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TONAL ACCENT IN SOMALI

Larry M. Hyman
University of Southern California

The issue of whether Somali is a tone language or not has been a matter of controversy for several decades. In this paper it is demonstrated that 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. The language also allows, under specifiable conditions, words totally lacking an accent, another common characteristic of tonal accent languages. The model developed in this study includes rules of accent placement (on either the final or penultimate vowel of a word), accent modification (shifts, reductions), and tone and pitch assignment.

0. Introduction

Since the earliest grammatical studies on Somali, a Cushitic language spoken in Somalia, Djibouti, and parts of Ethiopia and Kenya, there has been a confusing exchange of ideas and words on the subject of whether Somali is a tone language.[1] As is typical of many early grammatical descriptions of African languages, the earliest accounts of Somali do not mark—and usually do

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[1]This paper is a preliminary study based on an intensive two week investigation of the Somali tonal accent system at the University of Roma, June, 1980. During this period I was helped and guided through the grammar of Somali by several members of the Somali Language Project and would like to express my gratitude to Francesco Antinucci, Bianca Maria Bruno, Lucyna Gebert, and Annarita Puglielli for all they did to make this study possible. Although I have profited greatly from the literature on Somali, especially the important work of Prof. B. W. Andrzejewski, all of the data presented in this work are based on the speech of Mr. Ahmed F. Ali "Idaajaa" from Gaalkacyo, Mudug Region. Without Idaajaa's insights, patience, and interest in this project, we would not have been able to accomplish the work summarized in this paper. My sincerest thanks to him and also to Mssrs. Abdalla Omar Mansur and Issa Mohamed, who on occasion attended our sessions and provided additional information. Research was supported in part by a Guggenheim Fellowship. This paper will appear in Italian translation in a report by the Somali Language Project, Rome.

not mention—tone, e.g. Kirk [1905:2], who uses the accent mark (`) "to express the long drawn sounds of each vowel". Some early grammars mention a predominantly penultimate placement of accent in Somali [Hunter 1880:6, Reinisch 1903:28-29]. It was, however, not until Armstrong's [1934] pioneering work on the phonetics of Somali that the tonal nature of this accent was fully explored. In her study, Armstrong distinguishes four main "word tones" (high level, mid level, low level, and falling). She indicates a close connection between tone and stress, stating, "In words of more than one syllable strong stress is given to the syllable pronounced with high level or falling pitch" [p.147]. While Armstrong thus takes the position that tone is primary and "stress" secondary, Klingenheben [1949] takes a nearly opposite view and emphasizes the *accentual* nature of the high and falling tones. For Klingenheben, accent is primary and tone secondary. He concludes, "Das Somali gehört also nicht zu den echten Tonsprachen im phonologisch allein zu rechtfertigenden Sinn, sondern zu den Starktonsprachen..." [p.303]. Somali is not to be grouped with African tone languages such as Ewe, Vai, or Zulu, but rather with European accent languages such as German and English.

Despite Klingenheben's insightful typology of Somali as an accentual language, subsequent work has been almost exclusively concerned with Somali as a tone language. Although Armstrong's observation of the close relationship between high and falling tones, on the one hand, and stress on the other, is restated as "two types of strong stress" by Jones [1950:189], Abraham [1964] and Andrzejewski [1956; n.d.] do not emphasize the underlying accentual nature of these tonal accents.

The purpose of the present paper is to provide a formal account of Somali as a tonal accent system. In the following paragraphs I shall argue that most underlying forms are marked neither for accent nor tone. It will be shown that accents are introduced by morphological rules which are sensitive to grammatical categories, features, and construction types. At an abstract level these accents have no tonal correlates. After the application of a number of accent reduction and shifting rules, the surviving accents receive tonal specifications and integer pitch values according to rules sensitive to accentual phrase boundaries. The paper concludes with a brief discussion on the typology of the Somali tonal accent system and its implications for fur-

ther research.

1. Surface Tone Patterns

Phonetically, Somali clearly contrasts high (H) and low (L) tones. It is therefore appropriate to begin by considering the different tonal patterns found on the surface. We shall first discuss nouns (1.1), then verbs (1.2), and finally, other word classes and particles (1.3).

1.1. Nouns. From the earliest discussion of prosodic oppositions in Somali, whether the author(s) favored an accentual or a tonal interpretation, it has been observed that masculine and feminine nouns display different pitch properties. A frequent minimal pair cited in the literature is ínan 'son, boy' vs. ináan 'daughter, girl'. In this pair the masculine member has a H tone on its penultimate vowel, while the feminine member has a H tone on its final vowel. A similar opposition is sometimes found among singular/plural pairs, e.g. éi 'dog' vs. eí 'dogs'. (Interestingly, 'dog' takes masculine agreement, while 'dogs' takes feminine agreement.) In these and all examples in this study, the accent mark (´) indicates H tone (as well as accent), while the absence of such a mark indicates L tone (and lack of accent). In isolated words, L tones will be realized one pitch level lower than a following H, and two pitch levels lower than a preceding H (but cf. section 5 below). Thus, if we let the integer "1" indicate the highest pitch level, 'son' and 'dog' will be realized with 1-3 pitch, while 'daughter' and 'dogs' will be realized with 2-1 pitch.

Further examination of nouns in Somali indicate that there must be one, and never more than one, H tone per noun in isolation. Representative examples are given in the table in (1) on the next page. The nouns in (1) are arranged in two groups: (a) those whose tonal alternations represent a masculine/feminine distinction; and (b) those whose tonal alternations represent a singular/plural distinction. Nouns of varying length and syllable structure are represented.[2] It is observed that there are two patterns for placing

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[2]Standard Somali orthography is used, as established by the Somali National Language Commission in 1972, with one exception: Vy and Vw sequences are written Vi and Vu in *monosyllabic* words in order to correctly predict

(1) a. masculine/feminine pairs

CVVC		náil	'm. lamb'	naíl	'f. lamb'
VCVC		ínan	'son, boy'	inán	'daughter, girl'
CVCVC		nácas	'stupid man'	nacás	'stupid woman'
CVVCVC		qaálin	'young m. camel'	qaalín	'young f. camel'
CVCVVC	:	daméer	'he-donkey'	dameér	'she-donkey'
CVCCVVC		darmáan	'colt'	darmaán	'filly'
CVVCVVC		ceesáan	'young he-goat'	ceesaán	'young she-goat'

b. singular/plural pairs

VV	:	éi	'dog'	eí	'dogs'
CVV	:	yéi	'wolf'	yeí	'wolves'
CVVC	:	túug	'thief'	tuúg	'thieves'
CVCVC	:	kálax	'ladle'	kaláx	'ladles'
CVCCV	:	bálli	'water reservoir'	ballí	'water reservoirs'
CVVCVVC	:	doofáar	'pig'	doofaár	'pigs'
CVVCVVCV	:	Soomaáli	'Somali man'	Soomaalí	'Somali people'

H tone: in the left hand column, consisting of masculine singular nouns, the H tone is placed on the penultimate vowel; in the right hand column, consisting of feminine singulars in (1a) and plurals taking feminine agreement in (1b), the H tone is placed on the final vowel. While there are many examples illustrating these morphological alternations, not all nouns have mutable H

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placement of the tonal accent. (Tone is not marked in the standard orthography.) This allows us to generalize the pattern of penultimate masculine and feminine accent in such forms as wéil 'male calf' vs. weíl 'female calf'. In addition, we avoid the need for a special accent mark denoting falling tone. Interestingly, Klingenheben [1949:300-301] records the above words as bisyllabic wéyil vs. weyíl . Perhaps all monosyllabic words with these sequences were once bisyllabic. In any case, present-day words with more than one syllable are transcribed with Vy and Vw . Otherwise, nouns such as árday 'student', which would be written árdai , would have an accent on the antepenultimate vowel. This convention, which we adopt for the purpose of accounting for the distribution of the tonal accents, is justified by our observation that there are no bisyllabic (or longer) words ending in Vy or Vw carrying a falling tone. As is seen in the examples in (1), this is explained by the fact that the fall from H to L tone is possible only on a syllable having two vowels in sequence.

tones. In general, however, masculine nouns have H tone on their penultimate vowel, while feminine nouns have H tone on their final vowel, a subject to which we shall return. Of course, if the noun in question has only one vowel, the H tone is predictably placed on that vowel. Such nouns are either masculine or feminine, e.g. nín 'man' vs. hál 'female camel'.

The nouns in (1) reveal that the so-called falling tone, which we mark V̂V , is restricted to word-final syllables containing a vowel sequence. This H to L fall in pitch occurring within the same syllable had been marked by a circumflex (ˆ) accent by Armstrong and is marked by a grave (`) accent in all of Andrzejewski's work. The advantages of representing this fall as a H tone placed on the first of two successive vowels are twofold. First, by maintaining a single unit of prominence (H tone) whose domain is the (single) vowel, the restriction of this falling tone to syllables containing a double vowel or vowel sequence is accounted for. Second, by analyzing a falling tone as a H tone vowel followed by a L tone vowel, we can capture morphological regularities such as the alternations represented in (1). Thus, the alternation between náil 'male lamb' vs. naíl 'female lamb' becomes one of penultimate (masculine) vs. final (feminine) H tone, just as in the examples ínan and inán . Representations such as nâyl or nàyl only obscure this relationship.

In Armstrong's account of Somali tone, final H was left unmarked (cf. Welmer's 1952 description of Saho, another Cushitic language). Thus, we have the opposition in this analysis between /ínan/ 'son' vs. /inan/ 'daughter'. Armstrong points out that 'daughter' and other such nouns, including all monovocalic nouns, e.g. her /nin/ 'man', are realized with mid pitch. While there is a possibility of lowering the pitch of a H tone directly preceding a pause,[3] it is clear that there is a phonological H tone in such nouns, as has

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[3]This probably explains why Oomen [1981] describes monovocalic nouns as having mid tone (and no accent) in the Rendille dialect of Somali. This is the major difference between her analysis and ours. Andrzejewski (n.d.:1) relates this lowering to intonation: "In a sentence spoken in a normal unexcited manner, pause (intermediate or final) is usually associated with the 'lowering' of the tonal level in the syllable which immediately precedes it ...."

been recognized in most work subsequent to Armstrong [1932].

1.2. Verbs. In Somali, as in many languages, it is difficult to establish what the correct citation form of a verb should be. Among the likely candidates are the imperative singular and infinitive forms illustrated in (2).

(2)

Conjugation	Imperative	Infinitive	Meaning
C1	cún	cúni	'eat'
C1	kéen	keéni	'bring'
C2	kári	karín	'cook'
C2	joóji	joojín	'stop'
C3	dhaqsó	dhaqsán	'hurry'
C3	joogsó	joogsán	'stop'

Verbs are assigned to one of three conjugation classes (C1, C2, C3) according to the forms they take in various parts of the paradigm.[4] As can be seen in (2), the first and second conjugations take a penultimate H, while the third conjugation takes a final H in the imperative. In the infinitive construction, the first conjugation takes a penultimate H, while the second and third conjugations take a final H. The imperative form cún 'eat!' has a H on its only vowel, although the plural form cúna 'eat (pl.)!' shows the basic penultimate pattern of the construction (cf. keéna 'bring (pl.)!', where the H has "moved" one vowel to the right from the singular form so as to remain in penultimate position.)

The forms in (2) thus show that verbs have the same tonal capacities as nouns: H tone occurs on either the penultimate or final vowel. Whereas in nouns this H tone is placed according to gender, number, and declension class (see section 3 below), H tones are placed on verbs according to modality, construction type (main vs. relative clause), and conjugation class. We shall see below that most negatives and all relative clauses are characterized by a final H tone. Verb stems do not themselves show a tonal contrast.

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[4]In addition to the three major conjugation classes of verbs, there is a fourth conjugation class consisting of adjectival verbs [Andrzejewski 1956: 118]. These are not treated in this study.

Two factors complicate the above restriction of H tone to the last two vowels of the verb form. The first is that many verb forms occur without a H tone, as seen in (3).

(3) nín-ku abeesó wáa dilay 'the man killed a python'
man-the python IND kill/PAST

Typically, indicative affirmative present and past forms occur without a H tone in main clauses. As we shall see in section 3.2, verbal constructions lacking a H tone are exempt from the accent assignment rules.

The second complication is found in progressive forms, which are of considerable morphological complexity. Representative examples of the three conjugation classes are given in the present progressive in (4).

(4) a. C1 : waan keénayaa 'I am bringing (it)'
b. C2 : waan karínayaa 'I am cooking (it)'
c. C3 : waan dhaqsánayaa 'I am hurrying'

This construction is formed by adding the present or past forms of the defective verb ah 'to be' to the infinitive verb forms (with deletion of -i in C1 forms). The C1 form in (4a), for example, comes from *keéni + ahayaa and is realized dialectically as keénahayaa .[5] The forms in (4) are thus contractions. In order to preserve the restriction of H tone to one of the last two vowels of a word, we shall assume that these forms have an internal word boundary (#) to which the relevant accent placement rule is sensitive (cf. section 3.2, where it is shown that this internal boundary also accounts for the occasional occurrence of *two* H tones in progressive forms).

1.3. Other word classes; particles. The generalizations found to hold for H tone placement in nouns and verbs find few exceptions in other word classes. Adjectives are a separate (fourth) conjugation class of verbs, and numerals are nouns. They therefore are characterized by the tonal patterns seen above, as are pronouns, adverbs, etc.

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[5]Andrzejewski [1956:123] refers to work by M. M. Morena indicating that the progressive form is based on the auxiliary form *hay , which would be the C2 form of the verb 'to be'.

In addition to the above word classes, Somali is a language rich in particles. There are, for example, no fewer than six positions for the appropriate elements to occur before the verb. The following summary of these positions in (5) has been provided by Francesco Antinucci.

(5)

1		2	3	4	5	6	
soo	waa	la	i	u	má	soo	VERB
	ma	etc.	ku	ka		sii	
	ha		is	la			
	etc.		etc.	ku			

1: indicators (focused modality markers)
2: impersonal subject marker + short subject pronouns
3: object pronouns
4: prepositions
5: negation marker
6: deictic markers

This chart provides the basic patterns of pre-verbal elements. It indicates also that only the negative marker **má** (position 5) has an underlying H tone. In combining these particles, however, one may find that an additional H tone is introduced. Thus, consider the pair of sentences in (6).

(6) a. **wáa keenay** 'he brought (it)'
b. **waa keénayaa** 'he is bringing (it)'

The indicator /waa/ marks verb focus in declarative indicative main clauses. In (6a) it has a penultimate H tone, while in (6b) it has no H tone. We have indicated in (5) that indicators underlyingly have no H tone. Thus, a rule will be needed to introduce the H seen in 'he brought (it)'. This rule, which is formalized in section 3.3 below, is straightforward: "if there is no H tone in the verbal complex (particles + verb, abbreviated VC), put a penultimate H on its indicator (if present)." Thus, /waa/ gets a H tone in (6a) because the past tense verb form **keenay** has no H tone, while it does not get a H tone in (6b) because the present progressive verb form **keénayaa** has a H tone. Andrzejewski [1975] marks the tone of particles which alternate between H and L with a mark ' , e.g. **waa'** . Since the subject and object pronouns in positions 2 and 3 never get a H tone, Andrzejewski does not use this mark for these forms. It should be noted, however, that the independent,

self-standing pronouns which have the definite article suffixed to them take a penultimate H tone, e.g. anígа 'me', adígа 'you sg.', etc.

2. An Accentual Approach

The above discussion indicates that although Somali has H and L tone (with a mid level being predictable from the surrounding context), the distribution of one of these tones, the H tone, is extremely limited: a word can have only one H tone, and this H tone can occur only on a penultimate or final vowel. Because every noun, verb, and other non-particle must have a H tone, which can, according to rules spelled out in section 4, be reduced, the H tone has the same "culminative" property found in non-tonal accentual languages. An explanatory account of tone in Somali, therefore, must reveal not only the surface tonal nature of the H tone, but also its accentual identity with the stress-accents found in English and other languages. We therefore propose that at an abstract level the prosodic system is accentual and non-tonal. In providing the rules assigning and modifying the Somali accents, we shall follow the conventions of autosegmental phonology [Goldsmith 1976a,b] and use the asterisk (*) to stand for the feature specification [+accent]. Absence of accent will be represented by the symbol (°), which thus stands for [-accent]. We shall continue to use the acute (´) accent in citing Somali forms, taking note of its prosodic ambiguity: V́ stands for a vowel which is both [+accent] and is characterized by H tone. The proper autosegmental representation would therefore be $\overset{*}{\underset{H}{V}}$.

Since * is used for both Somali and English, the essential accentual nature of Somali H tone and English stress is revealed. Their differences relate to how the accents are assigned and how they receive their pitch specifications. Accent in Somali is clearly a property of the vowel (or mora), while it is a property of syllables in English. Concerning surface pitch realizations, Leben [1976] and Goldsmith [1976a] have shown that English intonation melodies associate according to where asterisks occur. In Somali, on the other hand, the H which is assigned by rule to each * is not an intonational melody, but rather a constant phonetic property of the accent itself. In Hyman [1977, 1978] I argued that definitionally stress accents have no inherent

pitch properties of their own, but rather receive all of their prosodic realization from the physical properties of the intonational patterns under which they occur. Tonal accents definitionally have an isolatable physical pitch property of their own which cannot be related in any way to intonation. Thus, in English, the intonational melody (and hence, the realization of stress accent) will change according to whether an utterance is a statement or question. In Somali, as is usual in tonal accent languages, there is no separate interrogative intonation pattern (or melody), as seen in a comparison of the two sentences in (7).

(7) a. waa áxmed 'it's Axmed'
b. ma áxmed baa 'is it Axmed?'

In each case the only H tone is on the penultimate vowel of /áxmed/ . There is no change of pitch, and no pitch rise at the end of the utterance as there is in English and many other languages. Instead, the declarative vs. interrogative nature of these utterances is effected through "indicator particles" [Andrzejewski 1975]. In (7a), /waa/ is the indicator particle marking declarative indicative affirmative verb focus. In (7b), /baa/ is the noun focus marker and /ma/ is an interrogative marker (bearing interesting resemblance to one of the negation markers—which, however, differs in tone and position—cf. (5) above).

Having assumed, then, that Somali is a (tonal) accent language, we shall now present a formal analysis of the system. In section 3 we shall present the morphological rules of accent assignment. This will be followed in section 4 by the morphophonemic rules of accent modification, which either reduce or shift the accents assigned in section 3. In section 5 the phonetic rules assigning integer pitch levels will be given. We conclude in section 6 by considering the implications of these findings and suggestions for further research.

3. Accent Assignment

As can be inferred from the discussion in section 1, the occurrence and location of accents is highly dependent on grammatical features. In nouns, accents can be predicted on the basis of gender and, as we shall see, declension class and construction type. In verbs, accents can be predicted on the

basis of modality, conjugation class, and construction type. The rules of accent assignment introduced in this section are morphological in nature. Their function is to rewrite grammatical and lexical features with phonological and accentual features. Thus, for example, the verb form in the utterance áxmed má keenín 'Axmed didn't bring (it)' consists of the verb stem /keen/ 'bring' and the feature specifications [+past, +negative]. It is these features which will be spelled out by morphological rule as /-*ín/ . While these morphological rewrite rules must introduce segments as well as accents, we shall be concerned only with accents in this study. Thus, we shall abstract away the accentual patterns in the absence of a fully worked out morphological analysis. In a second sense the analysis offered here is incomplete. There are certain parts of the grammar that are not covered. This is mostly because we were not able to study the accentual patterns of all grammatical constructions, although what we cover here includes all of the major and basic constructions and word classes. Thus, for example, we treat the C1, C2, and C3 verb classes, but not the C4 adjectival verbs or irregular verbs.

In the following subsections we shall provide the accent assignment rules first for nouns, then for verbs, and finally, for particles.

3.1. Nouns. In order to predict noun accents, it is necessary to introduce the declension system in Somali. Andrzejewski [1964, 1979] has proposed as many as ten declension classes in nouns. In our study we have not found the need to differentiate any more than three declensions, which are illustrated and defined in the table in (8) on the next page.[6] In the defining characteristics we have separated the accent assignment properties in (a) from the accent modification properties in (b). We shall discuss only the first properties here, since accent modification is treated in section 4.

The first declension (D1) has both masculine and feminine nouns and com-

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[6]In some cases we feel that Andrzejewski overdifferentiates; also some of his declension classes have few members. After having completed this paper, it seems that I also may have overdifferentiated. Douglas Biber has pointed out to me that D1 and D2 nouns differ only in final syllable structure: D1 nouns end in a consonant while D2 nouns end in a vowel (D3 nouns remain true exceptions).

(8)

Decl.	Gender	Andrz.	Example		Defining characteristics
D1	m.	1,2,3	ínan	'son'	a) * is pen. if m., final if f. b) * is reduced when subject (f. has -i subject case marker)
D1	f.	4	inán	'daughter'	
D2	m.	5	waraábe	'hyena'	a) * is pen. (m. ends in -e , f. ends in -o) b) * becomes final if obj. [-focus] or modified
D2	f.	5	abeéso	'python'	
D3	m.	6	haweén	'women'	a) * is final b) * is reduced when subject and (optionally) when object [-focus]

prises the majority of Somali nouns, including all of those seen earlier in (1). It corresponds to Andrzejewski's declensions 1-4. As indicated, masculine nouns receive a penultimate accent, while feminine nouns receive a final accent. It should be noted that plurals occur in D1 (as well as D3). Since they are specified either as masculine or feminine, they will follow the general pattern of the class for accent assignment.

The second declension (D2) also has both masculine and feminine nouns, although it contains no plurals. It corresponds to Andrzejewski's declension 5, where masculine nouns end in the suffix -e , and feminine nouns end in -o . As indicated, D2 nouns take penultimate accent.

The third declension (D3) consists solely of masculine nouns (including masculine plurals). The nouns in this class correspond to Andrzejewski's declension 6, including on the one hand plurals ending in -Co and -Caal , and on the other hand, a limited number of exceptional nouns, some of which are clearly borrowings. As indicated, D3 nouns take a final accent.[7]

As just described, the regular pattern of D1 masculine penultimate accent and feminine final accent is violated in two directions: D2 feminine nouns take penultimate accent and the exclusively masculine D3 nouns take final ac-

[7]Andrzejewski [1964:35-38] provides a nearly exhaustive list of the exceptional D3 nouns which are not plurals. We have found that in the speech of our primary language consultant, the following of these are exceptionally pronounced with penultimate accent: addúun 'world, wealth', górgor 'vulture', jíir 'rat', nádi 'whip (archaic)', and sabáan 'time, season'.

cent. The rules needed to assign accent to nouns are now provided in (9).

(9) a. $\circ \rightarrow * \; / \; \bar{V}\,(C)\,\#\,]_{\left\{\begin{array}{l}\text{D1 f.}\\ \text{D3}\\ \text{N [+gen]]}_{NP}\\ \text{Dem.}\\ \text{Poss./Pron.}\\ \text{'which'}\end{array}\right\}}$

b. $\circ \rightarrow * \; / \; \bar{V}\; C_0(V(C))\,\#\,]_{\left\{\begin{array}{l}\text{D1 m.}\\ \text{D2}\end{array}\right\}}$

Rule (9a) assigns a final accent to D1 feminine and all D3 nouns. In addition, it assigns a final accent to a genitive noun occurring unmodified, i.e. when occurring as the last element of its noun phrase, as well as assigning final * to demonstratives, possessives (and other personal pronouns), and the interrogative modifier 'which'. These last four environments are illustrated in (10).

(10) a. géed wíil 'a tree of a boy' (cf. wíil 'boy')
b. géed kaás 'that tree'
c. géed kaí(ga) 'my tree'
d. geed keé 'which tree'

The D1 masculine noun géed 'tree' is assigned penultimate accent by rule (9b) (although this accent is reduced in (10d) by a rule introduced in section 4). In (10a), the genitive noun 'boy' receives final accent, since it is not modified by any element in its noun phrase. As a non-genitive noun it would have received penultimate accent by rule (9b). The remaining forms in (10) show final accent on a demonstrative, a possessive (ignoring the definite article, which is normally suffixed to it),[8] and the interrogative 'which'.

Rule (9b) assigns penultimate accent to D1 masculine nouns and to all D2 nouns. Because rule (9a) is ordered before rule (9b), a D1 masculine or a D2 noun which is [+genitive] and final in its NP will first be affected by (9a) and hence receive final accent, e.g. géed waraabé 'a tree of a hyena'. The

[8]The same pattern applies to self-standing personal pronouns, where an accent is assigned to the final vowel preceding the definite article, e.g. aní-ga 'me', adí-ga 'you sg.', etc.

rules are designed with complementary environments so that only one of them can apply to any given form. Note that all full words found within the noun phrase receive an accent from one of the two rules in (9). Forms within the NP which do not satisfy the structural description of either rule are not full words and therefore do not get an accent, e.g. the definite articles ka (m.) and ta (f.).

3.2. Verbs. In contrast to nouns, some verb forms are unaccented and yet have full word status. The non-relative present and past tenses do not take an accent in the affirmative, as seen in the examples in (11).

(11) a. wáa keenaa 'he brings (it)'
b. wáa keenay 'he brought (it)'

Thus, the rules for verb accent assignment must be written in such a way that these forms are not affected by them. By convention, any form which is not assigned an accent by rule is accentless.

Verb accent can be assigned by means of the three rules in (12).

(12) a. $\circ \rightarrow * \; / \; \bar{\bar{V}} \; (C) \; \# \;]_{\{\text{inf. C2, C3} \; / \; \text{sg. imp. aff. C3}\}}$

b. $\circ \rightarrow * \; / \; \bar{\bar{V}} \; C_0 \; (V(C)) \; \# \;]_{\left\{\begin{array}{l}\text{inf. C1}\\ \text{imp.}\\ \text{1p, 2p. aff. opt.}\\ \text{neg. opt.}\end{array}\right\}}$

c. $\circ \rightarrow * \; / \; \bar{\bar{V}} \; ((V)C) \; \# \;]_{\{\text{neg.} \; / \; \text{rel.}\}}$

Rules (12a) and (12b) assign accent to infinitive, imperative and optative forms. As indicated, these two rules are sensitive to mood and, in some cases, to polarity, person, number, and conjugation class. We saw in the infinitive forms in (2) above that C2 and C3 infinitives receive final accent, while C1 infinitives receive penultimate accent. This is accomplished, respectively, by rules (12a) and (12b). Turning to accent in the imperative, the relevant affirmative/negative and singular/plural forms are given for the three conjugation classes in (13).

(13) a. affirmative	C1	C2	C3
sg.	kéen árag	sí i shaqée	baró joogsó
pl.	keéna árka	siíya shaqeéya	bárta joogsáda
b. negative			
sg.	ha keénin ha árkin	ha siínnin ha shaqáynnin	ha baránnin ha joogsánnin
pl.	ha keenína ha arkína	ha siinnína ha shaqaynnína	ha barannína ha joogsannína

The verb stems represented in (13) are C1 /keen/ 'bring' and /arag/ 'see', C2 /sii/ 'give' and /šaqee/ 'work', and C3 /baro/ 'learn' and /joogso/ 'stop'. As seen in these examples, rule (12a) assigns an accent to the final vowel of the singular affirmative imperative of C3 verbs in (13a). All other affirmative imperative forms, as well as all negative imperative forms of all conjugation classes, receive penultimate accent from rule (12b).[9]

Concerning the optative mood, affirmative forms are given in (14) for the C1 verb /keen/ 'bring'.[10]

(14)				
aan keéno	'let me bring'	ainu keénno	'let us incl. bring'
aad keéntid	'may you sg. bring'	aannu keénno	'let us excl. bring'
há keeno	'let him bring'	aad keentéen	'may you pl. bring'
há keento	'let her bring'	há keeneen	'let them bring'

As assigned by rule (12b), the first and second person forms have a penultimate accent. The third person forms, however, have an accented indicator há followed by verb forms lacking an accent. As can be seen, none of the rules in (12) affect third person optative affirmatives. The desired accentless verb form is therefore obtained. All negative optatives have penultimate accent, as was the case for negative imperatives. In (15), representative negative imperative and optative forms are given from the three conjugation

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[9]In some cases the penultimate accent of negative imperative forms may be obscured by an optional deletion of the final -nin , e.g. ha baránnin → ha barán 'don't learn!'.

[10]Since we neglected to study them ourselves, the second person forms in (14) are taken from Andrzejewski [1956:127]. In his listing of these forms, Andrzejewski indicates the second person plural form with antepenultimate accent, i.e. aad keénteen . However, in the table he gives on p.110, he indicates that this form should have penultimate accent, as we have transcribed in (14). We assume an error on p.127.

classes.

(15) C1 : ha keénin 'don't bring' yaanan keénin 'let me not bring'
C2 : ha síínnin 'don't give' yaanan síínnin 'let me not give'
C3 : ha baránnin 'don't learn' yaanan baránnin 'let me not learn'

The same invariant negative verb forms are used for both constructions. The indicator ha in the negative imperative forms in (15) is clearly the same morpheme as the indicator seen in (14) in third person affirmative optatives. The difference in accent is completely predictable from rule (20b) below.

Rules (12a,b) are clearly identical to rules (9a,b), which were proposed for nouns. Not only are they identical, but they also can be ordered identically: final accent assignment precedes penultimate accent assignment. Verbs differ from nouns, however, in possessing a third rule, that given in (12c). This rule generally assigns final accent, but if the word in question ends with a syllable of the shape CVVC, penultimate accent is assigned. Representative forms are given for the present negative in (16) and the past relative in (17).

(16) a. má keenó 'I do not bring (it)'
b. má keenáan 'they do not bring (it)'

(17) a. wíil kií aan keenáy 'the boy that I brought'
b. wíil kií ai keenáan 'the boy that they brought'

By (12c) we obtain a final accent in (16a) and (17a), but a penultimate accent in (16b) and (17b).

We have said that the rules in (12) are specified such that a verb form may undergo one or none of them. It is possible also for at least some fused verb forms to undergo (12a) and one of the other two rules, as seen in the examples in (18).

(18) a. má keéni-hayó → má keénayó 'I am not bringing (it)'
b. wíil kií aan keénayáy 'the boy that I was bringing'

In progressive negative and relative forms two accents are found on one complex verb form. The historical derivation is clear and is indicated for (18a) (cf. note 5). Rule (12a) assigns the appropriate infinitive accent on the

main verb (here, keéni), and rule (12c) assigns final accent to the conjugated auxiliary verb ah 'to be'. When fusion occurs (as is normally the case), the result is two accents on one form. It is interesting to note that no such double operation of accent assignment occurs in nouns.[11]

Before moving on to particles, it should be noted that Andrzejewski [1956, 1968] cites a few verb modalities that are not addressed here. They can easily be incorporated into our rules. Among these is the so-called independent paradigm of the past tense. Andrzejewski [1956:126] lists the following forms, which can stand alone without a subject pronoun or indicator:

(19)	keénay	'I brought'	keénnay	'we brought'
	keéntay	'you sg. brought'	keenté	'you pl. brought'
	keén	'he brought'	keené	'they brought'
	keéntay	'she brought'		

Accent is assigned penultimately, except for the second person plural and the third person singular and plural forms, which have final accent. This pattern is not duplicated elsewhere in the language.

3.3. Particles. Accent is assigned on the appropriate pre-verbal particles by the two rules in (20).

(20) a. $\circ \rightarrow * \;/\; \overline{V}\ ]_{prep}\ X\ _{verb}[$ (where X does not contain an *)

b. $\circ \rightarrow * \;/\; \overline{V}(V)\ ]_{ind}\ X\ ]_{verb}$ (where X does not contain an *)

These rules are somewhat more complicated (and are of a different nature) than those seen earlier in (9) and (12). Rule (20a) says that the final (= only) vowel of a preposition will receive an accent if there is no accent intervening between it and the verb. The relevant alternations are seen in (21).

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[11] A possible exception to this statement comes from vocatives. We have recorded both ídaajaayóu (2 22 22 13) and jdaajaayóu (2 22 11 13) for the vocative form of the name idaajáa . Rather than viewing this as two accents on the same noun form, we believe that there is a vocative intonation superimposed on the second variant, such that the H tone of the vocative suffix -(y)óu can be anticipated on a preceding vowel.

(21) a. áxmed buu ú keenay 'he brought (it) to Axmed'
b. áxmed u má keenín 'he didn't bring (it) to Axmed'

In these examples the preposition /u/ means 'to'. This preposition receives an accent in (21a), where it immediately precedes the unaccented verb, but it does not receive an accent in (21b), where there is an accented negative marker má occurring between the preposition and the verb. If the preposition is followed, even immediately, by an accent on the verb, it still acquires its own accent, e.g. áxmed lá cúna 'eat (pl.) with Axmed!'. This suggests, perhaps, that positions 4 and 5 in (5) above combine to form one word capable of taking only one accent.

Rule (20b) says that an indicator (focus marker) will receive an accent if there is no other accent in the whole verbal complex, i.e. no accent on any particle *or* on the verb itself. The relevant forms to compare are seen in (22).

(22) a. wáa keenay 'he brought (it)'
b. waa keénayay 'he was bringing (it)'
c. há keeno 'let him bring (it)'
d. ha ú keeno 'let him bring (it) to (him)'

In (22a) the indicator /waa/ is assigned a penultimate accent by rule (20b), since it is followed by all unaccented vowels. In (22b), however, where an infinitive accent has been assigned to the verb form keénayay , the structural description of (20b) is not met and the indicator therefore does not receive an accent. Thus, it is crucial that the verb accents be assigned prior to the assignment of particle accents. The same facts are observed in (22c), where the third person optative indicator /ha/ receives an accent, and (22d), where /ha/ does not receive an accent because of the accent of the preposition. Thus, rule (20a), which assigns accents to prepositions, must precede (20b).

The indicators which are known to be affected in this way by rule (20b) are /waa/ 'declarative indicative affirmative', /ha/ 'imperative negative, 3rd person optative', and /ma/ 'interrogative'.[12] As seen in the following

[12]We have not been able to study the accentual properties of the indicator

examples, the indicator /baa/ , which marks noun focus, works in the same way:

(23) a. áxmed baa 'Axmed?'
b. wax báa 'a thing?'
c. géed kaigáa 'my tree?' (< kaiga báa)

As seen in these examples, the indicator /baa/ , when used at the end of an utterance, queries the preceding elements, i.e. 'did you say ***Axmed***?', etc. In (23a) /baa/ does not receive an accent, since there is an accent on the proper noun áxmed . In (23b), however, the noun wáx 'thing' exceptionally "transfers" its accent onto the indicator. We see in (23c), where géed kaiga báa is optionally, but normally, fused into géed kaigáa , that the generalization is that /baa/ will receive an accent in case the preceding word does not itself have an accent. We therefore postulate that the indefinite generic noun /wax/ , whose irregularity has been recognized by Andrzejewski [1964], exceptionally loses its accent and thereby causes /baa/ to acquire one.[13]

In addition to the above rules, there will be some particles whose accent will simply have to be listed in the lexicon (or provided by a highly detailed morphological accent assignment rule). An example is the negative morpheme /má/ , which is apparently always accented.

4. Accent Modification

The rules given in section 3 introduce accents which, under certain circumstances, are either reduced or shifted one vowel to the right or left. We

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/soo/ or the deictic markers /soo/ and /sii/ and therefore refrain from any comments on how they fit into the above scheme.

[13]Another environment where we have recorded /baa/ with a penultimate accent is when it should have fused with the preceding element but doesn't. Thus compare wíil-kaa and wíil-ka báa , both meaning 'the boy?'. Andrzejewski always marks /baa/ with a penultimate accent (his bàa). We do not know if he has been influenced by the morphophonemics, or if this represents a dialect difference. It should be noted that in fused forms such as abeésaa 'a python?' (< abeéso + baa), where the accent winds up on the antepenultimate vowel, a non-distinctive glide from mid to low is heard on the final vowel sequence. I would thus transcribe abeésaa as 3-21-23 (see section 5).

have incorporated the accent alternations in the verb paradigm and on particles into the accent assignment rules themselves. This leaves nouns and their modifiers, whose accent alternations are treated in this section.

Accent modification can be of two types: reduction or shift. Reduction takes place either because of the presence of a conditioning element within the noun phrase, or because the noun phrase in question is functioning as subject (or sometimes object) within its clause. As has been argued by Andrzejewski [1979], these latter accent reductions are manifestations of case marking.

The major accent modifications conditioned by case were summarized in (8) under (b) in the defining characteristics of the three declension classes. Three rules are needed to capture these modifications and are formalized in (24).

(24). a. $* \rightarrow \circ \; / \; \_\_ \;]_{\substack{\text{subject D1,D3} \\ \text{[-focus]}}}$

b. $* \rightarrow \circ \; / \; \_\_ \;]_{\substack{\text{object D3 (optional)} \\ \text{[-focus]}}}$

c. $* \circ \rightarrow \circ * \; / \; \_\_ \; \# \left\{ \begin{array}{l} X \;]_{NP} \\ ]_{\text{object}} \\ \text{[-focus]} \end{array} \right\}_{D2}$ (where $X \neq \emptyset$)

Rule (24a) says that in D1 and D3 nouns, an out of focus subject loses its accent. In addition, if the D1 noun is feminine, it takes a -i suffix, as seen in (25).

(25) a. inan wáa dhacay 'a boy *fell*'[14]

b. inan<u>i</u> wáa dhacday 'a girl *fell*'

Rule (24b) says that a D3 noun optionally loses its accent when it is a [-focus] object. These facts are illustrated by means of the D3 noun caalín

[14]Forms which employ the indicator /waa/ have their verb in focus, which in (25) is indicated by italicizing the verb in the English gloss. We shall refrain from indicating the focus in the English translations, although it is important to note that Somali utterances take on considerably different characteristics according to what their focus is.

'learned man' in (26).

(26) a. caalin wáa dhacay 'a learned man *fell*'
b. caalín wáa keenay 'he *brought* a learned man'
or
caalin wáa keenay

Reduction of accent in object position is impossible if the noun belongs to D1 or D2.

Finally, rule (24c) states that the penultimate accent of D2 nouns becomes final if either (i) the D2 noun is modified, or (ii) the D2 noun is an out of focus object. Examples are seen in (27).

(27) a. abeesá daás 'that python'
b. abeesá wáa keenay 'he *brought* a python'

Unlike D1 and D3 nouns, D2 nouns do not undergo accent reduction when subject nor do feminine D2 nouns take the -i subject suffix, as seen in (28).

(28) a. waraábe wáa dhacay 'a hyena [m.] *fell*'
b. abeéso wáa dhacday 'a python [f.] *fell*'

When in focus, the indicator /baa/ contracts with D2 nouns, since they end in a short vowel (see Bell [1953:35]). Whether a focused subject, as in (29a), or a focused object, as in (29b), the accent remains on the (underlying) penultimate vowel:

(29) a. abeésaa dhacdáy 'a *python* fell'
b. axmed abeésuu keenay 'Axmed brought a *python*'

In (29a), the form abeésaa is a contracted form of abeéso + baa ; in (29b), the form abeésuu is a contracted form of abeéso + baa + uu , where uu is a masculine third person singular subject pronoun agreeing with the subject áxmed . Note that in (29a) there is a final accent on the verb, but there is no such accent in (29b). The reason for this is that subject-focus constructions require the relative clause verb forms, while object-focus constructions do not (cf. Hetzron [1965]).

The accent reduction which takes place when there is a subject D1 or D3

noun is actually somewhat more complicated than suggested by rule (24a). First, the accent reduction is blocked if the noun is modified by the short definite article ka/ta (taking the form ku/tu when in subject position):

(30) a. ínanku wáa dhacay 'the boy fell'
b. inántu wáa dhacday 'the girl fell'

Two further observations are that demonstratives (and some adjectives) modifying a noun themselves undergo the reduction (and take an -i suffix):

(31) a. wíil kaasi wáa dhacay 'this boy fell' (< wíil kaás)
b. wíil yari wáa dhacay 'a young boy fell' (< wíil yár)
c. wíil kaás yari wáa dhacay 'this young boy fell'

Because the forms for demonstratives and adjectives such as yár 'young' end in a final accent, there may be some relationship between accent placement and introduction of the subject case marker -i , normally used with feminine nouns, which, of course, are normally accent-final. As seen in (31c), where there is both a demonstrative and an adjective, only the accent of the last word is affected by rule (24a). An important exception to this is found when a subject noun is modified by a short possessive pronoun. Thus, compare the following two forms:

(32) a. walaál kaí 'my brother'
b. walaal kái wáa dhacay 'my brother fell'

In (32a) the short possessive pronoun kaí 'my' is assigned final accent by rule (9a). The noun walaál 'brother' also receives final accent by rule (9a), since it belongs to D3. In (32b), however, walaál not only loses its accent (as per rule (24a)), but also the possessive pronoun 'my' changes from final accent (kaí) to penultimate accent (kái). We will therefore have to modify rule (24a) so that the last element of the subject NP undergoes accent reduction unless that last element is the short possessive, in which case the subject noun undergoes the accent reduction and a special rule changes the accent of the possessive.[15]

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[15]We have not studied the accent modifications accompanying modified D3

The short possessive is used especially with kinship terms. When the longer possessive forms are used, their definite article suffix is ignored, and final accent is assigned to the possessive stem through rule (9a):

(33) a. kaíga 'mine' [m.] (< kaí 'my' + ka 'def. art.')
b. géed kaiga 'my tree'

However, as seen in (33b), there is a special rule by which this accent is reduced if the long possessive modifies a noun. This rule is formalized in (34).

(34) * → ° / NOUN $_{\text{poss.}}$[¯] Def. art.

There are two further rules that affect noun accents. The first was seen in operation in (10d) above. Whenever a noun phrase is modified by the morpheme 'which' (keé/teé), which occurs final in the phrase, all preceding accents are reduced. Further examples are seen in (35).

(35) a. moos keé 'which banana?' (< móos 'banana')
b. moos kai keé 'which banana of mine?'
c. kuul lacageed deé 'which silver necklace?' (< kuúl 'necklace', lacág 'silver')

In (35a) the noun móos 'banana' loses its accent, while (35b) has both the noun and the (short) possessive losing their accents. In (35c) we observe that compounds may also undergo accent reduction on both nouns. The first noun is, however, exempt from accent reduction if it is modified by the definite article (cf. its blocking of rule (24a) in the examples in (30) above), as seen in (36a). This also explains why the numeral in (36b) does not undergo reduction.

(36) a. walaál-ka wiil keé 'the brother of which boy?'
b. labá-da wiil keé 'which two boys?'

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nouns as they optionally undergo rule (24b). We assume that they work essentially the same as reductions characterizing D1 and D3 nouns in [-focus] subject position. A further relevant point is that the final accent of relative clauses is also reduced when the relative clause is the [-focus] subject of the matrix sentence. Thus, compare wíil-ka aan dilóo 'the boy that I hit' and wíil-ka aan dilo waa cáli 'the boy that I hit is Ali'.

Numerals are nouns, and when they are used with a noun they appear as the head of a genitive construction. Thus, labá-da wíl 'two boys' literally means 'the two of boy'.[16] The rule of accent reduction applying in (35) is thus formalized as in (37).

(37) $* \rightarrow \circ \; / \; {}_{NP}[\; X \text{ (Def. art.)} \; \overline{\quad} \; {}_{which}[$

(37) is to be read as follows: all accents preceding the morpheme 'which', but following a definite article (if present) are reduced.

The last accent reduction rule applying to nouns concerns compounding. According to rule (9a), a noun is assigned a final accent if it is [+genitive], i.e. the second noun of a $N_1 + N_2$ genitive construction. Whenever the genitive noun (N_2) is masculine, rule (9a) applies without complication, as we saw earlier in (10a). However, when the N_2 is feminine (and unmodified), it receives the genitive suffix -eed , with two accentual patterns possible:

(38) a. móos gabar-eéd 'a banana of a girl'
b. moos gabar-éed 'a girl's banana'

In (38a), móos 'banana' receives penultimate accent according to rule (9b), while gabar-eéd 'of a girl' receives final accent by rule (9a) on the basis of its being [+genitive]. In (38b), however, 'banana' appears without an accent, and the genitive suffix receives penultimate accent. The difference in meaning between these two phrases appears to be one of specific vs. generic: (38a) means "a specific banana belonging to a specific girl", while (38b) means "the kind of banana a girl would have", i.e. the kind normally associated with girls. The most explanatory account of the construction in (38b) would be to consider it a single (sometimes lexicalized) noun. That is, (38a) is a true possessive construction, while (38b) is a noun compound. Evidence for this interpretation is seen in the examples in (39).

(39) a. móos-ka gabar-eéd 'the banana of a girl' (i.e. belonging to a specific girl)
*moos-ka gabar-éed
b. moos gabar-éed-ka 'the banana of a/the girl' (i.e. 'the girl's banana')
*móos gabar-eéd-ka

[16] It is perhaps relevant here to point out that the number lába 'two' exceptionally changes from penultimate to final accent when modifying a noun (cf. labá wíl 'two boys'). It may thus once have been a D2 noun.

The examples in (39a) show that the definite article can occur on the N_1 in the genitive construction but not the compound construction. The examples in (39b) show that a definite article modifying the whole complex can occur after the compound construction but not after the genitive construction. The form moos gabar-éed-ka thus has a masculine definite article ka agreeing with the head noun 'banana'. If we attempted to place a definite article on the N_2 noun, the modified N_2 noun would then not permit the use of the suffix -eed (cf. Bell [1953:70-71]), e.g. móos gabádha 'a banana of the girl', where gabádha is a contraction of gabár 'girl' + ta 'def. art.'. We shall thus have to introduce a rule reducing the accent of an N_1 in a noun compound:

(40) $* \rightarrow \circ \; / \; [\; [\; \underline{\quad}\;]_N \; X \;]_N$

In (40), the configuration $[\; [\; \underline{\quad}\;]_N \;]_N$ represents a noun compound. In a true genitive construction, the structure would have been $[\; [\;]_N \; [\;]_N \;]_{NP}$. The compound structure allows no intervening elements between the two nouns.

The last accent modification rule to be considered apparently has its structural description met only in verb forms. Note the following data concerning imperatives in (41).

(41) a. cún 'eat!' (sg.) lá cun 'eat (sg.) with (him/her)!'
b. cúna 'eat!' (pl.) lá cúna 'eat (pl.) with (him/her)!'

In (42a) the singular imperative form cún 'eat!' has an accent on its only vowel in the left hand column. When directly preceded by an accented preposition (here, lá 'with'), however, it loses its accent. This does not happen in the plural imperative forms in (41b). There is thus a need for a rule of the form in (42).

(42) $* * \rightarrow * \circ \; / \; \underline{\quad}\; \%$

A phrase-final accent is reduced if immediately preceded by another accent. In (42), % represents a phrase boundary (cf. section 5). This rule is apparently also responsible for the single accent found on máin in (43b).

(43) a. má cúnaín '(he etc.) was not eating'
b. cúni máin " " " "

As is clear from sections 3.2 and 3.3, the negative marker má is inherently accented, and in negative indicatives there is a final accent (cf. (43a)). The expected form in (43b) is thus cúni máín , with accents on both of the final two vowels (< má ahín). It is not known if (42) has applications elsewhere in the grammar, since the possibility of final ** is rather limited.

5. Tone and Pitch Assignment

In sections 3 and 4 accents were assigned and modified. Nothing was said in those sections about how the resulting accented and unaccented vowels are pronounced. While there is some variation in pronouncing the output of section 4, it is clear that Somali speakers operate according to general rules which assign tone to the * and ° specifications. We saw in sections 1 and 2 that each accent was considered to be a H tone (and that each H tone was considered to be an accent). Mention was made of the possibility of distinguishing L vs. M (mid) tones. In such an analysis H would have an integer value of 1, M a value of 2, and L a value of 3. Recall the minimal pair ínan 'son' vs. inán 'daughter' which would in this analysis be treated as H-L (1-3) vs. M-H (2-1) tone.

While it is logically possible, and perhaps heuristically advisable, to provide an intermediate stage of H, M, and L tone specifications, such a representation would be redundant and superfluous. Rather than having a process whereby accent → tone → pitch, it is possible to go directly from the accent specifications of the preceding sections to the pitch integers themselves. It is this more economical analysis which is presented in this section.

We begin by assigning the integer "1" to every accented vowel and the integer "2" to every unaccented vowel. This integer assignment process would only produce a monotonous alternation of 1 and 2 pitches. As seen from (44), additional rules are needed to account for the numerous pitch levels characterizing real utterances.

(44) wíil-ka má díayó 'the boy is not hitting (him)'
13 3 1 2 4 3

The utterance in (44) is realized on four different pitch levels. As seen, the unaccented vowels have values of 3 and 4, while the final two accents are

realized on the 2 and 3 pitch. Since the 3 of the last accent is identical in pitch level to the 3 of the first unaccented vowel, one can identify underlying * vs. ° specifications only from the relative pitches surrounding each vowel.

In order to generate these additional pitch levels we shall need an additional rule. The process revealed in (44) is clearly one of downdrift: successive 1 and 2 pitches (or H and L tones, if one prefers) are realized on lower and lower levels.

There is an exception in (44), namely the 1 specification of the accented vowel in má . Compare also the following example:

(45) waraabé % inan % má dilín 'a boy didn't hit a hyena'
2 22 1 2 2 1 3 2

In this example má is again exempt from the progressive lowering of pitches, and in addition, the unaccented vowels of 'son/boy' are realized on a 2 level, rather than as 3's. The only way to resolve these discrepancies in the pitch realization of the accented and unaccented vowels is to introduce phrase boundaries (%'s) within which the downdrift effect is felt. These have been indicated in (46). While there is again some variation, the following two rules are extremely general and needed for almost all of our examples:

(46) a. VC → <%> / <+ind> ___ %

b. NP NP VC → % / ___ [-rel]

Rule (46a) says that there is a phrase boundary after the verbal complex (particles + verb), wherever it may occur in the sentence. In addition, if the verbal complex is marked [+ind] (by which is meant that there is an indicator marking focused modality), there is a phrase boundary preceding the verbal complex. Rule (46b) says that in main clauses (but not in relative clauses) there is a phrase boundary intervening between two noun phrases preceding the verbal complex. These two rules correctly assign the internal phrase boundaries in (45). As was said, these rules are extremely general, although they are on occasion violated. They are, after all, merely strategies for giving relative weight to the major categories (NP, VC) within an utterance.

As noted, then, some of the variation has to do with boundary assignment,

some with pitch assignment. In any case, there are no rules assigning phrase boundaries within an NP or VC, nor is there any rule inserting a phrase boundary between elements occurring to the right of the verb. That this is the case is seen in (47a), where downdrift occurs within an NP, and in (47b), where downdrift affects the three nouns dislocated to the right of the verb.

(47) a. abeesá daás — 'that python'
3 22 1 32

b. wái dishay % abeéso waraabé shálay — 'a python hit a hyena yesterday'
13 3 3 3 21 3 3 33 2 3 5

c. shálay % abeéso % waraabé % wái dishay — 'yesterday a python hit a hyena'
1 3 3 21 3 3 22 1 13 3 3

The second accent in (47a) is downdrifted to a 2 level, since there is no intervening phrase boundary between accents within an NP. In (47b) it is observed that the three elements occurring to the right of the verb constitute a single phrase, which should be compared with their occurrence to the left of the verb in (47c), where each is surrounded by % boundaries. It is probable that such rightward elements form only one accentual phrase because they represent presupposed information.

The process of pitch assignment thus proceeds as follows:

(48) a. assign 1 to every $\overset{*}{V}$ and 2 to every $\overset{\circ}{V}$

b. following the leftmost $\overset{*}{V}$, add 1 to the value of every vowel up to the first %, then begin with the second $\overset{*}{V}$ and add 1 to all following vowels up to the first %, etc. until no more $\overset{*}{V}$'s remain preceding that %; repeat for each %

c. (optional) an additional value of 1 can be assigned to one or more 2 levels in the environment %__

d. (optional) an additional value of 1 can be assigned to a 1 level in the environment 3__ // (where // = pause)

Rule (48a) assigns the initial integers of 1 and 2 to accented and unaccented vowels, respectively. Rule (48b) captures the downdrifting effect on all vowels following an accented vowel and through the entirety of a phrase. As indicated, (48b) may apply several times within the same phrase if there are multiple instances of $\overset{*}{V}$ not separated by % boundaries. Rules (48c) and (48d) are optional. The first of these optionally converts a form such as waraábe (2 21 3) to waraábe (3 21 3) by adding a value of 1 to one or more phrase initial 2's. Final-

ly, (48d) lowers a 1 to a 2 when preceded by a 3 and followed by pause.

Two representative derivations are seen in (49) and (50).

(49)	abeesá daán % tuká daani % má dilín	(output of accent rules + boundaries)
	2 22 1 21 2 1 22 2 1 2 1	(initial integer assignment [48a])
	11 11 1 1 1	(downdrift [48b])
	1 1	(optional [48c])
	3 22 1 32 3 1 33 3 1 3 2	SURFACE REALIZATION
	'this crow didn't hit this python'	
(50)	wái dishay % abeéso waraabé shálay	(output of accent rules + boundaries)
	12 2 2 2 21 2 2 22 1 1 2	(initial integer assignment [48a])
	1 1 1 1 1 11 1 1 1	(downdrift [48b]--first application)
	1 1	(downdrift [48b]--second application)
	1	(downdrift [48b]--third application)
	1	(optional [48c])
	13 3 3 3 21 3 3 33 2 3 5	SURFACE REALIZATION
	'a python hit a hyena yesterday'	

After the four rules in (48) have applied, all of the integers are added together and the surface realization is obtained. Note especially the multiple application of the downdrift rule in (50).

The rules in (48) will therefore generate the correct pitch intervals for a wide range of data. It should be noted, however, that there is some room for variation, and that some of this might be due to intonation.[17] While this section, like the preceding sections, is not considered to be complete, we believe that the framework developed here can be extended and refined so as to capture the complete accentual and tonal characteristics of the language.

6. Implications for Further Research

As just stated, this study is necessarily a preliminary one, one that is in need of further verification (with other speakers and with data from natur-

[17]Two areas that have posed some problem are (a) the initial pitch level of the phrase dislocated to the right of the verb and (b) relative clauses, where there is an occasional, but as yet unpredictable, internal % boundary.

alistic settings). It would not be too bold, however, to assume the basic correctness of the analysis and examine its possible ramifications. We assume, then, that underlying forms are entered into the lexicon without prosodic information. Morphological rules introduce accents, which after undergoing some alternations (especially reductions), receive pitch specifications through the application of phonetic rules. These pitch specifications can be considered also to be manifestations of "phonemic" H and L tone, but as seen in section 5, it is not necessary to recognize such an intermediate level of prosodic representation.

Of primary interest to us is the typology of the Somali system. It differs from pure tone languages in restricting the occurrence of H tone (accents) to one of the last two vowels in a word and in allowing only one such H tone per word. Its differences from stress accent languages have been mentioned earlier, namely, the assignment of accents to moras rather than syllables and the realization of pitch on these accents independent of intonation. The so-called culminative property of Somali accents is basic. However, it should be noted that an alternative approach recognizing multiple accents in words is at least logically possible. Consider the following D1 singular nouns, which take the indicated D3 plural form:

(51) a. ínan 'son' c. inammó 'sons, daughters'
b. inán 'daughter'

The underlying segmental representation of 'son' and 'daughter' is /inam/, and that of the plural is /inam-Co/ , where /C/ assimilates to the preceding /m/ to derive the geminate sequence [mm] . We have claimed in section 3 that the indicated accents are assigned as follows: (a) ínan receives penultimate accent by rule (9b), since it is a D1 masculine noun; (b) inán receives final accent by rule (9a), since it is a D1 feminine noun; and (c) inammó receives final accent by rule (9a), since it is a D3 noun. Note that the singular forms in (51a,b) share a common plural form (51c). The rules in (9) adequately capture this fact by referring directly to the declension class of the plural form. However, it is possible to maintain that there is a double assignment of accent to such plural forms, as hypothesized in (52).

(52) a. $[\ [\ \overset{*}{\text{i}}\text{nam}\ ]_{N,\ Dl\ m.}\ \overset{*}{\text{Co}}\ ]_{N,\ D3}$ 'sons'

b. $[\ ]\ \overset{*}{\text{i}}\text{nam}\ ]_{N,\ Dl\ f.}\ \overset{*}{\text{Co}}\ ]_{N,\ D3}$ 'daughters'

In (52) we have assigned an accent * to both the inner (singular) noun, and also, to the D3 plural suffix -Co . If both accents were to be realized on the surface, we would obtain a contrast between ínammó and inámmó . A rule would be introduced reducing all but the final accent of a word. As a result, 'sons' and 'daughters' would both be pronounced with a single accent on the plural suffix.

It is not our intention to fully examine this alternative approach to Somali accent here. The notion of assigning multiple accents of which only the last per word is phonetically realized is intuitively appealing and can be extended to a number of parts of the derivational morphology and grammar. However, the analysis proposed in section 3, which assigns a single accent per word on the basis of grammatical information (including the declension class of a noun, something which is needed independently of accent assignment), is much more economical and hence preferred in the absence of evidence to the contrary.

This leaves the question of how Somali accent got to be the way it is. The fact that we have been able to establish underlying lexical forms which are devoid of accent specifications suggests that Somali and related Cushitic languages once had no accent. This is the situation of much of Afro-Asiatic today, e.g. Berber, many Ethiopian languages [Leslau 1956:30], etc. As clearly indicated from our accent assignment rules (9), (12), and (20), accent is conditioned by grammatical, rather than lexical features. It seems motivated, then, to seek the origin of the accentual distinctions in the derivational and inflectional morphology.

Oomen [1981] proposes that the final accent of Dl feminine nouns can be predicted on the basis of a final lost syllable, which she reconstructs as *-et . Although basing herself on the Rendille dialect, this reconstructed feminine marker would correspond to both the -eed suffix of unmodified feminine N_2 genitives and the -i subject case marker found on Dl feminine nouns. Oomen argues that accent is assigned by a general rule to the penulti-

mate vowel of a noun, thereby producing forms such as *ínan 'son' vs. *inán-et 'daughter'. When the reconstructed *-et falls, we obtain the familiar D1 feminine final accent pattern.

This explanation is appealing, both because of the convincing reconstruction Oomen justifies in great detail and because we know that the accentual oppositions must be introduced into Cushitic by some natural means. Historical studies have shown in a number of language families that a lost syllable can produce accentual contrasts. Oomen's assumption that penultimate accent is basic repeats a common position asserted in early Somali studies; the assumption that final accents must be exceptionally derived may also explain why rules (9) and (12) had to be ordered with final accent assignment preceding penultimate accent assignment.

The unfortunate problem which arises for Oomen's account comes not from Somali, but rather from our general knowledge about prosodic systems. The chain of events postulated for Somali are so intuitively pleasing that one wonders why more languages have not derived tonal accents in this way. The cases that are familiar to us all involve stress accent systems which after loss of final vowels remain stress accent, e.g. as when Spanish develops infinitives such as hablár from loss of final *e . It is highly improbable that the loss of final vowels could change either an accentless or a stress accent system into a *tonal* accent system.

I would argue instead that Somali and related languages were already tonal prior to the loss of the feminine suffix. Oomen herself assumes that the general penultimate accent assignment process refers to vowels, rather than syllables. Thus, even among masculine nouns one could conceivably have had syllables of both shapes CV́V and CVV́. Now, a mora accent system necessarily *is* a tonal accent system, e.g. Classical Greek and Standard Japanese. How then did Cushitic change to assign accents to moras?

While I have been able neither to seek nor find evidence from Cushitic itself, the most likely source would be the loss of a final pharyngeal or laryngeal segment. Perhaps the feminine suffix *-et developed into a sequence such as [e?] prior to dropping out. Glottal stops are known to raise the pitch of a preceding vowel (see Hombert [1978] for examples and references). The H pitch acquired by this suffix is transferred to the preceding vowel

when the suffix is dropped, and any full word not assigned a H accent in this fashion is assigned a penultimate one. It would of course be necessary to trace the development of tone in other environments, e.g.(negatives or relatives). While the details of this proposal may be inadequate, the only point I wish to emphasize in conclusion is that the language must have *first* become sensitized to pitch and *then* generalized it throughout the grammatical system.[18]

[18]One of the grammatical features whose interaction with accent has been seen only in passing is focus. Once the tonal accent was established, focus became a key consideration, as seen in the specification of the accent rules in (24). Somali is a language where considerations of focus receive prominent grammatical realization (cf. Antinucci and Puglielli [1980]; Antinucci [1980]). One generalization which emerges from all of the accent properties discussed above is that any constituent marked [+focus] must have an accent. This explains, for example, why the verb focus indicator /waa/ receives an accent by (20b) if the [+focus] verb lacks one.

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