

## Prosodic restructuring in Somali nominals\*

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### 1 Introduction

It is uncontroversial that the Somali tonal system has stress-like properties:

- No more than one High tone can occur per Phonological Word (PWord).
- The position of High tones is, roughly, demarcative: they occur on either the penult or final syllable of a PWord.  
(See, e.g., Hyman 1981, 2006, 2016; Green & Morrison 2016, Le Gac 2003.)
- Only some proper names have a High tone in another position. (Saeed 1999: 22)

How to account for these generalizations is more controversial. Some possibilities:

- underlying accent (Banti 1988, Green & Morrison 2016, Le Gac 2003);
- (underlying) High tone (Andrzejewski 1964, 1979, 1981; Armstrong 1934; Hyman 2006, 2016; Le Gac 2016);
- no underlying tone or accent; rather surface tone is the result of morphological tone/accent assignment principles (Hyman 1981, Mous 2009).

Addressing this problem is outside the scope of this particular talk.

- However, we do assume that Somali is a tonal language, not an (underlyingly) accentual one.

Our topic of investigation for today is,

- To document which morphemes or morphological constructions contribute a High tone to some nominal constructions.
- In the spirit of Green & Morrison (2016; G&M), **we aim to account for** the position and number of High tones that occur within these constructions in terms of
  - **matches and mismatches** between morphosyntactic structure and prosodic structure.

Outline of the talk:

- in section 2, we show that a number of Somali nominal constructions do not have the tone pattern expected from the previous literature. One of the expected High tones is ‘missing’.
- in section 3, we argue that, even though many of the ‘missing’ High tones are phrase-final,
  - Final Lowering – a process well-documented for Somali – does not plausibly account for the tone patterns we find.
- in section 4, we propose that **prosodic restructuring** provides a better account,
  - and we draw a parallel with prosodic adjunction processes that have been motivated for Swedish (a language with a surprising number of prosodic properties in common with Somali).

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## 2 Data to be accounted for

This talk presents preliminary results of a study of the prosody of some nominal constructions, based on recently collected elicitation data.

We begin by summarizing the expected tone patterns for the data we investigated. Then we present the tone patterns attested (with more information about our corpus).

### 2.1 Expected High tones in (non-subject) nominal constructions from the literature

We briefly summarize the sources of High tones expected in (non-subject) nominal constructions, based mainly on Hyman (1981), Saeed (1993, 1999) and G&M.

All nouns in isolation have a High tone on either the penult or the final syllable. The position **is determined by morphological factors** (e.g., declension class; ‘gender’; singular vs. plural)

- **not phonological factors.**

We give a few examples in (1); note that compounds have a single High tone, on either the penult or the final syllable:

(1) Somali nominals

(a) tonal minimal pairs

ínan	‘boy’	vs.	inán	‘girl’
béer	‘liver’	vs.	beér	‘garden’
éy	‘dog’	vs.	eý	‘dogs’

(b) tone on penult vs. ultima in words of identical phonological form

dukáan	‘shop’
caleén	‘leaf’
sonkór	‘sugar’
kibís	‘bread’
súbag	‘butter’
mindí	‘knife’
gúri	‘house’

(c) compounds

dayaxgacméed	‘satellite’ (cf. dáyax ‘moon’; gacméed ‘of hands’)
lacagháye	‘cashier’ (cf. lacág ‘money’; hay- ‘have, hold’; -e agentive)
caanagéel	‘camel milk’ (cf. caanó ‘milk’; géel ‘camels’)
madaxweýne	‘president’ (cf. mádax ‘head’; wéyn ‘big’)

Nouns can be followed by a number of determiners. As shown in the list in (2), while the definite determiner is toneless, **the other determiners introduce a High tone:**

(2) Somali determiner types (Saeed 1999: 111-117); **k/g/h** vs **t/d/sh** distinction determined by gender agreement

- a. Definite ka/ta
- b. Remote definite kií/tíí
- c. Interrogative keé/teé
- d. Possessives káyga/táyda ‘my’, káaga/táada ‘your (sg.)’, kíisa/tíisa ‘his’, kéeda/téeda ‘her’, kayága/tayáda ‘our (excl.)’, kéenna/téenna ‘our (incl.)’, kíinna/tíinna ‘your (pl.)’, kóoda/tóoda ‘their’
- e. Demonstrative kán/tán, kaás/taás, keér/teér, koó/toó

Note that:

- the **High-toned determiners (i.e., (2b-e)) are expected to retain their High tone** in combination with a noun according to work like: G&M, Saeed (1993, 1999).
  - While Hyman (1981: 191) mentions a process of accent reduction on possessive determiners following a noun, only an example or two is provided.
- None of the determiners change the tone of the base noun, except *-keé/-teé* ‘which?’ - (3h-i)

(3) Somali nouns with determiners (Saeed 1993: 160-168)

- a. nín ‘man’ nín-ka ‘the man’
- b. naág ‘woman’ naág-ta ‘the woman’
- c. nín ‘man’ nín-kán ‘this man’
- d. naág ‘woman’ naág-tán ‘this woman’
- e. sáddex ‘three’ sáddex-daás ‘those three’
- f. shúqul ‘work’ shúqul-káyga ‘my work’
- g. lacág ‘money’ lacág-táada ‘your money’
- h. nín ‘man’ nin-keé ‘which man?’
- i. naág ‘woman’ naag-teé ‘which woman?’

Work like (G&M, Hyman 1981, Saeed 1993) observes that a High tone is realized, not only on many postnominal determiners, but also on the attribute in a noun+attribute phrase.

- As shown in (4), in an N+attribute phrase a **High tone is expected** to be assigned **on the final vowel<sup>1</sup> of the (indefinite) attribute**, while the modified noun keeps its base High tone pattern.
  - Note that numbers are considered nouns, and they head N+attribute phrases.

(4) Somali attributive noun phrases; N+ attribute (Hyman 1981; G&M; our elicitation notes)

- a. géed wííl ‘a tree of a boy’ (cf. wííl ‘boy’)
- b. áfar búug ‘four books’ (cf. búug ‘book’)
- c. gaarí cusúb ‘a new car’
- d. shúqul adág ‘hard work’
- e. gacán-ta midíg ‘the right hand’ (cf. midíg ‘right side’)
- f. labó sabuurad-oód ‘two blackboards’ (cf. sabuurád ‘blackboard’)
- g. mindí-da Maxaméd ‘the knife of Maxamed’ (cf. Maxámed)

<sup>1</sup> Only the adjectives *dhéer* ‘long’, *móog* ‘ignorant’, *nóol* ‘living’, *róon* ‘excellent’, *wéyn* ‘big’, and some female proper names seem to constitute exceptions.

In sum, many nominal constructions are expected to have **two High tones**:

- one on the noun
- one on the following attribute (determiner, noun, or adjective)

In keeping with the **one High tone per Prosodic Word** principle, G&M propose that the postnominal determiners and attributives which surface with a High tone are parsed as independent PWords from the Noun they modify.

- As a result, N+determiner (H-toned) and N+attributive have the same prosodic parse.

The representations in (5) adapt G&M’s analysis; surface High-toned morphemes are **bolded**:

(5) Prosodic structures for Somali nominals; parentheses indicate PWords (adapting G&M)

- |                          |   |
|--------------------------|---|
| a. N+definite            | (( <b>N</b> ) def) <sub>PWord</sub>   |
| b. compound              | (( <b>N</b> ) <sub>PWord</sub> ( <b>N</b> ) <sub>PWord</sub> ) <sub>PWord</sub> |
| c. N+H-toned determiners | ( <b>N</b> ) <sub>PWord</sub> ( <b>Det</b> ) <sub>PWord</sub>                   |
| d. N+attributive         | ( <b>N</b> ) <sub>PWord</sub> ( <b>Attrib</b> ) <sub>PWord</sub>                |

Notice the parallelism in the structure of N+Determiner (5c) and N+Attributive (5d).

## 2.2 Our data

What we find in our data is that the nominal constructions in (5c, d) do not consistently have the High tone patterns expected:

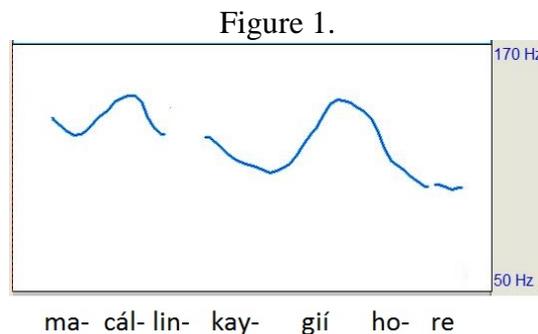
- The High tone on the determiner or nominal attribute is often ‘missing’.

For example, the possessive determiner is seldom realized with its expected High tone:

(6)

- |                                   |  |                |
|-----------------------------------|--|----------------|
| a. biyá-hayga                     | ‘my water’   | (~ biyá-háyga) |
| b. dhég-tiisa                     | ‘his ear’  | (~ dhég-tíisa) |
| c. macállin- <b>kay</b> -gií hore | ‘my previous teacher, you know’ (teacher-my-remote definite) |                |

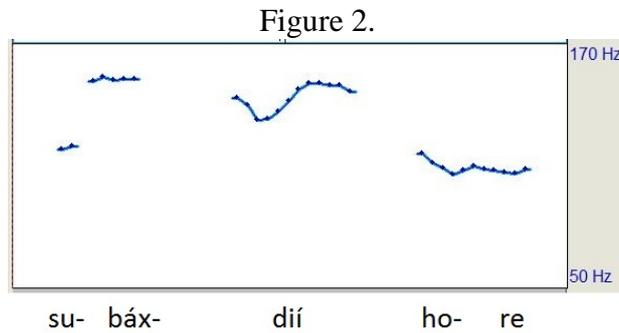
A typical possessive looks like this:



The demonstrative suffixes also often lack a High tone, whereas the remote definite suffix generally realizes its High tone.

When two consecutive High tones occur, they are generally on almost the same pitch level:

(7) subáxdíí hore ‘(in) the early morning’



N+N and N+Adjective attributive constructions should have a High tone assigned to the final syllable of the second word.

Yet, in our data, this High tone is often missing (note that numbers are nouns in Somali):

(8)

- |                   |                          |                    |
|-------------------|--------------------------|--------------------|
| a. hál litír      | ‘one liter’              | (~ hál litír)      |
| b. gúri-ga Muuse  | ‘Musa’s house’           | (~ gúri-ga Muusé)  |
| c. biyó badan     | ‘much water’             | (~ biyó badán)     |
| d. subáx-díí hore | ‘(in) the early morning’ | (~ subáx-díí horé) |

### 3 Why Final lowering cannot account for this pattern

The Somali tone literature (Andrejewski 1981, Hyman 1981, Saeed 1993, 1999) notes that High tones are lowered phrase-finally/pre-pausally.

- Since the ‘missing’ High tones in our data often occur in phrase-final position, the first account that comes to mind is that Final Lowering is responsible.

In this section, we argue, though, that Final Lowering cannot account for the missing High tones in our data.

First, the expected High tone on the possessive (~ dhégtíisa ‘his ear’) is not associated with the final syllable, so final tone lowering is not relevant here.

Second, final High tones are not deleted in our data in other morphosyntactic contexts:

(9) Words in isolation

- tukayaál ‘crows’ (\*tukayaal)
- ubaxyó ‘flowers’
- lafdhabarró ‘spines’

(10) Sentence final position

- a. Wáxaan arkay ratí. 'I saw a camel.' (cf. ratí 'camel')  
 b. Má aragtay macállin-kay-gíí? 'Did you see my teacher?'  
 c. Waxaan lá kulmay Sahró. 'I met with Sahra.'  
 d. Wáa sheeka-deé? 'Which story is it?' (cf. sheéko 'story')

That is, final High tones are not systematically deleted.

Third, High tones can be deleted from the word-final syllable of a determiner or an attribute even when the word is not phrase-final/pre-pausal.

(11)

- a. labá dúmar ah oo qurúx badan oo kalíya 'just two beautiful women'  
 (cf. labá 'two'; dúmar 'women'; qurúx 'beauty'; badán 'much'; kalíya 'only')  
 b. sánnad-kíi hore ~ sánnad-kíí hore 'last year' (cf. sánnad 'year'; horé 'previous')  
 c. bisád-daas yar ~ bisád-daás yar 'that little cat' (cf. bisád 'cat'; yár 'small')

## 4 Prosodic restructuring

### 4.1 Parallel with Swedish prosodic adjunction

Coming from a Swedish background, one is struck by the similarities between the prosodic systems of Somali and Swedish, another language with a stress-like tone system.

As argued for in recent work by Riad (2012, 2016) and Myrberg & Riad (2015), in Swedish we find:

- culminativity of stress at the PWord<sub>min</sub> level and culminativity of tone at the PWord<sub>max</sub> level;
- compounds are a single tone realization/assignment domain;
- some affixes are stressed, while others are not.

(12) Comparison of the prosody of Swedish and Somali

	Somali	Swedish
a. PWord culminativity	√ - tone	√ - stress (PWord <sub>min</sub> ); tonal accent (PWord <sub>max</sub> )
b. compounds are 1 tone realization domain	√	√
c. stressable/tone bearing affixes?	√	√

Some Swedish examples illustrating these properties:

(13) Culminativity in Swedish prosody (Myrberg & Riad 2015)

a. PWord culminativity for stress and tone

(3) *American English and Swedish stress*

(<sup>1</sup>mone,tary)<sub>ω</sub> (mone<sup>1</sup>tär)<sub>ω</sub><sup>min=max</sup>  
 (to,tali'tarian)<sub>ω</sub> (totali'tär)<sub>ω</sub><sup>min=max</sup>  
 (<sup>1</sup>ab,stract)<sub>ω</sub> (ab'strakt)<sub>ω</sub><sup>min=max</sup>

(4) *German and Swedish stress*

(<sub>ω</sub>mili,tari'sieren)<sub>ω</sub> (militari'sera)<sub>ω</sub><sup>min=max</sup>  
 (çono,matopo'etisch)<sub>ω</sub> (onomatopo'etisk)<sub>ω</sub><sup>min=max</sup>  
 (<sub>ω</sub>uni,versi'tät)<sub>ω</sub> (universi'tet)<sub>ω</sub><sup>min=max</sup>

b. compounds (and compound-like words) have two stresses but are a single tonal accent domain (accent 2)

(15) *Postlexical accent 2 (several stresses)*

a. sommar-lov <sup>2</sup>((<sup>1</sup>sommar<sub>2</sub>)<sub>ω</sub><sup>min</sup>(<sup>1</sup>lov)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'summer break' compound  
 jul-lovs-morgon <sup>2</sup>((<sup>1</sup>jul)<sub>ω</sub><sup>min</sup>(<sup>1</sup>lov-s)<sub>ω</sub><sup>min</sup>(<sup>1</sup>morgon<sub>2</sub>)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'Christmas break morning'  
 b. tvätt-bar <sup>2</sup>((<sup>1</sup>tvätt)<sub>ω</sub><sup>min</sup>(<sup>1</sup>bar)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'washable' tonic suffix  
 grym-het <sup>2</sup>((<sup>1</sup>grym)<sub>ω</sub><sup>min</sup>(<sup>1</sup>het)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'cruelty'  
 c. på-laga <sup>2</sup>((<sup>1</sup>på)<sub>ω</sub><sup>min</sup>(<sup>1</sup>lag-a<sub>2</sub>)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'tax; duty' tonic prefix  
 o-nödig <sup>2</sup>((<sup>1</sup>o)<sub>ω</sub><sup>min</sup>(<sup>1</sup>nöd-ig<sub>2</sub>)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'unnecessary'

c. affixes which add a stress/tone vs. ones that do not

(<sup>1</sup>moder)<sub>ω</sub><sup>min</sup>(<sup>1</sup>skap)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'motherhood'  
 ((<sup>1</sup>an)<sub>ω</sub><sup>min</sup>(<sup>1</sup>komma)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'arrive'  
 (för-(<sup>1</sup>ändra)<sub>ω</sub><sup>min</sup>)<sub>ω</sub><sup>max</sup> 'to change'

Most striking, as work like Garlén (1988), as well as Riad (2016) and Myrberg & Riad (2015) report,

- short phrases, sometimes even similar in meaning to those in our Somali data, are variably parsed into a single tone/stress realization domain:

Some examples:

(14) Prosodic restructuring in Swedish (Myrberg & Riad 2015)

*Prosodic adjunction in morphology and syntax*

a. morphology: för-<sup>2</sup>(<sup>1</sup>tal-a<sub>2</sub>) (fö<sup>1</sup>-<sup>1</sup>(<sup>1</sup>tal-a<sub>2</sub>)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'to slander', see (16c)  
 b. syntax: för <sup>2</sup>(<sup>1</sup>liten<sub>2</sub>) (fö<sup>1</sup>-<sup>1</sup>(<sup>1</sup>liten<sub>2</sub>)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'too small'  
 för <sup>2</sup>(<sup>1</sup>mång-a<sub>2</sub>) (fö<sup>1</sup>-<sup>1</sup>(<sup>1</sup>mång-a<sub>2</sub>)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'too many'  
 för <sup>2</sup>(<sup>1</sup>länge<sub>2</sub>) (fö<sup>1</sup>-<sup>1</sup>(<sup>1</sup>länge<sub>2</sub>)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'too long'  
 a. ((<sup>1</sup>röd-a<sub>2</sub>)<sub>ω</sub> <sup>2</sup>(<sup>1</sup>matt-an<sub>2</sub>)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'red carpet' (lexicalized phrase)  
 b. ((<sup>1</sup>Röd-a<sub>2</sub>)<sub>ω</sub> <sup>1</sup>(<sup>1</sup>Kors-et)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'Red Cross' (name, also lexicalized)  
 c. ((<sup>1</sup>hopp-a<sub>2</sub>)<sub>ω</sub> <sup>1</sup>(<sup>1</sup>upp)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'jump up' (particle verb)  
 d. ((<sup>1</sup>hel-a<sub>2</sub>)<sub>ω</sub> (<sup>1</sup>lång-a<sub>2</sub>)<sub>ω</sub> <sup>1</sup>(<sup>1</sup>dag-en)<sub>ω</sub>)<sub>ω</sub><sup>max</sup> 'all day, lit. whole long day'

Analysis by Riad (2016) and Myrberg & Riad (2015):

- Both words and affixes can be incorporated into PWord(max) via prosodic restructuring/adjunction.
- This accounts for the tonal reduction found, given the one tonal accent per PWord(max) principle.

#### 4.2 *Our proposal*

What we propose is that Somali High tone reduction is the result of prosodic restructuring, analogous to what has been proposed for Swedish by Riad (2016) and Myrberg & Riad (2015).

As G&M argue, for High-toned determiners like the possessive to be realized with a High tone, they must be parsed in a separate minimal PWord from the noun they modify, to maintain the one High tone per PWord principle. However, they must be parsed in the same PWord-max domain, because they undergo segmental sandhi processes, which do not apply across PWord-max boundaries:

(15)

- a. ((dhég)<sub>PWord-min</sub> (tíisa)<sub>PWord-min</sub>)<sub>PWord-max</sub> ‘his ear’  
 b. ((mindí)<sub>PWord-min</sub> (díisa)<sub>PWord-min</sub>)<sub>PWord-max</sub> ‘his knife’

In the variable pronunciation where the possessive, for example, has lost its High tone, we propose that:

- the construction has the same recursive PWord structure as the toneless definite determiner – cf. (5a).
- That is, the construction has undergone prosodic restructuring:

(16)

- a. ((dhég)<sub>PWord-min</sub> ta)<sub>PWord-max</sub> ‘the ear’  
 b. ((dhég)<sub>PWord-min</sub> tiisa)<sub>PWord-max</sub> ‘his ear’

Similarly, we propose that attributive nominal phrases that have ‘lost’ the High tone on the attribute have undergone prosodic restructuring. They are parsed into a Complex Word Group (cf. Vigário 2010; Vogel 2010):

(17) ((hál)<sub>PWord-max</sub> litir)<sub>CWG</sub> ‘one liter’

It is interesting to note that tonal reduction results in a High tone on the leftmost word of the attributive construction, whereas compounding typically results in a single High tone on the rightmost word.

(18)

- |                                  |  |
|----------------------------------|--|
| a. madax-weýn-e (m.) ‘president’ | (cf. mádax (m.) ‘head’; weýn ‘big’; -e agentive suff.) |
| b. cod-kác (m.) ‘tonal accent’   | (cf. cód (m.) ‘voice’; kac- ‘rise’)                    |
| c. biya-dhác (m.) ‘waterfall’    | (cf. biyó (pl.) ‘water’; dhac- ‘fall’)                 |
| d. bad-weýn (f.) ‘ocean’         | (cf. bád (f.) ‘sea’; weýn ‘big’)                       |
| e. magaala-mádax (f.) ‘capital’  | (cf. magaálo (f.) ‘town’; mádax (m.) ‘head’)           |
| f. laf-dhábar (f.) ‘spine’       | (cf. láf (f.) bone; dhábar (m.) ‘back’)                |

We conclude that these two constructions must have a different prosodic parse:

(19)

prosodic adjunction: ((há!l)<sub>PWord-max</sub> litir)<sub>CWG</sub> ‘one liter’

vs.

compound: (madax(weýne)<sub>PWord-max</sub>)<sub>CWG</sub> ‘president’

This is again analogous to Swedish, which only allows one tonal accent to be assigned to a compound or compound-like construction.

- For Somali, we propose that the High tone assigned to a CWG is realized on the internal PWord<sub>max</sub>.

It is interesting to note that compounds and N+N phrases are distinguished by tone. As shown in (20), N+N constructions can have two High tones, while compounds only have one:

(20)

- a. guri-márti ‘guesthouse’      gúri martí ‘guests’ house’ (cf. gúri ‘house’; martí ‘guests’)  
    ~ gúri martí
- b. caana-géel ‘camel milk’      caanó géel ‘camels’ milk’ (cf. caanó ‘milk’; géel ‘camels’)  
    ~ caanó geel

However, the N+N constructions can reduce the High tone on the second half, whereas compounds have a stable High tone.

In addition, the determiners are added only to the rightmost word in a compound, whereas each noun in an N+N construction can have a determiner. In this case the High tone of the second noun cannot reduce:

(21)

- a. guri-márti-ga ‘the guesthouse’      gúri-ga martí-da ‘the guests’ house’
- b. caana-géel-a ‘the camel milk’      caaná-ha géel-a ‘the camels’ milk’

We propose that this is because compounds can contain only one PWord-max, whereas each noun in an N+N construction must be a PWord-max when it is followed by a determiner.

## 5 Conclusion and topics for future research

- Many nominal constructions in Somali do not realize the expected High tones on the attributive suffix/word; that is, they undergo tonal reduction.
- We argue that tonal reduction in Somali is the consequence of prosodic restructuring.
- Prosodic restructuring in Somali closely parallels prosodic restructuring in Swedish, and so appears to be typical of these kinds of tonal systems (i.e., with tonal culminativity within a prosodic domain).
- Questions for future research: are High tones (or accents) underlying? Or are they assigned to PWord min (with access somehow to morphosyntactic information à la Hyman)?

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