F0 at the midpoint of the vowel and vowel duration. The midpoint was chosen for the pitch measurement in order to avoid influence from the preceding and following segments on F0. Again, phonemically short and long vowels were measured separately because vowel length is contrastive in Nobiin, and is thus controlled for in order to only examine the interaction between *phonetic* vowel duration and pitch. The two speakers were also measured separately, due to individual differences seen in the data. Figure 12.7 and Figure 12.8 show (respectively) the correlation between F0 and vowel duration for Speaker 1's phonemically short and long vowels, and Figure 12.9, and Figure 12.10 show (respectively) the correlation between vowel duration and mean F0 for Speaker 2's phonemically short and long vowels.

For Nobiin Speaker 1, there is a moderate correlation between mean F0 and vowel duration for phonemically short vowels (Pearson's $r = 0.538$; $p = 0.0054$). This shows that pitch and vowel duration are moderately positively correlated for phonemically short vowels. For Speaker 1's phonemically long vowel productions, mean F0 and vowel duration are only weakly correlated (Pearson's $r = 0.179$; $p = 0.423$). Although there is a positive correlation between pitch and vowel duration, the correlation is weak and is not significant.

Nobiin Speaker 2 shows a different pattern from Speaker 1. For Speaker 2's phonemically short vowels, F0 and vowel duration are moderately *negatively* correlated (Pearson's $r = -0.308$; $p = 0.199$), and Speaker 2's phonemically long vowels show a weak negative correlation between F0 and vowel duration (Pearson's $r = -0.148$; $p = 0.583$). Although Speaker 2 shows a negative correlation between pitch and vowel duration, the correlation is not robust for short or long vowels, and is not significant.

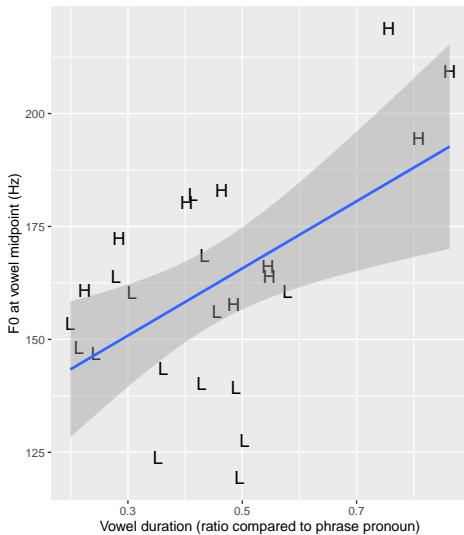


Figure 12.7: Nobiin Speaker 1: correlation between mean F0 and vowel duration for phonemically short vowel productions

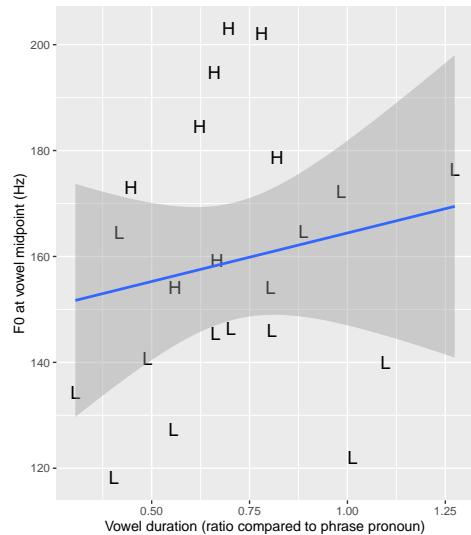


Figure 12.8: Nobiin Speaker 1: correlation between mean F0 and vowel duration for phonemically long vowel productions

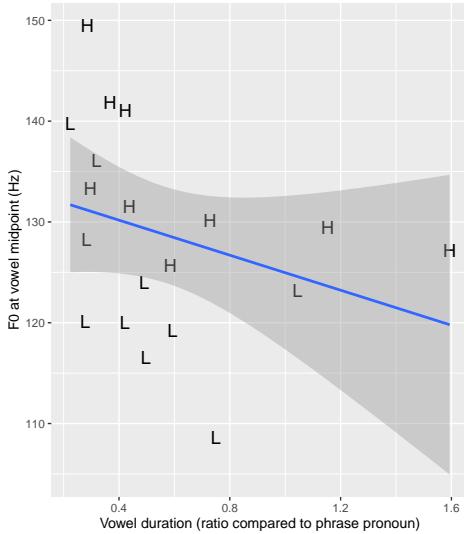


Figure 12.9: Nobiin Speaker 2: correlation between mean F0 and vowel duration for phonemically short vowel productions

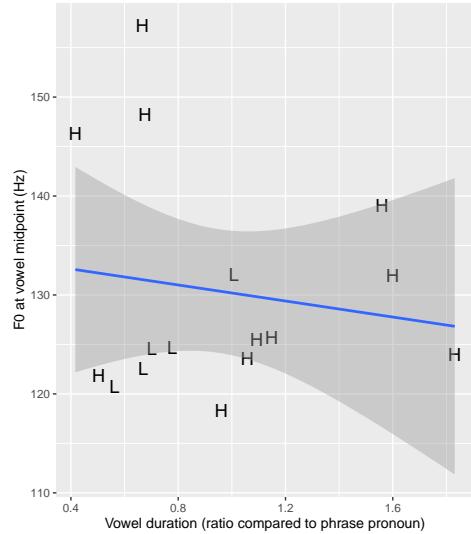


Figure 12.10: Nobiin Speaker 2: correlation between mean F0 and vowel duration for phonemically long vowel productions

3.2 Guébie acoustic results

Turning to the Guébie results, we first look at the differences in F0 for the four tone heights. Figure 12.11 and Figure 12.12 show the average F0 values in Hz for the four contrastive level tones at three time points.

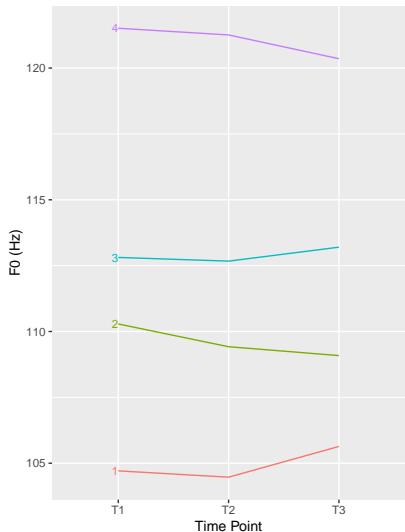


Figure 12.11: Average F0 measured throughout the vowel for tones 1, 2, 3, and 4 produced by Guébie Speaker 1

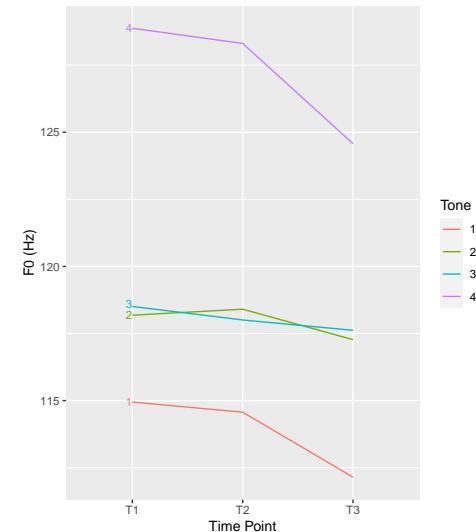


Figure 12.12: Average F0 measured throughout the vowel for tones 1, 2, 3, and 4 produced by Guébie Speaker 2

In general, Tone 4 has the highest pitch value at all three time points measured, followed by Tone 3, Tone 2, and finally Tone 1. Exceptionally, Speaker 2's pitch patterns show that Tone 2 rises to the midpoint of the vowel, at which point it has a high pitch value than Tone 3, and then pitch decreases throughout the second half of the vowel.

A one-way ANOVA for Speaker 1 and Speaker 2 show a main-effect of tone on pitch at all three measurement points (see Table 12.3 for results). However, a post-hoc Tukey HSD test confirms that not all tones have significantly different pitch values. First looking at Speaker 1, Tones 1, 2, and 3 do not differ at T1, T2, or T3. Tones 1 and 2 differ from Tone 4 at all three time points. Tone 3 differs from Tone 4 only at T1 and T2, notably caused by a rise in pitch for Tone 3 throughout the duration of the vowel, and a decrease in pitch for Tone 4 throughout the vowel.

A post-hoc Tukey HSD test for Speaker 2's ANOVA results show a very similar pattern to Speaker 1. Tone 1, Tone 2, and Tone 3 do not differ in pitch at anytime point, however all three tones differ from Tone 4 at T1, T2, and T3.

Table 12.3: Results from ANOVAs comparing pitch for Tones 1–4 at 3 time points throughout the vowel

	T1	T2	T3
Speaker 1	$3.18 \times 10^{-5}***$	$1.52 \times 10^{-5}***$	0.0018**
Speaker 2	$3.61 \times 10^{-7}***$	8.96×10^{-6}	0.00012***

The results are surprising, given both phonetic and phonological evidence that tones are contrastive in Guébie (Sande et al. 2020 finds phonetic evidence of pitch differences among tone heights in Guébie, and Sande 2017 and Sande 2018 shows phonological evidence of contrastive level tones in Guébie). There are two explanations that will be explored further here for why the present data may show pitch neutralized across the 4 level tones in Guébie. The first possibility is that the voicing of preceding consonants may impact F0 measurements. Figure 12.13 and Figure 12.14 show the average pitch of Tones 1–4 at the vowel midpoint (T2) following a voiced consonant and a voiceless consonant. A factorial ANOVA for Speaker 1, with F0 as the dependent variable, and preceding voicing and tone as the independent variable, does not show a main effect of preceding consonant voicing on F0 ($p = 0.398$), or the interaction between tone and preceding voicing ($p = 0.92$). Speaker 2 does appear to have lower pitch on vowels following voiced consonants than voiceless consonants, particularly for Tones 3 and 4. A factorial ANOVA for speaker 2 does show a main effect of preceding voicing on F0 ($p = 0.0058**$). This may explain why Tones 2 and 3 do not differ in F0 for Speaker 2.

The second possibility is that the phrase position in the carrier phrase of each chosen vowels may interact with intonation. See §4 for further discussion on this point.

Next, a logistic mixed-effects model was run in order to reveal which acoustic factors contributed to tone height identity. Tone identity was included as the dependent variable, and F0 at the vowel midpoint, vowel duration, and pitch slope were included as fixed effects. Speaker, vowel quality, and preceding consonant voicing were included as random effects. The output of the model is summarized in Table 12.4.

The mixed-effects model shows that F0 at the vowel midpoint is a significant factor in predicting tone in Guébie. This result is somewhat expected from results discussed above in Figure 12.11 and Figure 12.12, which shows that tones do differ in F0 (although Tones 1–3 are not significantly different in F0 values. This will

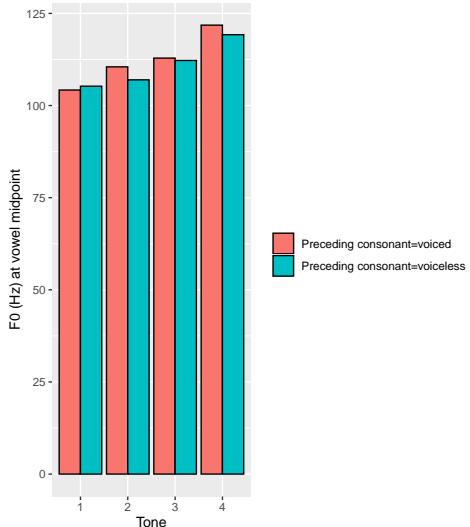


Figure 12.13: Average F0 at vowel midpoint following voiced and voiceless consonants for Tones1-4 produced by Guébie Speaker 1

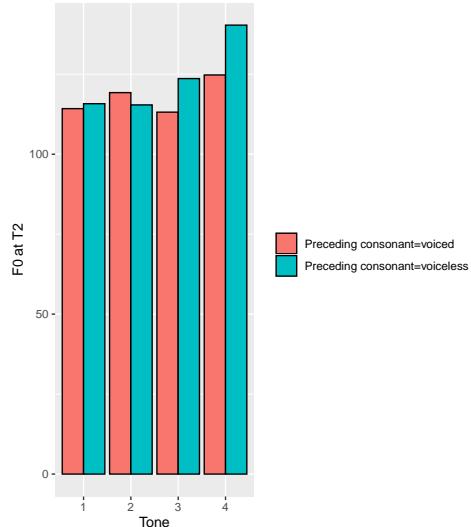


Figure 12.14: Average F0 at vowel midpoint following voiced and voiceless consonants for Tones1-4 produced by Guébie Speaker 2

Table 12.4: Acoustic factors that influence tone height identity; output of logistic-regression model for Guébie speakers

Fixed-effect	<i>p</i>
F0 at vowel midpoint	0.0083**
Pitch slope	0.286
Duration Ratio	0.403

be discussed further in §4). The results of the logistic regression, which include vowel quality and preceding consonant voicing as random effects, does find F0 as a significant predictor of tone. Vowel duration and pitch slope, however, are not significant predictors of tone identity.

Finally, the correlation between mean F0 and vowel duration was measured in order to describe the relationship between these two acoustic measurements. The correlation of vowel duration and pitch are shown in Figure 12.15 for Guébie Speaker 1, and the correlation of vowel duration and pitch are shown in Figure 12.16 for Guébie Speaker 2.

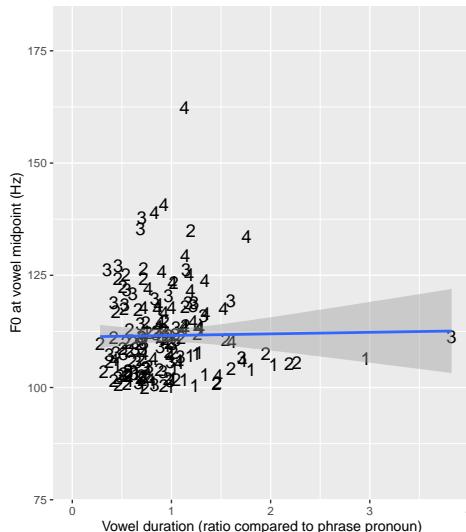


Figure 12.15: Guébie Speaker 1: correlation between mean F0 and vowel duration vowel productions

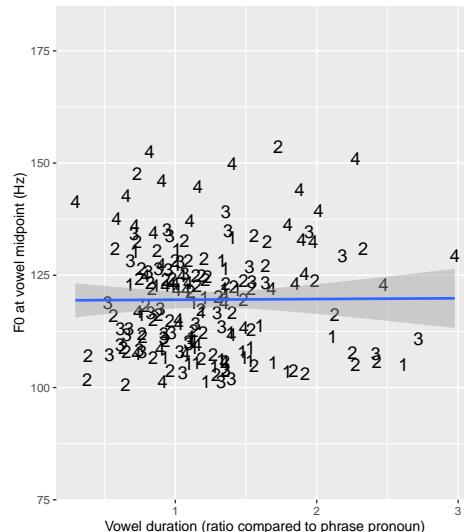


Figure 12.16: Guébie Speaker 2: correlation between mean F0 and vowel duration vowel productions

The results for Guébie Speaker 1 show a very weak positive correlation between vowel duration and F0 at the vowel midpoint (Pearson's $r = 0.019; p = 0.8$). This weak correlation does not appear to be driven by the outliers in the data, specifically by the vowels with a particularly long vowel duration. Removing the 5 tokens that are 2 standard deviations above the mean vowel duration (which is 0.96 of the duration of the pronoun vowel) yields only a slightly stronger positive correlation between F0 and vowel duration ($r = 0.243; p = 0.24$). Speaker 2 shows similar results. F0 and the vowel midpoint and vowel duration ratio are weakly positively correlated (Pearson's $r = 0.022; p = 0.76$). Taken together, although there is a slight trend for pitch and vowel duration to be positively correlated in Guébie, there is not strong evidence for a correlation.

4 Discussion

This study found pitch to be the primary acoustic correlate to tone in Nobiin, a language with two contrastive tone heights and phonemic vowel length, and Guébie, a language with 4 contrastive level tones. There is little evidence that vowel duration varies according to pitch in either language, despite suggestions that pitch and duration tend to be negatively correlated. §1 of this study outlined three research questions, which we return to here.

The first research question of this study was to examine the relationship between vowel length and tone. First, the results from §3 show that H tones tended to have a *longer* duration than L tones. Second, there is no evidence that long vowels differed from short vowels in F0 at the vowel midpoint for either speaker, showing that F0 does not appear to be used to enhance the contrast between short and long vowels.

The second research question asked what the acoustic correlates to tone were for Nobiin and Guébie. A logistic regression with tone as the dependent variable finds that F0 at the vocalic midpoint is a predictor of tone identity in Nobiin and in Guébie, but vowel duration and pitch slope are not. It could be hypothesized that tonal contrasts in Guébie would be more likely to make use of both duration and pitch cues to enhance the contrasts (because vowel length is not used contrastively in Guébie), whereas vowel duration is not an optimal correlate to tone in Nobiin (because vowel length is contrastive). However, only pitch correlates to tonal contrasts in both languages, despite the different status of phonological vowel length in the two languages.

A further note must be made here regarding the acoustics of tone in Guébie. As mentioned in §3, the results of a one-way ANOVA here did not show a significant difference in F0 value of tones 1-3 throughout most of the vowel. This result is surprising given previous findings (Sande 2018; Sande et al. 2020). Again, this result is likely not entirely attributable to the effects of the preceding consonant voicing, given that only Speaker 2 shows an effect of preceding consonant voicing on F0 value. The second alternative is that this phonetic finding is an effect of intonation. The present study only examines tones in phrase medial position, usually at the verb phrase boundary, which allows duration normalization with the pronoun, and increased similarity to the carrier phrase structure elicited with the Nobiin speakers. There is suspected to be a boundary tone in Guébie (Sande, p.c.) that may cause tone lowering at phrasal boundaries. Because this study excluded all phrase initial vowels, the pitch differences between the vowels may have been neutralized. Although describing the intonational system of Guébie is outside the scope of the present study, these results show interesting findings

compared to previous work on Guébie acoustics, and more work on the acoustics of suprasegmentals in underdocumented languages should be undertaken.

The final research question posed whether there was a negative or positive correlation between pitch and vowel duration in Nobiin and Guébie. This study does not find evidence for a universal negative correlation between pitch and duration, as has been suggested in previous studies (Gandour 1977; Dreher & Lee 1968). For Nobiin, Speaker 1 shows a positive correlation between vowel duration and pitch, while Speaker 2 shows a very weak negative correlation between vowel duration and pitch. Despite the fact that the two speakers show different patterns, these results do not support the hypothesis that there is a universal negative correlation between pitch and duration. Similarly, the Guébie speakers do not show evidence for a negative correlation between pitch and vowel duration. These results support the notion that the correlation between these phonetic features may be language, or even speaker, specific.

Taken together, this study finds that Nobiin and Guébie evidence that F0, but not vowel length or pitch slope, is an acoustic correlate to level tones. For Nobiin, vowel duration is an acoustic correlate to vowel length, but not tone. It has been discussed that when vowel duration is a contrastive phonological feature of a language, duration may not be an active phonetic cue to prominence (Remijsen 2014). The findings of the present study show that tonal languages with and without contrastive vowel length do *not* use vowel duration as a secondary acoustic correlate to tone. Even in languages without contrastive vowel length, vowel duration is not necessarily used to enhance tonal contrasts. Although this finding is preliminary, it motivates future work exploring the acoustic correlates to tone and vowel length in languages that use both contrastively.

5 Limitations

One limitation to the present study is the small sample of speakers representing Nobiin and Guébie. Gathering phonetic data from a large number of speakers is not feasible. For Nobiin, speakers have been displaced, making it difficult to work with a large group of native speakers. For Guébie, very few speakers live outside of Côte d'Ivoire, making it necessary to travel to collect recordings. In the villages where Guébie is spoken, there is social pressure to work with male speakers, rather than female speakers, and only certain male speakers are willing to participate in individual recording sessions. Despite the limitations on the small sample size of the speakers from each language, this research represents the first time acoustic correlates to tone in Nobiin or Guébie has been documented, adding to a diversity of language data represented in the phonetic literature.

6 Conclusion

This study investigates the acoustic properties of lexical tone in two understudied African languages, Nobiin and Guébie. Nobiin has two contrastive level tones realized as H and L on the surface, and phonological vowel length. Guébie has four contrastive level tones and no phonological vowel length. The results of production tasks show that pitch is the primary acoustic correlate to tone in both Nobiin and Guébie. These results have implications for the phonetics-phonology interface, and show that vowel length is not used as an acoustic correlate to tone in these two languages, regardless of the phonological status of vowel length. As for the correlation between these acoustic features, there is evidence for a positive correlation between pitch and duration in both languages. These results support more recent findings that argue that the assumed universal negative correlation between pitch and duration is, in fact, language specific (perhaps even speaker specific) which further highlights the importance of including a wider range of understudied languages in phonetic research.

Abbreviations

∅	Null tone	ms	Milliseconds
1	First person	sg	Singular
F0	Fundamental frequency	T1	First time point
H	High tone	T2	Second time point
Hz	Hertz	T3	Third time point
L	Low tone		
M	Mid tone		

Acknowledgments

I would like to thank Georgetown University's PhonLab for their feedback on this work. Thank you to Hannah Sande, Maya Barzilai, Alexandra Pfiffner, Elizabeth Zsiga, and Katherine Russel for their insights. I would also like to thank the Guébie and Nobiin communities for all their time spent working on this project.

References

- Abramson, Arthur S. 1979. The coarticulation of tones: An acoustic study of Thai. In T. L. Thongkum (ed.), *The coarticulation of tones: An acoustic study of Thai*, 1–9. Bangkok: Chulalongkorn University Press.
- Berinstein, Ava E. 1979. *A cross-linguistic study on the perception and production of stress*. UCLA Working Papers in Phonetics 47. (MA thesis).
- Boersma, Paul & David Weenink. 2017. *Praat: Doing phonetics by computer (Version 5.1.13)*. <http://www.praat.org>.
- Brunelle, Marc & James Kirby. 2016. Tone and phonation in Southeast Asian languages. *Language and Linguistics Compass* 10(4). 191–207.
- Dreher, John J & Pao-ch'en Lee. 1968. Instrumental investigation of single and paired Mandarin tonemes. *Monumenta Serica* 27(1). 343–373.
- Eberhard, David M., Gary F. Simons & Charles D. Fennig. 2020. *Ethnologue: Languages of the world*. 23rd edn. Dallas: SIL International. <http://www.ethnologue.com>.
- Franich, Kathryn H. 2016. Internal and contextual cues to tone perception in Medumba. *The Journal of the Acoustical Society of America* 140(1). EL107–EL112.
- Gandour, Jack. 1977. On the interaction between tone and vowel length: Evidence from Thai dialects. *Phonetica* 34(1). 54–65.
- Kpodo, Pascal & R. Akpanglo-Nartey. 2018. The effect of tone on vowel duration: The case of Ga and Ewe. Talk given at the 49th Annual Conference on African Linguistics, Michigan State University.
- Levi, Susannah V. 2005. Acoustic correlates of lexical accent in Turkish. *Journal of the International Phonetic Association* 35(1). 73–97.
- Lunden, Anya, Jessica Campbell, Mark Hutchens & Nick Kalivoda. 2017. Vowel-length contrasts and phonetic cues to stress: An investigation of their relation. *Phonology* 34(3). 565–580.
- Mamadou, Dine. 2018. Influence of level tones on vowel duration in Yoruba. In *49th Annual Conference on African Linguistics*. East Lansing.
- Remijsen, Bert. 2014. The study of tone in languages with a quantity contrast. *Language Documentation & Conservation* 8. 672–689.
- Sande, Hannah L. 2017. *Distributing morphologically conditioned phonology: Three case studies from Guébie*. University of California at Berkeley. (Doctoral dissertation).
- Sande, Hannah L. 2018. Cross-word morphologically conditioned scalar tone shift in Guébie. *Morphology* 28(3). 253–295.
- Sande, Hannah L., Madeleine Oakley & Alexandra Pfifner. 2020. Guébie phonetics. Submitted manuscript, Georgetown University.

- Svantesson, Jan-Olof & David House. 2006. Tone production, tone perception and Kammu tonogenesis. *Phonology* 23. 309–333.
- Yu, Alan CL. 2010. Tonal effects on perceived vowel duration. *Laboratory Phonology* 10(4). 151–168.
- Zhang, Jie. 2001. *The effects of duration and sonority on contour tone distribution-typological survey and formal analysis*. University of California, Los Angeles. (Doctoral dissertation).

Chapter 13

A diachronic analysis of the socio-semantic features of Igbo personal names

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This paper examines Igbo personal names from the perspectives of anthropological linguistics, socio-semantics, pragmatics and diachrony. It traces the evolution of name-giving within three major eras, pre-Christian (before the 1850s), early-Christian (from 1857–1960s) and Pentecostal (1960s to date) among the Igbo. The data for the study are 300 personal names sourced through interviews with both old and young members of the Igbuzo-Igbo community as well as from class registers of some nursery, primary and secondary schools in Port Harcourt. This paper reveals three interesting and important findings. First, indigenous Igbo names are culturally, semantically and pragmatically significant. Second, the principles and practice of name-giving have undergone some drastic changes through the eras. During the early-Christian and Pentecostal eras, the forces of Christianity, modernization and globalization have resulted in new names that reflect these changes. Third, indigenous names which belong to the core vocabulary of the language are seriously endangered. The paper concludes that if the indigenous names that are replete with meaning, and portray the values, identity and the beauty of the Igbo culture are allowed to die through lack of intergenerational transmission, then this aspect of the language and culture will also die.

1 Introduction

In Igbo society, personal names (anthroponyms) are not mere resources for identifying human beings. They encode information about the socio-cultural values,

Esther Nwakaego Oweleke. 2021. A diachronic analysis of the socio-semantic features of Igbo personal names. In Akinbiyi Akinlabi, Lee Bickmore, Michael Cahill, Michael Diercks, Laura J. Downing, James Essegbe, Katie Franich, Laura McPherson & Sharon Rose (eds.), *Celebrating 50 years of ACAL: Selected papers from the 50th Annual Conference on African Linguistics*, 261–282. Berlin: Language Science Press. DOI: 10.5281/zenodo.5578842 



beliefs and world views of the people. The events surrounding the birth of a child, the physical appearance of the child, the state of mind and experiences of the parents, time and place of birth, as well as the shared values and beliefs of the society are all encapsulated in the names given to a child. Thus, the name a child bears says a lot about him and his parents. The name *Âgiliga*, for example, tells us that the child is the second of a twin birth and *Âto* the third of a triplet. *Âdimàbùa* reveals that the father of the child is an only male child of his own parents. *Nwaèlège* is given to a slim and slender female child and *Âlìàm* to a fair complexioned child. If a child is given the name *Nòdù*, it signifies that the parents have had other children before him who died before their naming ceremonies; that is, less than eight days after birth. *Ôkelekē* is reserved for a male child born on the Èke market day.

Name giving is an aspect of the language which has attracted the attention of anthropologists, linguists and lately language documentation specialists. The practice and principles of naming have over the years provided a great resource for investigation in many African languages. Some Igbo writers like Ezeanya (1967); Ubahakwe (1981); Onukawa (1999; 2000); Iwundu (1994); Ezeude (2000); Nwigwe (2001); Okafor et al. (2008) and Onumajuru (2013) among others have described and documented Igbo anthroponyms. They believe that Igbo names reflect the value systems of the people. Madu (1996) notes that it is possible to understand, to a large extent the social, religious, historical and political issues in Igbo society through Igbo names. Consequently, Igbo names cannot be fully appreciated without adequate knowledge of the Igbo world view. In consonance with this view, Achebe (1975 as cited in Onukawa 2000) explains that, to know how life has treated an Igbo man is to look at the names his children bear, because they reflect his hopes, fears, joys, sorrows, and even his grievances against others. Similarly, Ekwunife (1989) observes that African names express African cosmology, social, economic, political, and religious values of the society, the tensions and struggles of man in society. From another perspective, Onyema (1999) sees Igbo names as being responsible for forming conscience and consequently determining the character of the bearer. Personal names include the first or given name (the name given to a child at birth by his/her parents), middle name, and family name or surname (the name normally inherited and shared with other members of the family).

The process of name giving in Igbo has witnessed a dramatic change as many indigenous names (especially given names) which reflect the core values, cultural identity and beauty of the Igbo language have been abandoned for the so called modern, “sophisticated” and “stylish”, Christian, English, or French names, as well as names that reflect the Pentecostal movement and ideology. Before the

advent of colonialists and missionaries to the shores of Africa, all Igbo names (both first and family names) were indigenous to the culture of the people.

The motivation for this study comes from a sarcastic expression used by some Enuani-Igbo speakers around the 1970's: *Nwaukpò abūhọ nwatā* 'Nwaukpo is not a child'. More specifically, it means, 'a woman named *Nwaukpo* is not a young woman'. Just before the Nigerian Civil War (1967–1970), most women who bore this name were already in their late thirties. The name was no longer found among children or young girls at that time. Thus, it readily revealed the age of the bearer. A woman in her thirties and unmarried in the African setting was stigmatized. The element, *ùkpò* 'throne' or a 'raised platform' usually inside the house is a metonymy for kingship. A contemporary replacement for the name is *Adaeze* 'Princess'. As significant as the name is, it is no longer borne by young girls. This is just one of the numerous Igbuzo indigenous names that are rarely given today as either a first or second name.

This study traces the names and name-giving trends within the three periods specified. It describes the socio-semantic and pragmatic features of Igbo traditional names; highlights the social and semantic changes that have taken place within the period, and examines the factors responsible for the drastic change and the reasons for non-generational transmission of both given and family names. Earlier works in Igbo anthroponomastics (the study of personal names) have largely adopted a synchronic approach, concentrating on the description of the semantic, syntactic, morphological analyses, and socio-cultural dimensions of Igbo personal names. This study however, takes a diachronic approach. It focuses on the content of names and its influence on social-cultural, pragmatic and semantic shifts, and so, investigates the implications of the trend to language endangerment. Therefore, it is relevant to Igbuzo-Igbo language documentation and contributes to general Igbo studies.

1.1 The Igbo language and its speakers

Igbo is the native language of the Igbo people, an ethnic group of South-Eastern Nigeria. It is spoken as a major and regional language in the states of Abia, Anambra, Ebonyi, Enugu and Imo. Igbo is a minor language in Rivers and Delta states, and it is spoken as a second language by many non-Igbo speaking people within and outside Nigeria. It is one of Nigeria's three major languages; the others are Hausa and Yoruba. Igbo is spoken by 20–25 million people in Nigeria. It has numerous and divergent dialects that share a high degree of mutual intelligibility. Some of dialects include Owere, Onitsha, Orlu, Afikpo, Ngwa, Oguta, Ika, Ogwashi-Ukwu, and Igbuzo. Manfredi (1989) identified seven dialect zones

namely: Delta, Enyom Central, Plains, Oshimili, Omanbala, and Savana. The Igbuzo variety of the Enuani cluster has been chosen for the study. Igbo, like many Nigerian languages, is a tone language. It has two basic tones: high and low, as well as a downstep tone. The standard also referred to as Onwu Orthography of Igbo is used in this study for representation. The orthography consists of thirty six letters of the alphabet, made up of 28 consonants and 8 oral vowels, given in this normal order:

- (1) a. Orthographic symbols:

{a b ch d e (e) f g gb gh gw h i ị j k kp kw l m n ń ny nw o ọ p r s sh t u
ụ v w y z}

- b. Phonetic representation:

[a b tʃ d e (ɛ) f g b y gʷ h i ɪ dʒ k β kʷ l m n ɲ n ɲʷ o ɔ p r s ʃ t u ʊ v w j
z]

This is necessary to help non-native speakers with a linguistic background comprehend how to phonetically interpret the names. In this paper, high tones are left unmarked, low tones are marked with a grave accent [`] and downstepped tones with a macron [¯] in line with the standard convention of Igbo orthography. Igbuzo dialect like many other Igbo varieties makes use of the ninth oral vowel e/ɛ used in this paper.

1.2 Methodology

For this study, 300 personal names of both old and young members of the Igbuzo-Igbo community were collected through group interviews with Igbuzo men and women, living in, and outside Igbuzo town. Lists of registered students of the Department of Linguistics and Communication Studies, University of Port Harcourt as well as those of some primary and nursery schools in Igbuzo and Port Harcourt were examined. Clarification on the meanings and contexts of some specific names especially the philosophical and proverbial types were further elicited from personal interviews with bearers and some older members of the community versed in the traditional meaning of the names. Data collection was supplemented by investigator-based introspection of a competent native speaker. The three major eras identified for the study are Pre-Christian (before the 1850s), Early-Christian (from 1857–1960s) and Pentecostal (1960s to date). The Pre-Christian era is the period before the introduction of the white man's God in the religious concepts of the Igbo. The study shows how these three different periods have influenced name giving in Igbo. Three sets of data were used to reflect the pattern of the changes. Both literal and non-literal interpretations of the names are presented.

2 Some features of Igbo culture

The culture of a people is the totality of their ways of life. It includes their beliefs, ideas, language, religion, practices, attitudes, social behaviours and even the social/religious objects shared by them. Other aspects of culture include music, dance, clothes and food. Nida (1975 as cited in Surakat 2009) classifies culture into ecology, material, religious, social and linguistic culture. Language is an aspect of a people's culture. The words, idioms and proverbs found in a language are used for expressing the beliefs and practices of the people. Language is a custodian of the cultural realities of a people and a medium through which culture is generationally transmitted. This explains why indigenous Igbo names reflect the culture of the people.

Culture is dynamic and so is language; it is not static. As a society changes, so does its language. A language is complete for its indigenous culture, but as speakers make contact with new concepts, civilizations and languages, new terms emerge in the language to cope with new realities. No matter how homogenous a community/society is, culture changes since societies do not exist in isolation. The Igbo contact with Western culture is largely responsible for its change in cultural values.

2.1 Religion and the Igbo culture

A study of the religious culture reveals that Igbo traditional religion is polytheism. The people believe in and worship the supreme God, *Chukwu* or *Chi Ukwu* also known as *Chineke* (the Creator of all things), *Chukwu Obiemè* (the Great achiever), *Osaebebuluwà* (the Owner and Sustainer of the universe) as well as other deities, and spiritual forces. They worship deities such as *Àlà* – the Earth goddess, river gods/goddesses, *Anyanwù* – the Sun god, *Àmadị Ọhà* – Thunder, *Igwe* – the sky god, *Àshì* and *Chi* – personal gods and a host of others. *Chineke* or *Chukwu* the Supreme God was considered to be too high up and too far from the people to worship directly, so they needed intermediary beings to reach him. This situation explained the strong affinity the Igbo had to certain gods or deities that influenced the names they gave their children in the traditional setting. The belief in ancestors also pervaded the ethos of the period. According to Aligwekwe (1991), ancestors were the deceased members of the community who from the land of the dead could influence their family members.

Igbo generally believe that each person has a personal god known as *chi* which controls his or her destiny and is responsible for what makes the difference between individuals. Ezeanya (1967) explains that *chi* "is a word used commonly to

denote the good spirit which according to the belief of the Igbo people is assigned to everyone from conception.” According to Onukawa (1999) most Igbo scholars believe that the concept of *chi* is central to the thought and belief of the Igbo. The concept is enigmatic and has been interpreted by different Igbo scholars as an individual’s fate, luck, guardian angel/spirit, personal life force or ‘individualized providence’ or even a man’s destiny god. In Igbo cosmology, *chi* is believed to be responsible for an individual’s success or failure, abilities or weaknesses, fortune or misfortune and even his wealth or health. Traditionally, the concept of *chi* is different from *Chi-Ukwu* or *Chukwu*, the Supreme Being. With the advent of Christianity, however, *Chi* came to stand for the Supreme God – *Chi-Ukwu* or *Chukwu* and consequently, Igbo Christians now use *Chi* as the short form for *Chukwu*.

The belief in reincarnation and *ògbanje* is another aspect of the religious culture of the Igbo. It is the belief that a dead person has the ability to come back to life, or be born again into his family. They believe that their ancestors can come back to the world in the form of a new baby. An *ògbanje* child is believed to have cycles of life and death; the same child can die and be born several times to the same mother. The views of reincarnation and *ògbanje* are in opposition to Christianity.

Other cultural activities apart from religion include marriage ceremonies, title taking, initiations, burial ceremonies, childbirth, naming celebrations and other political activities. Child-naming is an important activity in Igbo land that it is done amidst celebration and great joy. In Igbuzo different sections of the community also engage in celebrating different festivals such as *Igbā Ine*, *Ichū Ulō*, *Igbā Ekwensu*, *Igbā Iwū*, and *Ifējiokū*, (thanksgiving ceremonies to mark the end of a planting season while awaiting harvest), *Iwāji* ‘New Yam festival’, *Igbā mgba* ‘wrestling contest’, and *Òtùtù* ‘annual fishing contest’, among others. All these activities which define the Igbo are reflected in the names they bear.

3 Socio-semantic features of name-giving in the Pre-Christian era

This section focuses on the analysis of the religious, philosophical, metaphorical and contextual meanings of Igbo names within this period, before 1857. This analysis is adopted because it helps to establish the basic forms of the names before the changes.

3.1 Traditional names with religious meaning

Names in this era reflect the religious facts about the Igbo. The names are couched in concepts like *mmuqo* ‘spirit being’, *chi* ‘personal god/fate’, *àshì* ‘destiny’, *àni* ‘earth deity’, and *nzè* ‘deity/royalty’. A close examination of the names reveals the importance Igbo people attach to religion. It shows their relationship and dependence on spiritual beings (the Supreme Being, other deities and ancestral spirits). Before the advent of Christian missionaries in Nigeria, the Igbo did not believe in the Christian God even though they believed in the Supreme Being – *Chukwu*, *Chineke*, *Chukwu Obieme*, *Òlisà*, *Olisaebuluwa*, etc. Indigenous names which reflect this belief abound in this era. A few examples from Igbuzo-Igbo will suffice. The phonetic transcriptions of the names have been included to aid pronunciation.

Table 13.1: *Chi* names

Names	Pronunciation	Literal meaning
Chijindù	[tʃidʒɪndù]	‘God is the owner/giver of life’
Chiegbünem	[tʃiebunem]	‘God should not kill me’
Chinèdu	[tʃinèdu]	‘God directs/leads’
Chibùogwù	[tʃibùogwù]	‘God the healer’
Anaènechí	[anaènechí]	‘Let’s look up to God (for mercy)’

Table 13.2: *Mmuqo* names

Names	Pronunciation	Literal meaning
Muōdèbè	[mʊōdèbè]	‘God/gods/ the spirit preserves’
Muōsìmdi	[mʊōsìmdí]	‘God/gods/the spirit asked me to be/stay’
Muōgàha	[mʊōgàha]	‘God/the spirit is my arbiter’
Muōlòokwu	[mʊōlòokwu]	‘God/god/spirit has the final say’
Enémüo	[enémüo]	‘Let’s look up to God (god)’

Mmuō names could refer to the Supreme Being or any of the lesser gods or ancestors. The term is generic and also refers to ancestral spirits. *Chi* and *àshi* names are closely related. They can be interpreted as an individual's personal god or guardian angel or force which determines the person's fate. Besides, the information elicited from Igbuzo informants reveals that the concept of *chi* is not synonymous with the Supreme Being in the traditional setting.

Names with *àshi* are prevalent in the Enuani-Igbo cosmology and sometimes can be used interchangeably with *chi* names in Standard Igbo. *Anj* the earth deity is also highly revered in the Igbo society and given the status of a god. It is regarded as the being in charge of morality, agriculture, reproduction and fertility. The concept of *Nzè* has dual interpretation; first as a kind of deity and secondly as referring to royalty. *Òlisà* is a traditional name for the supreme God, and has the short forms as *Òsà* or *Òsè*. Examples of Ashi, Ani, Nze and Ose names are given in Tables 13.3–13.6.

Names that express the Igbo belief in religious objects of worship, adoration and practice also abound in this era. Such objects associated with deities include: *Òkwutē* 'stone', *mkpulù iyī* 'pebbles', *nkumè* 'rock', *Anyanwu* 'sun deity', *Ofo* 'symbol of innocence', *ugwu* 'hill', *Àkpaàlā* 'thunder deity', *Iyiocha* 'clear/clean running river' and some animals: *Agū* 'lion', *Agu Iyī* 'crocodile', and *eke ukwu* 'python'. These are totems believed to have spiritual significance.

Another significant aspect of naming in the traditional religious society which is no longer in vogue is that which revolves around the concepts of reincarnation, *ògbanje* and ancestors. These names were unique, interesting and very popular in the pre-Christian era. Some of the names in Table 13.7 are given to pacify or appease the children. However, some parents in indignation of the repeated deaths of the babies give them unpleasant and repulsive names that stigmatize and probably forbid them from going back to the spirit world. Such names include: *Ùliòmàgwù* 'day-old chicks for sacrifice are finished', *Ikpontù* 'refuse heap' or *Afàadiàzì* 'no more names to give' or *Ùdenè* 'vulture'.

Generally Igbo names are predominantly sentential in structure. They are nominals usually derived from phrases, especially noun and verb phrases and sentences (simple, complex and compound), and may be declarative, imperative or interrogative. They may also be in the affirmative or negative form. There are rarely single-morpheme names. Most personal names are expressed in full sentences that are often times clipped, leftward or rightward, in a way that makes deciphering of meaning unclear to the hearer. Some names may be clipped from the right or left only or from both as shown in the examples (2a–e) below. Clipping may involve segments, syllables, words or phrases. So, to decode the complete meanings of the names the sentences must be properly analysed to bring out the

Table 13.3: *Àshì* names

Names	Pronunciation	Literal meaning
Àshikodị	[àsikɔdị]	'It is one's destiny'
Ikediàshì	[ikedìàʃì]	'My destiny determines my achievement'
Dibeàshì	[dibeàʃì]	'Accept your destiny'
Àshionyeèduē	[àʃionyeèduē]	'One's god determines his fate'
Àshièdo	[àʃièdo]	'One's god designs or determines his fate'

Table 13.4: *Anị* names

Names	Pronunciation	Literal meaning
Àníkàmgbòlù	[àníkàmgbòlù]	'I take refuge in the earth deity'
Ànièmeke	[àníèmeke]	'The earth deity has done well'
Àniàgòlùm	[àníàgòlùm]	'The earth deity speaks for me/is my arbiter'
Kàníkwù	[kàníkwù]	'Ani (the earth deity) has the final say'

Table 13.5: *Òlisà/Òsà/Òsè* names

Names	Pronunciation	Literal meaning
Òsàelòke	[òsàelòke]	'God has been very thoughtful'
Òlisàdebe	[olisadebe]	'God preserves'
Òlisàèmeke	[òlisàèmeke]	'God has done well'
Òlisèàlukà	[òlisèàlukà]	'God has achieved much for me'
Òdiakaòsè	[òdiakaòsè]	'It is in God's hand. (God is my help)

Table 13.6: *Nzè* names

Names	Pronunciation	Literal meaning
Nzékwe	[nzékwe]	'If Nze/deity agrees...'
Nzèebùnè	[nzèebùnè]	'Nze (Nze) should not harm, kill or cause sorrow'
Nzèkwue	[nzèkwue]	'Nze has spoken'
Nzèèmeke	[nzèèmeke]	'Nze (deity or royalty) has done well'
Nwanzè	[ŋʷanzè]	'child of a noble one' ('prince')

Table 13.7: Names portraying reincarnation and Ogbanje concepts

Names	Pronunciation	Literal meaning
Nnaàndì	[nnàmdì]	'My father is alive'/ my father has come back'
Onòchiè	[ɔnòtʃie]	'One has come to replace another'
Àbiagòm	[àbiagòm]	'I have come/returned'
Onwòdì	[ɔŋʷòdri]	'Let this one stay/live'
Ñkèàdì	[nkeàdri]	'This one must be (live)'
Nwanòlué	[ŋʷanòluε]	'May this child live to a ripe old age'

underlying structure and meaning. In the sentences, the structures enclosed in brackets are the ones clipped.

- (2) a. Izuka: Izu ka (na ofu nne)
 'Consultation/Solidarity is best achieved among maternal siblings.'
- b. Ùgbaàjà: (Ùkọ nwa bùtè) ùgba àjà
 'The absence of a child is responsible for clay pots of ritual items.'
- c. Adiigwe: À(nyi) dì (na) ìgwè, ànyì èmeliè dike
 'In great number, we defeat the valiant warrior.'
- d. Elofu: (Chukwu adì) èlofù (onye o kè)
 'God does not forsake the one he created.'
- e. Isitøa: Isi tòa (ò liè ezè)
 'If the head (a man) grows old, he will become the chieftain of his clan.'

3.2 Philosophical names in the Pre-Christian era

Igbo names given to children in this era were highly philosophical; they reflected the thoughts of the Igbo man about his worldviews. Thus, to decode the meaning of these names is to understand the traditional Igbo man's philosophy of life. Table 13.8 shows a few examples.

As evident from the table, philosophical names are usually couched in rhetorical questions and figurative expressions. Metaphors, similes, metonymy, personification, and synecdoche are special strategies frequently employed. The names express Igbo maxims, aphorisms and are indeed proverbial. Like proverbial expressions, they are amenable to three levels of interpretation – literal, contextual

Table 13.8: Names depicting philosophical meanings

S/N	Igbozo-Igbo Names	Literal meaning	Philosophical/Pragmatic Interpretations
1	Ònyekàozìlù	Is anyone all sufficient?	Name given in recognition of God's sovereignty and prerogative of distribution of resources/destiny. No man is infallible. We all have our weaknesses.
2	Ònyepùnukà	Who can escape criticism?	Diverse talents are given by God. You do not determine your fate.
3	Ònyejebòlísé	Who has ever visited God?	Response by a good and prosperous man who suffers extreme resentment from his relatives/neighbours.
4	Àkpàdòmònýe	Am I inconveniencing anyone?	Betrayal can come from one's household or a trusted friend.
5	Kahàmñamú	All that laugh/rejoice with you are not your friends.	The one who pursues a great vision about life (given to one envisioned to have great fortune in life).
6	Ọchukènyi	The one that pursues an elephant	Man does not create life. To an Igbo, life is sacred and should not be destroyed. The name describes the inevitability of death.
7	Uzàakpùnwa	A blacksmith cannot make life.	Given in a family where many had died before the child's birth.
8	Ònyekàonwufijú	Does death reject anyone?	The Igbo recognizes the supremacy of death.
9	Ọnwụyàlı	Death, please, let go...	
10	Ọnwùachi	Death rules as master.	

and philosophical. Given their internal lexical structure, they are culture specific and so only those familiar with the culture are able to understand the semantic nuances, hidden associations and allusions in the names. Thus, deciphering such names require the contextual implication surrounding the birth of the child. This is also responsible for the many interpretations these names could be subjected to.

Some Igbo names like the philosophical names are derived from proverbs that have undergone clipping. The clipped, short or surface forms are left when the other parts have been deleted. The proverbs, *Nwa fę̄e nnà a, ò bulu isi nkā* ‘If a child honours his father, he will grow to old age’ and *Kà ànyi hà mụ amū abuho ṣosí* ‘All that laugh/rejoice with you are not your friends’ are shortened to *Nwafę̄e* and *Kaham* as names. The bearers and members of the community know the full forms and meanings of the proverbs/names. Other examples of truncated proverbs have been given in Examples (2a–e) in §3.1. Similarly, Musere (1999) has a good account of this naming strategy among the Ganda people of Uganda. However, in Igbuzo, not all names are derived from proverbs or express the philosophical thoughts of the people.

The Igbo perceive *onwụ* as a mysterious and enigmatic phenomenon in the reality of existence. To express this view, most *onwụ* names as above employ personification, that is, in the names, *onwụ* ‘death’ is personally addressed. Quite often, the names remind the people of the inevitability, universality and humbling nature of death. Alternatively, *onwụ* is seen as merciless and vicious. Philosophical names in general find expressions in rhetorical questions because their answers are obvious and usually the only one possible. For example: Does death reject anybody? Is anyone all sufficient? The obvious answer is “No”.

3.3 Contextual relevance of traditional Igbo personal names

Names that carry a high degree of contextual relevance characterized the pre-Christian era. In short, one can convincingly say that every Igbo traditional name had a covert or an overt contextual implication which told the story of the child, his family or his entire village. Context as a name-giving strategy refers to the physical features of the child, the place and time of birth, the sex of the child and the entire event surrounding the birth of the child. The four market days of *Èke*, *Olie*, *Àfò* and *Ǹkwọ*, frequently formed very useful resources for naming both male and female children in Igbo land. The linguistic element *oko*, *òkolo* or *oke* in a name suggests that the bearer is a male and *mgbọ* or *àda* is used for females. Below are some names reflecting the four market days:

(3) Female

Ḿgbøeke ‘born on Èke day’
 Ìgbønkwo ‘born on Ñkwø day’
 Ìgbøafø ‘born on Afø day’
 Ìgbøolie ‘born on Oliè day’
 Adaòlie ‘born on Oliè day’

Male

Ókeleké ‘born on Èke day’
 Ókonkwø ‘born on Ñkwø day’
 Ókoàfø ‘born on Afø day’
 Ókoliè ‘born on Oliè day’
 Nwaeké ‘born on Èke day’

In addition, some Igbo personal names reflect the place or time of birth of a child. A name like *Nwaqboshị* ‘child of Oboshị’ or *Òkoboshị* ‘male child of Oboshị’, a river deity in Igbuzo is usually given to a child in appreciation or dedication to *Oboshị* goddess by her devotees or to a child born by the *Oboshị* river. *Nwaozili* or *Ozili* is a name given to a child born along a tarred road. The names *Òkugbō* or *Nwandiògò* refer to ‘a male child born in the farm’, whereas *Òkeinē* or *Òkeulò* is a name for a male child. The names *Àdaulò/Àdaine* are give to a female born on *Ine* and *Ulò*, festivals in Igbuzo. Where a man finds respite from problems in his maternal family rather than among his kith and kin, he names his child *Ikwunnekàt* for ‘mother’s birth place is supreme/my respite’, or *Ìzùkà-nàòfunnē* ‘there is greater solidarity in maternal affiliation’, or *Nnebùògò* ‘mother is kindness’. A child named *Nwañkọ* reveals that the child is born during famine or some scarcity. *Egobī* ‘obi’s jewel’ is usually borne by the king’s first daughter. To express physical appearance, Igbo use names such as *Òkocha/Nwaokocha* ‘a fair complexioned male’, *Òkojìi/Òkonji/Nwanji/Òkonwanji* for a dark complexioned male child, *Nwalùpuè* for a plump and robust child, and *Mgbuude*, *Àliàm*, or *Nwaèlège* for a slim, elegant and adorable child. These names are given as tradition stipulates on the eighth day after birth.

Other names express the Igbo belief and views about longevity, strength and security, wealth, sustenance, bravery, respect for elders, filial affection, barrenness, and inestimable value for children, the importance attached to the male child above the female in a family, as well as names that express the practice of polygamy. All these are beautifully couched in the names children bore in Igboland in the pre-Christian period especially before the Nigerian Civil War. Names like *Ìlobàbaechinè* (*Ìlobàa*), *Òbòdòechinè*, *Uzòechinè*, *Òbiechinè*, and *Afàmefùnè* are given to male children to express their parents’ desire and prayer for con-

tinuity or preservation of the family name/lineage. Names as these were given to celebrate the goodness of the Supreme Being. A child is of inestimable value in Igbo and as such a woman without a child is ridiculed and considered as worthless or cursed. Thus, *Nwalōkōmobi* (*Nwalōkō*) ‘child comforts me’, *Nwakāegō* ‘child is greater than wealth’, *Nwanyémume* ‘child is my strength and security’, *Nwaamaka* ‘child is beautiful’, *Nwaejije* ‘child is my jewel’, *Giikānwa* ‘what can be more valuable than a child’, *Nwabiyàndò* ‘a child is your shield/cover’, and *Nwabuwà* ‘child is the essence of life’, are a few significant names common at that time which express the importance of child bearing in Igbo. However, women who had infertility challenges responded to the derision and scorn they suffered in the names they gave their children when they finally got blessed. Names like *Ajōokwuàgwụ* ‘ridicule, finally came to an end’, *Okèdìnàchi* ‘my lot is in God’, *Onywàegbunem* ‘the reproach of my adversaries will not kill me’ and *Ùwàkwuelie* ‘the world/enemies should take back their criticism’ are a few examples. As evident from the analyses, names in this era carry along with them high semantic-pragmatic import necessary for effective communication among members of the community.

4 Name-giving in the Early-Christian era

With the introduction of Christianity came monotheism and the change in faith, philosophy and the general world view of the Igbo. Apparently, the new religion was in opposition to the Igbo practice of polytheism. This crossroads gave rise to a partial acceptance of the Christian God. Thus, the Igbo imbibed Christianity but did not completely abandon their own traditional ways. They still practiced and worshipped their deities and ancestors in addition to the Christian God. The belief in ancestors, re-incarnation, medicine men, wearing of charms and amulets persisted. All of these events reshaped the practice and principles of the new sets of names that characterized the period. The naming system in this era therefore has witnessed significant social and semantic changes.

4.1 Social changes in naming-practices in the Early Christian era

A number of significant social changes have taken place. First, the addition of the Christian names to the traditional names was witnessed. Most people, who had two Igbo traditional names, at baptism, took on European and Christian names (names of saints for the Roman Catholics, or Bible figures for non-Catholics). Thus, *Nwanze Òwèlèmeké* and *Mgbuude Ofili* became *William Nwanze Òwèlèmeké* and *Bridget Mgbuude Ofili*. With time too, the Igbo middle names were

dropped for the English Christian names, e.g. Bridget Ofili. In some cases, both given and surnames were out-rightly replaced with English names in a way that it becomes difficult to identify the place of birth of the individual.

Second, their new belief in *Chi-Ukwu*, or, *Chukwu* (the Christian God) now finds expressions in the names given to the children. With Christianity, *Chukwu/Chi* names became very popular. The concept of *Chukwu* now denotes the Christian God and faith. *Chi* names no longer refer to the bearer's personal god, some force or destiny, but to the God Almighty, the father of Jesus Christ. *Chi* is now taken as the short form of *Chukwu* and so *Chi* and *Chukwu* names are now used interchangeably. Impressionistically, *Chi/Chukwu* names account for about 60-65 percent of Igbo names, both given and family names. A name common in this era was: *Chukwudumèbi* which translates to the biblical Emmanuel – 'God is with us', and borne by most first born sons in many families. Others include:

- (4) *Chinedu* 'God is my shepherd or God guides'
- Chukwumanya* 'God does not sleep/slumber'
- Olyuchukwu* 'The marvelous works of God'
- Uchechi* 'God's will is supreme'
- Chukwudunzō* 'God will fight for me'
- Onyinyechi* 'God's gift (probably the gift of the Holy Spirit)'

Third, the *m̄m̄uō*, *àní*, *chi*, *àshì*, *òlísà* and other names which represented deities, lesser gods, spirits, destiny and forces were substituted for *Chukwu/Chi* names since they are used interchangeably in the early Christian era. Names that portrayed the traditional religious practices of the people, religious objects, reincarnation and the *ogbanjē* concept were consequently dropped. More specifically, *chi* names no longer refer to one's personal god or destiny force, but to the Christian God. At this stage too, the names were no longer given to babies as first names, but were found only among the older members of the community. A few examples in Table 13.9 would suffice.

Family names (that is, inheritable surnames that pass through many generations, not patronymic) were also dropped in favour of Christian names. The naming system consequently witnessed a significant shift in this era as a good number of individuals changed their family names because of the negative meanings they consider them to connote in contemporary times based on the change in religious values. Names like *Nwaoboshì* 'a child of Oboshi deity', *Àníèmeke* 'The Earth deity has done well', *Ofoegbù - Ofo* (deity) should not kill', and *Nwosū* 'child of òsu caste' have been dropped by their bearers. In addition to the surnames, first and second names were replaced. Consequently, names such as Nancy Emmanuel, Mercy Johnson, David Harrison, Morris Jacobs, Michael Peters and Allen

Table 13.9: Substitution of traditional name for the Christian

Traditional Names	Early Christian Names	Meaning
Mmụōmà	Chukwumà	'God is all knowing'
Mmụōzòba	Chizòba	'God is able to rescue'
Mmụōka	Chika/Chukwuka	'God is supreme'
Òlisàdebe	Chukwudebe	'God preserves'
Anigbògù	Chigbògù	'God, our arbiter'
Ànìèmeke/Òlisàèmeke	Chukwuèmeke	'God has done well'
Ònyebùàshì	Ònyebùchi	'Who is like unto God'
Àshièdu	Chinèdu	'God guides'

Moses and others that blur the socio-cultural identity and generational information about the bearer now abound. In the past you could determine the part of Igbo land that a person came from by their surnames. Such information has been completely obliterated by the new naming system in the Early-Christian era. The names, first, middle and last are now woven around the Christian doctrine and Western civilization.

4.2 Semantic changes in the Early-Christian era

Forces of Christianity, colonization and modernization all add up to influence the semantic changes that names have undergone. Christianity in Igbo has changed the traditional meaning of *Chi/Chukwu* names and eroded reference to other deities. First, I will examine the religious terms denoting the spirit beings:

In the traditional setting, *Chi* and *Chukwu* were not synonymous; *Chi* specifically referred to one's personal god or destiny and *Chukwu* to the Supreme Being. Similarly, the Christian God and *Chukwu*, the Igbo supreme being were not equivalent terms. The *mmuō*, *ànì*, *chi*, *àshì*, *òlisà* names now no longer denote spirits, destiny or lesser gods but the supreme God of the Christians. These terms too have become polysemous, capable of more than one interpretation depending on the religious value of the one using the term (whether Christian or non-Christian). So the different senses now exist in the Igbo lexicon.

Words reflecting the religious concepts of reincarnation and *ògbanje* in the past have their original figurative meaning exchanged for the literal. *Abiagom* – 'I have come/returned'; *Nòsikē* 'Sit well'; *Anàzjà* 'Don't go anymore'. Their figurative meanings have become restricted. The concepts of *ògbanje* and reincarnation have been debunked by medicine and science and Christianity, so new

Table 13.10: Semantic changes in the early Christian era

S/N	Word	Old meaning	New meaning
1	Chi/chì	'personal god', 'fate', 'destiny'	the Christian God, every believer's God, the supreme God
2	Chukwu	'supreme being'	'the Christian God', 'the father of Jesus Christ'
3	àshì	'fate', 'destiny'	the Christian God, supreme God
4	ìnzè	'a deity'	'royalty'
5	àní	'a deity', 'goddess'	'community', 'place of origin', 'birth place' 'earth', floor
6	m̄mūō	a spirit being	'Holy Spirit', 'evil spirit'
7	ọnwụ	connotes extreme fear, mystery	a means to eternity

names that reflect the immediate realities of the time are now favoured. However, it is important to state that not all Igbo imbibed Christianity, and so, those who still practise traditional religion still favour the original senses.

Other words indigenous to the culture have become obsolete, less frequently used, or have changed their meanings, (that is, have their meanings extended or restricted). I give some examples in Table 13.11.

Words like *ùkpò* 'throne', *Nwukpò* 'personal name', *m̄gbọ* 'girl', *bàa* 'father', *nzolọ* 'consultation', *lòkò* 'console' and others are now obsolete and at the verge of extinction. Some others are more frequently used by the older members of the community. The younger generation use the newer equivalents. This situation has created temporal semantic variations in the language such as: *onwọ* ~ *nkeà* 'this one', *ògò* ~ *ugbō* 'farm', *òsi* ~ *òdi mmā* 'goodness', *ùliòm* ~ *nwa òkukụ* 'chick', *elò* ~ *uchè* 'thoughtfulness' and others. Sets of existing pairs of temporal variants in the language have thus, created synonyms in the language.

4.3 Name-giving in the Pentecostal era

With the introduction of Pentecostal movement and ideology (another form of Christianity) in the 1930s came a more drastic change in name-giving. The Pentecostal move offers a complete rejection of the traditional religious values of the Igbo and so, out-rightly opposes polytheism. Their mission emphasizes evangelism, miracle working, divine healing, conversion, dependence on the Holy

Table 13.11: Some indigenous Igbuzo words

Word	Gloss	Word	Gloss
lòkò	'console'	ùkpò	'throne'
bàa	'father'	ejije	'jewel'
medu	'accomplish'	nzòlo	'consultation'
gbòlu	'protect/defend'	ọbò	'vengeance'
elò	'thoughtfulness'	enū	'world'
kàlụ	'slander'	mkpu	'condolence'
ngòli	'enjoyment'	ògò	'farm'
ùliòm	'chick'	ugbā	'calabash plate'
mkpàmị	'appreciation'	ikwu	'kindred'
ọsị	'goodness'	èlège	'slim'/'elegance'
mìgbo.	'girl'	ilo	'lineage'
mgbuüde	'lustre'	gbo ọgụ	'arbiterate'
ọnwò	'this'	àjà	'ritual items'
Eke	'first day of the week'		

Spirit, empowerment for the supernatural, passion for worship, praise and prayer and this has made the Pentecostals stand out from orthodox groups before them. Ironically, the doctrine downplays holiness and righteous living, and emphasizes prosperity of the body and so, Pentecostalism has been described as "feel good Christianity". The philosophy encourages positive confessions and rejects suffering, long suffering and persecution, and everything that is negative, as they argue that God is the author of all that is good. And so, such expressions as *I am blessed, It is well with me, There shall be no loss, I am highly favoured*, among others, quite often are common with Pentecostal adherents. A few examples of English and Igbo first names that reflect the ideology of this period are given in Tables 13.12 and 13.13.

4.4 Social changes in the Pentecostal era

The period introduced a more drastic change in name-giving. Names in this era, both English and Igbo reveal a great affinity to positive thinking and confession, and rejection of certain realities – poverty, lack, sickness, and barrenness. Popular names in the Pre-Christian and Early Christian era such as *Ndidi*, 'patience', *Ndidiämaka* 'patience is honourable', *Dibeashi* 'accept whatever comes your way as the will of God', and *Nebeolisa* 'look up to God' are no longer in vogue.

Table 13.12: Typical English Pentecostal names

Amblessed	Glory	Honour	Evidence
Everlasting	Prayer	Faithful	Miracle
Anointed	Excellent	Praise	Melody
Gracious	Precious	Warrior	Endwell
Brightness	Favour	Prosper	Godspresence
Redeemed	Worship	Marvelous	Trueson
Breakthrough	Godson	Rejoice	Winner
Steadfast	Goshen	Miraculous	Delight

Table 13.13: Typical Igbo names in the Pentecostal period

Somtochukwu	'Praise God with me'	Chukwuebuka	'God is awesome'
Busomma	'Be so good'	Chisom	'God is with me'
Chinaza	'God answers prayers'	Chimamanda	'My God will not fail me'
Munachim	'My God and I'	Chidera	'Steadfastness of God'
Chinaemezunkwa	'God fulfils his promise'	Tobechukwu	'Begin to praise'
Chinonyelum	'God be with me'	Chukwunonso	'God is near'
Ekenedilichukwu	'Thanks be to God'	Ogochukwu	'God's mercy/kindness'
Oluchukwu	'God's marvelous works'	Kamsiyochukwu	'As I implored of God'

In addition, unlike naming patterns in the Christian and traditional era, Pentecostal names given in English no longer tell stories about the specific events surrounding the birth of the child and the experiences of the parents. Names such as *Breakthrough*, *Brightness*, *Gospel*, *Beloved*, *Prayer*, *Praise*, *Steadfast*, and *Everlasting* do not portray any unique social relevance to the child.

Clipping, a major strategy of name-giving is used here to make the names sound sophisticated, foreign and stylish. The names, therefore, do not conform in both style and structure with Igbo words as shown in Table 13.14.

Table 13.14: Clipped forms of Igbo names

Names	Clipped form	Names	Clipped form
Somtochukwu	Somto, Somie	Kamsiyochukwu	Kamsy, Kamsie
Kosisochukwu	Kosy	Chimamanda	Mandy, Amanda
Ekenedilichukwu	Eky	Onyekachukwu	Katchy, Katch
Chinonyelum	Nolly	Chukwuemeka	Mekus, Chucks
Chukwunonso	Nonso	Chukwuebuka	Bukas, Ebus
Olu-chukwu	Ollie	Uche	Utchay

Clipping in this era has surpassed the earlier period and has become more sophisticated and complex due to the adoption of English spelling and pronunciation. It is observed that the clipped or shortened forms leave the names meaningless and devoid of any socio-cultural associations. However, bearers assert that the forms make them feel good, more modern and attract more attention. Furthermore, data reveal that these clipped forms are registered officially. Clipping as a naming strategy has significantly changed the social-cultural and semantic import of naming practice and principles in Igbo.

5 Conclusion

Most works done in Igbo anthroponyms in the past decades have concentrated largely on the synchronic analysis of the socio-cultural import and linguistic features of personal names, but this paper has specifically examined Igbo personal names from a diachronic perspective. It highlighted the features that characterize the shifts in the practice of name-giving in the three periods chosen for the study. It reveals a number of interesting and significant facts about the evolving trends in the practice of name-giving in Igbo. In addition, the paper demonstrates

that name-giving, an aspect of the Igbo language is seriously endangered as the traditional names that reflect the core vocabulary of the language are fast disappearing. Facts about the core vocabulary items show a drastic reduction in the use of indigenous names that are replete with meaning and portray the socio-cultural values of the people. A significant percentage of the vocabulary is now limited to the older members of the speech community. Quite a good number of these words however, have been documented in this study. The lack of intergenerational transmission coupled with facts of globalization is largely responsible for the situation. We therefore warn that if the trend is not checked through documentation, a major aspect of the Igbo language and heritage would be lost.

References

- Aligwekwe, Pauline E. 1991. *The continuity of traditional values in the African society? The Igbo of Nigeria*. Owerri: Totan Publishers Ltd.
- Ekwunife, Anthony. 1989. Philosophy and African traditional religious values. *African languages and Cultures* 6(2). 133–146.
- Ezeanya, Stephen N. 1967. *A handbook of Igbo Christian names*. Port Harcourt.
- Ezeude, Enuma E. 2000. *Igbo names*. Pittsburgh Pennsylvania: Dorrace.
- Iwundu, Mataebere. 1994. *Igbo anthroponyms: A socio-semantic analysis*. University of Nigeria, Nsukka. (Doctoral dissertation).
- Madu, Raphael O. 1996. *African symbols, proverbs and myths: The hermeneutics of destiny*. New York.
- Manfredi, Vincent. 1989. Igboid. In J. Bendor-Samuel (ed.), *The Niger-Congo languages: A classification and description of Africa's largest language family*, 337–358. Lanham, Maryland: University Press of America.
- Musere, Jonathan. 1999. *African proverbs and proverbial names*. Los Angeles: Ariko Publications.
- Nida, Eugene A. 1975. *Exploring semantic structures*. München: Wilhelm Fink Verlag.
- Nwigwe, Boniface. 2001. *Naming and being: A philosophical investigation on names and objects, with special reference to Igbo anthroponyms*. New Brunswick: Transaction Publishers.
- Okafor, Richard, Lawrence Emeka & Tom A. Inyama. 2008. *Igbo personal and title names*. Enugu: New generation Books.
- Onukawa, M. C. 1999. The significance of the verb kwe in Igbo personal names. *Anthropological Linguistics* 41(1). 107–119.
- Onukawa, M. C. 2000. The Chi concept in Igbo gender naming. *Africa* 70(1). 107.

- Onumajuru, Virginia C. 2013. A semantic and pragmatic analysis of Igbo names. In Ozo-mekuri Ndimele, Lendzemo Constatine Yuka & Johnson Folorunso Ilori (eds.), *Issues in contemporary African linguistics: A Festschrift for Oladele Awob- uluyi*, 445–462. Port Harcourt: M & J Grand Orbit Communications.
- Onyema, Anozie. 1999. *The Igbo culture and the formation of conscience*. Port Harcourt: Assumpta Press.
- Surakat, T. 2009. Problems and prospects of translating Yoruba verbal art into literary English: An ethnolinguistic approach. In J. Inggs & L. Meintjes (eds.), *Translation studies in Africa*, 88–109. New York: Continuum.
- Ubahakwe, Ebo. 1981. *Igbo names, their structures and their meanings*. Ibadan: Daystar Press.

Chapter 14

Documenting praise names *ahanoŋkɔ* among Ewes: A socio-semantic perspective

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Names generally identify an individual and set him/her apart from other individuals. The Ewe (ISO639-3 [ewe])-speaking people of Ghana are known to have names which reflect an idea that a name giver or name bearer intends to put across. These names could be given due to, among others, circumstances under which the bearer was born, the day of birth, order of birth, or religious affiliations. Using a multifaceted approach in language documentation, this study focuses on a type of personal names termed *ahanoŋkɔ* (which literally translates as ‘drinking name’ or ‘name used while drinking alcohol’) among the Ewe of southeast Ghana, and investigates the semantic perspective of these praise names; *ahanoŋkɔwo*, as well as their social impact on the bearers and non-bearers of the names.

1 Introduction

Names play a variety of roles in connecting a person to his or her identity and individuality. This means, each individual at birth, is given a personal name which is used to identify him or her. The Ewe people of Ghana are known to have names which reflect an idea that a name giver or bearer intends to put across. The names of the authors of this paper; *Enyonam* and *Makafui*, are examples of these personal names. The personal name *Enyonam* is a short form of the actual

Doreen Enyonam Esi Yegblemenawo & Stella Afi Makafui Yegblemenawo. 2021. Documenting praise names *ahanoŋkɔ* among Ewes: A socio-semantic perspective. In Akinyi Akinlabi, Lee Bickmore, Michael Cahill, Michael Diercks, Laura J. Downing, James Essegbe, Katie Franich, Laura McPherson & Sharon Rose (eds.), *Celebrating 50 years of ACAL: Selected papers from the 50th Annual Conference on African Linguistics*, 283–299. Berlin: Language Science Press. DOI: 10.5281/zenodo.5578844



name: *Nu sianu si Mawu wo nam la, enyo nam*, meaning, ‘whatever God has done for me, it is well with me.’ It should be noted that, a name could be chosen later by the bearer or conferred on the bearer Adjah (2011).

The naming system among the Ewe people is not only rich and diverse, but also an interesting one, hence it is often an area of research. Quite a number of research works have been done on Ewe personal names, notable among these include Egblewogbe (1977), Egblewogbe (1984), Atakpa (1997), Adjah (2011) and Abdul (2014). This research, however, concentrates on documenting praise names and their meanings among the Anlo-Ewe ethnic group of Ghana, using language documentation tools, while analysing the semantics and socio-cultural impacts on the bearers and non-bearers of these names.

1.1 The Ewe community in Ghana

Ghana is made up of various ethnic groups which speak their own languages, with varied dialects, and have different cultural backgrounds. The Ewe ethnic group, which is largely resident in the area close to the eastern border of Ghana with Togo, is one of the numerous ethnic groups in Ghana. The Ewe people speak Ewe (Éve or Évegbe) which is classified as a Kwa language. According to the Ethnologue report on Ghana, the number of speakers of the Ewe language is estimated to be about 3,320,000 (Eberhard et al. 2020).

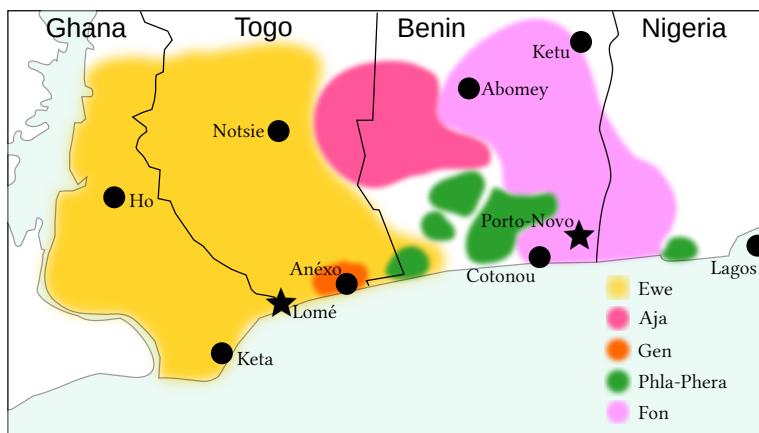


Figure 14.1: Geographical location of Ewe native speakers region (in yellow). CC-BY Mark Dingemanse and Sebastian Nordhoff.

In Ghana, there are several varieties of the Ewe language which include: *Anlo* (*Anlo*), *Uedome*, *Tongu* (*Tɔŋu*), etc. In this research, we are focusing on the Ewe dialect spoken by the Anlo people of Ghana.

1.2 Typology of Ewe personal names

Among the Ewe ethnic group of Ghana, one of the first rites of passage when a child is born is the ‘out-dooring’ (*vihehedego*) and naming ceremony performed on the eighth day after birth. The name giver, usually the father of the child, or a designated paternal relative (that is, if the father died before the child’s birth), gives the child a name. The Ewe-speaking people of Ghana are well known to have names which reflect an idea that a name giver or name bearer intends to put across.

Eglewogbe (1977) identifies ten naming systems among the Ewe people which he groups into four, namely: *dzədzəmeykɔwo* (natural names), *ŋkɔnanawo* (a given name at birth or taken later in life), *ŋkɔtsɔtsɔwo* (names taken later in life or acquired names) and *subɔsubɔŋkɔwo* (religious names). Abdul (2014) indicates that, the natural names which are inherent in a child, include birthday name (*azag-beŋkɔwo*) given according to the day the child was born and circumstantial names where children are named based on circumstances surrounding their birth. The given names are conferred on a child at birth or sometimes taken up later in life. The acquired names are said to be taken on later in life. The religious names denote the religious affiliation of the child or his/her parents. Agyekum (2006) in discussing Akan birthday names, termed it an automatic name every Akan child gets based on the day s/he was born even before s/he is officially named. This is the same for the Ewe child as he or she is also given day names depending on the day they were born as shown in Table 14.1.

Table 14.1: Ewe day names for male and female children (Atakpa 1997)

Day (Eng.)	Day (Ewe)	Male child	Female child
Sunday	Kɔsiɖa/Kwasidɑ	Kɔsie, Kwasi, Quarshie	Kɔshiwɔ, Awusi
Monday	Dzoda	Kɔdzo	Adzo, Adzowɔ
Tuesday	Braɖa/Blaɖa	Kɔbla, Kɔmla	Abla
Wednesday	Kuɖa	Kɔku	Aku, Akutɔ
Thursday	Yawoda	Yawo, Yao	Awo, Yawa, Yawɔ
Friday	Fidɑ	Kofi	Afi, Afiwɔ, Afitɔ
Saturday	Memleɖa/Memliɖa	Kɔmi	Ama, Ami, Ameyo

Other naming categories include the circumstance of birth names such as *Adukpo* [adukpó] ‘rubbish dump’, *Modzinu* [módzínú] ‘something on the road’, *Tsigbe* [tsi gbe] ‘in the rain’. There are also ‘the mission of life’ (destiny) names such as *Kplɔla* (leader/shepherd).

1.3 Praise name *ahanoŋkɔ* among Anlo-Ewe speakers

Praise names describe in short cryptic forms the qualities and accomplishments of a status or a holder of the name (Egblewogbe 1984: 216). In Ewe, praise names are locally referred to as *ahanoŋkɔ* (pl. *ahanoŋkɔwɔ*). This Avorgbedor (1983) translates etymologically as ‘a drinking name’. The drink being referred to, in this context, is an alcoholic drink, hence, it can be said to be an ‘alcohol-drinking-name’ or ‘a name used while drinking alcohol’. This name is sometimes called out when men gather to take alcoholic drinks in groups, but it does not mean it is mentioned out only within the context of drinking or taking alcohol.

Besides personal names given to an individual at birth, *ahanoŋkɔ* is given to, or, taken up by the bearer himself later on in life as a result of peculiar characteristics or outstanding qualities which he exhibits. Children, women, as well as men who were deemed unworthy, could not have an *ahanoŋkɔ*. Exceptions exist for a male child who exhibited extraordinary great qualities. He might earn an *ahanoŋkɔ* but would have to wait till adulthood before having the name performed. *Ahanɔŋkɔ* could pass for a nickname but it is in reality, far more powerful than a mere nickname (Geurts & Adikah 2006)

The Anlo-Ewe people are not the only ones who take up praise names. Other ethnic groups in Ghana such as Fantes and Ashantis equally take up praise names in their own unique forms. An example includes the form of praise appellations like *Ahunabɔbirim* meaning ‘at whose sight you tremble’ (Obeng 2001). In a research on Bantu languages, Finnegan (2012) noted that praise names among the Bantu speakers were picked due to some striking quality of an object and were used for inanimate objects, birds, and animals, before they finally became names of people. As Adjah (2011) rightly puts it, these praise names with appellations were acquired due to bravery or some other admirable quality and best describe the bearer of the name. Although most men take only one praise name, it is not out of place to find people responding to more than one *ahanoŋkɔ*. It is common to find many people known to have taken more than one *ahanoŋkɔ* in order to increase the social and psychical dimensions of their ego (Avorgbedor 1983).

2 Why a praise name *ahanoŋkɔ*?

The reasons for taking up an *ahanoŋkɔ* vary from person to person. It could be as a result of a heroic act performed by the bearer. These characteristics or qualities could be in the form of bravery, patience, resilience, or uniqueness. These praise names are called out loud or performed in order to cheer the bearers on. Each has a distinctive meaning and an interesting history behind it, which reflects not

only the socio-cultural beliefs of the people, but also reveals the character traits of the bearer of the *ahanoŋkɔ*.

However, the display of these *ahanoŋkɔwo* seems to be dying out slowly as they are being replaced by using the names of modern-day heroes, sportsmen and prominent stars in a similar fashion. Celebrity names currently being conferred as personal names and nicknames include Usain Bolt, Azumah Nelson, Mohammed Ali, among others. It was observed that most of the people contacted by the researchers, who bear an *ahanoŋkɔ* as surname, were not able to respond to their appellations when the name was mentioned, since they are not the original bearers of these names. There is, therefore, the need to document these *ahanoŋkɔwo* to preserve the socio-cultural history, beliefs and practices of the people.

2.1 Performance of *ahanoŋkɔ*

Whenever the bearer of an *ahanoŋkɔ*, hears his name being mentioned, most especially during specific situations or special events, it necessitates a performance known in Ewe as *nkofofodo* (moulding of name) (Avorgbedor 1983; Geurts & Adikah 2006; Nyamuame 2013). According to Avorgbedor (1983), the *nkofofodo* of *ahanoŋkɔ* is performed in two parts. The first part is the call of the name by the non-bearer and the second is the response by the bearer which may sometimes end with a handshake depending on the setting or communicative situation. Below is an example of the performance of *ahanoŋkɔ* between bearer and non-bearer:

(1) The performance of *ahanoŋkɔ*

First part	Second part
Calling (by non-hearer)	Response (by hearer)
Dzakpata (Noun)	Dzakpata be devi me nya ku o (Completing sentence)

Avorgbedor (1983) describes the performance of *ahanoŋkɔ* as deeply interactional and one that must take place, at least, between two persons with visual, verbal and tactile components. These components which are essential to the totality of the performance, include eye contacts, facial expressions, body movements and a vigorous handshake accompanying the recitation of the name, either simultaneously or immediately after the recitation, depending upon the nature of the personal encounter and the social situation. The contexts within which *ahanoŋkɔ* is performed include, among others, friends meeting casually at village corners,

or formally at musical performances, festive occasions, work camps, at administrative councils, funerals, personal or social tragedy (Avorgbedor 1983). The handshake, as Avorgbedor (1983) puts it, is usually accompanied by the ideo-phone *Etsaya!* (An idiophonic imitating sound of a handshake) vocalized by one person or both simultaneously. The performance is consummated with a final snap made from the middle (medius) fingers of both persons. The performance of *ahanonkɔ*, invokes an inner force in the bearer each time it is conducted. It has spiritual, physical and psychological effects/implications on the bearer and non-bearer. This explains why for a performance to take place, there is the need for an alcoholic drink to be offered to appease the inner force or spirit of the bearer.

2.2 Similarities and differences between *ahanonkɔ* and *lododo* ‘proverb’

Proverbs, known in Ewe as *lododo*, are short and concise sayings in common use which express some obvious and familiar truth or experience in a striking form (D'Angelo 1977: 365). A proverb therefore can be said to refer to any short wise or truthful saying, put forth in order to advise or caution hearers. It is important to note that some Ewe names are known to be derived from proverbs and hence referred to as proverbial names, examples include *Sekle*, *Vigbedor*, etc.

However, it has been observed that *ahanonkɔ* is often mistaken to be a proverbial name and vice versa. This may be due to similarities between these two. Both *ahanonkɔ* and proverbial names tend to serve as a source of advice or warning to hearers. These are both familiar truths which are common to the Ewe community, hence not difficult to be understood by the hearers.

Even though *ahanonkɔ* may sound or have similar structures like proverbs, it is unique and can be distinguished from proverbial names considering how and when they are used as well as the spiritual connotations invoked when performed. An *ahanonkɔ* is assigned to a person, based on various factors already defined in this paper. Traditionally, one cannot just mention the *ahanonkɔ* of a bearer without performing the required ‘rituals’ because these names are believed to invoke supernatural powers within the bearer of the name.

Proverbs and proverbial names, on the other hand, have their unique purpose and roles. They are used in conversation only when required to either harness a point, advise, enrich a discussion or exhibit the speaker's level of maturity. Unlike *ahanonkɔ*, proverbial names do not demand a performance. Proverbial names can be mentioned frequently in any communicative setting and at any time. Since proverbs are community owned, an individual can not be said to own

the proverbial name. Thus, the uniqueness of *ahanonjɔ* can best be likened to the praise name: *Dzogbesɔli be yedi egbewo, gake egbe adeke medi ye o* (*Dzogbesɔli* says it may resemble several other grass species or plants but no other grass type has its characteristics). Just like the *dzogbesɔli* plant, an *ahanonjɔ* has unique characteristics and uses which differ from that of proverbs.

2.3 Evolution of *ahanonjɔ*

As stated earlier, *ahanonjɔwo* were traditionally names reserved solely for worthy men who had shown deserving qualities. It was a taboo for women to be seen drinking alcohol in public, hence, there were certain restrictions on the female gender. A woman could however only take up an *ahanonjɔ* after menopause with the condition that she also exhibited extraordinary characteristics (Eblewogbe 1977). However, due to the introduction of foreign cultures, especially the adaptation of the western system of name registration, where children are required to add their father's name to their given names, *ahanonjɔwo* have been gradually transformed into family names/last names/surnames among the Ewe people over the years. The educational system in Ghana requires that children who attend school get registered, having at least one first name and a compulsory surname. This made fathers give their *ahanonjɔ* to their children including daughters. It is worthy to note that, old phenomenon where women were not given, or could not have, *ahanonjɔ* until they had attained menopause, has changed. It is now common to see females who in the past might not have been given an *ahanonjɔ* for cultural reasons, now bearing such names. For instance, a father who has an *ahanonjɔ* appellation such as *Akukɔ ku be yede ha dɔme gbɔ* (The seed of yellow mombin plum says it went (journeyed) into the pig's stomach and came back), could adopt *Akukɔku* or *Akukɔ* as the family name/last name, hence appearing on the birth certificates and passports of both his sons and daughters, as well as in their school academic registers. Another example is *Agble* (farm) or *Kotoku* (sac) being chosen as a surname by the bearer of the *ahanonjɔ*: *Agble kotoku me tsi na agble woxaa nu o* (when the agble kotoku (farm sack) is forgotten/left behind in the farm, it does not get worried).

There are also women who, for marital reasons, get to bear these *ahanonjɔ* since they are married to men who bear these names as surnames. They replace their maiden names with their spouse's last name, whatever it may be or mean. One can find names such as Mrs Zormelo, Mrs Gadzekpo, etc. This is a clear example of a woman who has abandoned her maiden name and adopted the surname of her husband who bears an *ahanonjɔ*.

A lot of importance or significance is attached to these *ahanoŋkɔwo* to the extent that some women who originally bear these *ahanoŋkɔwo* do not want to let go of their maiden names after marriage. They rather add the names of their husbands to form a new hyphenated last name. Examples include: Mrs Dzakpata-Amuzu in which, the bearer of the name has an *ahanoŋkɔ* as her maiden name Dzakpata, and upon getting married chooses to add her husband's name, Amuzu, which is not an *ahanoŋkɔ*.

3 Methodology

This research uses as its primary database, names collected from 12 Ghanaians between the ages of 40 and 50, who are native Anlo Ewe speakers and bear Ewe names. The researchers also contacted scholars in the Ewe language to enable them to correctly transcribe the *ahanoŋkɔ* that were collected.

Data elicitation techniques used included audio and video recording of unstructured interviews. Some of these interviews were conducted verbally through face-to-face interactions with native speakers while others were done through phone conversations as well as on the WhatsApp messaging platform. Permission was obtained orally from the interviewees for their voices to be recorded and used for the purpose of this research only. Those who self-recorded and sent voice notes on WhatsApp also gave their consent for their voice notes to be used for the research objectives. Data analysis techniques such as annotation, segmentation, transcription and translation (documentation corpora) were used to analyse the data collected.

A Flex database (pronunciation/images/meaning) of *ahanoŋkɔwo* was created. In this wordlist, there is a collection of thirty (30) *ahanoŋkɔwo* from field data. If a researcher keys in the name *Dzakpata* in the documentation wordlist, he/she would see a picture of the snake called dzakpata, the native pronunciation is then obtained and then, the full appellation and meaning of this *ahanoŋkɔ* is read out to the researcher interested in finding more about Ewe praise names.

4 Characteristics of *ahanoŋkɔ*

An *ahanoŋkɔ*, just like other categories of names, has unique characteristics which include its sources, structure and contextual usage.

4.1 Sources of *ahanoŋkɔ*

Most *ahanoŋkɔ* take their origin from animals, plants or objects that are usually found in the Ewe land and are known to bearers and non-bearers alike for the unique characteristics they exhibit. Examples include: the crocodile (*lo*), hippopotamus (*nyi*), viper (*dzakpata*), coastal crab (*bleyi*), octopus (*adits*), yellow mombin plum seed (*akukɔ ku*), hard bone (*fu sese*).

4.2 Personification of objects, animals and plants

The objects, animals and plants used in the *ahanoŋkɔ* names are mostly personified, that is, represented as humans with the voice to make statements or declarations. This is seen in examples such as: *Dzakpata be devi me nya eku o*. The use of the verb *be* ‘say’ indicates that a non-human *dzakpata* ‘viper snake’ that naturally has no human voice, is represented, in this case as a human, who says that a child does not know death.

4.3 Used only during specific situations or events

These *ahanoŋkɔwo* are not mentioned just anyhow as is done with other categories of Ewe names. Natural or allusive names, given at birth, could be mentioned anytime, anywhere and by anyone without any performance ritual. Same could be said for other categories of names such as vocational names, nicknames, etc., taken later in life. This, however, cannot be said of an *ahanoŋkɔ*. It is used in specific situations or events such as wars, negotiation of peace, striking a deal with a neighbouring or rival community to urge the bearer on to victory.

5 Discussion of socio-semantic perspective of *ahanoŋkɔwo*

Ahanonkɔwo can be grouped into several categories depending on the characteristics being exhibited by the bearer. While some of these *ahanoŋkɔwo* could be quotations of what the bearer said, some show the bearer’s:

- calmness in the face of provocation
- strength
- bravery

- uniqueness
- prominence/importance
- resilience
- dominance
- pride
- invincible nature

A collection of the call and response forms of some selected *ahanoykɔ* are discussed below, showing the meaning and the impact they have on both bearers and non-bearers.

5.1 *Ahanoykɔ* depicting calmness in the face of provocation

(2) *Dzakpata*

Dzakpata be devi menya ku o.
Viper says QT child NEG knows death NEG
'The viper says a child does not know death. / Death is a distant rumour to a child.'

Meaning: *Dzakpata* is a type of snake which is small and calm but very poisonous. Children may innocently mistake it to be harmless and then use it as a play object. Although it appears harmless, *Dzakpata*, in this case, is warning everyone who comes closer to it, about its dangerous nature. Thus, playing with it is like playing with fire.

Implication: This implies that anyone who bears this as his *ahanoykɔ* is indirectly putting fear in people who interact with him. The bearer warns non-bearers to be mindful of his dangerous nature and that he should never be taken for granted, as his calm and non-assuming appearance is very deceptive.

5.2 *Ahanoykɔ* portraying strength and its limitations

(3) *Zɔmelo*

Zɔmelo be yenya bublu, gake zo gbo nɔlawo ta yeli kpoo.
Zɔmelo says QT 2SG know raid but pot beside sitters so 2SG is calm
'Zɔmelo says it can cause a stir but it is for the sake of those by the pot, that it is calm.'

Meaning: *Zɔ* refers to a pot (a very fragile object made from clay), used in storing water in most homes before the advent of plastic containers or pipe-borne water. These clay pots are handled with care to prevent them from breaking into pieces. Crocodiles usually do not live in pots. But when a crocodile finds itself in a pot, one can presuppose that this crocodile has been domesticated and hence harmless. This crocodile is not at liberty to do what other crocodiles in ponds or other water bodies can do, hence, it is restricted from displaying its sterling skills.

Implication: This *ahanɔŋkɔ* portrays the amount of restraint the bearer of the name may be able to exercise. He tells non-bearers, his calm nature should not be underestimated nor misconstrued; it is just for the sake of people who may get hurt in the process that he, the bearer, decides to be calm.

(4) *Nyidevu*

Nyidevu medea kevu o.

Nyidevu NEG throw sand truck NEG

‘The hippopotamus which capsizes canoes cannot do same to a sand truck. (This happens to be the *ahanɔŋkɔ* of Kofi Awunor, a famous Ghanaian poet.)’

Meaning: *Uu* in Ewe simply means a vehicle used on land, on the sea or in the air. *Tɔdzi vu* is used to refer to canoes/ships which are primary means of transportation for the Ewe living along various water bodies. There is also *yame vu* which refers to airplanes, helicopters, etc. The word *tɔdzi* or *ya me* is added to differentiate between the *vu* (vehicle) used on land, in the air and on water bodies.

In Ewe, *nyi* refers to a cow. But the word *nyi* found in the name *Nyidevu* is the short form of *tɔme nyi* (literally meaning water cow) referring to a hippopotamus perhaps due to its size. The hippopotamus tends to capsize canoes/ships but it definitely cannot capsize (overturn) a truck filled with sand.

Implication: The bearer of this *ahanɔŋkɔ* is represented by the sand truck. Despite the ability of the strong or mighty to destroy lives, they would not be able to destroy the bearer of this name. He, therefore, is telling hearers of his *ahanɔŋkɔ* that, there is a limit to the strength of those perceived to be strong when dealing with him.

5.3 *Ahanorŋkɔ* portraying uniqueness

(5) *Dzogbesɔli*

Dzogbesɔli be yedi egbewo gake egbe adeke
Dzogbesɔli say QT resemble weeds/plants but weed/plant none
medi ye o.

NEG resemble 2SG NEG

‘*Dzogbesɔli* says it may resemble several other grass species or herbs but no other grass type has its characteristics.’

Meaning: *Dzogbesɔli* is a type of weed/grass that commonly grows by the river-side and lagoons and is fed to animals. A look at it testifies that it resembles other types of grass/plants. One will have to closely observe to be able to differentiate between *dzogbesɔli* and other plants or grass types.

Implication: To take up an *Ahanorŋkɔ* such as *Dzogbe* simply shows the bearer is able to do or perform so many activities done by others, but none among them is either gifted to be as versatile as he is, or possesses his unique characteristics and abilities. This indicates how uniquely talented the bearer of the name is. Although he (*Dzogbesɔli*), can accomplish the tasks performed by others, he cannot be imitated in any way, when it comes to his distinctive skills. In other words, his unique characteristics and skills distinguish him from others.

5.4 *Ahanorŋkɔ* portraying courage/boldness/bravery

(6) *Zagbede*

Zagbede be ye tu nu de ŋɔliwo.
Zagbede says QT 2SG forge object against ghost PL.

‘*Zagbede*; the night blacksmith says he has challenged or dared ghosts and nothing happened to him.’

Meaning: Blacksmiths usually work during the day. It was uncommon to see a blacksmith work at night since there was no electricity to provide light at night in precolonial Ewe land. Even though most people hardly came out in the night for fear of seeing ghosts of the departed members of the community, *Zagbede*, the night blacksmith, is so brave that he has defied this fear and works in the night thereby challenging the feared ghosts through his actions.

Implication: Ghosts are known as restless spirits of the dead. It was therefore seen as dangerous to encounter a ghost. The bearer of the name *Zagbede* fears nothing (fearless). In the event of situations which are life-threatening, *Zagbede* would face it and not retreat. After all, he defies even the dreaded ghosts.

5.5 *Ahanoykɔ* showing resilience and survival against all odds

(7) *Bleyi*

Bleyi be akɔ sese yetso nɔ fu tsi a nu.

Bleyi says QT chest hard 2SG take LOC sea water DEF POST.

'Bleyi says it is with resilience ('hard chest') that it is able to survive living at the seashore.'

Meaning: *Bleyi* is a small coastal crab found on the beaches or at the seashore. It is colourful but looks sandy. Since the Anlo people are located at the coast, these coastal crabs are very common to them. When the tidal waves come crashing down on the seashore, one would have the impression that the coastal crab could easily be washed away because of its small nature. Nonetheless, this coastal crab dips its claws deeply into the sand and clings tightly till the tidal wave subsides.

Implication: The bearer of this name exhibits a lot of resilience and survival tactics in the face of adversity. Just like *bleyi*, the bearer of this name appears to be telling hearers of his name that he is a survivor.

(8) *Fu sese*

Fu sese be yetsi avuwo fe gla me dɔ.

Bone hard says QT 2SG remain dogs LOC Pronoun jaw inside sleep.

'*Fu sese* (the hard bone) says it slept in the dog's jaw overnight.'

Meaning: Dogs are known to crack and chew bones. This *fu sese* (hard bone) however, could not get cracked or chewed by the dog and hence remained ('slept') in its jaw all night. This means the dog got tired of trying to chew the hard bone and finally went to sleep.

Implication: The bearer of this *ahanoŋkɔ*; *fu sese* is a hard nut to crack. Any attempt to do so will rather get the aggressor tired and eventually give up.

(9) *Akukɔ*

Akukɔ ku be ye de ha dɔme gbo.

Akukɔ seed says QT 2SG went to pig stomach return

'*Akukɔ ku*' the seed of yellow mombin plum says it went (journeyed) into the pig's stomach and came back'

Meaning: *Akukɔ* is the Ewe name for yellow mombin plum. Its seed is hard to crack or chew. The pig swallowed the fruit but was not able to digest it so the seed was 'returned' (was excreted without being digested).

Implication: The bearer of this *ahanoŋkɔ* shows resilience and survival tactics in the face of danger.

5.6 *Ahanoykɔ* showing pride and assurance

(10) *Adi*

Adi mesia aditɔ o.
Poison NEG harm HAB poison POSS NEG
'Poison does not kill the producer of poison.'

Meaning: *Adi* means poison, while *aditɔ* which literally means 'owner of poison' is used to refer to an octopus in Ewe. The octopus emits poisonous substances, which it is immune to (itself), but uses it to deter its predators.

Implication: The bearer of this name seeks to instill some fear in the hearers, while portraying some level of invincibility and pride. Just like the octopus, he can produce poison by creating an immensely toxic and hostile conditions with the goal of destroying his foes without harming himself.

(11) *Agble /Kotoku*

Agble kotoku metsia agble woxaa nu o.
Farm sack NEG remain farm 3PL lament HAB object NEG

'When the *agble kotoku* (farm sack) is forgotten/left behind in the farm, it does not get worried.'

Meaning: *Agble kotoku* refers to the sack used to carry produce from the farm at the end of the day. While it is not necessarily a farming tool, its importance cannot be ignored in the transportation of goods from the farms to feed communities. Farmers, however, sometimes forget their sacks on the farms especially during planting seasons when there are no harvests to take home. In such situations, the seemingly insignificant sack (*agble kotoku*), left behind on the farm, does not get worried. It is sure, its owner would come back to the farm and find it useful as usual.

Implication: This name shows the importance or usefulness of the bearer, whose value or skills might sometimes be underestimated by society. The bearer of this *ahanoykɔ*; *agble kotoku* (farm sack) is reassuring the non-bearer of its usefulness in the face of dejection, by comparing himself to a farm sack which although forgotten/left behind in the farm, the farmer would need it the next day and hence go back for it. In other words, when he, the bearer of the *ahanoykɔ*; *agble kotoku* (farm sack), is forgotten or neglected, he does not get worried because one day, he would be needed or useful in one way or another.

(12) *Gadzekpo*

Ga dze kpo ga nje.
Metal hit log metal break.

'The log "kpo" says if a metal hits it, the metal would end up breaking.'

Meaning: *Ga* refers to a metal. The log, ‘*kpo*’, which may not be rated to be as strong as a metal says: if a metal struck it or fell on it, the metal would rather end up breaking.

Implication: This implies that appearance can be deceptive. The bearer may look frail or weak in his appearance, but has the potential to cause havoc or create mayhem when facing perceived powerful enemies.

5.7 *Ahanonkɔ* showing dominance

- (13) *Kpoŋ megbe*

Kpoŋ megbe la, avuwo de dzradzra sese nya hem.

Leopard back TP dog PL remove show off hard talk pull.

‘In the absence of the leopard, dogs are jubilant and “make noise” (bark).’

Meaning: The leopard is very revered in the animal kingdom. Even though the dog and the leopard are from the same family of mammals, the dog does not dare to misbehave in the presence of the leopard in order not to incur its wrath. However, the dog is able to act in any manner when the leopard is not around.

Implication: The bearer of this *ahanoŋkɔ* portrays some form of dominance or superiority or an ability to tame and instill discipline in others. The dog and the leopard may possess the same physical features as mammals, just as the bearer of the name may look like his fellow human beings. Nevertheless, in bearing this praise name, he makes others aware that nobody should dare misbehave in his presence. They can only do so when he is away from their midst.

5.8 *Ahanonkɔ* showing peace/wisdom

- (14) *Dada*

Dada be, yede amegă kple etɔwo avua me.

Dada says QT 2SG remove master and other PL quarrel inside.

‘Dada says, he has put apart/delivered the “big man” (master) and his cohorts from the war ground/zone.’

Meaning: When mighty entities/factions decide to engage in hostilities against one another, it is usually difficult for one to calm tensions and ensure peace among them. But Dada, due to his unique ability as a peace-maker, is able to do so effortlessly.

Implication: To bring peace among feuding factions or calming down warring factions is not a skill most people possess. Dada, the bearer of the name, therefore, has such special skills and is able to bring calm where people assume it is impossible.

6 Conclusion

In the past, it was noted that most people were very proud of being bearers of these *ahanoŋkɔwo* and would always want to be called by these names. With modernisation, it has been found out that these *ahanoŋkɔwo* are being used as surnames, and most bearers of these *ahanoŋkɔwo* feel proud of being descendants of a once courageous ancestor, who stood out in the community. Some women specifically look out for men who bear these prestigious *ahanoŋkɔ* as suitors, in order, for their children to potentially bear these *ahanoŋkɔwo* as their surnames or family names. However, this is not always the case because, it was discovered that, not all bearers are proud of their surnames as it may be the name of an animal, a plant or an object. Individuals who are not the original bearers of the *ahanoŋkɔ*, but rather inherited them either by birth, adoption or through marriage, may not even know the full name or understand its true significance. This can be said to be due to the fact that, in recent times, the inherited *ahanoŋkɔwo* are neither performed nor revered as praise names, but merely used as surnames by the bearers. This has caused the full meaning or appellation of these *ahanoŋkɔwo* and their strong significance to get lost with time. A bearer of the name *Akukɔrku* (*Akukɔku*) may not be too proud to bear this name especially when the full *ahanoŋkɔ* is not known or performed. Schoolmates or friends may often tease them as this shorter version of the name means ‘the seed of a yellow mombin plum’. This also applies to a name such as *Kotoku* which literally means ‘a sack’. Therefore, an *ahanoŋkɔ*, which used to be uniquely performed in two parts, can be a source of prestige and encouragement to the bearer on one hand and a source of admiration, fear, and warning to the non-bearer on the other hand. It can also be a source of many jokes or seem derogatory to the bearer, if not mentioned in full or performed.

References

- Abdul, Rashidat Edem. 2014. *A synchronic sociolinguistic analysis of personal names among Ewes*. University of Ghana. (MA thesis).
- Adjah, Olive Akpebu. 2011. What is in a name? Ghanaian personal names as information sources. *African Research and Documentation* 117. 3–17.
- Agyekum, Kofi. 2006. The sociolinguistic of Akan personal names. *Nordic journal of African studies* 15(2). 206–235.
- Atakpa, F. K. 1997. *The Ewes of Southeastern Ghana*. Accra: Awoeli Publishing Services.

- Avorgbedor, Daniel. 1983. The psycho-social dynamics of Ewe names: The case of Ahanonko. *Folklore Forum* 16(1). 21–43.
- D'Angelo, Frank J. 1977. Some uses of proverbs. *College Composition and Communication* 28(4). 365–369.
- Eberhard, David M., Gary F. Simons & Charles D. Fennig (eds.). 2020. *Ethnologue: Languages of the world*. SIL International. <http://www.ethnologue.com>.
- Egblewogbe, Eustace Yao. 1977. *Ewe personal names: A sociolinguistic study*. University of Ghana. (Doctoral dissertation).
- Egblewogbe, Eustace Yao. 1984. Personal names as a parameter for the study of culture: The case of the Ghanaian Ewe. In François de Medeiros (ed.), *Peuples du golfe du bénin*, 209–219. Paris: Karthala.
- Finnegan, Ruth. 2012. *Oral literature in Africa*. Cambridge: Open Book Publishers.
- Geurts, Kathryn Linn & Elvis Gershon Adikah. 2006. Enduring and endearing feelings and the transformation of material culture in West Africa. In Elizabeth Edwards, Chris Gosden & Ruth B. Phillips (eds.), *Enduring and endearing feelings and the transformation of material culture in West Africa*, 35–60. London: Bloomsbury Academic.
- Nyamuame, Samuel Elikem Kwame. 2013. *History, religion and performing Yeve: Ewe dance-drumming, songs and rituals at Ave-Dakpa, Ghana*. University of Florida. (Doctoral dissertation).
- Obeng, Samuel Gyasi. 2001. *African anthroponymy: An ethnopragmatic and morphophonological study of personal names in Akan and some African societies*. Vol. 8. Munich: Lincom Europa.

Chapter 15

Clitics or agreement markers: A view from Tigrinya clausal possession and modal necessity

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This paper discusses the connection between clausal possession and modal necessity in Tigrinya. One of the unique traits of the two constructions is that they involve the same verbal element *?alləw-*, which hosts an object marker that tracks what appears to be a subject. Using a number of diagnostics, I first demonstrate that the object marker is an agreement affix and that it should be amenable to the operation Agree. Then, using several pieces of morphosyntactic evidence, I argue that the mismatch (the object marker tracking what looks like a subject) arises due to the fact that the DP the object marker references is a “quirky” argument is forced to remerge higher to escape an intervention effect. Finally, I present a syntactic analysis for clausal possession and modal necessity, claiming that *?alləw-* is the spell-out of the APPL head that relates two arguments in Tigrinya.

1 Introduction

In Tigrinya, a Semitic language mainly spoken in Ethiopia and Eritrea, there is a verbal root $\sqrt{h - l - w}$ that marks clausal possession (1a) and modal necessity (1b).¹ This verbal root, like any other transitive verbal root in the language, can be affixed with a bound morpheme, which is traditionally referred to as the *object*

¹The verb also marks locational predication, and often is referred to as “existential copula” in the literature (e.g., Hetzron 1972). In this paper, I will simply gloss it as HAVE to refer to a general clausal possession marker (see Myler 2016 for a similar usage), without judging it as ‘be’ or ‘have’.



marker. In both constructions, the bound morpheme, which I hereafter call the object marker (OM), tracks the same argument, i.e., *Selam* (a feminine personal name).²

(1) a. Clausal possession

Selam sələstə k'olʃut *?alləw-u-wwa*
Selam three child.PL HAVE-3MPL.S-3FSG.O
'Selam has three children.'

b. Modal necessity

Selam ni-gəza ki-t-məs'i? *?alləw-wa*
Selam to-house FUT-3FSG-come HAVE-3FSG.O
'Selam has to come home.'

The two examples in (1) are similar in the sense that they both involve the same verbal root *?alləw-* (*italicized*) and two arguments – two DPs in (1a) and a DP and a proposition (TP) in (1b). The two constructions, however, are unusual in one particular respect: They both have an OM (**bold**), which controls what appears to be the “subject” in their respective clauses. That is, there is the same noun phrase, *Selam*, which acts as a possessor in (1a) and as an obligation bearer in (1b), being tracked by the same morpheme, realized as -(ww)a (bold) in both as well as in a simple transitive verb ‘kiss’ given below.

(2) Simple transitive

Yared ni-Selam *siʔim-u-wwa*
Yared ACC-Selam kiss.PF-3MSG.S-3FSG.O
'Yared kissed Selam.'

Two questions arise from the data in (1): (i) What is the status of the OM? and (ii) How do we account for the correlation between the clausal possession (CIP) and modal necessity (MoN)?

In the literature, the analysis of similar elements (like the Tigrinya OMs), across a number of languages has inspired a great deal of debate (see Nevins 2011 for an overview and reopening of the debate; see also Kramer 2014 based on Amharic). Conceptually, clitics and agreement markers appear different, but in practice, they can be difficult to tease apart, as both share many properties in common. For example, both can be defined as prosodically weak (unaccented) morphemes, characterized by different degrees of phonological “affinity” to their

²I am using the term OM here pre-theoretically. In Tigrinya, since the bound morpheme occurs at a position where other ordinary OMs occur, as in (2), I will continue to refer to it as such (see Kramer 2014 for similar use).

host (Stump 2001). Their phonological properties, however, can be seen as quite separate from their morphosyntactic behaviour. As Stump (2001: 16) points out, the fact that clitics exhibit an affix-like phonological dependency on a neighbouring word may make them difficult to distinguish from affixes, even though their morphosyntax, which is word-like, appears quite distinct.

From a morpho-syntactic point of view, clitics are generally assumed to be optional and freely movable (Corbett 2006), but agreement affixes are obligatory and strictly local (Preminger 2009). In addition, from a theoretical stand point, agreement affixes are realizations of φ -features (exponed on a functional head), whereas clitics are pronominal copies of the arguments they cross-reference (Nevins 2011, Kramer 2014). While these are important distinctions, since arguments for and against such fundamental syntactic distinctions abound, it is important to consider other robust (morpho)syntactic diagnostics to determine whether the OMs in (1) belong to elements that cross-reference arguments or to elements that realize the φ -features of the arguments associated with them. One of the most widely-adopted methodologies in response to this question is to run a number of diagnostics (Zwicky & Pullum 1983) and check whether the predictions the diagnostics make are borne out in the data. In their seminal work, Zwicky & Pullum (1983), for instance, discuss a list of phonological, morphological, syntactic and semantic properties that separate clitics from (agreement) affixes. While some of their diagnostics have been deemed less relevant due to lack of current theoretically-grounded motivation (see Nevins 2011 for discussion), for this paper, I adopt the general approach in Zwicky & Pullum (1983) as well as in many others (e.g., Kramer 2014, Oxford 2014, Compton 2016, a.o) in determining the status of the OMs in Tigrinya.

The remainder of the paper is organized as follows: §2 presents some theoretical context for ClP and MoN as well as for agreement markers and clitics; §3 tests some predictions to determine whether OMs in Tigrinya ClP and MoN are better predicted under the clitic or the agreement approach; §4 presents some morphosyntactic evidence that comes to prove whether the syntactic argument the OM tracks is a true subject or not; §5 provides some preliminary analysis for the OM in ClP and MoN; finally, §6 presents reasons for the mismatch (the OM tracking an apparent subject), while §7 concludes with some remaining issues.

2 Theoretical context

This section provides a brief overview of ClP, MoN and clitics and agreement affixes. It also contains background information on theoretical assumptions relevant for these issues.

2.1 Possession and modal necessity

In many languages, ClP is expressed with the same mechanism as MoN (Bhatt 1997; Bjorkman & Cowper 2016). It has been reported that this correlation is not only observed with languages that express possession with ‘have’, as in (3), but also with languages that express possession with ‘be’ plus a preposition/oblique case, as in (4).

- (3) a. The students have three assignments this week.
(Bjorkman & Cowper 2016: (1))
b. The students have to do their homework now.
- (4) Hindi/Urdu (Bhatt 1997: (8))
John-ko seb khaa-naa/sirdard hai
John-DAT apple eat-GER/headache be.PRES
‘John has a headache/has to eat the apple.’

The fact that languages allow the same morphosyntactic elements ‘have/be’ and ‘have’ + infinitive or ‘be’ + oblique + infinitive to encode possession and MoN have invited different scholars to develop a proposal that establishes a link between the two. For instance, Freeze (1992) proposes that possessives (as in, *John has a book*) and existential/locative constructions (as in, *There is a book on the table*) are derivationally related and that possessives are underlyingly ‘be’ plus incorporated P-element (see also Harley 1995, Levinson 2011, a.o, for a similar proposal). Under this proposal, possessives are a kind of existential construction, argued to have the same underlying representation as in (5).

- (5) a. BE_{existential} [(a book) (to John)]
b. BE_{existential} [(a book) (on the table)]

In the same unificationist spirit, Bhatt (1997) claims that MoN/obligation and ClP are structurally linked and that the former is a kind of existential construction. Bhatt particularly considers two options to syntactically analyze MoN: syntactic Control, as in (6a) and syntactic Raising, as in (6b).

- (6) a. There is an obligation [(PRO_i to eat an apple) (to John_i)]
b. There is an obligation [(John to eat an apple)]
(Bhatt 1997: (12))

According to Bhatt, while (6a) makes a direct link between the existential and MoN, he favours (6b) as an underlying structure because in it, he argues, the existence of the obligation is clearly asserted. In other words, the modality involved (whether deontic or epistemic) in this structure is clearly implicated. Intuitively,

deontic and epistemic modality are different because they operate in different worlds (Kratzter 2006): while the former describes what the world is like according to someone's desires/the law, the latter describes what the world should be like according to someone's desires/the law and who should be responsible for bringing it into this desired/law-obeying state (Bhatt 1997).

Over the years, linguists have taken a number of syntactic approaches to distinguishing homophonous root and epistemic modals (Matthewson et al. 2005; von Fintel 2006). Much of the motivation for this has been purely semantic: Epistemic modality involves expression of a relation between necessity or possibility and a proposition, while root modality involves a relation between an individual and a necessary or possible event (Butler 2003: 967–968, Matthewson et al. 2005: 166–167, von Fintel 2006: 2, a.o.). Building on Cowper (1989), Bjorkman & Cowper (2016) develop a syntactic proposal for modal 'have' and possessive 'have' arguing that the former is like a part-whole sentence (e.g., *this table has four legs*), except that the relation involves sets of worlds rather than individuals.

In Cowper (1989) (see also Ritter & Rosen 1997) it has been observed that the interpretation of 'have' with nominal complements denoting events and states is largely determined by the complement itself. Cowper argues that 'have' in English doesn't assign thematic roles and positing multiple lexical entries for possessive 'have' is neither necessary nor desirable. Instead, she develops a theory of thematic underspecification which would account for the contextually-associated multiple interpretations of the argument associated with 'have'. Similarly, in Tigrinya, we find evidence that the subject in clausal possession displays a number of thematic relations to the event or state associated with any pragmatically-available relation, as the examples in (7) illustrate.

(7) a. (Agent)

- Dr. Yared ziħaləfə-səmun sələstə mət'baħti nəyr-u-wwo
 Dr. Yared last-week three operation HAVE.PST-3MPL-3MSG.O
 'Dr. Yared had three operations last week.'

b. (Patient)

- ʔiz-i-ħimūm ziħ aləfə-wərħi sələstə
 D-MSG-patient last-month three operation
 mət'baħ ti nəyr-u-wwo
 HAVE.PST-3MPL.S-3MSG.O
 'This patient had three operations last month.'

c. (Experiencer)

- Selam mərzam ħimam-risi ?alləw-ø-wa
 Selam nasty pain-head HAVE-3MSG.S-3FSG.O
 'Selam has a nasty headache.'

- d. (Believer)

Yared zis'ənhət diħirti ?imnət ?alləw-att-o
Yared old odd belief HAVE-3FSG.S-3MSG.O
'Yared has an old odd belief'

In (7), we can observe that the verb *?alləw-* admits arguments with different thematic roles (from agent to patient to experiencer). The different arguments involved are cross-referenced by the different forms of the OM attached on the verb. One immediate question the above data raises concerns the role of the OM and whether the verb *?alləw-* contributes any meaning at all. Building on Ritter & Rosen 1993 and Cowper 1989, Ritter & Rosen (1997) propose that 'have' doesn't have a lexical meaning of its own, rather the meaning is structurally determined (e.g., comes to mean causative or experiencer when it forms a complex predicate with another verb). Departing from previous proposals (e.g., Freeze 1992), they argue that HAVE is the realization of two argument-structural functional heads (rather than conceived of as the incorporation of P into BE). In more recent Minimalism and Distributed Morphology work, the treatment of HAVE has been further developed to involving different flavours of functional heads (from little *v*, to varieties of *Appl* to *Voice*). Myler (2016), for example, has developed an analysis for the too-many meanings HAVE relates (e.g., experiencers, causers, etc.) in different languages (e.g., Quechua) based on the interaction of functional heads, such as *Voice* and *Appl* (embracing the view that HAVE is semantically vacuous).³

Based on the above facts, and following the proposal laid out in Cowper (1989) and in Ritter & Rosen (1997), I argue that the Tigrinya verb *?alləw-* (and its perfective suppletive form *nəyr-*) is a transitive raising predicate with two underspecified or contextually-determined arguments.

Therefore, building on the cross-linguistic idea that HAVE does not significantly contribute core meaning to possession and other related constructions (see Myler 2016; Kim 2011 for a similar proposal), in §5, I develop a syntactic analysis for Tigrinya *?alləw-* in the context of clausal possessives and MoN. But first, in what follows, I will determine the status of the OM attached to *?alləw-* in both constructions.

2.2 Clitics or Agreement affix

Ever since Zwicky & Pullum's (1983) seminal work, the two notions *clitics* and (*agreement*) *affixes* have been at the forefront of both typological and theoretical studies across different fields of investigation (e.g., cognition or grammar). Each

³Some languages, such as English, allow expletive subjects, as in *It had to have rained last night.* and *There have to be 1000 dollars in my account by noon (otherwise, I will be screwed).*). See §2.2 for discussion.

phenomenon has gained widespread attention, especially in many well-studied individual languages and language families (see Uriagereka 1995 on Romance; Franco 2000 on Balkan; Riedel 2009 on Bantu; see also Corbett 2006 and Spencer & Luís 2012 for a typological discussion). What emerges from this vast body of work is that the phonology and morphosyntax of clitics by-and-large are different from that of agreement affixes, even though there is still controversy around what counts as a defining property of a clitic or an (agreement) affix (see Kramer 2014 for discussion).

In fact, much of the descriptive literature does not make a distinction between the two, with either agreement or clitics often used as a cover term for both phenomena (Siewierska 1999; Corbett 2006). Siewierska (1999: 225) (cited in Croft 2013: 3–4) states that “most scholars working on agreement acknowledge that there is no good basis for differentiating between person agreement markers and anaphoric pronouns”. There is also a bit of a warning from Corbett (2006: 112) which states that “a rigid classification into languages with agreement or with pronominal affixes would limit rather than enhance future research.”

However, if more robust approach with more theoretically-grounded diagnostics are adopted, many empirical differences between the two phenomena may emerge and the contrast can be accounted for accordingly. In line with this view, a more recent strand of work pursues this approach with an eye to analyzing object markers as (doubled) clitics (see Harizanov 2014; Kramer 2014 and references cited therein). In this body of work, object clitics are often analyzed as the movement of a D(P) into a verbal complex from within a “big DP” as in Figure 15.1(a). By contrast, object markers are analyzed as the realization of φ -features on the verb (Chomsky 2001) as demonstrated in Figure 15.1(b).

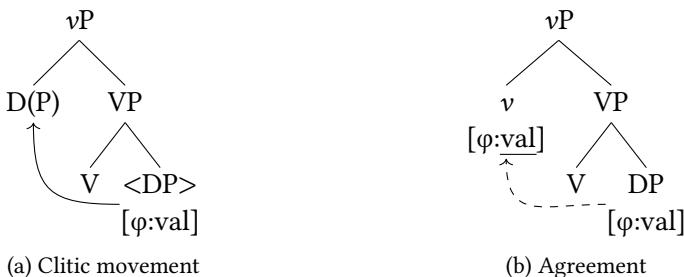


Figure 15.1: Derivations of clitics and agreement affixes

Under this structural difference, (object) agreement is viewed as the valuation of φ -feature between a probe (e.g., *v*) and a φ -bearing goal (e.g., object DP) via the operation Agree (Chomsky 2001).

In contrast, clitics are viewed as D(eterminers) that co-occur with their DP associate in a “big-DP” structure and dislocate to lean onto the hosting verb via the operation Move (Nevins 2011).

With this brief background, in what follows, I present a list of diagnostics that differentiate between subject markers (SMs) and (object) clitics, assuming that SMs are bona-fide agreement markers (Nevins 2011; Kramer 2014). A summary of comparison between the properties of subject agreement affixes and clitics is given in Table 15.1 (see Franco 2000, Kramer 2014, a.o, for similar and other diagnostics). The status of the OMs will be revealed as a form of prediction once each diagnostic is tested in the context of Tigrinya. It will be shown that Tigrinya OMs (in ClP and MoN) pattern more like agreement affixes and that the Agree-based approach straightforwardly accounts for their unique properties.

Table 15.1: Distinguishing clitics and agreement affixes

	Distinguishing properties	Clitics	Subject agreement	OM
1	Freely select	yes	no	?
2	Sensitive to meaning	yes	no	?
3	Optional	yes	no	?
4	Tense invariant	yes	no	?
5	Multiple per host	yes	no	?
6	Dislocate	yes	no	?
7	Non-referential	yes	no	?
8	Exhibit formal similarity with D	yes	no	?
9	Involve Case-alteration	yes	no	?

3 Testing the predictions

In the following subsections, I test the predictions each diagnostics listed above makes for Tigrinya OMs in order to determine whether each prediction is borne out or not in ClP and MoN.

3.1 Free selection

One of the diagnostics that has been adopted to distinguish clitics from agreement markers is free selection; according to this criterion, agreement affixes are not free to choose their host and should always attach to their host for the sake of

gaining morphological support. Clitics, by contrast, can lean onto a host or stand on their own because they have a somewhat low degree of selection with regard to their host (see Zwicky & Pullum 1983, Anderson 2005, Spencer & Luís 2012, a.o., for discussion). For instance, in English the possessive marker 's as a clitic can freely attach to a range of categories, as in *the queen's hat*, *the queen of England's hat*, *the queen we saw yesterday's hat*, etc. without specifically choosing its host (see Spencer & Luís 2012 for discussion).

If this diagnostic is applied to Tigrinya OMs, we would expect the OMs to choose freely and lean onto different hosts if they are deemed to be clitics; however, this prediction is not borne out. In Tigrinya both subject and object markers occur only as affixes attaching to the verbal element (e.g., ?alləw-) and never freely select or independently exist within the constituents of their host (8b and 9b).

(8) Clausal possession

- a. ?it-a məmhɪr kiltə məs'hafti ?alləw-u-**wwa**
D-FSG teacher two books HAVE-3MPL.S-3FSG.O
'The teacher has two books.'
- b. ?it-a məmhɪr (***wwa**) kiltə məs'hafti (***wwa**) ?alləw-u
D-FSG teacher 3FSG.O two books 3FSG.O HAVE-3MPL.S
Intended: 'The teacher has two books.'

(9) Modal necessity

- a. ?it-om təmaharo ki-məs's'-u ?əlləw-**om**
D-MPL student.PL FUT-come-3MPL.S HAVE-3MPL.O
b. ?it-om təmaharo (***om**) ki-məs's'-u (***om**) ?alləw
D-MPL student.PL 3MPL.FUT-come-3MPL.S 3MPL.O HAVE
Intended: 'The students have to come.'

The examples in (8) and (9) demonstrate that the OMs in Tigrinya MoN and CLP neither freely select nor independently lean onto the different constituents of the host in the verbal complex. They always have to remain, unlike typical clitics, attached to the main verb. Thus, by this diagnostic, Tigrinya OMs are agreement affixes.⁴

⁴An anonymous reviewer raises a question whether there are (morpho)phonological processes that apply across a verb-OM boundary but not across a verb-clitic boundary? If Zwicky & Pullum are right in pointing out that agreement affixes display allomorphy and morphological irregularities, while clitics are expected to be invariant, then Tigrinya OMs that exhibit suppletion and morphological idiosyncrasy should be treated as agreement affixes. Zwicky &

3.2 Semantic sensitivity

The tendency of clitics to affect meaning is often discussed in the literature. For instance, in Spanish, clitic doubling is often attributed to the semantic feature ANIMACY (Jaeggli 1986; Ormazabal & Romero 2010), in Romanian it has been argued that it is connected to humanness (Dobrovie-Sorin 1990), in Greek and other Balkan languages, to specificity, definiteness, and/or familiarity (see Kallulli & Tasmowski 2008 and references cited therein for a detailed discussion).

In Tigrinya, while SMs and OMs can co-reference their respective full DP associates, it appears that OMs are more semantically restricted than SMs. That is, an OM requires a specific or definite object associate with regular transitive verbs, but a SM does not have the same restriction. For example, while a verb obligatorily attaches a SM (e.g., *-a*) to reference any subject full DP as in (10), an OM only appears when the object noun phrase is definite or specific; compare (11a) & (11b). Note that Tigrinya uses the numeral *hada/hanti* ‘one’ as an indefinite marker and that, with the object DP, an accusative (ACC) case marker (*n(i)-*) attaches to it (see §3.9 for more on this).

- (10) a. *?it-i k'olfa birtfik'o səyr-u*
D-FSG child glass break.PF-3FSG.S
'The child/girl broke a glass.'
b. *(hant-i) k'olfa birtfik'o səyr-a*
ONE-F child glass break.PF-3FSG.S
'A child/girl broke a glass.'

Pullum's (1983) criterion C states that affixes, unlike clitics, are characterized by idiosyncratic forms, irregularities and suppletion (1983: 505). Morphophonological idiosyncrasy happens when either (i) the host is affected by the bound morphemes attached to it, or (ii) the phonological form of the bound morpheme cannot be predicted by general rules. In Tigrinya, we have cases where the host changes its form based on the affixation of the OM (Berhane 1991, Buckley 2000, a.o.). Particularly, type A imperfective paradigms, unsuffixed verbs have a geminated medial consonant (e.g., *yi-səbbir* 'he is breaking'), whereas verbs suffixed with the OM drop the gemination (e.g., *yi-səbr-om* 'he is breaking them') (see Lowenstamm 1996, Rose 1997, a.o, for similar description on other Ethio-Semitic languages). Crucially, with CLP and MoN, while the gemination idiosyncrasy may not be fully attested, the verbal root exhibits a clear case of suppletion (e.g., *nəyr-* 'had (to)' vs. *?alləw-* 'have (to)') and morphological idiosyncrasy with the imperfective paradigms, as it surfaces with the radical /h-/ if the OM is involved (e.g., *yi-hall-u-wwa* 'let her have them' and *yi-hilliw-wa* 'may have to ...') that would otherwise be unavailable in the perfective paradigms (as in *?alləw-u-wwa* 'she has (to)'). Thus, the gemination dropping and the recovery of the initial radical /h/ can be considered as morphophonological processes that apply across a verb-OM boundary, consistent with the agreement nature of the OMs.

- (11) a. ?it-a k'olfa n-ət-i birtʃik'o səyr-a-tto
 D-FSG child ACC-ONE-MSG glass break.PF-3FSG.S-3MSG.O
 ‘The child/girl broke the glass.’
- b. *?it-a k'olfa n-hadə birtʃik'o səyr-a-tto
 D-FSG child ACC-D-MSG glass break.PF-3FSG.S-3MSG.O
 Intended: ‘The child/girl broke a glass.’

In (10), we have a subject marker irrespective of the definiteness or specificity of the subject noun phrase (compare (10b) with (10b), where we have a definite subject ‘the girl’ marked by an independent determiner (?it-, and an indefinite subject ‘a girl’ marked by the numeral ‘one’, respectively). In both cases, the SM is always required, even though there is no nominative case marker as NOM is not morphologically marked in Tigrinya. Crucially, the OM only occurs with the definite full DP associate accompanied by an accusative case marker (reminiscent of the cross-linguistic differential object marking (DOM) phenomenon, Aissen 2003; see also Danon 2011 and Kalin 2016 for a recent discussion tying DOM to φ-features). Thus, while any subject – definite/specific (10a) or indefinite/non-specific (10b) – obligatorily triggers subject marking on the verb, it is only when the object is definite/specific (and accompanied by an accusative case marker) that the verb bears an OM. See §3.9 for more on this.

However, the same observation does not carry over to ClP and MoN: OMs in both construction types are not entirely conditioned by the definiteness or specificity of the object noun phrase itself – they appear insensitive to such semantic effects. Compare (12) and (13).

- (12) Definite
- a. ?it-a səbyti sələstə ?əħwat ?alləw-u-wa
 D-FSG woman three brothers HAVE-3MPL.S-3FSG.O
 ‘The woman has three brothers.’
- b. ?it-a səbyti ki-t-məs'i? ?alləw-wwa
 D-FSG woman FUT-3FSG.S.comeIMPF HAVE-3FSG.O
 ‘The woman has to come.’
- (13) Indefinite
- a. ?hant-i səbyti sələstə ?əħwat ?alləw-u-wwa
 one-FSG woman three children HAVE-3MPL.S-3FSG.O
 ‘A woman has three brothers.’

- b. ?hant-i səbyti ki-t-məs'i? ?alləww-wa
one-FSG woman FUT-3FSG.S.comeIMPF HAVE-3FSG.O
'A woman has to come.'

The examples in (12) and (13) show that definiteness does not have a significant role in determining the appearance of the OM in MoN and ClP (compared to the case with regular transitive clauses as in (11)). In (12), a definite DP *?it-a səbyti* 'the woman' and an indefinite DP 'a woman' are tracked by the same OM *-wwa*. This suggests that the full DP the OM tracks, in both MoN and ClP, can be definite or indefinite, even though the ones with indefinites are a little bit degraded for some speakers. It appears, though, with an appropriate context, particularly a partitive, the judgements substantially improve; for example, (13a) can be acceptable in the following context: suppose a statistician is collecting census data by counting individuals in a household; after the data collection, the statistician may report "(out of many) one/a woman has three brothers". Similarly, (13b) can be fully licit under the following context: in a co-ed soccer league, if at least one woman/girl is required for a team to play in each game, a head-coach may announce "(for us to play and not to forfeit the game tonight) a woman/girl has to come (to play)". Under such contexts, both constructions with partitive and specific readings become fully licit.⁵ In other words, while the OM is not generally sensitive to definiteness in MoN and ClP, for some speakers it appears that partitive and specific meanings seem to play a role in installing OMs onto the verb. I therefore take that OMs in MoN and ClP pattern with subject agreement markers because they are semantically insensitive (at least to some speakers) to definiteness/specifity.⁶

Thus, if it is true that subject markers are true φ -agreement markers because they are not conditioned by any semantic effects of their full DP associates (Preminger 2009, Nevins 2011, Kramer 2014, a.o), then OMs in Tigrinya MoN and ClP should be treated as true agreement markers that pattern like subject agreement markers in this respect.

⁵In some cliticizing languages, it is also natural to observe the clitic yielding a different interpretation when doubling an indirect object than a direct object (Bleam 1999), which is not the case with Tigrinya OMs. I thank an anonymous reviewer for asking to clarify this issue.

⁶In fact, if we use a less specific possessee, something every woman or man might possess, as in for example, *a piece of garment/scarf/a pair of pants*, the grammaticality judgement improves as well. Therefore, I take that the fact that the OMs exhibit a slight preference for having an OM with indefinite DPs is not indicative of their clitic status. Thanks to Sharon Rose for pointing out this idea to me.

3.3 Optionality

Optionality is widely discussed to distinguish agreement markers from clitics. It has been assumed that clitics are optional, whereas agreement affixes are obligatory (see Corbett 2006, Nevins 2011, Baker 2012, a.o.). In Tigrinya, SMs are consistently obligatory (regardless of whether they are indefinite (14a) or definite (14b)), as illustrated below.

- (14) a. *ḥanti k'olṣa birtʃk'o*
 one-F child glass
 səyr*(a)
 break.PF-3FSG.S
 ‘A child broke a glass.’
- b. *?it-a k'olṣa birtʃk'o*
 D-FSG child glass
 səyr*(-a)
 break.PF-3FSG.S
 ‘The child broke a glass.’

On the other hand, OMs are obligatory as long as the associated object DPs are, as pointed out above, definite/specific. Compare (15a) with (15b).

- (15) a. Indefinite object
 Selam *ni-ḥadə təmaharay s'ərrif-a(*-tto)*
 Selam ACC-one student insult.PF-3FSG.S-3MSG.O
 ‘Selam insulted a student.’
- b. Definite object
 Selam *ni-t-i təmaharay/nisifū s'ərrif-a*(-tto)*
 Selam ACC-D-MSG student/him insult.PF-3FSG.S-3MSG.O
 ‘Selam insulted the student/him.’

With ClP and MoN, OMs are also obligatorily required, as the examples in (16a) and in (16b) illustrate.

- (16) a. Clausal possession
 ?it-a-səbyti kiltə k'olṣut ?alləw-u*(-wwa)
 D-FSG-woman two children HAVE-3MPL.S-3FSG.O
 ‘The woman has two children.’
- b. Modal necessity
 ?it-om təmaharo kə-s'nif-u ?alləw*(-om)
 D-MPL student.PL FUT-study-3MPL.S HAVE-3MPL.O
 ‘The students have to study.’

Thus, Tigrinya OMs can not be optional. They are rather obligatorily, not only with ClP and MoN, but also with simple transitive predicates as well (15).

If optionality is a reliable property to tease apart canonical agreement from clitics (see also Kramer 2014, Anagnostopoulou 2017, a.o), then Tigrinya OMs (of the CLP and MoN type) should be treated as agreement markers.

3.4 Tense variability

Tense-variance, as a diagnostic for the agreement-clitic distinction, refers to the contextual allomorphy often observed sensitive to tense. Nevins (2011) proposes that clitics are tense-invariant because they are D-elements/pronouns. In other words, while agreement affixes can display allomorphy conditioned by tense, clitics (being pronouns) cannot.⁷

Nevertheless, if we generally assume that clitics neither change the internal structure of their host nor exhibit morphological variation with a different hosting head (e.g., with Tense, Aspect and Mood (TAM)), while agreement markers may, depending on the TAM markers, then, it is possible to test the prediction on Tigrinya (see, for an application of this diagnostic, Kramer 2014 on Amharic, Compton 2016 on Inuit, a.o).

In other words, we can predict that agreement affixes might show allomorphy conditioned by TMA, but pronominal clitics need not. With this amendment in place, we do observe an asymmetry between the OM and SM in Tigrinya: while SMs exhibit allomorphy across aspectual forms, OMs seem to be generally invariant (see Baker 2012 and Kramer 2014 for similar observation on Amharic).

In other words, we can predict that agreement affixes might show allomorphy conditioned by TMA, but clitics need not. With this amendment in place, we could test the asymmetry between the OM and the SM in Tigrinya and predict that while SMs exhibit allomorphy across aspectual forms, OMs should be generally invariant. In order to establish the argument, first observe that there is an aspectual opposition between perfect and imperfect aspect in Tigrinya: SMs appear as suffixes when the verb conjugates with perfect aspect, but as discontinuous morphemes (as prefixes and suffixes) when the verb conjugates with

⁷However, since Nevins only considers canonical agreement as subject agreement on T, it is unclear whether clitics are not also expected to show allomorphy with other adjacent hosting heads. As Harizanov (2014: 1082, fn55) points out, the conclusion only seems to follow under the additional assumption that pronominal elements cannot show contextual allomorphy sensitive to the features of another adjacent head. This diagnostic, thus, predicts that if we find a φ-cross-referencing morpheme that exhibits variance, we can conclude that it is an agreement affix and occurs on T. On the other hand, if we do not find tense variance, then we cannot conclude whether the morpheme under investigation is conclusively an agreement affix or a clitic. In fact, that's exactly what we would predict in Tigrinya, for the OM is arguably an agreement on Asp head (see Hamilton 2014 for a similar argument based on Mi'gmaq).

imperfective aspect. Compare the examples given in Table 15.2 with only 3rd person paradigms presented for ease of exposition.⁸

Table 15.2: Aspectual distinction of Tigrinya SMs

	Perfective	Gloss	Imperfective	Gloss
3msg	səβir- u	He broke	yi-səbbir-	He breaks/is breaking
3fsg	səβir- a	She broke	ti-səbbir-	She breaks/is breaking
3mpl	səβir- om	They broke	yi-səbr- u -	They break/are breaking
3fpl	səβir- ən	They broke	yi-səbr- a -	They break/are breaking

OMs, on the other hand, do not exhibit significant variation based on the aspectual opposition (or other TAM markers) on the hosting verb. Table 15.3 demonstrates the contrast between perfective and imperfective aspect with OMs. For ease of exposition, again, 3rd person masculine singular subject marker is used throughout the paradigms.

Table 15.3: Aspectual distinction of Tigrinya OMs

	Perfective	Gloss	Imperfective	Gloss
3m	səβir-u- woo	He broke him	yi-səβr- o -	He breaks/is breaking him
3f	səβir-u- wwa	He broke her	yi-səβr- a -	He breaks/is breaking her
3mpl	səβir-u- wwom	He broke them	yi-səβr- om -	He is breaking them
3fpl	səβir-u- wwən	He broke them	yi-səβr- ən -	He breaks/is breaking them

While the 3MSG SM is realized as a suffix *-u* in the perfective or as (a prefix) *yi-* in the imperfective aspect, the corresponding OM is realized only as a suffix *-(yy)o* or *-(ww)o*, respectively. The allomorphy of the OM being observed is largely phonologically-conditioned – to avoid vowel hiatus; for example, the selection of *y/w* in the OMs *-(y)o* and *-wo* appears partly dependent on the phonological features of the SM and the OM.⁹

⁸The hyphen at the end of the imperfectives indicates the expected ensuing auxiliary.

⁹While many of the formal variations appear phonologically conditioned, as in for example *-y-* or *-w-* is inserted to avoid vowel hiatus (Berhane 1991), others are not (see Gebregziabher 2013 for discussion). For instance, when a 3MPL subject marker, *-om*, is followed by a 3MSG object marker, *-o*, as in /barix-omm-o/ ‘they blessed him’ in normal speech, it changes from [barixəmmiwwo] to [barixəmmo]. This can be taken as an allomorphic variation of the SM conditioned by the OM. Again, since allomorphic variation is not expected with clitics (as opposed to agreement affixes), Tigrinya OMs cannot be clitics in this respect.

With CLP and MoN, the same conclusion obtains, as OMs in both constructions appear aspect-invariant as well. Consider the relevant third person paradigms given in Table 15.4.

Table 15.4: Aspectual distinction of Tigrinya OMs in clausal possession & modal necessity

	Perfective	Gloss	Imperfective	Gloss
3m	?allə-/nəyru- woo	He has/had (to)	yi-hilliw- o	He will have (to)
3f	?allə-/nəyru- wwa	She has/had (to)	yi-hilliw- a	She will have (to)
3mpl	allə-/nəyru- wwom	They have/had (to)	yi-hilliw- om	They'll have (to)
3fpl	allə-/nəyru- wwən	They have/had (to)	yi-hilliw- ən	They'll have (to)

Based on the paradigms in Tables 15.2–15.4, one can conclude that OMs in Tigrinya are different from SMs because they are aspect-invariant. Crucially, when it comes to tense, OMs are not affected, as tense in Tigrinya is represented on the auxiliary and OMs never show up on auxiliary verbs (see §3.6 for more on this). Thus, at first look Tigrinya OMs appear to have clitic-like properties because they are aspect-invariant; on a closer look, however, the correlation – morphological invariance with respect to tense – need not strictly hold as Aspect in many clitic-doubling languages does not have any real effect (because pronouns normally do not necessarily co-vary with Aspect). In addition, tense-variance as a diagnostic becomes helpful only if the supposed OMs do exhibit variation for tense; however, strictly speaking, such correlation does not hold in Tigrinya, as Tense is normally indicated by auxiliary verbs that are immune to hosting OMs.

Therefore, I take it that tense-invariance does not offer any additional evidence for differentiating whether OMs in Tigrinya are agreement affixes or clitics, and thus, may not be directly relevant as a viable differentiating diagnostic for the status of clitic-/agreement distinction in Tigrinya.

3.5 Multiple object marking

In a typical language with clitics, doubling more than one internal argument simultaneously is the norm rather than the exception. An illustrative example from Greek, where both the accusative Theme ‘the book’ and the genitive Goal ‘John’ are doubled, is given below:

- (17) Greek (Anagnostopoulou 2006: 548)
- | | | | | | | |
|-----------|-----------|----------|-----|----------|-----|----------|
| tu | to | edhosa | to | vivlio | tu | jani |
| 3MSG.GEN | 3MSG.ACC | gave.1SG | the | book.ACC | the | John.GEN |
- ‘I gave the book to John.’

In Tigrinya, however, only a single OM per clause is allowed, as the following ditransitive clauses demonstrate (see Baker (2012: 8) for similar observation in Amharic).¹⁰

- (18) a. Yared ?it-i məs'haft *ni-Selam* hiβ-u-wwa*-wwo
 Yared D-MSG book DAT-Selam give.PF-3MSG.S-3FSG.O-3MSG.O
- b. Yared *ni-t-i* məs'haft *ni-Selam* hiβ-u-*wwo/-wwo
 Yared ACC-D-MSG book DAT-Selam give.PF-3MSG.S-3MSG.O/-3FSG.O
 Intended: 'Yared gave the book to Selam.'

In (18), we observe that multiple OMs are prohibited in the context of ditransitive clauses. For example, in (18a), we see that more than one OM results in ungrammaticality. In addition, in (18b) tracking the theme (as opposed to the goal) generally renders ungrammaticality. Nevertheless, even though the OM can track different thematic arguments, there is always a single OM per clause permitted in the language.

The same restriction is observed with MoN and CLP: the verb does not host more than a single OM (although testing multiple objects in the domain of CLP and MoN does not always appear to be viable).

- (19) a. CLP
 S. ni-wədd-a bizuħat məs'hafti ?alləw-u-wwa*-wwo
 S. ACC-son-her many books HAVE.3MPL.S-3FSG.O -3MSG.O
 'Selam has a lot of books for her son.'
- b. MoN
 S. ni-wədd-a məs'hafti ki-t-gəz? ?alləw-wa*-wwo
 S. ACC-son-her books FUT-3FSG.S-buy.IMPF HAVE-3FSG.O/-3MSG.O
 'Selam has to buy books for her son.'

¹⁰Baker uses a similar observation to claim that in Amharic the OM is a canonical agreement marker. Baker argues that for the clitics view to pass, it requires to resorting to some kind of clitic cluster simplification process, in which one OM is deleted after/before another one at PF – an added stipulation. In contrast, the agreement analysis has a very simple account of why an OM is unique: there is only one functional head F/AgrO in the functional architecture of the clause (just as there is only one T head), and it agrees only once. However, (Kramer 2014: 624–625) contends that the restriction on multiple OMs in Amharic is neutral between an agreement and a clitic doubling analysis. For example, if multiple probe or multiple Agree is invoked (Hiraiwa 2005), then "all that needs to be said is that Amharic does not have multiple Agree". In this respect, it appears that clitics and agreement affixes are essentially the same phenomenon under the operation Agree, and their difference ultimately, as Kramer 2014 clearly points out, boils down to the presence/absence of multiple probes: multiple probes in languages with multiple OMs and a single probe in languages with a single OM. However, this naturally raises the question of why, as (Kramer 2014: 626) cogently puts it, "all clitic doubling languages seem to have multiple Agree/multiple probes".

Thus, while it is the norm in cliticizing languages to have more than one clitic pronoun, more than a single appearance of the OM renders ungrammaticality in Tigrinya. If this line of argument is on the right track, then OMs in Tigrinya are agreement markers (not clitics).

3.6 Dislocation/movement

One of the defining properties of clitics is movement/dislocation (see Sportiche 1996; Poletto & Pollock 2004); and often depending on their position relative to the host or the site of their attachment, they are referred to as *proclitics*, *enclitics*, or *endo-clitics* (see also Spencer & Luís 2012 for a detailed discussion). When other material is involved with the host of the clitic, namely auxiliaries and adverbs, the clitic normally attaches to the auxiliary verb or gets intervened from the host by an adverb. For instance, in Romanian, the clitic *l-* leans onto the auxiliary ‘have’ and not the main verb ‘see’, as shown below (Anagnostopoulou 2006).¹¹

- (20) Romanian (Anagnostopoulou 2006: 532)

I-am vázut pe Popescu
him.ACC-have.1SG seen pe Popescu
'I have seen Popescu.'

In addition, in some Romance and Slavic languages, clitics can be separated from the main verb when adverbs and negation markers are involved (Giusti & Stavrou 2008), suggesting that movement/displacement is still the core feature of clitics. The following examples from Greek and Serbo-Croatian illustrate the point.

- (21) a. Greek (Giusti & Stavrou 2008: 532)

To vivlio mu emena den pulithike katholu
the book me.GEN.STR not sold at.all
'My book was not sold at all.'

¹¹ A reviewer mentions that Kramer (2014) argues that low-positioned OMs are clitics in Amharic and that there is nothing inherent to clitic-hood that forces them to attach to auxiliaries. This, however, raises the question of why only the Amharic/Tigrinya OMs do not dislocate but (Romance) clitics do? Cross-linguistically, clitics are un-selective and inherently freely movable (Spencer & Luís 2012); for example, when auxiliaries enter to the picture, the clitic normally attaches to them as opposed to the main verb (quite distinct from the OM in Tigrinya and Amharic). Uriagereka (1995: 108) points out that in Romance “clitics need not be associated to a given verb and can thus climb”, obtaining different orderings. While clitic-climbing and doubling may have a different treatment, still it is not clear why Tigrinya does not exhibit any empirical evidence for either phenomena if OMs are truly clitics in the data under investigation.

- b. Serbo-Croatian (Bošković 2004: 75)
- | | | | | |
|----------------------------------|--------|--------|-----------|------|
| Jovan | mi | ga | juče | dade |
| Jovan | me.DAT | it.ACC | yesterday | gave |
| 'Jovan gave it to me yesterday.' | | | | |

However, OMs in Tigrinya are different. Recall that Tigrinya has auxiliary verbs, such as *?iyy-* ‘be (pres(ent))’ and its suppletive forms *nəbər-/nəyr-* ‘be (past)’. When the auxiliaries appear on the clause, neither can host the OM (only the lexical verb can) in a simple transitive clause.

- (22) Yared nə-t-om k'olſu ki-mihr-om
 Yared ACC-D-MPL children FUT-teach.IMPRF-3MPL.S
?iyy-/nəyr-u(-wwom)*
 AUX.PRES-/AUX.PST-3MSG.S(-3MPL.O)
 ‘Yared will teach/would have taught the children.’

Crucially, observe that the verb *?alləw-* (with its root future form *hilliw-*) can occur with either of the auxiliaries (*?iyy-* or *nəyr-*), and unsurprisingly, the OM does not “lean on” the accompanying auxiliary, regardless of whether the verb has different mood/aspectual forms. It must appear on the lexical verb. Compare the following examples:

- (23) Selam hadə-məʃaltı k'olſu ki-hilliw-u-wwa
 Selam one-day children FUT-HAVE-3MPL.S-3FSG.O
?iyy-om-/nəyr-om(-wwa)*
 AUX.IMPF-/AUX.PF-3MPL.S(-3FSG.O)
 ‘Selam will/would have children one day.’
- (24) Selam loməʃanti ki-t-məs'i? ?alləw-wa
 Selam today FUT-3FSG.S-come.IMPF HAVE-3FSG.O
?iyy-a-/nəyr-a(-wa)*
 AUX.IMPF-/AUX.PF-3FSG.S-3FSG.O
 ‘Selam will/would have to come today.’

If Tigrinya OMs were clitics, they would have shown signs of displacement/dislocation when auxiliaries (and adverbs) accompany the hosting verb as in (23) and (24). As we can observe from the above examples, OMs remain solely attached as suffixes to the main verb, a property fully consistent with the agreement approach.

3.7 Referential-binding

Referential-binding as a diagnostic is concerned with the question of whether OMs have a referential index or not. In many languages, an OM is associated with specificity, definiteness and animacy/humanness (see Aissen 2003, Danon 2006, Kalin 2016, a.o for discussion).

For example, in Romance languages, where object marking is associated with specificity and/or animacy, it has been argued that clitics are not individual denoting pronouns, because they do not bear referential index (Sportiche 1996 & later work). On the other hand, Baker & Kramer (2018) argue that OMs in Amharic are clitic pronouns because (unlike true agreement markers) they are not possible with (non-referentially) quantified objects and/or with anaphoric objects.¹²

- (25) ləmma hullu-n-imm səw/ ras-u-n ayyə-(*w)
Lemma every-ACC-FOC person/ self-his-ACC see.PF-3MSG.S-(3MSG.O)
'Lemma saw everyone/himself'

However, in Tigrinya OMs are allowed with quantified and anaphoric objects in ClP and MoN, as the following examples illustrate.

- (26) ClP
selam kullu faynət/nay-baʃlla məs'ħfti ?alləw-u-*(wwa)
Selam all kind/poss-herself books HAVE.PF-3MPL.S-(3MSG.O)
'Selam has every kind of/her own books.'
- (27) MoN
S. (ni)-kullu səb/nibaʃla ki-tə-xibbir ?alləw*(-wa)
S. (ACC-)every person/herself FUT-3FSG.S-respect.IMPF HAVE-(3MSG.O)
'Selam has to respect everyone/herself'

If referential-binding is a true diagnostic for separating clitics from agreement markers, then OMs in Tigrinya (ClP and MoN) should not be treated as clitics.

¹²Baker & Kramer (2018) argue that quantified and anaphoric objects in Amharic can be doubled by OMs when the object itself is higher than the attachment site of the OM, preventing a Weak Crossover (WCO) violation. They attributed this distribution to the fact that the OM in Amharic is a clitic pronoun – a referentially active element, which is dependent on the object – and the ungrammaticality is ruled out by WCO effect and principle B of the binding theory. While variable order of a direct object and an indirect object is possible in Tigrinya (see Mason 1996; Kifle 2007; for discussion), a careful comparison between Tigrinya OMs and Amharic OMs should, unfortunately, remain open for a different paper.

3.8 Formal similarity with D

Formal similarity between clitics and determiners in cliticizing languages, such as Romance suggests that they belong to one and the same category, namely the category D (Bleam 1999, Uriagereka 1995; see also Preminger 2014). In fact, it appears that the main proposal for clitics, namely “big DP” (e.g., Nevins 2011), largely rests on this view (Bleam 1999). In Tigrinya, the definite marker is an independent pre-nominal determiner (*?it-*) and is formally distinct from not only the third person singular masculine (-*ww*₀) and feminine (-*ww*_a) but also from the third person plural masculine (-*om*) and feminine (-*an*) markers.

Thus, the morphological overlap between determiners and OMs is unavailable, suggesting that OMs in Tigrinya are not clitics (provided that clitics are determiners).

3.9 Case-marking alternation

In many cliticizing languages, clitics co-vary with the case features of the associate (see Ormazabal & Romero 2010 on Spanish, Anagnostopoulou 2017 on Greek, Kallulli & Tasmowski 2008 on some Slavic languages, a.o.). The following examples are from Greek and Spanish:

- (28) a. Greek (Anagnostopoulou 2017)

tu	to	edhosa	to	vivlio	tu	jani
3MSG.GEN	3MSG.ACC	gave.1SG	the book.ACC	the John.GEN		
‘I gave the book to John.’						

- b. Spanish (Ormazabal & Romero 2010)

se	lo	dio	a Juan	Maria,	el libro
3MSG-DAT	3MSG-ACC	gave to	Juan Maria-NOM	, the book	
‘Maria gave to Juan the book.’					

As we can see from the above examples, each clitic has a designated case feature – ACC and DAT/GEN in both languages.

In Tigrinya, however, the OM does not inflect for case altogether, even though the arguments the OM tracks alternate with case. Recall that Tigrinya is a NOM-ACC language with only the accusative or dative morphologically coded by the prefix *niθ-* (phonologically-conditioned allomorphy). While the object that bears accusative/dative case normally triggers OM, that’s not always the case. For example, while a Goal and a Theme argument can take the same accusative case marker, the verb only tracks the Goal argument with the OM attached to it. Consider the following examples:

- (29) a. Yared (**ni-t-i**) məgbì nə-t-a-kəlbi hib-u-wwa
Yared(NOM) ACC-D-MSG food DAT-D-FSG-dog give.PF-3MPL.S-3MSG.O
'Yared gave (the) food to the dog.'
- b. (??**ni-**)Selam (***ni-**)bizuħat məħazut ?alləw-wwa
(ACC-)Selam (ACC-)many friends HAVE-3MPL.S-3FSG.O
Intended: 'Selam has many friends.'
- c. (***ni-**)Selam (**ni-**kullu səb ki-tə-xibbir
(ACC-)Selam (ACC-)every person FUT-3FSG.s-respect.IMPF
?alləw-wa
HAVE-3MSG.O
Intended: 'Selam has to respect everyone.'

In (29a), observe that in a typical ditransitive predicate 'give', the only argument morphologically required to be case-marked and cross-referenced by the OM - *wwa* is the Goal 'the dog', indicative of the facts that there is a disconnect between case and agreement (contra Chomsky 2000) and reminiscent of the fact that there is only a single argument per clause. With the CIP (29b) and MoN (29c), however, neither the bearer of the obligation nor the possessee takes the ACC/DAT marker (*ni/a*). It seems that the possessor permits it more so when it appears closer to the verb (although the construction is generally degraded) (see §4 for more on this). Crucially, the OM, whether it tracks an accusative/dative marked argument or not, does not change its form for Case. Thus, the fact that the case feature of the OM does not alternate with the case features of the arguments associated with it is indicative of the view that the OMs in Tigrinya are different from typical clitics.

3.10 Interim summary

So far we have diagnosed the properties of object markers (OMs) in Tigrinya CIP and MoN and observed that OMs pattern like canonical subject markers in some morph-syntactic respects (see Table 15.5): (i) they do not freely select their host, (ii) they are obligatory, (iii) they are insensitive to definiteness, (iv) they are not tense-invariant (rather aspect-invariant), (v) they only admit a single OM per clause, (vi) they are solely hosted by the main predicate, (vii) they do not involve case-alternation, and (viii) they are not formally the same with the D category.

However, some of these diagnostics may not be as reliable to differentiate between agreement affixes and clitics, as has been pointed out in the literature (e.g., Anagnostopoulou 2017). For example, tense-invariance does not seem to be helpful because while some cliticizing languages exhibit tense-invariance – T-based

Table 15.5: Distinguishing pronominal clitics & agreement markers

Distinguishing properties	Pronominal clitic	Subject agreement	OM (on <i>?allow-</i>)
1 Freely select	yes	no	no
2 Sensitive to meaning	yes	no	?not always
3 Optional	yes	no	no
4 Tense invariant	yes	no	?not strictly
5 Multiple per host	yes	no	no
6 Dislocate	yes	no	no
7 Non-referential	yes	no	?no
8 Exhibit formal similarity with D	yes	no	no
9 Involve Case-alteration	yes	no	no

distinction accompanied by allomorphy – others do not (Harizanov 2014). In Tigrinya, while there is no tense (in)variance per se, the aspect opposition seems to exhibit subject-object asymmetry. Similarly, referentiality does not give a clear cut distinction between the two (see Anagnostopoulou 2017 & Angelopoulos & Sportiche 2018 for discussion).

Therefore, if the force of the diagnostics lies in the numbers (the more agreement-like properties an OM satisfies, the more difficult it is to treat like a clitic), Tigrinya OMs in these particular constructions, which satisfy more than half of the diagnostics listed above (excluding the controversial ones), should be treated like true agreement markers (amenable to the operation Agree). In §5, I develop an analysis which accounts for the φ -agreement status of the OMs in Tigrinya ClP and MoN. Before I present the analysis, however, in what follows, I will determine the status of the object argument itself that the OM tracks.

4 The status of the argument the OM tracks

In this section, I address the question of whether the possessor/MoN argument is a true subject or object. Recall that the OM tracks what appears to be a subject on the surface. While the notion “subject” has long been debated (at least since Keenan 1976) and a comprehensive definition, which captures the whole intuition of the term, so far has not been proposed (see for discussion McCloskey 1997, Jayaseelan 2004, a.o), I assume that subject is a placeholder for some prominent syntactic position with a typical formal marking (e.g., NOM for NOM-ACC

language) and an EPP feature (McCloskey 1997; Chomsky 2000). Thus, by comparing objects with subjects in Tigrinya, an attempt will be made to provide some evidence in support of the view that the argument the OM tracks is a “quirky” subject, not a true object (or internal argument) in Tigrinya. Three pieces of evidence will be presented in support of this claim.

4.1 Evidence 1: Word order and case

Recall Tigrinya is an SOV and a NOM-ACC language, and subjects, morphologically unmarked, normally occur at sentence-initial position, whereas objects, often morphologically marked for ACC case, normally appear right before the verbal predicate. If the possessor of the ClP and the sole argument of the MoN are true objects, they are expected not only to appear right before the verb but also to take an accusative case marker. These predictions are not borne out. Such arguments, unlike true objects (but consistent with typical subjects) in the language, (i) appear at sentence-initial position (30 vs. 31), and (ii) do not take the ACC case marker, as the examples in (32) and (33) illustrate.

- (30) a. *Yared bizuḥat məħazut ?alləw-u-woo*
Yared many friends HAVE-3MPL.S-3MSG.O
b. *?? *bizuḥat məħazut Yared ?alləw-u-woo*
many friends Yared HAVE-3MPL.S-3MSG.O
Intended: ‘Yared has many friends.’
- (31) a. *Selam lomañanti ki-t-mə-s’? ?alləw-wa*
Selam today FUT-3FSG.S-COME HAVE-3FSG.O
b. * *lomañanti ki-t-mə-s’? Selam ?alləw-wa*
today FUT-3FSG.S-COME Selam HAVE-3FSG.O
Intended: ‘Selam has to come today.’
- (32) a. (?ni-) *Yared bizuḥat məħazut ?alləw-u-woo*
ACC-Yared many friends HAVE-3MPL.S-3MSG.O
Intended: ‘Yared has many friends.’
b. (*ni-) *Selam ki-t-mə-s’? ?alləw-wa*
ACC-Selam FUT-3FSG.S-COME HAVE-3FSG.O
Intended: ‘Selam has to come.’

In addition, the possessee or the propositional complement do not take the ACC case marker.

- (33) a. *Yared* (*ni-)bizuħat məħazut ?alləw-u-wwo
 Yared ACC-many friends HAVE-3MPL.S-3MSG.O
 Intended: 'Yared has many friends.'
 b. *Selam* (*ni-)ki-t-mə-s'? ?alləw-wa
 Selam ACC-FUT-3FSG.S-come HAVE-3FSG.O
 Intended: 'Selam has to come.'

While the word order facts consistently show that the appearance of such arguments in the standard pre-verbal object position is illicit in both constructions, the Case-marking facts appear to show a mixed result (compare 32 and 33). Two things deserve an explanation here. The first one concerns the presence of the accusative case marker with the possessor (which may at first sight suggest that the possessor is a true object). First notice that the construction is marginal for the speakers I have consulted, and it does not improve even when the accusative-marked possessor appears closer to the verb (34a,b) (see also §3.9 for discussion). Second, the grammatical judgement becomes even worse with independent pronouns (34c), which may again suggest that the possessor is not a true object (rather some kind of subject). Finally, accusative marking of the possessee always gives rise to ungrammaticality (33) (again suggesting that such arguments are not true objects, rather some kind of subjects).

- (34) a. ?? məs'ħafti niYared ?alləw-u-wwo
 books ACC-Yared/him HAVE-3MSG.S-3FSG.O
 Intended: 'Yared/he has books.'
 b. ?? məs'ħafti niʃuʃu/nissu ?alləw-u-wwo
 books him/he HAVE-3MSG.S-3FSG.O
 Intended: 'He has books.'
 c. * lomaħanti ki-t-mə-s'? niʃafha ?alləw-wa
 today FUT-3FSG.S-come her HAVE-3FSG.O
 Intended: 'She has to come today.'

The second point that deserves an explanation concerns accusative-case-marking with the obligation bearer of the modal necessity argument. In order to determine the case of the matrix subject of the MoN, it has been suggested that reference needs to be made to the underlying position of the argument that undergoes raising via the chain being created (Bhatt 1997). In Tigrinya, recall that non-pronominal subjects (or external arguments) get nominative case, which is always realized by the default empty (\emptyset), and objects (or internal arguments) get

accusative case (when marked definite). Thus, the fact that the obligation bearer in (35) (someone implicitly implicated here), which serves as the subject of the embedded clause ‘to clean’, cannot take an accusative pronoun (35) strongly suggests that the bearer of the obligation cannot be a true object in Tigrinya. In fact, the fact that the construction is licit with a bona-fide nominative pronoun strongly suggests that the obligation bearer is some kind of subject.

- (35) nə-t-i ?ax'uħut (*niħħafa/nissa) ki-t-ħas'bo ?alləw-wa
ACC-D-MSG utensils her/she FUT-3FSG.S-wash HAVE-3FSG.O
Intended: ‘She has to do the dishes.’

Based on the above evidence, I conclude that such arguments are not true objects/internal arguments (rather some kind of ‘quirky’ subjects) in Tigrinya.

4.2 Evidence 2: Passivization

The second piece of evidence comes from passivization. If such arguments are true objects in Tigrinya, they should be able to undergo passivization. This prediction is not borne out. Note that Tigrinya marks passivization by prefixing *tə-* on the verb and by introducing an optional by-phrase associated with the demoted subject (36).

- (36) ?it-i məs'ħaf (bi-Yared) tə-sərīx'-u
D-MSG book by-Yared PASS-steal.PF-3MSG.S
‘The book was stolen (by Yared).’

With ClP and MoN, passivization of the argument being tracked by the OM is not allowed as illustrated in (37).¹³

- (37) a. * məs'ħafti (bi-Yared) tə-nəyr-u(-wwo)
books by-Yared PASS-HAVE.PST-3MSG.S-3MSG.O
Intended: ‘*Books were had by Yared.’

¹³Of course, I am largely glossing over the fact that some verbs including ‘have’ in some languages (e.g., English: **A book/a sister was had by John*) may not undergo passivization, but in some others they do (e.g., Icelandic and Quechua, see Myler 2016 for discussion). Even in English, passivization of ‘have’ is widely attested than many assume (e.g., *A terrible fight was had at the station* and *A fierce discussion/debate was had/needs to be had to resolve the possession issue*). Nevertheless, it could very well be the case that the Tigrinya *?alləw-* is one of those verbs that resist passivization as well. I leave further exploration of this issue open. Thanks to anonymous reviewer for asking to elaborate on this issue.

- b. * nissa k'əlt'ifa ki-t-mə-s'?
- she hurriedly FUT-3FSG.S-come by-Selam
tə-nəyr-u(-wa)
 PASS-HAVE.PST-3MSG.S-3MSG.O
- Intended: ‘She was had/made to come hurriedly by Selam.’

If passivization is a true property of objects, then the arguments being tracked by the OM in ClP and MoN are not true objects. To make the argument complete (and for what it is worth), the other arguments, such as the possessee, even though they are not tracked by the OM, they do not undergo passivization as well, which is indicative of their non-object status.

- (38) a. * Yared (bi-)məħazut **tə-nəyr-u(-woo)**
 Yared by-friends PASS-HAVE.PST-3MSG.S-3MSG.O
 Intended: ‘*Yared was had by friends.’
- b. * Selam (bi)-?ax'uħut ki-t-ħas'ib **tə-nəyr-u(-wa)**
 Selam by-utensils FUT-3FSG.S-wash PASS-HAVE.PST-3MSG.S-3FSG.O
 Intended: ‘Selam was had/made to do the dishes.’

4.3 Evidence 3: Subject-to-object raising predicates

The final piece of evidence for the fact that the possessor/sole argument of the MoN is not a true object argument comes from exceptional Case-marking predicates (typically subject control, different from what I have discussed in §4.2 above). Let us start with the observation that there are certain verbs, namely *try*, *know*, *convince*, *seem*, etc., that select infinitival complements, whose subject is selected both by the main verb and the infinitival clause. Compare the following examples:

- (39) a. Selam_i ki-t-dik'k'is [PRO_i fəttin-a]
 Selam FUT-3FSG.S-sleep.IMPRF try.PF-3FSG.S
 ‘Selam tried to sleep.’
- b. Selam_i ki-t-dik'k'is [PRO_i ?ə?min-a-tta]
 Selam FUT-3FSG.S-sleep.IMPRF persuade.PF-3FSG.S-3FSG.O
 ‘Selam persuaded her(self) to sleep.’

In (39a), there are two predicates, ‘try’ and ‘sleep’, both sharing the same argument *Selam*, which serves as the subject in both (doing the ‘sleeping’ and the ‘trying’). In (39b), by contrast, there are two predicates, ‘persuade’ and ‘sleep’,

sharing the same argument *Selam*, which serves as the subject of the matrix verb ‘persuade’ and the object of the embedded verb ‘to sleep’ (doing the persuasion or being persuaded and the sleeping).

The above systematic patterns make one particular prediction: If the possessor/obligation bearer being tracked by the OM in both CIP and MoN is a true object argument, then it should be banned from undergoing subject-to-object raising under both the *try-* and the *convince*-type predicates (see for similar arguments Landau (1999) based on Hebrew and Kim (2011) based on Korean). However, this prediction is not observed in Tigrinya as such constructions are perfectly grammatical. Compare the examples below:

- (40) a. Selam bizuḥ gənzəb ki-hilliw-wa fəttin-a
Selam many money FUT-HAVE-3FSG.O try.PF-3FSG.S
'Selam tried to have a lot of money.'
- b. Selam nabzi ki-t-mə-s'if kəm-zə-?alləw-wa fəllit'-a
Selam here FUT-3FSG.S-come COMP-REL-HAVE-3FSG.O try.PF-3FSG.S
'Selam has to try to come here.'
- (41) a. Selam bizuḥ gənzəb ki-hilliw-wa ?ə?min-a-tta
Selam many money FUT-HAVE-3FSG.O persuade.PF-3FSG-3FSG.O
'Selam persuaded her(self) to have a lot of money.'
- b. Selam nabzi ki-t-mə-s'? kəm-zə-?alləw-wa
Selam here FUT-3FSG.S-come COMP-REL-HAVE-3FSG.O
persuade.PF-3FSG-3FSG.O
'Selam persuaded her(self) that she has to come here.'

The examples in (40) and (41) demonstrate that the possessor and sole obligation bearer argument of the MoN are not true objects. Given the verbs are “raising predicates”, which have the property of connecting true subjects with objects via some form of a pronoun (e.g., PRO) and that they occur at sentence-initial position, it is reasonable to conclude that these arguments in both constructions are indeed not true objects.

Based on this evidence, I conclude that both the possessor and the sole obligation bearer argument of the MoN are not true objects, but some kind of “quirky” subjects. In fact, if we look at the evidence from word order and case, passivization and subject-to-object raising, they are all used as diagnostics for determining subjects in many languages (see Jayaseelan 2004 on Malayalam, Holmberg 2005 on Finnish and Icelandic, a.o.). Thus, I claim that the reason why such a mismatch

occurs, i.e., the OM is tracking some kind of subject, has something to do with the nature of such arguments (as being “quirky”) and with intervention effects, which is further discussed in §6.

Now that I have established the nature of the OM and its associate in ClP and MoN, let’s develop an analysis that fully supports the view that the OM and its “quirky” subject associate are subject to the operation Agree.

5 Towards an analysis

Assuming the standard Minimalist Program (Chomsky 1995 et seq.) along with some elements of Distributed Morphology (Halle & Marantz 1993 & later work), I propose that the OM in Tigrinya is a true instance of φ -agreement realized on v through the operation Agree and that *?alləw-* is the spell out of the APPL head, which introduces an argument with possession and obligation semantic features. The structure I am proposing is in Figure 15.3.

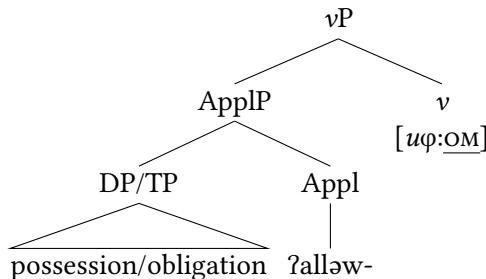


Figure 15.3: Proposed structure

I assume that agreement happens between a probe and a goal (Chomsky 2001; see also Pesetsky & Torrego 2007, a.o, for a recent reformulation of the operation Agree), and the direction of feature valuation can be parametrized (Baker 2008; see also Bjorkman & Zeijlstra 2014, for a recent discussion).

In Tigrinya, because the OM (along with the subject marker) is always attached to the main verb, object agreement involves a probe (e.g., v) with unvalued and/or uninterpretable φ -features, and a goal (e.g., object DP) with corresponding valued and interpretable φ -features. In this case, v (and also Asp/T) may have unvalued and/or uninterpretable φ -features indicated by *unval* and *u φ* , and the DP direct object (also the DP subject) may have valued and interpretable φ -features indicated by *val* and *i φ* . After v establishes an Agree relation with the object noun phrase, its unvalued φ -features become valued and the case feature on the object

realizes as Accusative/Dative (and the same process happens with Asp/T and the subject noun phrase).¹⁴

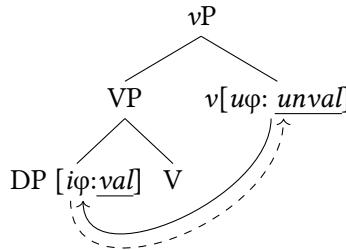


Figure 15.4: v 's downward probing and upward φ -feature valuation

With this background assumption, in what follows I demonstrate how both CIP and MoN are predicted by the structure given in Figure 15.3.

5.1 Clausal possession

With the above assumptions, I propose that a simple CIP like *He has three oxen* as in (42) has the structure in Figure 15.5.¹⁵

- (42) nissa ?əbʃur ?alləw-u-wwa
she oxen HAVE-3MPL.S-3FSG.O
‘She has oxen.’

The tree in Figure 15.5 has to pass the following derivational steps:

1. First, v probes downwards to its c-commanding domain to satisfy its $[u\varphi]$ -features, and finds the possessor merged in Spec, ApplP with matching features.
2. Then, the possessor raises to Spec, TP/AspP to satisfy the [EPP] feature.
3. Next, T/Asp probes down to its c-commanding domain to fulfil its $[u\varphi]$ -features and finds the possessee with matching features (once the intervener possessor gets out of its way).
4. Finally, Appl remerges with v (and possibly further with T/Asp) (via M-Merger (Matushansky 2006)), realizing *?alləw-u-wwo* or one of its suppletive forms, namely *nəyr-om-wwo*.

¹⁴I also assume (although nothing hinges on this) that roots combine with root-defining functional heads to form lexical items (Marantz 1997)

¹⁵The same analysis extends to the other suppletive forms that express other TAMs.

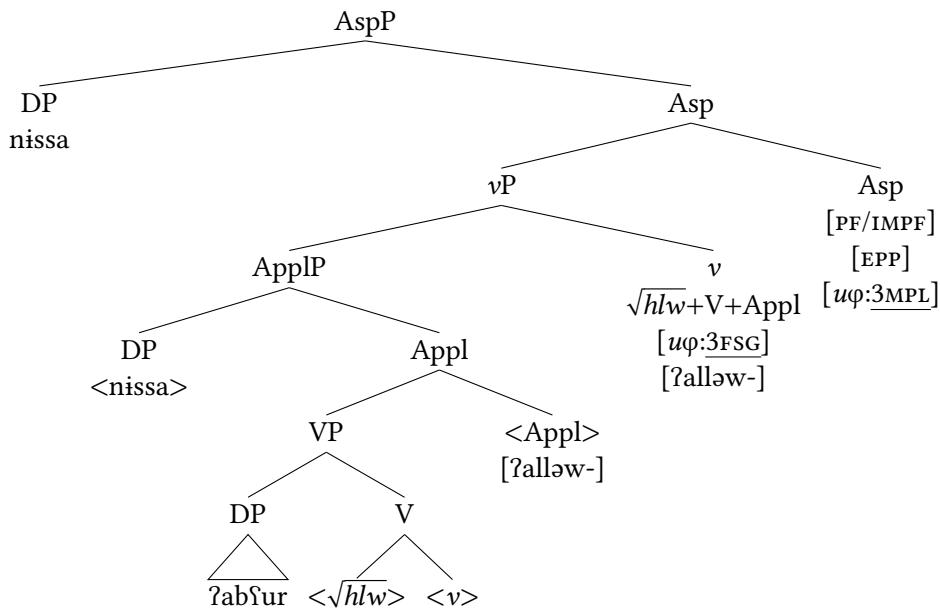


Figure 15.5: Structure of (42)

Under this analysis, the possessor is a potential intervener that needs to be vacated in order to feed the next cycle of Agree with T/Asp (Béjar & Rezac 2009). Once the intervener is cleared out of the way, T can probe downwards to its c-commanding domain and finds the possessee ‘three oxen’ and agrees with it, realizing a subject agreement marker. It is this particular mechanism that explains the “quirky” nature of the possessor subject (see §6 for more on this).

5.2 Modal necessity

The same mechanism works in MoN, except that the second argument of the APPL head is a proposition or an infinitival TP (as opposed to an individual DP) and the “quirky” subject first raises to the specifier of Appl before it remerges in Spec, ApsP.

- (43) nissa ki-t-mə-s'i? ?alləw-wa
 she FUT-3FSG.S-come HAVE-3FSG.O
 ‘She has to come.’

Similar to CLP, the above tree has to pass the following derivational steps:

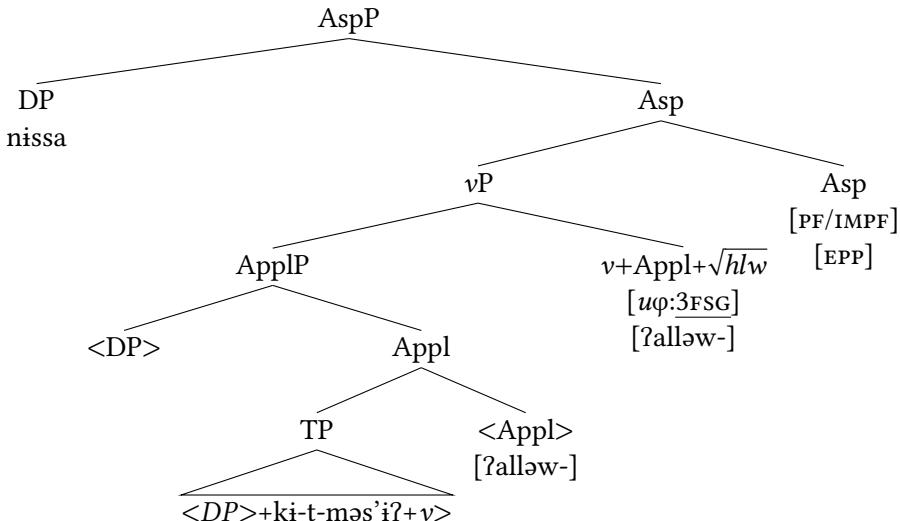


Figure 15.6: Structure of (43)

1. First, *v* probes down to its c-commanding domain to satisfy its φ -features, finds the subject of the infinitival clause TP ('she') and establishes agreement.
2. Next the subject, which is affected by the obligation, raises to Spec, TP (same as the possessor) to satisfy the [EPP] feature.
3. Finally, APPL remerges with *v* (and possibly with T/Asp) via M-Merger, realizing *ʔalləw-* (or its suppletive forms depending on different aspectual and tense forms) with the object marker.

6 Why does the OM track a “quirky” subject?

Now recall the mismatch between the OM and the nature of the argument it tracks (i.e., the “quirky” subject). Normally, the OM tracks true objects, but with CIP and MoN, it tracks what appears to be the subject (i.e., the possessor and the bearer of the obligation). In an attempt to explain why this happens, I consider two possibilities: (i) the argument is underlyingly a PP with empty P (see Landau 2010; Baker 2012), or (ii) the argument is an intervener with a special feature (see Rezac 2008; Béjar 2008; Anagnostopoulou 2017). While both options may have the same effect, I tentatively argue that the latter fares better than the former.

The assumption that the argument the OM tracks is underlyingly a PP is reminiscent of the “quirky” subject phenomenon in Indo-European languages, such as Icelandic (Zaenen et al. 1985) and in South East Asian Languages, such as Malayalam (Jayaseelan 2004). A striking similarity between “quirky” subjects in general and “quirky” subjects in Tigrinya CLP and MoN is that both are not significantly different from other argument markers; i.e., they exhibit the same argument marking, word-order, and/or agreement properties. However, while “quirky” subjects in languages like Icelandic take a special non-nominative/dative case, which separates them from other subjects, that is not true in Tigrinya. In Tigrinya, the “quirky” subject is not case-marked (at least not in MoN) and tracked by an OM like other non-subject arguments are (e.g., benefactive). Instead, it is signalled by nominative case, which is morphologically unmarked (with non-pronominal DPs) in Tigrinya.

If the assumption with the first option is correct, that the OM-associate is a PP with an empty P, the language should also permit OMs with other true PP objects and instances of predicate inversion (den Dikken 2006). However, such predictions are not borne out in Tigrinya. First, recall that in Tigrinya, the OM (bolded) tracks an accusative case-marked definite noun phrase (italicized), as the examples in (44) illustrate.

- (44) a. nissu *nifasa* si^{sim}-u-wwa
he her kiss.PF-3MSG.S-3FSG.O
'He kissed her.'
- b. Yared *ni-Selam* s'ərif-u-wwa
Yared ACC-Selam insult.PF-3MSG.S-3FSG.O
'Yared insulted Selam.'

Second, while Tigrinya bans an OM with associated non-referential PP/CP objects (45), with PP/CP subjects, the language employs a default 3SG.S marking (46).¹⁶ In other words, PP/CP subjects never get tracked with the OM.

¹⁶An anonymous reviewer wonders about the different forms of /g-w-y/ ‘go’ in Tigrinya and whether the geminate /yy/ stem is different from the un-geminated stem as in Amharic. Indeed, while some verbal conjugations are different (e.g., the imperfective has radical gemination in Tigrinya but not in Amharic type A verbs), generally gemination in Tigrinya, like in Amharic or other (Ethio-)Semitic languages, is morphemic and gives rise to a different type of verb paradigms (see Berhane 1991 for discussion). The fact that the verb ‘go’ geminates in, for example, *kəm-zı-xayyid* but not in *kəyid-a* ‘she has left’ and exhibits different conjugations are reflections of the properties of (Ethio-)Semitic verb types in general (Hetzron 1972).

- (45) a. *wadd-u kulifaf nab-bet-timhirti kəm-zı-xəyyid*
 son-his always to-house-education COMP-3MSG.S-go.IMPF
səmiʃ-u-(^{}woo)*
 hear.PF-3MSG.S(-3MSG.O)
 ‘He heard that his son always goes to school.’
- b. (nissu) *nab-t-i-bet-timhirti kəyd-u-(^{*}woo)*
 he to-D-MSG-house-education go.PF-3MSG.S(-3MSG.O)
 ‘He went to the school.’
- (46) a. *gʷal-u nab-bet-timhirti zəy-mi-xad-a*
 daughter-his to-house-education NEG-NML-go-3FSG.POSS
?annaddid-u-(^{}woo)*
 annoy.PF-3MSG.S(-3MSG.O)
 ‘That his daughter didn’t go to school annoyed him.’
- b. *tiħti-firaʃ t’irə gənzəb yi-ħibəʔəll-u-(^{*}woo)*
 under-mattress raw money 3MSG-hide.IMPF-3MSG.S(-3MSG.O)
 ‘Under the mattress is where you stash the cash.’

I therefore maintain that, if Tigrinya does not allow PP object arguments to be tracked by the OM, then it would be surprising for the subject to be a PP with an empty P. In fact, in Tigrinya PPs generally function as adjuncts, and, unsurprisingly, OMs do not track them.

The second alternative, that the “quirky” subject is an intervener with a special feature, may explain why the mismatch arises. In a number of languages, it has been observed that the nature of “quirky” arguments is that they are “in between” cases, where certain arguments behave as if they concurrently have structural and inherent Case properties when they are compared to other arguments (Marantz 1991, McGinnis 1998, Baker 2008, Pesetsky & Torrego 2011, Alexiadou et al. 2014, a.o.). In Sigursson & Holmberg (2008) and others, for instance, it has been argued that in Icelandic, the DAT-NOM pattern is altered due to intervention effects. In particular, intervention of the dative argument blocks agreement between the verb and the nominative argument (see also Boeckx 2000, Sigursson & Holmberg 2008, a.o.). That is, the dative argument blocks agreement between T and the nominative argument if it remains low as in (47a), but T may agree with the lower nominative argument when the dative argument vacates out of the way of the verb-probing domain as in (47b) (see Sigursson & Holmberg 2008 for a detailed discussion).¹⁷

¹⁷This follows if φ -features, namely, person and number are independent probes (Béjar & Rezac

- (47) (Sigursson & Holmberg 2008: 252)

- a. það virðst/*virðast einhverri konu myndirnar vera
EXPL seem.3SG/3PL some woman.DAT paintings.the.NOM be
ljótar
ugly
'It seems to some woman that the paintings are ugly.'
- b. Henni virðst myndirnar vera ljótar
her.DAT seem.3PL paintings.the.NOM be ugly
'It seems to her that the paintings are ugly.'

If we assume following the above discussion that "quirky" subjects are some kinds of experiencers or affected arguments (McGinnis 1998) and that they involve features like INCLUSION (Bjorkman & Cowper 2016) in Tigrinya, the explanation may naturally fall in place. Since interveners disrupt Agree relations (Rezac 2008), "quirky" subjects being merged in Spec, ApP can be considered as potential interveners for T (just as in Icelandic), which block T from establishing an Agree relationship with its potential GOAL (Figure 15.7). In many languages, the intervention is of course more visible with dative "quirky" arguments (see Sigursson & Holmberg 2008 on Icelandic; McGinnis 1998 on Georgian; Rezac 2008 on Basque; Anagnostopoulou & Sevdali 2015 on Greek), where "quirky" datives are assumed to have "lexically governed" case (Marantz 1991) despite exhibiting partial agreement (see Rezac 2008 and Béjar & Rezac 2009 for proposals to derive partial vs. complete φ -features agreement from differences in the feature structures of the relevant probes).

Nevertheless, the mismatch in Tigrinya arises simply because the "quirky" subject is being tracked by an OM and as a potential intervener it is forced to re-merge in Spec, AspP/TP to salvage the construction from being crashed. The fact that the "quirky" subject involves a special feature, i.e., INCLUSION, forces it to divorce EPP from typical φ -agreement. In other words, EPP feature checking normally happens along with standard subject-verb agreement (Chomsky 2001), but under this context, the "quirky" subject comes to rescue the construction from crashing by moving something without matching phi-features into Spec, AspP/TP, to satisfy the EPP (essentially obviating the intervention); otherwise, Spec,Asp/TP would remain empty, leaving the EPP unchecked, as the structure in Figure 15.7 demonstrates.

2009): Number agreement for example, (in the variety of Icelandic that permits) it is possible when the dative argument moves out of the intervening position between NumP and nominative object before number probes (Holmberg & Hróarsdóttir 2003; Sigursson & Holmberg 2008).

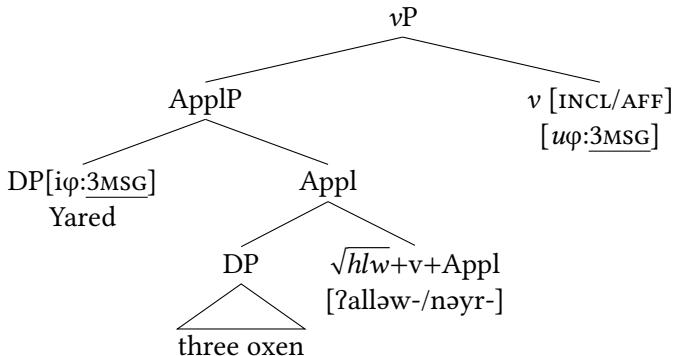


Figure 15.7: Structure for ClP with intervention

In Figure 15.7, when *v* searches down to its c-commanding domain for a goal with a matching feature, it finds the “quirky” subject merged in Spec, ApplP. Since the “quirky” subject in Spec, ApplP has matching features (e.g., PL), *v* agrees with it. In addition, Appl – the head that introduces the argument being tracked by the OM – has a feature called [INCL] that requires checking by *v*, before the DP argument that has matching features (e.g., goal, dative, etc.) evacuates to Spec, T/AspP, creating a workable domain for Asp/T to establish an Agree relation with the lower argument. It is through this mechanism of removing the intervention (parallel to movement of the DAT out of the verb-probing domain we observed in Icelandic in (47)) that the mismatch in agreement in Tigrinya could be explained.

One may wonder at this point whether the same intervention effect could carry over to the analysis of MoN. While the extension does not seem immediately direct as there are still some relevant morphosyntactic differences between possession and necessity, it would be a desirable consequence if the analysis could extend to MoN. Recall that in MoN the predicate may have different arguments (depending on c-selectional properties), but crucially, the surface argument involved may not be the source of the modal obligation (Bhatt 1997). Bhatt (1997) points out that the source of the obligation (whether asserted or not) is context-dependent, and argues that even in cases where the bearer of the obligation is present in the sentence, it does not have to be the subject of ‘have’ as in *Bill has to be consulted by John on every decision* (*John* being the bearer of the obligation).

Bjorkman & Cowper (2016), on the other hand, propose that possession and necessity establish a relation of containment or inclusion between two arguments. Building on the typological division within modal systems (e.g., Matthewson et al. 2005) and morphosyntactic featural decomposition (e.g., Harley & Ritter 2002),

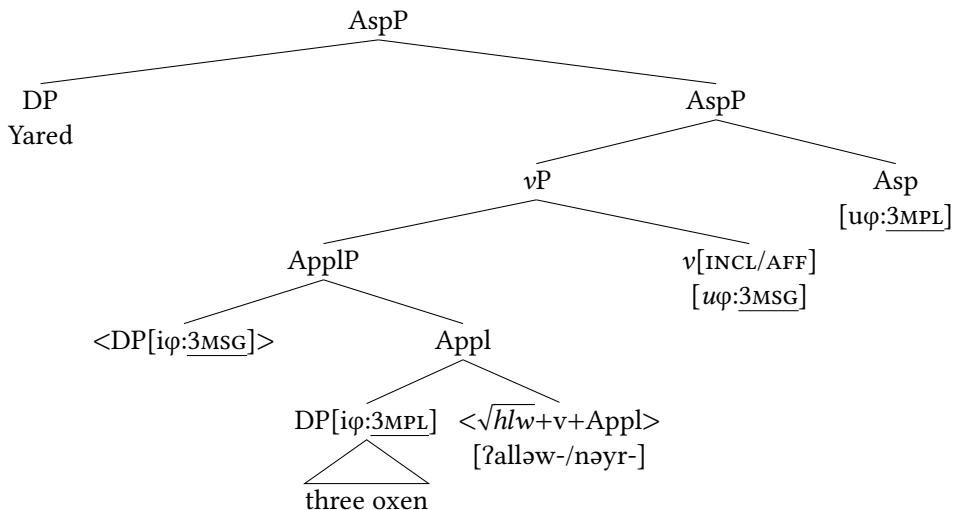


Figure 15.8: Structure of CIP with intervention resolved

they argue that the functional head that introduces possession (v_{have}) carries the feature INCL(USION), whereas the same head that introduces MoN carries the features [INCL, EPIST(EMIC)]; the feature [INCL] relates two individual arguments, while the features [INCL, EPIST] relate an individual with a proposition/clause. Assuming interpretable features on a head compose with each other before the result composes with the syntactic complement, they claim that v_{have} comes up with [INCL, EPIST] with the two features composing first. While [EPIST] provides v with the set of best epistemically accessible worlds in the modal base, [INCL] saturates the internal argument position the clausal complement of v supplies.

With the assumption that there is an implicit argument (whether overt or covert) in MoN, the above treatment for CIP indeed can straightforwardly be extended to the MoN domain. Assuming that *Appl* relates individuals as well as sets of worlds (in the sense of Bjorkman & Cowper 2016), the features [INCL, EPIST] may compose first to saturate the first argument of the predicate before *Appl* remerges with v in the derivation.

The underlying structure for MoN would therefore be as in Figure 15.9, with [INCL, EPIST] features on *Appl*, and an infinitive/gerundive proposition as its syntactic complement, as illustrated in Figure 15.9.

The only difference is that the subject of the infinitive/gerund (*Yared*) in Tigri-nya is attracted to the specifier of *ApplP* through raising (as opposed to external-Merge) before it raises further to the specifier of *AspP/TP* to satisfy EPP. Consistent with the analysis given for CIP, it is important to note that the DP in CIP

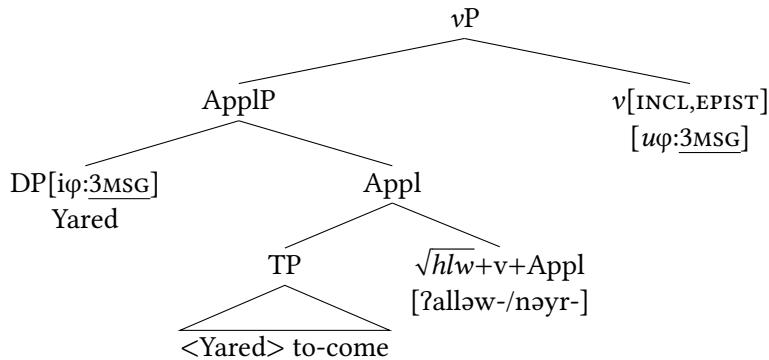


Figure 15.9: Structure for MoN

and in MoN is not a regular DP; rather, a DP with an INCL/EPIST feature which satisfies the EPP by further raising to Spec, Asp/TP as illustrated in Figure 15.10.

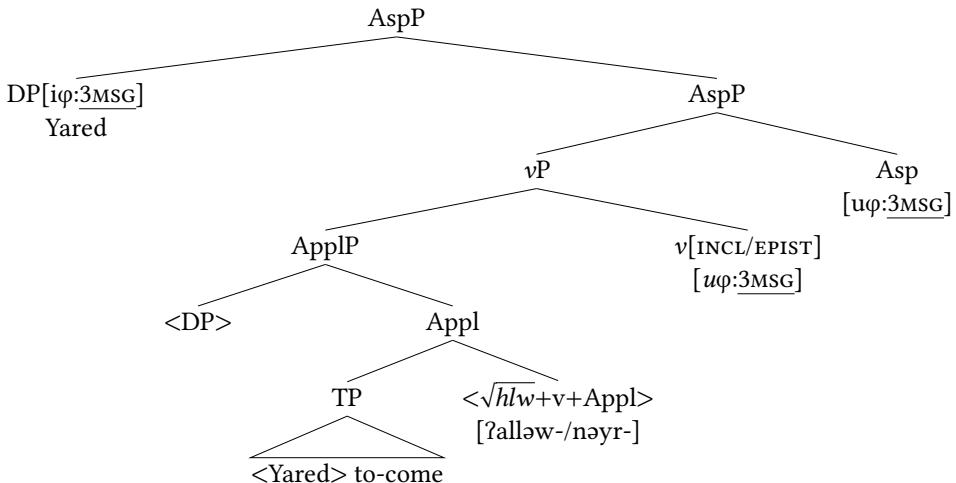


Figure 15.10: Structure of MoN with intervention resolved

Therefore, under this analysis, the mismatch arises due to the disconnect between agreement and EPP: T/Asp needs to overcome the mismatch by attracting an argument that does not agree with it to its specifier position; since the DP that satisfies T/Asp's φ-features is not attracted to satisfy its EPP requirement in these structures, something unusual needs to happen – a non-agreeing DP (T/Asp typically does not agree with the object) needs to re-merge to Spec,T/AspP, clearing the intervention, so that T/Asp would agree with the sole argument (see Rezac

2008; Anagnostopoulou 2006 for similar observation based on intervention effects).

Under this analysis, modal necessity clauses in Tigrinya (perhaps similar to Hindi/Urdu; Bhatt 1997) are raising predicates. Bhatt (1997) offers both semantic and syntactic arguments in support of the claim that MoN constructions are indeed derived via raising (like other raising predicates; see also Landau 2010). The first argument is concerned with the fact that the subject need not be the source of the direct bearer of the obligation, as illustrated in (48), where clearly it is not the obligation of ‘the door’ to be fixed itself. In this case, the subject is more thematically related only to the embedded clause.

- (48) ?it-i maſſ'o ki-s'iggen ?alləw-wo
 D-MSG door FUT-fix.IMPRF HAVE-(3MSG.S)-3MSG.O
 ‘The door has to be fixed.’

The second argument is syntactic and has to do with the agreement morpheme mismatch that surfaces on the verb. In Tigrinya, the OM tracks the subject, and of course the direct bearer of the obligation when implicated on the clause. Consider the following:

- (49) ni-?it-i maſſ'o ki-s'iggin-o ?alləw-wo
 D-MSG door FUT-fix.IMPRF-3MSG.O HAVE-(3MSG.S)-3MSG.O
 ‘He has to fix the door’

The OM -(w)o co-references to a 3rd person masculine singular object different from ‘the door’ that didn’t appear on the surface. Again, even if the subject of the clause need not be present on the surface (optionally dropped), as a bearer of the obligation, it is implicated on the dyadic verb ‘fix’ and the ‘door’ has not become the theme argument as the ACC-marker *ni-* on it and the OM tracking it attaches on the verb demonstrate.

Thus, the above Agree-based account of ClP and MoN not only accounts for the similarity between the two but also their important differences in Tigrinya.

7 Conclusion

In this paper, I investigated the nature of object markers (OMs) in Tigrinya ClP and MoN and claimed that they exhibit the same characteristics as canonical agreement/subject markers. Consistent with subject markers but unlike clitics, Tigrinya OMs are: (i) not freely movable, (ii) not optional, (iii) formally different

from D elements, (v) inadmissible more than one per clause, (vi) insensitive to case alternations, (vii) morphologically idiosyncratic, and (viii) non-referential. Based on these properties, I concluded that Tigrinya OMs are agreement markers that co-vary with the φ -features of their associate DPs. However, it is observed that the OM in Tigrinya is not a 100% agreement affix type. It exhibits a few properties that appear to be properties of clitics: semantic sensitivity and aspect invariance. These properties, however, are not always helpful to clearly separate clitics from agreement affixes (see Harizanov 2014 for discussion).¹⁸

Using a number of morphosyntactic properties, I also argued that the noun phrase the OM tracks is a “quirky” subject that re-merges higher to avoid intervention effects, and that *?alləw-* is a spell-out of the APPL head, which mediates the semantic and syntactic relationship between the two arguments involved in both ClP and MoN. If this analysis is on the right track, then it lends support to Agree-based accounts of the object marker (e.g., Baker & Kramer 2013, Compton 2014, a.o) and to alternative accounts to the operation Agree (e.g., Preminger 2009, Béjar & Rezac 2009). It also provides empirical support for possessive accounts (e.g., Ritter & Rosen (1997), a.o) that posit functional heads as underspecified argument-introducers for ClP, as well as for possessive and MoN accounts, such as Bjorkman & Cowper (2016) that syntactically the connection between the two.

One of the issues that still remains open is whether all the other OMs in Tigrinya (with ditransitive and unaccusatives) would also receive the same treatment or not. For instance, experiencer and dative arguments (unlike theme or source ones) often require an obligatory OM in Tigrinya. In other Ethio-Semitic languages, such as Amharic, the requirement appears to be optional (Leslau 1995). Future research with a comparative eye will address these issues.

Acknowledgements

I would like to thank my Tigrinya informants for sharing their knowledge with me. I would also like to thank two anonymous reviewers and Sharon Rose for their extensive feedback. Thanks also to Elizabeth Cowper for comments and discussion, Betsy Ritter for helpful references, and the Syntax/Semantics Research Group participants at the University of Toronto for discussion on earlier versions of this paper. Thanks also to ACAL 50 and ADWP 3 participants for discussion

¹⁸Perhaps, these properties hold in Tigrinya due to OMs have not fully finalized their grammaticalization journey from clitics to canonical agreement affix (in the sense of Fuß 2005).

and questions, especially Ken Safir, Mark Baker and Ruth Kramer, for helpful one-on-one discussions; for helping to make the L^AT_EX format LSP-compatible Mike Diercks and for comments with editing, L^AT_EXformatting Felix Kopecky. All errors of course remain solely my own. This research was partly funded by SSHRC postdoctoral fellowship granted to the author.

Abbreviations

1/2/3	persons	F	feminine	OM	object marker
ACC	accusative	IMPF	imperfective	PF	perfective
APPL	applicative	M	masculine	O	object
CLP	clausal possession	MoN	modal necessity	S	subject
D	determiner	NOM	nominative	SM	subject marker
DAT	dative	PL	plural		

References

- Aissen, Judith. 2003. Differential object marking: Iconicity vs. Economy. *Natural Language & Linguistic Theory* 21(3). 435–483.
- Alexiadou, Artemis, Elena Anagnostopoulou & Christina Sevdali. 2014. Opaque and transparent datives, and how they behave in passives. *The Journal of Comparative Germanic Linguistics* 17(1). 1–34.
- Anagnostopoulou, Elena. 2006. Clitic doubling. In Martin Everaert & Henk van Riemsdijk (eds.), *The Blackwell companion to syntax*, 519–581. Oxford: Blackwell.
- Anagnostopoulou, Elena. 2017. Clitic doubling. In Martin Everaert & Henk van Riemsdijk (eds.), *The Wiley Blackwell companion to syntax*, 2nd edn., 1–56. John Wiley & Sons, Inc.
- Anagnostopoulou, Elena & Christina Sevdali. 2015. Case alternations in Ancient Greek passives and the typology of Case. *Language* 91(2). 442–481.
- Anderson, Stephen R. 2005. *Aspects of the theory of clitics*. Oxford: Oxford University.
- Angelopoulos, Nikos & Dominique Sportiche. 2018. *Clitic dislocations and clitics in French and Greek: From interpretation to structure*. Ms. UCLA.
- Baker, Mark C. 2008. *The syntax of agreement and concord*. Cambridge: Cambridge University Press.
- Baker, Mark C. 2012. On the relationship of object agreement and accusative case: Evidence from Amharic. *Linguistic Inquiry* 43(1). 255–274.

- Baker, Mark C. & Ruth Kramer. 2013. The morphosyntax of applicative markers in Amharic. Talk given at the Afranaph Project development workshop II, New Brunswick, NJ.
- Baker, Mark C. & Ruth Kramer. 2018. Doubled clitics are pronouns. *Natural Language & Linguistic Theory* 36(4). 1035–1088.
- Béjar, Susana. 2008. Conditions on Phi-Agree. In Daniel Harbour, David Adger & Susana Béjar (eds.), *Phi theory: Phi-features across modules and interfaces*, 130–154. Oxford: Oxford University Press.
- Béjar, Susana & Milan Rezac. 2009. Cyclic Agree. *Linguistic Inquiry* 40. 35–73.
- Berhane, Girmay. 1991. *Issues in the phonology and morphology of Tigrinya. Problèmes de phonologie et de morphologie en Tigrinya*. Université du Québec à Montréal. (Doctoral dissertation).
- Bhatt, Rajesh. 1997. Obligation and possession. In Heidi B. Harley (ed.), *The proceedings of the UPenn/MIT workshop on argument structure and aspect*, vol. 32 (32), 21–40. Cambridge, MA: MIT Working Papers in Linguistics.
- Bjorkman, Bronwyn & Elizabeth Cowper. 2016. Possession and necessity: From individuals to worlds. *Lingua* 182. 30–48.
- Bjorkman, Bronwyn & Hedde Zeijlstra. 2014. *Upward Agree is superior*. Ms., University of Toronto and Universität Göttingen.
- Bleam, Tonia. 1999. *Leísta Spanish and the syntax of clitic doubling*. University of Delaware. (Doctoral dissertation).
- Boeckx, Cedric. 2000. Quirky agreement. *Studia Linguistica* 54(3). 354–380.
- Bošković, Željko. 2004. Clitic placement in South Slavic. *Journal of Slavic Linguistics* 12(1/2). 37–90.
- Buckley, Eugene. 2000. Alignment and weight in the Tigrinya verb stem. In Vicki Carstens & Frederick Parkinson (eds.), *Advances in African linguistics*, vol. 4 (Trends in African linguistics), 165–175. Trenton, NJ: Africa World Press.
- Butler, Jonny. 2003. A minimalist treatment of modality. *Lingua* 113(10). 967–996.
- Chomsky, Noam. 1995. *The Minimalist program*. Cambridge: Cambridge University Press.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89–155. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. Cambridge: MIT Press.
- Compton, Richard. 2014. An argument for genuine object phi-agreement in Inuit: Evidence from mood variance. Poster presented at GLOW37.

- Compton, Richard. 2016. Mutually conditioned mood and object agreement in inuit. In Christopher Hammerly & Brandon Prickett (eds.), *NELS 46: Proceedings of the 46th annual meeting of the North East Linguistic Society*, vol. 46, 241–250. Amherst, MA: GLSA.
- Corbett, Greville G. 2006. *Agreement*. Cambridge: Cambridge University Press.
- Cowper, Elizabeth. 1989. Thematic underspecification: The case of have. *Toronto Working Papers in Linguistics* 10. 85–93.
- Croft, William. 2013. Agreement as anaphora, anaphora as coreference. In Dik Bakker & Martin Haspelmath (eds.), *Languages across boundaries: Studies in memory of Anna Siewierska*, 95–117. Berlin: De Gruyter Mouton.
- Danon, Gabi. 2006. Caseless nominals and the projection of DP. *Natural Language & Linguistic Theory* 24(4). 977–1008.
- Danon, Gabi. 2011. Agreement and DP-internal feature distribution. *Syntax* 14(4). 297–317.
- den Dikken, Marcel. 2006. *Relators and linkers: The syntax of predication, predicate inversion, and copulas*. Cambridge, MA: MIT Press.
- Dobrovie-Sorin, Carmen. 1990. Clitic doubling, wh-movement, and quantification in Romanian. *Linguistic Inquiry* 21. 351–397.
- Franco, Jon. 2000. Agreement as a continuum. In Beukema Frits & Marcel den Dikken (eds.), *Clitic phenomena in European languages*, 147–189. Amsterdam: John Benjamins.
- Freeze, Ray. 1992. Existentials and other locatives. *Language* 68(3). 553–595.
- Fuß, Eric. 2005. *The rise of agreement: A formal approach to the syntax and grammaticalization of verbal inflection*. Amsterdam & Philadelphia: John Benjamins.
- Gebregziabher, Keffyalew. 2013. Tigrinya vowel and consonant epenthesis: An optimality theory account. *Journal of Afroasiatic Languages* 5(2). 223–296.
- Giusti, Giuliana & Melita Stavrou. 2008. Possessive clitics in the DP: Doubling or dislocation. In Dalina Kallulli & Liliane Tasmowski (eds.), *Clitic doubling in the Balkan languages*, 389–433. Amsterdam: John Benjamins.
- Halle, Morris & Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In Kenneth Hale & Samuel Jay Keyser (eds.), *The view from building 20: Essays in linguistics in honor of Sylvian Bromberger*, 111–176. Cambridge, MA: MIT Press.
- Hamilton, Michael. 2014. Multiple instances of agreement in Mi'gmaq verbs. In Monica Macaulay, Margaret Noodin & J. Randolph Valentine (eds.), *Papers of the forty-fifth Algonquian conference*, 73–91. East Lansing: Michigan State University Press.
- Harizanov, Boris. 2014. Clitic doubling at the syntax-morphophonology interface. *Natural Language & Linguistic Theory* 32(4). 1033–1088.

- Harley, Heidi B. 1995. *Subjects, events and licensing*. Massachusetts Institute of Technology. (Doctoral dissertation).
- Harley, Heidi B. & Elizabeth Ritter. 2002. Person and number in pronouns: A feature-geometric analysis. *Language* 78(3). 482–526.
- Hetzron, Robert. 1972. *Ethiopian Semitic: Studies in classification* (Journal of Semitic Studies 2). Manchester: Manchester University Press.
- Hiraiwa, Ken. 2005. *Dimensions of symmetry in syntax: Agreement and clausal architecture*. Massachusetts Institute of Technology. (Doctoral dissertation).
- Holmberg, Anders. 2005. Is there a little *pro*? Evidence from Finnish. *Linguistic Inquiry* 36(4). 533–564.
- Holmberg, Anders & Thorbjörg Hróarsdóttir. 2003. Agreement and movement in Icelandic raising constructions. *Lingua* 113. 997–1019.
- Jaeggli, Osvaldo. 1986. Three issues in the theory of clitics: Case, doubled NPs, and extraction. In Hagit Borer (ed.), *The syntax of pronominal clitics*, 15–42. New York: Academic Press.
- Jayaseelan, Karattuparambil A. 2004. The possessor-experiencer dative in Malayalam. *Typological Studies in Language* 60. 227–244.
- Kalin, Laura. 2016. Phi-features as derivational time bombs: A new model of nominal licensing. Talk given at the University of Toronto.
- Kallulli, Dalina & Liliane Tasmowski. 2008. *Critic doubling in the Balkan languages*. Amsterdam: John Benjamins.
- Keenan, Edward L. 1976. Towards a universal definition of “SUBJECT”. In Charles N. Li (ed.), *Subject and topic*, 303–334. New York: Academic Press.
- Kifle, Nazareth Amlesom. 2007. Differential object marking and topicality in Ti grinya. In Tracy Butt Miriam & Holloway King (ed.), *Proceedings of LFG07*, 5–25. Stanford: CSLI Publications.
- Kim, Kyumin. 2011. *External argument introducers*. University of Toronto. (Doctoral dissertation).
- Kramer, Ruth. 2014. Clitic doubling or object agreement: The view from Amharic. *Natural Language & Linguistic Theory* 32(2). 593–634.
- Kratzer, Angelika. 2006. Decomposing attitude verbs. Talk honoring Anita Mittwoch on her 80th birthday at The Hebrew University of Jerusalem.
- Landau, Idan. 1999. Possessor raising and the structure of VP. *Lingua* 107(1). 1–37.
- Landau, Idan. 2010. *The locative syntax of experiencers*. Cambridge, MA: MIT Press.
- Leslau, Wolf. 1995. *Reference grammar of Amharic*. Wiesbaden: Otto Harrissowitz.
- Levinson, Lisa. 2011. Possessive WITH in Germanic: HAVE and the role of P. *Syntax* 14(4). 355–393.

- Lowenstamm, Jean. 1996. CV as the only syllable type. In Bernard Laks & Jacques Durand (eds.), *Current trends in phonology: Models and methods*, 419–441. University of Salford: European Studies Research Institute.
- Marantz, Alec. 1991. Case and licensing. In Germán Westphal, Benjamin Ao & Hee-Rahk Chae (eds.), *Eastern states conference on linguistics*, 234–253. Ithaca, NY: Cornell Linguistics Club.
- Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. In Alexis Dimitriadis, Laura Siegel, Clarissa Surek-Clark & Alexander Williams (eds.), *University of pennsylvania working papers in linguistics vol. 4.2*, 201–225. Philadelphia: University of Pennsylvania.
- Mason, John S. 1996. *Tigrinya grammar*. Trenton, NJ: Red Sea Press.
- Matthewson, Lisa, Hotze Rullmann & Henry Davis. 2005. Modality in St'at'imcets. In M. Kiyota J. C. Brown & T. Peterson (eds.), *40th international conference on Salish and neighbouring languages* (ICSNL XL), 166–183. Vancouver, BC: UBC Linguistics.
- Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic Inquiry* 37(1). 69–109.
- McCloskey, Jim. 1997. Subjecthood and subject positions. In Liliane Haegeman (ed.), *Elements of grammar*, 197–235. Dordrecht: Kluwer Academic Publishers. DOI: 10.1007/978-94-011-5420-8_5.
- McGinnis, Martha. 1998. *Locality in A-movement*. Massachusetts Institute of Technology. (Doctoral dissertation).
- Myler, Neil. 2016. *Building and interpreting possession sentences*. Cambridge, MA: MIT Press.
- Nevins, Andrew. 2011. Multiple Agree with clitics: Person complementarity vs. omnivorous number. *Natural Language & Linguistic Theory* 29(4). 939–971.
- Ormazabal, Javier & Juan Romero. 2010. *Object clitics and agreement*. Ms. University of Basque Country and Universidad de Extremadura.
- Oxford, Robert William. 2014. *Microparameters of agreement: A diachronic perspective on Algonquian verb inflection*. University of Toronto. (Doctoral dissertation).
- Pesetsky, David & Esther Torrego. 2007. The syntax of valuation and the interpretability of features. In Simin Karimi, Vida Samiian & Wendy K. Wilkins (eds.), *Phrasal and clausal architecture: Syntactic derivation and interpretation in honor of Joseph E. Emonds*. 262–294. Amsterdam: John Benjamins.
- Pesetsky, David & Esther Torrego. 2011. Case. In Cedric Boeckx (ed.), *Oxford handbook of linguistic minimalism*, 52–72. Oxford: Oxford University Press.

- Poletto, Cecilia & Jean-Yves Pollock. 2004. On wh-clitics and wh-doubling in French and some North Eastern Italian dialects. *Probus* 16(2). 241–272. DOI: 10.1515/prbs.2004.16.2.241.
- Preminger, Omer. 2009. Failure to agree is not a failure: Agreement with post-verbal subjects in Hebrew. In Jeroen Van Craenenbroeck & Johan Rooryck (eds.), *Linguistic Variation Yearbook* 9, 241–278. Amsterdam: John Benjamins.
- Preminger, Omer. 2014. *Agreement and its failures*. Cambridge, MA: MIT Press.
- Rezac, Milan. 2008. The syntax of eccentric agreement: The Person Case Constraint and absolutive displacement in Basque. *Natural Language & Linguistic Theory* 26(1). 61–106.
- Riedel, Kristina. 2009. *The syntax of object marking in Sambaa: A comparative Bantu perspective*. Leiden, The Netherlands: Universiteit Leiden. (Doctoral dissertation).
- Ritter, Elizabeth & Sara T. Rosen. 1993. Deriving causation. *Natural language & Linguistic Theory* 11(3). 519–555.
- Ritter, Elizabeth & Sara T. Rosen. 1997. The function of *have*. *Lingua* 101(3). 295–321.
- Rose, Sharon. 1997. *Theoretical issues in comparative Ethio-Semitic phonology and morphology*. McGill University. (Doctoral dissertation).
- Siewierska, Anna. 1999. From anaphoric pronoun to grammatical agreement marker: Why objects don't make it. *Folia Linguistica* 33(1-2). 225–251.
- Sigursson, Halldór Ármann & Anders Holmberg. 2008. Icelandic dative intervention: Person and number are separate probes. In Roberta D'Alessandro, Sanna Fischer & Gunnar Hrafn Hrafnbjargarson (eds.), *Agreement restrictions*, 251–280. Berlin: Mouton de Gruyter.
- Spencer, Andrew & Ana R Luís. 2012. *Clitics: An introduction*. Cambridge: Cambridge University Press.
- Sportiche, Dominique. 1996. Clitic constructions. In Johan Rooryck & Laura Zaring (eds.), *Phrase structure and the lexicon*, 213–276. Dordrecht: Kluwer Academic Publishers.
- Stump, Gregory T. 2001. *Inflectional morphology: A theory of paradigm structure*. Cambridge: Cambridge University Press.
- Uriagereka, Juan. 1995. Aspects of the syntax of clitic placement in Western Romance. *Linguistic Inquiry* 26(1). 79–123.
- von Fintel, Kai. 2006. Language and modality. In *Encyclopedia of philosophy*, 2nd edn. Detroit, MI: MacMillan.
- Zaenen, Annie, Joan Maling & Höskuldur Thráinsson. 1985. Case and grammatical functions: The Icelandic passive. *Natural Language & Linguistic Theory* 3(4). 441–483.

Zwicky, Arnold M. & Geoffrey K Pullum. 1983. Cliticization vs. Inflection: English n't. *Language* 59(3). 502–513.

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Celebrating 50 years of ACAL

The papers in this volume were presented at the 50th Annual Conference on African Linguistics held at the University of British Columbia in 2019. The contributions span a range of theoretical topics as well as topics in descriptive and applied linguistics. The papers reflect the typological and genetic diversity of languages in Africa and also represent the breadth of the ACAL community, with papers from both students and more senior scholars, based in North America and beyond. They thus provide a snapshot on current research in African linguistics, from multiple perspectives. To mark the 50th anniversary of the conference, the volume editors reminisce, in the introductory chapter, about their memorable ACALs.

ISBN 978-3-96110-309-6



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