Articles

The Prosody of Harar Oromo Nouns

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Abstract

This paper examines the tone in Harar Oromo, a language widely spoken in Ethiopia. The focus is on tone in nouns. The examination implements acoustic analysis of tone using pitch contours, which helps in determining the type and position of tone in roots and in nominative and accusative case. The results show that roots can have either L or H tone, while case suffixes always have H tone. This suggests that tone is predictable in suffixes, but not in roots. The analysis suggests that Harar Oromo has a restricted tone system that is similar to stress-like languages.

I. INTRODUCTION

Oromo is the fourth most widely spoken language of Africa after Arabic, Hausa, and Swahili. Together with Amharic, it is the most important language of Ethiopia, where it is a national language and lingua franca (Geshe & Devardhi, 2013; Jamaica, 2020).

The focus of this paper is tone in nouns in the Harar dialect of Oromo. This variety has not received much linguistic attention in general. Available studies of Harar Oromo included a section on prosody (tone or stress). Of relevance to this study, two analyses of nouns in Harar Oromo are reviewed, Owens (1985) and de Lacy (2002). Other works that tackle similar topics of Oromo, which are not discussed here, include (Jamaica, 2020; Youssouf, 2019).

In 'A Grammar of Harar Oromo', Owens (1985: 26-54) devoted a sizeable section to tone. He examined the variability of tone in nouns, depending on their context and syllable structure. Focusing on tone in citation forms, or what Owens called the 'basic tone', (p. 26), the focus of this paper, Owens recognized four tonal patterns in nouns. He noted that nouns that end in a short vowel in accusative case, which is the case used in citation forms in this language, have a high tone on that vowel, as in (1). In all examples in this study, the acute accent (V́) indicates (H)igh tone, while the absence of such a mark indicates (L)ow tone. The asterisk (*)

represents lexical accent in noun roots, which is realized as a H tone on the surface.

(1) Basic tone patterns in Harar Oromo nouns ending in a short vowel (Owens 1985: 26)

> [namá] 'man'
> [addá] 'forehead'
> [intalá] 'girl'
> [angáfá] 'eldest brother'

He identified the following tone patterns in words that end in a long vowel, focusing on two syllable words, as in (2).

(2) Basic tone patterns of disyllabic nouns ending in a long vowel (Owens, 1985: 27)

LH	[gará:] 'stomach'
	[abdí:] 'hope'
	[e:rú:] 'farm'
	[abbá:] 'father'
HH	[mállá:] 'cheek'
	[hárré:] 'donkey'
	[hútʃtʃû:] 'clothes'
	[dámé:] 'branch'

In three-syllable words ending in long vowels, the following patterns arise, as in (3).

(3) Basic tone patterns of trisyllabic nouns ending in a long vowel (Owens, 1985: 27)

LLH   [maki:ná:] 'car'
        [hanga:sú:] 'lightening'
        [sagalé:] 'sound'
LHH   [xe:súmá:] 'guest'
        [k'urtúmmí:] 'fish'
        [okkóté:] 'pan'

Owens concluded that only the final two syllables of a word can bear H tone. He stated that the tone of a word can be identified based on the tone of the penultimate syllable (1985: 29). He suggested that only the penultimate syllable needs to have its tone specified underlyingly and if it is H then the final syllable is also high and if it is low then the final syllable must be high. This is similar to pitch behavior in pitch-accent languages because the basic tone is crucially located on one particular syllable.

In his discussion of whether Harar Oromo is a pitch accent or a tone language, Owens concluded by referring to Harar Oromo as a pitch-accent language underlyingly because tone on only one syllable is crucial for determining the overall tone pattern of the word (35-37). Furthermore, he referred to Harar Oromo as a tone language on the surface because a word can have more than one H tone. His analysis of Harar Oromo as underlyingly a pitch-accent language was based on the culminativity feature of accentual languages, which indicates that in pitch-accent languages any given word has only one prominent syllable unlike tonal languages that could have more than one prominent tone bearing unit, TBU, (Hyman, 2009).

de Lacy (2002) provided a formal analysis of pitch in nouns in Harar Oromo. Citing examples from Owens (1985), given in (4), he referred to the suprasegmental element in Harar Oromo as stress. de Lacy suggested that stress in Harar Oromo is predictable. Stress falls on the penultimate syllable if the final vowel is not [a(:)] as in (4-a). Otherwise, stress falls on the ultimate when the final vowel is [a(:)] as in (4-b).

(4) Harar Oromo noun stress (de Lacy 2002, p. 125)

a.
   [áblé:] 'knife'   [kíltí:] 'kettle'
   [hantʃˤábí:] 'ice'   [kúrs í:] 'chair'
   [háré:] 'donkey'   [okó:té:] 'pan'

   [hulálé:] 'door even'   [xálé:] 'liver'

b.
   [adá:] 'forehead' [namá] 'person'
   [gurbá:] 'boy'   [intalá] 'girl'
   [hulá:] 'door'   [lolá] 'battle'
   [ibidá:] 'fire'   [maná] 'house'

In Harar Oromo, de Lacy indicated, high tone associates with stressed syllables and spreads rightward and thus is predictable entirely in examples such as those in (4-a). As a result, words with a stressed penultimate syllable, as in [áblé:] 'knife', have high tone on the penultimate and final syllables, but words with final stress as in (4-b) have high tone on the final syllable only.

To examine tone patterns in nouns in Harar dialect, this study focuses on tone in nouns in citation forms, i.e., nouns in isolation, or nouns in the accusative case. It also includes the nominative case as well as noun roots, implementing the autosegmental framework of Goldsmith (1976) to frame the discussion. It will be shown that nouns can have H tone on noun roots, roots without H tone surface with L tone, and nominative and accusative case suffixes are always marked with H tone in citation forms. This is attributed to lexical accent associated with noun roots and predictable tone with suffixes. This study, in addition, suggests an alternative classification of Harar Oromo noun prosody motivated by a property-driven prosodic system (Hyman, 2009) to account for lexical and predictable tone in the language.

Before examining tone, nouns in Harar Oromo need to be introduced. Nouns in Harar Oromo consist of roots that are followed by suffixes of various types. Important to this work are the nominative and accusative case suffixes. In addition, nouns are also differentiated by gender. The noun root in Harar Oromo carries the lexical meaning of the word. The root is a morphologically simple unit and has no case information and cannot be decomposed into further smaller units (Stroomer, 1987: 37). Griefenow-Mewis (2001: 41) defined the noun root in Oromo as a form with no case ending or affix, which is usually found in dictionaries. The language consultant of this study indicates that noun roots are not used in any context without case markers. Owens (1985: 16) included examples of noun roots; some examples are shown in (5).

(5) Harar Oromo noun roots (Owens 1985: 16)

> man 'house'
> add 'forehead'
> ade:r 'uncle'
> xe:sum 'guest'

Since there is no context in which the morphological representation of the noun root can be examined, the morphological representation of the noun root in Harar Oromo is controversial. Gragg (1976: 194) suggested that all roots in Oromo end in a consonant. This view is supported by the following sets in (6).

(6) Root morphological representation

> gabb 'fat'
> [gabbis] 'make fat'
> [gabbat] 'become fat'
> [gabbíná] 'fatness'

All words in (6) of different lexical categories have the same root, (gabb). Therefore, a given root can belong to a number of grammatical classes depending on what suffixes are added to it. In other words, as Owens (1985: 241) indicated, this suggests that nouns are stored in the lexicon as classless roots that do not have inherent grammatical classification. Additional examples are given in (7).

(7) Classless roots in Oromo

Root			
dǔf 'arrive'	[dǔf-á] 'arrival'	noun	[dǔf-a] 'he arrives' verb
lol 'fight'	[lol-á] 'fight' noun		[lol-a] 'he fights' verb
gat 'ignore'	[gat-u:] 'throw away' verb		[gát-ú:] 'ignored' adjective
da:r 'ash'	[da:r-á:] 'ash' noun		[dá:r-á:] 'naked' adjective

Examples in (7) show that a given root can have different lexical categories based on the type of suffix it takes, and tone is category formative in this regard as well.

Before discussing the problems with this analysis, it is worthwhile to introduce the topic of gender. Nouns in Oromo are divided into two gender categories, masculine and feminine. The gender of a noun can be determined through agreement with determiners, adjectives, and verbs. There are some phonological properties that differentiate gender as well. Nouns ending in a long vowel are feminine and those ending in a short vowel are masculine (Stroomer, 1995: 37).

Returning to the analysis that all lexical entities are roots unmarked for category and ending with a consonant, this analysis faces two problems. The first is related to lexical accent assignment in nouns. Noun roots in Harar Oromo can have lexical accent or can be accentless, as in (8).

(8) Noun roots accent

> xǎl 'liver'
> ʔǎd 'sun'
> ʔa:r 'smoke'
> xudr 'vegies'

As can be seen in (7), tones can be introduced through suffixes. If one concludes that there are no lexical accents on roots, this will be problematic as noun roots must clearly be differentiated for tones. If roots are not classified as nouns, there is no way of knowing what tone will be assigned on the root. For instance, if a root such as (dirr) does not have lexical accent, it is not possible to distinguish the noun root (dǐrr) 'simple' from the noun root (dirr) 'rib'. The root for 'simple' has H tone and 'rib' does not. In other words, lexical accent, which is implemented in the language to convey different grammatical classes and different meanings of the root, is lost if it is assumed that roots are inherently toneless.

While this problem might be addressed by allowing lexical accent on roots, another problem in this analysis is related to noun gender. As noted above, nouns ending in a long vowel are feminine while nouns ending in a short vowel are masculine in Oromo, as in (9).

(9) Masculine & feminine nouns in Harar Oromo

Feminine	Masculine
[ʔebélé:] 'rain'	[ʔarrabá] 'tongue'
[horóró:] 'walking stick'	[harmá] 'breast'

According to the view that all roots are consonant final and toneless, the nouns in (9) have the roots in (10).

(10) Classless roots in Harar Oromo

ʔebel 'rain'	ʔarrab 'tongue'
horor 'walking stick'	harm 'breast'

Under the assumption that category is not indicated for a root, the noun roots in (10) do not include gender information. However, there are roots that are identical in form, differing only in gender, as in (11), where every pair shares the same root, but no reference is made to gender information.

(11) Masculine and feminine noun roots

Masculine		Feminine	
[ga:f-á]	'horn'	[ga:f-í:]	'question'
[ʔe:l-á]	'oasis'	[ʔé:l-é:]	'well'
[dirr-á]	'rib'	[dírr-é:]	'simple'
[da:r-á]	'clothes'	[da:r-á:]	'ash'

Even if tone is included, the final gender is not predictable as in (ʔintal) 'girl' masculine and (ʔalhǎd) 'Sunday' masculine, (gar) 'stomach' feminine and (dǎm) 'branch' feminine. It thus appears that gender must be part of the nouns lexical entry in order to know which nouns are masculine and which are feminine. This is problematic if roots end in a consonant and carry no information about category.

In this paper a different treatment of the morphological representation of noun roots is proposed. Root is inherently a noun root and carries both tone and gender information, as in (12). In addition, roots can end in either a consonant, masculine nouns, or a vowel, feminine nouns.

(12) Root lexical and gender information in Harar Oromo

(a) Feminine

Noun	Root
[ga:f-í:] 'question'	ga:fi
[ʔé:l-é:] 'well'	ʔě:le
[dírr-é:] 'simple'	dǐrre
[da:r-á:] 'ash'	da:ra

(b) Masculine

Noun	Root
[ga:f-á] 'horn'	ga:f
[ʔe:l-á] 'oasis'	ʔe:l
[dirr-á] 'rib'	dirr
[da:r-á] 'clothes'	da:r

In this paper, the root is suggested to include lexical accent as well as gender information. Feminine gender is represented by the final short vowel in the root. In (12-a) all feminine noun roots end with a short vowel. It will be shown below that the final long vowel in feminine nouns stems in Harar Oromo is attributed to the noun root final vowel and the case marker that takes on the same vowel quality of root final vowel. Root final consonant indicates that the root is a masculine noun, as in (12-b). The lexical accent and gender information on the noun root distinguish nouns in column (a) from those in column (b). Therefore, noun roots (ʔě:le) 'well'

and (ʔe:l) 'oasis' can be differentiated based on H tone on the first and L tone on the second as well as by root shape. The root final vowel in (ʔě:le) indicates that this is a feminine noun while (ʔe:l) is a masculine noun. In a similar way, the noun root (da:ra) 'ash' is different from the noun root (da:r) 'clothes' based on gender information. This analysis of including lexical accent and gender information as part of the noun root in Harar Oromo, therefore, means that noun roots are stored in the lexicon with grammatical class information.

The noun root in Oromo can be inflected for case (Stroomer, 1987: 91), which results in a morphologically complex stem that contains the root and the suffix. Owens (1985: 18) defined the accusative case in Harar Oromo, which is the unmarked case, as the case that occurs on nouns in the citation forms which is used in the object paradigm. Nouns in accusative case in Oromo end in a short low vowel [a] or long vowels (Gragg, 1976: 194). Nouns in Oromo that are used in subject position take different inflectional morphemes for nominative case. The phonological realizations of the accusative and the nominative case markers in Harar Oromo are predictable on the basis of the phonology of the root, as in Table 1.

Table 1. Harar Oromo case suffixes

Root	Accusative case	Nominative case
C-	-á	-ní
man 'house'	[maná]	[manní]
mux 'tree'	[muxá]	[muxní]
tab 'game'	[tabá]	[tabní]
V-	+V́	+V́n
ʃe:na 'remorse'	[ʃe:ná:]	[ʃe:ná:n]
ba:ti 'month'	[ba:tí:]	[ba:tí:n]
dʒo:lle 'children'	[dʒo:llé:]	[dʒo:llé:n]
barǎttu 'student'	[baráttú:]	[baráttú:n]
ʔǎkko 'grandmother'	[ʔákkó:]	[ʔákkó:n]
CC-	-á	-í
rife:ns 'hair'	[rife:nsá]	[rife:nsí]
bine:ns 'animal'	[bine:nsá]	[bine:nsí]
ʔibidd 'fire'	[ʔibiddá]	[ʔibiddí]
fard 'horse'	[fardá]	[fardí]

Examples in Table 1, in (1) show that when a noun root ends in a consonant it takes -á suffix in accusative case and -ní in nominative. Similarly, a noun root ending in a consonant cluster or in a geminate, as in (c), takes -á in the accusative case but only -í in the nominative case, I assume that the /n/ of the nominative is not syllabified in these forms to avoid unacceptable syllable structure

in the language as in *fardní or *rife:nsní. All noun roots ending in a vowel take a vowel as an accusative suffix +V́, which takes on the quality of the final vowel of a root, resulting in a long vowel, as in (b). Noun roots that end in a vowel have +V́n as a nominative case suffix in which the vowel also takes on the quality of the final vowel of a root, as in (b). This is simplified in Table (2).

Table 2. Harar Oromo case suffixes summary

Root	Accusative suffixes	Nominative suffixes
C-	-á	-ní
CC-	-á	-í
V-	+V́	+V́n

As suggested by Table 2, there is just one accusative marker, i.e., a short vowel [a], and if the root ends in a vowel, then this vowel takes on the quality of this vowel and then it is lengthened, while there are different nominative case markers, -ní with consonant-final root, -V́n with vowel-final root and -í after consonant cluster. The nominative case markers might have the same form underlyingly; which is beyond the scope of this paper.

To summarize, roots in Oromo that end in VC, those that end in CV and those that end in CC all take the same suffix in the accusative case but different nominative case markers. The roots are assumed to have lexical accent and gender information.

II. METHODS

This section outlines the methodology employed in this study. It begins with information about the language consultant in 2.1 and in section 2.2 the stimuli are discussed. Section 2.3 presents recording equipment and data processing information.

2.1 Speaker

The language consultant is a male native speaker of Harar Oromo dialect. The dialect he speaks is the one spoken in Haramaya Town in Ethiopia, specifically. The participant is 55 years old, speaks the dialect natively and reports no speech or hearing impairment.

2.2 Stimuli

As previously mentioned, the focus of this paper is tone in noun roots in accusative and nominative

case in words with two and three syllables in citation forms. Disyllabic nouns in this analysis are nouns with two syllables in the accusative form, and trisyllabic nouns are those with three syllables in the accusative case; this distinction is not based on the number of syllables in the root. The data collection process in this study had two phases. The initial phase involved collecting disyllabic and trisyllabic nouns in accusative case. Two syllable and three syllable nouns were chosen because they are the most common shapes of nouns in Oromo (Gamta, 1999: 179-181). These nouns were elicited with the language consultant with the aid of Owens (1985), which provided a glossary of Harar Oromo words in accusative case. Then, the nominative case of these nouns was elicited. Lastly, noun roots were elicited. Note that noun roots do not occur on their own, but the consultant provided them without any difficulty. As was discussed in the introduction, noun roots in Harar Oromo end in a consonant or a vowel. In this study, all noun roots were recorded with a consonant finally, as exemplified in Table 3. This form focuses on the locus of tonal contrast in noun roots since case marked nouns always have H tone on the final syllable.

Table 3. Noun roots elicitation

Roots	Recorded form	Nouns in Accusative case
a.	b.	c.
xǒfo 'trousers'	xǒf	[xóf-ó:]
mǎlla 'cheek'	mǎll	[máll-á:]
bǎ:lli 'feather'	bǎ:ll	[bá:ll-í:]
ʔadǎre 'town name'	ʔadǎr	[ʔadár-é:]
ʃimbǐrro 'bird'	ʃimbǐrr	[ʃimbírr-ó:]

Noun roots were recorded without the final vowel, as in (b) in Table 3, because the language consultant was more comfortable this way. In addition, as discussed further below, the H tone on noun roots is always found on the penultimate syllable of the noun stem after suffixation, as indicated by examples in (c). Therefore, analyzing the root, the locus of contrastive pitch, in this way seems reasonable since it does not influence tone or the syllable shape of the stem. More than two hundred nouns were collected in this phase.

In the second phase, one hundred nouns were selected to represent the target syllable number. In particular, these nouns are noun stems inflected for accusative and nominative case in disyllabic and trisyllabic nouns. In addition, noun roots were examined to see if roots bear any tone and if tone

is influenced by morphological changes induced by case. A sample of the stimuli is given in Table 4, full stimuli are given in Appendix A.

Table 4. Sample of stimuli

1. Disyllabic noun stems

Root	Accusative case	Nominative case	Gender
såre 'dog'	[saré:]	[saré:n]	Feminine
dåsa 'shack'	[dásá:]	[dásá:n]	Feminine
ʔůra 'hole'	[ʔúrá:]	[ʔúrá:n]	Feminine
wånna 'thing'	[wánná:]	[wánná:n]	Feminine
bar 'year'	[bará]	[barrí]	Masculine
mux 'tree'	[muxá]	[muxní]	Masculine
tab 'game'	[tabá]	[tabní]	Masculine
ga:f 'horn'	[ga:fá]	[ga:fní]	Masculine

2. Trisyllabic noun stems

Root	Accusative case	Nominative case	Gender
bartʃům 'stool'	[bartʃúmá]	[bartʃúmmí]	Masculine
fokkĭn 'ugliness'	[fokkíná]	[fokkínní]	Masculine
guddĭn 'bigness'	[guddíná]	[guddíní]	Masculine
ʔalhåd 'Sunday'	[ʔalhádá]	[ʔalhánní]	Masculine
bine:ns 'animal'	[bine:nsá]	[bine:nsí]	Masculine
balʔin 'width'	[balʔiná]	[balʔinní]	Masculine
k'allu:n 'fish'	[k'allú:ná]	[k'allú:nní]	Masculine

2.3 Equipment and procedure

Tone in this study is investigated both impressionistically and acoustically. To explore tone on an impressionistic basis, the language consultant was asked to read the stimuli and to give his opinion regarding the type of tone on each word. The second step of examining tone consists of an acoustic analysis of data.

Data collection took place at two locations, a soundproof booth as well as the residence of the language consultant. In both locations the language participant was asked to speak into a *AT831b* lavalier cardioid condenser microphone via an XLR cable connected to a *SOUND DEVICES USBPre2* or a *Marantz PMD660 digital recorder*, keeping a constant distance between the speaker's mouth and the microphone. The words were randomized prior to the recording sessions. The participant was requested to say the words at a normal speech rate. Each word was repeated three times by the participant. A total of 900 tokens were obtained, i.e., 3 noun forms (1 root and 2 stems) X 3 repetitions X 100 nouns. The recording sessions of the participant were digitized into a WAVE file at 44 kHz sampling rate and 16-bit quantization for further analysis. Praat (Boersma & Weenink, 2019) was used to generate pitch contours of the words under examination. Pitch was set to range from 75 Hz to 300 Hz, which is optimal for detecting pitch contours for male speakers (Boersma & Weenink, 2019). Figure 1 shows an example of pitch traces of the token [ʃimbírró:] 'bird'.
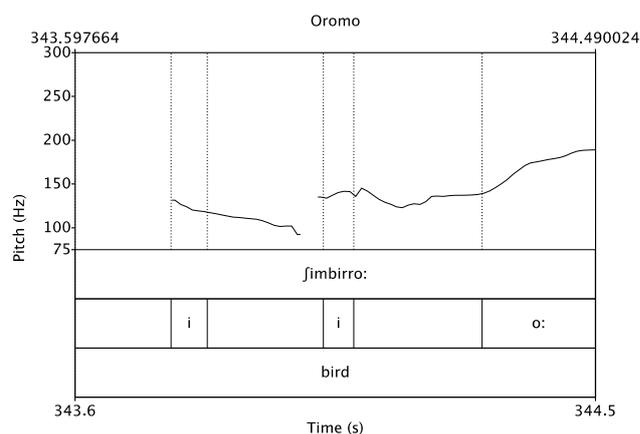
Figure 1. Sample pitch traces of the token [ʃimbírró:] 'bird'

In some nouns, short vowels in final syllable position preceded by a voiceless consonant were devoiced, making it difficult to generate pitch contours using Praat, as illustrated in Figure 2.
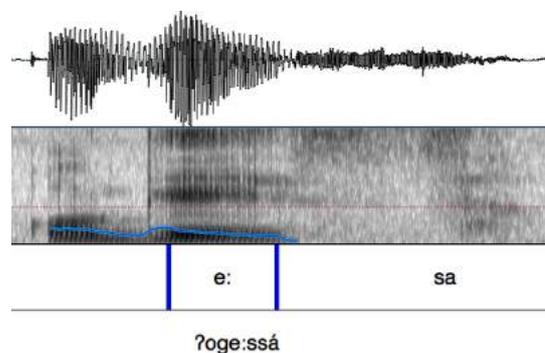
Figure 2. Pitch tracks and wave form of [ʔoge:ssá] 'expert'

Pitch contours that show clear pitch tracks are given in the paper, while those that do not show clear contours the judgment of the language consultant was the only feasible measurement of tone.

III. RESULT AND DISCUSSION

In this section tone patterns of the stimuli are discussed. The discussion starts with noun stems with two syllables and then moves to noun stems with three syllables as well as noun roots. This is followed by a phonological analysis to account for tone realizations in 3.2.

3.1 Surface tone realizations

Results of the acoustic experiment are discussed in terms of syllable number with no consideration to final vowel length because vowel length does not play a role in tone patterns in this language as shown below.

3.1.1 Disyllabic noun stems

Tone patterns of disyllabic noun stems and noun roots are given in Table 4 with selected examples, with Figures 3-10. To make it easier to follow, under each figure the tone pattern is indicated.

Table 4. Tone patterns in disyllabic noun stems

1. HH surface tone pattern

Root	Accusative case	Nominative case	Gender
k'ǒri 'plate'	[k'órí:]	[k'órí:n]	Feminine
ʔǎdu 'sun'	[ʔádú:]	[ʔádú:n]	Feminine
xǎle 'liver'	[xálé:]	[xálé:n]	Feminine
ʔěːge 'tail'	[ʔé:gé:]	[ʔé:gé:n]	Feminine
ʔěːle 'pot'	[ʔé:lé:]	[ʔé:lé:n]	Feminine
k'ǒːka 'isolated camel'	[k'ó:k'á:]	[k'ó:k'á:n]	Feminine
ʔǎkko 'grandmother'	[ʔákkó:]	[ʔákkó:n]	Feminine
gǎːnge 'mule'	[gá:ngé:]	[gá:ngé:n]	Feminine

2. LH surface tone pattern

Root	Accusative case	Nominative case	Gender
man 'house'	[maná]	[manní]	Masculine
bar 'year'	[bará]	[barrí]	Masculine
mirg 'right'	[mirgá]	[mirgí]	Masculine
ga:f 'horn'	[ga:fá]	[ga:fní]	Masculine
xara 'road'	[xará:]	[xará:n]	Feminine
ʃe:na 'remorse'	[ʃe:ná:]	[ʃe:ná:n]	Feminine
ba:ti 'month'	[ba:tí:]	[ba:tí:n]	Feminine
dʒo:lle 'children'	[dʒo:llé:]	[dʒo:llé:n]	Feminine

As shown in Table 4, all suffixes bear H tone regardless of the tone on the noun root. In all HH examples in Table 4 noun roots are disyllabic with accented root. In LH tone patterns, noun roots are accentless (L tone) and case suffixes bear H tone and thus the noun stem has LH tone pattern. No monosyllabic noun roots with H tone are found in Harar Oromo and, therefore, all monosyllabic noun roots with short vowel such as (man) 'house' are accentless and surface with L tone.
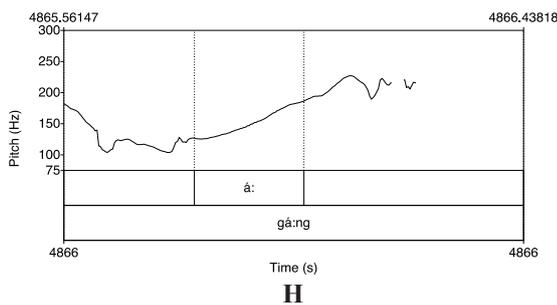
Figure 3. Pitch track of (gǎːnge) 'mule' root
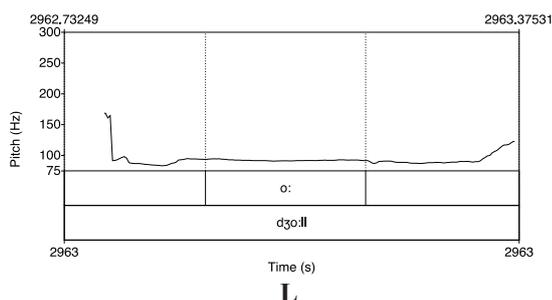
Figure 4. Pitch track of (dʒo:lle) 'children' root

In Figure 3, the noun root (gǎːnge) 'mule' bears H tone as can be seen in the increase of the pitch on vowel [ǎ:]. Figure 4, on the other hand, shows how the pitch on the noun root (dʒo:lle) 'children' does not show such increase. The two noun roots, as a result, surface with different tones. In (gǎːnge) 'mule' the noun root has H tone, while (dʒo:lle) 'children' surfaces with L tone. Similar patterns are found in Figures 5 & 6.
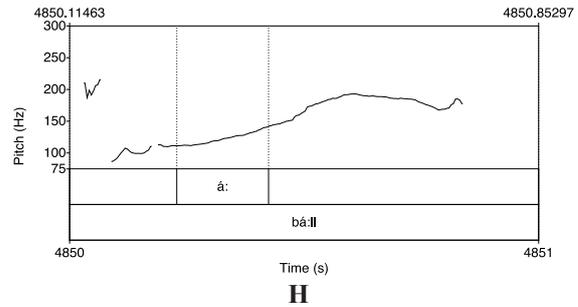
Figure 5. Pitch track of (bǎːlli) 'feather' root
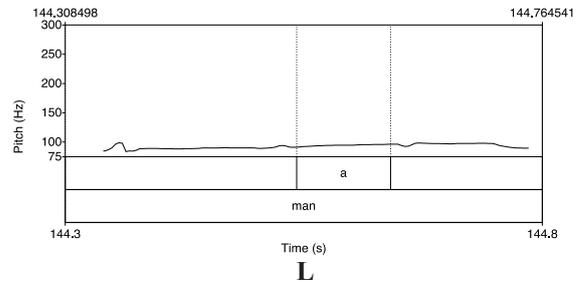
Figure 6. Pitch track of (man) 'house' root

In Figure 5, the noun root (bǎːlli) 'feather' shows that the pitch track increases on vowel [ǎ:] which is realized as H tone on the surface. In Figure 6, monosyllabic noun root (man) 'house' has a L tone as the pitch does not show any noticeable increase.

In all examples in Table 4, noun stems end in a H tone. This tone is found in accusative and nominative case markers. Therefore, accented noun roots, realized with H tone, will have HH tone pattern and noun roots with L tone have LH tone pattern after suffixation, as given in Figures 7-10.

The noun root (xǎle) 'liver' is accented and bears H tone. When this noun root is suffixed with the accusative case marker, as in Figure 7, it has HH tone pattern. However, when a noun root with L tone, as (man) 'house', is suffixed it will have LH tone pattern, as in Figure 8.

Similarly, when a nominative case marker is attached, the noun stem will always have H tone on the final syllable. In Figure 9, the noun root (bǎːlli) 'feather', which has H tone, is suffixed with -ín
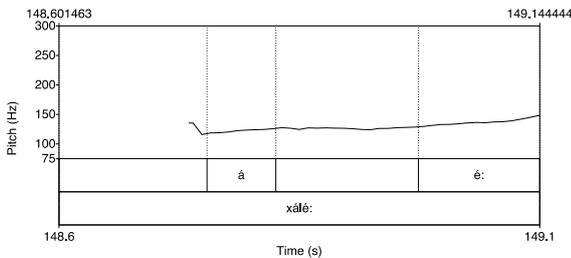
Figure 7. Pitch track of [xálé:] 'liver' accusative
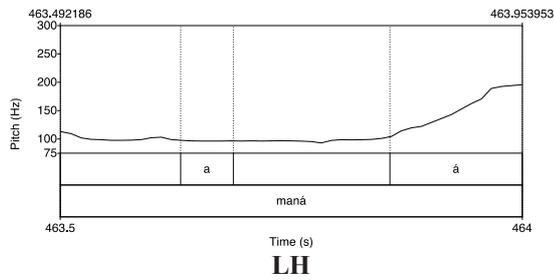
Figure 8. Pitch track of [maná] 'house' root

for nominative case and therefore it has HH tone pattern in the noun stem [bá:llí:n] 'feather'. In Figure 10, the tone pattern of [ga:rrí] 'mountain' is LH because the noun root is accentless and surfaces with L tone (ga:r) and it receives H tone on the final syllable of the noun stem due to suffixation which makes the tone pattern LH in [ga:rrí] 'mountain'.

To sum up, in disyllabic noun stems, noun roots with H tone will have HH tone pattern after suffixation. Noun roots with L tone will surface with LH tone when marked with case suffixes, which always have H tone. This shows that tone is predictable on suffixes, always H, but it is unpredictable on noun roots in which it can be either H or L.
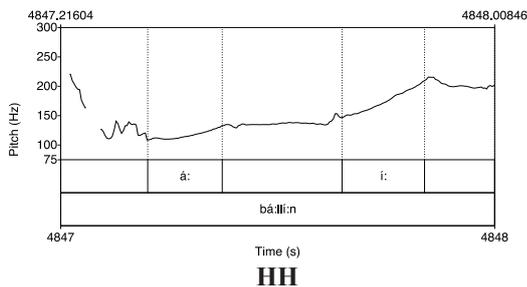
Figure 9. [bá:llí:n] 'feather' nominative
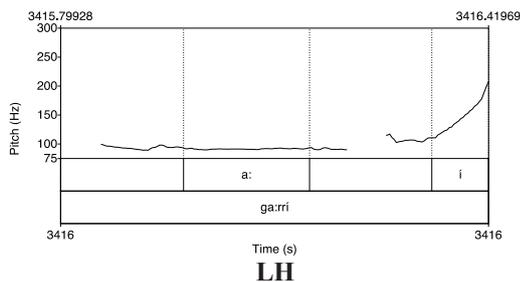
Figure 10. [ga:rrí] 'mountain' nominative

3.1.2 Trisyllabic noun stems

Tone patterns of trisyllabic noun stems and noun roots are given in Table 5. Pitch contours are given in Figures 11-18.

Table 5. Tone patterns in trisyllabic nouns

1. LHH surface tone pattern

Root	Accusative case	Nominative case	Gender
ɗe:rěn 'tallness'	[ɗe:réná]	[ɗe:rénní]	Masculine
galgǎl 'day hours'	[galgálá]	[galgállí]	Masculine
sagǎle 'sound'	[sagálé:]	[sagálé:n]	Feminine
ʔindʒĭre 'lice'	[ʔindʒíré:]	[ʔindʒíré:n]	Feminine
wallĭftu 'singer'	[wallíftú:]	[wallíftú:n]	Feminine
ʔorŏmo 'Oromo people'	[ʔorómó:]	[ʔorómó:n]	Feminine

2. LLH surface tone pattern

Root	Accusative case	Nominative case	Gender
ɗi:tʃtʃis 'dance'	[ɗi:tʃtʃisá]	[ɗi:tʃtʃifní]	Masculine
ʔibidd 'fire'	[ʔibiddá]	[ʔibiddí]	Masculine
ʔokkote 'cooking pot'	[ʔokkoté:]	[ʔokkoté:n]	Feminine
maga:la 'market'	[maga:lá:]	[maga:lá:n]	Feminine
ʔutuba 'supporting pillar'	[ʔutubá:]	[ʔutubá:n]	Feminine

As in disyllabic noun stems, trisyllabic noun stems always surface with H tone on the last syllable. Table 5 shows that noun roots can be accented as in (1) or accentless as in (2). Accented noun roots have LHH tone pattern after suffixation. LLH tone pattern, on the other hand, results from accentless noun roots suffixed with case markers.
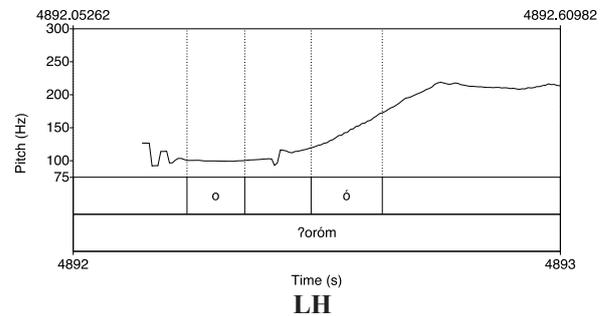
Figure 11. (ʔorŏmo) 'Oromo people' root
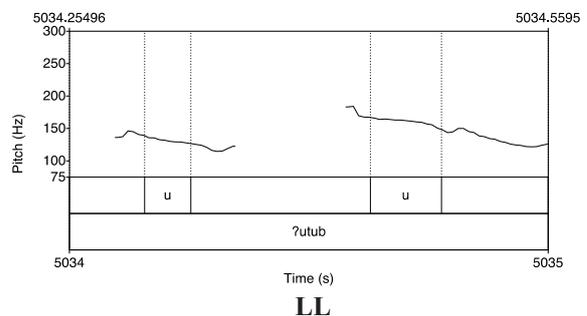
Figure 12. (ʔutuba) 'supporting pillar' root

Figures 11 & 12 show noun roots of (ʔorŏmo) 'Oromo people' and (ʔutuba) 'supporting pillar', respectively. As can be seen in Figure 11, (ʔorŏmo) has a H tone indicated by the increase of pitch over vowel [ŏ], while in Figure 12 the pitch on vowel [u] in (ʔut**u**ba) does not have such increase.
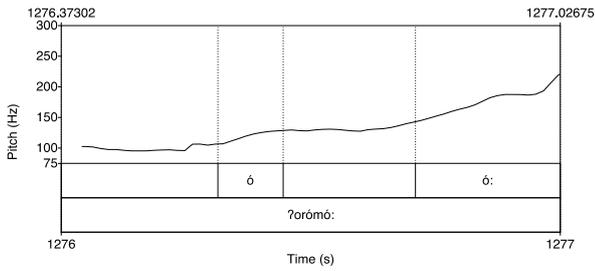
Figure 13. [ʔorómó:] 'Oromo people' accusative

Figure 14. [ʔutubá:] 'supporting pillar' accusative

After suffixation with accusative case, the stems of [ʔorómó:] 'Oromo people' and [ʔutubá:] 'supporting pillar' surface with final H tone, as in Figures 13 & 14. The overall tone pattern in these two noun stems is LHH in [ʔorómó:] and LLH in [ʔutubá:]. The same pattern is found in nominative case in [ʔorómó:n] and [ʔutubá:n].

Figure 15. (galgǎl) 'day hours' root
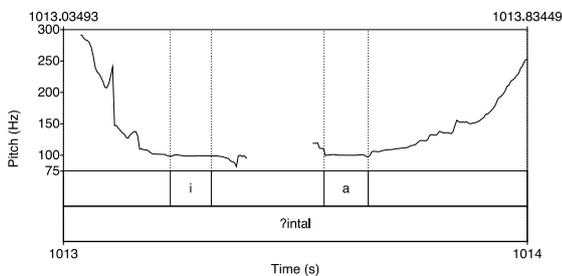
Figure 16. (ʔintal) 'girl' root

In a similar pattern, noun roots (galgǎl) 'day hours' and (ʔintal) 'girl' differ in lexical accent type. The former is accented and has a H tone while the latter is accentless and has L tone, as in Figures 15 & 16.

Figure 17. [galgálá] 'day hours' accusative

Figure 18. [ʔintalá] 'girl' accusative

Noun stems [galgálá] 'day hours' and [ʔintalá] 'girl' have LHH and LLH tone patterns, respectively. These tone patterns are the result of suffixes, which bear H tone, and noun roots tones that are H in [galgálá] and L in [ʔintalá].

In conclusion, tone in noun roots and suffixes is independent. This is seen when noun roots have L tone while suffixes always have H tone. Monosyllabic noun roots always have L tone. In accented noun roots, the overall tone pattern is HH in disyllabic noun stems and LHH in trisyllabic noun stems after suffixation. Accentless noun roots have LH or LLH tone pattern after suffixation. These tone patterns are accounted for in terms of phonological rules in the following section.

3.2 Phonological analysis

In this section the surface realizations of tone patterns in section 3.1 are accounted for in terms of phonological rules. The analysis begins with lexical accent on noun roots in section 3.2.1, then phonological rules of tone in case suffixes are presented in section 3.2.2.

3.2.1 Noun roots lexical accent

As indicated in the above discussion, Harar Oromo nouns consist of a root and an inflectional suffix to mark accusative or nominative case. Noun roots can be lexically accented as in (galgǎl) 'day hours'

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and (k'urtŭmmi) 'frog larva' or accentless as in (balʔin) 'width' and (ʔintal) 'girl'. Furthermore, monosyllabic noun roots, such as (mux) 'tree' and (tab) 'game' are accentless. Consequently, noun stems in Harar Oromo that are CV.CV do not have H tone on the noun root (first syllable).

This suggests that there can be a lexical accent in the noun root as in (13).

(13) Root lexical accent assignment

    (a). Monosyllabic noun roots

$$\sigma \longrightarrow \underset{L}{\overset{\sigma}{|}}$$

    (b). C- final noun roots

$$\sigma\overset{*}{\sigma} \longrightarrow \underset{H}{\overset{\sigma\acute{\sigma}}{|}}$$

    (c). V- final noun roots

$$\sigma\overset{*}{\sigma}\sigma \longrightarrow \underset{H}{\overset{\sigma\acute{\sigma}\sigma}{|}}$$
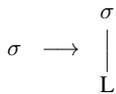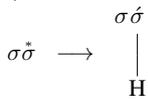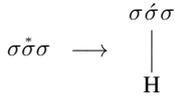
In (13-a) the noun root is accented, marked with an asterisk, and is realized as H tone, while in (13-b) it is accentless and surfaces with L tone. Therefore, it is assumed that tone on the noun root is lexical and thus unpredictable; it is realized as H tone when accented or surface as L tone when unaccented.

Lexical accent, when there is one, is carried by the final syllable if the root is C final or penultimate syllable if the root is V final while monosyllabic roots are accentless, as in (14).

(14) Root lexical accent position

    (a). Monosyllabic noun roots

$$\sigma \longrightarrow \underset{L}{\overset{\sigma}{|}}$$

    (b). C- final noun roots

$$\sigma\overset{*}{\sigma} \longrightarrow \underset{H}{\overset{\sigma\acute{\sigma}}{|}}$$

    (c). V- final noun roots

$$\sigma\overset{*}{\sigma}\sigma \longrightarrow \underset{H}{\overset{\sigma\acute{\sigma}\sigma}{|}}$$
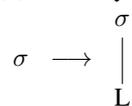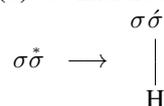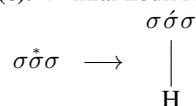
In (14-a) monosyllabic noun roots are always accentless and surface with L tone. In (14-b) the final syllable is accented in C final noun roots while

in (14-c) the penultimate syllable is accented in V final noun roots. The accented noun root is realized with H tone.

In all nouns, the lexical accent, if there is one, will be on the penultimate syllable of noun stems after suffixation, as in (15).

(15) Lexical accent on penultimate syllable

    (a). Monosyllabic noun roots

    man ⟶ [maná] "house" accusative

    tab   ⟶ [tabá] "game" accusative

    mux ⟶ [muxá] "tree" accusative

    (b) C- final noun roots

    ʔarăb ⟶ [ʔarábá] "Arab" accusative

    ʔarĕːd ⟶ [ʔaréːdá] "chin" accusative

    badiːns ⟶ [badiːnsá] "badness" accusative

    (c). V- final noun roots

    ʔadăre   ⟶ [ʔadáréː] "town name" accusative

    ʃimbĭrro ⟶ [ʃimbírróː] "bird" accusative

    ʃeːna   ⟶   [ʃeːná] "remorse" accusative

    săre   ⟶ [sáréː] "dog" accusative

In (15-a), monosyllabic noun roots always surface with L tone. It is a feature of Oromo disyllabic nouns, with CVC-V shape, to have L tone, such as [maná] 'house' and [muxá] 'tree'. In (15-b), C final noun roots can have lexical accent on the final syllable and after suffixation the lexical accent is realized on the penultimate syllable as in [ʔaréːdá] 'chin'. Noun roots that end in vowel, as in (15-c), can have a lexical accent on the penultimate syllable, which is also realized on the penultimate syllable of the stem as in [ʔadáréː] 'town name'. Unaccented noun roots such as (ʃeːna) 'remorse' surface with L tone as in [ʃeːnáː].

3.2.2 Tone on suffixes

Noun roots in Harar Oromo, as discussed above, are suffixed to mark accusative and nominative cases. The resulting noun stems always have H tone on the suffix, as in (16).

(16) Examples of case suffixes

	Root	Accusative	Nominative	Gender
a.	ʔilĭlli 'flower'	[ʔilíllí:]	[ʔilíllí:n]	Feminine
	falʔǎ:n 'spoon'	[falʔá:ná]	[falʔá:nní]	Masculine
	barsĭ:sa 'teacher'	[barsí:sá:]	[barsí:sá:n]	Feminine
b.	mux 'tree'	[muxá]	[muxní]	Masculine
	mirg 'right'	[mirgá]	[mirgí]	Masculine
	xarfaffu 'storm'	[xarfaffú:]	[xarfaffú:n]	Feminine

In (16) all suffixes bear H tone. The tone on the suffix is independent from the tone on the root. Nouns in (22-a) have H tone on the root and a H tone on the case suffixes. In (22-b), on the other hand, noun roots are accentless, while case suffixes bear H tone.

Case suffixes in Harar Oromo have different tone in other contexts, as in equational sentences. Equational structure is a non-verbal sentence with only a noun phrase, as found in Arabic (Al-Nassir, 1993), as in (17).

(17) Arabic Equational sentences

haðihi	tʃadʒaratun	haða	dʒabalun
this	tree	this	mountain
'This *is* a tree'		'This *is* a mountain'	

Oromo has a similar structure (Owens, 1985: 79), as in (17) with pitch tracks given in Figures 19-22.

(17) Harar Oromo equational examples

	Root	Tone in citation forms	Tone in equational sentences
		HH	**H**L
(a)	sǎre 'dog' femin.	[sáré:]	[tun sáre: ɗa] this dog 'This *is* dog'
(b)	man 'house' masc.	LH [maná]	HL [kun mána] this house 'This *is* house'
(c)	ʔisnĭ:n 'Monday' masc.	L**H**H [ʔisní:ná]	L**H**L [kun ʔisní:na] this Monday 'This *is* Monday'
(d)	k'ille:ns 'wind' masc.	LLH [k'ille:nsá]	HLL [kun k'ílle:nsa] this wind 'This *is* wind'

[sáré:] 'dog' 'accusative'

[tun sáre: ɗa] 'This *is* dog'
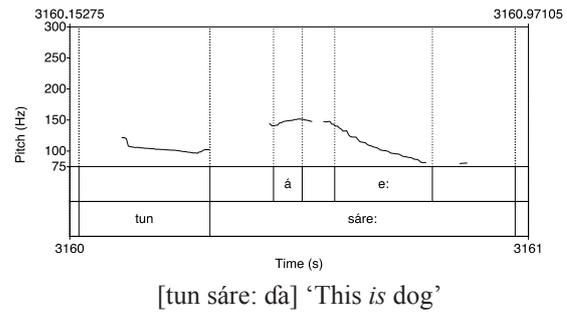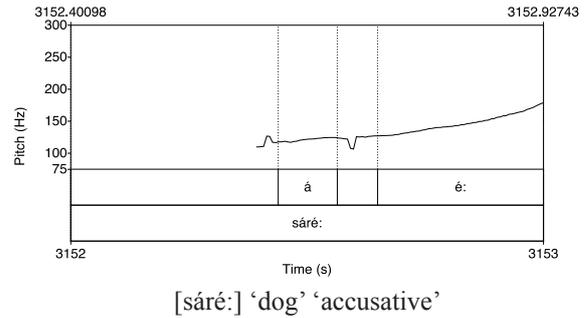
Figure 19. [sáré:] 'dog' in isolation and equational sentence

[ʔisní:ná] 'Monday' 'accusative'

[kun ʔisní:na] 'This *is* Monday'
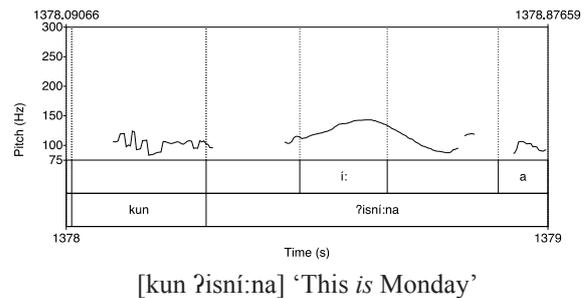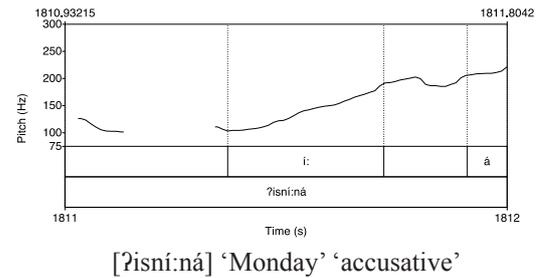
Figure 20. [ʔisní:ná] 'Monday' in isolation and equational sentence

Examples in (17) show that in any noun stem in Harar Oromo that is in an equational sentence H tone is realized on either the penultimate or initial syllable. A H tone on the penultimate syllable in a noun in a citation form does not change in equational sentences, as in (17 a & c). As in Figures 19 & 20, nouns [sáré:] 'dog' and [ʔisní:ná] 'Monday' have H tone on penultimate syllable in citation forms, i.e. HH and LHH tone pattern, which means that

the noun root is accented in both words. These two nouns have H tone on the penultimate syllable in equational sentences while there is no H tone on final syllable.

[maná] 'house' 'accusative'

[kun mána] 'This *is* house'

Figure 21. [maná] 'house' in isolation and equational sentence

[k'ille:nsá] 'wind'

[kun k'ílle:nsa] 'This *is* wind'

Figure 22. [k'ille:nsá] 'wind' in isolation and equational sentence

However, if a noun in citation form does not have H tone on the penultimate syllable, as in [maná] 'house' and [k'ille:nsá] 'wind', then in equational sentences H tone is found on initial syllable as in Figures 21 and 22 and sentences (17 b & d).

In summary, in equational sentences, nouns do not have a final H tone on case suffixes. Lexical accent on nouns is maintained on the penultimate syllable in equational sentences. However, if the noun does not have H tone on the penultimate syllable a H tone is found on the first syllable. In other words, nouns in equational sentences must have one H tone on the surface. If the noun has a lexical accent, then it takes priority but if the noun does not have a lexical accent, then a H tone is realized on the initial syllable.

It seems that at least the accusative suffix does not inherently have H tone. The final H tone on suffixes is more like a floating H tone related to noun case. In citation forms, this floating H tone associates with suffixes in accusative and nominative case, as in (18).

(18) Floating H tone

(a) Surface HH tone pattern
(dằrre) "weak"

/dằrre+V+´/ ⟶ [dárré:] accusative
                      | |
                      H   H

/dằrre+Vn+´/ ⟶ [dárré:n] nominative
                       | |
                       H   H

(jǎro) "time"

/jǎro+V+´/ ⟶ [járó:] accusative
                    | |
                    H   H

/jǎro+Vn+´/ ⟶ [járó:n] nominative
                     | |
                     H   H

In (18-a) the noun roots have lexical accent. After suffixation, the floating H tone is realized on the case suffixes. The overall tone pattern of the noun, as a result, is HH on the surface.

(b) Surface LH tone pattern
(man) "house"

/man+V+´/ ⟶ [maná] accusative
                  | |
                  L H

/man+ni+´/ ⟶ [manní] nominative
                   | |
                   L H

In (18-b) the noun root is monosyllabic and thus does not have lexical accent. The final H tone in the tone pattern of LH is the floating H tone, which is found on the case suffix.

(c) Surface LHH tone pattern

(hantʃʼǎbbi) "ice"

/hantʃʼǎbbi+V+ˊ/ ⟶ [hantʃʼ á bbíː] accusative

            | | |
            L H H

/hantʃʼǎbbi+Vn+ˊ/ ⟶ [hantʃʼ á bbíːn] nominative

            | | |
            L H H

(hafǔːr) "breath"

/hafǔːr+V+ˊ/ ⟶ [hafúːrá] accusative

            | | |
            L H H

/hafǔːr+ni+ˊ/ ⟶ [hafúːrrí] nominative

            | | |
            L H H

In (18-c & d) the overall tone patterns are LHH and LLH, respectively. The noun roots in (18-c) are accented and therefore have H tone and after suffixation the floating H tone is realized on the case suffixes and the tone pattern, therefore, is LHH. In (18-d) the noun roots are accentless and surface with L tone and the final H tone in LLH is attributed to the floating H tone.

In equational structure the floating H tone associates left to initial syllable of the noun if possible. As a result, case suffixes surface with L tone and a H tone is realized on the initial syllable, as in (19).

(19) Floating H tone in equational sentences

Root	Accusative	Equational sentences		
morm	[mormá]	/ˊ+ morm+V/ ⟶	[mórma]	[kun mórma] "This is neck"
ʔaːr	[ʔaːrá]	/ˊ+ ʔaːr+V/ ⟶	[ʔáːra]	[kun ʔáːra] "This is smoke"
ʔadaːd	[ʔadaːdá]	/ˊ+ ʔadaːd+V/ ⟶	[ʔáːdaːda]	[kun ʔáːdaːda] "This is aunt"
hirjja	[hirjjáː]	/ˊ+ hirjja+V/ ⟶	[hírjjaː]	[tun hírjjaː] "This is age friend"
hangaːsu	[hangaːsúː]	/ˊ+ hangaːsu+V/ ⟶	[hángaːsuː]	[tun hángaːsuː] "This is lightening"

In (19) noun roots are accentless and surface with L tone. In citation forms, the floating H tone is realized on the case suffix as noted above. In equational structure, however, this floating H tone is realized on the first syllable of the noun. Therefore, a noun such as [mormá] 'neck' acc., which has an accentless tone root (morm) 'neck',

has a H tone on the accusative case marker [á] due to the floating H tone. In equational sentences, the floating H tone is realized on the first syllable as in [kun mórma] 'This *is* neck'. Similarly, the noun root (hangaːsu) 'lightening' does not have a lexical accent on the root and thus surfaces with L tone. After suffixation in accusative case the floating H tone is realized on the case suffix as in [hangaːsúː] 'lightening'. In equational sentences, the floating H tone is found word initially as in [tun hánga:su:] 'This *is* lightening'.

Accented noun roots in equational sentences maintain the lexical accent, as in (20).

(20) Floating H tone in equational sentences with accented noun roots

Root	Accusative	Equational sentences		
budě:n	[budéːná]	/ˊ+ budě:n+V/ ⟶	[budéːna]	[kun budéːna] "This is bread"
hamǎrti	[hamártíː]	/ˊ+ hamǎrti+V/ ⟶	[hamárti:]	[kun hamárti:] "This is finger ring"
ʔarǎb	[ʔarábá]	/ˊ+ ʔarǎb+V/ ⟶	[ʔarába]	[kun ʔarába] "This is Arab"
wallíftu	[wallíftúː]	/ˊ+ wallíftu+V/ ⟶	[wallíftu:]	[tun wallíftu:] "This is singer"

In (20) noun roots are accented, as in (ʔarǎb) 'Arab' and (hamǎrti) 'finger ring', and therefore have H tone on the penultimate syllable of the noun stems. In addition to the lexical accent, in citation forms these nouns bear H tone on case suffixes from the floating H tone, as in [ʔarábá] 'Arab' and [hamártíː] 'finger ring'. In equational sentences it is expected that the floating H tone would be realized on the first syllable of these nouns as in accentless noun roots in (19). However, noun stems that have H tone on the penultimate syllable do not allow the floating tone to be realized on the first syllable. Therefore, noun roots which have a lexical accent, such as (budě:n) 'bread', are realized with only a H tone on the penultimate syllable in equational sentences, as in [kun budéːna] 'This *is* bread'. In (20) the lexical accent on the penultimate syllable takes priority over the floating H tone and only the lexical accent is realized.

Lloret (1988: 98) suggested that the L tone on the last element in the equational structure is a copula, which is only realized on the short vowel [a] in the Macca dialect of Oromo, see also (Youssouf, 2019). Therefore, if the sentence ends with a noun that ends with the short vowel [a] the tone is lowered on the final syllable of that noun and in nouns that end in a long vowel the particle [ɗa] is inserted to bear

this L tone. While there might be some dialectal differences, in Harar Oromo this does not seem to be the case. In equational structure in Harar Oromo nouns that end in a long vowel, as in [k'ut'usú:] 'younger brother' and [maga:lá:] 'market', are followed by the particle [ɗa] but they still undergo the same process in which suffixes do not bear H tone and the initial syllable bears H tone if the penultimate is accentless, as in (21).

(21) Nouns ending in a long vowel in equational structure

Root	Accusative case	Equational sentences
k'ut'usu 'younger brother'	[k'ut'usú:]	[tun k'út'usu: ɗa] this younger brother 'This *is* younger brother'
maga:la 'market'	[maga:lá:]	[tun mága:la: ɗa] this market 'This *is* market'

If the L tone functions as a copula and is realized on the short vowel [a], then it is expected that the nouns in (21) maintain their tone pattern as in citation forms, which is not the case. It seems that nouns in equational sentences in Hara Oromo are marked with H tone on initial syllable and H tone on the penultimate syllable takes priority if it is accented.

To sum up, noun stems in Harar Oromo can bear lexical accent tone on the penultimate syllable and always bear H tone on case suffixes in citation forms. Any syllable that does not bear lexical accent underlyingly surfaces with L tone. Specifically, noun roots can be accented which is realized as H tone or accentless which surface as L tone, while suffixes always bear H tone in citation forms. As indicated above, there is a floating H tone that is related to noun case. This floating H tone is realized on case markers in nouns in the accusative and nominative cases. Therefore, in citation forms if the noun root is accented then HH or LHH tone patterns surface. On the other hand, LH and LLH tone patterns surface if the noun root does not have a lexical accent. In equational sentences, this floating H tone is realized on the first syllable of the noun if the penultimate syllable is not accented, i.e., does not have H tone. In nouns that have accented roots, i.e., H tone on the penultimate syllable in noun stems, this floating H tone is not realized on the first syllable as the accented penultimate syllable takes priority. This suggests that suffixes do not inherently have H tone, not present lexically, but get H tone from this floating tone. This shows that while tone on the noun root is unpredictable, i.e., lexically assigned, tone on suffixes is always H in citation forms and therefore assumed to be predictable through the placement of the H morpheme.

IV. Classifying Harar Oromo

Harar Oromo is suggested to have a pitch-accent system in Owens (1985: 35). This was attributed to a main feature of pitch accent languages in which the overall tone pattern of a word can be predicted based on the tone specification of a single syllable. Based on this feature of pitch accent languages, Owens concluded that Harar Oromo has the characteristics of pitch accent languages. He indicated that Harar Oromo has this property where tone on the penultimate syllable in nouns can influence the overall tone of the word. If the penultimate has H tone, then final syllable gets H tone by tone spread to the right in nouns, as in (22).

(22) HH tone patterns in nouns (Owens, 1985)

[ádú:] 'sun'

[xófó:] 'trousers'

[barnó:tá] 'education'

[falʔá:ná] 'spoon'

As discussed in section 3, tone on final syllables of non-equational sentences is always H on the surface regardless of the tone type on the noun root. This is supported by the existence of nouns that bear H tone word finally despite L tone on the root, as in (23), which show that tone spread is not the source of H tone on the final syllable.

(23) LH and LLH tone pattern in Harar Oromo

Root	Accusative case
sodda	[soddá:] 'in-law'
ʔabdi	[ʔabdí:] 'hope'
maki:na	[maki:ná:] 'car'
ʔada:da	[ʔada:dá:] 'aunt'

Nevertheless, Oromo can be classified as a pitch accent language phonologically since a morpheme has at most one H tone underlyingly, marked in this paper as (*).

A point that is problematic in classifying Harar Oromo as a pitch accent language on the surface is culminativity property. The main phonological feature that distinguishes stress languages from tone languages is culminativity (Hyman, 1977). Culminativity means that each prosodic word has only one prominent syllable, i.e., one primary stress. In languages that have more than one stressed syllable per word such as Dutch and Romanian, only one syllable has primary stress. Tone languages, on the other hand, can have more than one high tone in the word.

Languages that share some qualities of both tone and stress languages are called pitch accent languages. Stress languages and pitch accent languages are usually grouped under accent languages (Hyman, 1977). Pitch accent languages are similar to stress languages in having one culminative prominent point and they are similar to tone languages where this prominence is lexically contrastive. However, pitch accent languages differ from stress languages in the contrastive use of pitch, and they differ from tone languages in the specification of lexical accent on TBU (tone bearing unit) (Beckman, 1986). In tone languages every TBU is specified for a tone while in pitch accent languages the overall pattern of tone in a word can be known from tone specification on a single syllable (McCawley, 1987). Harar Oromo does not fit this description since a word in this language can surface with more than one H tone. Owens (1985: 37) acknowledged this point and suggested classifying Harar Oromo as a pitch accent language underlyingly and as a tone language on the surface to account for the fact that Harar Oromo nouns can have more than one H tone on the surface. This could be justified since Harar Oromo has a pitch accent system property of having one lexical accent underlyingly and has a tone system property of having more than one H tone on the surface.

Based on the discussion in section 3, in non-equational sentences, the final syllable in noun stems always has a H tone, as in (24).

(24) Harar Oromo accusative and nominative noun examples

Root	Accusative noun forms	Nominative noun forms
man 'house'	[maná]	[manní]
bar 'year'	[bará]	[barrí]
dʒa:l 'mate'	[dʒa:lá]	[dʒa:llí]
ʃimbìrro 'bird'	[ʃimbírró:]	[ʃimbírró:n]
hantʃʼăbbi 'ice'	[hantʃʼábbí:]	[hantʃʼábbí:n]
so:gidda 'salt'	[so:giddá:]	[so:giddá:n]

I analyzed the suffix H tone as a morpheme that signifies that the noun has case. Lexical accent on roots is clearly unpredictable, as discussed earlier, with further examples in (25). Accented noun roots are realized as H tone on the surface while noun roots that are not accented underlyingly surface with L tone, as exemplified in (25).

(25) Harar Oromo noun roots examples

    (bar) "year"

    /bar+V+´/ ⟶ [bará] accusative
                       L H

    (ʔăble) "knife"

    /ʔăble+V+´/ ⟶ [ʔáblé:] accusative
                       H H

    (fokkìn) "ugliness"

    /fokkìn+V+´/ ⟶ [fokkíná] accusative
                       L H H

    (badi:ns) "badness"

    /badi:ns+V+´/ ⟶ [badi:nsá] accusative
                       L L H

Since pitch accent system does not accurately describe Harar Oromo on the surface, it is suggested in this paper to analyze Harar Oromo according to main prosodic features that characterize languages, suggested by Hyman (2009: 220), given in (26).

(26) Properties of prosodic systems of languages

1. **Obligatoriness** (at least one prominent syllable per word)
2. **Culminativity** (at most one prominent syllable per word)
3. **Privativity** (H vs. Ø or H vs. L)
4. **Metricality** (positionally restricted, subject to reduction/subordination in compounding or when out of focus)

As Hyman (2009: 233) argued, languages that satisfy all the properties in (26) are the prototypical stress languages, while languages that do not adhere to any of these properties are the most tone-like languages. As for languages that satisfy only some of these properties they can be considered as restricted tone systems (Voorhoeve, 1973). Hyman (2009: 219) defined tone in such a system as being subject to significant constraints, such as culminativity in Somali (Hyman, 1981). Following Takara (2012: 42), the suggested restricted tone system by (Voorhoeve, 1973) can be defined in (27).

(27) Restricted tone system definition

A restricted tone system is one that follows one, two, or three of the following properties: obligatoriness (OBL), culminativity (CUL), privativity (PRIV), and metricality (MET).

The number of properties a language has determines the prosodic system type of that language in the following ways in (28).

(28) Properties of prosodic systems

- A language with three properties of (26) is more stress-like language
- A language with one property of (26) is more tone-like language
- A language with 2 properties of (26) is what Hyman (2009) referred to as an intermediate language system.

This can be summarized and illustrated in Table 6, where +/- means the presence or the absence of the feature, respectively. These properties are discussed in terms of Harar Oromo tone patterns in nouns.

The first property is obligatoriness (OBL), which indicates that at least one prominent syllable per word should be found. An example of a language with this property is Chuave (Papua New Guinea) where every word must have at least one H tone

(Swick 1966: 2, Donohue 1997: 355-357), as in (29).

(29) Chuave tone patterns (Swick, 1966: 2)

σ	σσ	σσσ
H [fwí] 'salt'	HH [gáán] 'child'	HHH [gíngódí] 'snore'
	HL [gáam] 'skin'	HHL [dénkábu] 'mosquito'
	LH [kubá] 'bamboo'	HLH [énugó] 'smoke'
		HLL [kóiom] 'wing'
		LHH [amámó] 'yam'
		LHL [komári] 'before'
		LLH [koiyóm] 'navel'

If obligatoriness refers to surface H tone, then it is satisfied in Harar Oromo because no noun in citation form surfaces without a H tone either because of a lexical accent or because of the floating H tone realized on case suffixes in noun stems. However, if obligatoriness only considers lexical accent then, as shown earlier, Harar Oromo noun roots can be accentless and thus this property is not satisfied in the language. Based on the discussion of obligatoriness in Hyman (2009: 218), obligatoriness is examined in noun stems. Therefore, in this analysis both lexical accent and predictable tone are considered. Therefore, no noun in Harar Oromo surfaces with only L tone because suffixes always associate with a floating H tone in citation forms and noun stems, thus, have at least one prominent syllable per word, as shown in (30). Therefore, although Harar Oromo noun roots can be accentless underlyingly, it satisfies the property of obligatoriness on the surface.

(30) Tone patterns in Harar Oromo noun stems

a. HH [xálé:] 'liver' LHH [ʔadúrré:] 'cat'
b. LH [dubrá] 'girls' LLH [refe:nsá] 'hair'

The second property of prosodic systems is culminativity, which indicates that at most one prominent syllable per word is allowed. An example of a language that satisfies this property is Tinputz (Papua New Guinea) where a word has only one H tone at most regardless of the number of syllables (Hostetler and Hostetler, 1975: 6-9), as shown in (31).

Table 6. Restricted tone system features

	Prosodic systems	OBL, CUL, PRIV, MET
	Prototypical stress	++++
Restricted tone system	More stress-like	+++-
	Intermediate	++--
	More tone-like	---+
	Prototypical tone	----

(31) Tone patterns in Tinputz

σ	σσ	σσσ	σσσσ
L [yà] 'lime'	LL [bàwà] 'to call'	LLL [kwìànèn] 'village name'	LLLL [kàkàsìlè] 'yellow'
H [twáʔ] 'to cut'	LH [kèús] 'baby'	LLH [bòskòlén] 'shoulder'	LLLH [àpwènpwànhé]'when'
		LHL [kwàʔwétèʔ] 'boy'	LHLL [bùtómbàmèn]'sibling'
			LLHL [tòlàhlúà] 'nut tree'

As indicated above, Harar Oromo noun roots can have only up to one lexical accent underlyingly and no noun root can have more than one lexical accent. If only lexical accent is considered, then Harar Oromo satisfies this property. However, in the same way that noun stems are considered in obligatoriness, if culminativity is analyzed based on tone on noun stems, i.e., lexical accent and predictable tone, then Harar Oromo does not satisfy this property. A noun stem in Harar Oromo can have more than one H tone on the surface, as in (32). Therefore, it is assumed that Harar Oromo does not satisfy the property of culminativity on the surface.

(32) More than one H tone in Harar Oromo noun stems

   HH   [bímbé:] 'mosquito'

   LHH [wallíftú:] 'singer'

Next, the property of privativity (PRIV) is considered. Hyman (2009: 224) defined this property by the example of a language that has the feature H vs. Ø rather than the binary feature H vs. L. The outcome of /H/ vs. /Ø/ is H tone and L tone on the surface in the absence of H tone while the outcome of /H/ vs. /L/ includes a combination of tones such as HL or LH on the same TBU. In other words, in languages that satisfy this feature only H tone needs to be specified lexically and other syllables bear L tone phonetically on the surface. Puinave language (Colombia) can have H, HL or LH tones on the same TBU, which means L tone is assigned lexically. This language has the following underlying and surface tones in (33), (Hyman, 2009: 224).

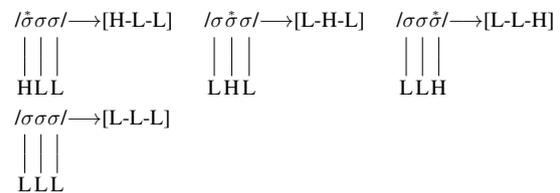(33) Puinave underlying and surface tone patterns
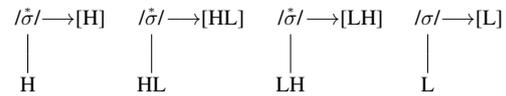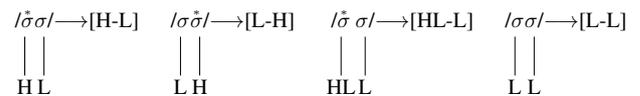
Since Puinave has a single TBU that bears HL or LH tone pattern this language is considered to not satisfy the privativity property.

In Harar Oromo, noun roots can be accented or unaccented, with accented roots surfacing phonetically with H tone and unaccented roots surfacing phonetically with L tone. Case suffixes get H tone from the floating H tone as noted above. Therefore, in Harar Oromo nouns, if no H tone is present lexically on the noun root, noun stems in citation forms surface with LH or LLH tone patterns after suffixation and realization of the floating H tone. Thus, since Harar Oromo nouns are either accented or unaccented, the property of privativity is met.

The final property to be considered is metricality. Metricality has two features, as Hyman (2009) suggested. The first refers to the condition where tones are placed or otherwise affected by metrical process, such as word edge. Tone placement in some languages is attracted to a metrically strong position either to the right edge of the word, as in Bantu, or to the left edge of the word, as in Mayo (Mexico) (Hyman, 2009: 221). The second feature of metricality is whereby the prominent features

are reduced or deleted in different contexts. An example of this is found in Haya (Tanzania), as in (34).

(34) Haya tone in different contexts (Hyman and Byarushengo, 1984: 69)

    a.
    [ba-kóm-a] 'they tie up'
    [bá-á-kóm-a] 'they tied up'

    b.
    [ba-kom-a káto] 'they tie up Kato'
    [ba-a-kom-a káto] 'they tied up Kato'

In (34-a) a verb may have one or more H tones, however, when the same verb forms are followed by a complement 'Kato' as in (34-b) the tone shifts to the right edge of the word.

Discussion of metricality allows us to return to an unsolved problem, why monosyllabic noun roots with a short vowel in Harar Oromo are always unaccented, with at least two vowels present for a root to carry accent. In Harar Oromo, monosyllabic roots with short vowels are all lexically accentless, while the longer roots can bear lexical accent, as in (35).

(35) Harar Oromo monosyllabic noun roots

Root	Accusative case	Nominative case
bar 'year'	[bará]	[barrí]
man 'house'	[maná]	[manní]
mal 'trick'	[malá]	[mallí]
mirg 'right'	[mirgá]	[mirgí]

In (35) nouns have final H tone while no lexical accent is found because roots are monosyllabic. It seems that a two-syllable domain in noun roots is required to have lexical accent[1]. Noun roots that do not meet this condition are always accentless and surface with only final H tone. The two-syllable requirement to bear accent is metrical in nature. It is similar to saying that a foot must be binary.

Another metrically motivated tone pattern in Harar Oromo is found in the position of accent in lexically accented noun stems; the accent must be penultimate. For accented roots, then, the position of the accent is predictable; vowel-final roots have penultimate accent and consonant-final roots have final accent. Thus, it is important only to know whether the root is accented or not.

Based on the above discussion of metricality in Harar Oromo nouns, therefore, it is assumed that Harar Oromo nouns satisfy the property of metricality. Table 7 summarizes the discussions of each of the four properties in Harar Oromo.

As in Table 7, the prosodic properties of obligatoriness and culminativity can be considered phonologically, i.e., underlyingly, or phonetically on the surface. Phonologically speaking, Harar Oromo does not satisfy the obligatoriness property. The property of obligatoriness indicates that at least one syllable should be prominent. Underlyingly, noun roots in Harar Oromo can be accented or accentless. Accented roots are realized as H tone while accentless roots surface with L tone. On the surface, i.e., phonetically, noun stems can have a H tone on the penultimate syllable, due to accented noun roots, and a H tone is realized on the case suffixes. Therefore, the property of obligatoriness is satisfied on the surface. The culminativity property, which indicates one prominent syllable at most per word, is satisfied underlyingly where only one lexical accent is assigned. However, if this property is considered on the surface, then it is not satisfied because noun stems can have more than one H tone on the surface. The properties of privativity, in which only H tone needs to be specified and L tone surfaces in the absence of H tone, and metricality, in which monosyllabic noun roots do not have lexical accent, are both satisfied in Harar Oromo. In both phonetic and phonological analyses, Harar Oromo satisfies only three prosodic properties: obligatoriness or culminativity, privativity and metricality. Therefore, as suggested by Table 6, Harar Oromo can be classified as a restricted tone system and under restricted tone system Harar Oromo is a more stress-like language. In other words, the prosodic system in Harar Oromo has stress-like properties in which nouns do not surface without at least one prominent syllable. In addition, syllables that are not prominent surface with L tone

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[1] Noun roots might be analyzed in terms of moras since monosyllabic nouns with long vowels in Harar Oromo can bear H tone. These nouns are at least bimoraic as in *fó:n* 'meat', *ló:n* 'cattle' and *ʔé:s* 'river name'. However, since monosyllabic nouns are not included in the analysis, reference to syllable number is used.

Table 7. Prosodic Properties in Harar Oromo

	Obligatoriness	Culminativity	Privativity	Metricality
			+	+
			Only H tone is present	Lexical accent is affected by number of syllables
Phonological	-	+		
	Roots can be accentless	One lexical accent underlyingly		
Surface	+	-		
	All nouns surface with at least one H tone	More than one H tone per noun can be found		

and metricality influence prominence in Harar Oromo. This conclusion justifies why Harar Oromo is described as a stress language in de Lacy (2002)

To summarize, this section provided arguments to how Harar Oromo is characterized in terms of prosodic properties of the world languages. It is argued that positing a pitch accent account for Harar Oromo does not fit the pitch behavior in the language since Harar Oromo prosodic system does not possess what has been suggested to be the main features of pitch accent languages which are tone predictability based on tone assignment on a single syllable and culminativity in which no more than one H tone per word is allowed. It is shown that Harar Oromo exhibits a restricted tone system in which obligatoriness is satisfied on the surface but not phonologically while culminativity is satisfied underlyingly but not on the surface. Together with privativity and metricality properties these prosodic properties indicate that Harar Oromo has a restricted tone system that is more stress-like.

V. CONCLUSION

In conclusion, the pitch feature in Harar Oromo has been analyzed by approaching the suprasegmental phonology of the language from different angles focusing on either stress or tone. Implementing an acoustic research methodology, this study included both floating H tone and lexical accent in explaining pitch patterns in nouns in the language.

Tone patterns in Harar Oromo nouns are examined in isolated forms in accusative and nominative case as well as in noun roots. The tone system of Harar Oromo nouns is argued to represent a language with a restricted tone system. This is supported by the fact that this language is a more stress-like language, lacking only the culminativity property of stress languages on the surface in which one prominent syllable occurs per word. Other properties of stress languages, i.e., obligatoriness on the surface, privativity and metricality, are satisfied.

Despite the results provided by this study, it has some limitations. This study focused only on a portion of the tone system of Harar Oromo covering only a part of the case system in nouns. Further research is needed to focus on other cases in the language such as the remaining four types of cases in Oromo: genitive, dative, ablative and vocative (Nordfeldt, 1947: 22). Furthermore, verb system needs to be included in future works. Other major lexical categories such as adjectives, demonstratives, pronouns, postpositions, prepositions, and adverbs should be incorporated in future research for the analysis to be more comprehensive. A further point that has potential for further investigation is the status of Harar Oromo among other Cushitic languages and different varieties of Oromo. Such a comparison with other languages in the region would be helpful in providing insight into any inconsistencies of the analysis.

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Appendix A:

A. Tone patterns in disyllabic noun stems

1. HH tone pattern

Root	Accusative case	Nominative case	Gender
dǎme 'branch'	[dámé:]	[dámé:n]	Feminine
sǎre 'dog'	[sáré:]	[sáré:n]	Feminine
dǎsa 'shack'	[dásá:]	[dásá:n]	Feminine
ʔuřa 'hole'	[ʔúrá:]	[ʔúrá:n]	Feminine
wǎnna 'thing'	[wánná:]	[wánná:n]	Feminine
xǎle 'liver'	[xálé:]	[xálé:n]	Feminine
ʔǎdu 'sun'	[ʔádú:]	[ʔádú:n]	Feminine
xǒ:fo 'trousers'	[xófó:]	[xófó:n]	Feminine
k'ǒri 'plate'	[k'órí:]	[k'órí:n]	Feminine
jǎro 'time'	[járó:]	[járó:n]	Feminine
ʔě:ge 'tail'	[ʔé:gé:]	[ʔé:gé:n]	Feminine
ʔě:le 'pot'	[ʔé:lé:]	[ʔé:lé:n]	Feminine
k'ǒ:k'a 'isolated camel'	[k'ó:k'á:]	[k'ó:k'á:n]	Feminine
hǎrre 'donkey'	[hárré:]	[hárré:n]	Feminine
hǎttu 'thief'	[háttú:]	[háttú:n]	Feminine
ʔǎble 'knife'	[ʔáblé:]	[ʔáblé:n]	Feminine
dǐrre 'field'	[dírré:]	[dírré:n]	Feminine
dǎrre 'weak'	[dárré:]	[dárré:n]	Feminine
bǐmbe 'mosquito'	[bímbé:]	[bímbé:n]	Feminine
ʔǎkko 'grandmother'	[ʔákkó:]	[ʔákkó:n]	Feminine
mǎlla 'cheek'	[mállá:]	[mállá:n]	Feminine
kǔmbi 'tusk'	[kúmbí:]	[kúmbí:n]	Feminine
bǎ:lli 'feather'	[bá:llí:]	[bá:llí:n]	Feminine
gǎ:nge 'mule'	[gá:ngé:]	[gá:ngé:n]	Feminine

2. LH tone pattern

Root	Accusative case	Nominative case	Gender
man 'house'	[maná]	[manní]	Masculine
bar 'year'	[bará]	[barrí]	Masculine
mux 'tree'	[muxá]	[muxní]	Masculine
tab 'game'	[tabá]	[tabní]	Masculine
ga:f 'horn'	[ga:fá]	[ga:fní]	Masculine
ga:l 'camel'	[ga:lá]	[ga:llí]	Masculine
ʔa:r 'smoke'	[ʔa:rá]	[ʔa:rrí]	Masculine
ʃe:na 'remorse'	[ʃe:ná:]	[ʃe:ná:n]	Feminine
ro:b 'rain'	[ro:bá]	[ro:bní]	Masculine
ba:l 'leaf'	[ba:lá]	[ba:llí]	Masculine
baʔa 'weight'	[baʔá:]	[baʔá:n]	Feminine
ʔabba 'father'	[ʔabbá:]	[ʔabbá:n]	Feminine
xara 'road'	[xará:]	[xará:n]	Feminine
ba:ti 'month'	[ba:tí:]	[ba:tí:n]	Feminine

da:ra 'ash'	[da:rá:]	[da:rá:n]	Feminine
ho:la 'sheep'	[ho:lá:]	[ho:lá:n]	Feminine
dʒo:lle 'children'	[dʒo:llé:]	[dʒo:llé:n]	Feminine
dʒa:l 'mate'	[dʒa:lá]	[dʒa:llí]	Masculine
ga:r 'mountain'	[ga:rá]	[ga:rrí]	Masculine
mi:l 'foot'	[mi:lá]	[mi:llí]	Masculine
dʒa:r 'men'	[dʒa:rá]	[dʒa:rrí]	Masculine
ɲa:t 'food'	[ɲa:tá]	[ɲa:ttí]	Masculine
ʔadd 'forehead'	[ʔaddá]	[ʔaddí]	Masculine
fard 'horse'	[fardá]	[fardí]	Masculine
dubr 'girls'	[dubrá]	[dubrí]	Masculine
morm 'neck'	[mormá]	[mormí]	Masculine
mirg 'right'	[mirgá]	[mirgí]	Masculine
xudra 'vegies'	[xudrá:]	[xudrá:n]	Feminine

B. Tone patterns in trisyllabic noun stems

1. LHH tone pattern

Root	Accusative case	Nominative case	Gender
bartʃʷŭm 'stool'	[bartʃʷúmá]	[bartʃʷúmmí]	Masculine
fokkǐn 'ugliness'	[fokkíná]	[fokkínní]	Masculine
guddǐn 'bigness'	[guddíná]	[guddíní]	Masculine
ʔalhǎd 'Sunday'	[ʔalhádá]	[ʔalhánní]	Masculine
galgǎl 'day hours'	[galgálá]	[galgállí]	Masculine
dallǎj 'fence'	[dallájá]	[dallájní]	Masculine
naggǎd 'trade'	[naggádá]	[naggánní]	Masculine
ʔisnǐ:n 'Monday'	[ʔisní:ná]	[ʔisní:nní]	Masculine
buddě:n 'bread'	[buddé:ná]	[buddé:nní]	Masculine
barnǒ:t 'education'	[barnó:tá]	[barnó:nní]	Masculine
barǎttu 'student'	[baráttú:]	[baráttú:n]	Feminine
hamǎrti 'finger ring'	[hamártí:]	[hamártí:n]	Feminine
ʔilǐlli 'flower'	[ʔilíllí:]	[ʔilíllí:n]	Feminine
ʔadǔrre 'cat'	[ʔadúrré:]	[ʔadúrré:n]	Feminine
biʃǐnga 'grain'	[biʃíngá:]	[biʃíngá:n]	Feminine
dongǒra 'hoe'	[dongórá:]	[dongórá:n]	Feminine
kotʃtʃǔma 'stomach'	[kotʃtʃúmá:]	[kotʃtʃúmá:n]	Feminine
ʔindʒǐre 'lice'	[ʔindʒíré:]	[ʔindʒíré:n]	Feminine
barsǐ:sa 'teacher'	[barsí:sá:]	[barsí:sá:n]	Feminine
ɗanɗǎ:rra 'camp fire'	[ɗanɗǎ:rrá:]	[ɗanɗǎ:rrá:n]	Feminine
ga:ddǐddu 'shadow'	[ga:ddíddú:]	[ga:ddíddú:n]	Feminine
hirrǐ:b 'sleep'	[hirrí:bá]	[hirrí:bní]	Masculine
dʒirě:ɲɲ 'existence'	[dʒiré:ɲɲá]	[dʒiré:ɲɲí]	Masculine
ba:skǐl 'bike'	[ba:skílá]	[ba:skíllí]	Masculine
dʒabě:ɲɲ 'power'	[dʒabé:ɲɲá]	[dʒabé:ɲɲí]	Masculine
sa:hǐb 'friend'	[sa:híbá]	[sa:híbní]	Masculine
di:mǐn 'redness'	[di:míná]	[di:mínní]	Masculine
ɗe:rě̌n 'tallness'	[ɗe:réná]	[ɗe:rénní]	Masculine

la:fĩn 'softness'	[la:fíná]	[la:fínní]	Masculine
sa:bŭn 'soap'	[sa:búná]	[sa:búnní]	Masculine
hafŭ:r 'breath'	[hafú:rá]	[hafú:rrí]	Masculine
kitǎ:b 'book'	[kitá:bá]	[kitá:bní]	Masculine
ʔadě:r 'uncle'	[ʔadé:rá]	[ʔadé:rrí]	Masculine
warǎ:n 'spear'	[wará:ná]	[wará:nní]	Masculine
ʔarě:d 'chin'	[ʔaré:dá]	[ʔaré:nní]	Masculine
magǎ:l 'brownish'	[magá:lá]	[magá:llí]	Masculine
ʔamǎt 'year'	[ʔamátá]	[ʔamánní]	Masculine
ʔarǎb 'Arab'	[ʔarábá]	[ʔarábní]	Masculine
damǐ:n 'chief'	[damí:ná]	[damí:nní]	Masculine
ʔorǒmo 'Oromo people'	[ʔorómó:]	[ʔorómó:n]	Feminine
ʔadǎre 'town name'	[ʔadáré:]	[ʔadáré:n]	Feminine
sagǎle 'sound'	[sagálé:]	[sagálé:n]	Feminine
ʃimbǐrro 'bird'	[ʃimbírró:]	[ʃimbírró:n]	Feminine
ʔergǎnno 'messenger'	[ʔergánnó:]	[ʔergánnó:n]	Feminine
hantʃʼǎbbi 'ice'	[hantʃʼábbí:]	[hantʃʼábbí:n]	Feminine
wallǐftu 'singer'	[wallíftú:]	[wallíftú:n]	Feminine
k'urtŭmmi 'frog larva'	[k'urtúmmí:]	[k'urtúmmí:n]	Feminine

2. LLH tone pattern

Root	Accusative case	Nominative case	Gender
badi:ns 'badness'	[badi:nsá]	[badi:nsí]	Masculine
refe:ns 'hair'	[refe:nsá]	[refe:nsí]	Masculine
bine:ns 'animal'	[bine:nsá]	[bine:nsí]	Masculine
ʔintal 'girl'	[ʔintalá]	[ʔintaltí]	Masculine
balʔin 'width'	[balʔiná]	[balʔinní]	Masculine
k'allu:n 'fish'	[k'allú:ná]	[k'allú:nní]	Masculine
ʔibidd 'fire'	[ʔibiddá]	[ʔibiddí]	Masculine
k'ille:ns 'wind'	[k'ille:nsá]	[k'ille:nsí]	Masculine
dǐ:tʃtʃis 'dance'	[dǐ:tʃtʃisá]	[dǐ:tʃtʃifní]	Masculine
ʔokkote 'cooking pot'	[ʔokkoté:]	[ʔokkoté:n]	Feminine
hanga:su 'lightening'	[hanga:sú:]	[hanga:sú:n]	Feminine
xarfaffu 'storm'	[xarfaffú:]	[xarfaffú:n]	Feminine
k'ut'usu 'younger brother'	[k'ut'usú:]	[k'ut'usú:n]	Feminine
ʔutuba 'supporting pillar'	[ʔutubá:]	[ʔutubá:n]	Feminine
du:me:s 'cloud'	[du:me:sá]	[du:me:sní]	Feminine
ʔada:da 'aunt'	[ʔada:dá:]	[ʔada:dá:n]	Feminine
maki:na 'car'	[maki:ná:]	[maki:ná:n]	Feminine
maga:la 'market'	[maga:lá:]	[maga:lá:n]	Feminine
hirijja 'age friend'	[hirijjá:]	[hirijjá:n]	Feminine