

A SIX-TONE LANGUAGE IN ETHIOPIA

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Tonal analysis of Benč⁴ non⁴ (Gimira)*

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A Surprise Tone

When in the late fifties one of the first sketches of an Ethiopian tone language was published, the fact that there should be an Ethiopian language with three tones, high, falling, and low, still came as a surprise - this at least is what the words convey, with which the discovery was announced: "For indeed, Moča is a tone language . . ." ¹

When in 1980 Habtemariam Marcos included Benčnon² in a preliminary survey of Omotic languages, he suspected that this language might be highly tonal - a suspicion which was confirmed dramatically when Ernst-August Gutt drafted a tentative analysis with an unbelievable five level system.³ When teaching a course on field linguistics in 1980/81, we were fortunate enough to find a Benčnon speaker at the Addis Ababa University who worked with us as language helper, and we were challenged to disprove Gutt's tentative analysis; but indeed, Benčnon is a tone language with five levels and a glide in addition !

Should linguists have anticipated finding such a complex tone system in East Africa? Certainly not. It is true that the majority of the world's languages are tone languages,⁴ but languages of five or more tones are rare indeed - especially when it comes to five levels: With the differentiation of five or more degrees along the same dimension, a limit to human perception seems to be reached, and human languages tend to avoid too fine a scale.⁵ The few areas where such languages do occur are clearly marked on the linguistic map of the world: East Asia (Thai, Miao), Amerindian enclaves (Peruvian and Aztec languages), and West Africa (Dan, Wobe of Ivory Coast).⁶ Even among these, five level tones are rare.

Now we will have to add Ethiopia to this list. In the present article, the focus will be on the Benčnon tone system and the relation of tone to various linguistic aspects of the language. The first part of the paper will give some of the background from the study of Ethiopian tone languages in general, and from the Benčnon phonology. In the last part of the paper we shall highlight some historical and cultural aspects. A text by Endrias Essay will describe the function of tone in the words of a mother tongue speaker of this language.

* Editor's note.

The transcription employed by the author departs from the convention followed by JES. Raised numerals indicate tones.

Benčnon and the Study of Other Ethiopian Tone Languages

It is unfortunate that, so far, no full description of the tone system of an Ethiopian language has been presented; but there are some suggestions, and in recent publications some more extensive studies have become available. The following list summarizes what is known about the number of tonemes. The list may not be exhaustive, but it represents all Ethiopian language families having tone:⁷

Cushitic

Borana-Oromo: two tones, linked with stress and word shape (Andrzejewski 1970, 89ff).

Somali: two tones, linked with stress (Abraham 1962, 264, 310, 360).

Dasānāč: “[± high tone] . . . seldom lexical” (Sasse 1976, 200).

North Omotic

Dizi (Maji): three tones, functioning lexically and grammatically (Allan 1976b, 385-389).

Moča: three tones, functioning lexically and grammatically (Leslau 1958, 135).

Kafa: three tones and stress (personal communication, Habtemariam Marcos).

Kullo: two tones (“pitches”), mostly predictable (Allan 1976a, 328).

South Omotic

Hamar: the role of tone is “not yet discovered” (Lydall 1976, 405).

East-Sudanic, Bārta, Kunama

Nāra: “At least two significant tones” (Thompson 1976b, 484).

Mursi: “. . . is analyzed as having four tones”, namely, high, mid, low and fall, “though it is doubtful that all of these are phonemic.” (Turton and Bender 1976, 539).

Añwa: “Tone is an important feature . . . grammatically and, less frequently, lexically. It has not been studied extensively.” (Lusted 1976, 498).

Bārta: “Tone may be distinctive” (Triulzi, Daffalah and Bender 1976, 521).

Kunama: two tones, modified by stress; both tone and stress are phonemic. (Bender, personal communication).

If one collates the more definite of these statements with a list of Maddieson's findings about three hundred tone languages in general,⁸ one in fact finds roughly the same "normal" distribution of the number of tonemes in Ethiopian languages as in Maddieson's extensive study. (Cf. Chart 1.)

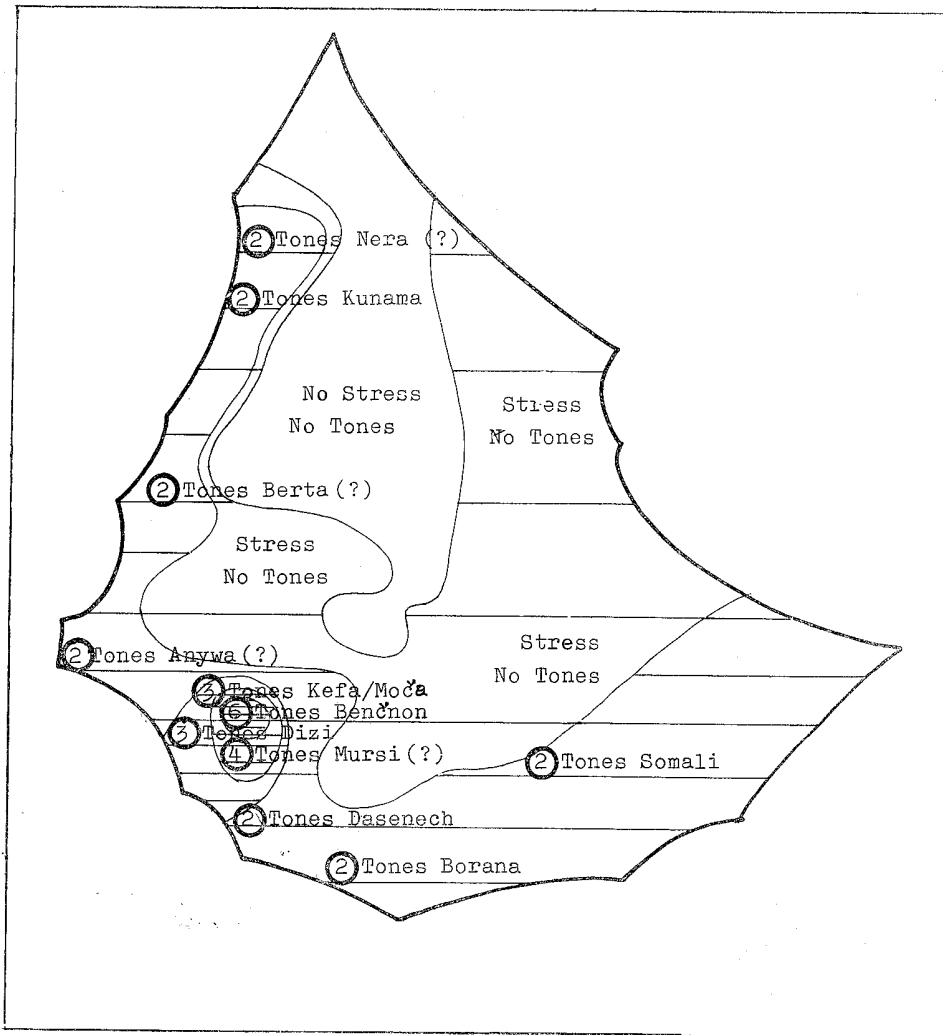
Number of tonemes	Tone Languages in the world	Tone Languages in Ethiopia
2	5.1 out of ten	4-7 Añwa (?), Bārta (?), Dasānač, Kunama, Nāra (?), Somali
3	2.8 out of ten	2-3 Dizi, Kafa (?), Moča
4	0.9 out of ten	0-1 Mursi (?)
5 or more	1.1 out of ten	1 Benčnon

Chart 1

Distribution of the Number of Tonemes in Tone Languages

As regards the list of Ethiopian tone languages in Chart 1, it should be noted that Mursi, with possibly four tones, belongs to a language family where it is more likely for complex tone systems to occur. Benčnon however belongs to the group of Omotic languages where, as in the Cushitic group, so far only two or three tonemes seemed probable.

But tone features are not linked to particular languages or language families exclusively. Like stress, tone must also be viewed as an areal feature which cuts across language families. If one uses a map to display the features of tone and stress in Ethiopia - as far as the data are available - one can visualize how geographical proximity plays a role as well as language family affiliation.⁹ In this Map (see below), a 'cline' of tonal and accentual complexity would seem to exist, arising from the non-stress, no-tone Semitic area, through the Cushitic stress/tone areas to the tone languages of the Omotic and East-Sudanic areas. A language such as Benčnon could be viewed as a point of highest complexity if, for the present purpose, one agrees to regard the number of tonemes as one aspect of the complexity of a tone system.¹⁰



MAP

Distribution of tone languages and stress languages in Ethiopia

The number (encircled) give the approximate location of the respective language, cf. the list in Chart 1. The Map is simplified in that areas for which no tonal analyses are available have been included or excluded in bold outlines, on the basis of language family affiliation only.

A Sketch of the Segmental Phonology of Benčnon

With the exception of a 1925 sketch by Conti Rossini,¹¹ no descriptions of the Benčnon language are available yet (Conti Rossini does not mention tone), but the language is now being analysed by Ethiopian linguists, in the framework of the general survey of Omotic languages.

In the following sketch, the segmental phonology will be presented only in so far as it seems relevant to the subsequent tonal analysis, or is important for an eventual development of orthographical systems.

Benčnon has about forty phonetically different segments and several suprasegmentals (Tone, length, laryngealization, nasalization); but of all these, only tone and 33 segmental phonemes (28 consonants, 5 vowels) are distinctive. The segments are: stops /b d g, p t k, p' t' k'/; affricates /c č ċ, c' č' ċ'/; fricatives /z ẓ ẓ, s š ṣ̌/; sonorants /m n, l r/; glides /' h y/, and five vowels /i e a o u/.¹² Some other sounds (such as fricative p, v, w, s', x, ñ, voiceless l and ɲ) are non-phonemic variants.

The phonetic values of the 33 phoneme symbols above are, in general, those of the IPA, but the following modifications have to be noted: /C'/ stands for glottalized consonants, /c/ for retroflexed consonants, and /č/ for alveopalatals. So /č'/ for instance is a glottalized, retroflexed alveopalatal grooved affricate, etc. The phonetic realization of certain phonemes involves some weakening on the universal strength scale;¹³ so the realization of /p/ is a bilabial fricative in the weak margin after vowels.¹⁴ A /c'/ comes close to a glottalized fricative [s'], and a /C-nV/ sequence can be reduced to a nasalized /CV/ syllable in quick speech. The glide /y/ is [y] before front vowels and [w] before back vowels. Certain initial stops are aspirated, final /l/ is devoiced, and tone 1 vowels are often slightly laryngealized.

Some of the major morphophonemic relations and processes can be sketched as follows: Before stops and affricates, the sonorants /m/ and /n/ assimilate as usual while /l/ and /r/ seem to become interchangeable. The 'glides' /' (glottal stop), /y/ and /h/ are partially exchanged across dialect boundaries, and they lose their contrasts in certain cases; /h/ or /y/ are inserted to break up V-V sequences created by suffixation, and /' or /h/ plus /a/ tend to merge into a lengthened [a:].

All Benčnon syllables have the structure

$$C_1 (y) V ((C_2) C_3) \text{ tone.}$$

Of the six possible readings of this formula,¹⁵ the simple closed syllable $C_1 V C_3$ is by far the most frequent structure of root morphemes, while $(\dots C) - V C_3$ is a frequent form of suffixes. In these patterns, C_1 can be any of the 28 consonants except /l/ or /r/, while C_3 can be any consonant. Palatalization, here written as (y), only occurs in syllables with the nucleus /a/ which have no further semivowels. Otherwise, the nucleus V can be any of the five vowels as well as /m/ or /n/, the two syllabic nasals which carry tone and which seem to be derived from an underlying /u/ historically. A final cluster $\dots C_2 C_3$ always consists of a continuant followed by a stop or an affricate. When read as a generative formula, the above structural syllable formula is too powerful and produces some unacceptable syllables (e.g. syllables involving /h/ as C_2), but space forbids us more than a descriptive abbreviation here.

A Description of the Tone System of Benčnon

The tonemes and their phonetic characteristics

Each syllable of the Benčnon language has one of six contrasting tonemes, normally carried by the nucleus V or N (vowel or syllabic nasal) of the syllable. Five of the tones are level or 'register' tones, and the sixth is a rising glide. They will be identified as follows: 1 Very Low, 2 Low, 3 Mid, 4 High, 5 Extra High, and 2-3 Rise (gliding from level 2 to 3). So there are five distinctive relative pitch levels, but six tonemes. Each of them has been found to occur on any one of the vowels or nasals, and each of them occurs in all positions of the word and on all major word classes.

Evidence for tonemic contrast can be given in the form of quadruplet and as sextuplet. (Cf. Chart 2.)

Tone	Minimal Quadruplets			Sextuplet	
5	—	—	—	šot ⁵ 'edge' point'	kar ⁵ 'clear'
4	sam ⁴ 'cabbage'	bar ⁴ 'neck'	mar ⁴ 'personal name,	šot ⁴ 'crutch'	kar ⁴ 'broad leaf'
3	sam ³ 'to be useless'	bar ³ 'holiday'	mar ³ 'to plait hair'	šot ³ 'to strip off,	kar ³ 'to be round'
2-3	—	bar ^{2.3} 'lucky'	mar ^{2.3} 'hypo- thesis'	—	kar ^{2.3} 'game with stones'
2	sam ² 'useless- ness'	—	mar ² 'pity, n.'	—	kar ² 'wasp'
1	sam ¹ 'glow' n.'	bar ¹ 'to take a mouthful'	—	šot ¹ 'seedling'	kar ¹ 'pudenda'

Chart 2
Evidence for Tonemic Contrast

Concerning the phonetic realization of these six tones and their relation to contour shape and length, the following may be said:

Since tones 1 to 5 are level tones, the question arises whether tone 2-3 should not be viewed as a sequence of two level tones, 2 and 3. But this would not take account of the following facts: a) the glide is realized on the same syllable patterns as the other tones (Cya syllables and CVy syllables not excepted), and b) the syllables

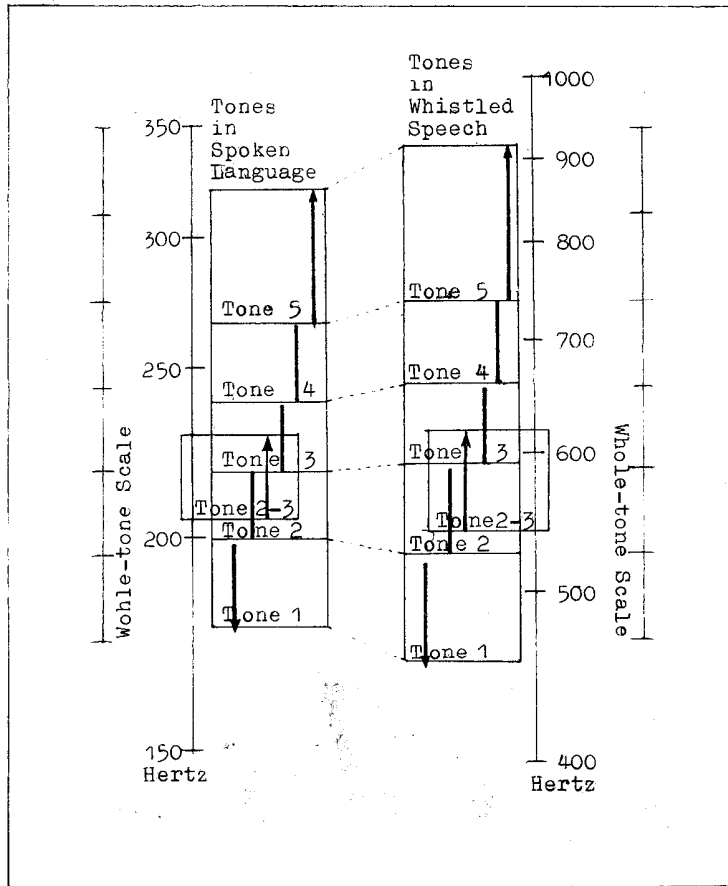


CHART 3

Absolute Pitch Frequencies in Spoken and Whistled Speech

which carry tone 2-3 are not distinctively longer than those of other tones.¹⁶ The peculiarity that there is no /i/ with tone 2-3 in our present data cannot easily be explained in either case.

Tone 2-3 is not the only one which phonetically exhibits some tonal 'gliding'. As has been observed in other tone languages too,¹⁷ the highest level tone tends to rise, and the lowest tends to fall - given an environment such as final position for final length, or extra emphasis for an extra rise. Tones 1 and 2-3 also have a statistical preference for lengthening,¹⁸ while tone 5 often goes with shorter, fortis pronunciation and tone 1 with creakiness. However, it must be noted that it is not the occasional length etc., which distinguishes the glides from the level tones, and that it is not the occasional glide which distinguishes tone 1 and 5 from the others: in normal speech, pitch levels alone will take care of all relevant distinctions.

To obtain an absolute measurement of the pitch ranges of each tone,¹⁹ two different tape recordings were prepared, consisting of short phrases using all possible tone combinations.²⁰ Both of these recordings were provided by the same speaker but with an interval of about 15 min . .

Concerning relative pitch, it was found that a) the average distance between the pitches of any two neighbouring tonemes was an interval of just a little less than two semitones of the musical scale, and that b) the differences between the same toneme pitches from the first and the second recording amounted to about a semitone. Whatever reason there may be for this close similarity, the same very small range of variation seems to pertain in intonational variation and in the range of what one might still call 'downdrift'. There is some downdrift, but again: it moves within a very small range. For a language without perturbation rules of the West African type, and for a language with the large number of five tonal levels, this small range of pitch variation probably had to be expected.²¹

The widest pitch ranges covered by any one tone were those of tones 1, 5, and of course tone 2-3. The Chart in the following section (Chart 3) displays the results of these measurements, as well as those of 'whistled speech'.

Relations between spoken and whistled speech

The rather stable word pitches of the 'spoken' lists of phrases have been compared with 'whistled speech' recordings of the same phrases, produced by the same young man. It was found that while in spoken language the average interval between neighbouring tonemes was a bit less than two semitones (see previous section), it turned out to be slightly larger than two semitones in whistled speech. (Cf. Chart 5.)

It may be interesting to note that the transposition interval between spoken and whistled speech, when the one followed the other immediately, varied from case to case (in most cases, it was an eleventh or a twelfth); but it has never been observed to be an octave, or two octaves - the interval one might have expected to find most frequently.

This may seem a trivial observation - but it provides evidence about a property of tone languages in general, a property one might like to call 'helpful' to free comm-

unication between speakers of different voice compass: The fundamental pitch of spoken language seems determinate enough to allow for the finest pitch distinctions such as between six stones - but at the same time it has enough indeterminacy (or modulation devices?) to give the person addressed sufficient freedom either to take up the same scale of tones which was established by the first speaker, or to choose his own scale.²² To my knowledge, this relation of between different tonal 'scales' of speakers communicating in a tone language - a relation of near-total determinacy and near total freedom - has not been discussed in the literature; but there seems to be some evidence here that the transposition rules (or modulation devices) which apply within spoken, whistled or sung language may be different from those which apply as a speaker changes from one medium to the other.

A description in terms of tonal features

If the description of Benčnon tones has to be recast in terms of distinctive features the most adequate set of features proposed as 'universal' seems to be Maddieson's set ([+High]; [+Low]; [Extreme] - even though it probably was devised for languages with less than six tones.²³ But with these features, it would be impossible to keep tone 2-3 as a unit and still distinguish it from tone 3 - while at the same time expressing a basic difference between two series of Benčnon tones: tones 1, 2, 2-3 on the one hand, and 3, 4 and 5 on the other.

Since the issue of universal tonal features is still an open question²⁴ some ad-hoc solution may be suggested here for Benčnon - a solution which takes care of the problems mentioned above and, at the same time, has some additional explanatory power. The features we propose here are [+High]; [+Shifted] and [+Glide], where the first, [+High], seems necessary for the distinction of tones 3, 4 and 5 from the lower tones (a distinction based on morphological considerations), where the second, [+Shifted], seems necessary for the distinction of tones 2-3, 4 and 5 from the others (based on observations of vowel frequencies and morpheme class frequencies, under a diachronic aspect), and where the last, [+Glide], seems necessary for the distinction of tones 1, 2-3 and 5 from the others again (based on observations of phonetic realization). Chart 4 displays the Tonemes and their respective Features.

Feature	Toneme					
	1	2	2-3	3	4	5
[+ High]	-	-	-	+	+	+
[+ Shifted]	-	-	+	-	+	+
[+ Glide]	+	-	+	-	-	+

Chart 4
Tonal Features and Tonemes

Together, these three features differentiate all of the six tonemes (including tone 2-3 as a unit), and they make it possible to state some of the basic morphophonemic relations and rules in simpler terms. These three features also identify those tonemes as 'marked' (by two or three pluses) which are rare, extreme, or semantically 'extreme'. Concerning the feature [\pm Glide] however, it has to be remembered that the 'extreme' glides move to a more 'extreme' pitch, while the central glide moves towards the central pitch, as has been outlined earlier.

Lexical tone and its distribution

Lexical tone and morpheme shape

The majority of Benčnon morphemes consist of one syllable, its tone, and its meaning. Morphemes with (apparently) more than one syllable are less than 8% of 630 entries, and all seem to belong to one of the following three classes:

1. Loans - such as *ka³tam³* 'town', *za³yit⁴* 'oil', *ma³kin⁴* 'car', *si³mar³* 'clothes' etc. Here, the tone patterns 34 and 33 seem predominant.
2. Reduplications - such as *dul²dul⁵* 'cloud', *kas²kas⁴* 'fly, n.', *wuč²uc⁴* 'fly, n.' (sic). The tone patterns 24 and 25 seem predominant.
3. Words with derivative suffixes no longer productive, or with formatives like class markers of limited distribution - such as the endings *-ar³* as in *bič³ar³* 'mule', *uk³ar³* or *wuk³ar³* 'chief', or *-in⁴* as in *buč¹in⁴* 'younger wife', and other relationship terms, or *-u⁴/-i⁴* as in *ar³ku⁴* 'cactus' or *kay⁴bi⁴* (Mer dialect) 'axe', or other plant names, etc.

Of all polysyllabics, none ends in a [-High] tone. This is significant. But since all polysyllabics can be viewed either as loans or as based on monosyllabics, the question whether tone in Benčnon is a feature of the syllable or of the morpheme seems somewhat pointless: Benčnon syllables and Benčnon morphemes are the same entity anyway. This by no means limits the Benčnon vocabulary to a few monosyllabics: even without compounds, the syllable pattern presented above (cf. the section on segmental phonology) allows for more than 70,000 different forms, each of which could take six tones theoretically.

The question whether Benčnon tends towards becoming monosyllabic or polysyllabic (again), depends on how Benčnon tone developed, and this will be discussed in one of the next sections.

Lexical tone, minimal sets, and functional load of tone

It has been found that tone does not carry the same information load in each tone language, and this is true even within a group of languages with the same number of tones.²⁵ It is difficult to assess the functional load of tone in any particular language, but the number of minimal pairs in relation to the total lexicon can be considered as a possible measure of this functional load.

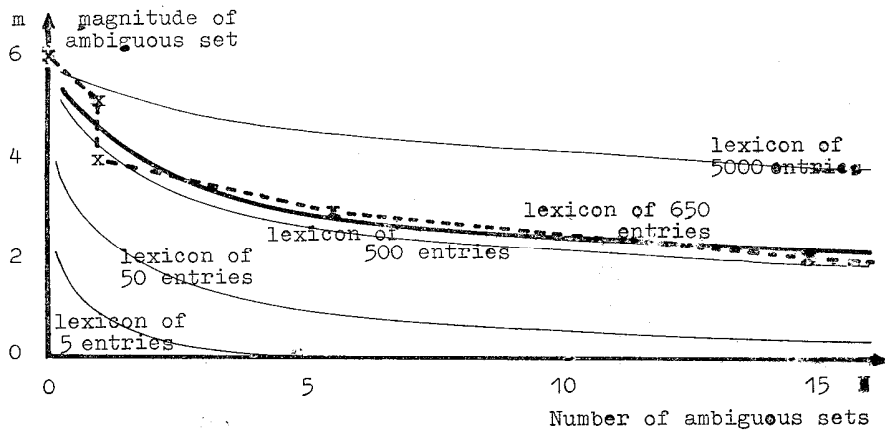


CHART 5

Relation Between Magnitude "m" of Ambiguous Sets.
Number "N" of Sets, and Lexicon Sample Size "ler"

There is a language specific relation between the number of words in a sample lexicon of a language and the number of its minimal pairs, triplets, quadruplets, etc., that is, pairs, triplets, etc. distinguished by tone alone. The number "N" of such minimal sets obviously will increase as the number of lexical entries "lex" increases. On the other hand, "N" should be in a reciprocal relation to the magnitude "m" of the set, where "m" is the number of tonal partners any entry may have.

So for languages in general there should be a universal relation of the kind

$$N = \text{lex} / f(m)$$

which should predict the number (N) of minimal "pairs" (m = 1), "triplets" (m = 2) etc., for any sample size of a lexicon (lex).²⁶

On the basis of these considerations, and for a Benčnon lexicon of 630 entries, this relation was found to be approximated best by the formula

$$N = \text{lex} / (m^4 + 6m + 1) - 0,0011 \text{ lex.}$$

To give an impression of the role of lexical tone in Benčnon, the number of minimal sets which are distinguished by tone alone will be listed here. The figures are based on a total lexicon of about 630 entries:

- 540 words without tonal partners (m = 0), unambiguous
- 71 minimal pairs (m = 1), ambiguous without tone
- 15 minimal triplets (m = 2)
- 5 minimal quadruplets (m = 3)
- 1 minimal quintuplet (doubtful, m = 4)
- 1 minimal sextuplet (m = 5)

This distribution is indicated by "x" in the graph of Chart 5. The Chart also gives the hypothetical number of ambiguous sets for various sample sizes, predicted by the above formula.

In a Benčnon word list, then, about every seventh word will be ambiguous in that it has a tonal partner which can only be distinguished by its tone. (The relation is probably somewhat better than 1 per 7, since in our present word list, minimal pairs etc. may be over-represented.) In written texts, ambiguities will be resolved by the context but tonal ambiguities may still create a problem. It is likely, however, that this will be counter-balanced by an ideal one-to-one representation of segments: in Benčnon there is no vowel length, and there is no consonant gemination that could create ambiguities as in Semitic or Cushitic writing systems.

Lexical tone and phoneme classes

For an explanation of the development of six Benčnon tones in a neighbourhood of languages with two or three tones, the distribution of these tones over the different phonemes (especially the vowel phonemes) should give some cue. Chart 6 displays

the statistics of this distribution. It is based on the collection of about 630 morphemes mentioned earlier. Figures which represent more than the average share of the total lexicon have been marked by “+”, and underlined.

Tones	Syllable Nucleus						
	<u>/Vy/</u> 5%	<u>/i/</u> 9%	<u>/e/</u> 17%	<u>/a/</u> 42%	<u>/o/</u> 11%	<u>/u/</u> 14%	<u>/N/</u> 2%
5	<u>20+</u>	<u>31+</u>	8	3	3	<u>14+</u>	<u>11+</u>
4	<u>20+</u>	19	<u>20+</u>	<u>21+</u>	<u>25+</u>	19	11
3	20	<u>31+</u>	20	<u>29+</u>	25	19	5
2-3	1	0	8	8	9	5	11
2	20	6	<u>20+</u>	<u>21+</u>	13	10	0
1	20	13	24	19	<u>34+</u>	<u>33+</u>	<u>56+</u>
	100	100	100	100	100	100	100

Chart 6

Distribution of Tones over Phoneme Classes

From Chart 6, the following statistical preferences are obvious:

1. /i/ and /Vy/ syllables prefer tone 5, i.e., a high tone.
2. /e, a/ and /o/ have a normal distribution with a slight preference for mid tones, including tone 4.
3. /o, u/ and the syllabic nasal /N/ strongly prefer the lowest tone 1, and /u/ and /N/ also prefer the high tone over mid tones.²⁷

So in general, high vowels tend to choose high tones, and back vowels, both high and low tones.²⁸ But it has to be noted that this is a statistical tendency only and that none of the vowels is linked with one set of tones to the exclusion of others. (The zero for N in tone 2 is meaningless, because it is a coincidence of two low frequencies.) Therefore the phonemic status of all six tones is irrefutable, as far as conditioning by vowels is concerned.

Lexical tone and morphological classes

The same 630 morphemes have been classified into four kinds of morpheme classes, to assess the conditioning of tones by morpheme classes. The classes are divided into roots (nouns, verbs, and others - i.e., adjectives, numerals, pronouns) and suffixes (Benčnon is a suffix language). Chart 7 displays the results.

Tone	Roots Nouns 48%	Verbs 29%	Others 14%	Affixes 9%	Totals 100%
5	7	0	23+	13	8
4	16	22+	11	18	17
3	25	18	19	31+	23
2-3	14+	4	8	0	9
2	16	22	16	6	17
1	23	33+	23	31	27
	100	100	100	100	100

Chart 7

Distribution of Tones over Morpheme Classes

From Chart 7 the following can be noted:

1. Nouns have more than their share of 2-3 glides
2. Verbs with tone 5 have not been found; verbs seem to prefer tone 1.
3. Pronouns and especially adjectives prefer tone 5.
4. Affixes prefer the mid tone, but avoid the glide 2-3.

Of these irregularities, some are insignificant, but some need an explanation. It is easy to see why adjectives expressing an extreme quality or quantity should have tone 5 (e.g., *p'ad³* 'long', *p'ad⁵* 'very long')²⁹ and the same can be said about indefinite numerals (e.g., *kang⁵* 'all', Benč dialect, or *kep⁵* 'all', Shak dialect). But it is not immediately obvious why verbs should avoid tone 5 and cluster around tone 1 and 4. These questions will be taken up in section 5, where some guesses about the genesis of Benčnon tones will be compared with the evidence.

Morphological tone, semantic tone change and sandhi

While tone has been found to make numerous distinctions in the lexicon, the function of tone in morphology, syntax and semantics seems to be limited to certain areas such as the transitivity system of certain verbs, the case distinctions of certain pronouns, and the semantic features of certain adjectives.

There are no morphotonemic rules governing the whole of the aspect or tense system, nor is case as a whole, or any semantic feature, expressed by tone alone throughout the language. So it seems, for instance, that the distinction between

passive/intransitive verbs and active (transitive) causative verbs has been made by tone alone over a certain period in the history of the language, but that in a different period or domain, the suffixation of *-s* or *-as* has taken over.

The same is true for tonal changes caused by sandhi: the Benčnon tone system is characterized by tonal stability, and change of tone caused by neighbouring items is very rare. In the following sections, examples from these different areas will be presented with short comments.

Examples of morphological classes marked by tone

Noun vs. verb
(Tones 1 vs. 4, 2 vs. 3 or 4, and 3 vs. 4)

durš ¹	'piece	durš ⁴	'to break, intr.'
geč ¹	'laughter'	geč ⁴	'to laugh'
gah ¹	'matter, subject'	gah ⁴	'to speak, talk'
ket ¹	'wealth'	ket ⁴	'to become rich'
k'ayč ¹	'work, n.'	k,ayč ⁴	'to work'
bač ²	'piece'	bač ³	'to break, tr.'
		(bač ¹	'to break, intr.')
hayt ²	'thing, matter'	hayt ³	'to say, speak'
mar ²	'pity, n.'	mar ³	'to pity'
wos ²	'message'	wos ³	'to send a message'
tač ²	'thought, idea'	tač ³	'to think'
dač ²	'worms'	dač ⁴	'to be worm eaten, rotten'
nars ²	'wind'	nars(n) ⁴	'to blow, be stormy'
dub ³	'dance, n.'	dub/dug ⁴	'to dance'
č'yad ³	'war'	č'yad ⁴	'to fight'

In a smaller number of cases, the change of morphological class is not accompanied by change of tone:

bom ¹	'change, revolution'	bom ¹	'to change, intr.'
		(bom ⁴	'to change, tr.')
sum ⁴	'kiss, on.'	sum/sunk ⁴	'to kiss'

Passive (intransitive vs. active) transitive causative verbs
(Tones 1 vs. 4, and 2 vs. 4, with causative marker *-s*)³⁰

'ut ¹	'to catch, get'	'uč ⁴	'to give, let get'
sum ¹	'to be named, have 'the name'	sums ⁴	'to name, give a name'
'at ²	'to arrive'	'ač ⁴	'to bring, let arrive'
dont ²	'to start, arise'	dons ⁴	'to raise, let start'
gart ²	'to roll, intr.'	gars ⁴	'to roll, tr., let turn'
wor ²	'to fall, intr.'	wod ⁴	'to fell'

Again there are some cases where the morphological change is not accompanied by a tonal change - or where the tonal change does not seem to be accompanied by a change of meaning:

'ašt ¹	'to be hidden, hide'	'ač ¹	'to hide, tr.'
yit ²	'to stop, intr.'	yič ²	'to cause to stop'
bek ³	'to see'	bes ³	'to show, let see'
bunk ⁴	'to burn, intr.'	buns ⁴	'to burn, tr., make fire'
sur(k) ²	'to sleep'	sur(k) ³	'to sleep'

An interesting case is the following verb, where the causative/active is signalled by tone as usual, but where the tone seems to contradict the segmental 'causative' signal (-s):

pyač¹ 'to number, be counted' pyad⁴ 'to count'

Examples of morphological pronoun classes marked by tone (Tones 1 vs. 3 vs. 4 or 5)

	Subject, focus	Subject, non-focus	Object, oblique cases
'I, me, my'	ta ¹ -	ta ³	ta ⁴
'you sg. . . . '	ne ¹ -	ne ³	ne ⁴
'we exclus. . . . '	nu ¹ (na ³)	nu ³	nu ⁴
'he . . . '	yi ¹ (si ³)	yi ³	yi ⁵
'she '	wu ¹ (sa ³)	wu ³	wu ⁵
'we inclus. . . . '	ni ¹ -	ni ⁵	ni ⁵

Benčnon has a large number of pronoun forms: singular, collective, polite, feminine, masculine, inclusive and exclusive. The forms displayed above are only those which differ in tone. Pronouns of the first column (tone 1) are used when the subject of a sentence is, at the same time, its topic. Those of the second column (tone 3) are used when the subject is not in focus or emphatic, especially when it is preceded by an adverbial phrase. Forms of the last column serve as object, adverbial case (normally with some suffix), or genitive.

Examples of semantic distinctions of degree or quantity in various morphological classes

(All other tones vs. tone 5)

t'um ¹	'to be dark, late'	t'um ⁵	'to be very dark, late'
'ez ²⁻³	'big'	'ez ⁵	'very big'
p'ad ³	'long, tall'	p'ad ⁵	'very long, tall'
'ink ³	'far'	'ink ⁵	'very far'
šot ⁴	'crutch, pointed stick'	šot ⁵	'pointed, sharp'
soy ⁴	'good, well'	soy ⁵	'very good, well'

Examples for tone sandhi

Tonal changes which could be regarded as sandhi are of the following kinds:

Some examples of the pronouns given above could be interpreted as cases of tone sandhi, as far as changes from tone 1 to tone 3 are concerned: The change of *nu¹na³* to *nu³* 'we exclusive . . .' or of *yi¹si³* to *yi³* 'he . . .' etc., could have been caused by the second (optional) syllable which, so to say, passes its tone on to the first syllable and then disappears. Because of some other properties of the pronoun system however, this explanation does not seem altogether plausible.

A second instance of tone sandhi might be the tone of syllabic nasals: In the case of the absolute pronouns the suffix *-n* sometimes seem to carry a syllabic tone, but sometimes appears to be part of the syllable, such as in *ta¹-n¹* or *tan¹* 'I, me (absolute)'. Again, this is not a clear case of tonal change.

The only instance of clear tonal sandhi found so far concerns verbs of tone 3. The verbs *bač³* 'to break, tr.', *bek³* 'to see', *et³* 'to take', and the irregular verbs *wu³* 'to come' (used in certain forms only) and *yist³* 'to be' all change to tone 4 in certain morphological environments.

Examples of tone sandhi in verbs of tone 3:

<i>bač³u²we³</i>	'he broke, tr.'	<i>beč³u²we³</i>	'he saw'
<i>bač⁴arg⁴u²we³</i>	'he didn't break'	<i>bek⁴arg⁴u²we³</i>	'he didn't see'

In these forms, the verb tone 3 seems to assimilate to the tone of the negative suffix *-arg⁴*. It is surprising that these changes have been found only with five of the verbs of tone 3 (though all of them are verbs of high frequency). The same change occurs not only before *-arg⁴*, but also in certain aspect forms such as with *-ns³* (Cf. the text given in the last section of the paper), and in question forms. But with *-ns³* 'habitual/future aspect', the tonal change cannot be explained as a case of assimilation.

Synchronic and diachronic aspects of tone change

In this section, some tone changes and the historical development of Benčnon tones will be considered and described in terms of the contrastive features given earlier. The focus will be on those tones which have the feature [+Shifted], i.e., tones 5, 4 and 2-3, since they seem to be derived from other tones - synchronically or diachronically. It has already been pointed out that these three tones include those with the lowest frequencies (cf. Charts 6 and 7); and this calls for some explanation.

Tone 5 has the features [+High] and [+Glide]. One group of the present words of tone 5 is a group split off from an earlier tone 4. These are the nominals containing

high vowels which still constitute the majority of all words of tone 5. At some point in the history of the language, a 'raising' of the following kind seems to have taken place:

Tone 4	→	Tone 5	
[+High]	→	[+High]	/For /i/ and /u/
[+Shift]		[+Shift]	
		[+Glide]	

The other main group of 'recent' words of tone 5 consists of adjectives and other 'ideophonic' words of 'extreme' semantic features. (Cf. the examples given earlier.) The rule is:

any Tone	→	Tone 5	
[+High]		[+High]	/For [+Extreme]
		[+Shifted]	
		[+Glide]	

In the language today, tone 5 has made itself independent from these conditioning factors. It is now a phonemic tone in its own right and attracts forms of other classes, too. For instance, in reduplicated words the second syllable may take tone 5, and there is a semantic connotation similar to that of ideophones. (For examples, cf. the section on lexical tone and morpheme shape, above.) The rule here seems to be:

Single syllable		1st syll + redupl. syll.	
Low Tone	→	Low Tone	Tone 5
[- High]		[- High]	[+High] /Reduplication
			[+Shifted]
			[+Glide]

Another entire group characterized by tone 5 is a group of pronouns. Here the language seems to have added to the pitch difference between subject vs. object (or genitive) pronouns. As in the examples below, in many sentences the only difference is the one between pitch 3 vs. 4 or 5:

haš ² i ⁵ yi ³ bek ³ we ²	haš ² i ⁵ yi ⁵ bek ³ we ²
'now he saw-he'	'now him saw-he'
'Now he saw'	'Now (he) saw him (the other)'

For the pronouns 'I, you sg., we excl.' the difference is a difference of neighbouring pitches (tones 3 and 4); for *yi* 'he' of the example given above, the additional feature [+Rise] of tone 5 helps to increase the tonal difference and thus resolves ambiguities.

Tone 4 has the features [+High] and [+Shifted]. There are several reasons why tone 4 can be regarded as a basic [+High] tone of a three tone language, which has then developed a higher pitch by an additional feature [+Shifted]. This tone 4, with the features [+High] [+Shifted] must have had a normal distribution of vowels, because today's tone 4 and 5, taken together, have a perfectly normal distribution of vowels. There is some additional evidence for such a development: Some of today's Benčnon High Tone words can be related to Dizi (Maji) High Tone syllables, as in the following example (data from Allan, 1976):

Dizi kaLdnH 'three' — Benčnon kazH⁴ 'three'
 Dizi taHmuH 'ten' — Benčnon tamH⁵ 'ten'

Other words of tone 4 are related to Low-Mid sequences in Dizi, and the evidence is meagre and not altogether conclusive - but it finds some support in evidence from within the Benčnon language itself:

There are alternative forms for some Benčnon (dialect?) words in which we find the same relation between loss of a final vowel and tone 4:

kar⁴ⁱ — kar⁴ 'broad leaf'
 'ark^{3u} — 'ark^{3or} 'cactus'

Another cause for a shift to tone 4 may be the re-interpretation of stress in loan words as 'shifted' high tone: Loans tend to have a rising tone pattern, such as in *za^{3yit}* 'oil', or *ma^{3kin}* 'car'. This conforms with the stress on final syllables in Cushitic and Omotic languages.

Many Benčnon verbs with causative (-s) suffix have tone 4 as well. The loss of a full causative syllable could be the historical background for this. (Cf. the section on morphological classes, above, for examples.) This process could be described as:

Low Tones —————> Tone 4
 [-High] — Causative (-Vs) —————> [- High] — Causative (-s)
 [- Shifted]

It is tempting to regard the similar relation between nouns and verbs (cf. the preceding sections on morphological classes) as a 'change' from underlying nouns to 'derived' verbs. In this case, the 'verbalizing' suffix would have disappeared, leaving nothing but a (doubtful) tone rule:

Low Tones —————> Tone 4 or 3
 [- High] — Verbalizer —————> [- High]
 [- Glide]

A more obvious source of additional verbs of tone 4 is the sandhi rule presented above. (Cf. the preceding section on tone sandhi.) In terms of tonal features, it has the following generalized form:

Tone 3 —————> Tone 4
 [- High] —————> [- High] / — Negat. Suffix
 [- Shifted] —————> [- Shifted]

The last tone to be considered under a diachronic aspect is tone 2-3. In our analysis, tone 2-3 has been characterized as [- High], [- Shifted] and [- Rise], since it seems to be derived from a non-high tone. The class of words with tone 2-3 may be a collection of originally 'long' syllables, and its statistics (Cf. Chart 6) would probably resemble the statistics of long vowels in a related language having such

vowels. At some point in the history of Benčnon tone, the Low tone, [—High], must have divided, with most of the /u/ vowels wandering to tone 1, and most of the (then long ?) /a:/ vowels forming the new class of tone 2-3.

Generalization about the history of Benčnon tones

Conclusions about the development of the extraordinary tone system which we find in Benčnon today cannot be based on much evidence from outside this language itself. That is unfortunate. However, we have important clues in the information which Bender presents in the form of word lists from all neighbouring languages (Bender 1971, 259-262):

For Benčnon and Se, the relation between monosyllabics and polysyllabics is about 10 to 1. But for the neighbouring related languages, it is about 1 to 10. The loss of final syllables quite obviously has led to a greater differentiation of tones in the Benčnon language.

Apparently this has been reinforced by a tendency within Benčnon itself - a tendency which seems to characterize all of the tonal processes described in the preceding sections: initial tones are lowered, and final tones are raised. This generalization is true both morphologically and syntactically:

Within words, the first syllables tend to be lower - as it has been shown for loans, reduplications and suffixes in general. Within sentences, again the initial forms tend to be lower: subject pronouns in initial position and nouns in general have lower tones than word classes which normally belong to the rhematic part of a Benčnon sentence. Sentence final forms, on the other hand are characterized by higher tones: cf. sentence final oblique cases, verbs in general, and ideophonic forms.

This underlying tendency seems to counterbalance any form of downdrift, and it gives Benčnon its distinct musical sound.

'Musical Speech' in the Benčnon Culture

The linguistic information contained in the tones of the Benčnon languages is sufficient for Benčnon speakers to communicate, if the environment supplies some necessary context. Females are excluded from this 'musical' communication, but to males, there seem to be at least three well-defined ways of communicating by tone alone: whistling with the lips, whistling with the hollow of the hands, and plucking the 'krar' - the Ethiopian five-stringed guitar.³¹

Whistling with one's lips is used in a situation where the partner is at close distance, but where one prefers not to give away one's identity, or where there is an atmosphere of playful teasing.

Whistling by means of the hollow hand is used in more serious circumstances, such as when someone tries to establish contact with a relative lost in the crowds of the market, or lost in the thick of the forest. Questions, commands and answers

can be exchanged, and there is an obvious advantage in being able to communicate over long distances where the voice may not carry. The hands are put together in such a way that the insides of both hands touch each other to form an airtight hollow; they are open only at the top where middle finger and index finger of the right hand are spread wide to form a V against the index finger and the thumb of the left hand. The back of the left hand is laid at the chin, and one blows into the hollow of both hands as well as over the lamella formed by the skin between middle and index finger of the right hand. The pitch of this loud, far reaching sound can be varied within somewhat less than an octave by altering the volume of the hollow.

The third way of communicating by tone alone is used mainly in games such as the one described in the text of Endrias Essay. Both the Benčnon krar and the Benčnon language have five level tones - and it would be very interesting to understand the relation between the two. (Cf. the text in the following section.)³²

"The Talking Guitar" by Endrias Essay

ḡong⁴-am⁴ gah⁴ ##
 Krar-by talk-infin. .
 Speaking with the (five-stringed) Krar.

nu⁴ dod³-n⁵ # mat³-a³ga² 'ac³-i³ 'ast¹-a⁴-m²³ #
 our-excl. land-in , one-gen. man-subj. leave-subord.-when,
 In our country, a person may leave (the others for some time),

'uḡ²-n⁵ mat³-a³ga² k'ays¹-a² # 'ac³-a² 'ast¹-uḡ²-i³ #
 that-in one-gen. thing-attr., man-attr. leave-def.-subj.,
 and in this time an object which is known to the person who

'er³-yisk⁵-uḡ²-i³ # 'ač¹-as²-ns³-u²we³ ##
 know-asp.-def.-subj., hide-deriv.-habit.-3ps.sg. .
 has left will be hidden.

'uḡ²-n⁵ nas⁴-a² ḡong⁴ buk³-yisk⁵-uḡ²-i³ #
 that-in man-attr. krar play-asp.-def.-subj.,
 Meanwhile, a guitar player

har²³-k'an⁴ yis³-i³ 'ač¹-as³-na⁴-sa³-n⁵ bek⁴-ns³-u²-we³ ##
 what-in it-subj. hide-deriv.-subord.-where see-habit.-3ps.sg..
 will watch where this object is being hidden.

'uḡ² ya³par³-n⁵ # 'ac³-a² 'ast¹-uḡ²-i³ #
 that after-in , man-attr. leave-def.-subj.,
 After that, the man who left earlier,

s'est¹-i⁵ # wu⁴-ns³-u²we³ ##
 call(pass.)-prtcp., come-habit.-3ps.sg. .
 will be called back and will return.

'uḡ²-n⁵ # nas⁴-i³ har²³-k'an⁴-na³ yis³-i³ 'ač¹-as³-na⁴-sa³-n⁵ #
 that-in , man-subj. what-in- it-subj. hide-deriv.-...at ,
 Then the player will 'tell', by means of (playing)

ḡong⁴-am⁴ hayt³-ns³-u²we³ ##
krar-by tell-habit.-3ps.sg. .
the guitar, where that object has been hidden.

'uḡ-n⁵-d nas⁴-i³ ḡong⁴-da¹dn³ sisk¹-i⁵ #
that-in-and man-subj. krar-from hear-prtcp. ,
And so the person (who seeks) will hear from the krar

har²³-k'an⁴-na³ yis³-i³ yic¹-a⁴-sa³-n⁵ koy¹-i⁵
what-in- it-subj.put-subord.-where- seek-prtcp.
where that object has been put; he will look for it there

yap²³-ns⁴(?)-u²we³ ##
find-habit.-3ps.sg. .
and find it! (April 1981, Addis Ababa)

- 1 Leslau 1958, 135.
- 2 Benčnon or “the Benč people’s language (mouth)”, Phonetically [benc⁴ non⁴] with tone 4 (high) and retroflexed c, is the name used by the speakers of the language themselves. Gimira or Ghimirra was the name more widely used, but it is regarded to be a derogatory term by some. The language is spoken by about 35,000 inhabitants of the Bencho administrative region around Mizan Teferi in the Kefa province of south-western Ethiopia. Unless stated otherwise, data are from the Benč dialect (which is mutually intelligible with Mer and Se) and were provided by Endrias Essay. His cooperation has been appreciated very much, and I also have to thank Colin Battell for suggestions concerning the wording of some passages.

A short time after the completion of the article I received comments and corrections from M. Breeze and D. Perrett which I fortunately can include here: Some verbs of tone 5 have been discovered in the meantime (cf. Chart 7, *passim*); tone sandhi has also been found in rare forms of questions and aspects; the tones of the following morphemes had to be corrected: *woɪ*²⁻³ ‘death’, *sur* (*k*)² ‘sleep’, and *-a*² ‘attrib.’; more information on pronouns will be found in M. Breeze, ‘Gimira pronouns’, to appear in U. Wiese *manned.*, *forth-coming*.
- 3 Gutt’s check lists of 1980 consisted of five lists with level tones, and several collections of glide tone words. Since he had no time to complete the analysis, he asked me to start afresh and falsify or confirm his analysis independently; in spite of initial doubts, I had to confirm it.
- 4 Fromkin 1978, 1.
- 5 Anderson (1978, 146) concludes his survey of tone features saying “a phonological feature system must provide for the description of at least (and apparently at most) five levels of tone.” Benčnon provides further evidence for both of these claims.
- 6 Languages reported to have five contrasting tone levels include Miao of China (Chang, as quoted in Anderson 1978, 147); Trique of Mexico (Longacre 1952); Mazateco of Mexico (Cowan 1948); Dan of Ivory Coast (Bearth and Zemp 1967) and Wobé of Ivory Coast (Flik 1977, 28).
- 7 The classification follows Bender (1976, 3-14).
- 8 Maddieson, ‘Dimensions of tone systems’, 1979, The figures are based on an oral presentation of his paper at the last International Congress of Phonetic Sciences, Copenhagen, 6. Aug. 1980.
- 9 The Map is based on ‘Ethiopia, distribution of mother tongues’, in Bender et. al. 1976.
- 10 “. . . the notion that overall tonal complexity tends to be in inverse proportion to the number of basic tone levels” (Bendor-Samuel 1974, 10f.), finds only partial support in Bendor-Samuel 1974, where Bendor-Samuel presents both simple tone systems with two tones, and complex ones with four.
- 11 Conti Rossini 1925 describes some characteristics and relations of Gimirra and its neighbours (pp. 612-36, esp. 630ff.), and gives word lists taken from Reinisch, Montadon and d’Abbadie (pp. 625-30). The transcription, as Conti Rossini correctly says, “*lascia a desiderare*” (p. 616).
- 12 “The Principles of the International Phonetic Association” 1949 (several revisions), abbreviated as “IPA Symbols”, should be referred to for the symbols used here. The classification of glides is based on Chomsky and Halle (1968, 303).
- 13 Cf. Hooper’s “universal strength hierarchy” (1976, 206).
- 14 Hooper 1976, 199.
- 15 CyV as open syllable has not been found yet.

- 16 Phonetic length of vowels varies with different speakers and most of the words occasionally lengthened have also been found with short vowels. Length occurs with all tones of /a/ syllables, and with the lower tones of /e/ or /o/ syllables. The interpretation of long /e o/ or /i u/ as /ey ow/ or /iy uw/ is ruled out by contrast with forms such as 'eys'² 'tongue'.
- 17 Habtemariam observed this for the neighbouring language, Kafa, too (oral communication), and Maddieson (as quoted by Anderson 1978, 147) reports that it is a common feature of "extreme" tones.
- 18 4% or less have this "fluctuating" length.
- 19 The figures were obtained on the basis of measurements by tuning fork and ear - through some acquaintance with absolute pitch and fundamental frequencies in tone languages. Unfortunately, no laboratory equipment was available for the present study, but the Institute of Language Studies of the Addis Ababa University is presently planning to acquire equipment which will be very valuable for further studies of Ethiopian tone languages.
- 20 Gutt and myself used frames of the following structure: Object - Verb - 3ps. past, for example:
'inč⁵ dons⁴we³ 'he lifted a tree';
mat⁴ dons⁴we³ 'he lifted grass'
 etc., with the objects *'inč⁵* 'tree', *mat⁴* 'grass', *dor³* 'sheep', *gas²⁻³* 'tooth', *gyam²* 'chicken', *sot¹* 'mat', and the verbs *dons⁴* 'lift', *bek'⁴³* 'see', *dekn²* 'hit', and *'ut'¹* 'catch', to cover the whole scale.
- 21 While Chao (1956, 53) views pitch as 'the algebraic sum of tone and intonation', Benčnon appears to resemble the Toura language, of which Bearth says "l'intonation expressive se superpose rarement aux tons . . ." (Bearth and Zemp, 53).
- 22 Endrias Essay always felt obliged to stay within exactly the same intervals as used by the conversation partner when exchanging 'whistled' words. He made no such adaptation in spoken language.
- 23 Maddieson, as quoted by Anderson 1978, 169.
- 24 Cf. Anderson: ". . . any of the systems surveyed is equally (un)satisfactory." (1978, 173). The solution chosen here resembles Stahlke's attempt to include diachronic considerations (Anderson 1978, - 172).
- 25 Longacre (1963, 136) distinguishes languages "in which very few", vs. others "in which many items differ lexically in pitch." Concerning the functional load of their tones he concludes that in the first case, tone need not be written, while in the second, it should.
- 26 Obviously, for any such curve the constant factor *c* must be chosen such that for *m = 0*, *N* equals *lex*, and for *m = -2*, *N* becomes *0*. The steepness of the curve *f'(m)*, is language specific; in a language with heavy lexical information load on tone, *f'* will be such that the curve falls very slowly. Possibly there is a critical value of *f*, beyond which tone cannot be ignored in orthographies.
- 27 M. Breeze comments that *-n³* and *-n⁵* are frequent morphemes. With some more evidence, /i/ and /u/ may prove to be the same phoneme /s/ as /n/ and /m/. It should be noted that Janjero has /mu/ 'to eat' where Benčnon has /m/ (syllabic nasal) 'to eat'.
- 28 Cf. Honbert (1978, 102): "One would expect the development to show that high vowels give rise to high tones and low vowels to low tones. However, historical data illustrating such developments are scanty." We believe that a comparison of Benčnon and neighbouring languages will supply such data.
- 29 This marking of "extremes" by "extreme" tones does not seem to be systematic as in West African ideophone classes (cf. Wedekind 1972, 166, 234f.)

- 30 The causatives assume various forms: /-as, -s/, and /-č/ with plosives.
- 31 Similar customs have been reported for Kafa and Janjero. It should be noted that in Benčnon, a fixed-pitch instrument (the krar) is being used as against a gliding pitch instrument - such as the Yoruba talking drum, or a fiddle.
- 32 The transcription is phonemic. Tone has been written with the morpheme rather than the syllable. Not all of the suffixes have been analysed conclusively yet.

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