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UMI®
THE DISTRIBUTION, CONSTRUCTION, TUNING, AND PERFORMANCE TECHNIQUE OF THE AFRICAN LOG XYLOPHONE

D.M.A. DOCUMENT

Presented in partial fulfillment of the requirements for the Degree Doctor of Musical Arts in the Graduated School of The Ohio State University

By

Yoo Jin Bae, B. M., M. M.

*****

The Ohio State University
2001

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Professor Daniel Avorgbedor, Co advisor
Professor Susan Powell, Co advisor
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Approved by

[Signature]
Adviser
School of Music
ABSTRACT

The log xylophone is a unique subcategory of xylophones in Africa and is identified mainly by the lack of a resonator attachment. Pieces of log or wood, bundles of grass, or banana stems are commonly used to serve as the support frame on which the wooden slats rest. In this study the leg xylophone is considered under the log xylophone topic since in the leg xylophone, human legs function in ways similar to the log.

Due to the unusual distribution of the xylophone in the African continent, some scholars tend to suggest Asian origins for the African xylophone. Indonesia, specifically, stands out in the works of Arthur Jones as a possible origin; his arguments are built around samples of evidence on equidistance tuning, geographical distribution, similarities in construction, and cultural practices.

The Ugandan amadinda xylophone is presented here as the representative log xylophone with supportive examples from Omabe and kponingbo xylophones along tuning, construction, and playing technique. The African xylophone remains a challenge to organologists, ethnologists, and percussionists.
Dedicated to my father, PhD in heaven.
ACKNOWLEDGMENTS

First of all, I really appreciate the help of my advisor, Dr. Avorgbedor, who brought up this topic and made it possible for me to continue with this research. Also accountability as a Christian perspective gave me a lot of strength through the period of writing.

Also I want to thank my performance advisor, Susan Powell, who helped me in many ways.

I wish to thank to Dr. Patricia Flowers, who is the graduate Chairperson of the School of Music. Her advice and effort under the circumstances was really helpful during my years here at The Ohio State University.

Finally, I want to convey my deep appreciation to my father, who encouraged me at all the times and made it possible for me pass through every step of this achievement.
VITA

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Field of Study

Major Field: Music Performance (percussion)
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CHAPTER 1

INTRODUCTION

The African xylophone is an ancient instrument that has been re-designed and diversified not only on the African continent but also all over the world. The African xylophone is found in many African regions from the east to the west and the south to the north, with a slightly different look and performance practice. There are, for example, different xylophone traditions from among the Lobi and Mande peoples of west Africa and from among the Ganda people of Uganda. Also there are intra-regional and inter-regional difference in the construction, function, tuning, and performance technique of the xylophone in Africa.

Many scholars have tried to classify the instrument as well as determine a common origin and patterns of diffusion to establish a common origin for the xylophone. Scholars have tried to find the genealogy, history, and cultural differences.

Hombostel and Sach classify African traditional instruments into several categories. Hornbostel arranges African sound-producing instruments\(^1\) and their distribution, from Africa and from outside of Africa, classifying the xylophone into

two categories: log xylophone and gourd xylophone. Other sources classify them into two general groups: free key xylophone and fixed key xylophone.

The log xylophone is generally classified as a free key xylophone. However, in the *New Grove dictionary*, which has two different classifications for xylophones, free key and fixed key, the log xylophone is found in both classifications: free key xylophone and fixed key xylophone. With these unclear classifications, a reader might be confused because of the vague definition of what a log xylophone is. A lack of information may lead people into erroneous information about this instrument. For this reason, I want to clarify what the 'log xylophone' is and define the fundamental aspects of this instrument. In the main chapter, I will discuss the 'classification of the African xylophone' and further identify the 'log xylophone'.

The African xylophone has become popular due mainly to the globalization of world music. With the lack of information and documentation, there are not enough resources on African music to convey adequately the impact the instrument has on the rest of the world. In Europe and the United States, some museums have traditional African xylophones, for example, the Smithsonian National Museum of African Art, the Musée Royal de l'Afrique Centrale in Tervuren, the UCLA museum, and the Metropolitan Museum of Art in New York. Most of the museums have just a few instruments in their xylophone collection, and the log xylophones are particularly few in number. The Metropolitan Museum of Art in NYC has only two sets of the log xylophones: a 5- key xylophone (with missing supports) from Kenya (Mombasa), and a 12-key xylophone from Gabon. Surprisingly, information on and collections of
African xylophones are rather sketchy and limited in quantity, especially when we consider the overwhelming influence of African music and musicians\(^2\).

The limited collections and lack of information on the traditional African xylophone and African instruments in museums does not paint a genuine picture of the impact of their influence. In the real world, there are commercial businesses which sell simple versions of African instruments such as the log xylophone (Paul Tracey’s catalogue of favorite things: 9 note log xylophone-$90.00, 11 note log xylophone $100.00)\(^3\). There are a lot of musical events related to the African culture and their instruments throughout the world. The presence of percussion is so relevant that there is a Percussive Art Society museum in Lawton, Oklahoma; it is the most important percussion instrument collection in the world, including those in Africa. Each year, a variety of African ensembles, master classes for drums, and other special events are highlighted at the Percussive Arts Society convention.

Famous percussion groups such as NEXUS and Percussion Group Cincinnati now have African instruments and rhythm in their music repertoires. Musician Derrick Jordan, master drummer Steve Reich, and Jay Cook have joined and played together, featuring African drums and a Balafon (xylophone of the Monde people).

Since African music and its instruments were introduced to Europe as a folk music, many composers have used African sound for their music. By the 19\(^{th}\) century, Polish and Russian xylophone and marimba performers had popularized the sound of African music in Western Europe. The first use of xylophone in Western music was

\(^2\) Interview with Ken Moore, curator of Musical Instruments at the Met Museum of Art, NYC, Aug 2, 2000.

in *Danse Macabre* (1874) by the French composer Camille Saint-Saëns. The Russian composer Stravinsky used a xylophone in his *Petrouchka* in 1911. Twentieth-century composers more frequently score xylophone and African instruments in their works, as in Reich, Ligetti, and Xenakis. This is true not only in classical music, but also in Pop music (Rock music) as well.

...Many elements of African American music have been a continuing source of influence on rock music. These characteristics include riffs (repeated patterns), backbeats (emphasizing the second and forth beats of each measure), call-and-response patterns, *blue notes* (the use of certain bent-sounding pitches, especially those related to the third and fifth degrees of a musical scale), and dense buzz-sounding timbres, or tone color.

Furthermore, in music education many music schools now greatly encourage the practice and incorporation of African musical instruments and activities. Many universities and music conservatory programs or departments of percussion emphasize what is generally called Ethnic Percussion, which often includes ethnic musical instruments and related traditions.

I chose the African xylophone as the subject of this dissertation primarily because of the kinship relationships with the keyboard instruments of the Western orchestra (such as marimba, xylophone, and orchestral bell). As percussion major, I always wanted to know the relationship between ancient and current percussion keyboard instruments in terms of methods, techniques, repertoire, and the history of these

---

instruments. Therefore, African log xylophone drew my immediate attention as a potential subject for this research.

My interest in the marimba led me to this research. It is thought that the marimba was derived and evolved from the African xylophone because of the way of construction, tuning, resonator, and finally performance practice. Through use of African instruments for educational purposes and in commercial music, the sound has become more popular. Readers will gain a better understanding of the African xylophone by comparing old and new: time, new technologies, diffusion, techniques, and construction are factors that must be taken into account when researching the African xylophone.

Another interesting point that inspired me to do this research is the fundamental importance of the African xylophone—especially log xylophone, one of the earliest versions of African xylophones. I wanted to trace back the history of the African xylophone in terms of technique and development in performance practice from ancient to modern. I wanted to know the similarities and differences according to changes in social environments, depending on factors like politics, population, religion, and so on.

In early periods of history, art could not be separated from the society and its culture—‘total art’, where music, culture, dance, drama and social activities, which are now diversified and specialized individually, were the components of the art itself.

In this paper, I also want to touch a little bit on the relationship between log xylophone and other musical instruments. It is important to relate the log xylophone to other African instruments and instrumental traditions mainly because there seem to be tone or timbral preferences that unite the sound properties of these instruments across several African societies. Thus, although musical instruments may be morphologically different, yet their sound products are very similar due to the preferences mentioned above. In this dissertation, I will briefly examine the timbral connections (and their performance techniques) that unite the log xylophone and other musical instruments. In this way, the reader will better appreciate the principles of tone production, resultant tone quality, and perhaps the repertoire of the log xylophone. The related instruments to be discussed will include the *mbira* (plucked idiophone), Tuned drum, even stringed instruments such as the harp-lutes commonly found in East, West, and Central Africa.
CHAPTER 2

LOG XYLOPHONE

2.1 Definition

The log xylophone is a subcategory of the xylophone family. The basis for the sub-categorization under the label “log” is explained in the use of a piece of wood or tree that supports the xylophone keys. Many authors are in agreement about these basic features that characterize a log xylophone. However, a detailed study of the instrument reveals some discrepancies in how various authors define a log. For example, in the literature examined, banana stem, which is composed of soft fibrous tissue, is often subsumed under a “log,” and for this reason many East African xylophones that employ banana stems are described as “log xylophones.” The lack of field and published information on the African log xylophone sometimes complicates any effort to formulate an adequate definition and label for the log xylophone. The standard work on the classification of musical instruments by Hornbostel and Sachs lists “log” as one of the ten subcategories of xylophone. Hornbostel and Sachs employ the main criterion.

2.1.1 Classification

Due to the various and different types of musical instruments, scholars classify African musical instruments into several categories. They adopt certain methods for
classification. Margaret J. Kartomi in her *On Concepts and Classifications of Musical Instruments*, mentions such classification methods as Taxonomy, Typology, Paradigm, and Downward and Upward Grouping. However, all classification methods are based in part on a scholar’s hypothesis or assumption. Therefore, readers are sometimes confused because of the different approaches to classification.

In their classification of African musical instruments and their regional distributions, Hornbostel and Sachs categorize the xylophone as an idiophone. Their system, presented in *Classification of Musical Instruments* by Erich M. Von Hornbostel and Curt Sachs, moves from the large point of view into smaller sub-categories:

In general we have tried to base our subdivision only on those features which can be identified from the visible form of the instrument, avoiding subjective preferences and leaving the instrument itself unmeddled with....¹

For further subdivision, they use the “Dewey numerical system”, which helps in cataloguing and describing:

If those in charge of large collections who issue catalogues in the future decide to accept our numerical arrangement, it will become possible to find out at first glance whether a given type of instrument is represented in the collection. ²

To sort instruments from a large point of view to a specific example, they use Roman numerals: I – indicates the general category idiophone. The further subdivision II

² Ibid., 126.
indicates struck idiophones. Therefore, the addition of numbers shows the further process of division. Following is the classification from idiophone >> xylophone >> log xylophone:

<table>
<thead>
<tr>
<th>Classification</th>
</tr>
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<tbody>
<tr>
<td>I <strong>Idiophones</strong>- The Substance of the instrument itself, owing to its solidity and elasticity, yields the sounds, without requiring stretched membranes or strings</td>
</tr>
<tr>
<td>II <strong>Struck idiophones</strong>- The instrument is made to vibrate by being struck upon.</td>
</tr>
<tr>
<td>III <strong>Idiophones struck directly</strong>- The player executes the movement of striking; whether by mechanical intermediate devices, beaters, keyboards, or by pulling ropes, etc., is immaterial; it is definitive that the player will apply clearly defined individual strokes and that the instrument itself is equipped for this kind of percussion.</td>
</tr>
<tr>
<td>III.2 <strong>Percussion idiophones</strong>- The instrument is struck either with a non-sonorous object (hand, stick, striker) or against a non-sonorous object (human body, the ground)</td>
</tr>
<tr>
<td>III.21 <strong>Percussion sticks</strong></td>
</tr>
<tr>
<td>III.2II <strong>(Individual) percussion sticks</strong></td>
</tr>
<tr>
<td>III.2I2 <strong>Sets of percussion sticks</strong>- Several percussion sticks of different pitch are combined to form a single instrument.</td>
</tr>
</tbody>
</table>

Table 2.1: Classification
Further Stage of Classification

<table>
<thead>
<tr>
<th>Table 2.2: Further classification</th>
</tr>
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</table>

The authors say that this further classification is based on use of morphological criteria from an ethnological point of view. However, the definition of the sub-categories confused readers because of similar functions of foundation and resonators. For instance, under log xylophone the prime criterion is the “two separate logs” beneath
the keys, while Sledge Xylophone has the edges of two boards. Then, the differences between two logs and two boards could be a source of confusion because the meaning of log is basically a tree or wood.

In addition, according to the note for log xylophone, "There is generally a shallow pit in the ground beneath the sounding bodies." The function of the ground hole would be as resonator, while the trough xylophone has a trough or box-shaped vessel. Such descriptions of resonators under different categories are dubious because it can be argued that the function of the hole in the ground can be a similar to the function of the box-shaped vessel.

Figure 2.1: Xylophone with box resonator

In terms of resonator, Hombostel classifies in his article ‘The Ethnology of African Sounding Instruments’, the log xylophone as a two sub categories, where both sledge xylophone doesn’t have resonators and tray xylophone has a shallow wooden tray, the function of the resonator. However, this classification also gives confusion what is the main criteria of the log xylophone: between resonators or two logs.

<table>
<thead>
<tr>
<th>Xylophone.</th>
<th>A set of wooden slabs supported at two points and struck with beaters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>III. Log-Xylophone.</td>
<td>Slabs laid on two parallel logs.</td>
</tr>
<tr>
<td>(Holm-xylophone.)</td>
<td></td>
</tr>
<tr>
<td>A. Sledge-(x).</td>
<td>Slabs laid on a frame like a sledge.</td>
</tr>
<tr>
<td>A. Tray -(x).</td>
<td>Slabs laid on a shallow wooden tray.</td>
</tr>
<tr>
<td>V. Gourd –-Xylophone.</td>
<td>A gourd resonator under every slab.</td>
</tr>
<tr>
<td>A. Table –(x).</td>
<td>Slabs laid on a stand like a table.</td>
</tr>
<tr>
<td>A. Bail –(x).</td>
<td>Slabs laid on a straight frame that is hung round the player’s neck by a strap and kept away from his body by a rod bent into a semicircle.</td>
</tr>
<tr>
<td>A. Concave –(x).</td>
<td>Slabs fixed on a semicircular (cradle -shaped) frame.</td>
</tr>
</tbody>
</table>

Table 2.3: Classification of xylophone by Hombostel

On the other hand, the Grove dictionary has slightly different types of categories of classification, which are based on the work of Olga Boone. Boone says that these categories are not based on evidence of the development of the instrument but are

---

concerned with the primary characteristics of the instruments, based on physical appearance:

<table>
<thead>
<tr>
<th>Free key xylophones</th>
<th>Fixed key xylophones</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Leg Xylophone-</td>
<td>(a) Without calabashes*-</td>
</tr>
<tr>
<td>(b) Pit Xylophone-</td>
<td>(b) With one or two calabashes</td>
</tr>
<tr>
<td>(c) Log Xylophone-</td>
<td>(c) With multiple calabashes-</td>
</tr>
</tbody>
</table>

* this indicates various types of gourds.

Table 2.4: Examples of free key xylophone and fixed xylophone

Free key xylophones are defined as xylophones with keys that are independent from other keys and from the mainframe, while fixed key xylophones have keys which are tied together and not independent from the main frame or supports. Leg xylophone, pit xylophone, and the log xylophone are included in the category of free key xylophones, where each key is loosely and temporarily attached to the supports.

The leg xylophone is usually played by young girls or boys to keep birds or monkeys out of the area or as a practice activity in Senegal. Two to six keys are played on the

---

performer's thighs. In addition, to enhance the resonance, gourds or pots are placed
underneath the keys.

Figure 2.2: Leg xylophone

A pit Xylophone, in which keys are placed at a 90 degree angle on a banana tree trunk
or a glass bundle, is the most representative form of the free key xylophone. The pit
xylophone and log xylophone have the same physical appearance with the banana-tree
trunks or grass bundles as a frame. The only difference between these xylophones is that
the pit xylophone has additional space, the pit, and, therefore, the sound is amplified
compared to the sound of the log xylophone.

Finally, in Table 2.5, I present three different kinds of classifications which show
various stages of the log xylophone. In the column of Hornbostel and Sach, the
xylophone belongs to the class of idiophone. The log xylophone is included as a bedded

---

xylophone (The sounding bodies rest on an elastic foundation), and at a parallel stage with the log xylophone are the frame xylophone, sledge xylophone, and bedded) trough xylophone. In Hornbostel’s classification, the xylophone is categorized as an idiophone, and the log xylophone is the next level of classification. Then, under log xylophone, there are two kinds of log xylophones specified, sledge xylophone and tray xylophone. In the Grove dictionary, there are two main categories of xylophone, free key and fixed key. Under free key xylophone, the log xylophone is the one model, along with two other types of xylophones, leg xylophone and pit xylophone.

<table>
<thead>
<tr>
<th>Hornbostel &amp; Sachs</th>
<th>Hornbostel</th>
<th>Grove dictionary*</th>
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<tr>
<td>Idiophone</td>
<td>Idiophone</td>
<td>Free key xylophone</td>
</tr>
<tr>
<td>↓</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Xylophone</td>
<td>Xylophone</td>
<td>Leg xylophone</td>
</tr>
<tr>
<td>↓</td>
<td>↓</td>
<td>Pit xylophone</td>
</tr>
<tr>
<td>Bedded xylophone</td>
<td>Log Xylophone</td>
<td>Log xylophone</td>
</tr>
<tr>
<td>Log xylophone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame xylophone</td>
<td>Sledge xylophone</td>
<td></td>
</tr>
<tr>
<td>Sledge xylophone</td>
<td>Tray xylophone</td>
<td></td>
</tr>
<tr>
<td>Trough xylophone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* the Grove dictionary of musical instruments.

Table 2.5: Different classification of log xylophone
2.2 GEOGRAPHICAL DISTRIBUTION

2.2.1 West Africa - Guinea (Kissi), Liberia (Kpelle), Ivory Coast (Guere people), Benin (Yoruba), Nigeria (Igbo people), Cameroon (Bamum and Bamileke), and Chad (Sara)

The coastal forest region of Guinea has a xylophone; which is called the "xylophone drum." It is made from banana stems or hollowed logs and played at the beginning of a rite among the Kissi people.

Igbo people in Nigeria, they call xylophone Ngedegwu; however, within the same country, there are several different names that indicate a xylophone. In Port-Harcourt, Nigeria has a xylophone rack, rather than two separate logs tied by a banana stem. The function of the xylophone rack is that it creates the effect of a pit xylophone, where slabs are laid on the ground over a deep hole. There is also a certain society, called Omabe, at Amofia in the northern part of Igbo land that has a xylophone. In the Ivory Coast, the jomolo xylophone in Baule is the one of the log xylophones.

The large log xylophone type can be found in west Cameroon among the Bamum and Bamileke people (Grove dictionary).

2.2.2 East Africa - Tanzania (Makonde), Uganda (Ganda or Buganda), South West Ethiopia.

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1 These countries from geographical distribution are mostly from Grove dictionary of Musical Instruments.
3 Joy Nwosu Lo-Bamijoko 'Performance Practice in Nigerian Music' Black Perspective in Music Vol 12, No.1 1984: 17
In Ruvumba, a region on the southeast side of Tanzania, the Makonde people use the *chityatya*, a small gourd-resonated eight-note lamellaphone, the *akanyembe* (one string fiddle) and the *dimbila* (log xylophone).

The *dimbila* xylophone usually has six keys placed over two hard stems of wood or soft banana stalks. Bundles of grass are placed on the two stems to give the keys a soft base, and the light and flat keys are pegged at one end with small sticks. The other end is left loose, but at both sides of each key small stick is pressed into the grass bundles. Two musicians sitting obliquely opposite each other play this instrument. Log xylophone of a slightly different type also occurs among the Makua and Yao.

The xylophone found in the southern part of Uganda is the log xylophone. It consists of two fresh banana stems, which are placed under the slabs. Examples of the log xylophones in Uganda are the *embaire* (15 keys), the *amadinda* (12 keys) and the *akadinda* (22 keys).

2.2.3 Central Africa - Gabon (Fang), Central African Republic (Zande), and Zaire (Pende,)

There are two types of xylophone in Gabon. Xylophones were introduced to the Zande people in the early 19th century; before this time, the xylophone did not appear in

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this area. One of the xylophones of Gabon, medzang m’biang, is a log xylophone whose keys number from 8 to 15 and rest on two fresh banana trunks. The other type of xylophone in Gabon is portable fixed key xylophone.

The Zande people in the Central African Republic make a log xylophone from the wood of the lusambya tree. There are two types of log xylophone one is small. The small one, the Manza log xylophone, has 5 keys. Unlike other log xylophones, the player strikes in the middle of the bar rather than on the edge, and xylophone is played by only one performer. By contrast, the Kponingbo is a big log xylophone, which has a 12 or 13 keys. Both small and large types of xylophone are laid out over two banana stems.

2.2.4 Southern Africa - Mozambique (Chopi, Makua, and Yao), and Malawi (Yao, Mang’anga, and Lomwe)

The Mangwilo xylophone is found in Alomwe and Ashirima. The Dimbila xylophone of Makonde is found in the northern part of Mozambique.

Malawi has two kinds of xylophones. One is the log xylophone, called the Lomwe Mambirira. It usually has seven keys and is tuned in a heptatonic scale. Two musicians play in slightly angled and opposite direction from each other. The playing technique is described as interlocking with cross rhythm as in Kiganda music.

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8 Ibid. 106.
10 Ibid. 552
Figure 2.1: Distribution of log xylophone (with ethnic groups)
Figure 2.2: Distribution of log xylophone
Figure 2.3: Distribution of leg xylophone
Figure 2.4: Distribution of pit xylophone
2.3 ORIGINS OF THE XYLOPHONE

Before speaking of the origin of the xylophone, we should think of the several names of xylophones and their origins. First of all, in Europe ‘African xylophone’ was known as ‘Balafon’ in early literature. ‘Bala’ means ‘wood’ and ‘fo’ means ‘to speak’. The Balafon (Bala player) was introduced to Europe around 1500. Schilick (Spiegel der Orgelmacher) referred to the xylophone as a hültze glechter – ‘wooden clatter’ when it first appeared in Europe. The first attempt at describing the xylophone occurred in Agricola’s musica Instrumentalis (1529). The first picture of the xylophone was shown in Praetorius’s Theatorum Instrumentorum (1620) – organographia / syntagma musicum by praetorius.

Figure 2.5: xylophone illustration by Mersemme

4 Ibid. 10
In Italy, the first instruction manual for the xylophone was published in 1695. At that time, the xylophone was very simple in construction with no resonator. In the nineteenth century, people in Europe began to put resonators in xylophones, influenced by the popularity of the American marimba, which came from Guatemala. The xylophone quickly got the attention of Romantic composers. Besides the early example of *Danse macabre* (1874), Mahler’s sixth symphony has a xylophone part in its orchestration.6

In Africa the term balafon (xylophone from Mande people)7 usually indicates the gourd-calabash resonated xylophone. It is widely spread and used especially by the Mande people in West Sudan (Jessup). Also it can also be found in Mali, Senegal, Guinea, Gambia, Guinea-Bissau, Sierra Leone, and the Republic of Guinea.

Another name we should consider is ‘Marimba.’ Currently, we know the ‘Marimba’ as one of the percussion keyboard instruments, which has a metal resonator and wooden bars with the range of the whole chromatic scale. However, historically, ‘Marimba’ was originally the name of a particular xylophone among other African xylophones and then, later, it was adopted in Latin America. The ‘Marimba’ in Latin America indicates a certain type of xylophone or lamellaphone (plucked instrument) with a calabash resonator from Africa. There are two hypotheses about the influx of the calabash xylophone. One is that the influx was in the Pre- Columbian period and the other that it was brought in a later century by African slaves. The gourd-calabash type xylophone is still played in Peru and Brazil.

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7 The name Balafon, a xylophone among the Mande people, is sometimes used to refer to “African xylophone” because balafon was the first xylophone introduced in Europe and then the name was generalized to other xylophones.
In Africa, the term ‘Marimba’ is from Bantu language. Among the Mang’anja and Lomwe of Malawi and in Mozambique, ‘limba’ or ‘rimba’ implies a single-note xylophone (Grove). There are many kinds of xylophones or lamellophones with names derivative of –limba or –rimba among the Bantu ethnic groups, such as ‘silimba’ in the Lozi of Zambia, ‘ulimba’ or ‘valimba’ in the Sena of Malawi. Therefore, it can be said that different prefixes indicate slightly different types of xylophones. Besides the Bantu-speaking area, other regions such as the Shangana-Ndau people of Mozambique have calabash-resonator xylophones. Under ‘marimba’ the Grove dictionary explains that ‘timbila’ xylophone is the largest and most advanced xylophone. It has an individual gourd resonator and is played by the Chopi people of Mozambique. In the Congo, there is a portable xylophone with calabash resonators called the ‘marimba’. There are other regions as well where the name of xylophone is ‘marimba,’ this is a source of confusion. In Tanzania, Zanzibar, and Pemba people use the term ‘marimba’. However, the east-coastal Tanzania has the box resonator marimba, while in inland Tanzania ‘marimba’ indicates a lamellaphone-plucked idiophone like mbira. Because there are so many similar names related to the xylophone among different ethnic groups, I would like to define these terms:
<table>
<thead>
<tr>
<th>Instrument</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ilimba</strong></td>
<td>One key xylophone of the Nsenga people in Zambia</td>
</tr>
<tr>
<td><strong>jinjimba</strong></td>
<td>Two key instruments in Angola.</td>
</tr>
<tr>
<td><strong>mbira (mbila)</strong></td>
<td>Either indicates xylophone or lamellaphone.</td>
</tr>
</tbody>
</table>
                        2. Box- resonated xylophone among Zaramo people in Tanzania and Pemba.  
                        3. Lamellaphone- in inland Tanzania.                                    |
| **silimba**         | Xylophone among Lozi of Zambia.                                            |
| **timbila**         | Xylophone for Chopi people.                                                |
| **ulimba or valimba**| Xylophone among Sena people of Malawi.                                     |

Table 2.6: Definition of various names of African xylophones.

The east coast of Africa and west side of South-East Asia are connected by the Indian Ocean. Many scholars and ethnomusicologists try to explain the relationship between these two areas and their imports or exports of instruments, such as the xylophone. For example, A. M. Jones has a strong hypothesis that is founded on some
evidence of similarities like tuning system, construction, the keys, compass of the instruments and instrumentation of the ensemble and their performance practice. His conclusion is that the African xylophone is influenced by or adapted from the Indonesian xylophone. On the other hand, some scholars argue that the influence was in the opposite direction, that is, from Africa to Indonesia. However, many sources seem to support the theory of Jones. More arguments on the origin of the xylophone and the influence between these two continents are considered later in this chapter.

Now, I want to mention some early versions of the xylophone in Africa. There are two types of xylophones which are accepted as within the legitimate classification of xylophone: 'free-key xylophone' and 'fixed-key xylophone'. The differences between the fixed-key xylophone and the free-key xylophone have already been explained in the previous chapter. However, I want to focus more on the free-key xylophone, especially its definition and geographical distribution. These early types of xylophones can be very useful in an argument to support the African origin of xylophones.

The leg xylophone is one of the earliest xylophone types, where human legs are the frames for the xylophone keys and the space between the two legs becomes the resonator. Sometimes people put keys on their upper thighs, knees, or even ankles. Usually, young children play the leg xylophone with a stick or a rock(s). Sometimes a person will just sit with a key(s) on his or her outstretched legs and a second person strikes the key(s). In terms of the natural way in function of resonator, I want say that the leg xylophone is part of the class of the log xylophone because of the natural function of

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9 Ibid. 20.
the resonator. There is no artificial mechanism for resonator. Only the natural space between the human legs increases the xylophone sound.

Yoruba people in central Dahomey play three keys with two stones. The Valley Tonga people of Northern Rhodesia play four keys, and the instrument is called *Chikerekore*, played by men. The distribution of the leg xylophone is Senegal, Guinea, Sierra Leone, Ivory Coast, Togo, Benin, Southeast Nigeria, Central African Republic, Zambia, Malawi, and Madagascar.

The log xylophone is one of the free-key xylophones; it has two fresh banana stems or logs lying at a 90° degree angle with the slats. The keys are loosely tied on the frame and there are no resonators attached underneath the keys. As with the leg xylophone, the space under the two logs has the function of a resonator. Therefore, basically, the leg xylophone and the log xylophone have somewhat similar structures in terms of the natural resonators. However, the maps of leg xylophone and log xylophone do not exactly match each other. They probably started and were evolved from the same idea but spread and were modified in different areas and then survived individually.

There are a lot of types of log xylophone, from the primitive to the highly complex. For example, the *akadinda* xylophone has 22 keys and is played by six people. The distribution of the Log xylophone is Guinea, Liberia, the Ivory Coast, Nigeria, Cameroon, Gabon, Central African Republic, Chad, northern Zaire, Malawi, Mozambique, Tanzania, Uganda, and southwest Ethiopia.¹¹

The third early version of free key xylophone is the ‘Pit xylophone.’ Unlike other free key xylophones, in this instrument, the pit becomes a resonator. Several keys, from

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four to thirteen, are placed on banana stems or grass bundles across the pit. Presently, this type of xylophone is played by small children or used as a practice instrument. In Zaire, among the Luba people, the pit is used as a tuner. In other words, they test individual keys by putting them across the pit before mounting them onto the gourd resonator or the banana tree trunk.

With regard to the origin of xylophone and its influence between Africa and Indonesia, people such as Ankermann undertake the research by the way of the ‘organology’ method. He approaches instruments not only from the music itself but also through similarity in construction between two different types of instruments. Therefore, the xylophone has become a hot issue in terms of finding out the cultural influence from one region to another because it is become a major instrument and has wide diasporas throughout Africa, Asia, and South America. Ankermann concludes, “I do not believe in the importation of the Marimba (xylophone) from Asia to Africa, it seems to the contrary more likely that they were invented independently in both places.”

Von Hornbostel’s research seems to approach the issue in a more scientific way; he researches comparative study of ‘tuning’ between Burmese and central African xylophones and sets out some similarities like tuning system and absolute pitch. He also develops the further complex idea of ‘the circle of fifth’ under the tonal system and compares Oceanian and South American panpipe to find some pitch relationship. In his article, “The Ethnology of African Sounding-Instruments; A Tentative Grouping of African Sound-Producing Instruments with Reference to Their Extra-African

12 Bernhard Ankermann, Dei Afrikanischen Musikinstrumente Notizblat (Berlin: Zentralantiquariat, 1983)
Distribution,” Hornbostel defines log xylophone as an instrument of the ‘West African Culture’:

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>Other Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Xylophone</td>
<td>Upper Guinea, Yaunde, Tanganyika Territory</td>
<td>Indonesia- Melanesia- S. America.</td>
</tr>
</tbody>
</table>

Table 2.7: Distribution of Log xylophone in West Africa and Other regions

The only African xylophone belonging to the West African culture is the log-xylophone. A peculiarly archaic form of this, with only two slabs hollowed out on their upper surface, which is used for signaling, might be assigned to a still earlier stratum (possibly L3.b), on account of its extremely sporadic distribution (the Gyabo [GREBO] in Liberia, New Britain, the Uitoto Indians in Columbia); it is the only form of the xylophone to be found in America. (285)

The West African culture extends in a broad belt from the Western Sudan to the mouth of the Zambezi, with maximum density in the Congo basin and less continuity in the north-western and south-western marginal area. The extra-African distribution extends continuously from South or East Asia, through Oceania, to South America. (284)
Another person who should be considered in a discussion of the origin and diffusion of the xylophone is Jaap Kunst (1891-1960). His remarkable research of Indonesian music and instruments has made it possible to find more similarities in the construction of xylophones and their musical context between African and Indonesian cultures. In terms of the manner of xylophone tuning, he tries to move a further step in the 'circle of fifth', which is the idea of Hornbostel, and sets forth some intervallic relationships of the Pelog and Slendro scales of Gamelan music. In addition, in his book, *The Cultural Background of Indonesian Music*, Kunst shows that many instruments in Indonesia have a relationship with other cultures, not only in Africa but also in China, Japan, Korea, Egypt, and even Mesopotamia. In the speaking of the xylophone, he mentions parallelism between Africa and Asia:

Finally the famous case of the Javanese and Balinese *gender*, that highly developed metallophone or xylophone, of which the keys are suspended above sympathetically tuned sounding-tubes. It provides us one of the rare cases that the archipelago, namely Java, has been the giving, the creative region. For it is from Java that this instrument came to the African continent, nobody knows in which way and when. Now it is to be found there in many regions from Mozambique in the southeast to Senegambia in the northwest, and is generally know in musicology as *marimba*. Another widespread name is *balafon*. The fact that they have exactly the same scale- in a relative sense, i.e., concerning the intervals, as well as regards the absolute pitch- proves that there is an organic relationship between the Javanese and the African instrument. (9)
A. M. Jones has a strong opinion and hypothesis about the Indonesian origin of the African xylophone (Grove). Due to his efforts and scholarly work, it seems to be accepted in the theory of Jones and other companions like Kirby that some instruments including the xylophone are of Indonesian origin. However, his work cannot achieve to 100% support of Asia origin for the instrument of Africa. In his book, *Africa and Indonesia: The Evidence of the Xylophone and Other Musical and Cultural Factors*, he presents several facts that he asserts prove that some similarities between Indonesian and African and instruments indicate the xylophone was brought from Asia in the past. Among the factors are argued in his book, first of all, he questions the limited geographical distribution of the xylophone:

We see it established along a considerable extent of the West coast from latitude 15° N. right round the Gulf of Guine, including and extending beyond the whole of the lower Niger basin. From here it penetrates inland parallel to, and south of the Sahara in a broad belt almost as far as the Nile. On the East coast it is found between latitudes 5° and 12° south, extending inland as far as Lake Nyasa, and again opposite Madagascar, where it sweeps up inland to the heart of the continent embracing the lower Congo basin, and covering most of Angola. It includes part, at least, of Gabon, and, as we shall see, it formerly extended right up to the mouth of the Congo River.(9)

Even though African instruments are simple/rough in shape, they show high-quality mechanics and skills in construction. For example, Jones draws attention to the materials of xylophone slats, which are mostly hard wood with broad a tonal range. In terms of construction of the xylophone, “the slats are usually supported or suspended in a
row by two leather thongs or sometimes strings, which pass round or through a hole near both ends of the slats, at the point where the nodes are situated" (10). Also the African xylophone occurs in a variety of sizes and shapes. The log xylophone keys number from six to twenty two. One of the largest and most famous of the log xylophones is the Akadinda in Uganda, where it has 22 keys and is played by six people.

The Indonesian keyboard instruments are made of metal such as iron and bronze; they are classified as “metallophone,” whereas the African xylophone is classified as “Idiophone,” which Hornbostel and Sachs address this name in their article.

Jones observes that the Indonesian and other East Asian xylophone keys are equally divided in pitch. In other words, there are two kinds of scales in Indonesian music: Slendro, Pentatonic scale, and Pelag, Septatonic scale. In the Pelag scale xylophone, seven notes are equally divided within its octave into seven degrees of seven full tones equidistant as regards to the different pitches (Jones 12). Slendro has five notes that are also part of the Pelag scale. As we know, Gamelan is a famous large instrument ensemble in Indonesia and Java. Regarding the two kinds of scale-Slendro and Pelog, there are also two kinds of Gamelan ensembles: “Gamelan Slendro” and “Gamelan Pelag.” In the Gamelan orchestra, the largest xylophone, “Gambang Kayu,” has a box resonator and a range of three or even four octaves. But, curiously, two notes of each octave are always missing. In Africa, Jones says that there are similar types of tuning in xylophones: the Slendro type of xylophone and the Pelag type of xylophone. Most African xylophones have five or seven pitches. However, they do not exactly match each other.
Jones points out that it is possible to identify some particular types of tuning such as the "Slendro type of African xylophone" and the "Pelag type of African xylophone." And within this restriction of tuning, he finds some similarities of both pitch and range. Moreover, he says that in the Pelag style of the xylophone, the two missing notes of the "Gambang Kayu" are missing in the African xylophone, too. He also researches the geographical boundaries of the xylophone, the "xylophone compass":

The xylophones themselves appear in the same families as regards both their compass, their pitch, and also the number of keys they contain.

Common to both Java and Africa is the Slendro type of scale, which is Pentatonic, that is, it is, or very nearly is Equipentatonic. In both cases it is laid at approximately the same pitch [...] 15

In speaking of Asian origin, we can find some documents that support this theory. In the Grove dictionary entries for Malawi and Tanzania, we see some sentences that explain the Asian influence:

Malawi has two types of xylophone: one is log xylophone, Lomwe mambirira, and the other one is a gourd xylophone by the Sena people. The largest xylophones are found among the Sena who are settled in the Shire marshes at the southern tip of Malawi [...].

The kalimba, a box resonated lamellaphone (Lamellaphone indicates 'plucked instruments with box', therefore kalimba, sanza, and mbira are basically same.) with eight iron tongues, is still very common among the Tumbuka. Tracy

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(1972) believed that the kalimba was an ancient instrument from which the more
complex types found in southeast Africa might have been derived. (569)\textsuperscript{16}

The Tanzania coast, like the rest of the east African coast, had intensive
contact with the outside world from the earliest times. About the year 300, sailors
from Indonesia visited this part of Africa. Some scholars maintain that, besides
bananas and outrigger canoes, they introduced such instruments as the box-
resonated xylophone and the zeze (flat bar zither). Box resonated xylophones are
not found in the interior of Tanzania but in the north-eastern parts of the coastal
strip, a small area of coastal Kenya and on the islands of Zanzibar and Pemba.\textsuperscript{17}

Percival R. Kirby, in his article “The Indonesian Origin of Certain African
Musical Instruments,” suggests some relationship between the xylophone and the Drum
chime, which is a drum ensemble that has variously tuned drums. The way of tuning and
utilizing scales is very similar to the xylophone:

Dare I suggest that here we have a definite link—a kind of musical “missing
link”—between Burma and Uganda? And in this connection I would emphasize the
important fact that in the year A.D. 724 African Slaves were sent from Sumatra to
China; so that some Africans, at any rate, had been in a position to see and to hear
an ancient Sumatran drum-chime!\textsuperscript{18}

\textsuperscript{18} Percival. R. Kirby The Indonesian Origin of Certain African Musical Instrument (Johannesburg:
On the contrary, there are some people like Roger Blench who strongly deny the "Asian origin of African instruments" in the theory of Jones and Kirby. Blench says that the hypothesis of Asian origin cannot be accepted for two main reasons: "regional restriction" and "chronological disconnection."

In terms of "Regional restriction," Blench points out that other cultures besides Asia should have been imported in Africa such as Egypt and the Middle East or there should be other relationships between East Asia and China. However, many scholars 'only' see the parallel between Asia and Africa. This parallelism is not accurately supported by the real evidence of instruments but based only on historical assumptions. For instance, "Sachs dating of the original migration as previous to 500 A.D. (based on the absence of gongs and tuned metallophones in Madagascar)" (82) shows the approximate time period to support the hypothesis of Asian influence in Africa. However, he cannot prove that such primitive instruments as Leg xylophone did not exist at that time.

There are more debates arising from "Chronological disconnection." First of all, the most popular style of xylophone in Indonesia and Java is metallophone with box resonators. The xylophones in East Asia are usually in a large frame and highly decorated in construction. In Africa, large frame xylophones usually have mostly gourd resonators underneath the keyboards. Besides the large frame xylophone, the one key xylophone (leg xylophone), pit xylophone, and log xylophone exist in African regions. However, it is hard to find an intermediate stage between the leg xylophone and the large frame xylophone in Indonesia. The only exception is gloenggangan, "a type of xylophone
reported from Bali; a set of slats lying on a wooden fame, resonated with hollowed coconut shells placed beneath the keys." (85)\(^9\)

In terms of the large frame xylophone, it is commonly believed that this type of xylophone is imported from Indonesia because this is a typical xylophone style of South East Asia. However, Roger also disputes this fact:

It is sufficient to say that this instrument was certainly introduced from Asia and most probably from Indonesia. Its distribution is conspicuously different from that of the xylophone, as it is found principally along the East Coast. Where it was diffused to the interior of Kenya and Tanzania, and to Zambia, Zaire and Uganda only at the end of the last century. It is surely indefensible to use this as evidence that the xylophone was introduced from Indonesia; to do so is to blur the distinction between a well-established historical fact and a very questionable hypothesis. (89)

Another chronological problem is related to the time period of imports of instruments:

Absence of individually resonated xylophone keys on the reliefs at Borobodur in Java, which date from the eighth and ninth centuries (The first clear illustration of individually resonated keys dates from 1597). A wide variety of instruments are represented, including box- resonated xylophone- implying, perhaps, that the former type had not yet been introduced. If this is so, then it would be impossible for Indonesians to have introduced it to Africa later than this date. (88)

A.M. Jones asserts that Indonesian xylophones are equidistant in tuning and some kind of Slendro and Pelog types of xylophone in Africa are equidistant. However, Blench strongly objects, stating that the Javanese xylophone is not equidistant because there is a significant discrepancy in tuning by western measurement although this is the main fact of Jones’s argument.

If these opposite theories are combined together, it can hardly be said that the influence is in a one-way direction from one to the other. Sometimes, I can even say that African has had an influence in East Asia because it seems that Africa has all kinds of instruments such as metallophone, ideophone, and membranophone, where Indonesia and Java have especially lamellaphone. Therefore, we can have various imaginary scenarios for possible influence flow:

- Influence of a third party civilization on Africa and South-East Asia.
- Influence of South-East Asia on Africa.
- Influence of Africa on South-East Asia.
- Collaboration between Africa and South-east Africa giving birth to the blade instrument. Each of these two parties would have thus contributed by bringing their own ideas. This collaboration could have taken place

  o in Africa only.

  o in South-east Asia only.

One can imagine, for example, that the first xylophone was born in Africa under a primitive form and that Austronesians have brought the idea of adding a resonator to each blade. That would have taken place locally, in Africa. This new
type of instrument would have then developed separately in Africa and in Southeast Asia. (Gamelan 1)\textsuperscript{20}

As a source of rudimentary instruments, Africa is absolutely the motherland of all musical instruments. As we have already observed in the early part of this chapter, Africa has many varieties of the free-key xylophone: leg xylophone, log xylophone and pit xylophone. In other words, the geographical distribution of free-key xylophone is widely spread in the African continent. However, Indonesia and other East Asian countries have only the leg xylophone, and if they have any other, it is only a hybrid type of xylophone;

\textsuperscript{20} "Gamelan"< http://www.crosswinds.net/~gamelan/afri_eng.htm>
<table>
<thead>
<tr>
<th>Xylophone Type</th>
<th>Africa</th>
<th>Indonesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg xylophone</td>
<td>Senegal, Guinea, Sierra Leone, Ivory Coast, Togo, Benin, south-east Nigeria, Central African Republic, Zambia, Malawi and Madagascar.</td>
<td>Mentawai Islands, West Madura, Sumbawa Flores, Lio, Central Timor, Taniembar and North Celebes.</td>
</tr>
<tr>
<td>Pit xylophone</td>
<td>Guinea, Upper Volta, Ghana, Benin, Nigeria, Chad, Central African Republic, south-east Zaire, north-west Uganda and southern Malawi.</td>
<td>???</td>
</tr>
</tbody>
</table>

Table 2.8: Distribution of xylophones in African and Indonesia

40
Another problem of this origin argument is that people are narrowing the scope of the question too much in hypothesizing that the only influence is between Africa and south-east Asia. This has occurred because such theories as that of A.M Jones are so strong and supported by several compelling research results. People have usually thought that the origin of the xylophone is definitely Africa or that it could have originated in both regions and then evolved independently. Even if there is some validity to the hypothetical relationship between Africa and east Asia, it is still a very limited point of view. Within this narrow point of view, I think that it is hard to find out the real historical truth: the origin of the xylophone.

We should look at other related influences from countries such as Egypt, Arabia, China, Japan and even Korea. Kirby shows one possible theory of Chinese origin of the xylophone:

...[It] undoubtedly originated in Indo-China, if not in China itself. The use of what are called “idiophone,” in which the sound is inherent in the materials from which they are made, such as xylophones, gong-chimes and the like, is, and has been, universal from time immemorial in that vast area. The discovery in 1949, in Indo-China, of a set of eleven stones, cut and tuned to a characteristic Indonesian mode by means of the familiar “flake” technique, showed that there is a much longer history than is generally recognized. This actual “stone-chime” is now preserved in the Musée de l'Homme in Paris, where I examined and tested it some years ago. There is no doubt whatever that the present-day “stone-chime” of
China and elsewhere in the East are, at least, relations of this recently discovered Neolithic specimen. (7-8)

In the African region, we can also consider the relationship with Egypt and the Middle East:

…the links that this hypothesis has with the notion that ‘high culture’ elements in Africa were imported. In the earlier part of this century Egypt and the Ancient Middle East were favored, and typically, this led to the attribution of Zimbabwe ruins to errant Phoenicians or Sabaeans, simply because Africans ‘couldn’t have’ built such structures. An early example is Johnston (1913), who declared that ‘domesticated animals, all musical instruments superior to the musical bow and the drum, several types of game played with hollowed or divided boards, and a good many Egyptian notions about religion came to sub-Saharan Africa from Egypt. These same notions are also present in an otherwise very reliable study of the Jukun people of Nigeria (Meek, 1931), which also has a section remarking on the similarities between Central Nigerian and Japanese names. (Blench 83)

Finally I want to talk about the geographical distribution of xylophone and how it illustrates the origins of this instrument. If we see a map of log xylophone, we realize that it starts from Mozambique in the southeast and spreads to Guinea in the northwest. Many people, including A. M. Jones, try to use this fact as an evidence of Asian origin. However, if so, then there are many nonsense answers to these questions:

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[1] Madagascar is an island in east. Why we cannot find log xylophone and pit xylophone in this area?

[2] If xylophone came from Indonesia and Java, why other east-coast countries like Kenya and Somalia don't have these early types of xylophones?

[3] If xylophone came from Indonesia and Java, why the direction of xylophone distribution goes only toward northwest, why not toward southwest?

In addition to that, this hypothesis of Asian origin cannot analogize when and where early instruments move to the Africa. In other words, this hypothesis is not based on scientific inquiry. Therefore, even though some scholars believe there is an Asian origin for the xylophone, it is hard to conclude that this is an actual historical reality.
Figure 2.6: countries of the Indian Ocean region²²

CHAPTER 3

LOG XYLOPHONE TUNING AND CONSTRUCTION

3.1 Tuning

3.1.1 Xylophone tuning in Africa

In general, the xylophone tuning starts from the low pitch on the left side to the high pitch on the right where the lower note has a bigger size of bar and the high note has a smaller size of bar, which is the same order as on the western keyboard instrument. For instance, xylophone makers in Zambia start to make the low pitches and move up to higher pitches, by chipping off pieces of wood from the ends of the bars, on the inside to raise the pitch. However, some cultures do not use exactly the same order so that in Cameroon, for example, some xylophones are tuned in the relation to the octave, where the same notes in octave are placed next to each other.

Many scholars like A. M. Jones and Jaap Kunst have observed that most of the xylophones in Africa are tuned in equidistance but not exactly at the same distance. J.K. Nketia in his book *The Music of Africa* mentions that "disparities will be found between them, partly because the intervals are not calibrated, and partly because what is aimed at

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is generally gross tuning within the pattern, rather than absolute pitches. An equidistance tuning, in the African context, is a system of tuning which is based not on a concept of small and large intervals, but on the recognition of steps that resemble one another.\(^2\) Not only the equidistance of each note, but even the pitches of the same kind of xylophone very greatly. Why is the sound of the same xylophone so different? This is hard to answer in one way but it can be assumed that, as Nketia mentioned, craftsmen of tuning are ruled by regional pitch. Mensa explains, “Regional pitch is a virtue by which we experience a note, not as an individuality, but as a member of a group, occupying some place in a tone region where it belongs. This virtue provides no absolute guarantee for obtaining pitch accuracy, but its usefulness as a general guide cannot be over-stressed” (22).

As we get into this chapter, we will see that the characteristic of African log xylophone tuning is roughness and a wide range of tone spectrum, not only because of the difficulty of calibration in Western pitch measurement but also because their way of tuning is quite different from the way of Western tuning. For instance, we distinguish pitch as low and high, while African people generally utilize pitch relative to the human voice: low pitch is tuned by the old human voice, the medium pitch is from young people’s voice, and high pitch mimics a woman’s voice.

Now, I want to focus on and narrow the discussion down to specific examples of the log xylophone so that I can discuss in detail the tuning system of each example. I have chosen two of the most famous and representative log xylophones in Africa, the amadinda and the akadinda—the most highly constructed and elaborately crafted models of log xylophone in Uganda.

3.1.2 Kiganda xylophone

The kiganda, language of Ganda people, music can be described according to the historical boundaries of Southern Uganda area music such as Buganda (Buganda and ganda is basically same) and its court music. Kiganda music includes certain xylophones (akadinda, amadinda, and embaire), which are all log xylophones, based on only two fresh banana stems as the bottom construction.

The amadinda and akadinda xylophones are the most representative xylophones of kiganda music. They are highly structured log xylophones and have from 12 to 22 keys. The most important concept of xylophone tuning in kiganda music is perception of the intervals for each note, approximately a perfect fourth or fifth. No major thirds or minor thirds occur but sometimes there happens to be a major second in kiganda instruments. The octave is utilized with the concept of the same note in a different position. Therefore, there are six intervals in Kiganda xylophone music.\(^3\) Kubik summarizes the interval relationship of Kiganda xylophone as shown below (Kubik, p260).

a. Prime (Progression to the same slat)

b. Kiganda second (Progression to a neighboring slat)—on average 240 cents

c. Kiganda fourth (skipping one slats)—on average 480 cents

d. Kiganda fifth (skipping two slats)—on average 720 cents

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e. Kiganda seventh (skipping three slats)----------on average 960 cents

f. Octave (skipping four slats)-------------------

Figure 3.1: The intervals in Kiganda xylophone music

Kubik noticed that both *amadinda* and *akadinda* xylophones are very ideal in structure; however, pitch wise, the *akadinda* is a little higher then the *amadinda*. For instance, in the middle range of *amadinda* xylophones, the pitch ranges are 388, 344, 304, 260, and 288 c.p.s. (slat nos. 6-10) while the pitch range of the *akadinda* is 416, 364, 312, 280, and 232 c.p.s. (slat nos. 9-13).

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5 Ibid. 263.
As we notice, the tuning of the *amadinda* and *akadinda* is based on the pentatonic scale: C, D, E, G, and A. An interesting aspect of the kiganda scale (interval) is that unlike western music temperament, there is no difference between minor third and major second, or between major third and fourth because the sounds are the same. Therefore, people often say that in the kiganda interval, there exist only second, fourth, fifth, seventh and Octave.

A. M. Jones, in a chapter about the tuning of the *akadinda* and *amadinda*, sort intervals into a “slendro-type scale.” Jones and Kubik both agree that the pitch of the kiganda xylophone is basically a tonal sound; “the kiganda xylophone scales have a

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central note, a tonal basis, which is soon perceived by a musician who tries his hand for the first time at one of the instruments...” (Jones, p112).

In Peter Cooke’s study ‘Report on pitch perception experiments carried out in Buganda and Busoga (Uganda),’ he supports the “equi-pentatonic” scale in spite of the discrepancy in interval sizes, although this definition is not utilized by the musicians themselves (Cooke, 124). In his experiments, even music students who are trained in western music have different intervals, from 35-50 cents sharp or flat (Cooke, 123). Therefore, we see that pitch discrepancy can be from individual difference among the musicians. In addition, the Ganda people, who have an oral tradition associated with playing the kiganda instrument, tend to hear any larger pitch interval as a minor third and any smaller interval as a whole tone. Nevertheless, the aural distinction between a whole tone and a minor third is significant.

Roderic Knight, also mentions personal discrepancy rather than whole interval size. He basically agrees with the “equi-distance” of the other scholars. In an article, he mentions that Balofon (Mande xylophone), which has seventeen to twenty keys with gourd resonators and is played by one player, has equidistant heptatonic tuning and is tested for accuracy of tuning. Like Cooke, he talks about the musician and xylophone maker’s individual pitch preference:

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9 Ibid. 125.

10 Roderic Knight, “Vibrato Octaves: Tuning and modes of the Mande balo and kora.” *Progress Reports in ethnomusicology* 3.4 (1991)

11 Ibid. 5.
What I see in all the figures is an individuality that manages to express itself within the orally transmitted standard tuning and, further that this individuality is essential to the traditional sonority of the balo... (Knight, p.5).

3.1.3. Omabe xylophone tuning (Obimo, Opi, and Amofia)

For the sake of comparison between the kiganda xylophone and other xylophones, I chose the omabe xylophone found in Igboland in Nigeria. One of the important reasons I chose the omabe xylophone is that we can compare eastern and western African xylophones. The tone of the omabe xylophone is slightly lower or higher than is common to the Western temperament. The pitch range of omabe xylophones is, as we can see from the examples, major 9\textsuperscript{th}, octave, and minor 7\textsuperscript{th}. These pitches are, as I mentioned

\footnotesize

\begin{itemize}
  \item \textsuperscript{13} Ibid. 132.
\end{itemize}
earlier, not exact pitches but approximate pitches where I assume that even among xylophones of the same kind, the pitches will differ depending on the quality of the wood, different makers, and different regions. The unique aspect of the omabe xylophone is that there are three distinct characteristics in the xylophone’s role. The bottom two slats are bass xylophone, and are played by the performer’s leg. The role of bass xylophone is not the major role, but is supportive and sometimes gives a sign of starting the music. The alto part also has two slats, but its role is important than that of the bass in that it provides the lower part of the melody with the soprano part and sometimes plays a rhythmic background in interlocking technique. The soprano (master) xylophone produces a melodic pattern and leads the ensemble musically.

3.1.4. Other instrument tuning related to the log xylophone –

First of all, throughout many research papers and references, I found that the xylophone tuning is closely related to the tuning of other instruments such as the *mbira* (African thumb piano- other names of thumb piano are *sanza* and *kalimba*.), African harp (e.g., kiganda harp), drum chime, and so on. Generally, these scales are pentatonic and are characterized by “roughness” due to the inharmonic structure of the spectrum. Moreover, two kinds of scales are found: both equidistance and nonequidistance are utilized in xylophone and other instruments’ tuning. Why are these different instruments, from xylophone to harp, tuned the same way? Is this influenced by the same reasoning as that in the tuning of western music? One possible explanation that I can think of is that the instrument maker, or a single instrument like the *mbira* (thumb piano) in Nigeria (the

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name of thumb piano in Nigeria is *ubo-aka*), can serve the function of a tuning fork so that the instruments are tuned in a consistent way.

3.1.4.1 Thumb piano

Let’s find out how other instruments and the xylophone are related in terms of the tuning process. In Nigeria, *ubo-Aka* (the name of the thumb piano in Nigeria) has a very important role when Igbo people tune the xylophone. *ubo-Aka* is used as a ‘tuning fork’ for tuning the xylophone. Also, the *ubo-Aka* is considered a small sized xylophone, and, as Lo-Bamijoko mentions, “some of the best xylophonists are expert *ubo-aka* players and visa versa.”

Not only because of pitch, but also in terms of how it is played, characteristics, and its role in an ensemble, the *ubo aka* is very similar to the xylophone. *mbira* (common name of African thumb piano) has its own ensemble; among the Soga people in Uganda, there are *mbira* with different ranges, such as soprano, alto, tenor, and bass, in the same ensemble of with xylophones. The *ubo aka* ensemble has a very similar idea and setting, compared with the xylophone ensemble. In Igboland, the omabe people classify and arrange the xylophone in three different roles, soprano, alto, and bass, depending on pitch range and their sound character.

3.1.4.2 Kiganda Harp (*ennanga*)

The tuning of an Africa harp such as the kiganda harp is also very closely related to xylophone tuning, and is based on the pentatonic scale: “the eight strings of the harp

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are tuned in an identical tonal system to that of the *amadinda*. The music can therefore be transcribed with the same numbers of notation\(^{18}\). These pitches are not descriptions of an absolute pitch from the harp, but call for a close sound from the instrument.

![Tuning of kiganda harp](image.png)

**Figure 3.4: The tuning of kiganda harp\(^{19}\)**

### 3.1.4.3. Tuned drum

In Uganda, there are 15 different drums tuned by different pitches, which is two octaves of the pentatonic scale. The tuning of tuned drum is the same as that of other kiganda instruments, especially a xylophone such as *amadinda*:

Four of six the drummers play three drums each, and the bass drum players play two and one drum, respectively. The drummers play a number of tunes, and it appears that the technique is similar to that employed in the playing of the Ganda *madinda* and *amadinda* xylophones.\(^{20}\)


\(^{20}\) Hugh Tracey, “Musical Instruments 3 Drums”. Linear note from LP.
3.2 CONSTRUCTION

3.2.1 General features of xylophone construction*

Some xylophones in Africa have a small number of keys, one to four. These small key xylophones are found in such places as among the Ibo of Nigeria, the Bariba of Dahomey, the Kabere of Togo, the Baule of Ivory Coast, and the Nsenga and Velly Tonga of Zambia.¹

Xylophone which have more than 10 keys are also widespread in Africa, e.g., the *amadinda* (10 keys), and *akadinda* (22 keys) in Uganda. Other regions where such large xylophones can be found include 17 keys in Angola (Chokwe), 10, 12, 16, and 19 keys in Zaire (Pende), 20 keys in South Africa (Venda), and 14, 17, 22 keys in Ghana (Sisala), 16 keys in Mali (Bambara), and 14 keys in Chad (Sara)².

Basically, the log xylophone consists of several parts: keys, two banana stems, and two side support bars on modern instruments. Figure 3.5. illustrates a typical log xylophone and shows how the slats or keys are hold in place on the two banana stems:

A hole is drilled at one node only, and through this passes a peg held in the resonator: at the other end of the key there is no hole, but two pegs are placed one on each side of the key. This is precisely the method sometimes used in Africa for free key xylophone, where the pegs are driven into the supporting banana stems.³

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² Ibid. 82.
3.2.2 Construction of the Amadinda.

3.2.2.1 An exterior view of the amadinda

The amadinada xylophone generally has 12 bars, which are up to 60 inches in length. The lowest bars are approximately 35 inches and the highest bars are 20 inches.

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**Figure 3.5: General features of the log xylophone**

**Figure 3.6: Top view of amadainda xylophone**

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The wood of *amadinda* bars should be dense in texture; therefore, often people use Lusambaya wood. In the northern part of Uganda, Mukerembo tree is used, while the silimba xylophone among the Lozi of Zambia is made from wood of the *mukwa* tree.

As a frame, traditionally, two fresh banana stems are used underneath the slats of the *amadinda*. To fasten the 12 bars in the right place on the two banana stems, long, thin sticks are pegged into banana stems between every bar (see Figure 3.7).

![Amdinda xylophone playing](image)

Figure 3.7: *Amdinda* xylophone playing

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When people move an amadinda xylophone to a new place, they have to prepare new banana stems for the frame to put the slats on. However, nowadays, because of the inconvenience involved, musicians use a permanent material in place of the stems to make moving easier.

3.2.3 How to make an amadinda-

There are several ways to make an amadinda xylophone depending on materials, methods, and different tools. Departing from the traditional construction procedure, currently, people make an amadinda much more easily by utilizing modern technology and tools. In addition, manufacturers in the music industry make a modern version of the amadinda xylophone so that we can purchase one easily. There are several guides to making an amadinda from such places as the Web and articles to describing the essential structure of the African xylophone. The basic materials (in U.S.) for the amadinda are:

1. 23 board feet of Philippine mahogany (or oak, maple, and walnut).
2. 12 feet of 2x2" poplar for the frame.
3. 10 feet of ½" square rope to support the bars.
4. 13 4-1/2" x 1/4" bolts with nuts and washers to secure the bars to the frame.
5. 4 4x1/4" bolts with nuts and washers to fasten the frame.
6. 25 feet of ¼" rope to secure one side of the bars to the frame.⁹

Or, for another version of the log xylophone:

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1. Pine planks for slats and frame: 50mm x 30mm x 450mm (slat no. one), x 440mm (two), 440mm (three), 430mm (four), 420mm (five), 405mm (six), 400mm (seven).

2. Frame (two support bars): 430mm each, two cross bars: 370mm each.

3. Other material: 18 wood screws: 75mm x 4mm, 4 C-clips: 6mm (C-clips are used to nail electric chords to walls and floors), 1m catapult rubber, 4 dowels: 300mm x 17mm each.


Ironically, each bar in the modern amadinda is attached by rope and bolts to tighten the slats onto the two support bars. Therefore, strictly speaking, the modern amadinda is not free-key xylophone compared to the early log xylophone, which had slats that could be removed from the frame.

Figure 3.8: A view of amadinda xylophone with rope fastening
This example of the *amadinda* in Figure 3.8 has the traditional long, thin sticks between bars. However, as we can see, the bars are also connected with rope to help keep them from moving.

![Figure 3.9: A view of amadinda xylophone without rope fastening](image)

There is no rope used in the *amadinda* shown in Figure 3.9. Therefore, the musicians often have to put the bars back in the right place while they are playing when the bars are out of position. To minimize the dampening of sound due to bolting the slats in place, people nowadays fasten the slats to the frame with nuts and bolts on one end and rope on the other end. The following figure shows how to fasten bolts through the bars.

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12 Ibid. 83
Usually, in the modern *amadinda* xylophone, we see the one side of bar fastened with bolts and the other side tied with rope.

![Figure 3.10: Bar fastened with bolt](image1)

![Figure 3.11: Bar fastened with rope](image2)

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14 Ibid.
Figure 3.12: Modern *amadinda* xylophone$^{15}$

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$^{15}$ Ibid. 74.
CHAPTER 4

PERFORMANCE PRACTICE OF THE AKADINDA AND AMADINDA XYLOPHONE

4.1 Performance practice

4.1.1 Interlocking technique

In the performance practice of the kiganda xylophone, the first player starts and introduces his melodic idea, and then the second player also comes in his melody which is structured between the first player’s beats. This redistribution of the time and pulse of the music thus creates the sense of double time, a very fast musical phenomenon. This resultant temporal arrangement (and technique) is usually described as “interlocking.” The interlocking pattern is commonly employed in the xylophone and drum traditions, including the amadinda and akadinda xylophones of Uganda. This example thus contrasts with the characteristic employment of a common beat or “one common metric point of departure”¹ in the Western art music practice. While African music has an “individual reference beat” where musician utilize his own beat but it is also related other musicians.

In the individual reference beat, the pulse of each musician occurs in the exactly middle of other musician’s pulse. In the playing of the amadinda and akadinda

¹ “Interlocking” <www.britannica.com> 1.
xylophone, this interlocking technique is happened. To explain this technique, we use certain notation, which is widely used to notate African music these days especially kiganda xylophone. First of all, there is a number, which indicates certain note, for instance "5" means on the fifth note from the fundamental. To indicate ‘octave higher or below’, they use underline, meaning that without underline it is fifth note of the scale, with underline it indicates octave below, e.g., 5 and 5.

Interlocking technique is utilized not only on xylophone but also tuned-drum and harp music. The basic duple interlocking system has a two parts, where ‘Okaunaga’- means “to start” and ‘Okwawula’ means, “to divide” are operated to very organization and length. As a starter, they play melodic pattern, while mixer they usually play several ostinato pattern under interlocking technique.

This is an example of “Mugoowa lwatakise”, where part of phase can be notate in five line staff as below:

![Figure 4.1: Interlocking relationship between Okunaga and Okwawula](image)

Also it can be notated like this:

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Okunaga- 3.3.1.3.3.

Okwawul- 1.3.3.1.

Okunaga (first player) starts his own melody few times (actually this melody is played in octave), and then Okwawula (second player—also in octave) fall in the middle of first player’s note:

In interlocking musician of this type, one musician’s positive action of striking a note always coincides with a negative action, or “non-strike,” of his fellow musician, who at that moment lifts his beater. The effect is such that both series of equally spaced notes seem to interlock like the teeth of a cogwheel. Each of the two musicians, however, feels his own series of notes as “on beat.”

In tempo wise, the rhythm and speed of kiganda music is so fast where it sounds like one person play thirty-second like notes in very fast tempo. Actually, *amdinda* xylophone players are extremely virtuosic. In *mangwilo*, xylophone music for two people, each player has an independent interlocking pattern in right hand, which is utilized between two players, and then each person has another individual rhythm in left hand.

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4 “Interlocking” <www.britannica.com> 2.
4.1.2 Triple interlocking technique

The duple and triple interlocking technique is related in terms of the performers numbers. Akadinda xylophone is much bigger than amadinda so that more people involve when playing akadinda. It requires “Triple interlocking technique” to play akadinda xylophone where three musicians are sitting and playing melody, which are an “equal-spaced series of notes” in three octaves. On the other side, there are two or three people sitting but use right hand and left hand individually.

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The overall sound, which generated by two groups of people are extremely rapid. This is an interesting feature of Uganda music not only in xylophone music but tuned-drum and even vocal music. Kubik and Anderson mention that the result sound of interlocking technique—an "individual and resultant." Here is an example with number notation to show how these individuals are integrated each other. the resultant is that large space-melody become continuous and fast passage:

Three musicians play: 2 . .4 . .2 . .2 . .1 . .1 . .2 . .5 . .


Resultant: 214435214235114135214535

Or rhythmically, individual rhythmic cell become a non-resting ostinato pattern:

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6 Ibid. 62.
Figure 4.4: Individual parts and resultant

As a total structure combined rhythm and melody with multiple players, the sound of resultant become very fast and even but each player has a one third of speed. However most difficult and important aspect of playing is keep pacing equal time like cogwheel so that overall sound xylophone becomes magnificent.

4.1.3 Sound of kiganda xylophone

When I listen a recording of kiganda xylophone ensemble, it reminds me the fast movement of 'minimal music' by Steve Reich or Philip Glass. In the beginning, first performer starts his own passage and repeats and then other person join but his playing is

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very similar to first person. Kubik points out “inherent rhythm” with combing two neighboring pitches. Therefore, the melody and rhythm of starter and mixer are related. And all the fact including playing technique become ‘one person’ like virtuosic sound.

Another interesting notice when I hear the kiganda xylophone ensemble and other recordings such as tuned drum and harp music. I instantly realize that not only the way of playing, interlocking, but the each sound come from different instruments are very similar. Without linear notes of backside of recording, I might not tell whether is tuned-drum ensemble or xylophone ensemble. It is just matter of slight different material of sound such as wood and animal skin. But the sonic differences generated from different category of instruments e.g., harp and xylophone are much less than the differences between western xylophone and harp. In other words, characteristic of African instruments are so percussive, whether it is string instrument of percussion instrument. The sound is just so similar.

Figure 4.5: playing harp

Figure 4.6: playing tuned drums

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4.1.4  *Amadinda xylophone music*

*Miko system*

*Miko* system is an essential concept of playing and composing kiganda xylophone, especially *amadinda* xylophone music:

According to Mr. Ephraim Bisase, Kampala, "*muko*" means "page", (plural: *miko*). It may also mean, "leaf" of a banana tree, "in which case it should be added: *emiko gyendagala*," says Mr. Bisase. The *miko* are specific kinds of transposition in *amadinda* music.

*Miko* is a melodic transposition of simple tune where amadinda musicians play the transposed melodies in several different levels. In other words, we can say that $T_0$ is original melodic tune, and then it is possible to transpose like $T_2$, $T_3$, $T_5$, and $T_6$ in pentatonic scale. However in the limited area with group of people in xylophone, ascending transposition is impossible because it may play other musician’s area. For instance, If $T_0$ is $[5,2,1]$, and $T_2=[1,3,2]$, $T_3=[2,4,3]$, $T_4=[3,5,4]$, and $T_5=[4,1,5]$. First of all, let’s look at the $T_0$, which is original shape of figure, and then we might think that the next upper lever will be $[8,3,2]$ but if lower-sitting player his the octave higher C, then he will hit the next person’s area. Therefore, to prevent to not play other people’s area and to remain his own place, he will switch his C into one octave low C. It may seem to play different shape of combination, but if we understand the concept of tonality, then we will notice that these re basically same. Because the prime form of $[1,3,2]$ and $[8,3,2]$ are the

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10 Ibid. 123.
same. In other words, when melodic figure transposes into upper position, the top note become octave lower, but other figures remain same:

![Diagram of musical notes]

Figure 4.7: Five mikos

Through the fact that we have considered so far, the miko system is the interval structure or melodic structure, because consequently "in the miko system several of the six possible intervals in Kiganda xylophone music must be considered structurally the same."13

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12 Ibid. 28.
13 Kubik, p.29.
CONCLUSION

The African log xylophone is one of the earliest versions of keyboard instruments. Discovering the relationship of this instrument and modern varieties of western instruments requires an understanding of the historical background, regional distribution, and construction of the African log xylophone. A survey of the literature and archival materials reveals a wealth of new information concerning regional variations in performance traditions of the instrument.

Chapter I introduces the African xylophone, in general, and surveys its historical background in world perspective. Evidence confirms the influence of the African xylophone outside of the African continent, as reflected in the orchestral and piano literature of the late 19th-Century and Twenty-Century. Recently, the African xylophone has gained much attention, not only among Western percussionists and composers, but also in the contemporary world music phenomenon. The South and Central American marimba varieties also show the lasting impact that the African xylophone has had on several other world cultures.

Chapter 2 presents a close and detailed definition of the “log” xylophone, both as a unique instrument and also as it shares in the features common to African xylophones. A comparative analysis of existing standard classification systems clarifies also the unique properties of the African log xylophone. In general, a xylophone is identified as an idiophone, with the log xylophone as a subcategory. For the sake of this document,
the “leg” xylophone is considered under the “log” subcategory. A critical assessment and a comparison of the arguments on the origins, geographical distribution or diffusion of the log xylophone has an unusual distribution pattern. Due to lack of enough evidence, some scholars like A. M. Jones argue that the instruments of Africa were influenced by Southeast Asia. There are quite a number of reasonable issues brought forth by these scholars in support of the Asian influence. However, I think that there are still important questions which seem to undermine make these arguments that cite Asia as possible origins for African xylophones.

Chapter 3 studies the tuning and construction of the amadinda xylophone from Uganda, specifically. The amadinda xylophone, one of the kiganda (the most representative form of the log xylophone in Africa. Kiganda (i.e., Ganda people and culture of Uganda, east Africa) instruments—including amadinda xylophone—employ a unique tuning system: pentatonic scale and approximate octaves. However, tuning practices in sub-Saharan African musical traditions generally favor “roughness,” thus allowing for variations in tuning, from person to person and from region to region.

Finally, there is attention to performance practice in the aspects of playing techniques of the amadinda xylophone. The chapter also highlights the important relationships that exist between African xylophone traditions and those of other musical instruments on the continent, such as the keyed instruments called variously as the mbira, sanza, and kalimba. Other instruments compared included harp-like instruments and tuned drums; playing techniques are also compared across dissimilar instruments.

In the appendix, I have included a list of music literature that contains African musical characteristics, such as ensemble texture, timbre, rhythmic structures, and tempo.
The scores in the appendix illustrate the persistent influences of African music and performance practices. The third movement of “Three technical sketches” by Margolis bears strong resonance and semblances of the sound of kiganda xylophone ensemble, especially in the areas of motivic segmentation, repeated patterns and fast tempi. In “Omphalo Centric Lecture”, we can see that the way of performance setup is very similar to kiganda xylophone playing. For four marimbas, a group of two marimbas facing each other, they aim not only at simulating the performance practice of the African xylophone but they also inevitably end up reproducing characteristic African sound textures. Later on, the marimba ensemble switch their instruments onto slit drum and one-person plays the shaker. This practice is also a common feature found in African xylophone ensembles.

In addition, Nigel Westlake, the composer of Omphalo Centric Lecture, cites specific African features intended in this music, “The piece also owes much to the music of the African balafon (or xylophone), with its persistent ostinati, cross-rhythms and variations on simple melodic fragments.” The Stuberinic by Mark Ford has a similar playing technique with other pieces. However, unlike Omphalo Centric Lecture, three musicians play on one marimba, a technique similar to that of the Kponigbo xylophone among the Zande people. A casual review of the appended score examples thus shows that African music has, indeed, exerted much influence on a wide variety of musical traditions worldwide. The results of this research confirm that the African log has been long overlooked and that further research is needed in order to uncover the interesting regional practices that remain undocumented. Contemporary percussionists will enhance

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their knowledge and skills through a careful study of the performance practices of the African xylophone. The African log xylophone will remain a challenge to both organologists and ethnologist.
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**Recording**


**Scores**


APPENDIX A

THREE TECHNICAL SKETCHES FOR MARIMBA BY BOB MARGOLIS:

THIRD MOVEMENT
3. Toccata (Speed)

A piacere

molto accel.

cresc. sub.

Presto

mart.

echo

f

f

f

f

f

f

f
Suddenly slower, but not slower by stages; play as felt.

poco cresc.
APPENDIX B

OMPHALO CENTRIC LECTURE FOR PERCUSSION QUARTET

BY NIGEL WESTLAKE
OMPHALO CENTRIC LECTURE
percussion quartet

Composed for "SYNERGY"
(For 4 marimbas, Log drums [3 pitches],
1 splash cymbal, 1 shaker)

Nigel Westlake

\[ \text{\textbf{Marimba 1}} \]
\[ \text{\textbf{Log drum}} \]
\[ \text{\textbf{Log drum}} \]

\[ \text{\textbf{Marimba 3}} \]
\[ \text{\textbf{Marimba 4}} \]

\( \text{\textbf{Mute (\text{\textbf{Log drum}})}} \)

\( \text{\textbf{Mute (\text{\textbf{Log drum}})}} \)

\( \text{\textbf{Mute (\text{\textbf{Shaker}})}} \)

\[ \text{\textbf{when \text{\textbf{muising marimba 3 leave low "A" \& "B" \text{\textbf{un-mute}})}}} \]

\[ \text{\textbf{N.B. "mute" indications for parts 2 \& 3 refer to the placing of}} \]
\[ \text{\textbf{soft material between the lower (natural) \& upper (sharp)}} \]
\[ \text{\textbf{marimba bars in order to obtain a shorter, staccato note.}} \]

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APPENDIX C

STUBERNIC BY MARK FORD
Stubernic

For one marimba with three performers
Dedicated to Stefan and Mary K. Stuber

Performance Notes

1. Stubernic should be memorized. Parts are supplied for players 1 and 3. Player 2 will use the score.
2. Players should be positioned behind the marimba in this order:

   Marimba

   3  2  1

3. Players should use medium to medium hard yarn mallets at the beginning. Players 1 and 2 should use a slightly harder mallet after the cadenza.
4. Bars 32-33: Players 2 and 3 must both use the "B" below middle "C". Player 3 should adjust his/her pattern to leave room.
5. Bars 47-59: Players must rotate behind the marimba to perform this section. Players will end up in their original positions.
6. Bars 78-110: Player 3 performs on the large fiberoard endpiece of the marimba. Endpieces have three pitches - low, medium, and high. Isolate these pitches on your marimba with your mallets (the highest pitch is usually dead center). Care should be taken in order not to damage the instrument. Player 3 also has to use the shaft of his mallets on the edges of the endpiece. Depending on the location of the low and medium pitches, the notation and stickings for the shafts on the edge of the endpiece may need to be reversed.

![Diagram of endpiece with notation]

Shaft of mallet on audience edge of endpiece.

Three pitches on endpiece, low, medium, and high.

Shaft of mallet on bottom edge of endpiece.

7. Bars 78-110: Player 1 should walk around to the front of the marimba and kneel in front of the upper register of the instrument. Using the shafts of the mallets, gently play on two adjacent resonator tubes of differing pitch.

8. Bars 90-111: Player 2 may play all rolls as 16th notes.

9. Stubemic is pronounced "Stew-bur-nick."
Stuberlic

Mark Ford
1988
Recorded on Polaide ICPS6-106
by Mark Ford

player 1

player 2

player 3

player 1

player 2

player 3

fade away

mp

decres.

pp

ppp

pp

mp

dim.

106