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## **Inside a Master Drummer's Mind: A Quantitative Theory of Structures in African Music**

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**Key words:** transcription of African music, levels of reality, reality state, ideal state, ethnic perception, cultural perception.

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### **Resumen**

Uno de los elementos más definitorios de la música africana y que ha atraído la atención tanto de teóricos como de compositores y musicólogos es su dimensión rítmica. En este sentido, el musicólogo con frecuencia se ha tenido que enfrentar a la difícil tarea de la transcripción de los complejos patrones rítmicos africanos. En el siguiente artículo, Willie Anku plantea ciertas problemáticas derivadas de la transcripción musical, a la vez que nos propone un modelo analítico que pretende resolver estos problemas. Para Anku, la transcripción requiere no solamente de unas habilidades musicales desarrolladas para poder plasmar en el papel lo que se escucha, sino que se hace necesario también un conocimiento profundo de la música que se está transcribiendo. La transcripción, así pues, debe tener en cuenta el "nivel ideal" de la música, el cual se encuentra en la memoria colectiva de la cultura en la que se genera. Este "nivel ideal" condiciona la manera en que una determinada cultura percibe aquello que suena, definiendo de esta manera lo que Anku denomina "ethnic perception". De este modo, Anku nos presenta una propuesta analítica que permitiría externalizar las dos propiedades del ritmo: la física u objetiva y la psicológica o cultural.

**Palabras clave:** transcripción de música Africana, niveles de realidad, estado de realidad, estado ideal, percepción étnica, percepción cultural.

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In his thesis, "*Allegory of the Cave*" on form and representation, Plato distinguishes between two—levels of reality— one that is very volatile and imperfect and the other, an idealism that is understood by way of the intellect. This philosophical concept puts in a nutshell the problem that any one interested in the scholarly study and understanding of structures in African music must confront, for it is now generally recognized that the organizational principles of African drumming for example encapsulate unique compositional embodiments of high intellectual conception. To capture the level of reality embodied in its performance manifestation, one needs objective and reliable transcription, a process, which transforms an intuitive, seemingly irrational and volatile disposition of African dance drumming cultivated and practiced by oral tradition into quantifiable data for theoretical analysis.

Plato's two levels of reality is also relevant for understanding the role of oral tradition in this process, for African philosophy is predisposed towards conceptual dualities and world view of idealism. The spirit world is constantly a part of the living; a masked dancer takes on the image of a spirit being in a masquerade, while a traditional healer makes a spiritual journey into a realm of knowledge, perfection and truth that is hidden to others. Idealism thus constitutes a mental-

cultural space, a level of critical and intellectual understanding, which lies deep in the collective memory of a people, and which is preserved by way of the intellect of those regarded as custodians of tradition such as carvers, weavers, praise singers, traditional healers, priests and priestesses and including master musicians who provide music leadership for the community. Thus what is handed down by oral tradition – the Reality State – constitutes a virtual realm where the essence of a peoples' musical culture, manifested for example in their drumming tradition, is stored.

Although communities share a collective memory of their musical traditions, the levels of individual memory may differ. They are critical on the level of master musicians and general for the community at large. While all Africans have an innate ability to sing, dance and drum, in the communities individuals from particular households are acknowledged as master musicians and custodians of particular traditions of artistry. A community performance therefore emerges from a principle of collective social participation with a high incidence of communality and social interaction. Interjecting a wide degree of tolerance in this communal performance process ultimately compensates for the obvious disparities, which may compromise manifestation of the ideal.

Because the music accommodates diverse levels of musicality it ought to be understood as such in the process of field recording for the purpose of transcription and analysis and ultimate formulation of theory. A reliable transcription therefore ought to take full cognizance of the reality-state on the appropriate level of inquiry and should not be dependent solely on the scholar's understanding of the recorded performance manifestations. For, a community performance is merely a representation of the ideal or reality-state stored in collective memory and manifested on a level of 'sensory experience'.

## Notation

It is common knowledge that African music transcription is perceived as problematic. This is mainly due to the popular notion that the use of "common" (Western conventional) notation in its representation is largely deficient and unreliable. This view has led to efforts in finding alternative methods of transcribing <sup>(1)</sup> traditional African music, which obviously, have not lived up to the task for which they were intended. Yet those who embrace "Western" conventional notation have not developed any explicit conceptual framework nor have they devoted theoretical attention to the clarification of the system in application to African music.

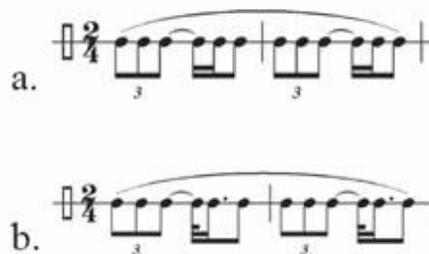
The growing skepticism about the use of Western notation seems to assume that, the volatile and perceived illogical or irrational nature of the organization of traditional African music does not lend itself to the kind of logical system that 'structures and animates' the common notation system and therefore its application must be approached with caution. It is regrettable that the passion to see difference in the world's cultures has indeed so characterized intercultural scholarship as to create a division between the West and other cultures of the world. There is an African story about three blind men who came into contact with an elephant. One touched the trunk, another the leg and the third the broad side of the body. In describing the elephant, one said it was long like a snake. The other said it was rather like a tree trunk. The third said it was a plain surface like a wall. We must begin to see ourselves as part of one indivisible whole and that our similarities far out-weigh our differences. Such passion to see difference fails to acknowledge certain fundamental human elements that bind us. Though notation has been created in the medieval West to meet certain special needs, these needs may also apply to other cultures today in a very basic sense.

Recording a performance of a Chopin nocturne, with its twists and turns of temporal expression, and attempting to present a faithfully transcribed score from the recorded performance, without a prior understanding of the mechanics of the dynamics of that musical style, would be absolutely absurd. The original score from which the performance is derived would represent the compositional idealism of the composer's intent, while the recording of the interpretations of the

performance would symbolize a representation of that idealism. Similarly, in the African context, the community communal performance, accommodating a wide degree of tolerance, symbolizes a representation of the idealism embedded in the intellect of the master musicians on a critical level.

Transcription requires the integration of a considerable amount of experience with the music (Nketia 1985). Recognizing the collective ethnic perception is an important step towards realizing a reliable transcription. Negotiating this position by speculation or inference destroys the ethnic composite and identity. Ultimately, the *tactus* and for that matter the meter, is the most important element without which the transcriber loses grip of the transfer process from the intuitive to the quantitative. Knowing precisely where the beats fall and what specific rhythmic relationships are established within each 'beat area' is pre-eminent in this decision. African drummers have precise notions of minutest details of the rhythms they play and of course the prescribed combinations thereof. Field-researchers need to be mindful of the fact that these musicians cultivate an inextricable sense of tolerance for others who may be rhythmically deficient -an important philosophical component of communal music making.

A *kundum* drummer of the *Ahanta* tradition of Ghana, may quite easily accommodate the following rhythm (a), instead of rhythm (b) in the hands of a novice or someone who is not quite endowed with a sense of rhythm:



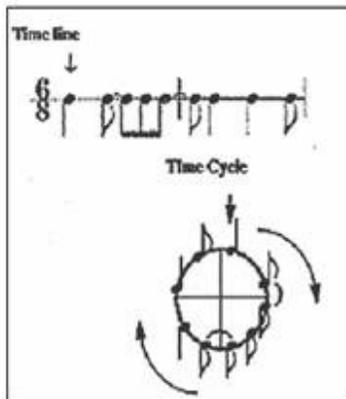
The difference between *a.* and *b.* is only a thirty-second note clearly perceptible to the African master musician.

## The Theoretical Foundation and the Principles of Structural Organization

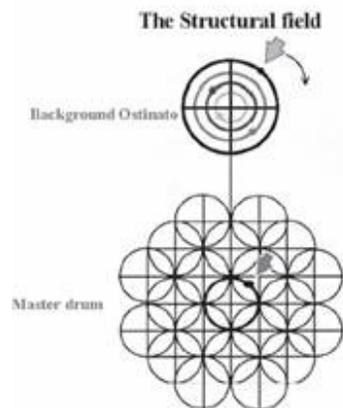
It is important to interrogate the problem of rhythm syntax and ethnicity as basis for formulating a Theoretical foundation for analysis. But first, for the sake of those who are not well acquainted with the general procedures of African dance drumming, the following are four descriptive statements about its structural organization:

**1.** African drumming is a microcosm of communal community life in Africa. Although there is some provision made for individual music making, there is more expression given to collective experience in musical activity with inclination towards a large degree of community participation. Whether performed individually or shared as a collective experience, the music is nonetheless rigidly controlled by a **recurrent rhythm** often associated with the role of the **Bell** pattern, typical of West African drumming. This controlling structural concept is however not always externalized along with the music. It prevails mentally and controls its structural perception as for instance in the case of a lone performer playing a xylophone or *Mbira / Kalimba* - 'thumb piano'.

**2.** This **Time line** concept of the bell rhythm, translates as a **Time Cycle** because African music is perceived essentially as a circular concept rather than linear. Events of the performance (which may include multiple instruments, a body of songs and dances) are all organized around this structural matrix, making it possible for performers to go in and out of the performance without much inhibition. There are however clearly prescribed cues for each event.



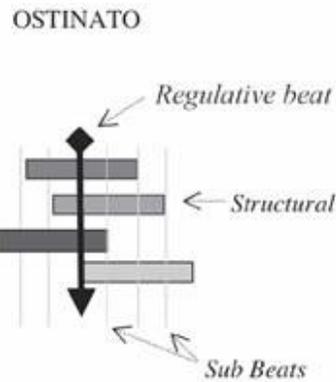
3. The events are unified by a common recurring under-current of one **Regulative Beat** (Nketia 1974) per cycle, which is divided into **four equidistant beats**. The regulative beat with its equidistant beat divisions should not be misconstrued for a 4/4 metric concept. Instead, it is a structural definition of the time cycle span. However, a single meter controls all the composite parts of the performance.



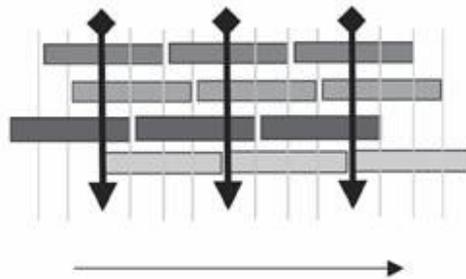
4. The drum ensemble consists of two basic concepts - the background **Ostinato** on one hand and the **Master drum** concept on the other. Visualize the background ostinato as consisting of concentric circular rhythms, each with its peculiar orientation to the regulative beat of the time cycle and thus revealing staggered entry relationships astride the regulative beat.

Against this constant ostinato structural framework of the background, the master drum “projects” a succession of intriguing, logically ordered rhythmic manipulations, which are concurrently regulated by the common timing principle of the time cycle. A visual representation reveals a complex interlocking super-structure of the fundamental circular concept.

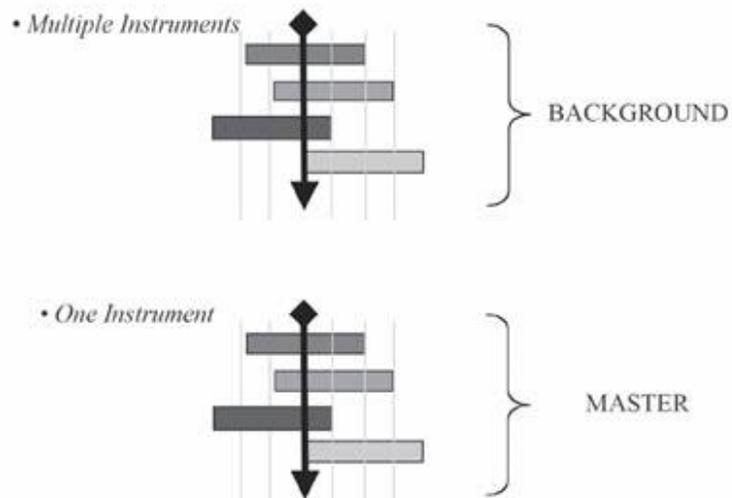
Linearly, the concept of the ostinato represents rhythms of equal structural span arranged in various integrated relationships astride one focal beat – the regulative beat.



The ostinato therefore amounts to a looping concept of this fundamental idea.



While the ostinato consists of multiple instruments, the master drum concept is the same idea of various prescribed rhythmic relationships with the regulative beat, but performed by one instrument—the master drum. This procedure manipulates the structural cells in logical distributions with the same structural referent of the ostinato.



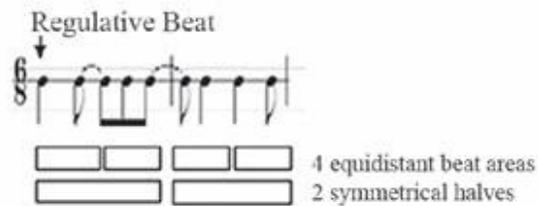
**What then are the structural properties of these rhythmic cells?**

## The Set, Set Properties and Set Types

The structural span constitutes a *time cycle*. The time cycle ultimately defines a **Set**. The set span is therefore a structural module from which the entire performance is derived. We will revisit this claim in later discussion. The following are the set properties and I will risk reiterating these properties even at the cost of over elaboration.

- The set constitutes a cycle.
- The cycle is defined by one occurrence of a culturally perceived regulative beat.
- The regulative beat span is divided into four equidistant beats.
- The four beats are polarized into two symmetrical halves of two beats each.

These properties characterize coherent set rhythms easily recognizable by the span of the bell pattern. Indeed all the composite rhythmic patterns of the ensemble are conceived within the set span or manipulations of this set concept.

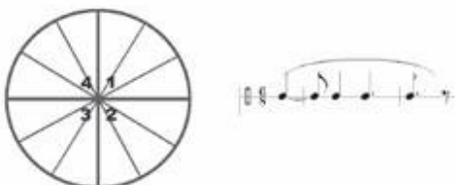


There are three identifiable set types observed in African music. These set categories are based on a psychological division of the four equidistant beats into mathematical grids of either duple, triple or a combination thereof.

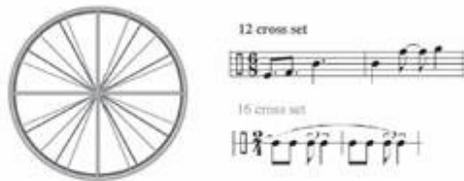
*a. 16 grid set.*



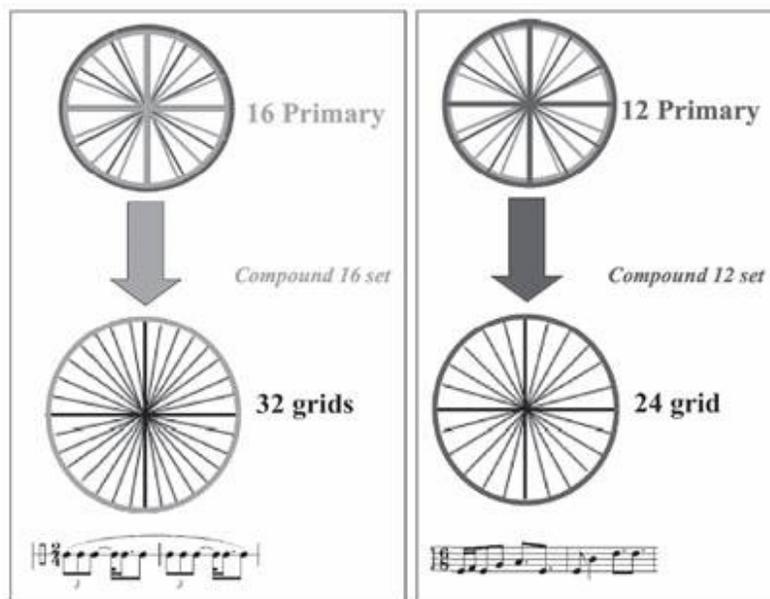
*b. 12 grid set.*



c. *Cross grid sets*



This concept of grids could be likened to the 13th century Ars Nova ideas of *tempus perfectum*, *tempus imperfectum* and their combinations. Sets consisting of compound grids of 24 time points (based on sixteenth note referent in the case of the 12 set) and 32 time points (based on the thirtysecond note referent in the case of the 16 set) are also evident particularly in reference to music of the cross set type.



Each musical type consists of one particular grid type. African musicians naturally fall into the metrical grid appropriate to each performance.

Imagine a small group of expert African drummers of various ethnic extraction engaged in a performance together for the first time – a situation which may be described in jazz terms as a “jam session”. The big picture or the sum-total of the performance sounds great by any African standard. However, the music performed cannot be recognizable or identifiable to any particular ethnic tradition. Firstly, it is because the collection of instruments used by the performers is of various traditions, which may result in an unfamiliar sound environment. Secondly, the individual constituent rhythms contributing to the big sound picture are not pre-determined nor of any one ethnic extraction. Therefore the distinctive ‘Africaness’ of the music is neither based on the particular sound sources nor the peculiar individual rhythms constituting the sum-total.

Like a blues musician who walks into a club to join a performance without knowing the song, the key element that holds African drumming together within its distinctive character, in this particular scenario of improvisation, is the knowledge of the structural commonalities in the ensemble organization on one hand, and the grid category on the other, shared by the performers. Bluntly speaking, the grid archetypes constitute three broad 'songs'. In a non-ethnic framework, any combination of rhythms is admissible in a performance of the same grid archetype. On this level, there are no wrong answers. The ethnic factor or a deviation thereof is the essential element in determining what constitutes an improvisation.

- The 12 grid set represents a four beat cycle consisting of three (eighth note referent) time points per beat [•••••• | ••••••] (as in two measures of 6/8 meter).
- The 16 grid set represents a four beat cycle consisting of four (sixteenth note referent) time points per beat [•••••••• | ••••••••] (as in two measures of 2/4 meter).
- The cross-set represents a four beat cycle with tuplets in the case of 6/8; [•••••• | <sup>-2-</sup>••••••] and triplets in the case of 2/4 [<sup>^</sup>•••••• | <sup>-3-</sup>••••••]

The crossing effect is not necessarily incorporated in juxtaposition with the primary grid. Most often one instrument in the ensemble is assigned this particular part as in the following example..

The image shows three staves of music in 2/4 time. The top staff is labeled 'Bell' and features a 12-grid set with eighth notes. The middle staff is labeled 'Support drum' and features a 16-grid set with sixteenth notes, including four groups of triplets. The bottom staff is labeled 'Master drum' and features a cross-set with a triplet in the second measure. Arched lines connect notes across measures, and arrows point to specific notes in the Bell staff.

The juxtaposition example often occurs in the master drum rhythms while all other rhythms in the ensemble stayed in the primary set. The effect is quite unsettling with a lot of tension and anxiety and is often associated with trance state in cult music of *Yeve*, *Akom*, *Trovu*, and their counterparts, *Santaria* and *Candomlé* in the Diaspora.

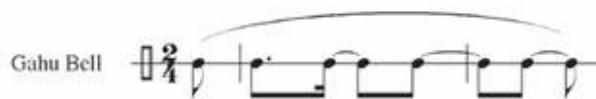
A particularly significant dimension lies with certain social implications of the three grid categories. So far, based on the traditions to which the theory has been applied, there is some degree of correspondence between the 16 grid and recreational music, the 12 grid and ceremonial music, and the cross-grid and ritual or prowess music.

Music in compound duple, of a 6/8 character generally induces a feeling of seriousness often associated with ceremonies, for example: *Adowa* funeral music.

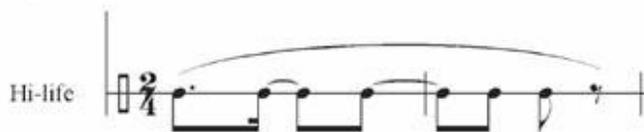


Thus, music that is essentially duple of a 2/4 character is generally associated with less serious situations of play content. For instance *Gahu* or *Hi-life*.

*Gahu*:



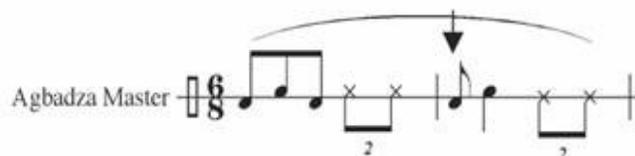
*Hi-life*:



Examples of the cross grid include hunters, warriors and executioners music - music that challenges us to be brave and invokes our spiritual consciousness. These utilize cross elements from the duple and the triple types. Examples include: *Kundum*, *Akom*, *Trovu*, *Adevu*, *Fontomfrom*, *Agbadza*, etc.

We should distinguish between cross set of a 16 grid primary type and a 12 grid primary type.

Example of 12 grid primary from *Agbadza* master drum part:



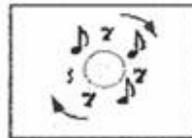
## Syntax and Psycho-Acoustic Considerations of Set Rhythms:

### Rhythm consists of two important elements:

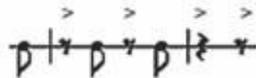
- The physical properties -what is heard on a superficial level, and
- The psychological properties -how we make sense of what is heard on a deeper subjective level.

When we hear a rhythmic passage without any preconceived beat indications, there is a natural tendency to assume a self-determined perception based either on our memory of a previous experience or by some natural inclination. Hearing therefore is subjectively conditioned by our choice of perception. The choice however does not necessarily represent the way the rhythm has been transmitted to us resulting in a disparity between the perception of the transmitter and that of the recipient. For instance, the following circular rhythm played without any accompanying beat indications (example *a*) could be perceived in two or more ways (example *b* and *c*):

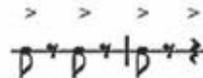
*a. Circular rhythm*



*b. Off-beat*



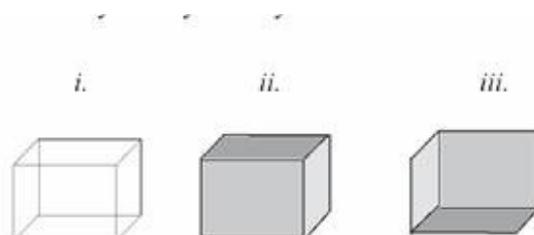
*c. On-beat*



On a superficial level, both rhythms are the same considering their circular conception. Example *b* and *c* would then represent perceptions from a few other possibilities available to the recipient. For instance, the performer/ transmitter may be thinking in an entirely different perception....

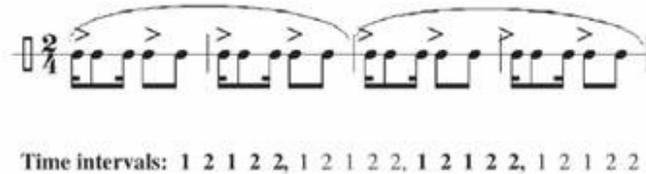


... a kind of aural illusion, comparable to the visual stimuli of perceptual illusion phenomenon you may already be familiar with.

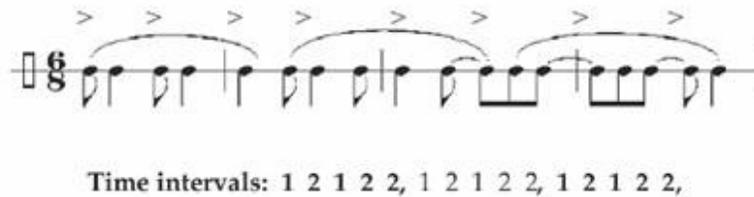


Cube (i) lends itself to perceptual variation (ii) or (iii).

Listening to the following rhythm from a perspective of the Northern *Ewe* of Ghana would give rise to the transcription below:



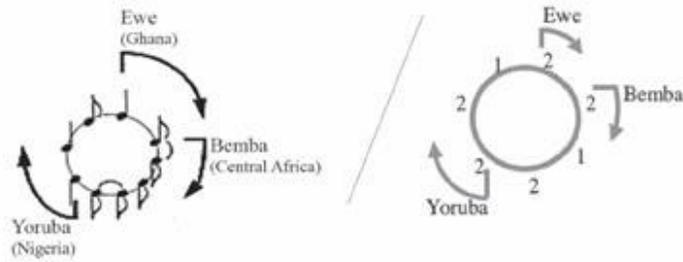
A similar rhythm among the *Fon* of Benin or the *Lukumi* of Cuba would have an entirely different perception:



Both rhythms sound the same on a facial level but are perceived differently, on the ethnic level. The concept is **homonymic** in the sense that an aural stimulus manifests a variety of perceptual meaning to different people particularly of different ethnic musical orientation. This is further evidence that beat perception—the way we culturally perceive beats in association with rhythm, is an essential factor of ethnic identity or differentiation. Simply inferring, speculating or conjecturing may lead to a misconstrued perception quite contrary to the ethnic norm. Ethnic perception is thus pre-eminent in decisions of rhythmic theory.

## Measuring Rhythmic Isomorphism

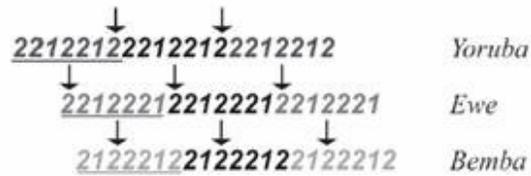
Based on the set properties of rhythm and the perceptual issues of ethnicity elucidated, one of the major problems faced by the analyst is the problem of comparison and description in view of the rhythmic dilemma of isomorphism and ‘homonymicity’. As an example, I will employ one of the most discussed and widespread bell patterns in African music, which Anthony King describes as “The Yoruba Standard Pattern” to explain my analytical model. This pattern has durational intervals of 2212212. Imagine that the pattern is played repeatedly to a mix audience of *Anlo Ewe* of Ghana, *Yoruba* of Nigeria and *Bemba* of Central Africa. The circular transformation of the pattern would give rise to isomorphic rotations of the initial 2212212 pattern. This is because even though the pattern may sound the same, each tradition may hear it from a different beginning point.



Thus:

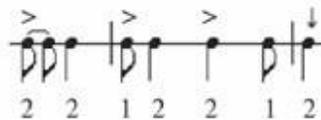
22122212221222122212 22122212221 for the Yoruba  
 221222122212221222122212221 for the Ewe  
 2212212221221222122122212221 for the Bemba

The next problem is how each perceives the regulative beat and the subsequent four beat areas of the pattern.



At this point we can conclude that the three rhythms are not the same, at least from the point of view of the ethnic constitution of the audience.

Yoruba



Anlo Ewe



Bemba



To compare the three set patterns, let's isolate elements that are common and those that are uncommon to all three rhythms:

1. The 3 set rhythms belong to the same 12 grid type.
2. They also consist of 7 *attack points* each.
3. Since they represent rotations <sup>[2]</sup> within the same un-order set, it will be helpful to choose an arbitrary standard set within the rotation (*the prime form*) that would serve as a point of reference. We would define *prime form* as the pattern rotation with the least intervallic arrangement at the beginning of the set without re-arranging the order of the *time intervals (un-ordered form)*. The *Prime form* of all six possible rotations of the original is therefore 1221222.
4. The prime form <1221222>, and its rotations are as follows:

<2212221> Rotation 1

<2122212> Rotation 2

<1222122> Rotation 3

<2221221> Rotation 4

<2212212> Rotation 5

<2122122 >Rotation 6

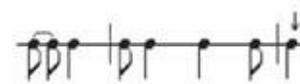
The *Yoruba* pattern <2212221> would be rotation 5 (R5) of the prime; The *Bemba* rotation 2 (R2) and *Ewe* rotation 1 (R1).

5. Finally, we would describe the regulative beat in terms of the particular time point placement in respect of the original pattern. Thus, the *Ewe* perception of the regulative beat (marked with a down arrow) is at time point 1 of rotation 1 of the prime, therefore it would be described as Regulative Time Point 1 – indicated as RT P 1. The *Yoruba* is at RT P 11 of rotation 5 while the *Bemba* is at RT P 4 of rotation 2 of the prime.

The schematic paradigm is arranged as follows:

***Set type/No of Attack points [Prime form] Rotation; Regulative time point***

For instance:

<p>Anlo Ewe.</p> 	<p>12/7 [1221222] R1, RTP 1</p>
<p>Yoruba</p> 	<p>12/7 [1221222] R5, RTP 11</p>
<p>Bemba</p> 	<p>12/7 [1221222] R2, RTP 4</p>

The scheme provides a way to externalize clearly both the physical and psychological properties of the three sets illustrated. Even though the sets appear to be isomorphic, the scheme makes it evident that their cultural perceptions differ in terms of their rotations and beat occurrences from the ethnic standpoint.

## The Structural Analysis

The intention of this segment of the paper is to offer a glimpse of the analytical process, which aims to account for the performer's logical distribution and manipulation of sets within the transcription provided.

The paper provides three ways to view and make sense of the ensuing analysis:

- a. A color-coded segmentation of set orientations within the transcription.* These show set distributions within the transcription itself. There are set orientations interspersed by *interpolations* and *nested interpolation* as well as *transitions* and *bridges* linking thematic sections.
- b. A detailed linear description of the performance.* The description shows thematic segments and within that, a nesting concepts of composite structures. Measure 31 – 68 simply means, from time point 1 of measure 3 to time point 8 of measure 6. This is followed by a corresponding description of the procedure.
- c. A color-coded circular mapping of set orientations.*

The circular mapping is a structural summary of the performance. This display shows an overview of the entire performance in a few circular representations of the various orientations of the performance at a glance.

For further details and explanations of these procedures, the author's book project on the subject will soon be available and will include eight full-length transcriptions with corresponding audio, description of analytical processes and performance procedures. The following however is an analytical excerpt from a social dance of the Ewe of Ghana <sup>[3]</sup>.

## Borborbor

*Ewe Social Dance*

*Performance reconstruction  
by Willie Anku*

The musical score is presented in three systems, each with three staves. The top staff is labeled 'Bell', the middle 'Support', and the bottom 'Master'. The time signature is 2/4. The score is divided into measures 1-8, 9-16, and 17-24. The first section (measures 1-8) is labeled 'Theme A' and shows the initial rhythmic patterns for each part. The second section (measures 9-16) continues the patterns with some variations. The third section (measures 17-24) shows further developments of the themes. The Bell part consists of a series of eighth notes, while the Support and Master parts feature more complex rhythmic patterns with accents and slurs.

The image displays a musical score for a drum piece, organized into six systems. Each system consists of three staves. The notation is rhythmic, featuring various note values and rests. The staves are numbered as follows: the first system (measures 23-32), the second system (measures 33-40), the third system (measures 41-47), the fourth system (measures 48-52), and the fifth system (measures 53-55). The notation includes stems, beams, and flags, indicating complex rhythmic patterns. The overall structure is highly organized and repetitive, characteristic of traditional African drumming.

The image displays a musical score for a piece titled "Thème II". The score is organized into four systems, each consisting of three staves. The top staff of each system is a treble clef staff with a key signature of one flat (B-flat). The middle and bottom staves are bass clef staves. The music is written in a rhythmic style characteristic of African drumming, featuring complex patterns of eighth and sixteenth notes, often grouped with beams and slurs. Measure numbers are indicated at the beginning of each line of music: 37, 39, 61, 63 in the first system; 65, 67, 69, 71 in the second system; 73, 75, 77, 79 in the third system; and 81, 83, 85, 87 in the fourth system. The title "Thème II" is written above the second system. The notation includes various rhythmic values, rests, and articulation marks such as slurs and accents.

37 39 61 63

37 39 61 63

37 39 61 63

65 67 69 *Theme B* 71

65 67 69 71

65 67 69 71

73 75 77 79

73 75 77 79

73 75 77 79

81 83 85 87

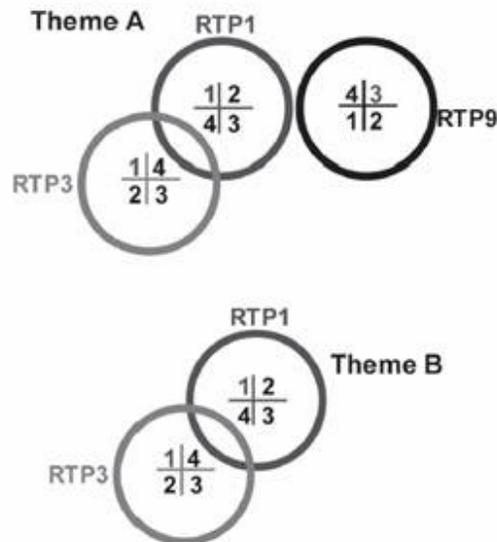
81 83 85 87

81 83 85 87

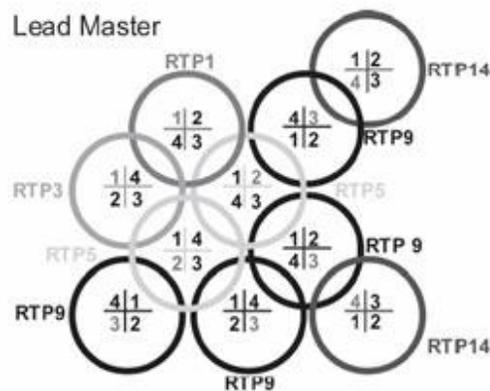
*Linear description of the performance.*

$3^1 - 60^8$	<b>Theme A - RTP 1 (Za za ke kre ðe)</b>
$3^1 - 6^8$	RTP 1 sets
$7^1 - 8^6$	Incomplete RTP 1 set
$8^7 - 12^6$	RTP 3 Interpolation
$12^7 - 12^8$	Complement of $7^1 - 8^6$
$13^1 - 14^6$	Incomplete RTP 1 set
$14^7 - 20^6$	RTP 3 Interpolation
$20^7 - 20^8$	Complement of $13^1 - 14^6$
$21^1 - 22^8$	RTP 1 sets
$23^1 - 24^6$	Incomplete RTP 1 set
$24^7 - 38^6$	RTP 3 Interpolation
$38^7 - 38^8$	Complement of $23^1 - 24^6$
$39^7 - 40^8$	RTP 1 sets
$41^1 - 41^8$	Incomplete RTP 1 set
$42^1 - 45^8$	RTP 9 Interpolation
$46^1 - 46^8$	Complement of $41^1 - 41^8$
$47^1 - 50^8$	RTP 1 sets
$51^1 - 60^8$	Preparation
$61^1 - 162^6$	<b>Theme B - RTP 1 (Za do √ç kraĉa)</b>
$65^1 - 66^6$	Incomplete RTP 1 set
$66^7 - 68^6$	RTP 3 Interpolation
$68^7 - 68^8$	Complement of $65^1 - 66^6$
$69^1 - 80^8$	RTP 1 sets
$81^1 - 82^6$	Incomplete RTP 1 set
$83^7 - 84^6$	RTP 3 Interpolation
$84^7 - 84^8$	Complement of $81^1 - 82^6$
$85^1 - 86^6$	Incomplete RTP 1 set
$86^7 - 88^6$	RTP 3 Interpolation
$88^7 - 88^8$	Complement of $85^1 - 86^6$

*Circular mapping of set orientations.*



Finally, the entire performance mapping of the master drum manipulations, consisting of 5 theme sections in all, (two of which have been presented here), come together as illustrated.



In summary, *“Inside a master drummer’s mind”* attempts to reposition the view of African music from an intuitive, seemingly irrational study, to a quantifiable theory. It highlights key elements of rhythm syntax and research into the structural essence of rhythm in traditional African music. Ultimately, it exhibits the application of structural set theory proposed by the author to an analytical model. The system reveals two complementing analytical approaches: a detailed linear system and a circular performance mapping which presents at a glance a structural summary of the analysis.

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[1] Koetting 1970, Pantaleoni 1972, Greene 1983.

[2] See also Rahn 1987, Pressing 1983.

[3] Cfr. CD.II.13.

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