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## TABLE OF CONTENTS

Azeb Amha	<b>Tone-accent and prosodic domains in Wolaitta</b>	111
W. R. Leben	<b>Tonal feet and the adaptation of English borrowings into Hausa</b>	139
Pascale Hadermann	<b>Grammaticalisation de la structure Infinitif + Verbe<sub>conjugué</sub> dans quelques langues bantoues</b>	155
Bonny Sands, Ian Maddieson, Peter Ladefoged	<b>The phonetic structures of Hadza</b>	171
<i>Notes and Queries</i>		
Jack Fellman	<b>Lines on the classification of Ethiopian- Semitic</b>	205
<i>Publications received</i>		207
<i>Upcoming meetings on African languages/linguistics</i>		208
<i>Guidelines for contributors</i>		inside back cover



## TONE-ACCENT AND PROSODIC DOMAINS IN WOLAITTA\*

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In Wolaitta, an Omotic language spoken in the south-central part of Ethiopia, simple phonological words are usually restricted to one high tone-accent per word. Nouns and adjectives have a similar tone-accent pattern, while verb roots differ from these in many respects. Morphology may alter the pattern in simple lexical forms in the sense that derivation and inflection may result in the presence of more than one high tone-accent in a word or, alternatively, in that they cause shift of the original tone accent. In nouns this depends on definiteness and the location of tone-accent in the citation form, while in verbs it is determined by the presence or absence of high tone-accent on the verb root and the type of suffix attached to it. High tone-accent marking in phrases can be predicted from the tone-accent pattern of the citation form of the modifier(s).

### 1. Introduction

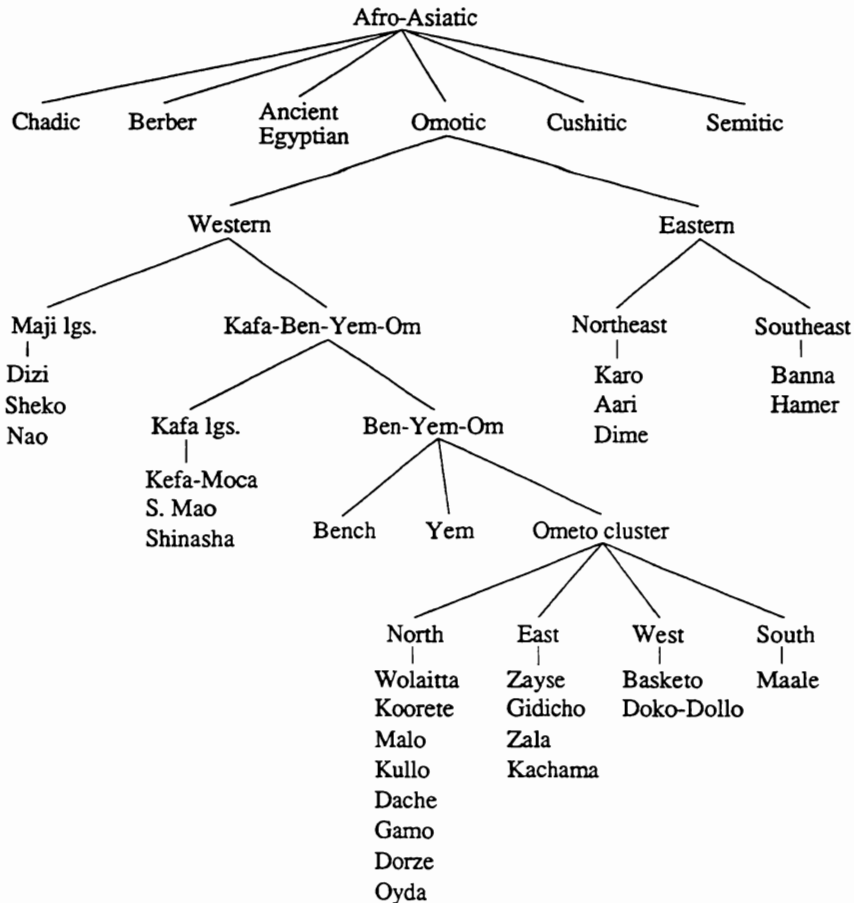
The Wolaitta language, spoken by approximately 1.1 million people (OPHCC [1991:48]) in the south-central part of Ethiopia, belongs to the West Omotic language group. The term “Omotic” refers to a group of languages formerly known as the “Western Sidama group”, classified as a sub-group of Cushitic. Since the 1960s, however, most scholars of Afro-Asiatic have accepted the classification of Omotic as separate from Cushitic. However, not all scholars agree on the internal sub-classification of these languages. Fleming [1976] sub-divides

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Omotic into two major subgroups, Western and Eastern, each with internal subdivisions, as illustrated in the tree diagram in (1).

(1) Omotic languages (based on Fleming [1976])<sup>1</sup>



Since the Omotic language family consists of languages which have a variety of prosodic systems, it is important to investigate the situation in detail for each individual member. Recent studies on some of the Omoto languages have shown that, unlike in many other Omotic languages, the function of pitch in the Omoto group appears to be more in the grammatical and prosodic domain than in terms

<sup>1</sup> The names of some languages described in Fleming [1976] have been officially changed over the past few years. Thus, instead of Fleming's Gimojan, representing Gimira (now Bench), Omoto, and Janjero (now Yem), I have used Ben-Yem-Om, first suggested by Wedekind [1990].

of lexical distinctions. The chart in (2) shows the type of prosodic systems reported for Omotic languages (numbers next to the tone languages indicating the number of distinctive lexical tone types).

(2) Prosodic Systems Claimed for Some Omotic Languages<sup>2</sup>

<u>Tone</u>	<u>Tonal-accent</u>	<u>Accent</u>	<u>Tone &amp; Stress</u>
Dizi (3)	Zayse	Aari	Koorete
Bench (6)	Gamo		

In previous studies Wolaitta has been described as a stress language (cf. Adams [1983] and Yitbarek [1983]). By considering Wolaitta to be a stress language, these studies did not account for the following two facts.

First, in accented long vowels the second mora receives tone-accent. This would not be possible in a stress language since the domain of stress is the syllable as a whole. Van der Hulst and Smith [1988:xi] take this to be a universal tendency of languages when they write: "... only the minimal syllable may be the bearer of stress... Hence we claim that the 'mora' is never the domain of stress."

Even though Adams [1983:54] states that "... sometimes a speaker will pronounce a long vowel with a slight pitch glide, which is also a characteristic of Wolaitta diphthongs", he analyses accented syllables with long vowels as having the same "stress" level. However, as in many mora counting tone-accent languages, Wolaitta exhibits a contour tone (i.e., a rising tone) in long accented syllables. These accented long syllables contrast with unaccented long syllables in which neither of the vowels bears high tone-accent. A similar situation is reported for Somali, in which contour tones occur only in long vowels (cf. Banti [1988]). Hyman [1981:169] considers this to be a defining characteristic of tone-accent languages: "... Somali is a tonal accent language, i.e., a language which (a) assigns accents to vowels (rather than syllables), and (b) realizes these accents as an invariant H tone."

Second, derived complex words have more than one high tone-accent. Adams makes reference to "higher pitch", "medium pitch", and "lower pitch" in his discussion of vocalic sequences, but he does not mention whether or not these correspond to various levels of stress, such as "primary" and "secondary" stress. In this paper, I claim that there is no such gradable distinction in prominence between two or more accented syllables in a word. In complex words consisting of more than one tone-accent, the accents are realized as high tone.

<sup>2</sup> Information on Zayse, Aari and Gamo are from Hayward [1990a], [1990b], and [1994], respectively. Allan [1976] has also dealt with the Dizi tone system (among other topics of the grammar). Breeze [1988] presents a comparative study of the phonology of Dizi and Bench. The Bench tone system is also known through publications of Wedekind [1983 and 1985]. Ford [1990] has a section on Koorete phonology.

Thus, Wolaitta does not belong to the category of stress languages. In the following discussion, I shall present an alternative analysis for this language.

In the first part of the paper the regular pattern of tone-accent assignment in the citation form of major lexical categories will be discussed.<sup>3</sup> The second section deals with the role of affixation, which allows the occurrence of more than one high tone-accent in a word. In the third part, it will be shown that the tone-accent marking of simple phrases is predictable from the high tone-accent placement in the citation form of the modifier. In expanded phrases, each modifier, except demonstratives and possessive pronouns, is assigned high tone-accent. Interestingly, high tone-accent is always marked on the modifier(s), but not on the head category in the phrase. Finally, syntactic categories that are never assigned tone-accent are discussed. In the present paper, high tone-accent is marked with ´, non-high (low) is not marked.

## 2. Major lexical categories

As emphasized in many linguistic studies, the main characteristic of tone-accent languages is the presence of a distributionally restricted once per word or per phrase type of pitch change, e.g., rise or fall (cf. McCawley [1978], Childs [1989]). Wolaitta has a restricted high tone-accent marking in the citation form of various categories.

All lexical nouns and adjectives have only one high tone-accent. However, with some this high tone-accent occurs on the final vowel, while with others it occurs on the penultimate vowel. It is not possible to predict, either on the basis of word class or on the basis of meaning, whether the tone-accent will fall on the final or penultimate vowel of the noun or adjective.

In most Omotic languages, nouns and adjectives end in vowels which are often deleted when another morphological unit is added to the noun or adjective. (For a discussion on this see Hayward [1987]). In this paper, I will refer to such vowels in Wolaitta as 'citation-form final vowels'. Unlike in other Ometo languages such as Basketto, the citation-form final vowel in Wolaitta is not always deleted with affixation. As mentioned above, in some nouns and adjectives this final vowel receives the tone-accent.

Verbs, which always involve affixation, differ from nouns and adjectives in accentual behaviour, and are discussed separately in section 3.

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<sup>3</sup> The term "citation form" is used in this paper to refer to the form of nouns and adjectives when they are unmarked for nominal inflection such as case, definiteness, or number. These are what are called "absolutive" forms in some published works of Omotic languages. Phonologically, citation form nouns and adjectives in Wolaitta are distinct from their inflected counterparts in having any one of /-e/, /-o/ or /-a/ vowel endings, which are sometimes deleted in affixation. For some nouns, however, the citation form and the form in the nominative or accusative case can be identical. For example, the citation form and the indefinite nominative form of nouns with the terminal vowel /e/ are identical. Nominals with the terminal vowel /a/ and their indefinite accusative form are also formally the same.

2.1. **Simple nouns.** With few exceptions, nouns in Wolaitta can be divided into two groups: (a) those that have tone-accent on the final mora (3), and (b) those that have tone-accent on the penultimate mora (4). For each group, examples of different word structures (=number of syllables and vowel length) are given.<sup>4</sup>

(3) High tone-accent on the final mora

a. <i>zoré</i>	'advice'	<i>sawó</i>	'divorced woman'
<i>zaré</i>	'lizard'	<i>šempó</i>	'soul'
<i>pengé</i>	'door'	<i>tamá</i>	'fire'
<i>morgé</i>	'nape of neck'	<i>ʔawá</i>	'sun'
<i>molé</i>	'fish'	<i>dirbá</i>	'haste'
<i>saló</i>	'sky'	<i>galbá</i>	'skin/hide(n.)'
b. <i>leehé</i>	'pumpkin'	<i>deemó</i>	'eye brow'
<i>maahé</i>	'tiger'	<i>ʔaayó</i>	'mother'
<i>c'ooc'é</i>	'hearth'	<i>maadó</i>	'help'
<i>maayó</i>	'cloth'	<i>c'iiššá</i>	'flower'
<i>meegó</i>	'cold'	<i>deeššá</i>	'goat'
<i>šooró</i>	'neighbour'	<i>c'uuččá</i>	'louse'
c. <i>ʔec'eré</i>	'rat'	<i>šukkaaré</i>	'sweet potato'
<i>miširá</i>	'bride'	<i>karaabé</i>	'drum'
<i>geleššó</i>	'monkey'		
<i>sukulʔó</i>	'guinea-fowl'		

(4) High tone-accent on the penultimate mora

a. <i>záre</i>	'relative'	<i>zókko</i>	'back'
<i>ʔáyfe</i>	'eye'	<i>mánk'o</i>	'poor'
<i>kúše</i>	'hand'	<i>ʔák'o</i>	'property'
<i>lágge</i>	'friend'	<i>ʔálʔo</i>	'expensive'
<i>tóho</i>	'feet'	<i>c'účča</i>	'saliva'
b. <i>k'oóre</i>	'neck'	<i>tuúmmo</i>	'garlic'
<i>huúp'e</i>	'hair'	<i>t'aáro</i>	'pot'
<i>siíre</i>	'nose'	<i>boóra</i>	'ox'
<i>t'iille</i>	'flour'	<i>buúr'a</i>	'dry grass'
<i>k'aác'o</i>	'ant'	<i>tuússa</i>	'central pillar'

<sup>4</sup> Phonetic symbols have the usual IPA values, except that /š/ is used instead of IPA /ʃ/, for a 'voiceless alveopalatal fricative', /č/ is used instead of /tʃ/ for a voiceless alveopalatal affricate, /j/ is used instead of /dʒ/ for the voiced alveopalatal affricate.



c. <i>ʔudúnt'e</i>	'fly'	<i>mek'étta</i>	'bone'
<i>zazzáre</i>	'sieve'	<i>bulláčča</i>	'wedding'
<i>biráǵǵe</i>	'finger'	<i>dangársa</i>	'elephant'
<i>bullúkkó</i>	'garment'	<i>ʔomársa</i>	'night'
<i>namísa</i>	'hunger'	<i>ʔint'ársa</i>	'tongue'
d. <i>ʔallaálle</i>	'business'	<i>buddeéna</i>	'kind of pan cake'
<i>k'unc'uúte</i>	'thread'	<i>hargaac'a</i>	'fatigue'
<i>malaáta</i>	'sign'	<i>bit'aála</i>	'bridle'
<i>ʔakeéka</i>	'caution'	<i>goopíne</i>	'lung'
e. <i>dangiriút'e</i>	'retainer'		
<i>goromoóte</i>	'evil eye'		
<i>šororoóte</i>	'spider'		

A few trisyllabic and quadrisyllabic words constitute exceptions to the final or penultimate mora tone-accent marking, having the high tone-accent on the ante-penultimate mora, as illustrated in (5).

(5) High tone-accent on the ante-penultimate mora

<i>másunta</i>	'wound'	<i>k'ánetta</i>	'curse'
<i>súk'k'unta</i>	'hot ashes, cinder'	<i>ʔáfutta</i>	'tears'
<i>sír'k'unta</i>	'hiccup'	<i>woláwušše</i>	'hepatitis'
<i>k'éretta</i>	'split wood'	<i>kórima</i>	'bull'

Note the similarity of these words in terms of tone-accent assignment to higher numerals given in (6).

(6) *ʔusúppuna* 'six'  
*laáppuna* 'seven'  
*hóspuna* 'eight'  
*ʔudúpuna* 'nine'

There are only a few words of this type in Wolaitta, each ending with *-nta/*, *-tta/* or *-puna/*. It seems likely that these are historically complex words consisting of more than one morpheme, and will not be discussed further here.<sup>5</sup>

<sup>5</sup> Fleming [1976:50] states that the form *-puna/* 'five' is an innovation shared by the Ometo, Bench, and Yem languages. Thus, we could say *ʔusúppuna/* 'six' and *laáppuna/* 'seven' analysed as *ʔissó/* 'one' plus *ʔpuna/* 'five' and *lam-/* 'two' plus *ʔpuna/* 'five', respectively, are compound or complex words, and tone-accent, like in other compound nouns in this language, is marked on the left most component of the compound. This, however, should be said with some reservation since the synchronic form for 'five' in Wolaitta is *ʔiccáfa*. Borrowing could also be

**2.2. Pronouns.** Subject pronouns take a high tone-accent on the final mora, object pronouns a falling tone-accent.

(7)	Subject	Object
1S	<i>taaní</i> (tá)	<i>tanâ</i>
2S	<i>neení</i> (né)	<i>nenâ</i>
3MS	<i>ʔi</i>	<i>ʔiyâ</i> (ʔâ)
3FS	<i>ʔiyá</i> (ʔá)	<i>ʔiyô</i> (ʔô)
1P	<i>nuuní</i> (nú)	<i>nunâ</i>
2P	<i>ʔinté</i>	<i>ʔintenâ</i>
3P	<i>ʔetí</i>	<i>ʔetâ</i>

The forms in brackets are shorter variants of the full forms; they can be used interchangeably. The tone-accent assignment in object pronouns constitutes an analytical problem, since falling tone-accent on short vowels has not been observed in other categories in Wolaitta. This apparent irregularity will not be dealt with in this paper, but merits further investigation.

**2.3. Adjectives.** Adjectives, like nouns, have tone-accent on either the penultimate (8) or the final (9) mora. Adjectives having high tone-accent on the final mora are fewer in number.

(8) a.	<i>lóʔo</i>	‘good’	<i>yelága</i>	‘young’
	<i>túna</i>	‘blunt’	<i>t’et’élé</i>	‘smart’
	<i>t’úma</i>	‘dark’	<i>karétta</i>	‘black’
	<i>c’íma</i>	‘old’ (of humans)	<i>ʔazálla</i>	‘lazy’
	<i>dámma</i>	‘dumb’		
b.	<i>boóza</i>	‘untidy, ineffective’	<i>č’aála</i>	‘sour’
	<i>buúk’a</i>	‘rotten’	<i>laáfa</i>	‘little, skinny’
	<i>c’eéga</i>	‘old’ (of objects, pets)	<i>boótta</i>	‘white’
	<i>keéha</i>	‘kind’	<i>guútta</i>	‘small’
	<i>ʔíita</i>	‘bad’		
(9) a.	<i>c’amó</i>	‘bitter’	<i>ʔadussá</i>	‘tall’
	<i>gitá</i>	‘big’		
	<i>ʔarsá</i>	‘light colored’		
	<i>woggá</i>	‘big’		

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considered to be the source of such words. At least the last word in (5), i.e., *kórima*, exists in other Ethiopian languages as well (compare Amharic /*korma*/ ‘bull’ and Oromo *kórimaa* ‘male animal’).

- (9) b. *kaaló* 'younger (of sibling)'      *bayrá* 'older (of sibling)'  
*k'eerá* 'small'  
*duurá* 'unruly'

Adjectives that have tone-accent on the antepenultimate mora have not been observed. In fact, the number of trisyllabic adjectives is relatively small, and, except for ideophonic adjectives (which often involve full or partial reduplication), no other quadrisyllabic adjectives have been recorded. Ideophonic adjectives have penultimate tone-accent (10).

- (10) *Iošóšša* 'weak'  
*boljófjfa* 'light coloured'  
*wurk'uúk'a* 'dirty'  
*bunduruúk'a* 'messy'  
*k'azzázza* 'tall and handsome'

The preceding sections can be summarized as follows. Vowel quantity and quality do not affect tone-accent assignment. All five vowels of the language can carry tone-accent: *k'íta* 'dirty', *kūše* 'hand', *ʔéra* 'knowledge', *tóho* 'feet', *záre* 'relative'. These vowels have long counterparts which may or may not be assigned tone-accent, as illustrated by the examples in (11).

- (11) *biittá* 'country/soil'      *šaára* 'pregnant'  
*suútta* 'blood'      *šaará* 'cloud'  
*keéha* 'kind'      *haattá* 'water'  
*c'ooc'é* 'hearth'      *ʔallaálla* 'business'

When a word medial long vowel is accented, it is always the second mora that carries the tone-accent (for word final accented long vowels, see 3.1.1 below). Hence, Wolaitta must be considered as having a mora marking system. None of the consonants, including the glides /y/ and /w/, function as moraic units. Where /y/ and /w/ occur in diphthongs, it is the vowel that receives the tone-accent, as in (12).<sup>6</sup>

<sup>6</sup> /y/ and /w/ exhibit different degrees of stricture in various positions in a word. Thus, in initial position in words like /yeéso/ 'fresh milk' and /waasó/ 'noise' they have more stricture; intervocally and as first members of a consonant cluster, as in /haysé/ 'story' and /kawššá/ 'scandalous' they occur with less stricture. The highest stricture for /y/ can be heard when it is geminated word medially as in /ʔeéyya/ 'moron', /ʔaayyía/ 'the mother' (nom), and /ʔáyyo 'boasting'. (See also Adams [1983] who discusses this issue at length.)

(12)	<i>giyá</i>	'market'	<i>c'áyo</i>	'insulting'
	<i>?aayó</i>	'mother'	<i>?áyyo</i>	'boasting'
	<i>kawá</i>	'king'	<i>káwo</i>	'dinner'
	<i>?awá</i>	'sun'	<i>móysa</i>	'to see sb. off, farewell'
	<i>báwta</i>	'carcass, dead body'		

Positionally, two contrasts have been observed. With very few exceptions, tone-accent is marked either on the final or the penultimate mora. The penultimate position has only high tone-accent, whereas the final position exhibits both a high and a falling tone-accent on short vowels; this falling tone-accent occurs only with object pronouns.

### 3. Tone accent and affixation

The importance of morphology in the analysis of prosodic systems has been well emphasised in the linguistic literature. Van der Hulst (in press) writes: "...affixes may have accentual properties of their own. Such affixes may be marked for receiving the primary accent, or they might determine the primary accent location in some way (by being pre- or post-accenting..." This has been attested in several languages. For example, Newman [1986] divides Hausa affixes into two types: "tone integrating affixes" and "non tone integrating affixes". The former affect (override) the lexical tone of the stem, while the latter do not affect the stem tone. Withgott and Halvorsen [1988:281] write for Norwegian: "Prefixes and suffixes are categorized according to which tone they assign and in terms of their dominance."

A similar situation can be observed in Wolaitta accent marking. Adams [1983:66] has pointed out that "[t]he predictability of Wolaitta stress is morphologically oriented." He shows that some morphemes, such as future marking morphemes and the plural morpheme, attract stress. He calls these "auto stressed". On the other hand, the vocative morpheme gets its preceding syllable stressed, which Adams labels "recessively" stressed. According to his analysis, the causative morpheme results in a shift of the stress in the original form (but see below). He also lists morphemes according to their accentual strength. In this section, I present further data on the forms dealt with by Adams. In addition, data on topics he overlooked are provided. Particularly relevant are verbal inflections and derivations which involve more than one high tone-accent. Furthermore, examples of nominal derivation and their effect on tone-accent pattern will be shown. All affixation in Wolaitta involves suffixes.

### 3.1. Noun Morphology

**3.1.1 Nominal Inflection.** Definiteness interacts with case and gender marking in Wolaitta.<sup>7</sup> Nominative case is marked for both definite and indefinite nouns, except those ending with /-e/, which are not inflected for indefinite nominative and only lengthen the citation form final vowel in the definite nominative. Definite and indefinite are not distinguished in plural nouns as they are in the singular. Inflection for case and number may shift the tone-accent of the base noun. This shift is shown in the paradigms in (13) and (14), where words are grouped into two categories depending on the location of the tone-accent.

(13) Inflection of nouns having high tone-accent on the penultimate mora (of the citation form)

a. <u>Citation form</u>	b. <u>Indf. nom.</u>	c. <u>Def. nom.</u>	d. <u>Def. acc.</u>	e. <u>Pl. nom.</u>	f. <u>Pl. acc.</u>
<i>záre</i> 'relative'	<i>záre</i>	<i>záree</i>	<i>záriya</i>	<i>záreti</i>	<i>záreta</i>
<i>kúše</i> 'hand'	<i>kúše</i>	<i>kúšee</i>	<i>kúšiya</i>	<i>kúseti</i>	<i>kúseta</i>
<i>tíre</i> 'liver'	<i>tíre</i>	<i>tíree</i>	<i>tíriya</i>	<i>tíreti</i>	<i>tíreta</i>
<i>tóho</i> 'feet'	<i>tóhi</i>	<i>tóhoy</i>	<i>tóhuwa</i>	<i>tóhoti</i>	<i>tóhota</i>
<i>mára</i> 'calf'	<i>mári</i>	<i>máray</i>	<i>máraa</i>	<i>máрати</i>	<i>máрата</i>
<i>dírsa</i> 'fence'	<i>dírsi</i>	<i>dírsay</i>	<i>dírsaa</i>	<i>dírsati</i>	<i>dírsata</i>
<i>ʔársá</i> 'bed'	<i>ʔársi</i>	<i>ʔársay</i>	<i>ʔársaa</i>	<i>ʔársati</i>	<i>ʔársata</i>
<i>boóra</i> 'ox'	<i>boóri</i>	<i>boóray</i>	<i>boóra</i>	<i>boóрати</i>	<i>boóрата</i>
<i>múzza</i> 'cow'	<i>múzza</i>	<i>múzziya</i>	<i>múzziyo</i>	<i>múzzati</i>	<i>múzzata</i>

(14) Inflection of nouns having high tone-accent on the final mora (of the citation form)

a. <u>Citation form</u>	b. <u>Indf. nom.</u>	c. <u>Def. nom.</u>	d. <u>Def. acc.</u>	e. <u>Pl. nom.</u>	f. <u>Pl. acc.</u>
<i>zaré</i> 'lizard'	<i>zaré</i>	<i>zarée</i>	<i>zariya</i>	<i>zaretí</i>	<i>zaretá</i>
<i>haré</i> 'donkey'	<i>haré</i>	<i>harée</i>	<i>hariya</i>	<i>haretí</i>	<i>haretá</i>
<i>toorá</i> 'spear'	<i>toorí</i>	<i>tooráy</i>	<i>tooráa</i>	<i>tooratí</i>	<i>tooratá</i>
<i>fok'ó</i> 'peel'	<i>fok'í</i>	<i>fok'óy</i>	<i>fok'úwa</i>	<i>fok'otí</i>	<i>fok'otá</i>
<i>ʔarsá</i> 'lgt colored'	<i>ʔarsí</i>	<i>ʔarsáy</i>	<i>ʔarsáa</i>	<i>ʔarsatí</i>	<i>ʔarsatá</i>
<i>maldó</i> 'sorghum'	<i>maldí</i>	<i>maldóy</i>	<i>maldúwa</i>	<i>maldotí</i>	<i>maldotá</i>
<i>geleššó</i> 'monkey'	<i>gelešši</i>	<i>geleššóy</i>	<i>geleššúwa</i>	<i>geleššotí</i>	<i>geleššotá</i>
<i>miččó</i> 'sister'	<i>miččá</i>	<i>miččíya</i>	<i>miččíyo</i>	<i>miččotí</i>	<i>miččotá</i>
<i>ʔaayó</i> 'mother'	<i>ʔaayá</i>	<i>ʔaayyía</i>	<i>ʔaayyíyo</i>	<i>ʔaayotí</i>	<i>ʔaayotá</i>

<sup>7</sup> The nominative case marker is /-i/ for masculine and /-a/ for feminine. The accusative case marker is /-a/ for masculine and /-o/ for feminine. When the accusative marker /-a/ is attached to nouns ending in /-e/, a glide is formed, resulting in the ending /iya/. The indefinite accusative forms are identical to the citation form.

The paradigms show that penultimate tone-accent in nouns (13) is not affected by the affixation of inflectional markers. On the other hand, citation form final tone-accent (14) shifts in the plural. Thus, we have in (13): /kúše/ ‘hand’ > /kúšetí/ ‘hands’, /záre/ ‘relative’ > /záretí/ ‘relatives’, but in (14) /zaré/ ‘lizard’ > /zaretí/ and /haré/ ‘donkey’ > /haretí/ ‘donkeys’.

It was shown in the previous section that, in simple noun phrases, the second mora of an accented long vowel receives high tone-accent. Word final long vowels on the other hand receive high tone-accent on the first mora as in (14c) /zaré/ ‘the lizard’ and /haré/ ‘the donkey’.

**3.1.2. Nominal Derivation.** Nominal derivation changes the tone-accent pattern of the base noun. The suffixes /-ta/, /-tétta/, /-amá/, /-ánčá/ derive ‘abstract’ or ‘agentive’ nominals; /-tétta/ derives nominals from adjectives, as well. Such derivational processes cause a shift of the high tone-accent of the original noun, and they also result in more than one accented mora in a noun. In (15b-d), the derived nominals have two accented syllables.

(15) a. -ta suffixes

<i>laggéta</i>	‘friendship’	< <i>lágge</i>	‘friend’
<i>siik’óta</i>	‘love’	< <i>siik’o</i>	‘loved one’

b. -tétta suffixes

<i>kawótétta</i>	‘kingdom’	< <i>kawó</i>	‘king’
<i>šoorótétta</i>	‘neighbourhood’	< <i>šooró</i>	‘neighbour’
<i>durététta</i>	‘richness’	< <i>dúre</i>	‘rich’
<i>minótétta</i>	‘strength’	< <i>míno</i>	‘strong’
<i>keehátétta</i>	‘kindness’	< <i>keéha</i>	‘kind’

c. -amá suffixes

<i>wolk’aámá</i>	‘one with power’	< <i>wolk’á</i>	‘power/force’
<i>doonaámá</i>	‘talkative one’	< <i>dooná</i>	‘mouth’
<i>wozannaámá</i>	‘smart one; one with good memory’	< <i>wozaná</i>	‘heart’

d. -ánčá suffixes

<i>goššánčá</i>	‘farmer’	< <i>goššá</i>	‘farm’
<i>hargánčá</i>	‘patient’	< <i>hargé</i>	‘illness’
<i>wordánčá</i>	‘liar’	< <i>wordó</i>	‘a lie’
<i>?odánčá</i>	‘gossiper’	< <i>?ódo</i>	‘news’

The vocative suffix /-o/ places a tone-accent on the penultimate mora. Thus, nouns having a final tone-accent in citation form replace it with a penultimate

tone-accent (16). Nouns accented on the penultimate mora in citation form, on the other hand, maintain the tone-accent on the penultimate in the vocative (17).

Vocative -o forms

- |      |              |                   |                |               |
|------|--------------|-------------------|----------------|---------------|
| (16) | <i>ʔišo</i>  | ‘Oh, brother!’    | < <i>ʔišá</i>  | ‘brother’     |
|      | <i>ʔaáyo</i> | ‘Oh, mother!’     | < <i>ʔaayó</i> | ‘mother’      |
|      | <i>ʔaáwo</i> | ‘Oh, father!’     | < <i>ʔaawá</i> | ‘father’      |
| (17) | <i>lággo</i> | ‘Oh, friend!’     | < <i>lágge</i> | ‘friend’      |
|      | <i>gódo</i>  | ‘Oh, lord/chief!’ | < <i>góda</i>  | ‘lord/ chief’ |

A similar situation exists in Somali. According to Banti [1988:24], “Vocatives in Somali uniformly have high tone on their first mora and low on their other moras.” Furthermore, as noted in Adams [1983], the plural form of vocative nouns such as those in (16) gets “stress” (tone-accent in our terms) on the final vowel of the suffix while those in (17) keep tone-accent in the same position.

- |      |                |                 |
|------|----------------|-----------------|
| (18) | <i>ʔišató</i>  | ‘Oh, brothers!’ |
|      | <i>ʔaayotó</i> | ‘Oh, mothers!’  |

But note that those in (17) keep tone-accent in the same position in the plural (19).

- |      |                |                     |
|------|----------------|---------------------|
| (19) | <i>lággeto</i> | ‘Oh, friends!’      |
|      | <i>gódato</i>  | ‘Oh, lords/chiefs!’ |

The nominal inflection and derivation show that ‘tone integrating affixes’ affect only the high tone-accent on citation form final vowel.

**3.2. Verb Morphology.** Verb roots in Wolaitta have the following canonical forms: C-, CVC-, CVVC-, CVCC-, and, for a very small set, CVC(C)VC(C)-. Every lexical verb has at least one suffix, and ends in a vowel.

**3.2.1. The Infinitival Verb.** That some verb roots are accented while others are not accented can be seen in the infinitival form of the verb. The infinitival morpheme is /-etta/.

- |                  |                 |                   |                  |                  |
|------------------|-----------------|-------------------|------------------|------------------|
| (20) a. Accented |                 |                   |                  |                  |
|                  | <i>káretta</i>  | ‘to cut branches’ | <i>fitetta</i>   | ‘to sweep’       |
|                  | <i>k’áretta</i> | ‘to tie’          | <i>k’ángetta</i> | ‘to curse’       |
|                  | <i>k’éretta</i> | ‘to split wood’   | <i>mándetta</i>  | ‘to bet’         |
|                  | <i>zérretta</i> | ‘to saw’          | <i>mírk’etta</i> | ‘to turn, twist’ |

## (20) a. Accented (continued)

<i>k'aác'etta</i>	'to scratch'	<i>zígiretta</i>	'to gossip'
<i>laáletta</i>	'to scatter'		
<i>heémetta</i>	'to herd'		
<i>wuúk'etta</i>	'to steal'		

## b. Unaccented

<i>beʔettá</i>	'to see'	<i>k'aarettá</i>	'to uncover'
<i>šoc'ettá</i>	'to hit'	<i>laač'ettá</i>	'to lick'
<i>bayzettá</i>	'to sell'	<i>laafettá</i>	'to lose weight'
<i>singettá</i>	'to smell'	<i>laamettá</i>	'to change'
<i>šammettá</i>	'to buy'	<i>maadettá</i>	'to help'
<i>?immetá</i>	'to give'	<i>doorettá</i>	'to choose'
		<i>kiitettá</i>	'to send'

In (20a), the high tone-accent is marked on the first vowel of the verb root, while in (20b) it is marked on the final mora of the suffix. The different behaviour of accented and unaccented verb roots can be seen in the inflection of these forms for aspect and negation, which are discussed in the next section.

**3.2.2. Verb Inflection.** In this section, tone-accent as a corollary of the inflection of verbs for aspect, person, and number is discussed. The perfective and imperfective forms which have distinct forms for person, number, and gender of the subject are shown in (21) and (22). In Wolaitta, the verb is not inflected for object nouns. The data in (21a and b) represent the inflection of unaccented verb roots, those in (22a and b) inflection of accented verb roots. The paradigms show that in non-accented roots high tone-accent is marked on the suffix, which in this case occurs on the first vowel of the suffix. In the accented verb roots, on the other hand, high tone-accent is not marked on the suffix. In the perfective, first and third person singular forms have two variants, which can be used interchangeably, but, according to this author, /*wuúk'k'-adisi*/ 'I stole' and /*šamm-adisi*/ 'I bought' sound more "archaic" than /*wuúk'k'-aasi*/ and /*šamm-aási*/.

## (21) Unaccented Roots

a. Perfective

<i>šamm-ádisi</i> /šamm-aási	'I bought'
<i>šamm-ádasa</i>	'you bought'
<i>šamm-ídesi</i> /šamm-íisi	'he bought'
<i>šamm-ádusu</i> /šammaásu	'she bought'
<i>šamm-ída</i>	'we bought'
<i>šamm-ídeta</i>	'you (pl.) bought'
<i>šamm-idosona</i>	'they bought'

b. Imperfective

<i>šamm-áysi</i>	'I buy'
<i>šamm-aása</i>	'you buy'
<i>šamm-eési</i>	'he buys'
<i>šamm-áwsu</i>	'she buys'
<i>šamm-oósi</i>	'we buy'
<i>šamm-eéta</i>	'you (pl.) buy'
<i>šamm-oósona</i>	'they buy'



## (22) Accented Roots

a. Perfective

<i>wuúk'k' -adisi/wuúk'k' -aasi</i>	'I stole'
<i>wuúk'k' -adasa</i>	'you stole'
<i>wuúk'k' -adusu/wuúk'k' -aastú</i>	'she stole'
<i>wuúk'k' -idesi/wuúk'k' -iisi</i>	'he stole'
<i>wuúk'k' -ida</i>	'we stole'
<i>wuúk'k' -ideta</i>	'you (pl.) stole'
<i>wuúk'k' -idosona</i>	'they stole'

b. Imperfective

<i>wuúk'k' -aysi</i>	'I steal'
<i>wuúk'k' -aasa</i>	'you steal'
<i>wuúk'k' -awsu</i>	'she steals'
<i>wuúk'k' -eesi</i>	'he steals'
<i>wuúk'k' -oosi</i>	'we steal'
<i>wuúk'k' -eeta</i>	'you (pl.) steal'
<i>wuúk'k' -osona</i>	'they steal'

Tone-accent marking in the future/intentional form, which is invariable for various subjects, and in the jussive and imperative moods, is presented in the paradigms in (23) and (24), which represent unaccented and accented verb roots, respectively. From the jussive inflection, only third person masculine singular and plural forms are chosen. In Wolaitta, as in most Omotiic languages, the second person imperative form is not distinct for gender.

## (23) Unaccented Roots

<u>Infinitive</u>		<u>Future /</u>		<u>Imperative</u>		<u>Jussive</u>	
		<u>Intentional</u>	<u>Sg.</u>	<u>Pl.</u>	<u>Sg.</u>	<u>Pl.</u>	
<i>be?ettá</i>	'to see'	<i>be?aná</i>	<i>be?á</i>	<i>be?ité</i>	<i>be?ó</i>	<i>be?óná</i>	
<i>šoc'ettá</i>	'to hit'	<i>šoc'aná</i>	<i>šoc'á</i>	<i>šoc'ité</i>	<i>šoc'ó</i>	<i>šoc'óná</i>	
<i>šamettá</i>	'to buy'	<i>šammaná</i>	<i>šammá</i>	<i>šammité</i>	<i>šammó</i>	<i>šammóná</i>	
<i>?imettá</i>	'to give'	<i>?immaná</i>	<i>?immá</i>	<i>?immité</i>	<i>?immó</i>	<i>?immóná</i>	
<i>bayzettá</i>	'to sell'	<i>bayzzaná</i>	<i>bayzzá</i>	<i>bayzzité</i>	<i>bayzzó</i>	<i>bayzzóná</i>	
<i>singettá</i>	'to smell'	<i>singaná</i>	<i>singá</i>	<i>singité</i>	<i>singó</i>	<i>singóná</i>	
<i>kiitettá</i>	'to send'	<i>kiitaná</i>	<i>kiitá</i>	<i>kiitité</i>	<i>kiitó</i>	<i>kiitóná</i>	
<i>doorettá</i>	'to choose'	<i>dooraná</i>	<i>doorá</i>	<i>doorité</i>	<i>dooró</i>	<i>dooróná</i>	
<i>laamettá</i>	'to change'	<i>laammaná</i>	<i>laammá</i>	<i>laammité</i>	<i>laammó</i>	<i>laammóná</i>	
<i>laafettá</i>	'to lose weight'	<i>laafaná</i>	<i>laafá</i>	<i>laafité</i>	<i>laafó</i>	<i>laafóná</i>	
<i>laac'ettá</i>	'to lick'	<i>laac'c'aná</i>	<i>laac'c'á</i>	<i>laac'c'ité</i>	<i>laac'c'ó</i>	<i>laac'c'óná</i>	
<i>k'aarettá</i>	'to uncover'	<i>k'aaraná</i>	<i>k'aará</i>	<i>k'aarité</i>	<i>k'aaró</i>	<i>k'aaróná</i>	
<i>maadettá</i>	'to help'	<i>maaddaná</i>	<i>maaddá</i>	<i>maaddité</i>	<i>maaddó</i>	<i>maaddóná</i>	
<i>laalukettá</i>	'to roll (tr.)'	<i>laalukkaná</i>	<i>laalukká</i>	<i>laalukkité</i>	<i>laalukkó</i>	<i>laalukkóná</i>	

## (24) Accented Roots

<u>Infinitive</u>		<u>Future / Intentional</u>	<u>Imperative</u>		<u>Jussive</u>	
			<u>Sg.</u>	<u>Pl.</u>	<u>Sg.</u>	<u>Pl.</u>
<i>fitetta</i>	'to sweep'	<i>fitana</i>	<i>fita</i>	<i>fitite</i>	<i>fitó</i>	<i>fitóná</i>
<i>k'éretta</i>	'to split wood'	<i>k'érana</i>	<i>k'éra</i>	<i>k'érite</i>	<i>k'éró</i>	<i>k'éroná</i>
<i>zératta</i>	'to saw'	<i>zérana</i>	<i>zéra</i>	<i>zérite</i>	<i>zéro</i>	<i>zéroná</i>
<i>k'aác'etta</i>	'to scratch'	<i>k'aác'ana</i>	<i>k'aác'a</i>	<i>k'aác'ite</i>	<i>k'aác'ó</i>	<i>k'aác'óná</i>
<i>mándetta</i>	'to bet'	<i>mándana</i>	<i>mánda</i>	<i>mándite</i>	<i>mándó</i>	<i>mándóná</i>
<i>k'ángetta</i>	'to curse'	<i>k'ángana</i>	<i>k'ánga</i>	<i>k'ángite</i>	<i>k'ángó</i>	<i>k'ángóná</i>
<i>mírú'etta</i>	'to twist'	<i>mírú'ana</i>	<i>mírú'a</i>	<i>mírú'ite</i>	<i>mírú'ó</i>	<i>mírú'óná</i>
<i>wuúk'etta</i>	'to steal'	<i>wuúk'k'ana</i>	<i>wuúk'k'a</i>	<i>wuúk'k'ite</i>	<i>wuúk'k'ó</i>	<i>wuúk'k'óná</i>
<i>laáletta</i>	'to scatter'	<i>laáлана</i>	<i>laála</i>	<i>laálite</i>	<i>laáló</i>	<i>laáloná</i>
<i>heémetta</i>	'to herd'	<i>heémmana</i>	<i>heémma</i>	<i>heémmitte</i>	<i>heém mó</i>	<i>heémóná</i>

The conjugation of four disyllabic verb roots—/zígir-/ 'to gossip', /hék'umm-/ 'to hiccup', /k'élt'umm-/ 'to vomit (of children)', and /saásuk-/ 'to whisper'—is shown in the paradigm below.

## (25) Disyllabic verb roots

<u>Infinitive</u>	<u>Future / Intentional</u>	<u>Imperative</u>		<u>Jussive</u>	
		<u>Sg.</u>	<u>Pl.</u>	<u>Sg.</u>	<u>Pl.</u>
<i>zígiretta</i>	<i>zígirana</i>	<i>zígira</i>	<i>zígirite</i>	<i>zígiró</i>	<i>zígiróná</i>
<i>hék'ummetta</i>	<i>hék'ummana</i>	<i>hék'umma</i>	<i>hék'ummitte</i>	<i>hék'úmmó</i>	<i>hék'úmmóná</i>
<i>k'élt'ummetta</i>	<i>k'élt'ummana</i>	<i>k'élt'umma</i>	<i>k'élt'ummitte</i>	<i>k'élt'úmmó</i>	<i>k'élt'úmmóná</i>
<i>saásuketta</i>	<i>saásukkana</i>	<i>saásukka</i>	<i>saásukkite</i>	<i>saásúkkó</i>	<i>saásúkkóná</i>

Close examination of verb roots shows that most end in a closed syllable in Wolaitta. However, the verbs in (26) below are different in that they suggest /C-/ or /CV-/ roots, depending on the kind of suffix attached to them.

## (26) C- or CV- roots

<u>Infinitive</u>		<u>Imperfect</u>	<u>Imperative</u>		<u>Jussive</u>	
			<u>Sg.</u>	<u>Pl.</u>	<u>Sg.</u>	<u>Pl.</u>
<i>beétta</i>	'to go'	<i>baaná</i>	<i>bá</i>	<i>biité</i>	<i>bó</i>	<i>bóná</i>
<i>meétta</i>	'to eat'	<i>maaná</i>	<i>má</i>	<i>míté</i>	<i>mó</i>	<i>móná</i>
<i>geétta</i>	'to say'	<i>gaaná</i>	<i>gá</i>	<i>giité</i>	<i>gó</i>	<i>góná</i>
<i>yeétta</i>	'to come'	<i>yaaná</i>	<i>yá</i>	<i>yiité</i>	<i>yó</i>	<i>yóná</i>

In a synchronic description, the above verbs should be treated as C- verb roots rather than CV- verb roots because some morphemes, e.g., the singular imperative and jussive morphemes above, are affixed to the consonant. Further more, where they appear as CV- roots, as in the infinitive, imperfective, and plural imperative forms, the vowel quality varies according to the kind of suffix. Based

on this latter fact one can also argue that these are CV- verb roots with an under-specified vocalic slot. This leaves open the question of why the vocalic element is not realised in all verb inflections.

C- verb roots have a tone-accent like that of unaccented verb roots, except in their infinitival form. Infinitival, unaccented verbs have the high tone-accent on the final vowel of the suffix and, hence, the word. C- verbs, however, have the tone-accent on the first vowel of the word, which, because of the moraic rule for long vowels, occurs on the second mora of that vowel. In this respect, they pattern with the accented roots, which also have the tone-accent on the first vowel of the word.

Inflection of the verb for negation also results in different tone-accent patterns, which are shown in (27).

(27) Unaccented Roots

a. The Perfective Negative

<i>šammábéyke</i>	'I did not buy'
<i>šammábákká</i>	'you did not buy'
<i>šammíbénná</i>	'he did not buy'
<i>šammábéykú</i>	'she did not buy'
<i>šammíboókko</i>	'we did not buy'
<i>šammíbékkétá</i>	'you (pl.) did buy'
<i>šammíbókkóná</i>	'they did not buy'

b. Imperfective and Future Negative

<i>šammíkke</i>	'I do/will not buy'
<i>šammákká</i>	'you do/will not buy'
<i>šamménná</i>	'he do/will not buy'
<i>šammúkkú</i>	'she do/will not buy'
<i>šammókkko</i>	'we do/will not buy'
<i>šammékkétá</i>	'you (pl.) do/will not buy'
<i>šammókkóná</i>	'they do/will not buy'

Accented Roots

c. The Perfective Negative

<i>wuúk'k'ábéyke</i>	'I did not steal'
<i>wuúk'k'ábákká</i>	'you did not steal'
<i>wuúk'k'íbénná</i>	'he did not steal'
<i>wuúk'k'ábéykú</i>	'she did not steal'
<i>wuúk'k'íboókko</i>	'we did not steal'
<i>wuúk'k'íbékétá</i>	'you (pl.) did not steal'
<i>wuúk'k'íbókóná</i>	'they did not steal'

d. Imperfective and Future Negative

<i>wuúk'k'íkke</i>	'I do/will not steal'
<i>wuúk'k'ákká</i>	'you do/will not steal'
<i>wuúk'k'énná</i>	'he does/will not steal'
<i>wuúk'k'úkkú</i>	'she does/will not steal'
<i>wuúk'k'ókkko</i>	'we do/will not steal'
<i>wuúk'k'ékkétá</i>	'you do/will not steal'
<i>wuúk'k'ókkóná</i>	'they do/will not steal'

The negative morpheme has different forms for the different person-number inflections. Thus, the perfective negative inflection in (27a) should be analysed as in (28).

(28) <i>šamm-á-béyk-e</i>	'I did not buy'
<i>šamm-á-bák-á</i>	'you did not buy'
<i>šamm-í-bénn-á</i>	'he did not buy'
<i>šamm-á-béyk-ú</i>	'she did not buy'
<i>šamm-í-boók-o</i>	'we did not buy'
<i>šamm-í-bék-étá</i>	'you (pl.) did not buy'
<i>šamm-í-bók-óná</i>	'they did not buy'

The subject markers are the discontinuous morphemes /á....e/ for first person, (á....á) for second person, and so forth. The negative marker, even though it synchronically appears to be part of the inflected verb and has varying forms for the different persons, must have been a separate word with its own tone-accent, which at a later stage became cliticised to the verb. One piece of evidence for this is the high tone-accent on the negative morpheme in the first person singular and plural inflections. Here, tone-accent remains on the negative marker, while in the other persons it is assigned to the person markers as well. The same holds for the inflection of the imperfective negative, which also has no tone-accent on the discontinuous first person marking morphemes. (This imperfective negative morpheme itself must have undergone vowel reduction, since now only a non-tone-accent bearing unit, /-nn-/ for third person masculine and /-kk-/ for all other persons, marks the imperfective negative.)

**3.2.3. Verb Derivation.** The affixation of passive and causative morphemes does not affect the location of tone-accent. Here, only causative verb derivation for /šamm-/ ‘buy’ and /wuúk’-/ ‘steal’ and the derivation of jussive forms from adjectives are discussed.

- (29) *šam-iss-aási* ‘I made somebody buy’ (compare *šamm-aási* ‘I bought’)  
*wuúk’-iss-iisi* ‘he made somebody steal’ (compare *wuúk’k’-iisi* ‘he stole’)

Tone-accent remains on the inflectional morphemes in double causative forms as well, as shown in (30).

- (30) *šam-is-iss-iisi*  
 buy-CAUS-CAUS-3MS.PST  
 ‘He got someone to make someone else buy’

The same can be observed in the Future (31).

- (31) *taaní šam-iss-aná* ‘I will make somebody buy’  
*taaní wuúk’-is-iss-ana* ‘I will make somebody make someone else steal’

The causative morpheme /-is/ is geminated before inflectional morphemes. The motivation for the gemination of this and related derivational and inflectional forms, as in *wozaná* ‘heart’ and *wozannaámá* ‘one with good memory’, *wuúk’ettá* ‘to steal’ and *wuúk’k’aasi* ‘I stole’, for example, is an interesting topic for future research.

In the derivation of jussive verb forms from adjectives, the masculine form /-o/ (32a) or the feminine /-u-/ (32b) is suffixed to the adjective, replacing the

final vowel of the adjective. This suffixation results in a shift in the tone-accent of the base form.<sup>8</sup>

(32) a.	<i>lo??ó</i>	'let it/him be good'	<	<i>ló??o</i>	'good'	
	<i>daró</i>	'let it be plenty'	<	<i>dáro</i>	'plenty'	
	<i>samó</i>	'let it be rotten'	<	<i>sáma</i>	'rotten'	
	<i>boot't'ó</i>	'let it/him be white'	<	<i>boótta</i>	'white'	
	b.	<i>karet't'ú</i>	'let her be black'	<	<i>karétta</i>	'black'
		<i>?azallú</i>	'let her be lazy'	<	<i>?azállá</i>	'lazy'

Based on the above description, Wolaitta verb roots can be grouped into two sets: accented and unaccented. In accented verbs, high tone-accent is marked on the first vowel except when the first syllable contains a long vowel. In such cases, it is the second mora of the first vowel that receives tone-accent. For unaccented verbs, it is not possible to identify the location of the high tone-accent on the inflected verb as 'ultimate' or penultimate'. In the inflection of such verbs for perfective and imperfective aspect, for example, the first mora (or the second mora of those suffixes beginning with a long vowel) is marked for tone-accent, irrespective of the relative distance from the right edge, which seems to determine nominal tone-accent marking. Compare, for example, /*šamm-idosona*/ 'they bought', and /*šamm-ída*/ 'we bought' and /*šamm-aná*/ 'I, you, etc. will buy'. Thus, in verb inflection, tone-accent pattern depends on 1) whether or not the verb root is accented, and 2) the place of tone-accent on the suffix. This appears to be the case in other Ometo languages as well. Hayward [1990a: 440], states the following about the Zayse tone-accent pattern in verbs: "In the case of verbs, accentual placement varies according to the paradigm concerned, and could therefore be regarded as a part exponent of the category (categories) expressed in that paradigm."

Suffixes, then, are of two types: those that shift the location of tone-accent and those that do not. "Accent integrating" morphemes, to borrow Newman's [1986] terminology, affect the tone-accent pattern of the base form. Examples of this type are shown in the derivation of nominals such as /*laggéta*/ 'friendship' (from /*lágge*/ 'friend') and in the vocative form, which alter the tone-accent of the base form. The same phenomenon can also be observed in the derivation of jussive forms from adjectival bases. Some suffixes, on the other hand, do not affect the tone-accent of the verb root. When suffixed to accented verb roots, the root retains its tone-accent while the suffix remains unaccented. For example, aspect,

<sup>8</sup> Next to the usual 'predicative' and 'inchoative' form, adjectives can be basis for the derivation of abstract nominals and jussive verb forms. When used in non-attribute position, they inflect for person and case. Thus, from /*ló??o*/ 'good', /*lo??ótetta*/ 'goodness', /*ló??oti*/ 'the good ones (nom.)'; /*ló??ota*/ 'the good ones (acc.)'; /*lo??ibenná*/ 'it was not good'. Also /*lo??o ka?úsi*/ 'it is well cooked'.

person, number, and gender morphemes (which are inseparable in the perfective and imperfective), as well as infinitive and imperative mood suffixes, are not accented when affixed to accented verb roots. However, when the same morphemes are affixed to unaccented verb roots, a tone-accent is marked on the suffixes themselves. We label these morphemes “non accent integrating” morphemes because their affixation to an accented base does not change the location of accent. We also include in this class jussive and negation morphemes, which do not alter the accent of the base form but add to it their own tone-accent, resulting in two or more accented moras in a word.

#### 4. Phrases

**4.1. Noun Phrases.** When nouns occur with modifiers, the position of the tone-accent may be affected. Consider the case of quantified nouns. When numerals up to ‘four’ are uttered in isolation, tone-accent is marked on the last vowel (33).

- (33) *ʔissó* ‘one’<sup>9</sup>  
*naaʔá* ‘two’  
*heezzá* ‘three’  
*ʔoyddá* ‘four’

Numerals for ‘five’ */ʔiččáša/* and ‘ten’ */támma/* both have penultimate tone-accent. Between five and ten, numerals have tone-accent on their ante-penultimate vowel, as in (34).

- (34) *ʔusúppuna* ‘six’  
*laáppuna* ‘seven’  
*hóspuna* ‘eight’  
*ʔudúpuna* ‘nine’

Numerals beyond ten are formed by a combination of */támma/* ‘ten’, the conjunction marker */-nne/*, and the lower numerals, such as */naaʔá/* ‘two’, */heezzá/* ‘three’, and */ʔiččáša/* ‘five’ (35).

- (35) *tammanne naaʔá* ‘twelve’  
*tammanne ʔiččáša* ‘fifteen’  
*hastammanne heezzá* ‘thirty three’

<sup>9</sup> In modifying positions, the last vowel of the numeral is changed to /i/ or /u/ as in: */ʔissí naʔi/* ‘one child’; */naaʔú naati/* ‘two children’; */heezzú naati/* ‘three children’. Those higher numerals that have */-puna/* are different. Thus, we have */ʔusúppun naati/* ‘six children’, */laáppun naati/* ‘seven children’.

In such combinations, it is the lower numerals that are marked for tone-accent. The tone-accent assignment of these numerals is different from what can be observed in compounds and phrases. Even though numerals above ten consist of three morphemes, the location of the high tone-accent makes them look like one single form.

In quantified noun phrases, illustrated in (36), the head noun loses its tone-accent. If the preceding modifier carries a penultimate high tone-accent, the latter is extended onto the final vowel of the same word.

- (36) *naaʔú haretí* 'two donkeys' (*haretí* 'donkeys')  
*naaʔú kušeti* 'two hands' (*kúšeti* 'hands')  
*ʔiččášú kušeti* 'five hands' (*ʔiččáša* 'five')  
*támmú naati* 'ten children' (*támma* 'ten', *naati* 'children')  
*ʔubbá kušeti* 'all hands' (*ʔubbá* 'all', *kúšeti* 'hands')  
*guúttá suk'k'unta* 'few ashes' (*guútta* 'few, little', *súk'k'unta* 'ashes')

The same process is observed with adjectives (37). The adjective as a modifier retains its inherent high tone-accent but high tone extension or spreading occurs in those adjectives that have penultimate high tone-accent in their citation form.

- (37) *karéttá miizziya* 'the black cow' (*karéttá*, *miizziya*)  
*k'ántá miširiya* 'the short woman' (*k'ántá*, *miširiya*)  
*lóʔʔó huup'e* 'good hair' (*lóʔʔó*, *huup'e*)  
*woggá haree* 'the big donkey' (*woggá*, *harée*)

Similarly, in the relative clause, it is the clause-final verb of the relative clause, not the head noun, that is marked for tone-accent, as in (38).

- (38) a. *ʔašo šamm-ída naʔ- ay*  
 meat buy-REL child-NOM (MASC.)  
 'The boy who bought meat'
- b. *mišša demm-ída naʔ- iya*  
 money find-REL child-NOM (FEM.)  
 'The girl who found money'

It was shown in section 3.1.2 (examples in 15) that affixation of nominalizing morphemes such as /ámá/ and /-ánčá/ to simple nominals and adjectives allows the derived word to have more than one high tone-accent. When these derived nominals are used as modifiers of other nominals, they keep this double tone-accent pattern (39).

- (39) *wolk'ámá asa* 'strong person'  
*doonámá asa* 'talkative person'  
*goššánčá keetta* 'a farmer's house'  
*hargánčá t'aliya* 'a patient's medicine'

**4.2. Adjectival Phrases.** Adjectival phrases have the same tone-accent pattern as noun phrases, since here, too, the specifier, not the head, is marked for tone-accent.

- (40) *dáró k'ánta* 'very short' (but, *dáro* 'a lot', *k'ánta* 'short')  
*dáró ló??o* 'very good' (but, *ló??o* 'good')

If these phrases modify other nouns, then the adjectives attract high tone-accent from the head noun (41).

- (41) *dáró k'ántá ?asa* 'a very short person'  
*dáró ló??ó ?asa* 'a very good person'

As in noun phrases, numerals attract tone-accent in adjectival phrases and, as heads, adjectives lose their tone-accent.

- (42) *naa?ú k'ántati* 'the two short ones' (*naa?á* 'two', *k'ántati* 'short ones')  
*?issí woggay* 'one big one' (*?issó* 'one', *woggá* 'big')

When these adjectival phrases modify a noun, then the adjective is reassigned high tone-accent:

- (43) *naa?ú k'ántá ?asati* 'two short persons'  
*?issí woggá kanay* 'one big dog'

In expanded noun phrases, each modifier, except for the singular demonstratives, carries high tone-accent.

- (44) a. *hageetí naa?ú ?adussá naati*  
 these two tall boys  
 b. *hegeetí heezzú k'ántá hareti*  
 those three short donkeys  
 c. *ha ló??ó ?adussá huup'e*  
 this nice long hair'



**4.3. Postpositional Phrases.** There are a few independent postpositions in Wolaitta. All of these have high tone-accent on the final vowel (45).

- (45) *bollá* 'on' as in /*keettáa bolla*/ 'on the house'  
*garsá* 'in' /inside/  
*guyyé* 'behind'  
*miyyé* 'beside'

There are also bound postpositional morphemes in Wolaitta, which, when suffixed to a definite noun with a long final vowel, result in high tone-accent on both moras. Compare the following definite and indefinite postpositional phrases: *miččééppe* 'from the sister' and *miččíppe* 'from a sister'; *kúšééppe* 'from the hand (diminutive)' and *kúšéppe* 'from a hand'; *keettááppe* 'from the house' and *keettáppe* 'from a house'. Further examples on the tone-accent pattern of postpositional phrases formed by a postpositional suffix and (definite) nouns with different location of high tone-accent in their citation form are given below.

- |                                    |                          |                       |
|------------------------------------|--------------------------|-----------------------|
| (46) a. <i>šaáfa</i> 'river'       | b. <i>miččó</i> 'sister' | c. <i>kúše</i> 'hand' |
| <i>šaáfáá-ppe</i> 'from the river' | <i>miččéé-ppe</i>        | <i>kúšiyáá-ppe</i>    |
| <i>šaáfáá-kko</i> 'to the river'   | <i>miččéé-kko</i>        | <i>kúšiyáá-kko</i>    |
| <i>šaáfáá-ra</i> 'with the river'  | <i>miččéé-ra</i>         | <i>kúšiyáá-ra</i>     |
| <i>šaáfáá-yyo</i> 'for the river'  | <i>miččéé-yyo</i>        | <i>kúšiyáá-yyo</i>    |
- 
- |   |                                   |
|---|-----------------------------------|
| (47) a. <i>ʔi šaáfááppe yiis</i>                      | 'He came from the river'          |
| b. <i>ʔi šaáfááko biis</i>                            | 'He went to the river'            |
| c. <i>ʔi miiššáa ba miččééppe ekkis</i> <sup>10</sup> | 'He took money from his sister'   |
| d. <i>ʔi ba miččééko biis</i>                         | 'He went to his sister'           |
| e. <i>ʔi ba miččééra biis</i>                         | 'He went with his sister'         |
| f. <i>ʔi miiššáa ba miččéeyo ʔimiis</i>               | 'He gave the money to his sister' |

Postpositional phrases lose their tone-accent when modified by other categories.

- (48) *lóʔʔó naʔaape* 'from the nice boy'  
*guúttá kušéeppe* 'from the little hand'

In all major lexical categories discussed so far, we have not encountered long vowels with high tone-accent on both moras. In nouns, adjectives, and verbs with accented long vowels, the right most mora receives high tone-accent, e.g. /*miízza*/ 'cow', /*keéha*/ 'kind', and /*laáletta*/ 'to scatter'. The only exceptions to this rising tone-accent in nouns are final accented inflected nouns as in /*zaréé*/ 'the lizard (nominative)' and /*haréé*/ 'the donkey (nominative)' from /*zaré*/ 'lizard' and

<sup>10</sup> The morpheme /*ba*/ in the last four sentences refers to third person possessor.

/haré/ ‘donkey’, respectively (see 3.1.1). The case of accented long vowels in postpositions shown above is parallel to the occurrence of extra high tone-accent on the final vowel of numeral or adjectival modifiers in noun phrases (see sections 4.1 and 4.2 above.).

## 5. Compounding

In terms of tone-accent patterns, nominal compounds behave like phrases in that the nouns involved, each with their inherent high tone-accent in isolation, take only one tone-accent when combined. This high tone-accent is always placed on the first component of the compound noun, as is the case with numeral and adjectival modifiers in noun phrases.

- (49) a. *hayttá* ‘leaf’  
           *tukké* ‘coffee’  
           *hayttá tukke* ‘spicy coffee made from coffee leaves’
- b. *haattá* ‘water’  
       *hargé* ‘illness’  
       *haattá harge* ‘algae’
- c. *gilʔá* ‘small’  
       *kūše* ‘hand’  
       *gilʔá kūše* ‘little finger / the fifth finger’
- d. *goóšša* ‘crazy’  
       *giyá* ‘market’  
       *goóššá giya* ‘a special market day in the second week of September’
- e. *yeehó* ‘mourning’  
       *keettá* ‘house’  
       *yeehó keetta* ‘mourning house’

## 6. Unaccented categories

It was shown in the previous sections that, in phrases, it is the specifiers which always take the tone-accent. But this generalization does not extend to demonstratives and possessive pronouns.

**6.1. Demonstratives.** Contrary to the case with numerals, adjectives, and relative clauses, singular demonstratives do not carry high tone-accent. Also, the modified noun retains its inherent tone-accent.

- (50) *ha haretí* ‘these donkeys’ (*ha* ‘this’ *haretí* ‘donkeys’)  
*ha kúšeti* ‘these hands’ (*ha* ‘this’ *kúšeti* ‘hands’)  
*he mízzati* ‘those cows’ (*he* ‘that’ *mízzati* ‘cows’)

The demonstratives /*ha*/ ‘this’ and /*he*/ ‘that’ have longer variants /*hagé*/ and /*hegé*/, respectively, which carry their own tone-accent when uttered in isolation. But even these full forms do not get high tone-accent as other specifiers of a noun would.

- (51) *hage harée* ‘this donkey (nom.)’  
*hege harée* ‘that donkey (nom.)’  
*hega haríya* ‘that donkey (acc.)’

But the plural morpheme on demonstrative pronouns does carry a high tone-accent. Note, however, that the noun retains its inherent tone-accent:

- (52) *hegeetí haretí* ‘those donkeys (nom.)’  
*hegeetá haretá* ‘those donkeys (acc.)’

**6.2. Pronominal Possessives.** The second set of specifiers that do not carry tone-accent are possessive pronominals.

- |         |                   |                    |    |                   |                  |
|---------|-------------------|--------------------|----|-------------------|------------------|
| (53) a. | <i>ta haré</i>    | ‘my donkey’        | b. | <i>ta kúše</i>    | ‘my hand’        |
|         | <i>ne haré</i>    | ‘your donkey’      |    | <i>ne kúše</i>    | ‘your hand’      |
|         | <i>?a haré</i>    | ‘his donkey’       |    | <i>?a kúše</i>    | ‘his hand’       |
|         | <i>?i haré</i>    | ‘her donkey’       |    | <i>?i kúše</i>    | ‘her hand’       |
|         | <i>nu haré</i>    | ‘our donkey’       |    | <i>nu kúše</i>    | ‘our hand’       |
|         | <i>?inte haré</i> | ‘your (pl) donkey’ |    | <i>?inte kúše</i> | ‘your (pl) hand’ |
|         | <i>?eta haré</i>  | ‘their donkey’     |    | <i>?eta kúše</i>  | ‘their hand’     |

The unaccented demonstratives /*ha*/ and /*he*/, which are short forms of /*hagé*/ ‘this’ and /*hegé*/ ‘that’, as well as the first person singular/plural and second and third person singular possessive pronominals, are the shortest possible non-verbal forms in Wolaitta, consisting of just CV. Thus, parallel to languages like Somali (Hyman [1981:182]), one could argue that these forms do not satisfy the structural description of independent lexical categories in Wolaitta and, therefore, cannot be assigned tone-accent. However, shorter variants of subject pronouns shown in section 2.2, which are segmentally identical to possessive pronouns do receive high tone-accent. Each of the forms in (53) above would give a different meaning if the pronoun forms were accented, as illustrated in (54a and b) below which, without the accent marker on /*?i*/, translate as ‘her donkey’ and ‘her hand’, respectively.

- (54) a. *ʔi haré*  
 he donkey  
 'He is a donkey'
- b. *ʔi kúše*  
 he hand  
 ?'He is a hand'

Subject pronouns carry their own high tone-accent, as in (55) and (56).

- (55) a. *tá ʔašó m-aaysi*  
 I meat eat-1S IMPF  
 'I eat meat'
- b. *taaní ʔašó m-aaysi*  
 I meat eat-1S IMPF  
 'I eat meat'
- (56) a. *né ʔašó m-aasa*  
 you meat eat-2S IMPF  
 'You eat meat'
- b. *neení ʔašó m-aasa*  
 you meat eat-2S IMPF  
 'You eat meat'

## 7. Discussion and conclusion

The description of the Wolaitta tone-accent system in this paper was based on the claim that in tone-accent languages there is a restricted occurrence of high tone-accent. However, it was shown that this is the case only with simple lexical categories. There is deletion and shift of high tone-accent in various categories, a phenomenon said to be typical of accent languages. Furthermore, through derivation, words may be marked for more than one high tone-accent, a property which is common in tone languages. This places Wolaitta somewhere between 'tone' languages and "stress" or "accent" languages as defined in various studies. For example, Childs [1989:141], in his discussion on the relationship between tone and accent with regard to African prominence systems, states that

...the basic distinction that is usually made between the two is that tone is paradigmatic and accent is syntagmatic. In a paradigmatic system, any number of units can have equal prominence, e.g., a series of high tones is possible. ... In a syntagmatic system, on the other hand, the location of the accented unit is crucial; only one unit in a phonological phrase is allowed to have prominence, e.g., a sequence of two accented syllables in a phonological phrase is ungrammatical.

Tone accent marking in phrases can be predicted from the tone-accent of the modifier(s). That is, if a single modifier is present and if this modifier has final tone-accent, the phrase will have only one high tone-accent. If the modifier has penultimate high tone-accent, this accent spreads to the final mora of the modifier. In all cases, it is the modifier that bears high tone-accent, not the head of the phrase. This could indicate the prosodic function of tone-accent, that high tone-accent in a phrase marks the boundary between modifier and head. It might also explain tone spread to the last vowel of modifier words which have high tone-accent in the penultimate position (57).

(57)	<i>ló??o</i>	‘good’	>	<i>ló??ó huup’e</i>	‘good hair’
	<i>dáro</i>	‘a lot’	>	<i>dáró lo??o</i>	‘very good’
	<i>karéttá</i>	‘black’	>	<i>karéttá miizziya</i>	‘the black cow’
	<i>guúttá</i>	‘small’	>	<i>guúttá suk’k’unta</i>	‘little ashes’

When complex, derived words with more than one high tone-accent are used in a phrase, they keep their tone-accent.

The data presented here also show that the domain of tone-accent marking in Wolaitta is not the syllable. Evidence for this is derived from the fact that in uninflected words with long vowels, it is the second mora of the long vowel that is marked with high tone-accent, whereas in inflected words with a long vowel in final positions, it is the first member of the long vowel that receives high tone-accent.

The pattern of complex tone-accent marking in negative verbs and in derivational processes suggests that morphology is highly relevant for our understanding of the function of pitch in Ometo as well as of the historical development of alternative (i.e., classical tonal) systems in other Omotic languages. According to Wedekind [1985], for example, the historical development of the Bench language to a system having five level tones and one gliding tone can be partially explained on morphological grounds.

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## TONAL FEET AND THE ADAPTATION OF ENGLISH BORROWINGS INTO HAUSA \*

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This paper investigates how Hausa places a tonal interpretation on stress in English borrowings. A key intermediary in this process is the tonal foot, which is maximally disyllabic. Tonal feet are of two kinds, in complementary distribution in the data. One is interpreted as HL, or falling-toned, the other as High-toned. The analysis represents a significant advance over the less highly structured view that a simple substitution algorithm replaces stresses with tones, e.g., High tone for stressed syllables and Low tone for unstressed. This provides a boost for the status of the tonal foot as a prosodic constituent. The analysis also has implications for Hausa non-loan word phonology in that it suggests a natural reinterpretation of claims made by Newman and Jagger [1989].

### 1. Introduction

This paper investigates how Hausa interprets English borrowings tonally. Hausa has High and Low lexical tones but no phonological stress, while English has no lexical tones but quite an intricate system of lexical stress. The data for this paper are 335 examples of English borrowings from Roxana Newman's English-Hausa dictionary [Newman 1990] and from a list compiled by Abdullahi Bature. Added to these are another dozen words ending in falling tones supplied by Paul Newman. I follow the standard practice of marking Low tones for Hausa with a grave accent, Falling tones with a circumflex accent, and leaving High tones unmarked.

The main factor governing tone in Hausa borrowings from English is the position of main stress in the English source word (compare *gàràntíi* 'guarantee'

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vs. *gaadinà* ‘gardener’). In most cases, English main stress is interpreted as a High prominence peak in Hausa, as shown by the examples in (1).

- (1) a. H-L  
*soojà* ‘soldier’  
*faakìn* ‘parking’  
*ciizàl* ‘chisel’  
*oofis* ‘office’  
*raakèt* ‘racket’
- b. (L)-L-HL  
*ràsít* ‘receipt’  
*kàsét* ‘cassette’  
*ràfàlìi, làfàrìi* ‘referee’  
*tànjàrìn* ‘tangerine’
- c. L-H-L  
*simintii* ‘cement’  
*kàmashòo* ‘commission’  
*ràkoodàa* ‘recorder’  
*kwàmandàa* ‘commander’

The examples in (1a) are the simplest. Disyllabic English words with initial main stress tend overwhelmingly to be interpreted as H-L in Hausa. The examples in (1b) illustrate how English words with final stress are normally interpreted. The final syllable is HL, and all preceding syllables are L. If the English word is stressed on the final syllable and an extra vowel is added at the end in its borrowed form, as with (1c) *simintii* ‘cement’, then the word receives a penultimate H tone, like the remaining words in (1c), whose English sources have penultimate stress, while the remaining syllables are L.

But it would be very wrong to conclude from this that English stress corresponds to Hausa H, and that other syllables are rendered as L. This would not generalize properly to most Hausa words other than those in the narrow categories in (1). For one thing, Hausa interprets some English words as having two stresses, as in (2), where two H tones appear, in each case followed by a L tone.

- (2) a. *caajì oofis* ‘charge office’  
 b. *fasà oofis* ‘post office’  
 c. *hedimastàa* ‘headmaster’  
 d. *helikaftàa* ‘helicopter’  
 e. *iyàakwàndishìn* ‘air condition’  
 f. *laasifìikàa* ‘loud speaker’  
 g. *tânkiifàa* ‘timekeeper’

These examples happen to be analyzed in English as compounds,<sup>1</sup> but the data in (3), which behave identically, show that it is not English compound structure, but rather what is interpreted as stress to the right of main stress, that determines the behavior of these words. We see from (3a,b,c,f) that a syllable of the form CVt to the right of main stress (where V can be either long or short) is frequently interpreted as stressed, even though English speakers in general do not perceive any stress on the final syllables of these words.

- |        |                    |               |
|--------|--------------------|---------------|
| (3) a. | <i>asìbitì</i>     | ‘hospital’    |
| b.     | <i>caakùleeṭì</i>  | ‘chocolate’   |
| c.     | <i>kirsìmatì</i>   | ‘Christmas’   |
| d.     | <i>kultìbeetâa</i> | ‘cultivator’  |
| e.     | <i>laabùraarèe</i> | ‘library’     |
| f.     | <i>singìleeṭì</i>  | ‘singlet’     |
| g.     | <i>sùkoolàshîf</i> | ‘scholarship’ |

The English source words in (2) and (3) all begin with main stress. In (3g), the English cluster [sk], which is not permissible in Hausa, undergoes epenthesis, and the epenthetic vowel [u] becomes Low-toned by a process to be described below. In all but one of these examples, the English main stress is rendered in Hausa as a High tone. The subsequent secondary stress is also rendered in Hausa as a High tone, as is any syllable of the form CVt, where t represents the consonant t. Examples (2a) through (2d) have a secondary stress on the penultimate syllable, which is rendered by a Hausa penultimate High tone.

Note that Hausa inserts a vowel to make the second syllable of (2f) *laasìfiikàa* ‘loudspeaker’ but does not do this in (2g) *tânkiifâa* ‘timekeeper’. This is because the epenthesis rule is governed by the syllable structure constraints of Hausa, which permit the CVC of *tân* to be interpreted as a syllable but not the CVVC sequence *laas*.

## 2. Tonal feet

Example (2g) *tânkiifâa* is particularly revealing, because it shows that HL can be inserted even on a single syllable, a sign that stress is not simply interpreted as a High tone. The same can be said for the final stressed cases in (1b) above. What unites these cases is that there is a single syllable that must bear a HL sequence. This suggests that the Hausa interpret English stress not as a High tone but as a HL sequence. It also suggests that this tonal interpretation applies not to the stressed syllable per se but rather to units that may contain one syllable, e.g., the first syllable of (2g) *tânkiifâa*, as well as to units containing two syllables, like

<sup>1</sup>‘Helicopter’ is not etymologically a compound, but a common naive analysis treats it as having the compound pseudo-element ‘copter’.

the last two syllables of *tânkiifâa*. I will refer to such units as tonal feet. Zec [1994] introduces the term to account for Serbo-Croatian tone and stress. Here, where English stress is being interpreted tonally, the notion comes in very handy.

Examples from (1) have just one tonal foot, while those in (2) and (3) have two, as shown in (4), with tonal feet delimited by square brackets.

- |     |                        |                     |
|-----|------------------------|---------------------|
| (4) | <i>[soojà]</i>         | 'soldier' (1a)      |
|     | <i>râ[sît]</i>         | 'receipt' (1b)      |
|     | <i>sì[mintù]</i>       | 'cement' (1c)       |
|     | <i>[caajì] [oofis]</i> | 'charge office' (2) |
|     | <i>[tân][kiifâa]</i>   | 'timekeeper' (2)    |
|     | <i>[asì][bitù]</i>     | 'hospital' (3)      |

These examples illustrate that tonal feet begin with a "stressed" syllable and are exactly two syllables long in most cases. They are one syllable long if the foot begins with the final syllable of the word, as in *râ[sît]*, or if the foot is immediately followed by another foot, as in *[tân][kiifâa]*. Thus, here are the basic characteristics of tonal foot formation in Hausa borrowings from English:

#### (5) Tonal Foot Formation

- a. The left edge of the tonal foot coincides with what is interpreted as stress in English. This includes main stress, secondary stress, and syllables of the form *CVt*.
- b. The tonal foot is binary wherever possible. However, tonal feet do not overlap. If a domain includes the left edge of a tonal foot, then it cannot serve as the right edge of another tonal foot.

If secondary stress is to the left of English main stress, then the secondary stress tends to be ignored in foot formation, as in the examples in (6), which are treated as parallel to *sì[mintù]*, but with additional unfooted syllables on the left.

- |     |                        |               |
|-----|------------------------|---------------|
| (6) | <i>màntà[leetàa]</i>   | 'mentholatum' |
|     | <i>fùròofà[gandàa]</i> | 'propaganda'  |

On the other hand, sometimes main stress in English is ignored when there is a secondary stress to the right. In (7) are examples that would be expected to behave like those in (2) and (3), but instead behave like those in (6). The data in (2), (3), and (7) exhaust the examples of this type in the corpus. Examples of the pattern of (2) and (3) outnumber those in (7) by two to one.

(7)	<i>kàafireetò</i>	‘carburetor’
	<i>kwàtàmastà</i>	‘quartermaster’
	<i>màkùròofò</i>	‘microphone’
	<i>òogàneeza</i>	‘organizer’
	<i>sùkkùdùreebà</i>	‘screw driver’
	<i>gwàmnà-janar</i>	‘governor-general’
	<i>kàtàfiilà</i>	‘Caterpillar tractor’
	<i>tàafireetà</i>	‘typewriter’

The other generalization that can be made about the tonal feet posited thus far is that they are assigned the tone pattern HL. Evidence for an additional tone pattern will be presented in the next section.

One word whose pattern is not predicted correctly is *laskoofùr* ‘lance corporal’. One would expect the first syllable to have either a falling tone, as in *tânkiifàa*, or a Low tone, as in *sàamanjàa* ‘sergeant major’.

### 3. Another kind of tonal foot

Disyllabic English words with initial stress are ordinarily rendered in Hausa with the pattern HL, as seen in (1a). This makes it tempting to expect a simple correspondence between stress and tone, with High tone corresponding to English stress on the first syllable of a foot, and Low tone equaling stresslessness on the second syllable of a foot. But this correspondence is far from exact. English stress does not always correlate with Hausa High tone, as shown by examples like *kàlandàa* ‘calendar’, *sàmfaifàa* ‘sand paper’, *sìlimàa* ‘cinema’, and *sìniimàa*, ‘cinema’. These examples also show that stresslessness does not always correspond to Low tone. The same is also shown by the examples in (8). They constitute a somewhat diverse group because they correspond to English words as short as two syllables and as long as four. But they share the key property of having two successive High-toned syllables in Hausa, against only one stressed syllable in the English source. Associating Low tone with stresslessness would result in forms such as those in the middle column, which are not attested.

(8)	<i>baasukùr</i>	* <i>baasùkùr</i>	‘bicycle’
	<i>fankeekè<sup>2</sup></i>	* <i>fankèekè</i>	‘pancake’
	<i>gwabnatì<sup>3</sup></i>	* <i>gwabnàtì</i>	‘government’
	<i>hankicì</i>	* <i>hankìcì</i>	‘handkerchief’
	<i>kaabeejì</i>	* <i>kaabèejì</i>	‘cabbage’

<sup>2</sup> This form is from Bature’s list. Newman [1990] gives *fankèekè*, with the tone pattern HLL, which is anomalous, both in the present account and, as far as I can tell, in relation to the remaining borrowed words in that source.

<sup>3</sup> This form is from Bature’s list. Newman [1990] gives *gwamnatì*.

(8) continued

<i>kaafintàa</i>	* <i>kaafintàa</i>	'carpenter'
<i>kwalaràa</i>	* <i>kwalaràa</i>	'cholera'
<i>kwalbatì</i>	* <i>kwalbatì</i>	'culvert'
<i>kwaleejì</i>	* <i>kwaleejì</i>	'college'
<i>kyamaràa</i>	* <i>kyamaràa</i>	'camera'
<i>laasiisì</i>	* <i>laasiisì</i>	'license'
<i>maaleejì</i>	* <i>maaleejì</i>	'mileage'
<i>maasinjà</i>	* <i>maasinjà</i>	'messenger'
<i>màkaanikèè</i>	* <i>màkaanikèè</i>	'mechanic'
<i>manajà<sup>4</sup></i>	* <i>manajà</i>	'manager'
<i>ministàa</i>	* <i>ministàa</i>	'minister'
<i>nàajeeriyàa</i>	* <i>nàajeeriyàa</i>	'Nigeria'
<i>raskwanàa</i>	* <i>raskwanàa</i>	'ready reckoner'
<i>reediyòò</i>	* <i>reediyòò</i>	'radio'
<i>sàkàteeriyàa</i>	* <i>sàkàteeriyàa</i>	'secretariat'
<i>taafintà</i>	* <i>taafintà</i>	'interpreter'
<i>warantì</i>	* <i>warantì</i>	'warrant'

These cases bring up a new generalization about the tonal interpretation of English stress. To find out what it is, let us apply the rules of tonal foot formation from (5) to the cases in (8). This results in the foot structures in (9).

(9)	<i>[baasu]kùr</i>	<i>[kwalba]tì</i>	<i>[minis]tàa</i>
	<i>[fankee]kè</i>	<i>[kwalee]jì</i>	<i>nàa[jeeri]yàa</i>
	<i>[gwabna]tì</i>	<i>[kyama]ràa</i>	<i>[raskwa]nàa</i>
	<i>[hanki]cì</i>	<i>[laasii]sì</i>	<i>[reedii]yòò</i>
	<i>[kaabee]jì</i>	<i>[maalee]jì</i>	<i>sàkà[teeri]yàa</i>
	<i>[kaabee]jì</i>	<i>[maasin]jà</i>	<i>[taafin]tà</i>
	<i>[kaafin]tàa</i>	<i>mà[kaani]kèè</i>	<i>[waran]tì</i>
	<i>[kwala]ràa</i>	<i>[mana]jà</i>	

The striking tonal generalization in (9) is that everything within the foot is High, while everything outside the foot is Low.

It is easy to reconcile this generalization with what we have seen earlier. The tonal feet seen earlier, which were HL, are in complementary distribution with those in (9). Those in (9) occur before unfooted material, while those in (4) and (6) occur either word-finally or before another foot. Representative examples appear in (10). The distribution of H vs. HL in these cases suggests the rule formulated in (11).

<sup>4</sup> This form is from Bature's list. Newman [1990] gives *manajàa*, with a long final vowel.

- (10) [soojà]  
 rà[sít]  
 sì[mintii]  
 [tân][kiifàa]  
 [asì][bitì]  
 fùròofà[gandàa]  
 [maasin]jà  
 nàa[jeeri]yàa

- (11) Tone assignment  
 tonal foot > H before unfooted material;  
 tonal foot > HL elsewhere

By the standard rules of tone association of autosegmental phonology stated in (12) (Goldsmith [1979], as modified by Pulleyblank [1986]), we get the associations in (13).

- (12) i. Within a tonal foot, assign the first tone to the first TBU, the second to the second, and so on.  
 ii. Within a tonal foot, every TBU must have a tone, and every tone must be assigned to a TBU.  
 iii. Association lines do not cross.

- (13) [sooja]      ra[sit]      si[mintii]      [tan][kiifaa]  
       | |            ^            | |            ^ | |  
       H L            HL            H L            HL H L
- [asi][biti]      furoofa[gandaa]      [maasin]ja      naa[jeeri]yaa  
       | | |            | |            \ /            \ /  
       H L HL            H L            H            H

Since the default tone is L, the result will be the tone patterns in (14).

- (14) [sooja]      ra[sit]      si[mintii]      [tan][kiifaa]  
       | |            | ^            | | |            ^ | |  
       H L            L HL            L H L            HL H L
- [asi][biti]      furoofa[gandaa]      [maasin]ja      naa[jeeri]yaa  
       | | |            | | | |            \ / |            | \ / |  
       H L HL            L L L H L            H L            L H L

We may trace the HL Hausa feet to the corresponding English constituents with normal falling intonation. Interestingly, though, Hausa also includes an additional kind of foot with a level High tone.

#### 4. Independent evidence

We have yet to motivate an account of tonal assignment to epenthetic vowels, but, as we will see, the analysis outlined above correctly predicts the tonal realizations of many different borrowed forms containing epenthetic vowels. Consider the penultimate vowels in (15), which all behave similarly.

(15)	<i>àsambùlèe</i>	'assembly'
	<i>askìrìn</i>	'ice cream'
	<i>caakùlèt</i>	'chocolate'
	<i>coocilà<sup>5</sup></i>	'torch light'
	<i>dìsfansàrèe</i>	'dispensary'
	<i>firaamàrèe</i>	'primary school'
	<i>fursù<sup>n</sup></i>	'prisoner'
	<i>ingilà</i>	'England'
	<i>lootàrèe</i>	'lottery'
	<i>naasàrèe</i>	'nursery'
	<i>reelùwèe</i>	'railway'
	<i>sigìnà</i>	'turn signal'
	<i>talgìrà<sup>m</sup></i>	'telegram'

The penultimate vowel of *askìrìn*, *caakùlèt*, *coocilà<sup>n</sup>*, *ingilà*, *reelùwèe*, *sigìnà*, and *talgìrà<sup>m</sup>* is clearly epenthetic. The same can perhaps be said of the corresponding vowels of *fursù<sup>n</sup>*, *lootàrèe*, and *naasàrèe*, given that British English was the likely model for these words.

For these examples, we need to consider whether Tonal Foot Formation applies to the output of epenthesis or whether epenthesis applies only after the construction of tonal feet and assignment of tone.

If Hausa feet were built on the epenthesized structures, they would resemble the ones in (9) that did not undergo epenthesis. The first two syllables would be interpreted as a tonal foot. Because it is followed by an unfooted syllable, the tonal foot would be H, and the unfooted syllable would be made L by default. The sample in (16) illustrates an incorrect derivation.

(16)	<i>[ingi]la</i>	* <i>[ingi]l<sup>a</sup></i>	compare	<i>[maasin]ja</i>	from (9)
	\ /			\ /	
	H L			H L	

<sup>5</sup> This form is from Bature's list. Newman [1990] gives *toocilà<sup>n</sup>*, with the same tone pattern.

But this result is avoided by building Hausa foot structure directly onto the English-based model before epenthesis applies, as in (17).

$$(17) \text{ ingla} > [\text{in}]\text{gla} > [\text{in}]\text{gila} > [\text{in}]\text{gila}$$

		∨
H	H	L

In general, then, Foot Formation applies to the unepenthesized structures. There are, however, a few special cases that require special treatment. The word *likitâ* ‘doctor’ has exactly the tone pattern that we wished to avoid in (16), but as an anonymous reviewer has noted, the segmental shape is also anomalous if we regard this item as having been borrowed directly from English. A more plausible source of this word is a language such as Yoruba, through which words of English origin like *kwabòo* ‘penny’ (from ‘copper’), *sulèe* ‘shilling’, and *tiiti* ‘street’ came into Hausa. Two other entries on Bature’s list, *asimâa*<sup>6</sup> ‘asthma’ and *kitikâa* ‘kit car’ also have this tone pattern. *likita*, with many segmental differences distinguishing it from the apparent source word ‘doctor’, no doubt has become a separate Hausa lexical entry. If its three syllables are underlying, then the analysis of words in (9) like *maasinjâ* would predict the HHL pattern attested on *likita*. It is not clear, however, why this happens with *asimâa* and *kitikâa*.

Before we examine how Hausa treats epenthetic vowels in initial syllables, it is instructive to observe first how two distinct English stress patterns give rise to LHL in Hausa borrowings.

## 5. The special problem of LHL words

Consider the two sets of LHL words in (18)-(19) in relation to their English sources. The set in (18) is an exhaustive list of the LHL words in the corpus that correspond to an English word with no stress on the first syllable and main stress on the second syllable.<sup>7</sup> These words are correctly described by the principles in (5), (11), and Default Low Insertion, as in the derivation in (20).

<sup>6</sup> This form is from Bature’s list. Newman [1990] gives *asmâa*, with no epenthetic vowel.

<sup>7</sup> A related but somewhat special case is *kâlandâa* ‘calendar’, which is apparently interpreted as if it had main stress on the second syllable in English rather than the first. Perhaps the heavy second syllable following a light initial syllable is responsible. However, this explanation does not account for *silimâa* ‘cinema’ (from Newman’s [1990] dictionary), which exhibits the same shift. Interestingly, Paul Newman provides a variant *siniimâa* whose second syllable is lengthened in Hausa.



- |      |                   |              |
|------|-------------------|--------------|
| (18) | <i>àkantàa</i>    | ‘accountant’ |
|      | <i>dàarakta</i>   | ‘director’   |
|      | <i>fàrfeelaa</i>  | ‘propeller’  |
|      | <i>fòomeekaa</i>  | ‘formica’    |
|      | <i>kàashiyàa</i>  | ‘cashier’    |
|      | <i>kàmashòo</i>   | ‘commission’ |
|      | <i>kwàmandaa</i>  | ‘commander’  |
|      | <i>kwàmfyutaa</i> | ‘computer’   |
|      | <i>làftanàn</i>   | ‘lieutenant’ |
|      | <i>ràkoodaa</i>   | ‘recorder’   |
|      | <i>sùfeetòo</i>   | ‘inspector’  |
|      | <i>sìrinjii</i>   | ‘syringe’    |
|      | <i>tiyaatàa</i>   | ‘theatre’    |
- 
- |      |                  |              |
|------|------------------|--------------|
| (19) | <i>kàlandàa</i>  | ‘calendar’   |
|      | <i>sàmfaifàa</i> | ‘sand paper’ |
|      | <i>sìlimàa</i>   | ‘cinema’     |
|      | <i>sìniimàa</i>  | ‘cinema’     |
- 
- |      |                  |                  |                  |
|------|------------------|------------------|------------------|
| (20) | <i>a[kantaa]</i> | <i>a[kantaa]</i> | <i>a[kantaa]</i> |
|      | >                |                  | >                |
|      |                  | H L              | L H L            |

The cases in (19) are anomalous. Judging from those in (8) and (9), these ought to be High on the first two syllables, like *[mana]jà* and *[minis]tâa*, since their English models have initial stress. The foot structure ought to be as in (21), and, because the foot is non-final in the word, it ought to have a level High tone. Certainly, we would not expect it to be Low-High, as is actually attested, since this tone pattern has not been found on any other foot of Hausa borrowings.

- |      |                     |              |
|------|---------------------|--------------|
| (21) | <i>[kàlan]dàa</i>   | ‘calendar’   |
|      | <i>[sàmfaif]fàa</i> | ‘sand paper’ |
|      | <i>[sìli]màa</i>    | ‘cinema’     |
|      | <i>[sìni]màa</i>    | ‘cinema’     |

The explanation for these forms is not readily apparent, but see footnote 8 for a suggestion.

## 6. Epenthetic vowels in initial syllables

To motivate an analysis of words whose initial syllable has an epenthetic vowel, it is useful to compare them to words that have *no* epenthetic vowels at all. A subset of such words from (18) is provided in (22) below.

(22)	<i>àkantàa</i>	‘accountant’
	<i>dàarakl̩a</i>	‘director’
	<i>fàrfeel̩aa</i>	‘propeller’
	<i>fòomeekàa</i>	‘formica’
	<i>kàashiyàa</i>	‘cashier’
	<i>kàmashòo</i>	‘commission’
	<i>kwàmandàa</i>	‘commander’
	<i>kwàmfyutàa</i>	‘computer’
	<i>làftanàn</i>	‘lieutenant’
	<i>ràkoodàa</i>	‘recorder’

For words whose first syllable has an epenthetic vowel in Hausa, the corpus shows two patterns, illustrated in the two sets of data in (23) and (24). Most entries appear both on Bature’s list and in Newman’s [1990] dictionary. In case of discrepancies, Bature’s (more recent) entry is listed in the main column of the table, Newman’s variant in braces to the right. Differences are omitted if they do not involve tone and probably involve transcription practice rather than linguistic contrasts (*viz.* short *i* vs. *i̩*).

(23)	<i>bùrood̩i</i>	‘bread’	{ <i>burood̩i</i> }
	<i>bùruush̩ii</i>	‘brush’	{ <i>bùroosh̩ii</i> }
	<i>g̩l̩aash̩ii</i>	‘glass’	
	<i>sàfayàa</i>	‘spare’	{ <i>sàfiyàa</i> }
	<i>s̩ifaanàa</i>	‘spanner’	
	<i>s̩ifir̩it</i>	‘spirit’	
	<i>s̩ikaaw̩ùt</i>	‘scout’	
	<i>s̩ikeef̩ii</i>	‘scale’	
	<i>s̩itaac̩i</i>	‘starch’	{ <i>s̩itaac̩i̩</i> }
	<i>s̩itaat̩aa</i>	‘starter’	
	<i>s̩itaat̩ii</i>	‘starch’	
	<i>s̩itam̩f̩ii</i>	‘stamp’	
	<i>suf̩eet̩òò<sup>8</sup></i>	‘inspector’	

<sup>8</sup> An anonymous reviewer has suggested that this word has an epenthetic first vowel, based on the putative English input *‘spector*, with its first syllable dropped. This would explain the considerable leap from the English beginning *ins* to the Hausa one, *su..* Other examples, e.g. *t̩iyaat̩aa* ‘theatre’, could be interpreted in a similar way (*i.e.* as coming from a truncated English input form with initial theta followed by the glide *y*, with no vowel in between). The beauty of this explanation is

- (23) *sumoogàl* 'smuggle'  
*suwaitàa* 'sweater'  
*tùroozàa* 'trousers'
- (24) *faraabitù* 'private'  
*firimiyàa*<sup>9</sup> 'premier' {*fìriimiyàa*}  
*garambaawùl* 'grand valve'  
*direebà* 'driver'  
*faraashu* 'price' {*fàraashii*}  
*filaawà* 'flour' {*fulaawàa*}  
*filaayà* 'pliers' {*fìlaayàa*}  
*filankii* 'flank'  
*filastàa* 'plaster'  
*firaayim* 'prime' (before *ministà*)  
*fuloogì* 'plug'  
*fulootì* 'plot'  
*karanshàf* 'crankshaft'  
*kiristàa* 'Christian'  
*kuloocì* 'clutch'

As an anonymous reviewer has pointed out, a preponderance of words begin with voiceless coronals in the first list and absolutely none do in the second. We would not be far off if we phrased the generalization as follows: words with epenthetic first vowels have a Low tone on the first syllable if the initial consonant is a voiceless coronal and a High tone otherwise. This would not explain the pronunciations *bùroodì*, *bùruushii*, and *gilaashii*. However, the first of these does have the LHL variant predicted by this rule, and it would be difficult to rule out the possibility of alternate LHL forms for the other two as well. Perhaps there are competing forces at work in these cases: the tendency to assign High tone to toneless syllables whose onsets are sounds other than voiceless

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that it helps to bridge the gap between the English original, which tends to have *initial* stress in British English, and the Hausa, which looks on the surface as if it came from a model with *penultimate* stress. The shift of stress from the first to the second syllable could be explained if the first syllable's vowel had been perceived as the glide *y*, with the initial stress shifted to the *new* initial syllable, a fused version of the first and second syllables of the original. The theta-*y* cluster would then be understandably broken up with an epenthetic vowel, which, as we will see, would receive a Low tone. As the reviewer goes on to suggest, one might even entertain similar solutions for the problematic stress shift cases cited above, *kàlandàa* 'calendar', *sàmfaifàa* 'sand paper', *šilimàa* 'cinema', *šiniimàa* 'cinema'.

<sup>9</sup> It is possible that the model for Newman's [1990] form—*firimiyàa*—is the British pronunciation with stress on the first syllable: *PREmier*. This would explain why the form behaves tonally like *reediyòo*, aside from the initial syllable *fì*, which results from epenthesis and the change of English *p* to Hausa *f*, with a Low default tone on this syllable, as with most of Newman's other examples beginning in *f*. Thus, the foot structure would be *fì[rìimì]yàa*.

coronals (as in *búroodì*), as against the tendency to assign Low tone to syllables containing epenthetic vowels after voiced obstruents (as in *bùroodì*).

### 7. Epenthetic final vowels

We may now return to cases like *sìmintìi* in (1c). In section 2, this word was assumed to have the foot structure *si[mintii]*. If the final vowel is epenthetic, the assumption that foot formation precedes any kind of epenthesis will lead us to posit a different derivation for this word, but with the same output as before.

(25)	Foot	Epenthesis	Tone Assign.	Default L
	<i>simint</i> > <i>si[mi]nt</i>	> <i>si[mi]ntii</i>	> <i>si[mi]ntii</i>	> <i>si[mi]ntii</i>
			H	L H L

Thus, one is free to analyze the final vowel as epenthetic synchronically or not, without any tonal ramifications.

### 8. Excursus: Borrowings ending in two Low tones

This account provides some perspective on a point of Hausa tonology raised by Newman and Jaggar [1989]. About half the forms in (15) end in long vowels. Those that end this way are repeated below in (26).

(26)	<i>àsambùlèè</i>	‘assembly’
	<i>disfansàrèè</i>	‘dispensary’
	<i>firaamàrèè</i>	‘primary school’
	<i>lootàrèè</i>	‘lottery’
	<i>naasàrèè</i>	‘nursery’
	<i>reelùwèè</i>	‘railway’

A possible derivation is shown in (27).

(27)	Tone Assign.	Epenthesis	Default L
	<i>a[sam]blee</i> > <i>a[sam]blee</i>	> <i>a[sam]bulee</i>	> <i>a[sam]bulee</i>
	H	H	L H L L

After considering a variety of Hausa examples, including several in (26), Newman and Jaggar [1989] reject the rule in (28), from Leben [1971].

(28)	Low Tone Raising	
	L L #	→ L H #
	[+Long]	[+Long]

Low Tone Raising was proposed by Leben [1971] and Leben and Bagari [1975] to explain a number of morphophonemic alternations in Hausa, as well as being widely evident from surface tonal patterns. Indeed, the effect of the rule can be seen in borrowings, since in comparison to words like *simintui*, where the final epenthetic vowel is Low and is preceded by a High tone, words like *oofishii*, whose final epenthetic vowel is preceded by a Low tone, get a High tone on the final syllable by the rule in (28). However, Newman and Jagger [1989] note that forms like those in (26) do not undergo (27) and so regard them as counter-examples.

Yet something very regular seems to be going on here. The Low-toned penultimate vowels are all arguably epenthetic, a point made by Schuh [1989:258]. This is clearly so for *reelùwèe* and *àsambulèe*. The remainder all have an [r] at the beginning of their final syllable. This concentration of [r]'s makes it possible to speculate that the vowel before [r] in the English source words was deleted, reduced, or fused with the following [r] sound, or was heard by Hausa speakers as being reduced in this way.

These words would then have a derivation parallel to (27), as shown in (29).

(29)		Tone Assign.	Epenthesis	Default L
	<i>dis[fan]sree</i>	> <i>dis[fan]sree</i>	> <i>dis[fan]saree</i>	> <i>dis[fan]saree</i>
		H	H	L H L L

This account offers a reason why the borrowings cited by Newman and Jagger [1989] escape the raising of their final syllable to High: the epenthesis rule that creates these forms applies after (28) Low Tone Raising. If we fully interpret the proposed inputs to Epenthesis tonally, they do not meet the environment of the rule, since there is just a single final Low-toned syllable rather than the required two: *àsamlèe*, *disfansrèe* etc.

Such an account seems quite plausible, considering that, as Newman and Jagger [1989] allow, these forms are recent borrowings. Their connections with the English source words are no doubt obvious to Hausa speakers with a knowledge of the English source words, constantly reinforcing the "inserted" status of the epenthetic vowels in question. Rule (28), on the other hand, is a lexical rule in the sense of Kiparsky [1982], with an essentially morphophonemic function applying to established lexical items but not to newly coined ones.<sup>10</sup> This is supported by Newman and Jagger's [1989] other findings. Of the seven other groups of "exceptions" that they list, all would more plausibly be viewed as the product of processes at the outer reaches of the lexical phonology or in the post-lexical

<sup>10</sup> Newman and Jagger [1989] say that it was presented in Leben [1971] as a rule "comparable to what today one might describe as a post-lexical rule." This is mistaken. Leben [1971] even noted a lexical exception and, though not foreseeing the advent of lexical phonology ten years later, did entitle the article "The morphophonemics of tone in Hausa."

phonology. Schuh [1989], in his critique of Newman and Jaggar's article, makes a similar point. Note that four of their groups involve reduplication in the formation of words with high emotional content: "semantically expressive" adjective plurals (*fankamaa-fànkàmàa*), ideophonic adjectives (*daraa-dàràa*), ideophonic adverbs (*jagee-jàgèe*), and ideophonic action nouns (*rabaa-ràbàa*). It is unsurprising that these act as a class, and it is equally unsurprising that this group does not include non-emotive constructions that involve clearly lexical processes of reduplication, such as the formation of the intensive of verbs by reduplicating CVC or the formation of certain adjectives by reduplicating CVC). Another group on their list are vowels lengthened utterance-finally in questions. There is no reason why these should undergo lexical rules. Slightly more interesting are a class of "alternative L-L imperatives" which they report to be quite common as alternatives to the standard L-H imperatives. Perhaps the case is not unlike the Hausa borrowings in (26) whose inserted vowels remain in speakers' consciousness because they continue to exist side-by-side with their English source words. Having the standard L-H imperative as a lexical model, perhaps Hausa speakers are able to derive the L-L alternative as a more conscious process, one which understandably would escape a lexical tone rule because the alternative is not formed by a lexical process. The final case brought up by Newman and Jaggar [1989] adds two more exceptional adverbs, *wàatàu/wàatò* 'that is to say' and *kàasàrai /kàasàrèe* 'contemptuously' to *yàayàa/kàakàa* 'how', mentioned in the initial work of Leben [1971]. The latter group seems to include the only truly lexical exceptions on the list.

Incidentally, the analysis proposed for (26) automatically explains tone assignment to *sakandàrèe* 'secondary school'. Due to the extra post-stress syllable in the English model, this word has an epenthetic vowel *two* syllables after the English stressed syllable. Despite this difference, the analysis predicts its outcome correctly, as the derivation in (30) demonstrates.

(30)	>	Tone Assign.	>	Epenthesis	>	Default L
		<i>[sakan]dree</i>		<i>[sakan]dree</i>		<i>[sakan]daree</i>
		\ /		\ /		\ / \ /
		H		H		H L

## 9. Conclusions

This analysis demonstrates the need for the tonal foot as a structural intermediary between English stress and Hausa tone. Without it, there is no obvious way to capture the complementarity between the High-Low and level High patterns that Hausa assigns.

Epenthetic vowels receive different tonal interpretations depending on their position in the Hausa word. They do not receive a uniform tonal treatment in Hausa.

The analysis also has implications for Hausa non-loan word phonology, in that it suggests a natural reinterpretation of claims made by Newman and Jaggard [1989].

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## GRAMMATICALISATION DE LA STRUCTURE Infinitif + Verbeconjugué DANS QUELQUES LANGUES BANTOUES

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Dans certaines langues bantoues, nous avons relevé l'existence de formes verbales complexes où l'auxilié précède l'auxilient. Nous nous proposons ici d'analyser quelques-unes de ces formes verbales à partir d'un corpus constitué de langues des zones B40-50 et H10-H30 (+L) de Guthrie. En réalité il y a lieu de distinguer entre deux structures différentes: "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" et "infinitif + auxilient". Dans cet article nous examinerons comment ces structures ont pu être générées et quelles sont les raisons qui motivent leur existence. Nous montrerons qu'il faudra tenir compte de plusieurs paramètres, tels que la tendance à accepter un ordre SOV, le facteur pragmatique de la mise en emphase et l'usure phonétique et sémantique d'anciennes formes verbales composées.

### 1. Introduction

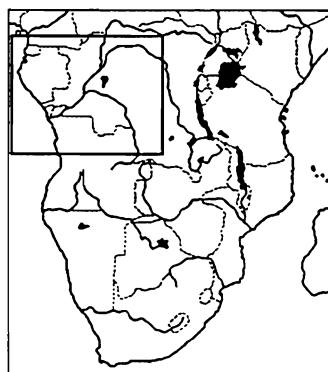
Dans un certain nombre de langues bantoues de zones B et H, l'ordre des constituants de certains temps composés est inversé par rapport à l'ordre canonique "auxilient + auxilié". Cette inversion peut apparaître dans des formes verbales référant aussi bien au passé, au présent, qu'au futur, mais elle semble se manifester avant tout dans des formes verbales exprimant l'aspect progressif du procès verbal en question. Dans ce qui suit, nous voudrions examiner comment les langues bantoues de notre corpus ont pu acquérir ces formes complexes. Nous verrons que ce sont des processus à la fois sémantique et syntaxique qui ont déclenché la grammaticalisation de structures "infinitif + verbeconjugué" dans les langues envisagées ici.









Mais avant d'aborder l'analyse de formes verbales complexes avec un infinitif antéposé, nous situerons d'abord géographiquement les langues retenues pour cet exposé-ci. Nous énumérerons ensuite quelques-unes de leurs caractéristiques morphosyntaxiques pour analyser finalement deux structures particulières, "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" et "infinitif + auxiliaire", souvent classées parmi les formes de la "conjugaison composée".

**1.1. Le corpus.** Pour ce travail, nous nous sommes limitée à l'étude de quelques langues parlées au Gabon, au Congo et en Angola (voir la carte ci-dessous).

(1) Carte des langues étudiées



	yombe		punu	•	fiot?
	nzebi		holu	■	suundi
	tsotso		parlars kongo (ntandu, manyanga)		

Notre corpus est essentiellement constitué de parlars du groupe kongo (suundi H13b, manyanga H16b, yombe H16c, fiot = vili H12a ou kongo-Ouest H16d?<sup>1</sup>, ntandu H16g et kaamba H17b) ainsi que du tsotso (H33?), du punu (B43), du nzebi

<sup>1</sup> Le terme fiot(i) qui a deux significations—"noir" et "petit" selon Laman [1932: 183]—était surtout utilisé au début du siècle par des missionnaires pour désigner les langues des côtes congolaises, dont fait partie le vili. Pourtant Ndamba [1977: III] fait l'observation suivante:

"En compulsant ces manuels [de la langue fiote], on remarque vite qu'en fait, la langue qui y est décrite n'est pas le vili. Il s'agirait plus vraisemblablement de la langue parlée à Cabinda que Guthrie appelle West Kongo (fiote) et qu'il classe en H16d."

Vu qu'en ce moment, nous ne disposons pas de données suffisamment précises pour déterminer si la langue décrite par Ussel [1888] est proche du vili ou du kongo-Ouest, nous avons décidé de maintenir le terme fiot dans le cadre de ce travail.

(B52) et du holu (géographiquement proche de H33; L22?). Ces parlers sont localisés sur la carte ci-dessus.<sup>2</sup>

## 1.2. Caractéristiques morphosyntaxiques des langues étudiées

**1.2.1. Langues à types tonals.** Dans les langues retenues pour cette analyse-ci la tonalité permet d'identifier le lien fonctionnel qui existe entre la forme nominale ou pronominale et la forme verbale. Dans les phrases citées en (2) on peut observer que pour un substantif comme "femme" le préfixe nominal est bas en isolation et le thème est HHH. En fonction sujet le préfixe est également bas, mais le thème a une tonalité BBH, alors qu'après le morphème *ni* et en fonction objet le préfixe nominal est haut et le thème est respectivement BBH et BBB.

(2) kaamba [Bouka 1989]

- |    |   |                     |
|----|---|---------------------|
| a. | <i>mùkè:tó</i><br>femme                                   | 'la femme'          |
| b. | <i>nì</i> <i>múkè:tó</i><br>c'est <sub>[préd]</sub> femme | 'c'est la femme'    |
| c. | <i>mùkè:tó ùdí:dí</i><br>femme    elle a mangé            | 'la femme a mangé'  |
| d. | <i>hó:nđídí</i> <i>múkè:tò</i><br>il a tué    femme       | 'il a tué la femme' |

Il faut encore ajouter que la position en fin de phrase peut également conditionner la tonalité, ce qui est illustré dans les exemples suivants du nzebi.

(3) nzebi [Marchal-Nasse 1988-89]

- |    |   |                                       |
|----|---|---------------------------------------|
| a. | <i>m' èmòni bàvègá gù tsó nzò</i><br>moi j'ai vu esclaves dans maison | 'j'ai vu les esclaves dans la maison' |
| b. | <i>m' èmòni bàvègà</i><br>moi j'ai vu esclaves                        | 'j'ai vu les esclaves'                |

Le syntagme-objet *bavega* a une tonalité B-BHH s'il n'est pas en fin de phrase (voir 3.a), alors qu'il est B-HB devant pause finale (voir 3.b).

Toutes les langues de notre corpus se caractérisent par la présence de ce qu'on appelle communément formes ou types tonals. Ce n'est que pour le fiot, le manyanga (décrit par Dereau [1955]) et le yombe que nous ne disposons pas de

<sup>2</sup> Les cartes ont été réalisées au moyen du logiciel Bantu Mapmaker 3 [1996], créé par Prof. T. C. Schadeberg. Nous le remercions d'avoir mis ce logiciel à la disposition du Service de Linguistique du MRAC.

description du système tonal<sup>3</sup> et que nous ne pouvons pas affirmer si la tonalité y est conditionnée par la syntaxe ou non.

**1.2.2. Langues de type SVO?** Généralement, on admet que les langues bantoues sont des langues SVO de type “consistent”<sup>4</sup>: elles connaissent l’ordre déterminé-déterminant et au niveau de la conjugaison l’auxiliaire précède l’auxilié, comme le montrent les exemples en (4).

(4) tsotso [Baka 1992]

- a. *zé:ngélé mbā:mbà* ‘il a coupé la liane’  
il a coupé liane
- b. *̀̀sí:ngú yímós!í̃* ‘un cou’  
cou un
- c. *kyàkélé kùwé:lá kò* ‘je n’étais pas malade’  
je n’étais pas être malade non

Cependant, Grégoire [1993] a montré que l’antéposition de l’objet n’est pas exceptionnelle en zones B, C, H et K, c’est-à-dire au Nord-Ouest du domaine bantou. L’apparition de l’ordre SOV est, selon elle, liée à “l’expression de la focalisation portant sur l’objet du verbe transitif” (voir 5) ou à “l’emploi d’une

<sup>3</sup> Il existe actuellement des données sur la tonalité du vili, e.a. dans la thèse de doctorat de J. Ndamba [1977], “Syntagme nominal et groupe nominal en vili”, Paris, Sorbonne Nouvelle. Malheureusement, l’auteur ne fournit pas d’illustrations de formes verbales complexes dans ce travail qui est consacré au système nominal. En outre, nous avons signalé que la langue fiot décrite par Ussel [1988] n’est probablement pas du vili mais du kongo-Ouest, classé en H16d.

Nous n’avons pas pu avoir accès à la thèse de doctorat de Ndembe Nsasi [1981], “Etude lexicale du verbe yombe”, Rijksuniversiteit Leiden.

<sup>4</sup> Les langues bantoues elles-mêmes font partie de la famille linguistique Niger-Congo, pour laquelle les deux hypothèses coexistent: ordre SVO ou SOV. En effet, plusieurs langues de cette famille attestent actuellement un ordre SOV canonique.

Ijo (Ijoid)

*é́rí bídè dè̀n-mí* “He wove cloth”  
he cloth weave-past

Généralement, on admet que les langues SOV sont des langues de type casuel. C’est grâce aux affixes casuels qu’on peut distinguer l’objet du sujet. Si les marques casuelles s’estompent, on évoluera vers un ordre SVO. Cependant, les langues Niger-Congo de type SOV ne possèdent aucune trace d’un ancien système casuel. Si l’on accepte cependant que la présence d’affixes casuels n’est pas un critère nécessaire pour avoir un ordre SOV, on pourrait tout de même envisager l’hypothèse SOV pour le proto-Niger-Congo. Sans vouloir nous prononcer de manière définitive sur l’ordre des mots en proto-Niger-Congo, nous tenons à signaler que Claudi [1993] avance plusieurs arguments en faveur de l’hypothèse d’un ordre SVO et d’une modification de cet ordre par des processus de grammaticalisation:

“Grammatikalisierungsprozesse können unter bestimmten, angebbaren Umständen die Grund-reihenfolge von Verb und Objekt verändern.” [Claudi, 1993: 16]

<sup>5</sup> Le signe (̀) indique que le ton suivant est un ton haut abaissé.

forme composée de la conjugaison, l'objet s'intercalant alors entre l'auxiliaire et le verbe auxilié" (voir 6).

(5) suundi

*ngó kàhó:ndídi* 'il a tué le léopard  
léopard il a tué

(6) punu [Grégoire 1993]

*bàyé:tù bàkò mánú:ngì úvà:rè<sup>6</sup>*  
femmes elles vont plantations cultiver  
'les femmes vont cultiver les plantations'

Rappelons que ces dernières langues sont des langues à types tonals. L'existence d'une tonalité conditionnée par la syntaxe a probablement facilité l'antéposition de l'objet: la tonalité permet d'identifier les syntagmes-sujet et -objet.

Dans ce qui suit, nous voudrions examiner le fonctionnement de quelques formes de la conjugaison composée dans un échantillon de langues des zones B, H (et L?), zones pour lesquelles nous venons de voir que l'ordre SOV existe à côté de l'ordre canonique SVO. Notre corpus est constitué d'énoncés recueillis dans des descriptions qui existent pour les langues en question. Ce n'est que pour le suundi que nous avons travaillé avec un informateur, J. Baka, et que nous avons tenté de réunir le plus d'occurrences représentatives possibles.

## 2. La conjugaison complexe avec infinitif antéposé

Nous approfondirons les différentes structures que nous avons relevées avec, dans la position de l'auxilié, un infinitif antéposé et, dans la position de l'auxiliaire, un verbe conjugué. Nous distinguerons deux cas: le premier cas concerne les structures périphrastiques de type "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" et le second a trait aux constructions "infinitif + auxiliaire être". Nous nous poserons la question de savoir si ces constructions relèvent réellement de la conjugaison complexe et nous examinerons dans quelle mesure elles participent à la création de temps verbaux. L'analyse du progressif fournira des indications quant à l'origine de ces structures.

### 2.1. Infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>

**2.1.1. Emplois.** Toutes les langues de notre corpus antéposent au verbe conjugué (conjugaison simple) le même verbe sous forme d'infinitif.<sup>7</sup> Cette construction

<sup>6</sup> Selon Grégoire [1993] *bàkò* est une forme éliée de *bàkòyé*: où *-yé*: est le radical du verbe 'aller'.

<sup>7</sup> Normalement l'infinitif, dans les langues bantoues, se caractérise par la présence d'un préfixe nominal. Dans les langues qui nous occupent ici, le préfixe de l'infinitif est généralement *ku-* ou *u-* (préfixe nominal de classe 15), mais il peut être absent, comme on l'observera entre autres en (7), (10), (12), (15), (16). La présence du préfixe de l'infinitif ne dépend pas seulement de la

“infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>” est le plus souvent illustrée à des formes verbales du présent et de préférence du présent progressif, ainsi que le montre l'exemple (7).

(7) kaamba [Bouka 1989]

*sàlá kàmú:sàlá* 'il est en train de travailler'  
travailler il est en train de travailler

Notons tout de même que le kaamba permet aussi d'exprimer le progressif à l'aide d'une forme simple, comme on peut l'observer en (8). Dans ce cas le préfixe verbal de classe 1 apparaît sous sa variante canonique *ù-*, alors qu'en (7) c'est la variante secondaire *kà-* qui est utilisée. Il faut encore noter que le kaamba, entre autres au passé récent, n'emploie pas de préfixe verbal à la classe 1 (voir ex. 2d).

(8) kaamba [Bouka 1989]

*wàmú:sàlá* 'il est en train de travailler'  
il est en train de travailler

En (8), nous retrouvons pour le progressif une structure qui est très répandue dans les langues bantoues et qui est de type “préfixe verbal-mu-radical verbal (-extension)-finale”. Cette forme est à mettre en rapport avec la proto-structure du progressif telle qu'elle a été proposée par Bastin [1989]. Selon cet auteur, dans un grand nombre de langues bantoues, le progressif est issu d'une séquence qui comporte le verbe “être” -di, suivi d'un préfixe locatif mu- et d'une forme nomino-verbale: \*PV-di-mu-NV<sup>8</sup>, littéralement “êtreV<sub>conj</sub> dans le fait de ...”. Le kaamba dispose donc de deux structures pour exprimer le sens de “être en train de”: *wàmúsàlá* et *sàlá kàmú:sàlá*. Pourtant, la forme *sàlá kàmú:sàlá* sert, selon Bouka [1989: 237], à “renforcer l'idée de répétition dans le déroulement de l'action”.

C'est donc essentiellement pour des raisons d'emphase qu'on a redoublé le verbe sous forme nomino-verbale antéposée au verbe conjugué.<sup>9</sup> Cette structure pragmatiquement marquée peut cependant évoluer vers une structure non marquée, comme on peut l'observer dans les exemples du fiot cités en (9).

structure syllabique du radical verbal, mais semble également être conditionnée par le statut de la forme nomino-verbale au sein de l'énoncé. Ainsi dans les formes verbales complexes, la forme nomino-verbale apparaît souvent sans préfixe, de même que dans des structures connectivales ou locatives. La disparition du préfixe de l'infinitif est probablement liée au fait que dans des formes complexes, *ku-* est un morphème à faible charge sémantique et ce n'est qu'avec des verbes à initiale vocalique que le préfixe se maintient: *kweendá tükwéenda* [Daeleman 1966]

aller nous allons

<sup>8</sup> NV = forme nomino-verbale, dont l'infinitif.

<sup>9</sup> Notons que le punu, qui redouble également le verbe sous forme nomino-verbale antéposée, peut faire précéder l'infinitif d'une particule la ‘pour’.

*u singa ngi singi* 'je crois encore'  
*lo singa ñi ba no singa* 'je viens de croire'  
[lo = la-u] (lit: pour croire je viens d'être avec croire)

## (9) fiot [Ussel 1888]

- a. *minu kusala insala* 'moi, je suis en train de travailler'  
 moi travailler je travaille
- b. *minu insala* 'moi, je travaille'  
 moi je travaille

D'après les données de Ussel [1888: 43], il n'y a pas d'emphase du procès "travailler" en (a). Mais il faut noter que la forme citée en (b), de type "préfixe verbal-n-radical verbal-finale", est seulement attestée avec le sens de 'je travaille'. Parallèlement à l'usure phonétique de la séquence \*-di-mu- > -ø-mu- > -n-, il s'est produit ici un affaiblissement sémantique et la connotation de progressif a disparu au profit d'une connotation de présent ponctuel. Dans ces conditions, la forme originellement emphatique est réinterprétée en forme non marquée et sert à signifier le progressif. Le yombe, d'après les données que nous avons à notre disposition (voir ex. 10), a subi la même évolution que le fiot.

## (10) yombe [De Clerq 1921]

- sonika ndinsonika* 'je suis occupé à écrire'  
 écrire j'écris

Si la construction "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" est employée à d'autres temps que les temps du progressif, il semble que l'évolution de la forme pragmatiquement marquée vers une forme non marquée ne se soit pas encore accomplie. Ainsi en suundi (voir l'exemple 11), où la forme simple et la forme complexe coexistent à plusieurs temps de la conjugaison, on antéposera la forme nomino-verbale si l'on veut mettre en évidence le procès exprimé par le verbe conjugué.

## (11) suundi

- a. *ndyèkátá:ngà* 'je vais lire'  
 je vais lire
- b. *kùtá:ngà ndyèkátá:ngà* 'je vais lire'  
 lire je vais lire

**2.1.2. Restrictions.** Cependant, même dans les langues qui l'ont grammaticalisée, la structure "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" ne semble pas encore être entièrement intégrée au système verbal. L'infinitif y semble occuper la position que l'objet, s'il est focalisé, pourrait acquérir. Cette hypothèse est confirmée par l'apparente impossibilité d'antéposer un objet, pragmatiquement marqué, au verbe dans un énoncé où se trouve déjà un infinitif antéposé, comme nous le verrons dans les exemples suivants.

## (12) nzebi [Marchal-Nasse 1988-89]

- a. *bàkà:só bán'á:, péndó bà:vádà*  
 femmes ces arachide elles cultivent  
 'ces femmes, elles cultivent l'arachide'
- b. *bàkà:só bán'á:, vádó bà:vádó péndà*  
 femmes ces cultiver elles cultivent arachide  
 'ces femmes, elles sont en train de cultiver l'arachide'
- c. \**bàkà:só bán'á:, péndà vádó bà:vádó*  
 femmes ces arachide cultiver elles cultivent

Le nzebi fait partie des langues où la structure "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" n'est pas une structure emphatique en alternance avec une forme simple mais où elle est la seule structure possible pour exprimer le progressif. Malgré l'absence d'emphase, si dans un énoncé au progressif, c'est-à-dire avec une forme verbale de type "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>", on veut actualiser l'objet, celui-ci se mettra après le verbe conjugué (voir 12.b). L'absence d'occurrences avec objet antéposé montre que la structure redoublée n'est pas encore devenue tout à fait neutre en nzebi, sinon on aurait pu imaginer l'antéposition de l'objet au syntagme verbal.

Ce stade, où l'objet se trouve antéposé à une forme verbale redoublée, semble être atteint par le suundi. Mais rappelons d'une part qu'en suundi la structure avec redoublement du verbe reste une structure emphatique en alternance avec la forme verbale simple (voir 11) et d'autre part que l'ordre SOV y a tendance à être généralisée, autrement dit l'antéposition de l'objet n'implique pas que celui-ci est focalisé (voir 13.a).

## (13) suundi

- a. *bùkù ndyèkátá:ngà* 'je vais lire le livre'  
 livre je vais lire
- b. *mwà:nà bùkú kùtá:ngà kèkátá:ngá dyò* 'l'enfant va lire le livre'  
 enfant livre lire il va lire celui
- c. *bùkú mwà:nà kùtá:ngà kèkátá:ngá dyò* 'l'enfant va lire le livre'  
 livre enfant lire il va lire celui

Malgré l'emphase qui porte sur le procès verbal, le suundi accepte l'antéposition de l'objet à l'infinitif (voir 13.b) ou même au sujet lexical (13.c). Pour lever l'ambiguïté quant à la fonction syntaxique de *buku*, celui-ci est repris après le verbe par un démonstratif en (b) et (c).

**2.1.3. Conclusion.** En guise de conclusion, la structure "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" est à l'origine une structure emphatique qui avait pour but de souligner

le procès exprimé par le verbe conjugué. Dans les langues où le verbe conjugué subit un affaiblissement sémantique, lié probablement à une usure phonétique des morphèmes constituants, comme nous l'avons vu au progressif pour la séquence \*-di-mu- 'être dans' > -mu- > -n-, l'existence de la structure redoublée permet de combler la lacune dans le système de référence temporelle et la séquence "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>", de forme pragmatiquement marquée, évolue vers une forme neutre. Dans notre corpus, cette évolution s'est produite en fiot, en yombe, en punu et en nzebi. Ces langues ont grammaticalisé la séquence "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" pour signifier le progressif parce que la forme originelle du progressif n'y traduisait plus que le présent, ponctuel ou omnitemporel. Cependant, les constructions avec objet réalisé montrent tout de même qu'en punu et en nzebi<sup>10</sup>, l'infinitif est toujours ressenti comme extérieur au noyau verbal, puisque l'ordre des mots se présente comme suit: (S) Inf<sub>x</sub> V<sub>x</sub> O. L'infinitif, forme nomino-verbale, y semble donc occuper la position que l'objet, mis sous un regard focalisateur, pourrait avoir dans un énoncé comportant une forme verbale simple.

En revanche, en suundi où la structure "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" est toujours une structure marquée, l'antéposition de l'objet s'effectue spontanément, mais avec reprise au moyen d'un démonstratif après le verbe conjugué. On dirait qu'en suundi, malgré l'emphase du procès verbal, la séquence "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" est considérée comme formant le noyau verbal et que les actants du verbe peuvent occuper leur position habituelle.

Si on compare les exemples du nzebi et du suundi, on constate que les évolutions de formes marquées vers formes non marquées ne se sont pas produites de la même façon.

(14) Evolution de la structure "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>"

nzebi			suundi	
(S) Inf <sub>emphase</sub> V	V <sub>progressif</sub>	(S) O <sub>emphase</sub> V	(S) Inf <sub>emphase</sub> V	(S) O <sub>emphase</sub> V
↓	↓	↓	↓	↓
(S) Inf <sub>progressif</sub> V	V <sub>présent</sub>	(S) O <sub>emphase</sub> V	(S) Inf <sub>emphase</sub> V	(S) O V
	↓			↓
	(S) Inf <sub>progressif</sub> V O			(S) O Inf <sub>emphase</sub> V

Dans ce qui suit nous analyserons le fonctionnement de l'infinitif au sein de la structure "infinitif + auxiliaire" et nous insisterons à nouveau sur l'importance du

<sup>10</sup> Pour le yombe et le fiot nous n'avons malheureusement pas d'exemples avec un objet actualisé.



progressif dans la création de ces formes verbales complexes où l'auxilié précède l'auxilient.

**2.2. Infinitif + auxilient.** Il faut en premier lieu noter que toutes les langues de notre corpus ont des formes verbales composées de type "auxilient + infinitif". Mais, l'infinitif peut être antéposé à l'auxilient. Dans ce qui suit nous essaierons d'expliquer l'origine de cet ordre inversé et nous examinerons les contextes dans lesquels les séquences "infinitif + auxilient" sont acceptées.

**2.2.1. Infinitif + auxilient.** Dans la mesure où l'on peut estimer qu'une structure de type "auxilient + infinitif" résulte d'une ancienne structure "verbe + objet[nomino-verbal]", l'existence de la structure "infinitif + auxilient" (autrement dit une ancienne séquence "objet[nomino-verbal] + verbe") n'est pas surprenante dans des langues qui admettent l'ordre SOV. Pourtant, la structure "infinitif + auxilient" n'est pas si fréquente dans notre corpus et elle semble se limiter à des formes verbales destinées à exprimer l'aspect progressif du procès, comme on peut s'en rendre compte dans les exemples suivants.

(15) manyanga [Dereau 1955]

*musala ngina* 'je suis en train de travailler'  
dans-travailler je suis

(16) tsotso [Baka 1992]

*mwà:nà mùsákáná<sup>11</sup> kéná* 'l'enfant est en train de blaguer'  
enfant dans-blaguer il est

Notons que, dans ces exemples, l'infinitif antéposé est introduit par le préfixe locatif *mu-*. Vu que le proto-bantou atteste, pour le progressif, une structure de type "PV-di *mu-NV*", on pourrait envisager qu'à un moment donné le syntagme locatif infinitival a été antéposé au verbe "être", ceci pour des raisons d'emphase. Cette inversion a dû se produire au moment où la séquence PV-di-*mu-NV* n'était pas encore devenue une structure figée mais s'analysait toujours en "être dans le fait de", c'est-à-dire en "être + complément locatif[nomino-verbal]".

En manyanga, en tsotso et en holu, la structure "locatif-infinitif + auxilient" semble être devenue la plus courante, alors qu'en ntandu elle coexiste avec la structure "auxilient + locatif-infinitif", ce que nous avons illustré en (17.a). Il semble d'ailleurs qu'en présence d'un objet antéposé la structure "auxilient + locatif-infinitif" soit la seule utilisée en ntandu, comme on peut le voir en (17.b) et (17.c).

<sup>11</sup> Pour *-sakana*, Baka [1992] ne donne que le sens de 'blaguer'. Cependant, comme nous l'a fait remarquer un de nos lecteurs anonymes, *-saka(na)* a, dans les langues kongo, généralement comme sens premier 'jouer'.

## (17) ntandu [Daeleman 1966]

- a. *tukelé mu(ku)sonika* ‘nous étions en train d’écrire’  
nous étions dans-écrire
- b. *móókó nkéle mu(ku)sukula* ‘j’étais en train de me laver les mains’  
mains j’étais dans-laver
- c. *ngúbá kákélé mu(ku)kuná* ‘il était en train de planter des arachides’  
arachides il était dans-planter

Nous ne disposons malheureusement pas d’exemples avec simultanément un locatif infinitival et un objet dans les autres langues de notre corpus et nous ne pouvons par conséquent pas confirmer si l’observation faite en ntandu vaut également pour les autres systèmes linguistiques.

Remarquons aussi que l’infinitif n’est pas nécessairement précédé du morphème locatif en ntandu; à côté de *móókó nkéle mu(ku)sukula* on peut entendre *móókó nkéle súkúla* ‘j’étais en train de me laver les mains’. On pourrait imaginer qu’à partir du moment où la structure “locatif-infinitif + auxiliaire” pour le progressif est devenue habituelle dans la langue, le locatif mu- peut s’affaiblir et disparaître. A ce moment, la structure “infinitif + auxiliaire” pourrait s’appliquer à d’autres temps, l’auxiliaire se chargeant de la référence au présent, passé ou futur. Cependant, ce n’est qu’en suundi (voir 18) et en tsotso (voir 19) que nous avons relevé des exemples d’infinitif non locatif antéposé et la valeur temporelle de la structure “infinitif + auxiliaire” reste tout de même celle d’un progressif ou d’un présent intemporel.

## (18) suundi [N’Landu Kitambika 1993-94]

*kùsàlá kàdì* ‘il travaille’  
travailler il est

## (19) tsotso [Baka 1992]

*kùwé:lá ng’iná* ‘je suis malade’  
être malade je suis

Le degré de figement relativement important de la structure “infinitif + auxiliaire” (limitation au présent et présence fréquente du morphème mu-) semble indiquer que l’infinitif ne s’intègre pas tout à fait à la forme verbale proprement dite et qu’il continue à assumer la fonction de complément nomino-verbal antéposé. Cette hypothèse semble être corroborée par l’absence, dans notre corpus, d’énoncés comportant à la fois un objet et un infinitif antéposés. Le suundi est la seule langue qui fasse exception à cette affirmation. Si en suundi l’infinitif régit un objet, on peut obtenir une séquence de type (S) O Inf Dém Aux.

## (20) suundi

bùkù kùtá:nà dyò káđi  
livre lire celui il est

'il est en train de lire le livre'

Rappelons que le suundi accepte également l'antéposition de l'infinitif, même s'il régit un objet, dans le cadre des structures "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>". Ce qu'il est pourtant intéressant de noter, c'est que le morphème anaphorique se met ici après l'infinitif, alors que dans le cas d'un verbe redoublé, le morphème anaphorique suit le verbe conjugué. Cette particularité montre que les deux structures ont un fonctionnement différent et que dans le cas de la structure "infinitif + auxiliaire", c'est bien l'infinitif qui est la forme régissante alors que dans l'autre structure, c'est le verbe conjugué qui régit l'objet.

**2.2.2. Conclusion.** Dans notre corpus, la structure "infinitif + auxiliaire" semble se limiter à des formes verbales destinées à exprimer l'aspect progressif du procès. Etant donné que la proto-structure des langues bantoues pour le progressif a été reconstruite comme constituée du verbe "être" suivi d'une forme nomino-verbale précédée d'un préfixe locatif, nous avons été amenée à poser que dans les structures "infinitif + auxiliaire", l'infinitif a été antéposé au verbe "être" pour des raisons d'emphase à une époque où la suite PV-di-mu-NV n'était pas encore devenue une structure figée. L'infinitif se trouve donc antéposé au verbe "être" en tant que complément le plus souvent locatif. Ce fonctionnement nominal explique pourquoi l'infinitif ne peut pas être antéposé à l'auxiliaire s'il régit un objet qui est également antéposé. On peut cependant supposer que l'ordre marqué "infinitif + auxiliaire" pourra évoluer vers un ordre non marqué et qu'à ce moment le système pourra accepter une séquence de type (S) O Inf Aux. Cet ordre a déjà été relevé en suundi, langue qui tend vers un ordre SOV généralisé.

### 3. Conclusion générale

Dans ce travail, qui se base sur un échantillon de langues de zones B et H (+ 1 langue de zone L) et qui a essentiellement dû se limiter aux données mentionnées dans les sources, nous avons pu observer que l'ordre des constituants de certaines formes verbales complexes s'écarte de l'ordre canonique "auxiliaire + auxilié". Pour ce qui est de la première structure examinée, "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>", nous avons voulu montrer qu'elle s'explique simultanément par trois phénomènes linguistiques. D'une part, il y a eu le phénomène de l'emphase qui est à la base du redoublement du verbe. D'autre part, il s'est produit pour certains temps une usure phonétique qui s'accompagne d'un affaiblissement sémantique et qui crée une lacune dans le système de la référence temporelle. C'est à ce moment que la structure emphatique évoluera vers une structure non marquée et comblera la lacune dans le système temporel. Finalement, les langues dans lesquelles nous avons observé l'existence de structures "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>" sont des

langues qui acceptent un ordre SOV. L'existence de cet ordre inversé a très probablement facilité la grammaticalisation de structures "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>", qui remontent en effet à d'anciennes séquences "objet<sub>nomino-verbal</sub> + verbe conjugué<sub>x</sub>" et où l'infinitif antéposé fonctionnait probablement comme une sorte d'objet interne du verbe conjugué.

La deuxième construction que nous avons analysée est celle où l'infinitif est antéposé à un verbe auxiliaire. Dans cette structure l'infinitif est généralement introduit par le préfixe locatif *mu-* et l'ensemble traduit l'aspect progressif du procès verbal en question. Donc, contrairement à ce qui se passe dans les constructions à verbe redoublé, le morphème locatif (ou sa trace) propre au temps du progressif (cf. la reconstruction \*PV-di-mu-NV) n'apparaît pas dans la forme verbale conjuguée mais dans la forme *nomino-verbale* antéposée. Cette caractéristique est un signe du fait que la structure "infinitif + auxiliaire" est issue de la séquence "auxiliaire + infinitif" mais à un moment où celle-ci pouvait encore s'interpréter en "verbe + complément[nomino-verbal]". Puis, il y a eu antéposition du complément, ceci probablement pour des raisons d'emphase. De nouveau, l'existence de l'ordre SOV dans les langues en question a sans doute facilité l'antéposition du locatif infinitival. Au moment où la structure emphatique "(S) Loc-Inf Aux" devient une structure non marquée, un processus de grammaticalisation peut se déclencher et le locatif infinitival sera réinterprété en noyau verbal, suivi d'un verbe-auxiliaire "être".

L'intérêt de cette étude réside dans le fait que des langues apparentées et parlées dans un environnement géographiquement restreint n'ont pas toutes atteint le même stade d'intégration de formes complexes au paradigme verbal. Cette divergence dans le degré d'évolution permet de montrer comment des formes verbales complexes sont générées à partir de séquences "verbe + objet" et de quelle manière la grammaticalisation a pu s'opérer. Un système linguistique donné, s'il ne dispose pas de marques morphologiques propres à situer un procès dans le temps, recourra à des constructions analytiques. Ces constructions analytiques, au fur et à mesure qu'elles s'intègrent dans le système de la langue, seront soumises à des processus de réanalyse.

Dans les langues retenues ici, ces processus de réanalyse se sont plus particulièrement déclenchés pour recréer des structures aptes à signifier le progressif. Dans les cas où la proto-forme du progressif a abouti à une forme verbale simple référant à un présent ponctuel ou omnitemporel, les langues ont comblé la lacune dans le système de référence temporelle de deux manières différentes. Des langues comme le *nzebi* ont utilisé la forme emphatique "infinitif<sub>x</sub> + verbe conjugué<sub>x</sub>", dont le but initial était de mettre en évidence le procès verbal et qui évolue vers une forme pragmatiquement neutre. D'autres langues, comme le *manyanga*, antéposent le syntagme locatif infinitival à une forme du verbe "être". Dans cette structure, qui se rapproche le plus de la proto-structure du progressif, l'infinitif se caractérise par un fonctionnement encore très nominal. Cependant, il

tend à devenir le noyau du syntagme verbal et à fonctionner comme véritable auxillié.

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## THE PHONETIC STRUCTURES OF HADZA\*

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Hadza is one of three East African languages with clicks. Previous field reports on this language have disagreed on several of its phonetic characteristics, including the number and nature of the clicks. This paper—based on acoustic and articulatory analyses of data collected in recent fieldwork—presents a more detailed picture than any previous work. Special attention is given to the articulation of the click types and the acoustic features of the click accompaniments, the role of aspiration in distinguishing classes of consonants, and the formant structure of vowels.

### 1. Introduction

Hadza is a language of uncertain genetic affiliation spoken in the neighborhood of Lake Eyasi in north-central Tanzania by approximately 800 people. Among its many interesting characteristics is its rich consonant inventory, including clicks, ejective stops and affricates, and lateral fricatives and affricates. Along with Sandawe and Dahalo, it is one of only three languages spoken outside southern Africa to have clicks. In this paper, we will present a description of the basic phonetic characteristics of the language, including results based on instrumental

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articulatory fieldwork and on acoustic analysis of field recordings. The sound system of Hadza has been described previously in several studies, notably Tucker, Bryan, and Woodburn [1977] and de Voogt [1992], but there are discrepancies between the phonetic inventories reported by different researchers. In the notes and analyses resulting from the considerable amount of fieldwork carried out by a number of researchers [Obst 1912, Dempwolff 1916-17, Bleek 1931, 1956, Berger 1943, Tucker, Bryan, and Woodburn 1977, Elderkin 1982, 1983, de Voogt 1992, Wagner forthcoming] there are also differences on such matters as the occurrence of aspiration, the distribution of nasalization and the qualities of the vowels. We hope to clarify these disagreements by providing careful phonetic observations based on a number of speakers, supported by our instrumental analyses. In addition to enhancing our knowledge of this particular language, a description of Hadza is important for the insights it provides into the overall characteristics of typologically rare sounds, such as clicks. More generally, basic phonetic descriptions of any language are relevant for the study of cross-linguistic universals.

A better understanding of the phonetic structure of Hadza may also assist in clarifying its relationships with other languages. Relying on the structure of the phonological inventory and a small number of plausible lexical and morphological similarities, some researchers have classified Hadza among the Khoisan language [Bleek 1931, Greenberg 1966, Ehret 1986], while others maintain that it is a language isolate [Woodburn 1962, Elderkin 1983] or that it cannot be classified on the basis of present knowledge [Sands, to appear 1997]. A better understanding of the linguistic structure of Hadza can assist in understanding the nature of similarities to other languages, and aid in determining whether they are indicative of historical relationship or not.

This study is based on field observations and transcriptions and instrumental analyses. Field work was carried out in Mangola, Mbulu District, Tanzania, in August 1991 by all three authors. All of the consultants for this study resided in the Mangola area and speak a uniform dialect. Speakers in some areas are considered to be more strongly influenced by Isanzu or Sukuma, both neighboring Bantu languages. The differences between dialects are primarily in the lexicon and not in the sound system, and will not be discussed here. Two male speakers served as primary consultants for the preparation of an extensive word-list designed to illustrate all the salient segmental phonetic phenomena of the language. Subsequently, a group of seven speakers, four women and three men ranging in age from early 20's to early 50's, were tape-recorded saying the more selective list of words which is provided as an Appendix to this paper. The audio recording was made in a somewhat reverberant indoor setting in order to avoid substantial outdoor wind noise, but is generally of very good quality despite these difficulties. All the acoustic analyses reported below were conducted on words in this recording. Articulatory characteristics of clicks and lateral affricates were documented by palatograms and linguograms provided by the two primary

speakers. Palatal casts were also made to assist in interpreting the palatographic and linguographic data. The first author returned to Mangola for further fieldwork from January to June 1992. The analyses reported here are based on the material obtained during the first field trip, supplemented by observations of some additional words noted during the second period of fieldwork.

## 2. Consonants

An overview of the inventory of distinctive consonants of Hadza is provided by the chart in Table 1. In this table, and in all subsequent citations of Hadza data, the transcription follows the current practice of the IPA.

Table 1. Hadza Consonants

	Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar / Palatal	Velar	Labialized Velar	Glottal
Plosive	p <sup>h</sup> p b			t <sup>h</sup> t d		k <sup>h</sup> k g	k <sup>hw</sup> k <sup>w</sup> g <sup>w</sup>	ʔ
Ejective	(p')					k'	k' <sup>w</sup>	
Cen. Oral Click			ǀ	ǃ				
Lat. Oral Click					ǂ			
Nasal	m			n	ɲ	ŋ	ŋ <sup>w</sup>	
Nas. Cen. Click			ǀ̃ ǀ̃	ǃ̃ ǃ̃				
Nas. Lat. Click					ǂ̃ ǂ̃			
Prenas. Plosive	mp <sup>h</sup> mb			nt <sup>h</sup> nd		ŋk <sup>h</sup> ŋg		
Prenas. Affricate				nts ndz	ndʒ			
Cen. Affricate				ts dz	tʃ dʒ			
Lat. Affricate					tʃ̣			
Ejec. Cen. Affr.				ts'	tʃ'			
Ejec. Lat. Affr.					tʃ̣'			
Cen. Fricative		f		s	ʃ			
Lat. Fricative				ʃ̣				
Cen. Approx.					j		w	ɸ
Lat. Approx.				l				

(Cen. = central, Lat. = lateral, Nas. = nasalized, Prenas. = prenasalized, Ejec. = ejective, Affr. = affricate)

As Table 1 shows, consonants occur at seven places of articulation but the number of place contrasts differs depending on the manner of articulation. There are three contrasting places among plain plosives: bilabial, alveolar, and velar. Nasals and prenasalized stops occur at these three places, and there is in addition a palatal nasal. On the other hand, there are only two places for ejective stops, bilabial and velar, with the bilabial one occurring in only a very few lexical items. One of the two places used for central clicks, the dental, does not occur with other consonant manners, but there is a considerable number of other consonants formed in the same place as the lateral clicks, the palato-alveolar or palatal region. The only labio-dental is a voiceless fricative. Labialization occurs only with velar consonants; a separate column is provided for labialized velars on the chart. For convenience, the labial-velar approximant [w] has also been placed in this column. "Glottal" is also listed as a place of articulation; the glottal stop is shown in Table 1 with the plosives, and [ɦ] is shown as a glottal approximant. Some of the articulations involved will be discussed in more detail later in this paper.

Hadza has a large number of types of stop consonants, differing in onset and release characteristics, laryngeal setting, and airstream mechanism. As we will show in more detail later, plosives (pulmonic stops) occur voiced, voiceless, and aspirated, but there is only a two-way laryngeal contrast among prenasalized plosives and pulmonic central affricates. The only pulmonic lateral affricate is voiceless. Hadza lacks implosives but has a variety of ejective stops, including central and lateral ejective affricates. As we will also discuss in more detail below, there are nine distinct clicks in Hadza, formed by combining three click types with three click accompaniments: voiceless oral, voiced nasal, and voiceless nasal with glottalization. The continuant consonants of Hadza include voiced nasals, voiceless fricatives, and voiced approximants. There are two lateral continuants, one a voiceless fricative, the other a voiced approximant. In intervocalic position, the approximant [l] varies with a flap [ɾ].

Words illustrating all the Hadza consonants are shown in phonemic form in Table 2. The number after the gloss indicates the number of that word in the Appendix, which lists the words in the order in which they appear on the field recording mentioned above. Copies of this recording can be made available to those who are interested in pursuing further research. A few of the words in Table 2 are not among those on the recording, in some cases because they were not observed until the second period of fieldwork.

(In the table, gender and number suffixes of nouns are separated from the root by a hyphen. Verbs are generally cited as roots, with a final hyphen to indicate that a suffix would normally follow, for example the infinitive -ʔV.)

Table 2. Words illustrating the contrastive consonants of Hadza in initial and medial positions.

	word	gloss	# on tape	word	gloss	# on tape
<b>Bilabial:</b>						
p <sup>h</sup>	p <sup>h</sup> andʒu-p <sup>h</sup> e	'sp. plant'	32	ʔúp <sup>h</sup> úk <sup>h</sup> w <sup>a</sup>	'leg'	101
p	patáku'fɛ	'palm of hand'	99	ʔupá-k <sup>h</sup> o	'foam'	81
b	badá	'hole'	44	ŋ  obá-k <sup>h</sup> o	'baobab'	138
p'	p'áʔùwé-	'to split'	-			
m	mák <sup>h</sup> o	'clay pot'	85	sámak <sup>h</sup> a-p <sup>h</sup> i	'three'	37
mp <sup>h</sup>	mp <sup>h</sup> alamafio-k <sup>h</sup> o	'slingshot'	-	fiomp <sup>h</sup> ai-k <sup>h</sup> o	'wing'	-
mb	mbalata-k <sup>h</sup> o	'cockroach'	-	k  amba-bi	'small intestine'	186
<b>Labiodental:</b>						
f	fá-	'to drink'	11	ts'ifi	'night'	46
<b>Dental:</b>						
k	k úti-	'neck'	177	k ak a	'large flat rock'	-
ŋ '	ŋ 'ats'e-	'to reheat'	211	táŋ 'e	'belt'	140
ŋ	ŋ at <sup>h</sup> á	'tongue'	228	k iki ŋ a	'little finger'	181
<b>Alveolar:</b>						
t <sup>h</sup>	t <sup>h</sup> asé	'long'	123	át <sup>h</sup> amá	'blood'	107
t	tít 'i-	'black'	120	patáku'fɛ	'palm of hand'	99
d	dalanga	'flour'	-	badá	'hole'	44
n	nát <sup>h</sup> i	'donkey'	-	ʔéna-p <sup>h</sup> i	'grass'	30
nt <sup>h</sup>	nt <sup>h</sup> uli-bi	'beer'	-	ʔint <sup>h</sup> awe	'nose'	-
nd	ndag <sup>w</sup> e-ko	'notch'	-	ŋ!andá	'agama lizard'	97
l[r]	lalá-k <sup>h</sup> o	'gazelle'	67	baʔalá-k <sup>h</sup> o	'honey'	91
ts	tsipit'í	'porcupine'	65	tsetse-	'to grow old'	-
dz	dzá-	'come!'	2	tɛ'odzo-	'to say'	19
ts'	ts'áke-	'to steal'	24	fiits'á-p <sup>h</sup> e	'fat'	89
nts	ntsá-k <sup>h</sup> o	'star'	47	tan(t)se-	'to crack'	-
ndz	ndzop <sup>h</sup> a	'bottle'	-	mindza	'reedbuck'	-
s	sámaka-p <sup>h</sup> i	'three'	37	pápa'sa	'hip bone'	109
ʔ	ʔanó	'python'	95	ŋ!'ak'itá	'palate'	179
k!	k!ákú-	'to jump over'	4	k!o'k!ó-k <sup>h</sup> o	'back of head'	137
ŋ!'	ŋ!'ojé	'wax'	139	fiaŋ!'á-k <sup>h</sup> o	'rock'	184
ŋ!	ŋ!ána-	'sp. mongoose'	64	ŋ!ikiŋ i-	'to push a lot'	-

	word	gloss	# on tape	word	gloss	# on tape
<b>Palatoalveolar/Palatal:</b>						
n	nau-wa	'cat'	56	moŋóda	'salt'	92
tʃ	tʃatʃa	'bushbaby'	55	ʔitʃáme	'one'	36
dʒ	dʒándʒai	'leopard'	167	gubidʒi-	'to get s.t. ready'	-
tʃ'	tʃ'á-k'ó	'guineafowl'	117	fiatʃ'apitʃ'i-k'ó	'ear'	-
ndʒ	ndʒa	'reedbuck'	-	dʒandʒai	'leopard'	167
ʃ	ʃamu-ko	'Swahili'	-	andáʃa	'caracal'	-
tʃ̥	tʃ̥ákáte	'rhino'	183	kʷatʃ̥a	'shoe'	84
tʃ̥'	tʃ̥'áʔa-	'to sing'	22	mitʃ̥'	'bone'	142
kʃ	kʃap'há	'stump'	190	kakʃá-	'to hunt'	14
ŋʃ	ŋʃ'ek'hwá	'sp. root'	188	k'háŋʃ'é-	'to jump'	203
ŋʃ	ŋʃ'áʔa-	'to scavenge'	214	koŋʃafiete	'man w/ 2 wives'	-
j	jámu-a	'land'	40	ʔijátu-bi	'snakes'	96
<b>Velar:</b>						
kʰ	kʰalimo	'animal'	52	makʰo-wa	'clay pot'	85
k	káŋga	'sp. mongoose'	57	fiaká-	'to go'	13
g	gaʃa-bi	'honey beer'	-	damoga-kʰo	'beard'	-
k'	k'apáku-bi	'jaws'	114	ts'ik'ó	'smoke'	43
ŋkʰ	ŋkʰólo-á-kʰo	'heart'	108	ts'anjkʰa	'sp. mongoose'	58
ŋg	ŋgat'há	'head ornament'	113	k!oŋga	'hare'	158
ŋ	ŋaŋa	'kind of fruit'	50	ŋaŋa	'kind of fruit'	50
<b>Labialized Velar:</b>						
kʰw	kʰwakʃa-	'to vomit'	224	ukʰwá-kʰo	'arm'	98
kʷ	kʷaʔi	'warthog'	68	ŋʃ'ekʷa	'sp. root'	188
gʷ	gʷanda-kʰo	'shirt'	-	fiagʷanda	'adolescent animal'	-
k'ʷ	k'ʷaʔu-kʰo	'eggshell'	-	fiek'ʷa-be	'shell, rind'	-
ŋʷ	ŋʷapo-kʰo	'ditch'	-	—		
w	watʃ'o	'sp. mongoose'	63	ʔáwawa	'bee'	93
<b>Glottal:</b>						
ʔ	ʔáfiú	'skin'	104	tʃ̥'óʔa-kʰo	'a skin'	103
fi	fiaka	'to go'	13	k'háfi	'to climb'	8

### 3. Vowels

Hadza has five contrastive vowel qualities [i, e, a, o, u], as illustrated by the examples in Table 3. The vowels occur nasalized when they precede a voiced or

voiceless nasalized click. The vowels [ĩ, ũ] occur in two recorded lexical items in which their nasality cannot be predicted from the environment. These are also given in Table 3. In both these examples, the nasalized vowel is followed by [fɪ], but occurrence of [fɪ] is not generally associated with nasalized vowels. It is possible that these words may once have contained a nasal or a nasalized click.

Table 3. Words illustrating the distinctive vowels of Hadza.

i	ŋji-ʔi	'put poison on female arrow'	210
e	ŋje-ʔe	'put poison on male arrow'	209
a	ŋʃáʔa-	'to scavenge'	214
o	ŋʃ'o-ʔo	'wash, bathe'	226
u	ŋʃúʔu-	'to snore'	220
ĩ	ʃi fi-	'to blow nose'	-
ũ	saŋũfi	'be quiet!'	-

The oral vowel qualities are plotted on a standard vowel chart in Figure 1. Note that Hadza vowels in general tend to be auditorily somewhat centralized rather than peripheral.

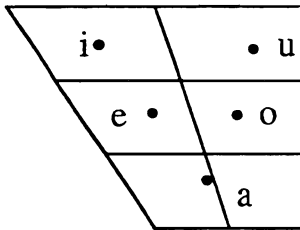


Figure 1. Qualities of Hadza oral vowels.

Length is not underlyingly contrastive in the vowel system, although there are phonetic differences in length which correlate with differences in pitch or accent, and long vowels may occur as the result of the addition of an affix to a word, e.g., /uk<sup>h</sup>wa-a-k<sup>h</sup>o/ 'It is an arm' [uk<sup>h</sup>wa:k<sup>h</sup>o]. Reduction of intervocalic [fi] can also result in a long vowel, e.g., [k<sup>h</sup>aʃia]/[k<sup>h</sup>a:] 'to climb'. Final vowels frequently become voiceless [j, ɛ, ɔ, ɔ, ɔ, ɔ], particularly when preceded by a glottal stop or any other voiceless stop. In fact, this devoicing can also extend to the penultimate vowels so that as much as the final two syllables of a word in utterance-final position can become whispered.

#### 4. Tone and stress

The roles of tone and stress in Hadza are not entirely clear. Tucker, Bryan, and Woodburn [1977] transcribe both stress and three level tones, high, low and mid (unmarked), although they are careful not to claim that these are all contrastive elements. They mark five tonal classes for the nouns (in the frame: \_\_\_*bàhèà* 'there is \_\_\_'): MMM, MML, MHH, HML, HMH. For the verbs they note four tonal classes (using the first person singular future as the elicited form): LH, HL, HH, LL. The mid tone thus appears not to be distinctive.'

Words in this article are transcribed with high tone [ˈ], and stress [ˑ]. These notations are impressionistic and based principally on repeated listening to the recorded wordlist. Syllables without a tone mark were heard as low, at least on a majority of occasions. In the field, we noted a good deal of variation in the pitch pattern in repetitions of a given word, e.g., [ŋ̩ˑˈɛkʰwá], [ŋ̩ˑˈɛkʰwá], [ŋ̩ˑˈɛkʰwā] 'species of root' (188). High toned syllables are typically longer and more stressed than low toned syllables. We have found no minimal or near minimal pairs which contrast a mid tone with either a high or a low tone. Most words seem to have one or other of two word-level melodies, LHL and HL, but the interaction of these melodies with additional morphemes attached to the root and with larger prosodic constituents has not been worked out. We believe that these facts, as well as the overall behavior of tone and stress might best be accounted for by analysing Hadza as a pitch-accent language, with prominence shifting from one syllable to another according to the context.

#### 5. Click types

The following more detailed description of the place of articulation of the clicks is based on field observations combined with the questioning of the consultants about their articulations, and instrumental palatographic records. Because only a few studies, such as Doke [1923, 1925], Beach [1938], Traill [1985], and Ladefoged and Traill [1984, 1994], have described clicks with the use of instrumental techniques, these sounds were given particular attention in our fieldwork. Following a tradition going back to Beach, we distinguish between click type and click accompaniment (Beach used the terms 'influx' and 'efflux'). The type of a click is the place of articulation and manner of release of the front closure. The accompaniment of a click is all of its other properties, such as the place of the back closure and its manner of release, the laryngeal actions, and the position of the velum determining if the click is nasalized or not. A given click consonant is transcribed with one symbol representing the click type, and with one or more other symbols and diacritics representing the accompaniment.

We consider that Hadza has three click types, dental, lateral and alveolar, but some earlier descriptions reported a larger number of types. Bleek [1956 (but based on fieldwork conducted in the early 1930's)] transcribed a fourth click type

with the symbol [ɕ]. In Nama and other Southern African Khoisan languages the click transcribed with this symbol has a more forward point of release and usually greater affrication than [!] [Ladefoged and Maddieson 1966]. Greenberg [1966] followed Bleek in reporting four click types in Hadza. All the words which Bleek transcribed with the [ɕ] click have been transcribed by us or Sands [1992 ms] with other sounds, such as [!], [!!!], and [k']. The recognition of a [ɕ] click type, therefore, appears to be due to errors of transcription; it is unlikely that it has disappeared through a set of diverse linguistic changes occurring over the sixty years separating Bleek's and our fieldwork.

Tucker, Bryan, and Woodburn [1977] in addition transcribe a bilabial click and a "flapped" version of the [!] click, transcribed [!!]. The two words they give as examples of a bilabial click are in greetings; they also indicate that these words may be produced with a dental click. Our consultants had aspirated bilabial stops in these words. Neither a bilabial nor a dental click was considered an acceptable substitute for the pulmonic stop; however it was acceptable to precede the greeting with a labio-manual click — a kiss on one's own hand. We will consider later the occurrence of a flapped version of the [!] click.

In order to study the production of the three click types, palatograms and linguograms were made for two adult male speakers of Hadza, using techniques described by Ladefoged [1993]. A small number of words containing a single click and no other oral consonants were selected for study. Separate repetitions were used to study the contact area on the upper surface of the mouth and the part of the tongue making the contact. Each speaker uttered a given word twice before the contact area was recorded on videotape, using a mirror to view the contact on the roof of the mouth, and having the speaker stick out the tongue to see the lingual contact area. Palatograms and linguograms of the ejective lateral affricate were also made, as this sound has a striking acoustic similarity to the lateral type of click. The video images were later digitized using a Macintosh computer equipped with a video capture card. For each speaker, a dental impression was made, showing the shape of the roof of the mouth. This was used to create a sagittal view of the fixed structures of the speaker's vocal tract.

The dental clicks [!] can be described as having a laminal coronal closure, extending from the upper teeth to the alveolar ridge. This can be seen in Figure 2, which shows palatograms and linguograms of the front articulation in a dental click, as produced by the two speakers. The palatograms on the left of each pair of pictures show the front contact as observed in the mirror. The linguograms on the right of each pair show the projected tongue viewed directly. The areas covered by the black marking medium indicate where the articulators made contact during the articulation in each case. A sagittal view of the maximum area of the front contact for each speaker, inferred from the information in the palatograms and linguograms, is shown above the palatograms. The location of the back closure of the click cannot be seen on these palatograms and linguograms; the dark areas toward toward the back, i.e., right, of the pictures



for speaker 2 are shadows caused by a rather small mouth opening, not part of the contact pattern. The extension of the closure along the sides of the mouth, however, can be seen. This lateral closure, along with the front and back closures, is necessary to create a suction chamber and hence generate the inflow of air characteristic of a click release.

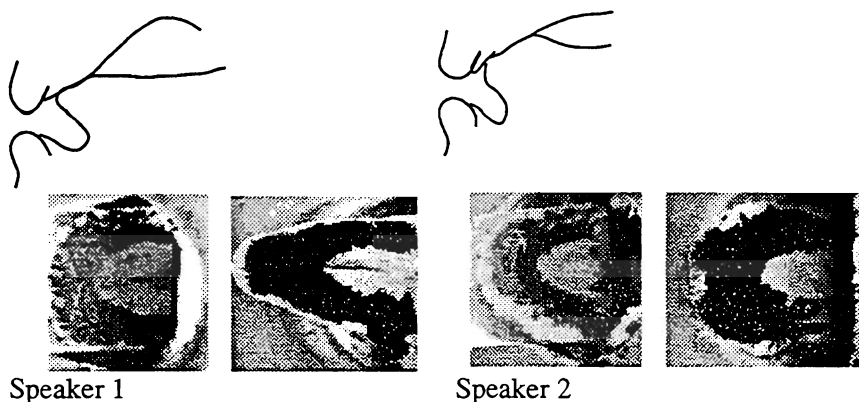


Figure 2. Palatograms and linguograms of a dental click in the word [ɲlaha] 'forget', as spoken by two male Hadza speakers. The sagittal view of each articulation was inferred from the patterns of contact on the tongue and palate, and the known contour of the palate.

The inability to see the back closure in the palatograms of the dental click in Figure 2 (and those of the alveolopalatal and lateral clicks in Figures 3 and 4, which we will be discussing later) indicates that this contact must be quite far back on the roof of the mouth and/or quite short in the sagittal plane. This is similar to the production observed in Dahalo dental clicks [Maddieson, Spajić, Sands, and Ladefoged 1993] but differs from the corresponding clicks in languages spoken in Southern Africa, such as !Xóõ (Traill 1985) and Zulu [Doke 1923, 1925, Beach 1938]. In these other languages, the back closure extends further forward so that the contact of the back of the tongue reaches about the position of the second or third molars, and its forward edge is visible on palatograms. Sagittal diagrams of !Xóõ clicks [Traill 1985, Ladefoged and Traill 1984, 1994], based on x-ray cinema-tography, also show that at the onset of the formation of the click there is usually a smaller enclosed air space than our palatographic records indicate for Hadza. It is uncertain if this difference is due to the fact that the speakers differ in their oral morphology, or is attributable to a different target position for the back closure. The two Hadza speakers studied have a somewhat higher palatal vault than the !Xóõ speakers, and a less sharply curved arrangement of the teeth so that the distance between the left and right

molars is greater. These differences might make a more forward closure harder to achieve. The shape of the roof of the mouth is not given for the Zulu speakers studied by Doke, but their dentition seems to be more like that of the Hadza speakers than that of the !Xóǀ speakers studied by Trail [1985]. If this is so, it may be the case that the more retracted back contact is a controlled property of Hadza clicks, that is, a component of their target.

Palatograms, linguograms, and inferred sagittal sections of the front articulation of the [!] click type are shown in Figure 3. We describe this click type as alveolar since the front closure of these clicks tends to be made at a less anterior place of articulation than the [ɰ] type; it might even be labeled post-alveolar. It is typically also more apical. This is certainly the case for speaker 2, who shows a contact area on the tongue for [!] that is approximately half the size of that for [ɰ]. Speaker 1 shows more similarity in his articulations for [!] and [ɰ]. The linguograms for speaker 1 show front closure contact on the tongue to be similar in length and location for both [!] and [ɰ], but these clicks differ in the shape of the area in the middle of the tongue which did not make contact with the roof of the mouth. In the dental clicks, this area is tapered toward the front, whereas the alveolar click displays a more rectangular shape for the corresponding area. These linguograms and palatograms suggest that, at the midline, the tongue behind the contact is more sharply lowered for the alveolar than for the dental click.

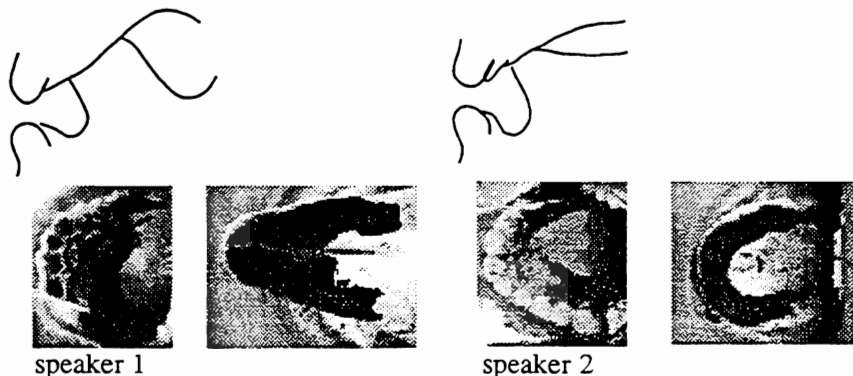


Figure 3. Palatograms, linguograms, and inferred sagittal view of the alveolar click in the word [ŋ!eʔe] 'to cut', as spoken by two male Hadza speakers.

The palatogram of the alveolar click for speaker 1 shows that contact was also made against the back of the front teeth, yet this contact does not extend to the base of these teeth at the gumline. The blackened area on the front teeth must be the result of a separate and lighter contact than the principal one in the alveolar

region, otherwise we would expect a continuous contact area extending over the dental and alveolar regions. The contact pattern seen is thus not consistent with a broad laminal denti-alveolar articulation, but is more likely to be the result of the tip of the tongue quickly flipping against the teeth after the front contact closure is released. The extent of the contact area for the front click closure is somewhat longer in the sagittal dimension for speaker 1 than for speaker 2. This is consistent with the idea that speaker 1 articulated the click with a rather forceful release. The contact would have extended to the post-alveolar region initially, but later only covered the alveolar region as the cavity behind the closure was enlarged to lower the intraoral pressure. This is similar to the reduction in contact area before release seen in Traill's cineradiographic data on one speaker's production of [!] in !Xóǀ (Traill 1985: 110).

The alveolar click [!] in Hadza was observed to vary a great deal in terms of how forcefully it was produced by speakers. In some instances, the amplitude of the click release was very low, as if the click were produced with very little suction. This differs from the production of the similarly-transcribed click in languages such as !Xóǀ and !Xú, which is typically very loud and salient [Traill 1994, Snyman 1978]. Waveforms illustrating strong and weak productions of this click are shown in Figure 4. In the high-amplitude production of this click, the burst is much louder than the surrounding vowels; in low-amplitude productions, the burst can have less energy than the surrounding vowels, as in the token illustrated here.

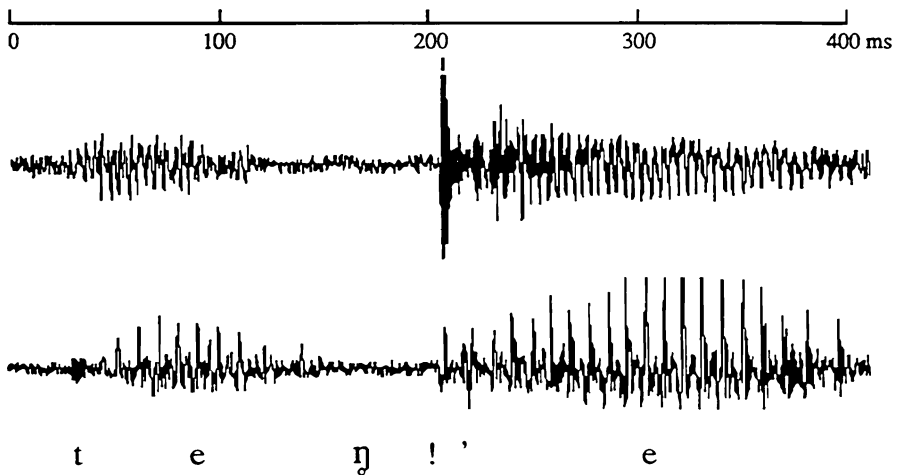


Figure 4. Waveforms of the word [teŋ'e] 'to carry on shoulders' as produced by two different speakers. The upper exemplar (from a female speaker) shows a high-amplitude burst for the release of this click; the lower exemplar (from a male speaker) shows a low-amplitude burst.

A notable unconditioned allophonic variant of the [!] click was observed at times from most of the speakers we heard. In this variant, the normal click release is quite quiet but the tongue tip makes a forceful contact with the bottom of the mouth after the release of the front click closure. The release of the front closure and the contact with the bottom of the mouth is one continuous, ballistic movement, with the underside of the tip of the tongue making a percussive sound as it strikes the floor of the mouth. This version of the [!] click is thus similar to the sound sometimes made by speakers of non-click languages trying to imitate the sound made by the shoes of a trotting horse. This is presumably the articulation which Tucker, Bryan, and Woodburn [1977] characterized as a flapped palato-alveolar click. It is quite clearly a free variant of the unflapped [!] and not a separate phoneme. The only parallel variant reported from any of the Southern African languages with clicks concerns an individual !Xū speaker, noted as atypical, who used what Doke [1925] called a palato-alveolar flapped click. The tongue front is “flapped smartly to the floor of the mouth, the under-side making a resounding ‘smack’ behind the lower front teeth and on the floor of the mouth” [Doke 1925: 163]. No comparable allophonic variation is noted by current researchers on Southern African languages with clicks [Traill, personal communication], but we have observed this kind of production of [!] to be quite frequent in Sandawe [Wright, Maddieson, Sands, and Ladefoged 1995]. A suggested phonetic notation for this variant is [i].

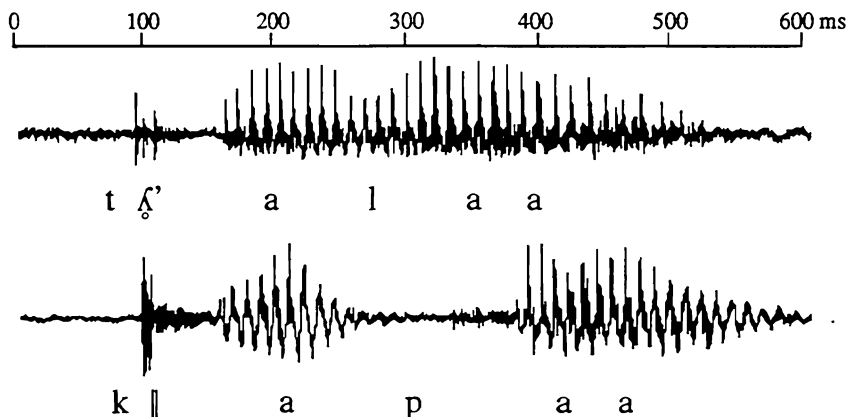


Figure 5. Waveforms illustrating a lateral ejective affricate in the word [tʂ'ala-a] ‘dove’ and a lateral click in the word [k||apa-a] ‘stump’, spoken by one of the female speakers recorded.

The third type of click found in Hadza, the lateral click [||], is especially interesting because of its similarity to the lateral ejective affricate. In many

acoustic and articulatory respects, these two sounds are quite comparable. Figure 5 shows waveforms of words containing [k||] and [tɕ'] in similar environments produced by one of the female speakers recorded. The similarity between the two sounds in the burst amplitude and duration of frication is evident in this figure. The acoustic likeness also extends to the frequency characteristics of the frication period. Both these sounds are produced with a laminal closure involving the front of the tongue and with a ring-like closure along the sides. For many speakers, the lateral release in these sounds occurred quite far back in the mouth, and could be properly characterized as a lateral palatal release. Our field transcriptions show that we transcribed the lateral ejective on various occasions as [cɕ'], or even as [kL']. Based on the articulatory data we classify these sounds as palato-alveolar (or laminal alveolar) in place. Figure 6 shows the palatograms and linguograms of the lateral click for the two speakers, and Figure 7 those for the lateral ejective. The absence of any of the marking medium from the tongue tip in the linguograms for speaker 1 shows very clearly that both laterals were made with the tip of the tongue down. The laminal contact is on the teeth and alveolar ridge for the click, but only on the alveolar ridge for the ejective. Unfortunately, this speaker did not open his mouth sufficiently when the photograph was taken, and his upper teeth prevent us from seeing the backward extent of the contact in the ejective. For speaker 2, the tongue tip also appears to be down during both laterals. Contact occurred from the bottom of the top front teeth to the back edge of the alveolar ridge, and appears quite similar in position and extent for both sounds.

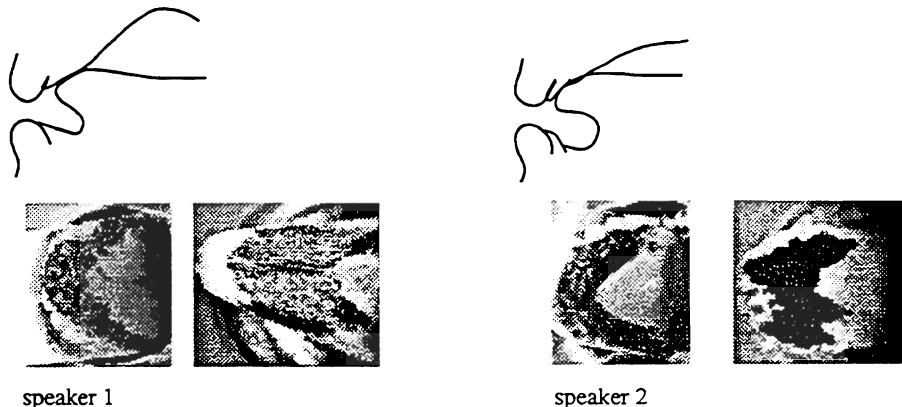


Figure 6. Palatograms, linguograms, and inferred sagittal view of a lateral click in the word [ɲ|aʔa] 'to scavenge' as spoken by two male Hadza speakers.

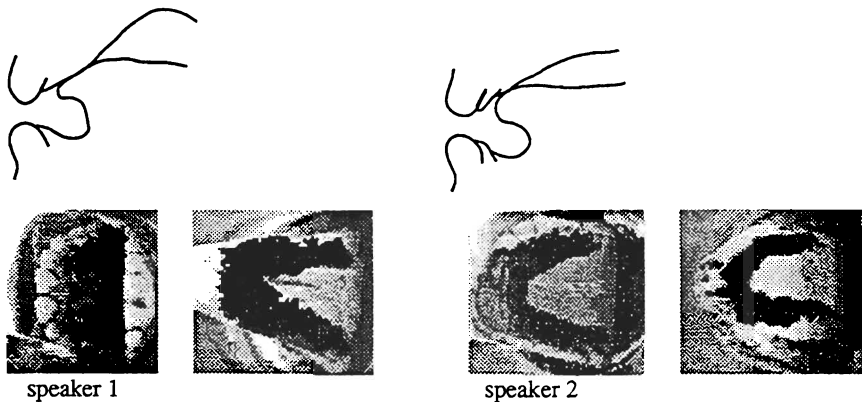


Figure 7. Palatograms, linguograms, and inferred sagittal view of a lateral ejective affricate in the word 'bone' [mitʃ'a] as spoken by two male Hadza speakers. The position of the tongue is shown by a dashed line for speaker 1 as the mouth was not open sufficiently and the extent of contact cannot be seen.

## 6. Click accompaniment

The range of accompaniments to the clicks in Hadza is more limited than that which occurs in many of the Khoisan languages of Southern Africa and even in some of the Bantu languages of the same area [Ladefoged and Traill 1994, Ladefoged and Maddieson 1996]. There are no plain (i.e., non-nasalized) voiced clicks, and aspiration plays no role in distinguishing between clicks. In Hadza, each of the three types of clicks, [ǀ, ǁ, ǃ], can have three different accompaniments. The first possibility can be regarded as an accompanying voiceless velar stop [k], giving [kǀ, kǁ, kǃ]. A waveform of a word in Hadza containing an intervocalic dental click with this accompaniment is shown in Figure 8. The same accompaniment is also illustrated in Figure 5. We will discuss the degree of aspiration in these clicks in a later section.

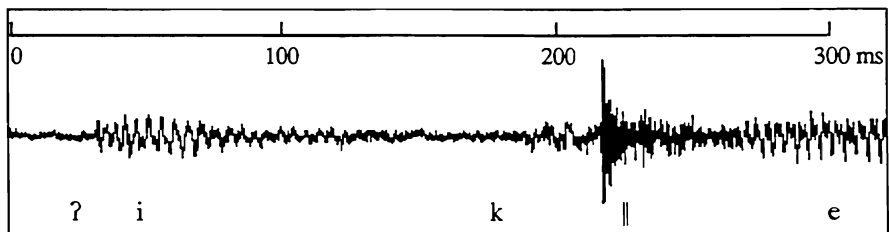


Figure 8. Waveform of voiceless click in intervocalic position in the word [ʔikǁe-ʔe] 'to close'.

The other two accompaniments involve nasalization of the click. The second possibility is an accompanying voiced velar nasal [ŋ, ŋ̃, ŋ̃!]. Voicing continues throughout the production of clicks with this accompaniment, as shown in the waveform of a dental click in Figure 9. Some anticipatory nasalization of a preceding vowel occurs before clicks with this accompaniment.

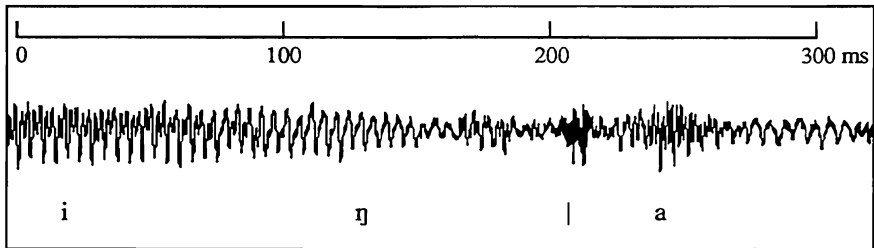


Figure 9. Waveform of voiced nasal click in intervocalic position in [kʰikilɪŋja] 'little finger'.

The third accompaniment is more complex; it is both nasalized and glottalized. This voiceless nasal accompaniment is transcribed (ŋ̃! , ŋ̃! , ŋ̃! ), although it should be kept in mind that the devoicing is achieved not by opening the vocal folds but by glottalization. The glottalization takes the form of a glottal stop which is formed during the click closure, and released well after the release of the front closure of the click, so that there is a delay before the onset of voicing. The nasalized nature of this accompaniment can be hard to detect in an utterance-initial click, but in word-medial cases it induces full or partial nasalization of a preceding vowel, as in the word 'rock' [h̃āŋ! 'á-ak<sup>h</sup>o]. Similar anticipation of nasalization is also heard on a preceding vowel across a word boundary. Also, when a vowel precedes, a short voiced nasal segment can sometimes be heard as the click is being formed. However, in all environments the presence of nasal airflow can be detected by placing a hand in front of the nose of the speaker, and speakers themselves readily identify clicks with either the voiced or the voiceless nasalized accompaniment as having nasal airflow. The waveform of a voiceless nasalized alveolar click in Figure 10 clearly shows that the closure for this click is voiceless. Airflow is interrupted at some point by glottal closure, but when voicing resumes some time after the click is released the following vowel is somewhat nasalized, indicating that the velum remains lowered during the glottalization. Because of their similar effects on neighboring vowels, the voiced and voiceless nasalized click accompaniments can be difficult to distinguish in intervocalic position on first hearing. But as Figures 9 and 10 show, the laryngeal contrast between them is not neutralized in this position.

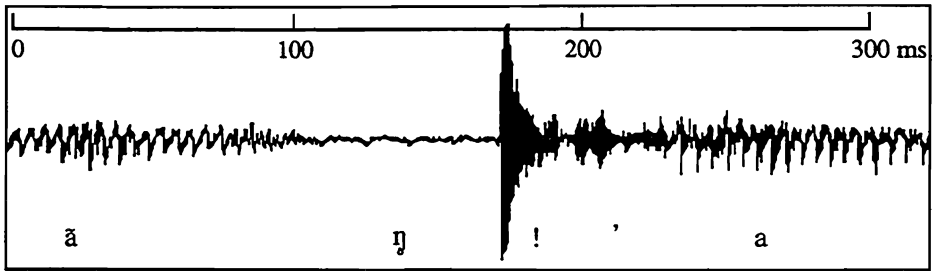


Figure 10. Waveform of voiceless nasalized click in intervocalic position in [haŋǀ'a-ko] 'rock'.

Other researchers have distinguished different sets of accompaniments. Bleek [1958] notes among the click accompaniments velar frication, ejection, and voicing, writing [||kx, ||k", g||], etc. We observed no voiced clicks other than the nasalized ones, and none in which the back closure was released into velar friction. The accompaniment marked as ejective may be the voiceless nasalized accompaniment we have described with its glottal closure component. Other disagreements in the literature also concern the failure to recognize the voiceless nasalized and glottalized accompaniment for what it is. Tucker, Bryan, and Woodburn [1977] note "pausal" (i.e., only utterance-initial) clicks which have a glottalized accompaniment and go on to report that these have nasalized allophones in other positions. Elderkin [1992] also recognizes a glottalized click accompaniment but notes that nasalization "before the glottalized click" is "almost always present". A. de Voogt [1992] transcribes a total of four types of click accompaniment, described respectively as voiced nasalized, aspirated (glottalized), "simple" glottalized (without delay in voice onset, possibly not glottalized) and glottalized with delayed release. These researchers fail to note that the "glottalized", "pausal", or "glottalized click with delayed release" clicks are not nasalized only when intervocalic, but in all environments. The nasal component of this accompaniment is less auditorily salient when clicks of this type are post-pausal but it is still present. It appears to us that when these clicks are in utterance-initial position, they actually begin with voiceless nasal airflow. This nasal airflow is, however, interrupted by a closure at the glottis that seems to be timed to coincide approximately with the formation of the front closure of the click. The initial nasal component is not at all auditorily salient, and this probably accounts for the emphasis given to glottalization in other accounts of Hadza. However, it is in intervocalic cases that the presence of the glottal closure is particularly apparent as a sharp cut-off of the preceding voicing occurs. But since some audible nasalization always occurs at the release of clicks with this accompaniment, we believe that nasalization should be recognized as an inherent property of the accompaniment.



## 7. Voice Onset Time

There is some disagreement in the literature as to the nature of the contrastive laryngeal states that accompany the consonants of Hadza. As with all contrasts in the language, there are few minimal pairs to serve as a guide. The distinctions, if any, between aspiration and voicelessness have been particularly difficult for researchers to untangle. Tucker, Bryan, and Woodburn [1977] transcribe an aspirated/unaspirated contrast for both the pulmonic affricates and the clicks, and de Voogt [1992] transcribes this contrast for the pulmonic affricates, but feels it may be due to allophonic variation. In fact, simple pulmonic stops, clicks, and affricates all appear to pattern differently with respect to phonation type.

In order to investigate these differences, measurements of Voice Onset Time (VOT) were taken in a range of clicks, and pulmonic and ejective stops and affricates. Each of these words were said twice by each of the 7 speakers on the recording, providing usually 14 measureable tokens of any individual word. Some lexical roots have additional repetitions on the tape. These additional repetitions were made at a different place on the word list and are averaged separately. Measurements were made by examining simultaneous displays of spectrograms and waveforms on a Kay Elemetrics Computer Speech Lab, with speech digitized at 10 kHz. The duration measured was from the beginning of the release burst of the consonant to the onset of voicing of the following vowel.

Simple plosives made at bilabial, alveolar, and velar places occur both phonetically voiced and with voiceless closure. We are persuaded that there are two series of voiceless stops, which are transcribed as aspirated [p<sup>h</sup>, t<sup>h</sup>, k<sup>h</sup>] and unaspirated [p, t, k], although both stop series are phonetically aspirated to some degree, that is, they have some delay between the stop release and the onset of voicing for a following vowel. Measurements of VOT for voiceless pulmonic velar stops in 22 separate lexical items were taken. The means and standard deviations of the VOTs for pulmonic velars by word is shown in Figure 11, arranged in order from shortest to longest. The first 14 words from the left clearly group together, separate from the 9 rightmost words. The mean VOT in the word [ŋk<sup>h</sup>olo-wa-k<sup>h</sup>o], the only prenasalized velar stop in the set, falls in neither group. For the other words, the overall mean VOT's are 45.2 ms (standard deviation 13.6) for 114 tokens of /k<sup>h</sup>/, and 23.6 ms (s.d. 7.9) for 142 tokens of /k/. This is a much smaller difference than is usually observed between voiceless aspirated and unaspirated plosives, which probably accounts for the uncertainties surrounding the phonological pertinence of this difference.

There does not seem to be a two-way contrast in aspiration for the prenasalized stops. The degree of aspiration for voiceless prenasalized stops does not correspond to that of either the less aspirated or the more highly aspirated stops, but falls in between. We have chosen to represent them as aspirated. Similar results to those for the velars were found in measurements of bilabial and alveolar stops, although smaller data sets were examined.

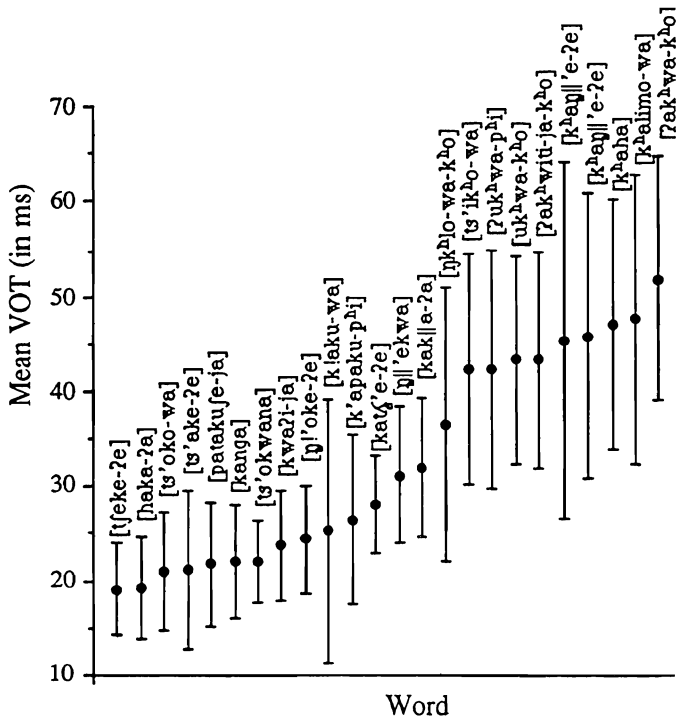


Figure 11. Plot of the mean VOT of a velar stop [kʰ, k] in 22 separate lexical roots. VOT was measured for 7 speakers, producing each item twice. Each mean represents no fewer than 9, and no more than 14, separate tokens.

The set of velar stops includes an ejective, /kʰ/, as well as the voiced, voiceless aspirated and unaspirated stops /g/, /kʰ/, and /k/. The occurrence of ejective stops is marginal at the bilabial place, and is not found at the alveolar place. The VOT measurements for pulmonic velars shown in Figure 11 were compared with measurements of ejective velars in 5 lexical items. An overall mean of VOT of 50.0 ms (s.d. 14.9) was found in 78 tokens of /kʰ/. In an analysis of variance with speaker and phonation type as independent variables, VOT was found to be significantly different for /kʰ/ and /k/ ( $p < .0001$ ). The mean VOT for the ejectives is slightly longer than for the aspirated stops, but this difference was not significant.

In contrast with the pulmonic consonants, we have not observed a distinction between aspirated and unaspirated affricates and clicks. The lack of a systematic contrast between aspirated and unaspirated voiceless clicks can be seen in Figure 12, a plot of mean VOTs for words containing voiceless oral [k!] clicks. These tend to show some aspiration, but of a variable extent. The variation between the means of the three repetition sets of the word [k!e?e] 'to cut' (10, 196, 216) can be seen to be quite large.

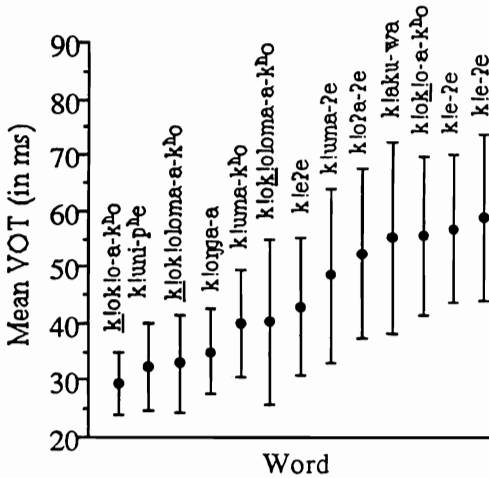


Figure 12. Means and Standard Deviations of VOT of voiceless alveolar clicks for 7 Hadza speakers. Separate means are given for each click in words with more than one click; the relevant click is underlined.

There is, however, a small but significant difference in mean VOT between the voiceless oral clicks and voiceless nasalized clicks with glottalization. The voiceless nasalized clicks tend to have longer VOTs. The mean VOT is 45.9 ms (s.d. 16.7) for 182 tokens of /k!/, and 51.0 ms (s.d. 18.6) for 220 tokens of /ŋ!/. These values are very similar to those found for /k<sup>h</sup>/ and /k'/, respectively. In an analysis of variance with speaker, syllable position, and accompaniment type as independent variables, this difference was found to be significant ( $p=.0042$ ). Recall that these two click accompaniments are also distinguished by the presence or absence of nasalization on any immediately preceding or following vowel and by the glottalization feature, so that this small VOT difference is unlikely to be itself an important cue to perceiving the contrast. Differences in VOT between pulmonic and ejective affricates were also found, with the ejective affricates having longer VOTs. These differences tended to be somewhat greater than the difference between these clicks.

Tucker, Bryan, and Woodburn [1977] note that an initial consonant has a very short VOT in a word where the first and second syllables are otherwise the same. During the course of our fieldwork, we noted that this generalization holds for plosives, affricates and clicks. That is, these consonants have a shorter VOT if they are the initial consonant in the first of two identical syllables than if they occur in a non-identical sequence. The mean VOT for initial [k!] clicks in words where the first two syllables are identical was found to be significantly different ( $p < .0001$ ) from the VOT of the second [k!] click in these words in a paired, two-tailed T-test. The words used in this comparison are among those shown in Figure 12. As can be seen in this figure, the mean VOTs for the initial clicks in [k!ok!oloma] ‘epiglottis’ (129) and [k!ok!o-ak<sup>h</sup>o] ‘back of head’ (137) are shorter than the VOT’s for the second clicks in these words. Similar comparisons for /p/ and /p<sup>h</sup>/ showed the same effect.

The other systematic variation in VOT of clicks that we observed occurs when the following syllable contains a nasal. In the data set shown in Figure 12, four words have an initial click with a nasal in the following syllable: [k!uni-p<sup>h</sup>e] (144), [k!uma-k<sup>h</sup>o] (145), [k<sup>h</sup>uma-ʔe] (20) and [k!oŋga-a] (158). In an analysis of variance with speaker as an independent variable, these clicks had significantly lower VOTs ( $p < .0001$ ) than the other clicks (excluding the initial clicks in [k!ok!oloma] (129) and [k!ok!o-ak<sup>h</sup>o] (137)) in this data set. Given that both absence of nasalization of the following vowel and a shorter VOT are cues to the voiceless oral click accompaniment as contrasted with the voiceless nasalized accompaniment, we might expect some trade-off between these cues to be possible. Where a vowel becomes partly nasalized due to a following nasal consonant, it might be more difficult for the listener to determine whether a preceding click is oral or nasal based on the cue of the nasalization of a following vowel alone. The reason why voiceless oral clicks have shorter VOTs when a nasal follows might therefore be that this enhances the VOT cue to their identity in the context where the cues from vowel nasalization are more ambiguous.

## 8. Vowel Quality

The quality of the five vowels in Hadza was examined by making measurements of the formant frequencies of each of these vowels in a similar environment. The first five words in Table 3 were used for this purpose. These words were chosen to measure because they represented the nearest to a full minimal set available for the vowels, despite the fact that they contain nasalized clicks which could affect the formant estimates. For each of the seven speakers, there were two utterances of each word, and two identical vowels in each word. Formant frequencies were measured in the midpoint of each voiced vowel, i.e., the final vowels were not measured if devoiced. Figures 13 and 14 plot the first formant against the difference between the first and second formants for each token for the four female and three male speakers, respectively. In these figures, the axes of the diagram

are scaled according to the Bark scale but labeled in Hz. The origin of both axes is in the upper right corner, so that the vowels are arranged in the same orientation as in the traditional vowel plot used in Figure 1. The use of the formant difference for the horizontal axis also assists in presenting the vowels in a familiar-looking spatial arrangement. The mean position for each vowel is shown by a large dot and the ellipses enclose all data points for a given vowel that are within two standard deviations of the first two principal components of the distribution of that vowel. The third formant is not plotted or discussed due to the large number of tokens in which it could not be reliably estimated.

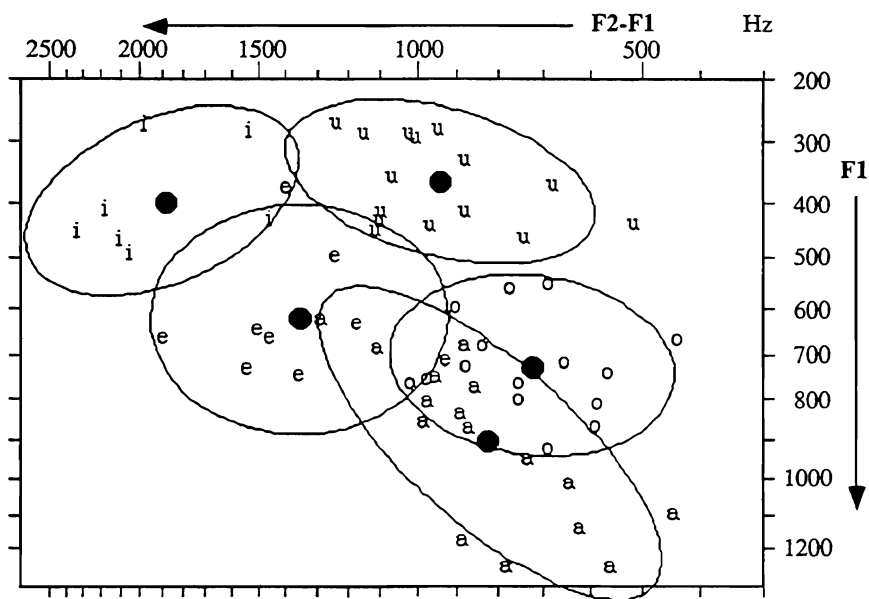


Figure 13. Frequencies of F1 and F2-F1 of the vowels [i, e, a, o, u] for four female speakers of Hadza.

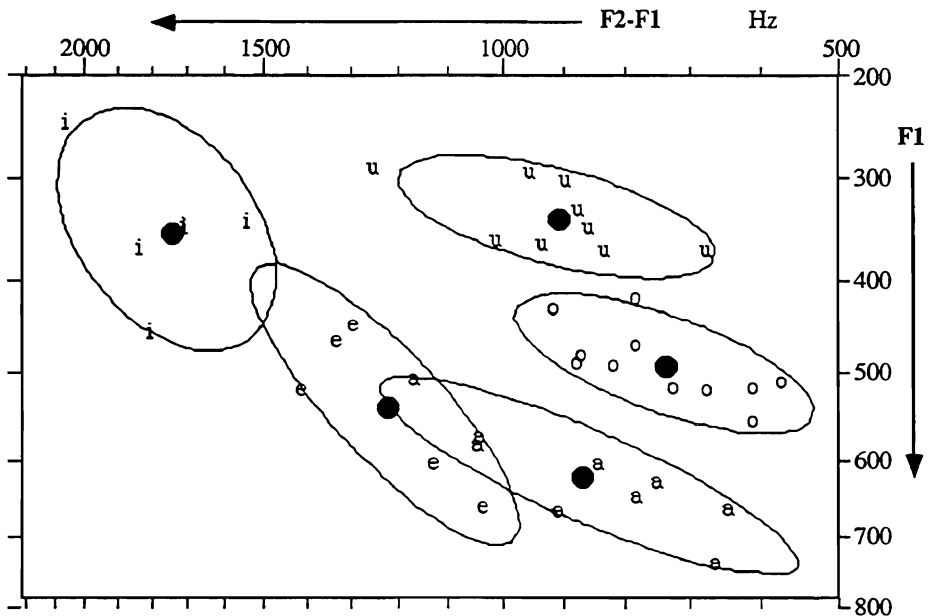


Figure 14. Frequencies of F1 and F2-F1 of the vowels [i, e, a, o, u] for three male speakers of Hadza.

The mean vowel positions are well separated in both Figures 13 and 14, but the individual points show considerable scatter. This scatter is surely due in part to speaker differences in vocal tract size and shape, but it is also our impression that Hadza vowels are free to vary quite widely within given ranges of quality. It is likely that the scatter of points in these figures also represents some of this optional variability. Given the large number of distinct consonants and the rarity of monosyllabic forms, lexical contrast rarely depends solely on vowel quality in Hadza; this may encourage toleration of vowel variation. One notable feature of the vowels is the relatively high mean second formant of the high back vowel [u], reflected in the location of the mean position for this vowel to the left of that for [o] in the figures. This property would correspond to a perceptual fronting of this vowel relative to Cardinal Vowel 8, and might result either from a more fronted tongue position or a less rounded lip position, or some combination of both.

## 8. Concluding comments

This paper has clarified some of the phonetic contrasts that underlie the phonological system of Hadza. In particular, it has presented a clear picture of the system of click types and accompaniments, showing that it includes some features that are unusual even when considered in relation to the much larger set of clicks

found in some of the Southern African Khoisan languages. Some documentation of the similarities between lateral clicks and the lateral ejective affricate has been provided. Such similarities suggest one possible avenue by which a language could gain or lose clicks in its inventory. The presence of an aspiration contrast in the plosives has been supported, and a number of other details of the consonant and vowel systems have been noted in greater detail than in the previous literature.

There are three languages spoken in East Africa whose phonetic inventories include clicks. One of them, Sandawe, is spoken by several thousand people who form a strong community with schools and local government bodies in which they form the largest group. Another, Dahalo [Maddieson, Spajić, Sands, and Ladefoged 1993], is clearly a language in retreat, spoken by only a few hundred people scattered among other larger communities. The situation of Hadza is harder to describe. It appears to have been spoken by a small group for a very long time. Children today are learning the language, despite a high frequency of contact with other languages. As linguists, we are glad that this language continues to show this vitality.

## APPENDIX

The following appendix contains the word list recorded by four women and three men in August, 1991. Words are cited as roots, with the endings placed in a separate column. The different speakers varied in whether they gave a form with or without an ending and often gave different endings. Variant transcriptions we noted are given in the final column.

(tape 1)

#	root	gloss	recorded endings	observed variants
1	bo'tʃó-	'to come'	-ʔo	bʏtʃo-ʔo, bətʃo-ʔo, butʃo-ʔo
2	dzá-	'to come'	-ʔa	dʒa-ʔa
3	k <sup>h</sup> a'ŋǁ'é-	'to jump', 'to spring up' (= 203)	-ʔe	
4	'k!áku-	'to jump over	-wa	
5	tʃi-	'to run'		
6	te'ŋ!'é-	'to carry on shoulders'	-ʔe	te'ŋ!'é-
7	'pótʃ'o-we-	'to break'	-ʔe	'pútʃ'o- ,wé-
8	k <sup>h</sup> áfia-	'to climb'	-ʔa	káfia-ʔa, káa-ʔ
9	ŋǁ'ut <sup>h</sup> i-je-	'to cook'	-ʔe	ŋǁ'uti-je-ʔe
10	'k!a-	'to cut' (= 196 & 216)	-ʔe	'k!é-
11	fá-	'to drink'	-ʔa	
12	séme-	'to eat'	-ʔe	séme-ʔ
13	haká-	'to go'	-ʔa	
14	kǁa kǁá-	'to hunt' (= 202)	-ʔa	kakǁa-ʔa
15	tʃé-	'to take'	-ʔe	
16	ts'afia-	'to know'	-ʔe	ts'áfie-
17	t <sup>h</sup> a-ija	'to leave off', 'to stop doing sth.'	-ʔe	t <sup>h</sup> a-je-
18	tʃeké-	'to put'	-ʔe	
19	tʃ'odzo-	'to say'	-ʔo	
20	k!uma-	'to wrinkle'	-ʔe	
21	k!oʔá-	'to scratch'	-ʔa	
22	tʃ'áʔa-	'to sing'	-ʔa	
23	tsija-	'to sneeze'	-ʔa	



24	ts'áke-	'to steal'	-ʔe	
25	ŋ!eko	'to stir'	-ʔe	ŋ!éke-
26	ŋ!'uʔ-ija-	'to swell'	-ʔa	
27	tʃéfiɛna	'below, bottom'		tʃé:na
28	ŋ  'o-	'to wash' (= 226)	-ʔo	
29	ga'gá-	'grasshopper'	-a	ga'gá-a
30	ʔéna-	'grass'	-p <sup>hi</sup>	
31	fiáts'ap <sup>hi</sup> -	'leaves'	-p <sup>hi</sup>	
32	p <sup>h</sup> ándzu-	'sp. plant'	-p <sup>he</sup>	
33	p <sup>h</sup> isé-	'thorn'	-ja	
34	ts'ití-	'tree'	-ja	
35	bone-	'four'	-p <sup>he</sup>	bone-p <sup>he</sup> , bole-p <sup>he</sup>
36	ʔitjáme-	'one'	-ja	
37	sámaka-	'three'	-p <sup>hi</sup>	
38	píje-	'two'	-p <sup>he</sup>	p <sup>hi</sup> je-p <sup>he</sup>
39	fiék'wa-	'bark, shell, rind, crust'	-p <sup>he</sup>	
40	jámuʔá-	'country, land'	-a	
41	tʃ'alá-	'dust'	-a-k <sup>ho</sup>	
42	ts'okó-	'fire'	-wa	
43	ts'ik'ó-	'smoke' (= 86)	-wa	
44	badá-	'hole'	-a	
45	'sét <sup>h</sup> a-	'moon'	-a	se:t <sup>h</sup> a:
46	ts'ifi-	'night'	-ja	
47	ntsa-	'star'	-a-k <sup>ho</sup>	t <sup>h</sup> sa-k <sup>ho</sup>
48	ifó-	'sun'	-wa-k <sup>ho</sup>	
49	at <sup>h</sup> i-	'water'	-p <sup>hi</sup>	
50	ɲaɲa	'sp. fruit'		
51	maná-	'meat'	-a-k <sup>ho</sup>	
52	k <sup>h</sup> alimo-	'animal'		k <sup>h</sup> alimo, -wə
53	fiáts'e-	'hunger'	-ja	
54	nak'oma-	'buffalo'	-a	
55	tʃatʃa-	'lesser bushbaby'	-a	
56	ɲáu-	'cat'	-wa-k <sup>ho</sup>	
57	káɲga-	'sp. mongoose'	-a	ka:ɲga:

58	ts'aŋk <sup>h</sup> á-	'banded mongoose'	-a	
59	ts'okwana-	'giraffe'	-a	
60	ts'inggaʔú	'oryx, sable or roan antelope'	-wa	
61	ʔúndaʔúnda-	'hedgehog'		
62	wéts'ái-	'hippo'	-ja-k <sup>h</sup> o	
63	watʃ'o-	'sp. mongoose'	-wa	
64	ŋ!ána-	'kudu'	-a	
65	tsipiti-	'porcupine'	-ja	
66	jóndo-	'rat'	-wa	
67	lalá-	'gazelle'	-a	la:la:k <sup>h</sup> o
68	kwaʔi-	'warthog'	-ja	
69	mbugida-	'wild dog'	-a	
70	dóŋgo-	'zebra'	-wa-k <sup>h</sup> o	
71	ʔolá-	'child'	-a	
72	báwa-	'father'		bawə
73	ʔemé-	'man'	-ja	ʔeme-ja
74	ʔák <sup>h</sup> wití-	'woman'	-ja-k <sup>h</sup> o	
75	fióts'o-	'ashes'	-wa-k <sup>h</sup> o	
76	loʔo-	'horn'	-p <sup>h</sup> e	
77	mbo'góʃi-	'bag'	-ja-k <sup>h</sup> o	bogofsi-, bugufsi-
78	ndzópá-	'bottle'	-a	nzópá-
79	k <sup>h</sup> óʔó-	'bow'	-wa	
80	'k <sup>h</sup> ómati-	'eland'	-ja	
81	ʔup <sup>h</sup> á-	'foam'	-a-k <sup>h</sup> o	
82	k  ek  etʃe-	'woman's loincloth'	-ja	ŋ  'eŋ  'etʃe
83	lógo-	'shield'	-wa	
84	kwatʃ'a-	'shoe'	-a-k <sup>h</sup> o	kwatʃ'a-
85	mák <sup>h</sup> o-	'clay pot'	-wa	
86	ts'ík'o-	'smoke' (= 43)	-wa	
87	ut <sup>h</sup> umé-	'spear'	-ja	
88	fiek'wá-	'shell, bark, rind' (= 39)	-a-k <sup>h</sup> o	
89	fiits'á-	'fat, oil'	-p <sup>h</sup> e	
90	semé-	'food'	-ja	seme-
91	baʔalá-	'honey'	-ko	baʔalá-ko
92	mopóda-	'salt'	-a	mopo:da:

93	ʔawawa	'bee'	-a	
94	tʃ'áfi-	'maggot'	-p <sup>hi</sup>	
95	ʔanó-	'python'	-wa	
96	ʔijátu-	'snake'	-p <sup>hi</sup>	
97	ŋ!'anda-	'agama lizard'	-a	
98	ʔu'k <sup>h</sup> wa-	'arm'	-ko	
	ʔu'k <sup>h</sup> wa-	'hand'	-p <sup>hi</sup>	
99	patákuʃé-	'palm of hand', 'sole of foot'	-ja	
100	guliŋgu'rí-	'kneecap'	-ja-k <sup>h</sup> o	gulunguri-
101	ʔúp <sup>h</sup> úk <sup>h</sup> wa-	'leg'	-a	
102	fiáts'áts'e-	'lower leg bones'	-ja	
103	tʃ'óʔa-	'cloth tied around shoulder'	-a-k <sup>h</sup> o	
104	ʔá'fiú-	'skin'	-wa	
105	ts'á'fió-	'tail'	-wa	
106	fiomp <sup>h</sup> ái-	'wing'	-ja-k <sup>h</sup> o	
107	ʔát <sup>h</sup> a'má-	'blood'	-a	
108	ŋkólo-	'heart'	-wa-k <sup>h</sup> o	
109	pápara-	'innominate bone'	-a	
110	ho'tʃ'ó-	'lung'	-p <sup>he</sup>	
111	ʔatʃú-	'sinew'	-p <sup>hi</sup>	
112	ʔak <sup>h</sup> wá-	'eye'	-a-k <sup>h</sup> o	
113	ŋk <sup>h</sup> at <sup>h</sup> a-	'strand of beads worn on head'	-a	ŋkat <sup>h</sup> a
114	k'apáku-	'mandible'	-p <sup>hi</sup>	
115	ʔáwaniká-	'mouth'	-a	
116	ʔáfiá-	'tooth'	-p <sup>he</sup>	
117	tʃ'á-	'guineafowl'	-a-k <sup>h</sup> o	
			-p <sup>he</sup>	
118	wáʔiná-ma	'all'	-ma	
119	pákapaʔá-	'big'	-a	
120	títʃ'i-	'black'	-jé-ja	
121	ts'útʃi-	'wind'	-p <sup>hi</sup>	
122	ŋ  a'tʃ'á-	'to be cold'	-ne-ja	
123	t <sup>h</sup> asé-	'tall, long'	-ja	
124	petʃ'ái-	'white'	-ja	
125	k'alafái	'sp. fruit'		

(Tape 2)

126	ts'ukú-	'firewood'	-p <sup>hi</sup>	
127	ʔi'k á-	'to close'	-ʔe	ʔi'k é-
128	hiŋ!'é-	'to come out of', 'to exude', 'to give out'	-ʔe	
129	k!ok!óloma-	'epiglottis'	-a, -a-k <sup>ho</sup>	
130	ŋ 'ekéjo-	'ankle'	-wa	
131	huŋ 'ú-	'anthill'	-wa	
132	k ána-	'arrow, female'	-a-k <sup>ho</sup>	
133	k ána-	'arrow, male'	-a	
134	'k ák <sup>h</sup> á-	'arrowstand'	-p <sup>hi</sup>	
135	néʔe-	'baboon'	-ja-k <sup>ho</sup>	
136	ŋ!aleʔa-	'red flesh which sticks out of the anus, or red area on a baboon'		
137	k!ok!ó-	'back of head'	-a-k <sup>ho</sup>	
138	ŋ obá-	'baobab'	-a-k <sup>ho</sup>	
139	ŋ!ojé-	'beeswax'	-ja	
140	taŋ 'e-	'belt, rope'	-ja	
141	,ŋ áwétʃ'e-ne	'blue, green'		
142	mitʃ'á-	'bone'	-a	
143	tʃ'áfia-	'bushpig'	-a	
144	k!úni-	'calf muscle'	-p <sup>he</sup>	
145	k!uma-	'club'	-a-k <sup>ho</sup>	
146	ŋgets'ea-	'forehead'	-p <sup>he</sup>	
147	k átʃ'o-	'fontanelle' (same root as 'frog' 156)	-wa-k <sup>ho</sup>	
148	k áʔano-	'dog'	-wa	
149	tʃ'ápo-	'dove', 'gull'	-wa-k <sup>ho</sup>	
150	tʃ'á'lá-	'dust'	-a-k <sup>ho</sup>	
151	ŋ!'oko	'to pierce'	-ʔ	ŋ!'uki-
152	ŋ 'úkú'maje-	'elbow'	-ja-k <sup>ho</sup>	
153	ŋ 'intʃino-	'fang'	-p <sup>hi</sup>	ŋ 'indzino-
154	ŋ 'amá-	'fish'	-a	
155	k a'k á-	'flat rock'	-a	
156	k átʃ'o-	'frog' (same root as 'fontanelle' 147)		
157	'fiátʃ'é-	'hair'	-p <sup>he</sup>	
158	k!ón'ga-	'hare'	-a	

159	tʃóma-	'head'	-a-k <sup>h</sup> o	
160	ʔets'á-, ŋl'ets'á-	'house'	-a-k <sup>h</sup> o	
161	ŋ!'uŋguwe-	'hundred'		
162	tʃáʃo-	'tree hyrax'	-wa	
163	ŋ!'úkun,dzu-	'kidney'	-wa	
164	ŋ!'ama-	'klipspringer'	-a-k <sup>h</sup> o	
165	ʔitʃá-	'knife'	-a-k <sup>h</sup> o	ʔitʃ'a-
166	ŋ!'elé-	'hartebeest'	-a-k <sup>h</sup> o	
167	dʒándʒai	'leopard'		
168	ŋ!é-	'leopard'	-ja	
169	ŋl'e-	'liver'	-ja-k <sup>h</sup> o	
170	ŋl'ámáts'i-	'louse'	-ja-k <sup>h</sup> o	
171	k áʔa k aʔa-	'middle'		
172	huŋl'u'k'ó-	'molar tooth'	-wa-k <sup>h</sup> o	haŋl'u'k'ó- huŋl'o'k'ó-
173	k uwi-	'mosquito'	-ja-k <sup>h</sup> o	
174	ŋl'utʃ'e-	'mountain, hill'	-ja	[ŋl'ütʃ'e-]
175	toŋ!'oko-	'mud'	-wa-k <sup>h</sup> o	toŋ!'ok'o-
176	ŋ!'uʃu-	'navel'	-wa-k <sup>h</sup> o	
177	k úti-	'neck'	-ja	
178	ŋ!o'mo-	'half'	-ja	ŋ!umo-ja, ŋ!umo-ja ŋ!'ak'itá-
179	ŋ!'akitá-	'palate'	-a	ŋ!'ak'itá-
180	tʃ'ónk <sup>h</sup> o-	'tawny eagle'	-wa	
181	k ikilinj a-	'pinky finger'	-a	k ikin a-
182	k a,tak'ánó	'rainbow'		
183	tʃákáte-	'rhino'	-ja	tʃ'akate
184	fiaŋl'á-	'rock'	-a-k <sup>h</sup> o	
185	ŋl'its'é-	'short'	-ja	ŋl'its'e-
186	k amba-	'small intestine'	-p <sup>h</sup> i	ŋl'amba-p <sup>h</sup> i k ampa-p <sup>h</sup> i
187	ŋ áláka-	'snail'	-a	
188	ŋl'ekwá-	'sp. root'	-a	
189	pú'k'é-	'spleen'	-ja	
190	k a'pá-	'stump'	-a	ŋl'apa-

191	k áts'i-	'sweat'	-ja	
192	ŋ 'u'k'wá-	'larynx'	-a-k <sup>h</sup> o	
193	ŋ 'ets'é-	'tick'	-ja	
194	ŋ 'óso-	'to be full'	-ʔo	
195	ka't <sub>ɕ</sub> 'é-	'to bite'	-ʔ	
196	k!a-	'to cut' (=10, 216)	-ʔe	'k!é-
197	taŋ  'i-	'to die'	-ʔi	
198	ŋ!óʔo-	'to enter'	-ʔ	
199	'ŋ áfia-	'to forget'	-ʔ	
200	'ŋ áfʔe-	'to hear'	-ʔ	
201	ŋ  'aka-	'to hit with an arrow', ( 'to shoot at, to hit' )	-ʔ	ŋ  'ake-
202	ka'k á-	'to hunt' (=14)	-ʔa	
203	k <sup>h</sup> a'ŋ  'é-	'to jump', 'to spring up' (=3)	-ʔe	
204	'k ó-we-	'to kill'	-ʔ	
205	ts'uʔa-	'to remove s.t.'	-ʔe	ts'u-we-
206	ŋe'fié-	'to whistle' (=227)	-ʔe	
207	'ŋ i-je-	'to push'	-ʔ	
208	ŋ 'uts'u-we-	'to push'		
209	ŋ e-	'to put poison on a (male) arrow'	ŋ e-ʔe	
210	ŋ e-	'to put poison on a (female) arrow'	ŋ i-ʔi	
211	ŋ 'ats'a-	'to reheat'	ŋ 'ats'e-ʔe	
212	'máŋ!'i-	'to circle around'	-ʔi	
213	k aŋgála-	'to pass legs under, to be lying down'	-fi	
214	'ŋ áfʔa-	'to scavenge'	-ʔ	
215	k i-jé-	'to see'	-ʔ	
216	'k!a-	'to cut' (=10,196)	-ʔe	'k!é-
217	'ŋ!'óko-	'to slap'	-ʔe	'ŋ!'óke-
218	ʔase-	'to sleep'	-ʔe	
219	'k úpi-	'to sleep'		
220	'ŋ úʔu-	'to snore'	-ʔ	
221	ŋ 'a'k'wé-	'to swallow'	-ʔ	
222	ut <sub>ɕ</sub> 'ú-we-	'to uproot (roots)'	-ʔ	
223	'ŋ!'ó-we-	'to uproot'	-ʔ	
224	'k <sup>h</sup> wák a-	'to vomit'	-ʔa	
225	'ŋ íts'i-	'to wait for', 'wait!'	-ʔi	

226	ŋ  'o-	'to wash', 'to bathe' (=28)	-ʔo
227	ŋ e'fié-	'to whistle' (=206)	
228	ŋ áta-	'tongue'	-a
229	ŋ  imó-	'van der Decken's hornbill'	-a-k <sup>h</sup> o
230	ŋ!'oŋgojó-	'area of body encompassing the buttocks, hips, pelvis, and tail'	-k <sup>h</sup> o
231	ŋ 'ámé-	'white hair'	-ja-k <sup>h</sup> o
232	'tǿ'ómásá	'pipe'	-a

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## LINES ON THE CLASSIFICATION OF ETHIOPIAN-SEMITIC

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Ethiopian-Semitic constitutes a compact, readily defined and homogeneous linguistic family, consisting of Ge'ez, Tigre, Tigrinya, Amharic, Argobba, Harari, Gafat, and the Gurage cluster. The most recent attempt to set up a classification of Ethiopian-Semitic was Hetzron [1972], but this work was rather thoroughly criticized by Goldenberg [1977], and the field has yet to recover from it. The present note seeks to open the classification question anew by providing a basic, minimalist classification scheme, which can serve as a starting-off point for any future work on the subject. We begin with some of the results of Marcel Cohen [1931], "the father of Ethiopian studies" in the twentieth century. Cohen treats Tigre and Tigrinya as Northern Ethiopic, and Amharic, Harari, and the Gurage cluster as Southern Ethiopic. All are ultimately descendants of a Proto-Ethiopic koiné most closely resembling Ge'ez. Gurage, according to Cohen, is not a language or a linguistic unit in itself, but rather an ensemble of at least two separate and mutually unintelligible dialect clusters, Eastern Gurage and Western Gurage. Eastern Gurage consists of Wolane, Selti-Ulbarag, (and in the present state of our knowledge also Zway), and is most closely connected with Harari. Western Gurage consists of several subgroups of dialects, in particular (a) Chaha, Ezha, Ennemor (Inor), Gumar, Gyeto (and in the present state of our knowledge Endegeñ) and (b) Muher, Gogot, Mäsqañ. Aymallel (Soddo, Kəstanəñña), another Gurage tongue, is left unclassified by Cohen, as being perhaps intermediate between the two groups. Tentatively, he terms it North-Eastern Gurage. (Gafat and Argobba are not classified by Cohen.)

Cohen's classification may be modified and/or expanded on the basis of the following points.

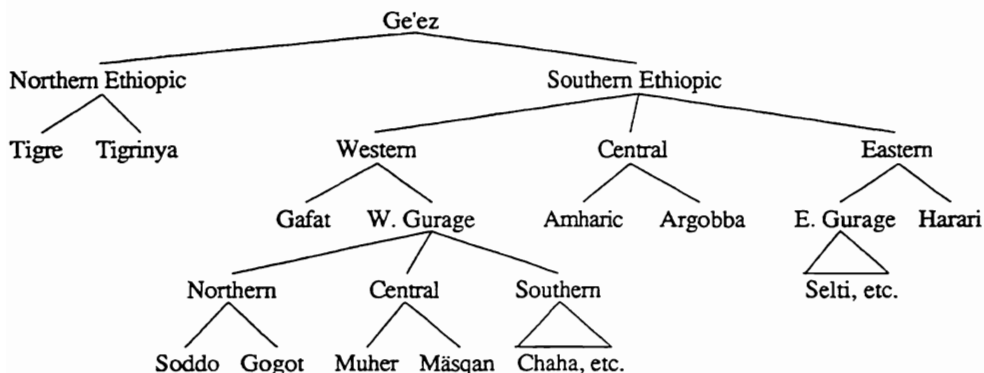
1. Polotsky [1949:37, text and footnote 5] noted that Soddo is clearly a Western Gurage tongue.

2. Leslau [1960], on the basis of work in the 1940's and 1950's, showed that (a) Argobba is most closely connected with Amharic, and indeed may be considered a conservative dialect of the language and (b) Gafat is most closely connected with Soddo. Indeed, Polotsky [1949:37, text and footnote 5] had

already noted that Gafat has “striking affinities” to Western Gurage in particular, and especially to Soddo (and Muher).

3. Goldenberg [1968:62-63] noted that Gogot “is a somewhat modified form” of Soddo “adequately understood” by Soddo speakers. Hetzron [1972:2] similarly noted that Soddo-speakers consider Gogot “a Soddo dialect” and that the two groups understand each other “fairly well”.

Adding these comments to Cohen’s 1931 classification, we obtain the following diagram, which, we submit, can be taken as the basis for any future classification of Ethiopian Semitic.



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## PUBLICATIONS RECEIVED

Lecarme, Jacqueline, Jean Lowenstamm, and Ur Shlonsky (eds). *Studies in Afroasiatic Grammar: Papers from the Second Conference on Afroasiatic Languages* (Sophia Antipolis, 1994). The Hague: Holland Academic Graphics. 1996. Pp. 449. Dfl 75 (paperback). ISBN 90-5569-005-8.

This well-produced volume contains twenty papers presented at the Second Conference on Afroasiatic Languages, Sophia Antipolis (France), June 16-18, 1994. (This conference is not to be confused with the usually quinquennial International Hamito-Semitic Congress, the sixth of which was held in Moscow in the spring of 1994.) Fifteen of the papers are on Semitic: six primarily on Arabic, five on Hebrew (some discussing Arabic as well), and four on Ethiopian Semitic languages. Three of the papers are on Cushitic: two on Somali, one on Iraqw. One paper is on Berber and one is on Chadic (Hausa). The papers are all highly theoretical, treating issues in and employing the language of modern linguistic theory. Thirteen of the papers are concerned with syntax, of which three are typological in nature; six of the papers are on morphology, and one is strictly phonological. The authors of the papers are: Georgine Ayoub, Hagit Borer, Abdellah Chekayri & Tobias Scheer, Edit Doron, Abdelkader Fassi Fehri, David Gill, Mohammed Guerssel & Jean Lowenstamm, Giuliano Lancioni, Jacqueline Lecarme, Giuseppe Longobardi, John J. McCarthy, Lunella Mereu, Maarten Mous, Jamal Ouhalla, Jean-François Prunet & Degif Petros, Sharon Rose, Philippe, Ségéral, Ur Shlonsky, Tali Siloni, and Laurice Tuller.  
[PN]



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?Dates

NORTH AMERICAN CONFERENCE ON AFROASIATIC LINGUISTICS, 24TH. Miami, Florida (American Oriental Society) (Contact David Testen, University of Pennsylvania; e-mail: dtesten@midway.uchicago.edu)

March

SYMPOSIUM ON ARABIC LINGUISTICS, 11TH.

Salt Lake City, UT (Contact: Dilworth Parkinson, Brigham Young University; e-mail: parkinsonD@yvox.byu.edu)

July 11-13

ANNUAL CONFERENCE ON AFRICAN LINGUISTICS (ACAL), 28TH. Cornell University, Ithaca, NY (in conjunction with the LSA Linguistics Institute) (Contact: ACAL 28, Department of Linguistics, 227 Morrill Hall, Cornell University, Ithaca, NY 14853; Fax: 607-255-2044)

JULY 7-11

INTERNATIONAL BIENNIAL CONFERENCE OF THE AFRICAN LANGUAGE ASSOCIATION OF SOUTHERN AFRICA (ALASA 97), 9TH. The University of Natal, Durban, South Africa. (Contact: Prof. N Canonici, Department of Zulu Language and Literature, University of Natal, Durban, P.O. Box 18091, Dalbridge, 4014, South Africa; Tel. 27-31-260-2510; fax: 27-31-260-3362; e-mail: canonici@mtb.und.ac.za)

July 27 - August 3

WORLD CONGRESS OF AFRICAN LINGUISTICS, 2nd. University of Leipzig, Germany. (Contact: World Congress of African Linguistics, Institut für Afrikanistik, Universität Leipzig, Augustusplatz 9, D-04109 Leipzig, Germany. Tel. 49-341-97-37031; fax: 49-341-97-37048; e-mail: wocal97@uz.uni-leipzig.de)

December 12-17

XIII<sup>TH</sup> INTERNATIONAL CONFERENCE OF ETHIOPIAN STUDIES. Hotel Sunflower  
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01, Japan. Fax: +81-75-753-6615; e-mail: ethiopia@jambo.africa.kyoto-  
u.ac.jp) Deadline for pre-registration: November 30, 1996; for abstract  
March 31, 1997.

## 1998

September 2-6

7<sup>TH</sup> INTERNATIONAL CONFERENCE ON NILO-SAHARAN LINGUISTICS.  
Department of African Studies, Institut für Afrikanistik, Vienna, Austria.  
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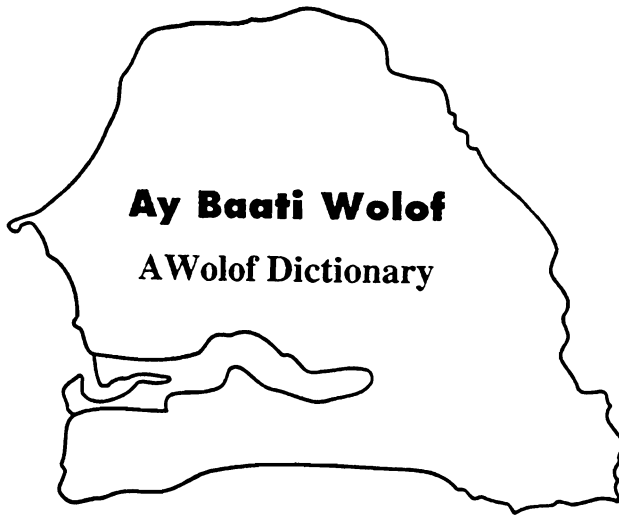
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