

### THE MUSIC OF THE BANDA-LINDA HORN ENSEMBLES: FORM AND STRUCTURE<sup>1</sup>

Fieldwork with the aim of recording the overall repertoire of a Banda-Linda horn ensemble led me to the study and analysis of the shapes in which this particular type of orally-transmitted multipart music functions.

Among the Banda-Linda – about 27,000 people residing in a wooded savanna region in the heart of the Central African Republic – horn orchestras are associated with the rites of passage of young boys. They comprise from 10 to 18 instruments whose sizes vary from 30 to 180 cm., and one pair pellet-bells (see Figs. 1 and 2 in the appendix). The 6 highest-tuned instruments, made of antelope horn, have a lateral mouthpiece while the rest, made of wood, are end blown. The repertoire of such orchestras includes about 15 pieces, all of which correspond to traditional folk songs current in the Banda-Linda community.

In order to highlight the musical principles underlying this particular repertoire I propose to submit one of its pieces, the 18-part “*ndereje balendoro*”,<sup>2</sup> to a detailed analysis of all its constituent elements. The purpose of this analysis is to uncover the code underlying a certain message, i.e., to proceed from one of the possible variant realizations of the piece to the implicit pattern which underlines all of them.

A simple audition of the piece – and of all the others in the repertoire – permits the following observations:

1. The scalar system employed is anhemitonic pentatonic;
2. The entries of the different instruments are successive, following a rigorously descending order ranging from the highest pitched horn to the lowest;
3. A period constant in duration, whose time-units are marked by the beats of the pellet-bells, recurs with variations in its musical content.

The opening fragment of the score if “*ndereje balendoro*” is presented here (Ex. 1, 2).

A detailed examination of the isolated parts shows that:

1. Each instrument produces one single tone;<sup>3</sup>
2. With this single tone, the instrument yields a cyclical rhythmic figure, which constitutes a “cell” (by “cell,” we mean the smallest organic unit) characteristic of that instrument;
3. This cell can be performed with numerous variations;
4. It constitutes a clearly defined and readily identifiable discrete unit, whose various realizations can be arranged into a paradigm;
5. The tone of each instrument corresponds to one of the steps of the pentatonic system:
6. The instruments in each of the following series: 1-6-11-16, 2-7-12-17, 3-8-13-18, etc. (see table below) are tuned in octaves; each member of the same octave series has the same name, and performs a similar rhythmic function in each cell.

Thus each 1-6-11-16 is called a *tete*. Those in 2-7-12-17 are called *ta* (see table below).

7. Starting with the highest pitched horn, each group of instruments whose sounds add up to a complete pentatonic system is considered a “family” and is distinguished by its own particular name.

The organization of the ensemble, as emerges from the table on the following page, clearly shows that the Banda-Linda are fully acquainted with the notion of octave, as well as with the individual function of each of the steps within the pentatonic system.

The study of polyphonic music by means of recordings is fraught with numerous problems stemming principally from the difficulty of distinguishing and isolating the different parts, and of precisely defining the shapes of their interweaving. The solution I have adopted to overcome these difficulties consists of the application *in situ* of the technique of re-recording, or “playback,” which makes it possible to isolate and subsequently recombine all the constituent parts of such musical entity (Arom, 1976) (see Figs. 3 and 4).

The transcription and analysis of the piece under study-like that of all pieces featured in the repertoire of the Banda-Linda horn ensembles – show that each of its pentatonic “families” manifests a number of features in common with the other families as defined by:

1. The pitch relationship of the instruments;
2. The rhythmic cells of the individual parts;
3. The root of variations of each, i.e., their “paradigmatic theme”;<sup>4</sup>
4. The mode of interlocking the different parts;
5. The various melodic-rhythmic combinations arising therefrom.

The different “Families” are distinguished by one single feature, that of their register, i.e., the position each one occupies within the overall range. It appears, therefore, that each pentatonic family constitutes a sort of scale model of the whole, since it contains, within the framework of one single octave, all the constituent parts of that whole. It also appears that the different families constitute variables in relation to one another, since they manifest the same musical value (Ex.3).

The piece “*ndereje balendoro*”, like all others of the same repertoire, is composed of the uninterrupted reiteration, in varying realizations, of the rhythmic cells particular to each horn. Every instrumental part thus constitutes a paradigm in the usual sense of the term.

The simultaneous performance, by all instruments, of their respective cell produces a composite formula, a polyphonic cell. Since the piece is based on the varied reiteration of that combinatory formula, the latter also behaves as paradigm. In consequence, if we were to place on the paradigmatic axis all of the combinatory formulas as they appear during a performance, we would obtain a “meta-paradigm” encompassing the totality of the piece, i.e., the entirety of the individual realizations as well as of the combinations performed therein.

We have seen that the instruments tuned in octave show a very marked resemblance in the rhythmic variations they perform, and that they may consequently be considered

as being subject to the same “paradigmatic theme.” It is, therefore, reasonable to conceive beyond the multiple realizations of the “theme” the existence, albeit implicitly, of a unique pattern which constitutes their common point of reference.

On the basis of that hypothesis, I wanted to proceed from the *message* to the *code*, in order to delineate this pattern.

Since the “message” expressed by each pentatonic group of instruments possesses an identical value, it seemed adequate for the purpose of this study to consider a single series. I asked the musicians playing the *ngbanja* family of instruments to perform, under the supervision of the “master of horns,” all the pieces of the repertoire, in the simplest, most unadorned manner, repeating their respective basic cells as strictly as possible.

Several attempts were necessary, due to the difficulty experienced by musicians for whom launching into variations is second nature, to respond to my odd request that they repeat the same cell uniformly, without the slightest alteration, throughout the approximately three minute duration of the piece. However, once the principle was grasped, no obstacle was encountered in performing all the pieces in their repertoire along these lines.

For the piece under study, the formula obtained is the following (Ex. 4).

All the pieces of the repertoire were submitted to passive verification, i.e., to an audition by various members of the community other than the performers, and were easily identified.

A supplementary verification, active this time, was designed to establish the conformity between the piece, as performed by the horn ensemble, and the original melody. With this objective in mind, I asked the musicians to super-impose, upon the previously recorded instrumental “sonorous pattern,” the vocal version of the corresponding melody.

This operation had a twofold purpose: (1) to confirm that we were dealing with an identical musical entity, and (2) should this be the case – and this is a point I consider fundamental – to confirm that the underlying “skeleton” uncovered by this procedure constitutes the ultimate point of reference which functions, albeit implicitly, as a *pattern* guiding each of the players in performing the variations of his “paradigmatic theme.”

A comparison between the “skeleton” of “*ndereje balendoro*”, as shown in Ex. 4, and any conventional piece (i.e., in traditional setting without any interference arising from the re-recording technique) renders it possible to affirm that the formula thus delineated condenses all the relevant feature of the piece, extending beyond the latter’s multiple modes of realization. One is therefore justified in regarding this formula as the pattern of the piece.

The concise presentation in Ex. 5, condensed within a single staff, permits a better grasp of what I would entitle the “economy principle” on which the pattern rests:

- A time cycle of four beats, in which the durations expressed are limited to quavers and semi-quavers;
- In any one cycle, no step of the pentatonic system has total duration exceeding the value of a dotted crotchet;

- All the manifestations of consonance can be condensed into two fifth-intervals (C-G, and A-E), the first of which appears twice (Ex. 6, 7).

The applicational behavior of the pattern, i.e., its pervasive presence underlying the various realizations, is illustrated in Ex. 8, intentionally selected as having a musical text similar to the one presented in Ex. 3, but with all the notes which constitute the pattern being circled.

An examination of this pattern shows that, in effect, it constitutes a melodic-rhythmic motif, whose constituent elements are distributed between the different parts –along a principle analogous to that of the medieval *hocketus* – according to their individual pitches.<sup>6</sup> Thus, the result may be considered as a “staged polyrhythmy,” arranged in tiers rather than as “broken polyphony.”

Viewed from this angle, the rich multipart effect produced in the various realizations results from the interlocking and mutual overlapping of the different instrumental parts (by prolongation of their durations) and from the superposition of aleatory variations represented by each of them.

In order to bring to light the rules which determine the form and underlying structure of the repertoire of the Banda-Linda horn ensembles, I submitted one of the pieces of that repertoire to an analysis of its component elements. The procedure made it possible to:

(1) Discover that each piece is founded upon a melodic-rhythmic formula belonging exclusively to it, and

(2) To demonstrate that this formula constitutes the *pattern* of that piece, i.e. the fundamental organizational principle which shapes all its various realizations.

It is well known that Central Africa is the home of numerous horn and whistle ensembles which use a pentatonic system and in which each instrument produces one single tone, corresponding to one of the steps of that system. Accordingly, it seems probable that the repertoire of many of these ensembles obeys principles of musical structure very closely resembling those described in the present study.

### Notes

<sup>1</sup>Our fieldwork was conducted among the horn players of the ensemble of Ippy, “capital” of the Linda area, in the course of three expeditions in 1972, 1973, and 1974, under the auspices of the *Laboratoire des Langues et Civilisations a Tradition Orale* (LP 3-121) of the Centre National de la Recherche Scientifique (CNRS), Paris.

<sup>2</sup>Transcription of all Banda-Linda terms is based on the phonological alphabet established by France Cloarec-Heiss in *Le verbe Banda*, 1972, Paris, SELAF, *Colloction Langues et Civilisations a Tradition Orale* 3.

<sup>3</sup>In each of the six highest tuned horns, the lateral mouthpiece is flanked at the narrow extremity of the instrument by a playing hole which allows for the production of a second tone, situated at the upper interval of the pentatonic scale; the latter is, however, used solely for the execution of the appoggiaturas, trills and the like.

<sup>4</sup>Following the terminology proposed by Jean-Jacques Nattiez in *Fondements d'une semiologie de la musique*, 1975, Paris, U.G.E.

<sup>5</sup>*Ngbanja* is the group whose register corresponds to the second octave from the top, in which tones are produced with the greatest facility.

<sup>6</sup> See Nketia, J.H.K. "The Hocket Tecjnique in African Music", *Journal of the International Folk Music Council*, vol. XIV, 1962, pp.44-52. See also Koetting this volume.

### References

Arom, Simha. (1976). The Use of Playback Techniques in the Study of Oral Polyphonoies. *Ethnomusicology*, XX (3): 483-519.

Cloarec-Heiss, France. (1972). Le verbe Banda. *Collection Langues et Civilizations a Traditions Orales* 3. Paris: SELAF.

Nattiez, Jean-Jacques. (1975). *Fondements d'une semiologie de la musique*. Paris : U.G.E.

Nketia, J.H.K. (1962). The Hocket Techniques in African Music. *Journal of the International Folk Music Council*, XIV: 44-52.

მაგალითი 1.  
Example 1.

♩ = 132

The first system of musical notation consists of three staves. The top staff is a treble clef with a key signature of one flat (B-flat). It contains a melodic line with eighth and sixteenth notes, including some beamed eighth notes and a half note. The middle and bottom staves are also in treble clef and contain accompaniment with eighth and sixteenth notes, some beamed together.

The second system of musical notation consists of seven staves. The top staff is a treble clef with a key signature of one flat. It contains a melodic line with eighth and sixteenth notes, including some beamed eighth notes and a half note. The middle and bottom staves are also in treble clef and contain accompaniment with eighth and sixteenth notes, some beamed together.

The image displays a musical score for the piece 'Simha Arom. APPENDIX' on page 32. The score is written on 11 staves. The top staff is a vocal line, featuring a melodic line with various note values and rests. The subsequent staves represent the piano accompaniment, with the right hand (RH) and left hand (LH) parts clearly delineated. The music is in a 2/4 time signature, as indicated by the time signature symbol at the beginning of the first staff. The key signature is one flat (B-flat major or D minor). The score includes various musical notations such as eighth notes, quarter notes, and rests, along with dynamic markings and phrasing slurs. The overall structure of the score suggests a short, lyrical piece.

The image displays a musical score for a piece by Simha Arom, titled 'APPENDIX' and found on page 33. The score is written on 14 staves. The notation includes various rhythmic values such as eighth and sixteenth notes, as well as rests. There are several instances of slurs and ties across the staves, indicating phrasing and melodic connections. The music is presented in a standard Western staff notation format. A double bar line is visible at the bottom of the page, marking the end of the section.

This page contains a single system of musical notation, consisting of 18 staves. The notation is written in a traditional style, likely Georgian, and includes various musical symbols such as notes, rests, and beams. The first staff begins with a treble clef and a key signature of one sharp (F#). The music is organized into measures by vertical bar lines. The notation is dense and covers the entire page, with some staves featuring longer notes and beams. The overall appearance is that of a formal musical score.

The image displays a page of musical notation for the piece 'Simha Arom. APPENDIX', page 35. The notation is arranged in 18 staves. The top two staves appear to be vocal lines, while the remaining 16 staves are for piano accompaniment. The music is written in a complex, multi-measure style with various rhythmic values and articulations. The notation includes notes, rests, and dynamic markings, all rendered in black ink on a white background.

This page contains a single system of musical notation, consisting of 18 staves. The notation is written in a traditional style, likely Georgian, and includes various rhythmic values, accidentals, and phrasing marks. The first staff begins with a treble clef and a key signature of one sharp (F#). The music is organized into measures by vertical bar lines. The notation includes eighth and sixteenth notes, rests, and various ornaments. The system concludes with a double bar line and repeat signs at the bottom.

The image displays a page of musical notation, identified as page 37 of the 'Simha Arom. APPENDIX'. The notation is arranged in 18 horizontal staves. The top two staves appear to be vocal lines, featuring melodic phrases with some slurs and accents. The remaining staves are for piano accompaniment, showing a complex rhythmic and harmonic structure with various note values, rests, and dynamic markings. The notation is dense and detailed, typical of a professional musical score. The page is numbered '37' in the top right corner.

This page contains a single system of musical notation, consisting of 16 staves. The notation is written in a traditional style, likely Georgian, and includes various rhythmic values, accidentals, and phrasing marks. The system is organized into two groups of eight staves each, with a double bar line separating them. The notation is dense and complex, typical of a detailed musical score.

The image displays a page of musical notation for the piece 'Simha Arom. APPENDIX', page 39. The notation is arranged in 18 staves. The top two staves form a grand staff, with the upper staff in treble clef and the lower staff in bass clef. The remaining 16 staves are individual parts, each with its own clef (treble or bass). The music is written in a complex, rhythmic style, featuring many sixteenth and thirty-second notes, often grouped in beams. There are several measures with rests, and some measures contain chords. The notation is dense and detailed, typical of a full score or a complex instrumental arrangement. The page number '39' is located in the top right corner, and the title 'სიმჰა არომი. ღანართი' and 'Simha Arom. APPENDIX' are in the top left corner.

მაგალითი 2. პირველი საყვირის პარადიგმის ფრაგმენტი.  
Example 2. A fragment of the paradigm of horn 1.

The image displays a musical score for a horn, consisting of 12 staves of music. The notation is in a single system, with each staff containing a line of music. The music is written in a key signature of one flat (B-flat) and a 2/4 time signature. The notation includes various rhythmic values such as eighth and sixteenth notes, as well as rests. There are several slurs and accents throughout the piece, indicating phrasing and emphasis. The score is presented in a clear, black-and-white format, typical of a printed musical score.

მაგალითი 3. პარტიტურის ფრაგმენტი, რომელშიც ნაჩვენებია *ngbanja*-ს „ოჯახი“ (ზემოდან მეორე ოქტავა).

Example 3. Extract of the score showing *ngbanja* “family” (second octave from top).

The image displays two systems of musical notation, each consisting of five staves. The notation is in a Western staff format with a treble clef and a key signature of one flat (B-flat). The music is written in a rhythmic style characteristic of traditional West African music, featuring a mix of eighth and sixteenth notes, often grouped in pairs or fours. The first system contains five measures of music, and the second system contains four measures. The notation includes various rhythmic values, rests, and phrasing slurs. The overall structure suggests a melodic line with a complex, syncopated rhythm.

მაგალითი 4.  
Example 4



მაგალითი 5 *ndereje balendoro* -ს – მოდუსი.  
Example 5. The Pattern of *ndereje balendore*



**მაგალითი 6.** მოდუსების რიტმული განლაგება.

**Example 6.** Distribution of the pattern into rhythmic cells.



**მაგალითი 7.** მოდუსის ერთ-ერთი შესაძლო ვარიანტი.

**Example 7.** One possible realization of the pattern.



**მაგალითი 8.** მოდუსის მუდმივი ფორმა.

**Example 8.** Constant presence of the pattern.



მაგალითი 8. (გაგრძელება).  
Example 8. (Cont'd).



ცხრილი 1. 18 ინსტრუმენტის ანსამბლის ორგანიზაცია.  
Table 1. Organization of an 18-horn ensemble.

Group	Family	Register	Names of Instruments and their Corresponding Tones				
			აბა	ბე	გე	დარა	ეზა
I	რეპე		Horn 1 = g <sup>2</sup>	Horn 2 = e <sup>2</sup>	Horn 3 = d <sup>2</sup>	Horn 4 = c <sup>2</sup>	Horn 5 = a <sup>1</sup>
II	რეპე		Horn 6 = g <sup>1</sup>	Horn 7 = e <sup>1</sup>	Horn 8 = d <sup>1</sup>	Horn 9 = c <sup>1</sup>	Horn 10 = a <sup>0</sup>
III	რეპე		Horn 11 = g	Horn 12 = e	Horn 13 = d	Horn 14 = c	Horn 15 = A
IV	რეპე		Horn 16 = G	Horn 17 = E	Horn 18 = D	-	-

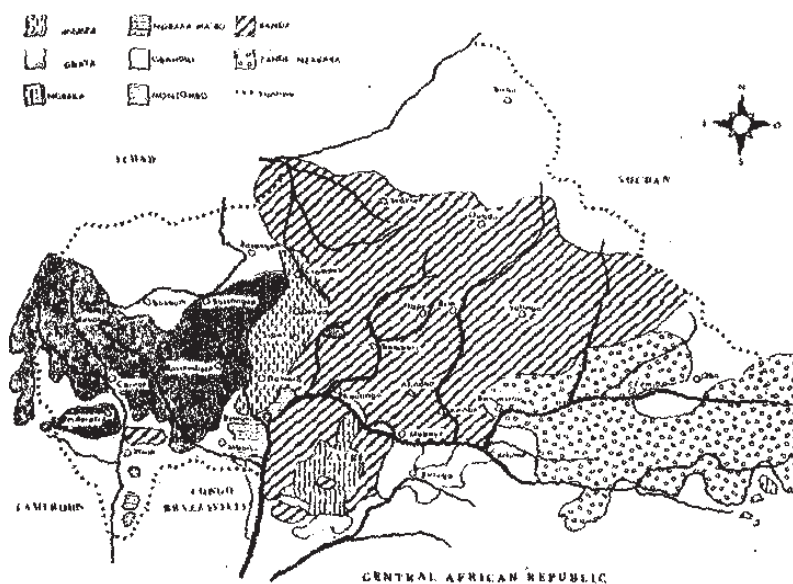
**ჰორიზონტალი:** ინსტრუმენტები განლაგებულია შესაბამის "ოჯახებში".

**ვერტიკალი:** ინსტრუმენტები განლაგებულია ერთი და იგივე დასახელების მიხედვით, მაგრამ მიკუთვნება სხვადასხვა "ოჯახებს".

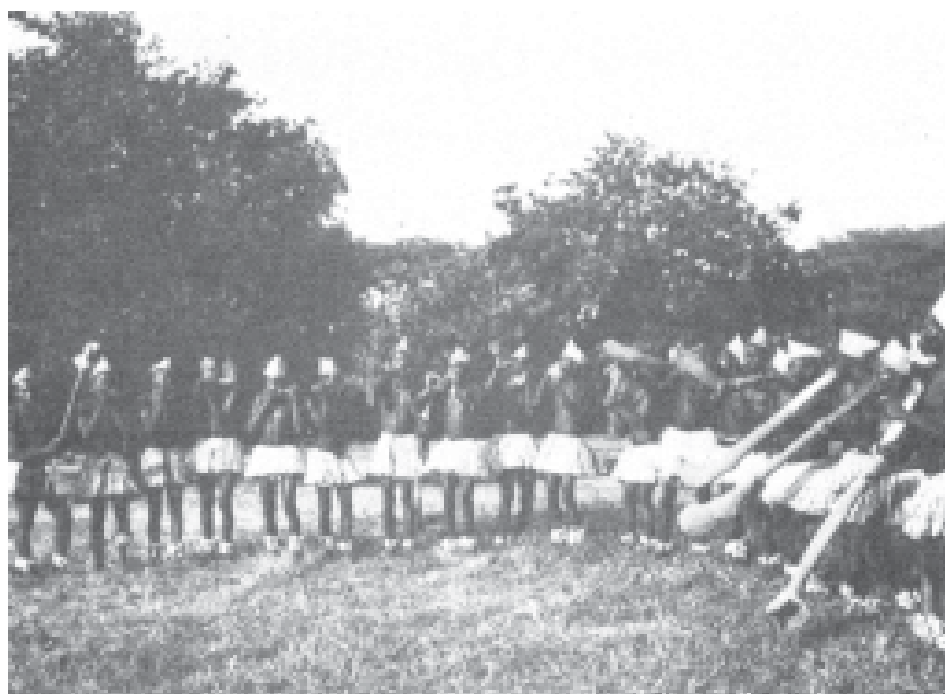
**Horizontal:** Distribution of the instruments within their respective "families."

**Vertical:** Distribution of the instruments of same designation, but belonging to different families.

სურათი 1. ბანდა - ლინდას ტერიტორია.  
Figure 1. The territory of the Banda-Linda.



სურათი 2. 18 ჩასაბერი საკრავის ანსამბლი.  
Figure 2. The 18-horn Ensemble.



სურათი 3. მე-2 ნიმუშის ჩანერა და გადაწერა ორი ჩამწერით.  
Figure 3. Recording and “re-recording” the pattern 2 by 2.



სურათი 4. მე-2 ნიმუშის ჩანერა და გადაწერა ორი ჩამწერით.  
Figure 4. Recording and “re-recording” the pattern 2 by 2.

