# PATTERNS OF NSENGA KALIMBA MUSIC

by

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#### Introduction:

The recordings on which this analysis is based, were made between July 24th and August 7th, 1961, in the Petauke District of the Eastern Province of Northern Rhodesia. Some of them appear on Side 1 of Volume II in the series of three long-playing records, *Music from Petauke*, published by Ethnic Folkways Library, New York.

Dr. Raymond Apthorpe, in his capacity as Research Sociologist of the Rhodes-Livingstone Institute, Lusaka, had already done several months' fieldwork amongst the Nsenga, when he suggested to the acting director of the Institute, Mr. C. M. N. White, M.B.E., that I should be invited to make a brief, but concentrated, study of Nsenga music. I am most grateful to all those who have made this study possible, and especially to the Council of the University of the Witwatersrand, whose Research Committee made a most generous grant to enable me to have a Nagra IIIC Portable Tape Recorder, and to cover some of the costs of preparing this analysis. Above all, I should like to thank the Nsenga musicians who responded patiently and graciously to my enquiries about their art.

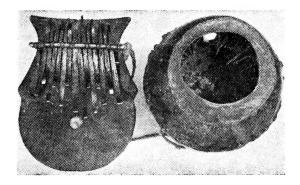


Fig. 1. 14-note kalimba with calabash resonator.

A brief communication on "Fieldwork cooperation in the study of Nsenga music and ritual" appears in *Africa* XXXII, 1, 1962, p.72, and a general introduction to Nsenga music accompanies the three long-playing records: more detailed analyses of other aspects of Nsenga music, especially that of the puberty rituals, will appear later.

The present analysis does not relate the style of the *kalimba* music to that of Nsenga music as a whole, since the other recordings have not yet been analysed in detail; nor does it compare it with *kalimba* music from other parts of Africa. An attempt is made to present the *kalimba* tunes in such a way that we may explore, as far as possible, the musical inclination of their performers, and observe the relative rôles of patterns of movement and patterns of melody in the structure of the tunes. Even if the Nsenga have developed their own types of *kalimba* to suit the general style of their music, it will be seen that unity within the different tunes is assured more by the physical properties of the instrument and the way in which it is played, than by purely musical factors.

The kalimba and ndimba hand-pianos are distinguished chiefly by the layout of their keys (see Fig. 2). Fig. 1 shows a kalimba with calabash resonator, on which tunes I to IV were played. Its manufacture is similar to that of the Lala Kankowela described by A. M. Jones in Africa, XX, 3, 1950, p. 324 ff. The Nsenga instruments differ from the Lala in their shape and the number of their metal keys, and in the covering of the calabash resonator, which is made of animal skin fastened with wooden pegs, instead of with sisal fibre. The Nsenga instruments vary in length from  $4\frac{1}{2}$  to  $5\frac{3}{4}$  inches, the average being about 5 inches. They are played with the thumbs only: the soundboard is held by the two extended first fingers, and the resonator is held underneath with the remaining fingers of both hands, so that it does not quite touch the soundboard.

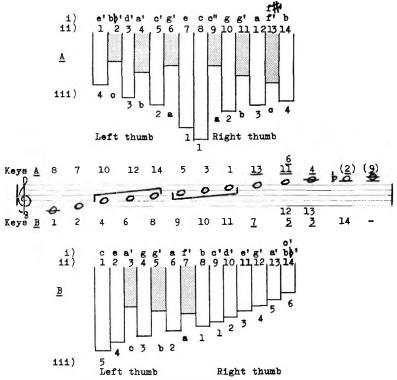


Fig. 2. Diabrams of the keys of (A) kalimba, and (B) ndimba.

(i) Usual pitches of keys, transposed into C.

(ii) Numbers of keys, from left to right.

(iii) Numbers given in this analysis to the 'fingering' of the keys.

Common alternative pitches are given for all keys A13 and B14. In the key numbers which accompany the musical notation, the short keys are underlined.

I studied in detail two *ndimba* and five *kalimba*, and looked at several other instruments of the same class. Though the exact pitch of different instruments varies, the relative pitch of their keys does not, and I only found unusual tunings in those instruments which were adapted for the performance of modern jive melodies, such as No. 6 in the transcriptions, for tunes XVIII and XIX. Fig. 2 shows the basic layout of the instruments studied, with pitches transposed into C. The relative pitch of the first ten degrees of the 'scale' and their position on the *kalimba* keyboard are the same as those of the Lala *kankowela*. As might be expected, not every instrument that I heard or saw was

considered to be in tune, and even the pitch of those keys that were tuned for performance was not always corrected between items, although it sometimes slipped as a result of vigorous playing. Until I have at my disposal satisfactory instruments for measuring the exact pitches of the keys, I am quite satisfied with the approximate indications given by the staff notation. As a matter of fact, the tuning of some instruments was remarkably close to the European scale, and in any case performers were not always unduly concerned by small variations in pitch; for instance, the player of XVI and XVII, who was considered to be good, was not disturbed because the e' on his kalimba (No. 5) was distinctly a quarter-tone flat, and he happily sang e in tune whilst playing it flat on the kalimba.

The diagrams and the numbering of the 'fingering' have been standardised to the pattern of the more common, fourteen-note instruments. Thirteen-and-twelve-note instruments usually lack keys 9, and 9 and 2 respectively; I came across one instrument (No. 6, for tunes XVIII and XIX) which lacked key 7, but this was considered exceptional.

The 'fingering' has been based on European piano fingering, although only the thumbs are used, because contrary motion of the thumbs is more common than parallel motion and is, in any case, inherent in the layout of the keys of the *kalimba*: thus the sequence of 'fingering', R—1 2 3 4 represents contrary motion of the thumbs, whilst L—1 2 3 4

R—1 2 3 4 represents parallel motion. Similarly, in the graphic illustrations of thumb L—4 2 3 1

movement which appear after the transcriptions, the contrary motion of tune I can be distinguished at a glance from the parallel motion of Tune VI. It is hoped that this type of graphic illustration may prove useful in comparing the music of hand-pianos from different parts of Africa.

The kalimba is most frequently played by youths, who repeat simple phrases over and over again, as they walk alone, or with friends. They are, of course much concerned with girls and courting: although they generally play 'walking songs' (nzimbo zo yendalamu) without words, such as tune XX, they give them titles which express the emotions that either underlay their composition, or are at least associated with their performance. The music of such songs appears to be entirely abstract, and the same type of brisk tune can convey equally the resentment that the player feels when his girl goes off in a richer man's car (No. 1), or his pleasure when she shows that she loves him (No. III). In many cases, the apparently different tunes are in fact rhythmic variations on a nuclear pattern of 'fingering' (e.g. Nos. I and II), or even a complete pattern of 'fingering' (e.g. Nos. VIII and IX).

The *ndimba* seems to be an instrument for adults who are semi-professional musicians: I never heard a walking song played on it, and its melodies are either 'transcriptions of songs normally heard in other contexts, such as the funeral song XV, or 'songs for *kalimba*' (nzimbo za kalimba), such as XIII and XVI, which are frequently composed by the performer. The layout of its keys renders it more suitable for melodic work than the *kalimba*, which is ideally suited for 'harmonic' figuration, and this contrast can be seen by a comparison of transcriptions I to X with XIII and XVII. The chief differences between the two instruments, whose keys are tuned similarly, may be summarised as follows—though the features should not be regarded as mutually independent:

Kalimba:
For youths.
Generalized (most youths play).
Private performance.

'Harmonic' figuration and rhythmic variations, short periods.

Ndimba:
For adults.
Specialized (semi-professional).
Public performance (e.g. accompanying songs at beer-parties, etc.).
Melodic basis of tunes, long periods.

Essentially musical doodling.

'Stage presence' and performing gambits expected.

A comparison of the functions of the *kalimba* and the *ndimba* with those of the minipiano and the concert grand is not entirely irrelevant; and there is no doubt that many *kalimba* tunes are the musical results of thumbs wandering 'idly over the noisy keys', whilst the distracted player is 'weary and ill at ease'.

## The structure of the tunes.

In analyses of music for flute and ocarinas<sup>1</sup>, I have shown how musical patterns may be generated by physical factors: this same principle applies more to the analysis of kalimba music than to almost any other type of African music. An analysis of the intervals of tunes I to X (and in such music it is hard to tell which intervals are significant to the performer) reveals no pattern common to the different melodies. But as soon as patterns of 'fingering' and of rhythm are compared, we see that several tunes differ only in so far as rhythmic variations are applied to certain nuclear, or total, patterns of 'fingering' (see especially the notes on tunes I and II, and V, VIII and IX). The contrast between the interval frequencies of kalimba melodies and of vocal melodies that are accompanied on the kalimba, is demonstrated clearly in Table I after the transcriptions. Although the sample is small, there is no reason to believe that the pattern of intervals would change radically if it were doubled or trebled: both the vocal melodies and the kalimba melodies are Nsenga music, and theoretically they should present similar patterns of interval frequency; in fact, their interval frequencies differ because the physical layout of the kalimba conditions the type of tune that is played on it. The most significant common factors of the kalimba tunes are not their melodic structures, but the recurring patterns of 'fingering' which, combined with different patterns of polyrhythm between the two thumbs, produce a variety of melodies. Tunes such as V, VIII and IX are variations on a theme, but the theme is physical and not purely musical.

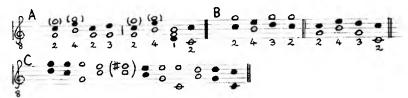
The metrical basis of the tunes is summarised in Table 2, and shows the polyrhythmic foundations of almost every item. Neither thumb has the monopoly of any particular type of rhythm, and the different patterns are generally typical of many other styles of African music: it is as if one person were playing two drums parts together, with the thumbs instead of the hands.

Eleven tunes are based on dotted crotchet values: five have periods of four beats, two of eight beats, one of six beats, one of (6+6) beats, and one of (8+8) beats; No. XI has the unusual pattern of 2(4+5)+2(4+4) beats. The other nine tunes are based on crotchet values: four have periods of four beats, and one of eight beats; No. XIII has (4+4+4) beats, No. XIV has (6+9) beats, No. XVI has (4+4+6) beats, with an interlude of variable length; No. XV has a remarkably long period of 2(6+6)+(4+4)+2(4+6)+(4+4) beats. Ndimba tunes generally have the longer periods, and it may also be significant that most that I heard were based on crotchet beats.

A full discussion of the tonality of the tunes must await the detailed analysis of the Nsenga musical tradition, and this applies particularly to the *ndimba* tunes which are based on recognizable melodies. Most of the tunes transcribed are in the key of the instrument on which they are played, and the tonic of this key (which, in most cases, is essentially the same as a European major) is produced at three different pitches on all 14-note *kalimba* by keys 5, 8 and 9 (see Fig. 2). Tunes XI and XII are notable exceptions: the F sharp should not be taken as a sign that they are in the key of the dominant, nor the B natural that they are in the tonic; they are rather in the Lydian (F) mode, transposed to C. Tune XVI is not in the tonic key of F major, but in the Mixolydian (G) mode, transposed to C (or perhaps in the Phrygian (E) mode, transposed to A).

Assuming that C is the tonic of the scale (see Fig. 2), the two other important notes are E (mediant) and G (dominant), which are produced at two pitches by keys 1 and 7, and 10, 6 and 11 respectively. The 'harmonic' importance of these notes probably ex-

plains why the constitute the bottom three notes of every scale. 'Harmonic' shifts away from the tonic to intervals or broken chords that include these notes, drive the tunes on and achive an effect of shifting tonality, although there is no modulation.



- Fig. 3. (A) 'Harmonic' framework of tune I, transposed into C.
  - (B) Rudimentary 'harmonic' fluctuation based on the tonic, mediant and dominant. The black notes in (A) and (B) are those generally played on the
  - kalimba with the left thumb; 'fingering' is indicated below.
    (C) Synthesis of all the intervals played on the kalimba in the transcriptions. The black notes signify those that are most commonly used.

Tune I is a good example of shifting tonality, and Fig. 3A shows its basic 'harmonic' framework. Fig. 3B shows the most rudimentary form of 'harmonic' fluctuation based on the tonic, mediant and dominant; and a comparison of this with 3C shows that it is these intervals which are in fact most frequently used. In 3A and 3B, the notes played by the left thumb provide an ostinato-like figure which binds together the 'harmonic' fluctuations.

The left-thumb part of tune XII is closely related to the sung melody, and it was the left-thumb part which was crucial in the correct performance of XIX (see detailed notes on transcriptions); furthermore, there is more similarity between the left-thumb than the right-thumb parts of different kalimba melodies. This all suggests that the left-thumb part provides the nuclear theme of the music, though I was unable to clarify this by conversation with Nsenga musicians. Fig. 3 shows its importance in the control of 'harmonic' fluctuations, and in addition Jones's evidence that the left-thumb part of the Lala kankowela reduplicates the melody (op. cit. p. 333) may be cited as evidence in support of its thematic function in Nsenga kalimba music. The function of the right-thumb part, except in ndimba music and those kalimba tunes which merely reduplicate vocal melodies, such as No. XI, is therefore to embroider the nuclear pattern produced by the left thumb. Thus we may say that for the Nsenga kalimba player the tunes are very frequently thythmical variations on a pattern whose significance is primarily 'harmonic', rather than melodic.

The analysis of overt intervals showed no relationship between Nsenga vocal melodies and the *kalimba* tunes, but an analysis of the respective rôles of the left and right thumbs, and of the 'harmonic' foundations of the tunes has revealed certain tonal principles that need not be specially related to the structure of the instrument, but may rather be fundamental features of the Nsenga musical tradition. Although the structure of several *kalimba* melodies is much affected by the physical layout of the instrument and the way in which the thumbs move over the keys, the physical layout, in turn, may be designed to meet the demands of certain tonal principles. It now remains to be seen to what extent these tonal principles are typical of the main body of Nsenga music.

## Notes on individual items.

The numbers of the transcriptions are followed by (a) their numbers on the original tapes, which are stored in the Ethnological Museum, University of the Witwatersrand, e.g. N8/31a (the numbers represent the original sequence of performance); and (b) their numbers in the three records of Music from Petauke, published by Ethnic Folkways Library, New York: since all the kalimba recordings appear

on Side 1 of Volume II, their cut numbers are simply preceded by the letters EF, and a dash indicates any of the original taped items that does not appear on the record, e.g. EF/2a, —, b, c.

The names of performers are followed by their clan-names in brackets.

The transcriptions are based both on the recordings and on the instruction I received in kalimba playing from Nsenga informants. I have not given any of the doodles with which several players begin their performances: these usually consist of a run down the scale and then a few intervals played at random, but always emphasising the key of the tune to be played. If the music of African hand-pianos is to be understood and comparative studies are to be made, methods of transcription must be standardised: I have devised a system of writing the right-and-left-thumb parts under the complete tune, so that the physical foundations of the tune may be discovered, and the graphic illustrations are designed to show the patterns of movement of the thumbs. I hope that these methods may provide a satisfactory basis on which other workers may improve.

Tunes I to IV (N8/31a, b, c, d: EF/2a, —, b, c).

Played by Ackson Zuly (Ng'oma) of Endawalo village, on the 14-note kalimba which appears in the photograph (Fg. 1), on 31/7/61.

He called these walking songs respectively:-

I. She has ridden in Daligeni's motor-car.

II. Come, let us go together.

III. Wait, and I will open up for you.

IV. Come, man, let's dance jive.

I and II are closely related by nuclear patterns of 'fingering':-

R—(2c4b2) 42b L—(2 4 2 3) II. R—1b (2c4b2) b L—21 (2 423) 1

The left-thumb 'fingering' of III and IV is similar-43 (2432) and (2432) 43 respectively. (This might also be compared with the sequence (324) (324) in XII). In general, the thumbs move in contrary motion: in IIIA, the right-thumb elaborates the general drift of contrary motion with parallel motion.

The sequences on the recorded performances of III and IV were:III. (3A+B+C)+(4A+2(B+D)+2(6A+1(D+B))+(11A+2(D+B))+2A.

2A + 9B + 4A + 7B + 4C + 2A.

Tunes V to X (N8/33c, d, b, e, f, a,: EF/lc, d, b, e, f, a).

Played by Taiad ('tired') Mwanza (Banda) of Mawilili village, on a 14-note kalimba on 31v7/61. The titles of the songs were:-

Good morning, mother of Booi.

VI. There are not many of you who are after women.

Let us run out of the rain. VII.

VIII. The wife should kill a chicken, the husband a cow.

IX. 1. Corn that is small gets dry soon.

I have been chewing you for a long time.

The house which has no child.

VIII and IX were originally played consecutively: they have identical patterns of 'fingering', and differ only in rhythm. V has the same tempo as IX, and an almost identical rhythm; its pattern of fingering is basically the same, though what is the first thumb-movement of IX occurs at the end of the phrase:-

R—(21421/21431) V. L--(2414/2413) R--431)(2/4212 VIII.

-133)(24/1424

R-431)(2/4212 IX. L-13)(24/1424

The nuclear pattern for the left thumb also occurs in VI (i.e. 2414). In general, parallel motion of the thumbs is used more in tunes V to X than in I to IV.

Mwanza began both VIII and IX by playing 14, instead of 13, with the left thumb.

Tunes XI, XII, and XIIA (N2/12b, 12a, and N1/lb: EF/5b, —,

XI and XII played by Ackson Lungu (Ng'oma) of Congololo village, on a 12-note kalimba, on 26/7/61.

XIIA played by a youth of a Congololo village, on a 13-note *kalimba*, on 25/7/61.

XI is a funeral song, whose text means, 'Camba has gone away, alas'

The words of XII are:-

1. You have confused me, my orphan child.

2. When I grow up, I will marry a European woman.
The topical words of XIIA are based on those of XII, and refer to a European farmer whose aeroplane crashed:-

Van der Steen, you have lost your aeroplane'. The period of XI is unusual—2(4+5)+2(4+4) dotted crotchets. Although it is entirely different in style from XII, both songs use the same nuclear patterns for the left thumb—324) and 224): there is also considerable similarity between the right-thumb patterns:-

X1. -b c 4 2 c 4/2.

#### XII. --b2c 4b2 c 4/b2b4b2b4.

Tunes XIII to XV (N2/11a, b, c: EF/4a, b, 5a).

Played by Simoni Zulu (Nguluwe) of Cimate village, on a 14-note ndimba, on 26/7/61.

XIII is his own composition:-

'Tear up; European wealth is for us all'.

XIV is a traditional hunting song:"There is meat: they cannot cry for no reason when the mother of Lova has died'.

He omits the solo, 'Where the cultures cry ken, there is meat'.

Another well-known line of this song is, 'They cannot cry (i.e. the vultures) for no reason where the hunters have slept'.

XV is a traditional funeral song:-

Kachepa will be mourned only by the honey-guide (a bird); 1.

He has died a poor man.

The ndimba tunes are basically an accompaniment of the melodies, with the addition of fourths, fifths and octaves.

Tunes XVI and XVII (N7/26a, b: EF/3,—)

Played by Gideon Bingaili (Mwanza) of Mawilili village, on a 14-note ndimba, on 30/7/61.

The words of XVI are, 'We have laughed, kakaka. Let us mourn and look at the beer standing in lines.

The third line of XVII was a topical reference to the puberty ritual of which Dr. Apthorpe was the patron:-

1. Luvemba, my child.

Luvemba was born out of love (lit. a child of the back). 2.

A European has made us dance, Luvemba my child.

Tunes XVIII and XIX (N2/13a and N1/4a, N2/13b-2:EF/-, -, 6b).

XVIII is a composite of two performances. Sikisi Phiri (Tembo) sang Sumbali tsotsi to the accompaniment which is more normally used for vula matambo, which I had heard performed correctly on a previous occasion (NI/4a). He was rather drunk, and after much criticism he resigned in favour of his younger brother, Beliya Phiri (Tembo), who gave three performances of the same song on three different kalimba (Nos. 3, 6 and 7—EF/6), on 26/7/61, at Congololo village. XIX is the second of these three performances, and the transcription shows the 'fingering' which he used for each differently pitched kalimba.

These are melodies for sawa-sawa, the Nsenga version of tsaba-tsaba, a Johannesburg urban dance

which reached Norther Rhodesia in about 1945 and was in vogue in urban areas until about 1952, when it was superseded by jive. It was accompanied by erotic dance movements of the legs and thighs, while the top of the body was kept still. The music was played chiefly on guitars, and this is a 'transcription' for hand-piano.

The words are:-

1. Open up for me, my tsotsi friend.

Open your legs, Evalina.

Tsotsis are the city slickers who live by their wits in urban areas in Southern Africa.

Although the chromatic tuning may be an 'advance' on the traditional Nsenga scale, the graphic illustrations show clearly that in complexity of 'fingering' and rhythm these tunes rank with the most rudimentary patterns.

When the analytical transcriptions are seen side by side, the mistake which Beliya's elder brother was making is clear: the rhythm played by the right thumb in vula matambo, should be played by the left

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in sumbali tstosi, though with the same 'fingering', 2432. L-(2432) also appears as a nuclear pattern in tunes III and IV.

### Tune XX (N1/1a.).

This was the first kalimba tune that I heard in Petauke, played on a badly tuned instrument at Congololo village, on 25/7/61. It was a 'walking song' with a very simple structure; but it embraces the basic principle of polyrhythm between left and right thumbs, which applies to almost all kalimba tunes—R-(b2c4), found in I, II and XII; and L—(2413), found in V, VIII and IX, R—(b2c4) is, in fact, as easily played, 'natural' sequence on the kalimba, in which the thumb slides from the short to the long keys, first to the left and then to the right.

Note: There is a considerable difference between the relative percentages of ascending and descending intervals. When these are taken separately, there is a notable similarity in the frequency of thirds, but differences between the frequencies of seconds and intervals greater than the third, the most marked of which is the high percentage of fourths in the kalimba tunes.

	Kalimba tunes		Vocal melodies	
	Total	Percentage	Percentage	Total
Ascending	71	46.1	23.4	60
Descending	64	41.6	41.0	105
Unison	19	13.3	35.6	91
TOTAL	154	100.0	100.0	256
	Percentage		Percentage	
	A scending	Descending	Ascending	Descending
2nd—minor	2.87	7.87	20 )	25.7
	<b>}</b> 7.0	>32.8	<b>}3</b> 0	>74.3
—major	4.2	25.0	10	48.6
3rd-minor	28.2	12.5)	33.3	10.5
	>53.6	<b>≻28.1</b>	53.3	>20.0
—major	25.4	15.6	20	9.5
4th	32.4	15.6	8.3	4.75
Aug. 4th	_	3.1		_
5th	5.6	1.6	3.3	0.95
6thminor	_	3.1		_
		9.4		
major		6.3		
7th-minor	1.4		1.7	_
Octave	_	7.8	1.7	-
9th-minor			1.7	-
10th-minor		1.6	<del>-</del>	<del>-</del>
TOTAL	100.0	100.0	100.0	100.0

