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PREFACE

Someone should invent a new word. To use the term 'Indonesian' to include both the peoples in the Malay Archipelago and also the people of South East Asia is to stretch it beyond its normal connotation, as it is usual to restrict it to the former. To stretch it still further to refer to the peoples both of the mainland and of the islands before they were influenced by India would be too great a liberty were there another word available. But there is not: and yet, as I shall need frequently to refer to them collectively, a single reasonably short word had to be chosen. In default of a better one, I have used the word 'Indonesian' in this broad sense.

It is becoming realised nowadays, that the complexity of African cultures needs for its historical unravelling the cooperative contribution of divers disciplines—anthropology, history, linguistics, ethnomusicology, to mention but four. Thus the specialist in one field has of necessity to come to terms with the weight of evidence offered by other disciplines if he is to avoid working in a partial vacuum.

Whether he is by nature musical or not, the scholar in things African is invited to recall that music is part of the very fibre of the African and thus has a claim on his attention. Further, I believe that African musical practices will prove to be of no little value in helping to solve some of our problems.

In a book which makes a far-reaching proposition, it is only fair to the reader to give him every chance to verify its statements where they depend on published material. The problem posed by the considerable number of references—which makes it unworkable to quote them in full every time—has been solved by giving each entry in the Bibliography a number printed in bold-faced type. This number is used in the footnotes where it also appears in bold type. I realise this detracts from the immediate value of the footnotes, but it seemed the only reasonable course.

To the late Dr. Jaap Kunst I wish to pay special tribute firstly for his kindness in making available to me his large collection of xylophone tunings. Secondly, for drawing my attention to the fact that the tunings given in Olga Boone's *Les Xylophones du Congo Belge* have in many cases, for simplicity, been reduced from

CHAPTER TWELVE

MORE EVIDENCE ON AFRICA AND INDONESIA

I. XYLOPHONE TUNING

Since the first edition of this book appeared two further elements have impinged on the situation. First, further evidence in support of this thesis has continued to flow in, more especially on the musical side. Second, in spite of the arguments adduced in the book showing the reliability of the xylophone tunings given there, some critics have maintained a rooted antithesis to these tunings. Their argument runs like this: "Your tunings are nearly all taken from *museum* specimens. Such instruments may have shrunk—their tunings cannot be accepted as reliable—and therefore a thesis based on such shaky evidence has no firm foundation in fact."

This first essay is devoted to the latter question. Let us meet the critics on their own ground. Do they want contemporary tunings from instruments played by living performers? We will willingly provide them. Since the book was published a considerable number of such tunings have come into the hands of the author. A selection of these is set out in the Tables given later in this essay: but before examining them, several matters need clarifying.

The tunings come mainly from four field-workers. Dr. Hugh Tracey has for many years been recording and studying African music in its natural habitat—the villages of Africa. To ascertain the tunings he uses a set of tuning forks, each of which is 4 vps. distant from its neighbour. He matches the forks to the notes by ear. Unfortunately he usually restricts himself to testing one octave of the instrument only, and further, he gives the top note as an exact octave of the bottom one. Nevertheless he has had great experience, and within the octave, his tunings represent what he found in the villages.

The Viennese scholar Dr. Gerhard Kubik has repeatedly made long field trips in various parts of Africa. Living in the villages he has had first hand contact with African musicians and their instruments. He travels with a tape recorder on which he has recorded these in the following way. He sets the recorder going: he then

sounds a pitch-pipe giving $A = 440$ vps.: he then sounds each note of the instrument three times. The tape-recorder is not turned off till this is all completed.

Two other field-workers have recorded on tape in the same way. Margot Diaz did research in Mozambique around 1967 and sent her tapes to the author. The ethnographer Mr. T. J. Chappel recorded Nigerian xylophones also in 1967. In both cases they used tuning forks sounding $A = 440$ vps.

On receiving these tapes the author has them dubbed on to disc and then takes the tunings on a *Stroboconn*. It is not possible to get accurate results if one tries to use the tape itself.¹

All the tunings given in the Tables are therefore tunings of instruments actually in use in Africa at the time they were recorded: and the Tables provide us with two quite separate pieces of information first, they give the exact *pitch* of the notes and second, they give the *scale* used (i.e. the intervals between the notes).

Further, as can be seen from the designations in the Tables, the xylophones, sansas (hand-pianos) and harps together cover a wide area in Africa, from Mozambique and Portuguese East Africa in the south-east through Malawi and Zambia, Uganda and the North-east Congo to the Cameroons and Nigeria—in all a fairly representative survey.

My thesis about these instruments is threefold. I maintain first that African xylophones and sansas are tuned for the most part to two standard scales—Equiheptatonic and Equipentatonic: second, that these scales are respectively laid *at the same pitch*: third, that these scales and their respective pitches are the same as those used in Indonesia. This information is all contained in the Tables. In order to appreciate the impact of the evidence provided by the Tables we must be quite clear as to what the Tables show and as to how they are computed.

As an example, let us take from the Tables xylophone No. 2. Dr. Tracey's tuning-forks give us the *pitch* of each note expressed in vibrations per second (v.p.s.). We must now convert these into the System of Cents so as to measure the intervals between each note. So we refer to a table of cents and find the requisite Cents Code number for each of these vibration numbers. Lastly by

¹ *On using the Stroboconn*: A. M. Jones, in *African Music*, Vol. 4, No. 4, 1970.

From the point of view of pitch, then, most of the field recordings both for Equiheptatonic and Equipentatonic instruments amply confirm the proposition that they are in each case tuned to a scale lying at a definite pitch, which will respectively include a note at around 182 and 296.5 v.p.s. or their octaves.

EQUI-HEPTATONIC FIELD RECORDINGS

The tunings are expressed in cents, and are cumulative.

The exact pitch is indicated at the head of each column by giving the vibrations per second of the figure 'o'.

XYLOPHONES

Xylo. No.	1	2	3	4	5	6
Standard Equi-Hept.	S.E. Africa <i>Chopi</i>	S.E. Africa <i>Chopi</i>	S.E. Africa <i>Chopi</i>	S.E. Africa <i>Chopi</i>	Mozam- bique <i>Makonde</i>	Came- roons <i>Mvele</i>
o = v.p.s.	368	364	364	364	753.5	369
<i>Low</i> 857					860	
685	682		664	664	677	
514		530	505	505	518	
343	353	335	358	335	349	
171	178	181	181	181	176	228
0	o	o	o	o	o	o
171	162	163	180	180		187
343	341	328	359	359		
	489)					
514	518 \	507	536	536		487
685		670				691
857						837
1028						
1200						
<i>High</i> 1371						
Tuning by	T	T	T	T	G	G

XYLOPHONES (*continued*)

Xylo. No.	7	8	9	10	11	12
Standard Equi-Hept.	S.E. Africa <i>Chopi</i>	S.E. Africa <i>Chopi</i>	Came- roons <i>Muele</i>	Came- roons <i>Muele</i>	S.E. Africa <i>Chopi</i>	S.E. Africa <i>Chopi</i>
o = v.p.s.	186	373	194	368.3	190	373
<i>Low</i> 1028						972
857		654		679		792
685		508		455		654
514		351		323	358	474
343		162		201	186	355
171	207	o	o	o	o	183
o	o	o	o	o	o	o
171	161	194		177	173	161
343	306	368	305	269	297	342
514	570	537	499	498	482	503
685	690	708	669	671	655	685
857	852	880	835		834	861
1028	1021	1045	1008	999	1018	1051
1200	1187	1215	1197		1214	1176
1371	1354				1353	1367
1543			1518		1520	1514
1714					1712	
1885					1876	
2057					2053	
<i>High</i> 2228					2221	
Tuning by	D	D	G	G	D	D

Xylo. No.		41			42
Standard Equi-hept.		Mozambique <i>Khokhola</i>	Standard Equi-pent.		Cameroons <i>Mpyemo</i>
o = v.p.s.		731	o = v.p.s.		309
<i>Low</i>	1453	1443	1440		1367
	1371	1358	1200		1176
	1200	1111	960		931
	1028	973	720		716
	857	858	480		418
	685	611	240		249
	514	464	0		0
	343	304	240		314
	171	181	480		585
	0	0	720		793
<i>High</i>	171	143	960		1037

In the Equiheptatonic xylophone, in spite of its poor tuning, the pitch of 'o' — 731 v.p.s. — is within our restricted pitch-range. If we look at the Cumulative Cents, we note that the octave of 'o' is only 1111 cents instead of 1200—nearly a semitone flat. Similarly the lowest note — 1443 — is a semitone flat on the theoretical scale. On the other hand, the intervals on each side of 'o' — 181 and 143 cents respectively — show clearly enough the sort of scale aimed at: and this is reinforced by the figures 858 (theoretical 857), 973 (theoretical 1028) and 1358 (theoretical 1371). Once one has grasped from the more precisely tuned instruments what the tuning really is, this particular xylophone, poor though its tuning is, is seen to belong quite clearly to the same class. The *intervals* between the notes tell the same story. From low to high they are, in cents: — 135, 197, 138, 115, 247, 147, 160, 120, 181 and 143. Anyone with experience of xylophone tunings can see at once that these are *essentially* the intervals of an Equiheptatonic scale poorly realised.

In the Equipentatonic example the pitch of 'o' — 309 v.p.s. — is outside our imposed limits—but only just outside. It is too high by only 14 cents, which is a mere $\frac{1}{17}$ th. of an equipentatonic tone.

While the Cumulative Cents show considerable divergence from the theoretical values, one notes on the other hand that the octave of 'o' is 1176 cents which is quite good: we note also the figures 716

(an interval of a fifth below 'o'), and the figure 249. Both are very near the theoretical values. It clearly belongs to the Equipentatonic class. The *intervals* between the notes confirm this: they are typical of a poorly tuned xylophone in this scale: in cents from low to high they are: — 191, 245, 215, 298, 169, 249, 314, 271, 208, 244. Compare these with the theoretical interval of 240 cents.

If these two xylophones represent some of the worst tunings one can produce, what of the rest? They all approximate closer to the theoretical tunings. We have quoted 40 instruments to illustrate how Africans tune the instruments they are actually using. But we could from our files quote over 200 such living tunings. The conclusion, it seems to us, is inescapable. These African instruments are tuned approximately to either the Equiheptatonic or the Equipentatonic scale.¹

PROVENANCE OF THE INSTRUMENTS

1. African Music Society, Johannesburg, 'Sound of Africa' records: file card for record TR 206 A, bands 1-7. Tuning by Hugh Tracey of the xylophone *ensemble* of Regulo Zandamela, 1949.
2. 'Sound of Africa' record TR 207 A; file card for bands 1-3. Tuning by Hugh Tracey of the xylophone *ensemble* of Cabo Mtoti, 1949.
3. 'Sound of Africa' record TR 207 B; file card for bands 4 & 5. Tuning by Hugh Tracey of *Sange* xylophone of the *ensemble* of Regulo Banguza, 1940.
4. 'Sound of Africa' record TR 208 B; file card for bands 2-5. Tuning by Hugh Tracey of the *ensemble* of Regulo Zavala 1949.
5. Recorded by Gerhard Kubik at Mitande, Rovuma area of N. Mozambique, October 1962. Log xylophone called *dimbila*: keys placed over banana stems with additional grass bundles as shown in Jones, 'Africa and Indonesia' p. 126. Further details of this instrument were published by Kubik in *African Music*, Vol. 3, No. 3, pp. 97-99. The instrument had 8 keys, but only 6 of them were recorded.
6. Recorded by Gerhard Kubik at Minkalong near Andom, on the road from Nanga-Eboko to Bertoua, Jan. 1964. Portable xylophone with gourd resonators; it is the typical xylophone of southern Cameroon and is called *Ombek*. This particular instrument is played in a group of four such xylophones of different range and different number of keys.
7. Recorded by Margot Dias in 1968 in Port. E. Africa.
8. Recorded by Margot Dias in 1968 in Port. E. Africa.
9. Recorded by Gerhard Kubik in Cameroons in 1964.
10. Recorded by Gerhard Kubik in Cameroons in 1964. Xylophone called *Ololong*. It is played together with No. 6 in the 4-instrument *ensemble*.
11. Recorded by Margot Dias in 1968 in Port. E. Africa.

¹ See also 'Sur les Xylophones Équiheptatoniques des Malinke': Gilbert Rouget avec la collaboration de J. Schwarz, in *Revue de Musicologie*, Tome LV, No. 1, 1969.

12. Recorded by Margot Dias in 1968 in Port. E. Africa.
13. Recorded at Livingstone Open Air Museum, Zambia, in June 1968.
14. Recorded by Gerhard Kubik at Makanjila, east of Lake Malawi, on Mozambique border, June 1967. Log xylophone over banana stems, called *Mangolongondo*. The instrument has 9 keys but only 8 were played. The keys were separated by small sticks, but regularly and not as with the *Makonde*. The mode of attaching the keys is the same as with the *amadinda* of Uganda.
15. Recorded by Gerhard Kubik. His own xylophone bought from lepers at Nanga-Eboko, southern Cameroon, in January or February 1964. These lepers have a xylophone band: they are the best players in the region, says Kubik, and play the ancient type of music in southern Cameroon. The tuning must be considered as ancient style. The instrument was sent to Europe to Kubik's house, the gourds mostly broken in transit. He recorded the tuning in Dec. 1968.
16. 'Sound of Africa' record TR 89 A; file card for bands 1 & 2. Recorded at E. Tengani, S. Malawi. Central octave only, of xylophone called *Ulimba*. Tuning by Hugh Tracey.
17. 'Sound of Africa' record TR 182 B. File card for band 7. Recorded by Hugh Tracey at Kasama, Zambia. Tuning by Hugh Tracey.
18. 'Sound of Africa' record TR 41 B; file card for band 7. Sansa called *Kankowela*, recorded in Gwembe District by Hugh Tracey who also did the tuning. Player - Siambelele Nyema.
19. 'Sound of Africa' record TR 120 B; file card for bands 1 & 2. Sansa called *Neikimbe*. Recorded by Hugh Tracey at Paulis, N.E. Congo. He also did the tuning. Player - Ebogoma Gabriel.
20. 'Sound of Africa' record TR 51 B; file card for band 4. Sansa called *Kangombio* recorded in Mongu district by Hugh Tracey who also did the tuning. Player — D. Mwanambuyu.
21. 'Sound of Africa' record TR 193 A; file card for band 2. Sansa called *Mbira* recorded by Hugh Tracey at Dite, Rhodesia; he also did the tuning. Player — Joel Mutseesene.
22. Xylophone made of bamboo slats with plank-built resonator, bought in Burma about 1962 by Mr. J. W. A. Okell. He says it is a good (but not firstclass) instrument, and that it has dried out in London. The top note was added at his request—he watched it being made—as this note is found on some Burmese instruments. He says the bottom note — 544 cent no. — and its two octaves — 685 and 1885 are regarded by the Burmese as the 'true notes'.
23. Recorded by Gerhard Kubik in Jan. 1963 at Bumanya, south of Lake Kyoga, Uganda. Log xylophone called *Embaire*.
24. Recorded by Gerhard Kubik in Dec. 1968. He says this was originally a part of an *akadinda* xylophone which he got for his own use from Evaristo Muyinda in 1962, which the latter had started to construct. In order to enable Kubik to play *amadinda* music on it, Mr. Muyinda quickly made two more keys, one at the top (highest key) and one at the bottom (lowest key). It is important, says Kubik, to know that this instrument has *akadinda* tuning in its overall pitch level, and not *amadinda* tuning. See also G. Kubik, "Composition Techniques in Kiganda xylophone music", in *African Music*, Vol. 4, No. 3.
25. Recorded by Gerhard Kubik, Dec. 1968. An incomplete *Akadinda* xylophone which belongs to him.
26. Recorded by Gerhard Kubik in Jan. 1963. Log xylophone called *Embaire*.

Another instrument (cf. No. 23) recorded at Bumanya, south of Lake Kyoga, Uganda. It belonged to another group of players independent from that of No. 23.

27. Recorded by Gerhard Kubik at Kampala in February 1960. This is the instrument on which he learned while in Uganda between November 1959 and March 1960.
28. Recorded by Gerhard Kubik in April 1964, at Mabou, 7 km. north of Djema, Central African Republic. A portable xylophone with gourd resonators; the instrument is called *Longo*. It is tuned to a scale which is said to be different from that of the *Kponingbo* xylophone (see No. 29) — which came from the Congo, and which was also played in this village, and, says Kubik, everywhere in the area. Both instruments have Equipentatonic tuning, the difference being that while the notes of the *Kponingbo* are arranged in sequence from low to high, those of the *Longo* are arranged quite differently. If the figures 1-6 represent the *pitch* of the *Longo* keys from low to high, their order on the actual instrument is: — 1, 6, 5, 4, 3, 2.
29. Recorded by Gerhard Kubik in April 1964 at Fizane, a village some 15 km. east of Zemio, on the road to Obo, Central African Republic. He says the xylophone is said to represent good tuning. It is a log xylophone with keys on banana stems, and is called *Kponingbo*. About this particular tuning see G. Kubik, "Harp music of the Azande" in *African Music*, Vol. 3, No. 3, 1964, pp. 45-46. The *Kponingbo* tuning, he says, corresponds in absolute pitch with that of the harp tuning.
30. Recorded by Mr. T. J. Chappel in Nigeria in 1967.
31. Recorded by Mr. T. J. Chappel in Nigeria in 1967. Xylophone made by Malam Musa of Jimeta.
32. Recorded by Mr. T. J. Chappel in Nigeria in 1967. A xylophone he has acquired for himself.
33. Recorded by Mr. T. J. Chappel in Nigeria in 1967.
34. Recorded by Gerhard Kubik at the Uganda Foundation for the Blind Training Centre at Salama, on Dec. 23, 1962. The blind musician Ntalo—who played this instrument—and his friend Waiswa (also blind) were considered to be the most experienced Basoga musicians at Salama at the time.
35. Recorded by Gerhard Kubik at Njalobekwe, 7 km. east of Yokadouma in Dec. 1969. The instrument is called *Kembe* and is played by Paul Mpoma.
36. Recorded by Gerhard Kubik at Buzibirira near Kamuli, Busoga Dist., Uganda, in January 1968. It was played together with No. 37, and belongs to a son of the celebrated Soga musician Aloni Kaja. This son was playing it.
The instrument is called *kadongo*. For the history of this instrument and its migration to southern Uganda via the Nilotic north from the Congo, Kubik refers us to Prof. K. P. Wachsmann's works, and also to G. Kubik, 'Generic names for the Mbira' in *African Music*, Vol. 3, No. 3, 1964.
37. Recorded by Gerhard Kubik at the same time as No. 36. This instrument is called *Endongo* and was played and belongs to Aloni Kaja's second son.
38. 'Sound of Africa' record TR 124 A: file card for bands 5 & 6. Sansa called *Minu* recorded in Mabagi District, N.E. Congo by Hugh Tracey who also did the tuning.

39. Recorded by Gerhard Kubik at Salama in 1962. This is a tuning of one of the greatest harpists of the Alur, Mr. Lazaro Albinga Olamoto, a blind musician.
40. Recorded by Gerhard Kubik in december 1967. The harp was tuned by the great Mr. Evaristo Muyinda. Mr. Kubik writes, "This was recorded during a long and inspired harp-session in one of the rooms of Mr. Muyinda's house near Kampala where I had put up with him. It can be called representative. The musician knew that the tuning would be recorded and he tuned very carefully."
41. Recorded by Gerhard Kubik at Kolowiko, border village, area of Lake Chilwa, Malawi, in May 1967. The musicians were not Malawi people but came from Mozambique—not far away. A log xylophone on banana stems; it is called *Mambila*.
42. Recorded by Gerhard Kubik at Njalo-vekwoe village, east of Yoka-douma, Cameroon, in December 1969. A log xylophone called *Mentsyang*, played by Jean Kamboyo—an old man born about 1897.

II. XYLOPHONE MUSICAL STYLES

If the xylophone was brought from Indonesia to Africa, what of the music played? Does the style of playing in Africa show evidence of Indonesian origins? Those who are familiar with African music will probably feel there is something unreal about the question, for it ignores the very widespread characteristic handling of rhythm in Africa. When Africans combine a number of instruments they nearly always set up a series of cross-rhythms, each instrument having a rhythm of its own which is integrated with, but cuts across, the rhythms of the others. *Prima facie*, then, one would expect Africans to handle their xylophone orchestras as they do their drums, building up a resultant rhythmic pattern arising from the crossing of rhythms played on each xylophone. With this in mind, let us start our investigation by looking at Indonesia. What are the principles involved in the playing of their *gamelan* orchestras?

Indonesia contains two entirely different techniques. The one most widely used is found in Java and in Thailand. Let us take this first. The system is built on six essential factors. All the music is in duple rhythm. All the instruments are in phase with one another. A full score will therefore have bar-lines running right down the page, as each instrument is performing to the same duple time. There is a 'Nuclear Theme' or main tune. This tune is accompanied by the rest of the orchestra in two ways: the gongs divide the nuclear theme into sections, and strike on the last beat of each section (at least they do so in Java): the *panerusan* instruments —

gendèrs, *bonangs* and *gambang kayu* — play elaborations of the nuclear theme by subdividing its time-beats. The Javanese measure contains four time-units: but whereas we Westerners would accent the first and third beats, the Javanese place the main accent on the fourth beat, and a minor one on the second.

The details just given are intended merely to indicate the basic rhythmic set-up of the music. For fuller details about Java one turns to Mantle Hood and Jaap Kunst.¹

In Thailand the rhythmic system is similar, the only difference apparently being that they seem to accent their duple time as we do in the West, that is, the gongs will accent the first beats of the bars and so on. Phra Chen Duriyanga prints some short but useful full scores in his '*Thai Music*'.²

In Africa, while xylophones are often played as single instruments, they are sometimes used in combination. This is preeminently the case among the Chopi people of Soth East Africa whose orchestras may contain up to some twenty xylophones, the instruments being of five different classes according to their pitch-range. To illustrate the sort of music played, we give in Figure 3 a few bars from the transcriptions set out in Hugh Tracey's book on the Chopi.³

The following points are noteworthy. First, there is a leader who plays the principal melody. This is a series of musical sentences of 16-bar length divided into two sections of 8 bars each.⁴ Second, the music is thoroughly duple in rhythm: the orchestral ground consists of two groups of four bars each, consistently repeated: and each bar is in 2/4 time. Whether all Chopi music is in duple time there is not enough evidence to decide. Third, all the instruments are in phase. Fourth, except for *Gulu* (the lowest sounding xylophone) the instruments, where they are not duplicating the main tune, are often embellishing it: this is especially true of *Cilanzane*. Fifth, the second *Gulu* player places his accents on the second and fourth beats of the bar.

¹ *Patet in Javanese Music*: Mantle Hood. Pub. J. B. Wolters, Groningen, Djakarta, 1954. *Music in Java*: Jaap Kunst. The Hague, 1949. For full scores see Vol. II, Appendix 3, pp. 481-489.

² *Thai Music*: Phra Chen Duriyanga. Thailand Culture Series, No. 8. Pub. by The National Culture Institute Bangkok, 1956. Pp. 48 ff.

³ *Chopi Musicians*: Hugh Tracey. Pub. for the International African Institute by Ox. Univ. Press, 1948. The transcription follows p. 164.

⁴ Tracey, *op. cit.* p. 162.