

EIGHT FLUTE TUNES FROM BUTEMBO, EAST BELGIAN CONGO

—an analysis in two parts, musical and physical

by

JOHN BLACKING

PART I

INTRODUCTION.

The eight tunes were recorded by Mr. Hugh Tracey on July 24th, 1952, at Butembo, near Lake Edward, North-East Belgian Congo.¹ The performer was Katsuba Mwongolo, a Nande herdsman who roams the highlands on the eastern border of the Congo where the hills run alongside the great western rift opposite the Ruwenzori Mountains. Mwongolo plays the flute all day to his goats and has developed, so they say, a distinct style of his own.

THE NANDE.

Nande is the name given to those of the Konjo tribe who live in the Belgian Congo. The word Konjo means 'mountain people', which aptly describes the environment of the tribe. Probably as a result of pressure from the neighbouring Nyoro-speaking kingdoms of Uganda, the Konjo have occupied almost the whole Ruwenzori range. (See Trowell and Wachsmann, '53, page 7 et seq.) The Congo members of the tribe, the Nande, are according to Schebesta essentially inhabitants of the open country, in their manners and customs radically different from the forest-dwellers, but having much in common with the Nyoro. "The Nyoro-speaking peoples call the Konjo *Songora*, which means people who file their teeth to points." (op. cit. p.8)

NANDE MUSIC AND MUSICAL INSTRUMENTS.

For a full account of Nande musical instruments see under musical instruments of the Konjo. (op. cit Part II).

I have not been able to hear enough recordings of Nande music to attribute to it any special characteristics. It is possible that an intensive study of Nande/Konjo music would show a close affinity with the music of the Nyoro-speaking peoples. Some Nande/Konjo scales are tabulated below for comparison.

Mwongolo performs on a four-holed, notched Nyamulera flute. For a full description of a similar instrument see Part II of this paper. "The word *ENDERE* or *NYAMULERE* is widely known for the four-stop instrument". (op. cit p. 339) "Notched flutes are popular almost everywhere" in Uganda . . . "the name *NYAMULERE* betrays the Nyoro origin of the flute . . ." "In Konjo a popular ensemble is formed by a trio of three tall bamboo flutes accompanied by a Uganda drum. As a solo instrument the notched flute had a glorious past in Ganda, where it has fallen into neglect." (op. cit. p. 340).

In the three photographs of players of notched flutes which appear in Trowell and Wachsmann '53 (Plates 99 and 100 A and B), the left hand is always held above the

¹ Four of them (Nos. V-VIII) are available on one disc (Gallotone GB 1703): Nos. V and VI were awarded a prize in the 1952 Osborn Awards, so that they appear also on Decca LF 1171 (No. 6 in the 'Music of Africa' series). The research numbers of the eight items are F4A-1 to F4A-4 in the African Music Research Library. Copies of the recordings are obtainable through the International Library of African Music.

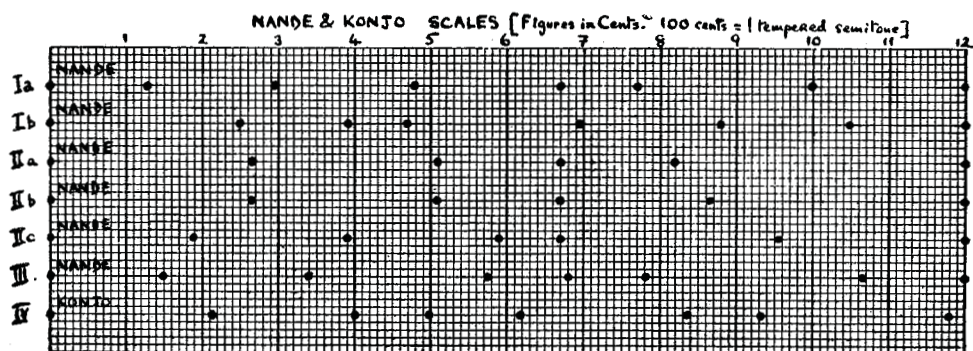
right hand, as with most European wind instruments. It is interesting that Mwangolo holds his instrument with his left hand below the right hand. (see photo).

COMPARATIVE TUNINGS OF NANDE AND KONJO INSTRUMENTS.

The following tunings were recorded in the field by Mr. Hugh Tracey in 1950 and 1952:—

1. **Nande.** Two *likembe* mbiras², recorded at Butembo, 24.vii.52.
 - (a) *KASAYU likembe* mbira. (21-note)
 - (b) *Likembe* box-mbira. (10-note)
 2. **Nande.** Three different *likembe* mbiras, recorded at Mbau-Mbili, near Beni some 30 miles north of Butembo, 25.vii.52.
 - (a) *MANG'BARU likembe*.
 - (b) *KATIMA likembe*.
 - (c) *KILIYO likembe*.
 3. **Nande.** One *CHINANGA* harp, recorded at Butembo, 24.vii.52.
 4. **Konjo.** *ILENGA* flute ensemble. (10 differently pitched pipes).
 1. (a) v.p.s. 364, 392, 432, 480, 536, 568, 648, 728
 intervals in Cents 128 - 168 - 182 - 192 - 100 - 228 - 202
 Scale in Cents 0 1.28 2.96 4.78 6.70 7.70 9.98 12.00
 - (b) v.p.s. 284, 328, 356, 372, 424, 472, 520, 568
 intervals in Cents 249 - 142 - 76 - 227 - 185 - 168 - 153
 Scale in Cents 0 2.49 3.91 4.67 6.94 8.79 10.47 12.00
 2. (a) v.p.s. 364, 424, 488, 536, 584, 728
 intervals in Cents 264 - 243 - 163 - 148 - 382
 Scale in Cents 0 2.64 5.07 6.70 8.18 12.00
 - (b) v.p.s. 364, 424, 488, 536, 600, 728
 intervals in Cents 264 - 243 - 163 - 195 - 335
 Scale in Cents 0 2.64 5.07 6.70 8.65 12.00
 - (c) v.p.s. 364, 406, 456, 512, 536, 632, 728
 intervals in Cents 188 - 202 - 200 - 80 - 284 - 246
 Scale in Cents 0 1.88 3.90 5.90 6.70 9.54 12.00
 3. v.p.s. 158, (172), 192, 220, 234, 248, 292, 316
 intervals in Cents 148 - 190 - 236 - 107 - 101 - 282 - 136
 Scale in Cents 0 1.48 3.38 5.74 6.81 7.82 10.64 12.00
- N.B.—There are 8 strings on the harp. The eighth is in fact pitched above the seventh (344 v.p.s.). I have included it in the scale an octave lower.
4. v.p.s. 336, 380, 424, 448, 480, 544, 576, 664, 736, 776
 intervals in Cents 213 - 190 - 95 - 119 - 217 - 99 - 246 - 178 - 92
 Scale in Cents 0 2.13 4.03 4.98 6.17 8.34 9.33 11.79 1.57 2.49

² This type of instrument is often called *sanza*. This name is understood by only one small group, whereas the generic terms *likembe* and *mbira* are understood over vast areas respectively north and south of the Zambezi river. The International Library of African Music has adopted the word 'mbira' to refer to this class of instruments throughout Africa, so that it is not printed in italics, and an English plural form is used.



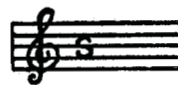
One significant factor emerges from a comparison of the scales quoted above: it is dangerous to generalize about the music of a single tribe on the basis of knowledge of only a limited number of instruments or styles of music. There are less than twenty examples of Nande/Konjo music in the International Library of African Music; but they are sufficient to suggest that these people recognize and use pentatonic, hexatonic and heptatonic scales, as well as a variety of methods of constructing the intervals of these scales.

Scales Nos. Ia from Butembo and IIa, IIb and IIc from Beni have in common the interval of 670 cents, as well as a tonic of 364 v.p.s. IIa and IIb are pentatonic and identical except for the fourth note, which is sharper in IIb. IIc and Ia are hexatonic and heptatonic respectively; it is possible that there is a greater affinity between them than at first appears; if the tonic of IIc is shifted so that its first interval coincides with the second interval of Ia, then the scales have more in common. Further observations seem unwise, in view of the lack of evidence: enough has been said to demonstrate the variety of Nande scales.

NOTES ON THE TRANSCRIPTIONS.

The transcriptions have been checked and re-checked several times and represent the original performance as nearly as possible.⁸

All slurs indicate notes played without separate tonguing: where groups of three or five notes are played in one beat (or half-beat) but with separate tonguing, they are bracketed with a straight line. (e.g. Tune I, bars 25, 45, 46, 47 etc.) Notes marked ⊗ were 'fluffed' in performance. Unless otherwise marked note-values remain constant throughout each piece, in spite of changes of time-signature. Almost all *rallentandi* and rests have been written out in full: bar-lines have been inserted merely for clarity and convenience, and as far as possible follow the underlying rhythm of the music and the shape of the phrases. In some cases where I have felt it wrong to force the music into a metrical straitjacket, I have used the sign meaning *senza tempo*. The constant changes in time signature are not to be taken as indications of rhythmic complexity: in Tune I, for instance, the time-changes in Bars 5-28 are indicated solely for the purpose of study; if a composer were in fact writing out bars 5-15 he would indicate 3/4 time throughout, and mark the passage *agitato*.



⁸ In *Problèmes d'Afrique Centrale*, No. 26, 1954, Monsieur Paul Collaer gives transcriptions of M'wongolo's Tunes Nos. V and VII. In certain details my transcriptions do not agree with his. The higher pitch which he has accorded to No. V can, I think, be explained by the fact that the version on the record is not at the same pitch as that on the original tape, which was available to me.

Since I have attempted to transcribe the passage exactly as I hear it, I cannot make allowances for the performer's pauses for breath or his excited attack of a second bar before he has given full value to the first. It cannot be emphasized too much that the *tempi* and phrasing which I have marked, the analyses of tonality and form which I have made, are the product of ears and a mind trained in European musical traditions. Katsuba Mwongolo, if he were able to read, might regard these analyses and transcriptions as complete nonsense; it is just possible that when we think of melodic line he may be thinking in terms of pleasant sensations which he derives from moving his fingers on and off the holes of the flute according to certain rhythmic patterns (see Part II of this paper). There is inevitably an unassailable gap for Europeans who study African music; it is impossible to be absolutely objective. The last word on African music must always be spoken by Africans themselves.

INDIVIDUAL ANALYSIS OF THE EIGHT TUNES.

Note:—The compass of the tunes is almost always within the octave d'' to d''' , excluding the differences of an octave which occur in some items. Therefore the following notation is used in this section of the paper, for the sake of simplicity:— D E F G A B C d e f g a. The tones e to a are rarely used, and more often than not they are the result of a 'fluff'.

I have divided each analysis into two parts, under the headings 'Rhythm' and 'Melody: Tonality and Form'. I use the word 'rhythm' to cover all aspects of time—metre, accent, period and tempo—since rhythm, which means literally 'flow', is the overall, personal combination of these aspects of music.

Sva. throughout. ($\text{♩} = 192 \text{ M.M.}$)

I.

1 2 3 4

5 6

7 8

9 10

11 12

13 14

agitato.

ff

15 16 17

18 19

20 21

22 23 24

25 26 27

28 29

30 31 32 33

(♩ = 208 M.M.) 34, 36 35, 37 38

(♩ = ♩) 39 40 41 42

43 44 45 46 47 48

[1' 27"]

RHYTHM.

Bars 5-15 are dominated by groups of three beats; the first two beats are always 8 separately tongued semiquavers, which are brought to a halt on the third beat: in bars 5-7 the third beat is straightforward, but for the remaining 8 bars added interest is given

by off-beat accents. Each group of three beats corresponds to a single breath taken by the player. The period is of two bars' length.

In bars 16 and 17 the triple time is abruptly broken by two fanfare-like figures, which lead to a basic duple time, which is maintained to the end of the piece. A semi-cadential ending to the first section is provided by the repetition of a figure (bar 20) which also announces the smoother, slurred playing which now persists to the end.

In bars 23- the end there is syncopation and suggestion of triple time within the framework of the two-beat phrase. Once again the period is of two bars' length. Note the predominance of the 3+3+2 division of phrases in bars 34-42; and how this gives a cumulative effect, brought to a sudden close by the Coda. Compare bars 34-42 with 20-22 for similar rhythmic effect.

MELODY, TONALITY AND FORM.

The 'fanfare' announces the descending scale of the first motive d C B A. In bars 5-10 this descending motif is repeated with variations, followed alternately by a rising or a descending figure. The melodic line is based on falling and rising 3rds:—

d B G B d, d B G E G
 d B G B d, d B C A G B,
 C A G B C A, d B G E G.

Thus the tonality follows a formal pattern:—

d , G : d , G : C A , d G.

Bars 11-15 begin as an answer to bars 5-10, following the same pattern of three-beat phrases. Bar 11 (tonality G B), beginning with the figure GBBG, is answered by bar 12 (tonality B G), beginning with the inverted figure BGGB. Moreover the melody now tends towards the lower registers of the instrument, in contrast to bars 1-10. Bars 13-14 (tonality G, D E), instead of imitating bars 11-12 (as bars 7-8 imitate 5-6) lead to a new tonality (E) and to a surprise return of the fanfare theme (syncopated) in bars 16 and 17 instead of the expected 6th bar in imitation of the first section (bars 5-10).

Bars 18-22 are a cadential ending to the first part, following the entry of the fanfare motif.

Bars 23-29 appear to be a development of the fanfare motif, beginning tautly and rather deliberately at the top of the register, and then relaxing into fast and freer time (bars 27-29) after the manner of bars 20-22.

Bars 30-42 consist of a number of phrases each made up of the statement of a motif and its response.⁴

⁴ The words 'call' and 'response' are often used to describe the structure of African music of an antiphonal nature. I do not find these terms sufficiently exact to cover all aspects of this typically African musical form; in this paper I shall differentiate between two main types of 'call' and 'response' pattern:—

(1). **Statement and Response.** (abbreviation S & R). In this case a short motif is followed by another answering motif of more or less equal length, and often a direct imitation of the Statement. The Response may be different each time that it is repeated. Examples are:— Tune I, bars 5-10; Tune II, bars 1-4; Tune IV, bars 1-24 etc. The equal length of the phrases in passages such as Tune VIII, bars 7-14 brings them into the category of Statement and Response, although the Response is the same each time. The point is that the Statement is also the same, and the whole passage is merely a repetition of one S & R pattern rather than a series of Statements and Responses.

(2). **Statement and Refrain.** (abbreviation S & RF). Whereas the S & R might be called primarily an instrumental form, since the two halves are of equal complexity and should remain under the control of one performing unit, the S & RF pattern is derived from vocal patterns where there are the two performing units of Solo and Chorus. The Refrain remains virtually the same each time it is played or sung, while the Statement varies considerably and is usually somewhat longer than the Refrain. Examples of S & RF pattern in Mwongolo's performance are:— Tune II, bars 5-19; Tune III, lines 2-8. An interesting combination of S & R and S & RF patterns is found in Tune VIII, bars 32-47.

Bars 30, 31 (melodic basis d C A, d B G: tonality G (C) A, (d) G) are repeated and then answered by the similar bars 34-37 (melodic basis G D A, A D G: tonality G A, A G). The phrase (bars 34, 35) is apparently to be repeated a third time, when it is interrupted (cf. bars 15-17) by two similar phrases (bars 39-42: melodic basis d B G, d B A; tonality d G, d A) which terminate the third section, and lead to the Coda. The Coda begins with a rising scale which culminates on e, the highest note in the whole piece that is used prominently, and falls to B, giving the impression of tonality E. The A in bar 43 functions tonally not unlike a dominant 7th, but rises instead to the 5th B.

The overall Form of the piece may be said to be as follows:—

A - B B' - A' - C - coda.

There is a certain similarity between the form of Sections 2 and 4 (cf. especially bars 11-17 and 34-40; note how the phrases begin on higher notes and are answered by phrases made up of lower notes)—so that it might be more accurate to interpret the formal design:—

A - B B' - A' - b b' - coda.

In this and in all ensuing assessments of the form of these tunes it is, of course, impossible to know if Mwongolo's music was carefully planned or intuitive.

II.

Sva. throughout. (♩ = 200 M.M.)

The musical score for Section II consists of seven staves of music in G major. The tempo is marked 'Sva. throughout. (♩ = 200 M.M.)'. The score includes bar numbers 1 through 21. The first staff contains bars 1-4, the second staff bars 5-8, the third staff bars 9-12, the fourth staff bars 13-16, the fifth staff bars 17-19, and the sixth staff bars 20-21. There are two '1st. time' and '2nd. time' markings above bars 6 and 9 respectively. Some notes are circled in the original manuscript, including the first note of bar 1, the first note of bar 2, the first note of bar 3, the first note of bar 4, the first note of bar 5, the first note of bar 6, the first note of bar 7, the first note of bar 8, the first note of bar 9, the first note of bar 10, the first note of bar 11, the first note of bar 12, the first note of bar 13, the first note of bar 14, the first note of bar 15, the first note of bar 16, the first note of bar 17, the first note of bar 18, the first note of bar 19, the first note of bar 20, and the first note of bar 21.

RHYTHM.

It is difficult to postulate a rhythmic plan for this item. It is a mistake to think that there is any significance in the alternations between 5/8 and 6/8 time in bars 5-19. These time-signatures were inserted for convenience: even so these bars do follow a similar rhythmic pattern, which appears quite clear both when one hears the tune and when one sees the bars written symmetrically as they are in the transcription. The form of bars 5-19 is antiphonal, with a S & RF pattern. The figure (bars 6, 9 etc.) is not strictly in 6/8 time.

MELODY, TONALITY AND FORM.

The melodic line of bars 1-23 might be called 'pathogenic' (see Sachs '43, page 41), with the "voice" beginning high in the register and relaxing. Almost every phrase begins with the flute's highest practical note, d, and continues with a run downwards d C B A G, or variations on this figure. The melodic basis of bars 1-4 is:—

d (B G) C B A, d (A) C B A
d C B a G E, C B G E.

Compare this with bars 20-24:—

d (B G) C B A, d A C B,
d A C B G, C G B A.

The melodic basis of bars 5-7, 8-10 etc. is:—

d (B G) C B G E A: d C B G.

Bars 5 and 6 are in fact an elaboration of the first motif (bar 1).

The Coda is derived melodically and tonally from preceding motifs. The final A in bar 29 'leads', as does that in bar 43 of Tune I; but the D E G of the following bar give the final B a flavour of tonality G, rather than E.

The overall form of the tune is:—

A - B - A' - coda (A and B)

The form of A and A' is that of Statement and Response, whereas that of B is Statement and Refrain.

(♩ = 100 M.M. approx.) *Bra. ad fin.* III

1 2 3 4 5 6 7 8 9 10 11 12

W accelerando

a tempo

Detailed description: This musical score consists of 12 staves of music in G major (one sharp). The tempo is marked as approximately 100 M.M. (♩ = 100 M.M. approx.). The score begins with a first ending bracket over the first two staves, labeled 'III' and 'Bra. ad fin.'. The music features a variety of rhythmic patterns, including eighth and sixteenth notes, often grouped in threes. Performance instructions include 'W accelerando' (with accelerando) above the fourth staff and 'a tempo' above the fifth staff. The score concludes with a final cadence on the twelfth staff.

RHYTHM.

This item has so much the flavour of recitative, with its overall S & RF pattern, that a detailed examination of the rhythmic elements and any attempt to put order into the variety which emerges can only lead to involved conclusions which are probably false. Nevertheless a glance at the transcription shows considerable rhythmic similarity in the S & RF phrases (lines 2-9) and the S & R phrases (lines 10-13).

MELODY, TONALITY AND FORM.

In the Introduction, after a series of rhythmic adornments on tonality E, the antiphonal refrain, which is the core of Part I, is announced. Melodic basis:—

E G B (A) G D.

Throughout Part I (lines 2-9) the melody follows the curve suggested in the introduction: it is not pathogenic: in the Statement, the melody rises and falls; in the Refrain it rises again, though not as much as in the Statement, and falls. The melodic basis of lines 2/3 is:—

A B G d (C) B G E: B (A) G D.

This is also the melodic basis of lines 3-8. The tonality might be interpreted as: (A) (B) G: G D, similar to that underlying the Introduction.

The transition from tonality G to D is quicker in Part II, where the form is rather that of S & RF. This form, with the quicker shift of tonality and more definite rhythmic impetus, creates greater tension, so that the tune moves on quickly to the Coda, which is altogether sudden, and cuts into the middle of a S & RF phrase. The sudden shift of tonality to E at the end of the piece is effective, and reminds us of the Introduction. (Note that although each Statement in Part II is almost entirely of tonality G, the final shift to A is strong enough to produce a definite feeling of tonal shift from G to D, which is repeated in the Response.)

The overall form of the tune is:—

A - B - b - (coda).

Viv. Throughout. (♩ = 100 M.M.) **IV**

1 2 3 4

5 6 7 8

9 10 11 12

1st time. 13,17 14,18 15,19 16,20

2nd time.

21 22 23 24

25 26 27

⊗ 28 29 30 31

32,34 33,35 36 37

38 39 40 41

42 43 44 45

46 47 48 49

RHYTHM.

The rhythmic structure of this tune is clear. Part I (bars 1-24) consists of regular phrases in steady duple time: it might be more accurate to halve the number of bars, and write either the time signature 4/4 or 2/2: but there is a slight hiatus in the middle of each phrase, implied both in the melody, tonality and rhythm, which caused me to use a 2/4 time signature. The 5/8 bar is in fact a 2/4 bar, written thus because the player pauses to take a breath before beginning the next phrase. Bars 2, 4, 6, 8, 10 etc. are really variations of the same Response, so that there is an underlying structure of 1-bar phrases grouped in pairs. This structure, in regular 2/4 time, is brought to the fore in bars 25, 26, and dominates until the coda, when there is a brief allusion to the former 2-bar phrase pattern.

MELODY, TONALITY AND FORM.

The basis of the melodic line in Part I is:—

d (C) B G (F#) E: A F# D G (F#) E,
the basic tonality being G E: A D G E.

The form of Part II is a straightforward S & R pattern, each Statement and Response of which might be further subdivided into S & R patterns.

The basic melodic line in Part II shifts alternately from d C B G: d C B A (bars 25-30; 37-40; 45-48) to A D G: G D A (bars 31-36; 41-44). The pattern of shifting tonality (A G : G A: A G: G A) remains constant from bar 25 to bar 48. The form of this part is that of S & R in paired 1-bar phrases. The first motif (bars 25-26) is repeated 3 times, followed by the second motif (bars 31-32) also repeated three times. Motif I x 2 is followed by Motif II x 2, and again by Motif I x 2. This section is admirably rounded off at the beginning of the Coda by a Statement and Response (bars 49-50) consisting of half of Motif I and half of Motif II. The fall and rise of tonality in each phrase (A G: G A) contrasts well with the almost monotonous repetition of the same phrases in the same form; it leads the ear on until the final resolution in bars 52, 53. It may well be that Mwongolo's concept of tonality is radically different from mine, and that he regards tonality A (in this case) as his point of rest: but there is no doubt that to an European ear the logical progress of the tonality according to the phrases should have been G A: A G. (For a possible interpretation of Mwongolo's concept of tonality see Part II of this paper, Patterns of Fingering, (5).) It may be that Mwongolo began on the wrong foot in bar 25, and that the real resolution of this section is in bar 51. This is quite likely; the almost hypnotic monotony which would be induced by the regular repetition of the Statement and Response pattern with the symmetrical shifts of tonality G A : A G, is in keeping with the tone of much African music.

Sva. throughout. (♩ = 96 M.M.) V

1 2 3 4 5, 7 6, 8 9, 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

* The dotted semiquaver and the demisemiquaver are scarcely perceptible, and in most cases the ear receives the impression of two semiquavers

[1' 2'']

RHYTHM.

The basic rhythm of this tune, with the exception of the coda, is steady duple time. The only rhythmic variety in the piece, apart from occasional syncopations, is afforded by the alteration of Period in bars 9-11 and 15.

MELODY, TONALITY AND FORM.

The melodic basis of bars 1-7 is, with a slight exception in bar 5:—

C A F, C G F: C A F, D (G) F.

At bar 8 the melody runs C A F D G, with tonality shifting from F to G. The form of bars 1-8 is that of Statement and Response, each S & R being itself subdivided into S & R, so that the form is A (a-a'): A' (a-a').

From bar 9 to bar 11 there is a series of short motifs (melodic basis C A F, C G F, C A F etc.: tonality F) which are in fact variations of bars 1 and 2.

The first motif returns at bar 12, with varied form: the Statement is repeated (bar 13) before leading to the Response (bar 14), and the second part of the Response is repeated three times. Three slight variations of the initial motif (bars 1 and 2) lead to the Coda: the variation of bars 9 and 10 is recalled twice in bar 20.

Apart from the additional bar 10 and the expanded variation (bars 12-15), the tune amounts to little more than a series of simple variations on the initial Statement and Response, with a regular rhythmic and tonal scheme. It is the simplest of all the eight tunes.

(♩ = 116 M.M.)

VI

8va. 4 5

mf.

1st time. 6,8 7,9

2nd time. 10 11,12

p

13 14 15

16 17, 18 19

20 21, 22 23

24 25 26

27 28-30 31 32

33 34 35

36 37 38

39 40 *loc.* 41 42

43 44 45 46

[1/24]

RHYTHM.

The basic rhythm of this piece is triple-time, sometimes concealed within a duple framework (e.g. bars 10-13). I have marked Part I *senza tempo* and have given equal value to all the semiquavers, but there is in fact an underlying current of 6/8 time which is brought out clearly in bars 10-13. I have grouped bars 26-31 according to the phrasing: it is probable that bar 26 should be thought of as in 3/4 time, thus finishing on what is, in my transcription, the first beat of the next bar. This steady triple time was probably in Mwongolo's mind; and my grouping of bars 26-31, from my own aural judgement, may be wrong.

There are particularly interesting examples of off-beat accents in bars 2-4 (although these bars are marked *senza tempo*, there is no doubt from the recorded performance that the notes are conceived as off the beat) and in bar 42.

MELODY, TONALITY AND FORM.

The ostinato-like figure of Part I is based on the descending tones G F E: the constant repetition of the A acts as a lively balance checking the overall tonality of E.

The following 6 bars (4-9) are based on the short motif A FF BG. The melodic basis of bars 4 and 5 is:—

A F B: C A F B etc.

Thus the tonality shifts regularly with the melody and rhythmic impulse from F to G, with a corresponding increase in tension (cf. the tonal scheme of bars 25-48 of Tune IV). After a cadence-like relaxation of tension (GFE in bar 9), there is a return of the ostinato motif, now played in strict duple time, and an octave higher.

Part IV consists of the return and development of the motif of bars 4-9. This time the cadence of bar 9 is elaborated and a new motif introduced (bars 26-31), possibly derived from the cadence (bars 24-25). This is followed by a further development of the motif of Part II (bars 4-9), leading to a Coda, based on a motif first heard in Part I (bar 2).

The overall form of the Tune is:—

A - B - A - B' Coda (a).

Handwritten musical score for Tune VII. The score is written in treble clef with a 2/4 time signature. It includes tempo markings such as "Allegro", "Sua. Agitato", and "Meno mosso". The score features various rhythmic patterns, including triplets and accents, and a key signature change to one flat at the end. The score is numbered 1 through 22.

23 24 25 26

27 28 29 *agitato.* 30

31 32 33 *meno mosso.* 34

35 36 37 38

39 40 41 42 *accelerando* 43 44

45 *Scherzando agitato.* 46 47-50 51 52 53

Rallentando. *meno mosso.* 54 55 56 57

58 59 60 61 62 63

64

20 [1' 15"]

RHYTHM.

The basic rhythm of this tune is duple time. One of its most interesting features is the constant change of tempo and mood. There is a certain amount of syncopation and some bars which stretch the 2/4 bar to the utmost: bars 20, 37, 56 must be thought of as elongated 2/4 rather than 11/16 bars: a composer would probably write these bars as 2/4, bracketing all eleven notes; but I have not written them thus, since my ear accords semiquaver value to all eleven notes, equal to the value of semiquavers in other bars.

MELODY, TONALITY AND FORM.

Bars 1-5 unfold the ascending Motif I, which dominates Part I of the tune.

This is answered by Motif II, a descending figure, based on d B G E F (AF) D E, which leads back to a rhythmic variation of motif I. This in turn leads to Motif IIa, a

melodic variation of Motif II (bars 17-19), basis d C d B C A B G, which is followed by a rhythmic variation, (the tones remaining exactly the same) of Motif II (bars 20-22) and a return to Motif I, followed by a variation of Motif II with which the first part ends. Note how the tonality of Motif I shifts from E to D (?A?), and that of Motif II from D back to E, via G, giving Part I a remarkably balanced design.

Part II begins with a rhythmic motif, followed by a variation of Motif IIa. This is followed by another variation of Motif II and then again by IIa, now pitched a fourth lower. A further statement of Motif II leads to a rhythmic figure (bars 46-50) similar to that of bars 30-34.

Part III consists of a variation of the second part of Part I (bars 17-29), with Motif IIa followed by Motif II, then Motif I and finally by a variation of Motif II, leading to the coda.

The overall form of this piece is impressive:—

A - B - A - b - B - A - B - C - b - B - b $\frac{7}{2}$ - B - C - b - B - A - B - coda.

or, more simply:—

A - A' - B - A' - coda.

VIII.

(♩. = 144 M.M.)

The musical score for VIII is written in G major (one sharp) and 3/4 time. It consists of 32 measures, with a 3-measure coda. The tempo is marked as quarter note = 144 M.M. The score is divided into six systems of five staves each. Measure numbers 1 through 32 are indicated above the notes. Dynamics include *p* (piano) and *f* (forte). A *Sva.* (Sustained) marking is present above measure 6. The piece ends with a 3/2 time signature and a 3-measure coda.

33 34 35 36 37

1st time. 38, 42 39, 43 40, 44 41, 45

2nd time.

46 47 48 49 50

51 52 53 54 55-58

59 60 61

63 64 65 66 67 69-72

73 74 75 76

77 78 79 80 81

82 83 84 85 (b) 86

87 88 89 90 91

92 93 94 95

RHYTHM.

The basic rhythm of this tune is duple time, with a 6/8 signature almost without exception from the first to the last bar. The introduction of unequal groupings (bars 90-98) provides an effective variation in the rhythm of the tune.

MELODY, TONALITY AND FORM.

After hovering on E, the introductory motif is stated—two descending scales from d-D in S & R style. The Statement itself is made up of a Statement followed by an exact imitation beginning a fourth lower; and the Response is virtually a variation of this.

Motif I (bars 7-14) is derived from bars 4 and 6 of the Introductory motif, and consists of a repetition of the S & R sequence (bars 7-8) (melodic basis G (E) A, G (E) D). This is followed by Motif II, a two-bar figure which is repeated with slight variations (bars 16-25) (melodic and tonal basis B (d) C (A) B), and concluded with a cadence (bars 26-31), tonality E.

Part III consists of a rhythmic and melodic fusion of Motifs I, II and the introductory motif, laid out in a form which is at once a mixture of S & R and S & RF patterns: bars 34-35, 38-39 etc. are according to S & R pattern, and yet as a unit, because of their constant repetition they act as Refrains to the bars 32-33, 36-37 etc., which themselves are according to S & R pattern. Moreover, because of the similarity of bar 33 and 37, 41 and 45, we may also say that there is one Statement (bars 32-39) followed by one Response (bars 40-47), overriding all the smaller structures.

Part IV begins with a return to Motif I (bars 51-60), followed by a partial recapitulation of the Introductory motif, with a long-held D this time, and a return to Motif II with a more elaborate version of its cadential ending (bars 89-95).

Part V consists of a development passage, based on the descending scale of the Introduction, leading back to a more extended version of Motif I (melodic and tonal basis G (E) A, G D: G (E) A, G E.)

The coda (in 3/8 time) has no particular connection with the rest of the tune, and is almost identical with the coda of Tune VI.

CHARACTERISTICS COMMON TO CERTAIN ITEMS.

A study of the transcriptions and the preceding analyses will reveal considerable similarities between the eight flute tunes. I do not pretend that the following section of this paper is an exhaustive analysis of common characteristics: it is intended merely to draw attention to some of the more significant features, especially those which can be found in other items of African music.

RHYTHM.

(a) OFF-BEAT ACCENTS.

An important feature of much African music is the establishment of rhythmic variety by means of syncopation, the alteration of the normal time accents of the bar by the setting up of contrary accents. When there is a firm basic beat in duple or triple time, as in most of the flute tunes, the syncopation is most effective. Regular additive time (such as 3+3+2, 3+2+3) also produces the effect of syncopation.

It should be emphasized that the cases of syncopation quoted below are judged according to Western musical traditions. Mwongolo himself might not interpret them as syncopation; there is evidence from certain parts of Africa which suggests that what seems syncopated to the Western ear may be the result of a different, physical concept of rhythm, and therefore not a case of syncopation to the African performer.

Approaching these flute tunes in the light of Western values, therefore, I have accepted cases of syncopation as such, and have attempted to classify the different types. There appear to be four main varieties.


(i) The use of an agogic accent in the unaccented part of a beat. There are two varieties of this accentuation:—

(a) The beat is divided into two notes of unequal length, a short note followed by a long note.


(b) The beat is divided into three (or more, if one of the three notes is subdivided) notes, a long note being surrounded by two short notes of equal length.

Examples of type (a) are:—

Note:—When the case is debatable I have marked the bar in brackets.

	Tunes	I—	Bars 8, 9, 11, (14)
		II—	„ 4, (5, 8 etc.)
		V—	„ 5, 18, 19.
		VI—	„ 4, 5, 6 etc.
		(since logically the G is of dotted quaver length)	
		VII—	„ 6, 35, 38.
		VIII—	„ 50, 60, 98.

Examples of type (b) are:—

	Tunes	I—	Bar(s) 28.
		(The subdivision of the short notes does not affect the classification)	
		II—	„ 3.
		IV—	„ (32, 34, 36), 47.
		V—	„ 13.
		VII—	„ 21, 23, 24, 25, 26, 27.
		VIII—	„ 2.

(ii) The use of a tonic accent on the weak note of a beat.

Tunes	I—	Bars 5, 7, 10, 11, 18.
	II—	„ 2, 4, 5, etc., 21, 22, 25.
	III—	Lines 9, 10, 11 etc.
	IV—	Bars 1, 4, 5, 6 etc.
	V—	„ 5, 18, 19.
	VI—	True tonic accent not common in this piece: most notable examples in the Coda, bars 42, 43.
	VII—	Bars 7, 21, 34, 35, 38, 44.
	VIII—	„ 7, 17 etc., 28, 30, and in repetition of these figures.

(iii) The use of a dynamic accent on a weak beat, the note values remaining unaltered. This is like an anticipatory suspension.



Tunes	I—	Bar(s) 10, 13, 15, 16, 17, 19.
	II—	„ 3.
	III—	Lines 6, 7 etc.
	IV—	Bar(s) 54.
	VII—	„ 63.
	VIII—	„ 19, 21, 48, 62, 79, (90, 92, 94).

(iv) The grouping of tones against the beat.

Tunes	I—	Bar(s) 26 (N.B. that there are no semiquaver triplets in this bar), 34-38, 41, 42.
	II—	„ 9, 12 etc., 2, 21.
	IV—	„ Coda.
	V—	„ Coda.
	VI—	„ 2 (NOT triplets), 3, Coda (bar 42).
	VIII—	„ Coda (bar 119).

This suggested classification is tentative. The fact that I have found examples of the various types of syncopation used by Mwongolo in several other items of African music from widely differing areas suggests that, subject to revision, this may serve as a basis for a more general classification of rhythmic technique in all African music.

(b) THE USE OF RHYTHMIC DEVICES AS A TECHNIQUE OF VARIATION.

The same succession of notes repeated with different accentuation serves as an effective form of variation in the following passages:—

I—Bars 1-4: var:- 23-24; 24-25.

Bar 5: var:- Tune II, bar 1 et sim.

(N.B. also the similarity between bars 8 and 9 of Tune I, and 3 and 4 of Tune II).

(Bar 11: var:- 12)

Bars 32, 33: var:- 41-43; (? 39, 40?)

III—Line 2 (dCABG etc.): var:- Lines 6, 7, 8.

IV—Bar 5: var:- 54.

VI—Bar 2: var:- 42, 43.

VII—Bars 5-8: var:- 20-22; 37-39; 43-45.

Bars 17-19: var:- 34-36.

(c) TEMPO.

The tunes were recorded at one session, in the order of the transcriptions. It is interesting to note that the Tempo increases gradually from Tune I to Tune VIII.

The basic beat of each tune is:—

I— 96 M.M. (192 quavers)

II—100 M.M. (200 quavers)

III—100 M.M.

IV—100 M.M.

V— 96 M.M.

VI—116 M.M.

VII—120 M.M.

VIII—144 M.M.

MELODY, TONALITY AND FORM.

Owing to the limitations of the instrument and its working scale of little more than eight tones (with 5 in the lower octave), it is inevitable that there should be many points in common in all the motifs used. Thus we find a close similarity between the first

motifs of Tunes I, II, IV and V, and the Introductory motif of VIII, with their 'pathogenic' melodies descending from near the top of the flute's compass. Bars 30-37 of Tune I are repeated almost exactly in expanded form in Tune IV, bars 25-50. The repeated B of the coda of I is found at the end of II, V, and VII. The ascending scale of the coda of I is found also in the codas of IV, V and VII. The codas of IV and V, VI and VIII are almost identical. Some possible reasons for the similar pattern of many motifs are suggested in Part II of this paper, and will not be treated here.

A common feature of the tonal design is the shift of a tone at the end of a repeated motif, giving the effect of a Tonic-dominant-dominant-Tonic pattern. This occurs in Tune I, bars 30-42, where the tonality shifts from G to A and then back to G, in the course of each two-bar phrase. It is impossible to tell at this stage whether there is an instinctive feeling for tonic-dominant tonality (it must be admitted that to a European ear the tonal shift in Tune I, bars 30-42, sounds more like one from tonality G to D, and then back to G); or whether it is merely the rise and fall of one tone that matters to the player. The same shift of tonality from G to A (or D) and back to G, is found in each Statement and Refrain of Bars 5-19 of Tune II; and in Tune IV, bars 25-50 (but N.B. analytical notes on this section). In Tune VIII there is an example of the shift of a tone within a single phrase (bars 16-23 et sim. Tonality B-C-B), and a double shift in bars 7-8 et sim., which has more the nature of the European Tonic-dominant patterns (tonality G A : G D). It is not necessary to enumerate every case of similar tonal patterns, since they have been elaborated in the individual analyses.

It is scarcely correct to apply such terms as Binary or Ternary to the overall form of the flute tunes, since the use of the words implies a good deal more than mere AB or ABA arrangement. Nevertheless the tunes do follow a generally regular pattern. The form of tunes I and VI is A B A B: of tunes III and IV, A B: of tunes II, VII and VIII, A B A. Tune V is merely a set of slight variations on a simple motif. Of all the tunes, VII has the most interesting and remarkable structure.

The basic structures of all eight tunes are the Statement and Response, and Statement and Refrain patterns. The latter clearly owe a debt to vocal music (see Tune III), and the former may be considered as a more rigid structure derived from the latter and suited primarily to instrumental music. It is almost certain that the structure of the tunes is to a great extent influenced by the structure of the instrument (see Part II of this paper). This is a factor which should be more often borne in mind in the analysis of exotic folk music.

The basic Period of all eight tunes is the short two-bar phrase, a logical outcome of the vocal S & RF pattern.

PART II.

An experimental analysis of some aspects of the music, in the light of knowledge of the properties of the instrument.

Mwongolo's flute has only four holes for stopping. The most fleeting glance at the transcriptions is sufficient to show that his performance is remarkable, and that he has exploited to the full all the potentialities of a simple instrument. This in itself is sure proof of his ability; the same tunes played on a six-holed flute or recorder would not be as remarkable, since there would be few problems of overblowing to tackle.

An analysis of the music without an analysis of the instrument is inevitably incomplete. Truly adequate analysis could only be made in 'the laboratory' with the assistance of Mwongolo himself. Naturally Mwongolo did not part with his instrument; so that analysis must be based on a similar model. The International Library of African Music possesses a Nyamulera flute of exactly the same design as that used by Mwongolo, as well as recordings of this very instrument being played by the Konjo people from whom it was collected. (The Konjo and the Nande are one and the same people: see Introduction to Part I of this paper.)

I learnt to make some noises on this instrument—I could hardly call it playing, in comparison with Mwongolo's performance—in order to study its potentialities, and then compared these facts with the musical nature of the eight tunes. My results are mainly hypothetical, since I am not dealing with the instrument which Mwongolo used: but I offer these analytical sketches (that is all they can be called), since I believe that the method of approach may prove effective if applied further to the analysis of African instrumental music.

DETAILS OF *NYAMULERA* NOTCHED FLUTE.

Collected 23.viii.50 at Bukuku, Port Portal, Uganda.

Owned and made by Konjo man; (language group 20/2/1) these people are also found in the Belgian Congo, where they are known as Nande.

Recording of the instrument described made by Mr. Hugh Tracey on 23. viii. 50. (Research No. D50.11, Master No. 5335).

Description:—

The flute is made from a single section of bamboo, which grows on the higher slopes of the Ruwenzori Mountains just above the homes of the Konjo people who live in the foothills below.

Length:—72 cms. (c. 28½ ins.)

Diameter:—(a) external—c. 3 cms. (c. 1¼ ins.) (N.B. the bamboo is not exactly circular)

(b) internal—c. 2 cms. (c. ¾ in.)

Spacing of 4 holes:—(measurements taken from the centre of each hole; distance reckoned from distal end, i.e. the end opposite the notch)

1. 7.2 cms (c. 2¾ ins.)

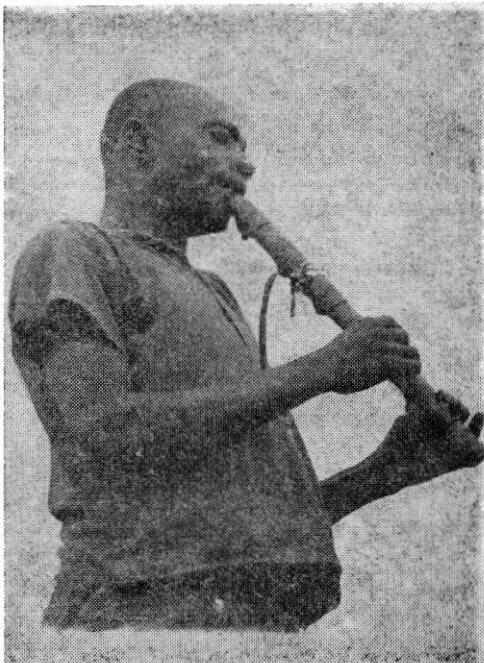
2. 14 cms. (c. 5½ ins.)

3. 20.8 cms. (c. 8¼ ins.)

4. 28 cms. (c. 11 ins.)

Thus the holes (diam 1.25 cms.) are almost equidistant in spacing.

The notch at the proximal end is like an equilateral triangle—(length of base c. 1.2 cms., height c. 1.8 cms.)



Two studies of Mwongolo playing his flute.

(Photos—H. T. Tracey)

METHOD OF PLAYING.

The instrument is held by the thumbs and second fingers of each hand, left hand below right hand; the holes are stopped by the first and third fingers of each hand. (See photograph of Mwongolo. But N.B. that the flute described above is much longer than Mwongolo's instrument; it has to be held almost at arm's length, which makes quick finger-work difficult. I doubt if even Mwongolo could manage some of his rapid passagework on this instrument.)

The player purses his lips and blows against the notch, as in the photograph. In addition to the flute tone the player produces a throat tone by a tightening of the larynx and the diaphragm: this appears to be similar to the method of performance described by Merriam ('55, page 122), referring to Bashi flute players. It sounds as if much of the 'tonguing' in Mwongolo's performance is produced by these movements of the larynx and diaphragm rather than by the tongue. This would account for the paradox of slurred repeated notes, such as are found in Tune V, Bar 1 etc.: they would be produced by a vibrato of the larynx and diaphragm.

TABLE OF TONES PRODUCED ON THE *NYAMULERA* FLUTES.

The tones were measured with a set of tuning forks, ranging from 212 to 424 v.p.s. and tuned to each successive interval of 4 v.p.s. Thus there is an inevitable margin of error which becomes even greater in the conversion to Cents: for instance 226 v.p.s. is equivalent to Cent code number 492, and 225 v.p.s. to code number 485. Thus a difference of 1 v.p.s. would make the intervals between $a\flat$ and a , and a and b 103 and 196 cents respectively. Furthermore the measurements were taken from the recording, in the case of Mwongolo's flute, and from my own efforts at blowing the *NYAMULERA* flute from Bukuku, so that too much faith must not be placed in them. The scale differs considerably from the Nande scales quoted in Part I; that is probably due to the nature of the flute, which tends perhaps to give a more regular scale.

The lowest tone on the flute from Bukuku is 212 v.p.s. and on Mwongolo's flute 296 v.p.s. For the sake of convenience the pitches of the available notes have been telescoped within one octave.

TUNING OF MWONGOLO'S *NYAMULERA* FLUTE.

v.p.s.	..	..	..	..	296,	332,	352,	372,	392,	440,	496,	528,	592
code..	..	..	..	..	960	1158	60	155	246	446	654	761	960
scale in Cents..	..	..	..	..	0	1.98	3.00	3.95	4.86	6.86	8.94	10.01	12.00
intervals in Cents	..	..	..	..	1.98	- 1.02	- .95	- .91	- 2.00	- 2.08	- 1.07	- 1.99	
approx. tempered equivalent and v.p.s.	..	d'	e'	f'	$f\sharp'$	g'	a'	b'	c''	d''			
	..	(293)	(329)	(349)	(369)	(391)	(440)	(493)	(523)	(587)			

TUNING OF *NYAMULERA* FLUTE FROM BUKUKU.

v.p.s.	..	..	..	..	424,	452,	504,	536,	568,	636,	680,	760,	848
code..	..	..	..	..	382	492	681	788	888	1084	0	192	382
Scale in Cents..	..	..	..	..	0	1.10	2.99	4.06	5.06	7.02	8.18	10.10	12.00
intervals in Cents	..	..	..	..	1.10	- 1.89	- 1.07	- 1.00	- 1.96	- 1.16	- 1.92	- 1.90	
approx. tempered equivalent and v.p.s.	..	$a\flat'$	a'	b'	c''	$d\flat''$	$e\flat''$	e''	$g\flat''$	$a\flat''$			
	..	(415)	(440)	(493)	(523)	(554)	(622)	(658)	(738)	(830)			

TABLE OF FINGERING AND BLOWING, WITH TONES PRODUCED ON THE *NYAMULERA* FLUTE.

It is probable that many more tones than those listed in the tables above can be played on the *NYAMULERA* flute. In experimenting with the instrument from Bukuku I was only concerned with the notes which would be required for the analysis of the flute tunes.

● represents stopped hole. line (i) of the tempered equivalents is for Mwangolo's flute;
 ○ represents open hole. line (ii) for the flute from Bukuku, whose v.p.s. are quoted.

R.H.	{ 1st finger	●	●	●	●	○	○
	{ 3rd finger	●	●	●	○	○	○
L.H.	{ 1st finger	●	●	○	●	○	○
	{ 3rd finger	●	○	○	●	○	○
Fundamental:-	v.p.s.	212	226	252	268	284	318
approx. tempered equivalent:	(i)	d'	e'	f'	f#'	g'	a'
	(ii)	ab	a	b	c'	db'	eb'

Octave:-		424	452	504	536	568	636
		d''	e''	f''	f#''	g''	a''
		ab'	a'	b'	c''	db''	eb''

Twelfth:-		636	680	760	—	848	—
		a''	b''	c''	—	d'''	—
		eb''	e''	gb''	—	ab''	—

Fifteenth:-		848	904	1008	—	—	—
		d'''	e'''	f'''	—	—	—
		ab''	a''	b''	—	—	—

Seventeenth:-		1072	1136	—	—	—	—
		f#'''	g'''	—	—	—	—
		c'''	db'''	—	—	—	—

Nineteenth:-		1280	—	—	—	—	—
		a'''	—	—	—	—	—
		eb'''	(sharper than a''' and eb''')				

Mwangolo's flute does not, of course, give exactly the same succession of tones as that from Bukuku which I have described above. There is clearly a difference in the sequence of intervals in the Fundamental register which is reflected in the other registers. Judging from the photograph, Mwangolo's flute is shorter than that described, which would account for its higher pitch. I tried several combinations of fork fingering, but the only combination which regularly produced satisfactory results was that with the top and two bottom holes closed, and it was only effective in the Fundamental and Octave registers. This corresponds well with the F natural and F sharp in Mwangolo's tunes, which represent the only consistent change in the scales employed.

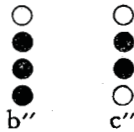
It may be argued that my comparison of the fingering and blowing of the instrument in hand with Mwangolo's is based on arbitrary assumptions, and therefore unsound. But in allocating tones to certain fingerings I have taken the shape of Mwangolo's melodies carefully in account:—

Firstly, there are only a few occasions on which he uses tones in the Fundamental register (VI, bars 1-3; 41-46: VII, bars 1-5: VIII, bars 118-127); and in all these cases he uses the tones d', e', f', g', a'. It is even more significant that in these passages he never plays F sharp, the equivalent of which I found hard to play at speed on the flute described. The working scale of all the tunes runs from d'' to d''', which according to my reckoning is covered by fingering in the Octave and Twelfth registers; moreover I found that the notes in these registers were the most easy to obtain with accuracy, even more so than those in the Fundamental register. Several passages in Mwangolo's tunes will be seen, according to my chart of fingering, to fit well into the Octave and Twelfth

registers. For instance the following passages can be played entirely in the Octave register:— I—bars 34-38. III—Introduction, except for one note.
 IV—bars 31-36; 41-44. VI—bars 10-14.
 VII—bars 7-16; 21-25. VIII—bars 37-39; 45-47 etc.

There are passages which can be played in the Twelfth register, such as the Fanfare in Tune I, and bars 16-23 etc. in Tune VIII. Moreover bars 3 and 4, 5 and 6 in Tune VIII provide an excellent example of a repetition of fingering in different registers.

An alternative fingering for b'' and c'' which makes the change from Octave to Twelfth registers more easy is:—



There are several pasages which may arise out of this fingering:- Tune I, bars 11-15, 18-22: Tune IV, bar 3 and 4, 7 and 8 et sim. etc.

There appears to be considerable evidence to justify my comparison of the fingering I used on the *NYAMULERA* flute from Bukuku with that probably used by Mwongolo on a similar flute: I cannot of course claim that my comparison and the ensuing remarks are infallible.

Some comments on the relationship between the physical properties of the instrument and the music played on it.

PATTERNS OF FINGERING.

Note:—The numerals 0 1 2 3 4 will be used to represent the stopping of the flute holes (see chart) in the Octave register. Fingering in registers other than the Octave will be represented thus:—

Fundamental	0	1	2	3	4
Twelfth	1'	2'	3'	4'	
Fifteenth	2''	2''	4''		
Seventeenth		3''	4''		

The fingering for f#'' will be represented by 2a, and the alternative fingering for b'' and c'' (see above) by iii and ii respectively.

Given only five different ways of stopping the flute, 0 1 2 3 4, and selecting any group of 5, 4, 3, or 2 tones, there are no less than 320 different musical patterns that can be produced without repeating a single tone. When one considers that any of these patterns can be combined ad libitum, and that the same patterns can be made, by overblowing, to produce certain tones an octave, a twelfth or fifteenth higher, one begins to have some idea of the enormous musical range of this simple four-holed instrument—even excluding the use of the fingerings 2a, iii and ii.

I transcribed all eight tunes 'physically', according to the possible patterns of fingering used in performance. Confronted by such an array of numerical patterns it was tempting to come to conclusions about Mwongolo's performance. But since there may be alternative fingerings for several tones (e.g. a'' may be played 0 or 4'; and d'', 1' or 4''), and since my whole system of fingering is hypothetical, being based only on a similar instrument, I will limit myself to a few general remarks which throw further light on Mwongolo's performance and indicate that this 'physical' method of musical analysis may be useful in the study of some exotic instrumental music.

(1) The same fingering is frequently used for adjacent notes, which are made to sound differently by overblowing. In many cases this seems to influence the choice of the tone which begins a new phrase. In Tune III, for example, we find (line 2) the following pattern of fingering:—

4' 3'2' 3' 1 1' 2' 4' 3' 1 2a 343 3' 4' 1 2a 4

A glance at the transcription will show clearly how fresh 'pathogenic' phrases are begun at the two points (1 . . . 1' and 3 . . . 3') where the flute tone is transposed up a fifth without any change in fingering. (There are several other examples of phrases beginning and ending in similar fashion; but I do not quote them here, for reasons of space. The reader can discover these points for himself by comparing my chart of fingering with the transcriptions.)

The rhythmic figure in Tune VII bars 46-50 (fingering 3' 3 3'3' 3 etc.) is based entirely upon the principle of overblowing. It may be that the player derives special oral pleasure from this passage, just as he may find certain patterns of fingerwork pleasant to execute.

(2) The use of intervals of the 3rd. may be suggested by the symmetry of the fingering 0 2, 1 3, or 2 4 and vice versa. Intervals of a third occur frequently in all eight items.

(3) One cannot help wondering if there is any significance in the fact that Mwongolo always ends with the same fingering, either 3 or 3'. (It may be argued that this proves the incorrectness of my fingering chart, and that Mwongolo probably ends by blowing 4 and 4', or 2 and 2'. But if this were the case, he could not play the passages in the Fundamental register; nor can I see how he could play the d'', if his final fingering were 4 and 4': if it were 2 and 2' it is surprising that he never plays a c''.) If there is any significance in Mwongolo's choice of 3 and 3', any suggestion must as yet be pure speculation. It is true that the ending is always tonally coherent, but the choice of 3 or 3' sometimes comes as a surprise, especially in the Coda of Tune V.

(4) The same pattern of fingering can be made, by means of overblowing, to produce different motifs. The basic pattern 1 2 3 4 1 2 3 4 provides motifs for Tune I, II and VIII:—

I—bars 5 and 7: 1' 2' 3' 4' 1 2' 3' 4' 1'
 II—bar 1: 1' 2' 3' 4' 1 2' 2' 3' 4'
 VIII—bars 3 and 4: 1' 2' 3' 4' 1 2 3 4
 etc.

The use of similar finger patterns is also an effective technique of variation; compare, for instance:—

{ I—bars 11 and 12: 1 3' 3' 1 3' 1 1 3' 1 3' etc.
 I—bar 15 : 3 3 3 1 1 3 1 3 - 3 1 2a
 I—bars 31 and 32: 1' 2' 1' 3' 1 1' 2' 1' 3' 4'
 I—bars 39 and 40: 1' (?1''?) 2'' 1' 3' 1 1' (?1''?) 2'' 1' 3' 4'
 I—bars 41 and 42: fingering identical to bars 31 and 32.
 VI—bars 4 and 5 : 4' 22 3' 1 2'3'4'223'1 1' 2' 3' etc.
 VI—bars 8 and 9 : 4'4' 2 2' 3'1 2' 3'4'22'3'1 1 2 3 etc.
 etc.

(5) The shape and tonality of a phrase may be determined more by the physical properties of the flute—the notes which can be played within each register, and so on—than by purely musical considerations.

This factor may well account for the frequent Tonic-Dominant flavour in many of the short S & R motifs, which I have discussed in the musical analysis. For instance in Tune IV, 31-36 etc. (and in many similar cases in other tunes) there is a distinct feeling for Tonic-Dominant-Tonic progression in the melodic line. This passage can be played within the Octave register, with the following fingering:

11 2 3 4 3 0 00 2 3 4 1 11 2 3 4 3 0 00 2 3 4 1 etc.
 (Tonic) (dominant) (Tonic) (dominant) (Tonic)

Thus the 'tonic' cadences are marked by the regular stopping of one hole only, and the 'dominant' cadences by the removal of all fingers from the instrument.

People accustomed to Western music think of a Tonic-dominant-Tonic tonal progression as one of relaxation-Tension-relaxation. But it may well be that Mwongolo, at least in the passage quoted above, thinks in opposite terms; for in the 'tense', dominant passages he removes all his fingers from the instrument—most probably with abandon and a feeling of relaxation.

It is unwise to come to any conclusions about the music of the Nande on the strength of only eight flute transcriptions and a mere handful of recordings from the area. Flute music is only one small branch of the musical culture of a people, and in any case Mwongolo's fellow-tribesmen say that he has evolved a distinctive style of his own. Moreover, the discovery of 'characteristic' intervals of 3rds, 4ths and 5ths in an area means nothing unless they can be proved to occur frequently in every conceivable type of music: my analysis of the physical properties of the flute shows clearly that as a result of the principles of overblowing one would expect frequent use of such intervals, although they might be otherwise foreign to Nande music.

I would even refrain from conclusions about the music of the eight flute tunes alone, since my analysis is inevitably hypothetical, especially the second Part. Moreover, we cannot generalize unless we have a number of recordings of Mwongolo's playing made on different occasions: it is quite possible that if we heard him play today, his music would differ considerably from that described in this paper.

The main purpose of this paper has been to show that a 'physical' analysis of the instrumental music of Africa may often prove more enlightening than a purely musical analysis. This may seem obvious to any performing musician: a pianist who plays the Etudes of Chopin or many pieces by Liszt cannot help being conscious of the sheer physical pleasure of numerous passages, and noticing how the music grows out of physical movement. And yet as far as I know there has been no attempt to analyse the music of Africa (or any exotic, unwritten music for that matter) according to the physical properties of the instruments on which it is played. We often read such remarks as:—"the basic step is the third", or "the fourth seems to be the most important interval in the music of this tribe". If such remarks refer to predominantly instrumental items, they are probably platitudes, since the significant intervals may arise from the nature of the instruments used. Even when they are said about several hundred transcribed vocal items, it is quite conceivable that the vocal intervals may be partly derived from the features of the instruments most commonly played in the area. The form of vocal music will similarly affect instrumental music, as in the antiphonal structure of most of Mwongolo's music: the Statement and Refrain structure of Lines 2-8, Tune III, might well be an instrumental arrangement of a song for Solo and Chorus in truly African style.

We find numerous examples of Western classical music, where the musical form is much influenced by the properties of the instruments for which it was written. It seems likely that we should find this even more frequently in African music, which is not written down and where muscular memory must surely play an important part. Thus I suggest that analyses on the lines which I have sketched in Part II of this paper may be fruitful and lead to a greater understanding of African music by non-African musicologists and musicians, who begin their study with the enormous disadvantage that they were not born Africans.

WORKS QUOTED

Trowell and Wachsmann '53:—"Tribal Crafts of Uganda", by Margaret Trowell and K. P. Wachsmann. O.U.P., 1953.

Merriam '55:—"Musical Instruments and Techniques of Performance among the Bashi", by A. P. Merriam. From *Zaire*, IX, II, 1955.

Sachs '43:—"The Rise of Music in the Ancient World", by Curt Sachs., W. W. Norton, New York, 1943.