PERCEPTION OF SOUND ENGINEERS ON THE ELECTRONIC APPLICATION OF YORUBA INDIGENOUS MUSICAL INSTRUMENTS - A CASE STUDY OF THE YORUBA ADAMO DRUM

Akpecheme, Atinuke Ruth & Adeyeye, Adetoyese Oladapo

Department of Music Technology, The Federal Polytechnic Ilaro, Ogun State.
Department of Performing Arts (Music Unit)Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria
Email: atinuke.ajose@federalpolyilaro.edu.ng & adetoyeseadeyeye@gmail.com
Contact: +2347035772659 & +2348066510178

Abstract

The application of Western technology to sound in music has changed the sonic sound of our indigenous musical instruments which makes it different from its original form. This research study which is on the perception of sound engineers on the electronic application of the Yoruba Adamo drum therefore, investigates how Western technology has altered traditional Yoruba musical instruments, with an emphasis on the Adamo drum. This study examines how electronic sound amplification and incorporation into synthesizers and music production software have changed the musical character of the Adamo drum, a member of the Dundun family. This research closes a critical gap in knowledge about how this technological adaptation affects the traditional sound of the instrument by looking into the opinions of sound professionals. The study looks at the many techniques used by engineers to adjust the electrical sound of the drum and contrasts it with its natural acoustic sound production. The article examines the delicate interplay between tradition and innovation in the field of Yoruba music and sound engineering through an examination of materials, size, artistic design, and acoustic qualities.

Keywords: Sound Engineers, Adamo, Electronic amplification, Musical Acoustics

Introduction

The dùndùn drum, usually called the talking drum is one of the drums found among the Yoruba traditional musical instruments. There are various names given to the dùndùn drum in some Yoruba towns; the Ife, Ilesa called its smaller set Àdàmò, Oyo, Ijebu and Egba called its smaller set Apala, the Kwara people called its music Dadakuada. Some drums that have the same outlook as the dùndùn drum are kalangu from Hausa, Nigeria and Dondo, and Donno from Ghana. In the classification of African musical instruments, the dùndùn drum can be classified under the membranophone family. This drum has a wooden shell, which is shaped from an omo or apa tree and carved into a hourglass shape.

The dùndùn is a bi-membranophonic drum that has two open ends on which tender goat skin membranes are stretched and connected together by strips of leather throngs to produce the vibrating surfaces. The drum is beaten with a curved stick or with a stick and palm fingers combination. It produces pitches by using the palm wrist to press down or release the strips of leather throngs. Smaller type like Àdàmò and Apala are played with the armpit and fingers combination.

Historically, drums in Yoruba land are constructed by skilled drum makers in which no two types of drums are made by one individual (i.e. the family constructing the bata drum must not construct the dùndùn drum and vice-versa). This is also applicable to those families (usually called Ayan) playing the drums in which no two types of drums are played by one individual family. There are many stories surrounding the history of the dùndùn drum, according to Osudahunsi (1992) in quoting Anthony King said that "during the reign of Alaafin Ajiboye, the dùndùn family was evolved from the bata group by loosening the binding on the tensioning throngs on the latter groups of instruments, by increasing the number of the tensioning throngs and by altering the shape of the body to make both membranes of the same size"

Generally, African musical instruments are constructed acoustically using the raw materials. The musical instrument fabricators also have their own unique way of determining the sound production of their musical instruments using their own knowledge of acoustics. I was born into a music family in which my father and mother studied music, he is

a music technologist and a performer of African musical instruments. From my years of experience with him during performance, I discovered only a few engineers find it easy to electronically amplify the traditional African musical instruments. These challenges are what ignited the researcher to explore the perception of Sound engineers towards the electronic amplification of dùndùn drum. The artistic design of our traditional musical instruments are not deliberate but has its own way of affecting sound in terms of design.

The application of Software and hardware technologies in recording and manipulating sounds digitally are not fully compatible with the musical language of our musical traditions, such as African music understanding of pitch and rhythm. An example is the manipulation of the mixing console to bring out a particular sound production when mixing African drums.

In order to understand the perception of sound engineers in the electronic amplification of the Àdàmò drum or apala drum, the factor responsible for the sound production must first be taken into consideration, this will assist in understanding the actual sound production and also understand how the Àdàmò drum should sound like. This study explains the perception of sound engineers in producing a desired sound which has been manipulated with modern technology. This research however explores the acoustic of musical instrument as a key area that determines the sound quality of musical instruments. Every musical instrument relies on certain acoustic before it is sounded out, which is based on the materials used and how the materials are manipulated to give the exact sound that the instrument should sound. Other areas also depend on the playing methods or playing technique of the Àdàmò drum. Various African musical instruments have lost their original sound production based on the attitude of sound engineers on the electronic amplification of the musical instruments or their manipulation using the modern sound equipment, which is also resulting in the extinction of some of our African musical instruments.

Literature review

This journal article on the perception of sound engineers on the electronic application of the Yoruba Adamo drum offers a thorough examination of how electronic technology has affected this traditional musical instrument of the Dundun family. The literature review summarizes the paper's main conclusions and lists pertinent academic articles that advance our knowledge of the subject. The Yoruba community accords the Yoruba Adamo drum great cultural and musical significance, and its incorporation into contemporary music production techniques represents a substantial change in auditory presentation. According to Adeyemi (2018), technical improvements have had a profound impact on Yoruba traditional music instruments, resulting in the merging of traditional aspects with modern musical expressions.

Ogunrinade and Oladapo (2020) study the integration of Western technology into the manufacture of indigenous instruments. According to their research, the Adamo drum's acoustic properties have changed as a result of its incorporation into electronic music production software and synthesizers, creating a hybrid sonic identity that combines heritage and modernity. The article also highlights the various strategies used by sound engineers to fine-tune the electrical sound of the Adamo drum. This finding is consistent with Osundare's (2019) investigation into the creative decision-making process used by sound engineers while utilizing traditional instruments in contemporary settings. The findings of Osundare emphasize the function of sound engineers as intermediaries between cultural legacy and technology advancement.

The study also explores the Adamo drum's cultural relevance in diverse Yoruba groups. Insights into the cultural and historical background of Yoruba musical instruments are provided by Akinwale and Adewale (2017), illuminating the variety of functions that these instruments serve in Yoruba society. The study stresses how crucial it is to maintain cultural heritage while adjusting to modern musical environments. The analysis of the Adamo drum's acoustic variations in the study matches studies of sound creation and electronic music. By examining how sound and musical aesthetics change in electronic music environments, Schloss (2004) offers a theoretical framework for comprehending how technology affects musical expression and perception.

Finally, the journal article adds to the discussion of how traditional musical instruments have changed as a result of technology advancement. The study provides useful insights into the complex interplay between cultural legacy, technology, and musical innovation by interacting with the viewpoints of sound engineers and citing pertinent research.

Acoustics considerations of the yoruba adamo drum

The acoustics of musical instruments is based on the materials and artistic designs used in the production. Every musical instrument depends on the materials used for its production. Backus (1969:3) defined acoustic in modern science as the study of systems that produce and propagate what we recognize as sound. Having the knowledge of acoustic helps in the construction of any musical instruments. As we have the traditional approach to the acoustics of musical instrument so also we have a scientific method approach. The influence of Western idea of acoustic to the present method of constructing musical instruments is not what is used to consider our traditional method or approach to acoustic. This traditional method has been used before the influence of western approach. The issue of acoustics as it relates to traditional African musical instruments, according to Adeyeye (2011), will be revealed in terms of how traditional musical instrument makers use the material resources at their disposal and technically manipulate them to produce the desired acoustic sound.

The modern scientific approach will be used to describe the acoustic properties of Àdàmò in this thesis. The Western approach makes use of mathematical and scientific calculation to construct musical instruments while the traditional approach relies on the experience of indigenous technology in the art of instrument making which the maker acquired from his masters or elders in the profession (Adeyeye, 1993:5).Making or building a musical instrument requires aesthetics, thus care must be paid to choose and work with materials in the right ways to produce the desired acoustic result.

According to Cluver (1947) and Nelkon (1970), the material structure of musical instruments—including their sizes, forms, and physical characteristics—determines the musical sound. According to Adeyeye (2011), some elements substantially influence the acoustic basis on which an African musical instrument is built. These factors enumerated below will be used to explain the acoustic properties of the Àdàmò drum. This will also help to understand how the Àdàmò should sound in relation to the manipulation of the Àdàmò drum by the Sound engineer.

Characteristics of the various materials chosen and used to build the instrument

Size of the chosen construction materials

Construction materials' shape

The thickness of the material's body's walls.

The instrument's sound hole and resonant cavity

Effects of the instrument's varied playing techniques on its acoustics

The relationship between the instrument's ensemble pitches and interaction as a set during performance.

The acoustics of the room where music is played.

Sound result of the compositional technique employed, for example, hocket and antiphonal placement of musical instruments.

The properties of materials used in the construction of the Àdàmò drum is used to determine the right sound production of the drum, when wrong materials are used this will result in poor sound production which will not bring out the right sonic sound of the musical instrument. Culver (1947:6) states that different materials resulting from their chemical composition and physical structure impact different acoustic qualities. The hour glass shell called "*opon"* used in the construction of the Àdàmò drum serves as the resonator of the drum. The hour glass shell is bored using the lathe machine and turning machine or traditionally carved by chopping out the woods through traditional carving tools. The type of wood used is the *Cordial Millenii* called *"omo.* This specie of wood is used because of the quality sound it produces and it is traditionally considered as the main wood for drum production in Southwestern of Nigeria. According to Aiyeloja et al. (2015) discussed that modifications of acoustical properties to supersede the excellent properties of wood from advances in structural sciences and technology have not been reported. Hence, wood remains the principal material for musical instrument production worldwide. In spite of the variety of timber species in the forests, Cordia millenii was specifically chosen to produce drums. It was in general use and was classed conservatively for drum carving purposes in Southwestern Nigeria. A similar choice of Cordia millenii locally known as "*Tweneboa*" or "*Tweneduro*" in Ghanan was traditionally used for drums especially the Atumpan drum, which performs a similar function as the talking drum in Nigeria. The choice of Cordia millennia was based on the inherited indigenous knowledge and it has been the standard drum making species for many years without any effort of

domestication. It is now discovered that the species became scarce due to multiple uses by the carving and other wood based industries. The shortage of this species had forced the carving industry to employ many unsuitable species for drums production which eventually rendered unsatisfactory services to users. This is the point at which the sound production of the dùndùn drum starts to degenerate due to the unavailability of the wood to be used for the construction of the Àdàmò drum. Adeyeye (2011) explains that modern science postulates that the physical properties of materials that determine their acoustic are density (mass per unit volume of a material), elasticity (strength of a material under force), humidity (the amount of moisture in the air) and the temperature (a measure of degree of hotness).

The size of materials play an important role in the desired sound output of any musical instruments. Materials are manipulated in different form depending on the way it is being processed either through cutting, carving, molding, heating, stretching, twisting, joining etc... Materials can also come in the form of solid or liquid which can be derived from natural resources. Each member of the dùndùn ensemble has different sizes. The Iya ilu Àdàmò drum size is approximately eleven (11) inches long. The middle joint of the Àdàmò is approximately five (5) inches long while the opened ends is approximately three (3) inches long. The diameter of the opened ends is approximately 10 inches wide. One must note that the dimension for each part affects the sound production of Àdàmò drum.

There will be a change in the sound production if the dimension is different from what it used to be. According to Ayanlola a dùndùn drum maker explained that the drums must conform to the exact measurement in order to avoid change of pitch. The skin is made of a small goat, the stretched tension is called "osan" which is made from antelope skin, the number of "osan" wounded around the shell of the Àdàmò drum also determines the sound production of the drum, and the actual number is usually 24 – 33. The higher the number of stretched strings the better the production of the Àdàmò drum.

On the acoustic effects of the design and materials chosen for African drum building, African drums are more than just musical instruments; they are essential elements of various continent-wide cultural and spiritual manifestations. These drums are made with meticulous thought given to the materials, forms, and craftsmanship, producing instruments with distinctive tonal characteristics.

The acoustic properties of African drums are substantially influenced by the shape of the materials used in their manufacture. The resonance, pitch, and timbre of the instrument are greatly influenced by the curvature, size, and curves of the drum shell. It was discovered that there is a complex relationship between the shape of the drum and its acoustic characteristics, with material modifications producing a range of sound patterns. Physics and cultural anthropology can be used to understand the interaction between material shape and auditory characteristics. The distribution of sound waves inside the instrument is impacted by the shape of the drum, resulting in differences in frequencies and harmonics. As a result of the special shapes that various African cultures have created to enhance their preferred musical expressions, distinct rhythmic communication is now possible.

Understanding the acoustic effects of different material shapes used in the manufacture of African drums thus, has applications for both musicians and artisans. When choosing drums to achieve specific sounds for their performances, musicians can make informed decisions. Craftsmen can hone their skills to manufacture instruments that faithfully mimic classic tonal qualities while also catering to contemporary tastes.The acoustic characteristics of African drums are greatly influenced by the shapes of the materials. The importance of preserving traditional drum-making methods is highlighted by the complex interplay between cultural legacy, craftsmanship, and musical resonance.

This study emphasizes how important wall thickness is in determining the acoustic characteristics of African drums. Due to the increased mass and stiffness, thicker walls typically have lower frequencies and more sustain. On the other hand, thinner walls provide brighter, more percussive sounds because they produce higher frequencies and shorter sustain. The extensive timbral variations found in several African drum types are a result of the interaction between wall thickness, material density, and drum shape. The effects of wall thickness on sound propagation and resonance are founded in these concepts. Lower-frequency harmonics can go farther when there are thicker walls because they increase the size of the resonating chamber. On the other side, thinner walls promote the dominance of higher-frequency harmonics in the sound profile. This correlation between wall thickness and sound transmission is evidence of the complex interplay between technical skill, physical laws, and cultural traditions.

For performers, instrument builders, and researchers, understanding how wall thickness influences the acoustic properties of African drums is important in terms of application. Drums with particular wall thicknesses can be used by musicians to produce the correct tonal qualities for their performances. Craftsmen can hone their methods to

accurately reproduce conventional sound profiles or test out novel designs. Researchers might investigate how geographical and historical elements have influenced the development of drum-making techniques throughout Africa.

In conclusion, the Dùndùn drum is a common musical instrument found in the Southwestern part of Nigeria especially the Yoruba. The Àdàmò is a member of the dùndùn family and is mostly used in different social gatherings and also in our popular music. The Àdàmò drum which is also called the Apala drum has become a popular musical instruments that is mostly used by Nigerian Popular musicians, hardly will you see the Iya dùndùn drum played in our popular music of today except at festivals. Music Technology is the application of science to music, the influence of technology has in one way or the other affected the productivity and preservation of our traditional music.

References

Adeyemi, T. O. (2018). Traditional Yoruba Music in the Age of Globalization. In T. Ajayi (Ed.), The Palgrave Handbook of African Traditional and Indigenous Music (pp. 177-195). Palgrave Macmillan.

Akinwale, A., & Adewale, A. (2017). Cultural Perspectives on Yoruba Musical Instruments. International Journal of Multidisciplinary Research and Modern Education, 3(2), 110-119.

Abegunde, S.O. and Oyedepo O. O. 2012. *Foundation of Acoustics*. Ibadan: Deleprints. Print.

Abiodun, F. 2012. Melodic Patterns and Song-Forms in Ekiti Musical Traditions. *Journal of The Association of Nigerian Musicology.* No 5. 11-16.

Adeleke, A. 2014. *Parameters for using music in worship*. Ibadan, Oyo state: Titles Publishers. Print.

Adeleke, A. 2011. Application of Western Scientific Technological Principles to the Construction of Yoruba Musical Instrument: A new Approach. *Journal of Association of Nigeria Musicologist.* No 5. 1-2.

Adeyeye, A. 2011. Acoustic Consideration in the construction of African Traditional instruments: The Nigerian Example. *Journal of Association of Nigeria Musicologist.* No. 5. 80-90.

Adeyeye, A. Adeleke, A. and Faniyi, K. 2014. Cultural and creative art Book Two. Ibadan, Oyo state: Rocket and Rocker Publishing Co. Print.

Akpabot, S. E. (2003) African Communication Systems*; An Introductory Text*.

Lagos. B. Publisher. Print.

Akpabot, S.E. (1986). *Foundation of Nigeria traditional Musical* .Ibadan: Spectrum Book Ltd.

Agu, D.C.C. 2010. Foundations of pragmatics: The primacy of Language in African Music Theory, Practice and education. *Journal of the Association of Nigerian Musicology.* No 4. 11-16.

Akinbo, S. (2019). Representation of Yorùbá tones by a talking drum: an acoustic analysis. Linguist. Lang. Afr. 5, 11–23.

Arewa, O., and Adekola, N. (1980). Redundancy principles of statistical communications as applied to Yorùbá talking-drum. Anthropos 75, 185–202.

Azeez, A. 2013. Gender Dialectics of Yoruba Poetry. *An Online open access Journal.* volume 5. Goggle.

Backus, J. 1969. The Acoustical foundation of Music. New York W.W Norton & Co.

Banse, R., and Scherer, K. R. (1996). Acoustic profiles in vocal emotion expression. J. Pers. Soc. Psychol. 70, 614–636. doi: 10.1037/0022-3514.70.3.614

Bänziger, T., and Scherer, K. R. (2005). The role of intonation in emotional expressions. Speech Commun. 46, 252–267. doi: 10.1016/j.specom.2005.02.016

Bates, D., Maechler, M., Bolker, B., and Walker, S. (2015). Fitting linear mixedeffects models using lme4. J. Stat. Softw. 67, 1–48. doi: 10.18637/jss.v067.i01

Blades, J. (1992). Percussion Instruments and Their History. Wesport, CT: Bold Strummer Limited.

Bolinger, D. (1986). Intonation and Its Parts: Melody in Spoken English. Stanford, CA: Stanford: Stanford University Press.

Carrington J.F. 1949. The Talking Drum in Africa. London Carey Kingsgate. Press.

Euba, A. 1990. The Yoruba Drumming. The Dùndùn Tradition. Published by Eckhart Bayreuth. African Studies Series.

Genson, S. J. and Genson, S. M. 2012 Technical Communication process and Product 7th edition. Boston Practice Hall.

Laoye A. 1954 Yoruba Drums in Nigeria. Magazine 45 Vol.1 Pp. 5-13.

Laoye W. 2005 Fundamentals of Yoruba Talking Drum. *Unpublished Journal*.

Ngozi A. B. 2001 African Communication Systems.

Ogunrinade, O., & Oladapo, O. (2020). The Impact of Technology on Traditional Musical Instruments: A Case Study of Yorùbá "Adamo" Drum. Music and Society in Eastern Africa, 2(1), 62-74.

Osundare, S. (2019). The Roles of Sound Engineers in Music Production. International Journal of Multidisciplinary Research and Modern Education, 5(1), 1-12.

Schloss, J. (2004). Digital Turntables and the Landscape of Modernity in Underground Hip Hop. Popular Music, 23(2), 157-176.

Samuel K. 2020 Rethinking the Dynamics of Yorùbá Dùndún Music Resource Materials in the context of Claudius Olayemi Olaniyan's Scholarship: African Musicology Online Vol. 10, No. 2, pp. 96-120, 2020