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TOWARDS A GENERATIVE APPROACH IN UNDERSTANDING THE KÓNKÓLÓ TIMELINE IN YORUBA MUSIC

ABSTRACT: The *kónkóló* timeline is ubiquitous in most Yoruba musical practices; serving as the background rhythmic pattern and time marker, it is the principal pattern that delineates the music's rhythmic structure. Previous bodies of work have investigated the nature of Western rhythm from a range of different perspectives, such as in terms of cultural significance, cognitive and neural relationships with language and movement, and potential pedagogical and therapeutic value. There is also increasing interest in the connections between formal and traditional semantic approaches to analysing musical meaning, including for rhythmic structures. The current, interdisciplinary study attempts to bring together aspects of these distinct areas of knowledge, through a generative approach, in understanding musical and cultural functions of the *kónkóló* timeline in Yoruba music. This is attempted by seeking to understand the creative ways in which the *kónkóló* timeline is used and communicated between the musicians, dancers, and audience in Yoruba music. While this study is based on a generative approach in Yoruba traditional music, which is unlike the generative theories of Western tonal music, it agrees to the presence of a hierarchical system of metrical organization and rhythmic grouping in the music. Data were elicited during fieldwork through observation and interviews of traditional drummers and dancers. The study

provided information on the *kónkóló* timeline's metric/rhythmic structure as unique inputs, and the predictive outputs in the music, such as specific syllabic and rhythmic generation, movement and dance patterns, and other socio-cultural layers that constitute the full experience of Yoruba music. This also include perspectives on the social and affective features of *kónkóló* patterns.

1. INTRODUCTION

Yoruba music, like other sub-Saharan African music, exudes a multitude of diverse rhythmic patterns. Although the music has both melodic and harmonic elements, it is popularly known for its rich rhythmic elements and cultural functionalities, like much of West African music (King 1960, Chernoff 1979, Simha 1989, Novotney 1998, Stone 2005, Agawu 2016). That is, while the melodies are often relatively simple, the rhythms are considered complex with much apparent syncopation and cross-rhythms, exemplifying the characteristic predominance of rhythm over melody and harmonic content in African music (Nketia 1982, Akpabot 1998, Vidal 2012). As Overy have observed, "many cultures emphasize rhythm, with melody playing a less significant role" (2009, 1). In Yoruba music, the principal regulative pattern that underlies all music and dance rhythm practice is the *kónkóló* timeline. This pattern, inherent and widespread in West African musical practices, reflects the predominance of percussive music in the region. Scholars such as Locke (1982), Mereni (1990), Agawu (2006), and Dada (2015) have suggested that the *kónkóló*, also known as standard (bell) pattern, is a resultant pattern realized from interplays of different rhythmic structures, as a result of cross-rhythm, hemiola, and polyrhythm.

The *kónkóló* timeline is a standard pattern which functions both as a time marker and the background metric/rhythmic organization in Yoruba traditional and popular music, hence also used as a musical (*kónkóló*) rhythm in almost all of the Yoruba genres. According to Stover, the timeline functions "as generators of both structural and surface level rhythmic relationships and that subtend numerous diasporic West African performance practices" (2012, 131). The *kónkóló* pattern serves as an iconic figure which embodies the rhythmic style of Yoruba music, and also acts as a form of cultural identity because it is a rhythmic nomenclature and artistry unique to Yoruba musical culture.

Nevertheless, it not only serves as the background metric/rhythmic organization and time marker in Yoruba music, it also provides extra-musical functions and meanings. The timeline's function in keeping time in African music has been likened to that of the metronome in Western music, albeit with a different metrical function due to the presence or lack of 'isochrony' in the music. Agawu posited that, "each timeline is in principle structurally dependent on a metronomic foundation", and "because it is unchanging, the timeline may seem to function like a metronome, but there are differences as well" (2016, 172). According to Agawu, the timeline function as "patterns rather than mere pulses" (*ibid*.). Schaefer thus clarifies that "these deviations from the equal and unequal duration of beats (or pulse) and rhythm pattern in the metronome and timeline respectively "constitute the primary difference between a metronome and musical rhythms [of the timeline]" (2014, 2). This is because, unlike the metronome, "a timeline uses a carved rhythmic pattern to mark time" (Agawu 2006, 7). The word 'carve' in this context refers to a more complex structuring of time, rather than a simple marking.

Since the *kónkóló* timeline is itself a rhythmic pattern, as earlier mentioned, it is used essentially by the musicians, dancers and listeners to carve the unique rhythm associated with each musical performance, which in turn reflect the style and movement pattern from a particular musical and dance genre, as well as reflecting the cultural event for which each genre is used. That is, the *kónkóló* timeline is usually deployed as the basis for rhythmic patterns, which can individually be referred to as *kónkóló* rhythms. This feature will be addressed in detail in the analysis section, in relation to specific musical examples. There are also links between the use of the *kónkóló* rhythm in a specific region and the use of language by those people where the music is practiced (Nketia 1982, Kubik 2010, Omojola 2012, Vidal 2012, Oludare 2015, González & Oludare 2022). Hence, through the *kónkóló* timeline and carved (or generated) rhythms, Yoruba musicians and dancers are able to coordinate their performances and body movements, and to communicate and refer to specific musical styles and cultural events within their society. This is true for all rhythms indigenous to any society, hence the unique structure and function of the *kónkóló* patterns among the Yoruba people makes it special to them and differentiates it from how

the same standard pattern is structured and functional in other West African communities where it is prevalent.

Various scholars have written about the interrelationship of rhythm, movement, language, and cultural events in African music. According to Witek et al., there is a correlation between rhythm and movement, as exemplified in how "certain kinds of music... makes us want to move" (Witek et al. 2014, 1). While Waterman (1952) wrote about how the Africans engage a rhythmic metronome sense in their body movement and dance, Mereni (1990), Ekwueme (2004), and Agawu (2006) expanded on rhythmic organization in African musical practices, and the cultural link between rhythm and body movements by musicians and dancers. Fadahunsi (2016) and Omojola (2017) have described the association of Yoruba dance-types with the rhythms of the drum music. Chernoff (1979), Euba (1988), Akpabot (1998), Vidal (2012), and Agawu (2016) have written about the link between African rhythm and linguistic sensibilities, tune and text, oral literature, and language and rhythmic imaginations, respectively. In addition, scholars such as Nketia (1982), Euba (1990), Omojola (2012), and Adeeko (2019) have discussed the cultural functionalities of musical rhythms in African arts and traditions. In Yoruba musical traditions, be it vocal and instrumental music, or dance music, chants and poetries, the *kónkóló* pattern persists as a common denominator.

Although the *kónkóló* timeline and rhythms are deployed as a means of generating different musical meanings in Yoruba culture, nonetheless information on how this specific standard rhythmic structure, ubiquitous in most Yoruba musical and dance traditions, is specifically linked to generating these musical and cultural meanings is insufficient in the current academic literature. An entirely separate body of work have investigated the nature of rhythm in terms of its cognitive and neural links with language and movement, as well as the potential pedagogical and therapeutic benefits of such links (Clayton et al. 2004, Overy 2009, Schaefer 2014). However, it is still unclear how African rhythmic structures in particular, such as the *kónkóló* timeline (auditory rhythmic input) are used in re-creating (or generating) various shared experiences of social and affective features (performative output) displayed by the musicians, dancers, and listeners in Yoruba musical culture. This study will attempt to address these issues. In parallel to the literature

discussed so far, there has been increasing interest in the connections between formal and traditional semantic approaches to analysing and communicating musical meanings. Lerdahl & Jackendoff (1983), in their pioneering work on "a generative theory of tonal music", focus on the formal description of how musical syntax and meanings are generated, based on the musical intuitions of a listener with previous knowledge in a particular musical expression. Schlenker (2017) posits that just as music has a syntax, it also possesses a semantics, thereby proposing an approach by which musical meanings can be formally analyzed. Katz & Pesetsky (2011) and Patel (2007) also take a formal semantic approach to understanding musical meaning, through an assessment of the connections between musical and linguistic syntax, taking a generative hierarchical structure and cognitive perspective. While Perry (1965) had written about how rhythms portray meanings in music, Sioros et al. (2018) provided a formal description of musical rhythms through a generative model. Formal and traditional approaches to analysing and communicating semantics has also been extended to music and dance. These include scholars such as Leaman (2016), Patel-Grosz et al. (2018), and Charnavel (2019), who focused on Western music and dance, while Clayton et al. (2004), Naveda & Leman (2011), and Witek et al. (2014), focused on non-Western (Afro-diasporic) music and dance. The current work attempts to bring together aspects of these distinct areas of knowledge, through a generative approach in understanding the musical and cultural meanings attributed to the *kónkóló* timeline in Yoruba music. This is attempted by seeking to understand the creative ways in which the *kónkóló* timeline is used and communicated between the musicians, dancers, and audience in Yoruba musical performances. The study attempts to explore how the *kónkóló* timeline is re-used in generating various rhythmic patterns, and how these relate to movement (dance) and communication patterns, as well as the rhythm's social and affective features in Yoruba musical culture.

While this study adopts a generative approach for the rhythmic structure in Yoruba traditional music and dance, which is unlike Western tonal music and dance structure, it does not use the same approach as the generative theoretical analyses of scholars like Perry (1965), Lerdahl & Jackendoff (1983), Katz & Pesetsky (2011), Patel-Grosz et al. (2018), Sioros et al. (2018), and Charnavel (2019). However, it agrees to the

presence of a broad hierarchical system of metrical-like organization and rhythmic grouping in the music under study. Just as the rhythmic structure of Western tonal music has generative features, so also does the *kónkóló* timeline and resulting rhythmic patterns. Also, while the building blocks of tonal musical structure are primarily based on pitch-class and chord quality (Lerdahl & Jackendoff 1983; Katz & Pesetsky 2011), this study argues that the building blocks of Yoruba musical structure are primarily based on rhythmic organization and speech intonation. It has been suggested that music and language share common syntactic components, through which semantic meanings can be derived (Patel 2007; Katz & Pesetsky 2011). One of the main objectives of this study is to explore how the *kónkóló* timeline and rhythms can be analysed and described in order to develop a structural description of the complexity of Yoruba music. This is significant because, the interplay of the generative features of the *kónkóló* timeline in Yoruba music (rhythm and movement) and language (pairing of sound and linguistic meaning) is sacrosanct, towards the understanding of its broader musical and cultural meanings and functions. Hence, based on the existing theories and formal approaches to the analysis of African music, this study will attempt to describe how Yoruba musical meanings could be formally analysed, going forward, for example through the engaged cognitive layers of its rhythmic, movement, language, and cultural interactions. This is because the *kónkóló* timeline functions not only as a hierarchical system of metric organization and rhythmic grouping, it also generates specific socio-cultural meanings; these may thus be used as a focal point to bring together formal and traditional semantic approaches to analysing and discussing Yoruba music. This paper discusses the *kónkóló* patterns' use in Yoruba music in more detail, using standard Western music notation and including Western bar lines and time signatures, for clarity of communication. It is of course extremely important to note that the music is not conceived of in this way within Yoruba musical culture, in which bars, bar-lines and time signatures are irrelevant.

2. METHODOLOGICAL APPROACH

This paper describes the aims and first analytical outputs of a series of recording sessions of Yoruba traditional drum music and dance un-

dertaken by the researcher in May 2021 in Lagos, Nigeria. The source material consists of six commissioned drum and dance performances of Yoruba traditional drum music and song repertoires, by three professional drum (*dùndún*, *bàtá*, and *gángan*) ensembles and their associated dancers. (All participants gave their informed consent to take part in the research, and ethical approval was granted by the ethics committee of the University of Lagos.) The drumming performances consisted of different versions of existing repertoires of traditional drum music and rhythms, as well as the drummer's performance. The song and dance performances consisted of a variety of existing traditional songs, dance and movement, with musical accompaniment by different drum ensembles. Interviewed participants include the six leaders and some members of the three drum and dance ensembles. Each drum ensemble consisted of a lead and support drummers, and each dance ensemble consisted of a lead and support dancers. The acquired dataset thus comprised different versions of existing repertoires of traditional music from each drum and dance ensemble, enabling observation of the different possible ways of utilizing and communicating the *kónkóló* pattern by the drummers and dancers. This approach also allowed the researcher to observe, consider and discuss the variety of complex musical and cultural layers and meanings present in each performance.

The analytical and ethnographic methodology chosen aims at understanding the fundamental rhythmic elements that the drummers and dancers employ creatively when generating the rhythmic, movement, affective, and cultural features of a group musical experience, including how speech references play a role in the communication between musicians and their audience. The approach was to watch the recordings of the musical performances and interviews and to notate short sections of the musical and communicative (articulated and unarticulated) layers of each drum pattern and the related dance movements. This was followed by the analysis of the *kónkóló* timeline and rhythmic organization in the drum and dance performances, and the movement and communication patterns engaged in the performance. Additionally informed by the interviews with the musicians and dancers, this was followed by the reflection and discussion of the role and importance of the *kónkóló* timeline in generating the rhythmic, movement and communication patterns and practices in Yoruba music, through a generative approach.

The current study is a preliminary analysis, to stimulate discussion and further analysis.

3. THEORETICAL FRAMEWORK

Two distinct theoretical frameworks were adopted for this study, in the attempt to bring together different disciplinary approaches. The first theoretical framework adopted is Agawu's (2006) generative approach theory, which he used as a procedure to generate a structural description of rhythmic development in African music. Agawu opined that "of the numerous competing approaches to the analysis of African rhythm in general and time lines in particular, the one most consonant with African ways of proceeding is a generative approach" (2006, 28). The generative approach, which "lies at the heart of African modes of rhythmic expression... hold considerable promise for codifying certain aspects of African musical behaviour and thereby promoting a cross-cultural understanding" (*ibid*., 29). Agawu explains that, the generative approach juxtaposes the rhythmic structure of a music with what the people identify it with culturally, like a musical and cultural function comparison, "the unadorned with the adorned" (*ibid*., 30). That is, the background with the foreground, subjective with objective, internal with external. For example, while the adorned could be the general knowledge, "the unadorned could be an archetype known within the culture, or a[n innate] pattern that is readily compatible with existing patterns" (2006, 30). In other words, the approach describes how a music's hierarchical rhythmic structure generates different semantic meaning within its culture.

However, just like Lerdahl & Jackendoff's (1983, 307) cautionary remark that "the generative music theory... does not look much like generative linguistics", Agawu also "emphasized that the generative process being advocated here is not a report on existing compositional practices as such...but an imaginative reconstruction" (Agawu 2006, 30). He affirmed that, it is "at best, a generative proceeding [which] makes explicit the logic of structure inherent in a given cultural product" (*ibid*.). Other scholars who have adopted a generative approach, in establishing a hierarchical rhythmic structure and its semantic meanings in African music, include Nketia (1982), Chernoff (1991), Temperley

(2000), Clayton et al. (2004), Naveda & Leman (2011), to mention a few. Agawu's model is relevant to this study, as it provides the much needed connecting bridge between formal and traditional semantic approaches in analysing and communicating musical meanings. Through his generative approach, which considers the cultural functions and sensibilities of rhythm in African music, this study is able to explore the generative features of the *kónkóló* rhythm, and the associated socio-cultural cognitive layers in Yoruba music.

The second theoretical framework adopted for this study is the shared affective motion experience (SAME) model (Molnar-Szakacs & Overy 2006, Overy & Molnar-Szakacs 2009), as also used by Molnar-Szakacs et al. (2012). According to the SAME model, "musical sound is perceived not only in terms of the auditory signal, but also in terms of the intentional sequences of expressive motor acts behind the signal" (Molnar-Szakacs et al. 2012, 314). Molnar-Szakacs et al argues that, "music can be interpreted fundamentally as physical gestures emanating from another person... and such gestures can be used in a musical context for self-expression, and interpreted by another individual... resulting in a shared affective motion experience" (*ibid*., 320). Rooted in cognitive neuroscience research and theory, the SAME model presents an "evidence-based theoretical model to support the observation that music...can increase empathy and communication between individuals" (*ibid*., 323). The SAME model is relevant to this study because it explores not only shared musical and social experiences, and expressions among both performers and listeners, but also the potential therapeutic, cognitive, and educational benefits of music, cross-culturally. It is suggested that "even a simple musical listening experience carries within it the presence of human action and human agency, and can facilitate feelings of empathy and social bonding" (*ibid*., 314). Thus, the SAME model of music perception proposes that, "it is the ability of music to communicate social and affective information and to create the feeling of 'being together in time' that makes it so appealing to humans across all ages and cultures" (*ibid*., 324).

The SAME model is thus relevant to the musical and socio-cultural functionalities of music and dance among the Yoruba and other African communities. For example, Molnar-Szakacs et al. (2012) opine that, although responses to music are significant due to the "complex nature of

the actual sound signal (rhythms, melodies, harmonies, structures)", it is even "more in terms of the physical, social, communicative, empathic and pro-social experiences involved" (*ibid*., 321). This study used the SAME theoretical framework in understanding the implied social and affective aspects of the auditory information (*kónkóló* timeline) and the shared experience of the various rhythmic, songs and dance elements in Yoruba music, considered in parallel with the observation of the performances and dataset from the current fieldwork.

4. METRIC ORGANIZATION OF THE KÓNKÓLÓ TIMELINE

The *kónkóló* timeline is used in generating the various *kónkóló* rhythms employed by the musicians in the drum music activities, and subsequently the dancer's movement patterns in the dance and song music activities, as shown in the following musical examples. As was observed in the fieldwork datasets, in Yoruba music, the *kónkóló* timeline exists in two rhythmic forms: duple pulse and triple pulse. While the former can be conceived of as simple quadruple time, the latter is rather in compound quadruple time. In Western music, while the beats of the simple and compound quadruple metric timings are usually in two groups of pulses (beat 1 & 2, and 3 & 4), in Yoruba music, the musicians perceive the metric beats in the timeline in three groups of rhythmic pulses as shown in Figure 1. For this paper, it is important to note here that, the author, being a Yoruba indigene, native (L1) speaker of Yoruba language, and Yoruba talking drummer, with a firsthand knowledge of the Yoruba drum language tradition, chose the most common 3, 5, and 7-metric beats forms of the *kónkóló* pattern, which are widely articulated by Yoruba indigenes orally (speaking and singing). However, the rhythmic sequence of the timelines, especially the 5 and 7-metric beats variational forms, have been notated slightly differently by some scholars, thereby influencing its syllabic nomenclature, particularly the last three rhythm and syllables of the 7-metric beats form, referred to as the standard pattern and ubiquitous in the West African regions.[1]

Culturally, the *kónkóló* timeline is perceived to consist of 3-metric beats in its original form. In this context, this study uses the word 'metric' to refer to the conceptual timeline pattern, which may or may not be articulated in the actual musical notes performed (corresponding to

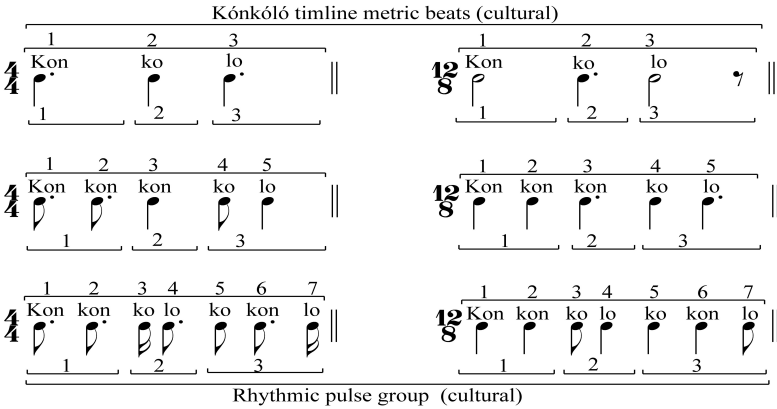


Figure 1: Metric organization of the 'cultural' beats in the *Kónkóló* timeline

'metrical' organisation in Western music). Although its overall metric structure is asymmetrical, the *kónkóló* timeline exhibits an 'internal' symmetrical pattern of repetitive elements (metric beats and rhythmic pulses) with an interposed 'pivotal' beat/pulse element. As shown above, the *kónkóló* timeline pattern in its original form consists of a 3-note sequence, with the sequences (beat/pulse) 1 and 3 occupying the first and last parts of the pattern are equal in beat summation value. This is separated by the sequence 2 (beat/pulse) which serves as the fulcrum or central point of the entire pattern's symmetry. This intricate characteristic is also exhibited in the *kónkóló* timeline's 5- and 7-metric beats variational forms. That is, the rhythmic pulse group 2 serves as the fulcrum that perfectly divides the timeline's metric organization into two equal beat summation sequences. Consequently, Figure 1 also shows that, while the 3 different forms of the *kónkóló* timelines are culturally structured in a 3, 5 and 7 metric organizations, they all also mark time uniformly through an 'equal-carved' pattern of rhythmic pulse group. The observation of how the musicians and dancers perceive, learn, and manipulate the *kónkóló* timeline and rhythms as an auditory input, and the resultant shared experiences of motion and emotional responses and expressions through improvisation and dance, shows a correlation

between the *kónkóló* patterns and some generated socio-cultural cognitive features through a generative approach. These include syllabic and rhythmic generation, movement (dance) patterns, communication (language) patterns, among others. These generative approach towards understanding the unique musical and cultural use and functional meanings of the *kónkóló* timeline in Yoruba music will now be discussed in detail.

5. GENERATIVE APPROACH

5.1. Syllabic and rhythmic structure of the kónkóló timeline

The significance of the metric organization of the (cultural) beats and rhythmic pulse grouping in the *kónkóló* timeline pattern can be better understood in how the linguistic nomenclature of the timeline is generated in Yoruba language. This in turn sheds light on the derived contextual interpretation of the meaning and use of the *kónkóló*'s syllabic nomenclature musically (rhythmic organization) and culturally (genre styles) by the native musicians, dancers and listeners. The name '*kónkóló*' is an onomatopoeic sound; a nomenclature derived from the combination of the percussive rhythm in Yoruba music and the tonal inflection of the language (Oludare 2016a). Linguistically, the word '*kónkóló*' is derived from the sonic expression of the instrument that commonly plays the rhythm (that is, the *agogo* or any other instrument with a high pitch or percussive sound). This is despite the fact that the *kónkóló* is a 'non-lexical vocable' without any specific lexical meaning in Yoruba language.[2] For clarity and analytical purposes, this paper decides to write the name of the timeline starting with capital 'K' only in the following discussions, table and examples, just as a stylistic way of differentiating the first '*Kón*' syllable from the other '*kón*' in the 5 and 7 metric beats variational forms, albeit sounding the same way in practice.

Just as the Yoruba timeline in its original form has 3 metric beats, its linguistic nomenclature also has 3 syllables '*Kón-kó-ló*', with the first sequence element (beat/pulse) beginning with the syllable '*Kón*', the last sequence element(s) ending with '*ló*', and the possible duplications in the middle sequence element(s) as '*kón*', '*kó*' and/or '*ló*'. Consequently, the syllabic nomenclature of the beats in the 5 and 7 variational forms of the '*Kónkóló*' timeline are sequentially generated to reflect their rhythmic

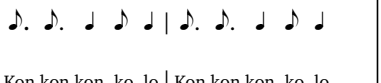
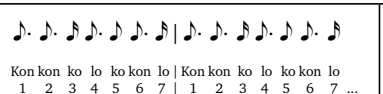
and linguistic positions in the pattern. That is, the first, middle and last sequence element(s) making use of duplications of the syllables '*kón*', '*kó*' and '*ló*'. Just as there are three onomatopoeic syllables in the Kón-kó-ló timeline, matching its 3-metric beats, the 5 and 7-metric beats variants of the timeline are linguistically adjusted to also have five (*Kón-kón-kón-kó-ló*) and seven (*Kón-kón-kó-ló-kó-kón-ló*) onomatopoeic syllables respectively, as commonly used in Yoruba culture. Hence, it is easy to figure out, especially for anyone conversant with the Yoruba language, the possible and unlikely '*Kónkóló*' timeline syllabic and rhythmic patterns, like an unwritten 'generative' rule of the 'grammar' of the '*Kónkóló*' timeline structure in Yoruba musical culture. For example, the reverse (that is, starting with *ló* and ending with *Kón*), starting with '*kó*', '*ló*', or ending with '*Kón*', '*kón*', '*kó*' are not practiced among the Yoruba in the *Kónkóló* timeline grammar, rhythmically or linguistically in any of its 3, 5 and 7 sequence patterns.

Table 1: Syllabic and rhythmic generation of the *Kónkóló* timeline

Possible patterns	**Unlikely patterns**
3 beat metric timeline	
 Kon ko lo | Kon ko lo | Kon ko lo 1 2 3 | 1 2 3 | 1 2 3 𝄾 2 3 | 1 2 3 | 1 2 3 𝄾 𝄾 3 | 1 2 3 | 1 2 3	1 3 2 | 1 3 2 {*Kón-ló-kó*} 2 1 3 | 2 1 3 {*kó-Kón-ló*} 2 3 1 | 2 3 1 {*kó-ló-Kón*} 3 1 2 | 3 1 2 {*ló-Kón-kó*}

Although this asymmetric timeline pattern, a ubiquitous standard pattern in West Africa, has a cyclic structure with rotational possibilities, nonetheless each region or community have their unique phrasing and

Table 1 continued

Possible patterns	**Unlikely patterns**
5 beat metric timeline	
 Kon kon kon ko lo | Kon kon kon ko lo 1 2 3 4 5 | 1 2 3 4 5 | ... 2 1 3 4 5 | 2 1 3 4 5 | ... 𝄾 2 3 4 5 | 1 2 3 4 5 | ... 𝄾 𝄾 3 4 5 | 1 2 3 4 5 | ... 𝄾 𝄾 𝄽 4 5 | 1 2 3 4 5 | ... 𝄾 𝄾 𝄽 𝄾 5 | 1 2 3 4 5 | ...	2 3 4 5 1 | 2 3 4 5 1 { *kón-kón-kó-ló-Kón*} 3 4 5 1 2 | 3 4 5 1 2 { *kón-kó-ló-Kón-kón*} 4 5 1 2 3 | 4 5 1 2 3 { *kó-ló-Kón-kón-kón*} 5 1 2 3 4 | 5 1 2 3 4 { *ló-Kón-kón-kón-kó*}
7 beat metric timeline	
 Kon kon ko lo ko kon lo | Kon kon ko lo ko kon lo 1 2 3 4 5 6 7 | 1 2 3 4 5 6 7 ... 2 1 3 4 5 6 7 | 2 1 3 4 5 6 7 ... 𝄾 2 3 4 5 6 7 | 1 2 3 4 5 6 7 ... 𝄾 𝄾 3 4 5 6 7 | 1 2 3 4 5 6 7 ... 𝄾 𝄾 𝄽 4 5 6 7 | 1 2 3 4 5 6 7 ... 𝄾 𝄾 𝄽 𝄾 5 6 7 | 1 2 3 4 5 6 7 ... 𝄾 𝄾 𝄽 𝄾 𝄾 6 7 | 1 2 3 4 5 6 7 ... 𝄾 𝄾 𝄽 𝄾 𝄾 𝄾 7 | 1 2 3 4 5 6 7 ...	2 3 4 5 6 7 1 | 2 3 4 5 6 7 1 {*kón-kó-ló-kó-kón-ló-Kón*} 3 4 5 6 7 1 2 | 3 4 5 6 7 1 2 {*kó-ló-kó-kón-ló-Kón-kón*} 4 5 6 7 1 2 3 | 4 5 6 7 1 2 3 {*ló-kó-kón-ló-Kón-kón-kó*} 5 6 7 1 2 3 4 | 5 6 7 1 2 3 4 {*kó-kón-ló-Kón-kón-kó-ló*} 6 7 1 2 3 4 5 | 6 7 1 2 3 4 5 {*kón-ló-Kón-kón-kó-ló-kó*} 7 1 2 3 4 5 6 | 7 1 2 3 4 5 6 {*ló-Kón-kón-kó-ló-kó-kón*}

starting point of reference for their timeline (Jones 1958; Stone 2005; Anku 1992; Kubik 2010; Agawu 2016). As a result, while the Yoruba musicians and dancers may decide to start playing or dancing on any of the *Kónkóló* timeline's metric beat point, nonetheless the 'unifying' starting point of reference for all the performers and for the music's

metric organization remains the first 'metric' beat of the first rhythmic pulse group (represented as '*Kón*' as explained earlier). From the above table, it is observed how the linguistic and resultant rhythmic structure of the *Kónkóló* timeline reveals the possible patterns and those that are unlikely in Yoruba music.

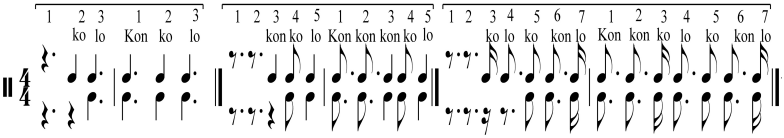


Figure 2: Some possible *Kónkóló* timeline patterns in Yoruba music

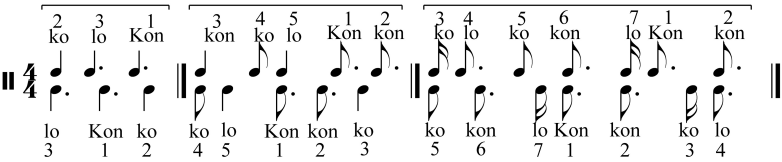


Figure 3: Some unlikely *Kónkóló* timeline patterns in Yoruba music

The examples in Figures 2 and 3 show some of the 3, 5 and 7 metric beat *Kónkóló* timelines commonly practiced and those that are improbable in Yoruba musical culture based on the syllabic patterns that the corresponding rhythmic pattern will generate, and vice versa. In other words, the linguistic generation of the *Kónkóló*'s syllabic nomenclature is conceived by the musicians, dancers and listeners in engaging the timeline to generate and communicate the different Yoruba indigenous rhythms and musical genres.

5.2. Generation and (re)organization of kónkóló rhythms for different Yoruba music genres

Generally, the rhythmic organisation or structure of the music of a culture provides the basis for the coordinated movement (dance or gesticulation) of the people to such music. Rhythm "is a combination of durations created by a group of notes", and in Western music, the rhythmic organisation "may explicitly or implicitly fit onto a temporal grid of equally

spaced intervals, leading to an isochronous 'beat' or 'pulse', to which a listener can align their movement" (Schaefer 2014, 2). However, in most traditional music in Africa, particularly in West Africa, the rhythmic organisation consists of combination of group of notes with unequally spaced time intervals. As was observed in the performances during our fieldwork, in Yoruba musical culture, the musicians, dancers, and listeners engage a cognitive understanding of the rhythmic organisation, wherein the notes fit into a complex, fluid, rotational structure that does not actually articulate the simple beat structure used for dancing – rather it 'plays' with the beat structure in a dynamic way. All community members with such 'innate' knowledge understand this complex rhythm structure and can dance or clap in time to it, while professional dancers can additionally 'play' with the complexity. Anyone without these 'innate' experiences would often be confused when trying to listen out for 'the steady beat' in the music, in order to know when to clap or move. This is, however, attainable through proper exposure and training in these rhythmic and linguistic elements and the musical and cultural meanings and functions associated with them.

The various patterns of the *kónkóló* rhythms employed in Yoruba music are subsequently generated from the essential *kónkóló* timeline. This is done simply by using the three forms of the timeline as the rhythm for the music, that is, articulating the timelines as stroke patterns to produce different percussive rhythm and dance styles – for example, by articulating the 3, 5, and 7-metric beat timelines as 3, 5, and 7-stroke rhythms (much like a Western 'march' in 2/4 time would clearly articulate each beat in the music). Thus, the *kónkóló* timeline is deployed as the basis for creating the different *kónkóló* rhythmic patterns used in Yoruba music, as shown in Figure 4 below.

The example in Figure 4 shows not only how the 3, 5 and 7-metric beats forms of the *kónkóló* timeline (see Figure 1) are also used as musical (*kónkóló*) rhythms, but how these rhythmic patterns are reproduced from the duple pulse structure (common in Western music) into the triple pulse structure prevalent in Yoruba and other West African music. The notation shows the internal rhythmic (re)working of each forms of the *kónkóló* rhythms in generating the next pattern employed by the drummers as a creative process in Yoruba music. For example, the first bar displays how (from a Western notation viewpoint) the 3-metric

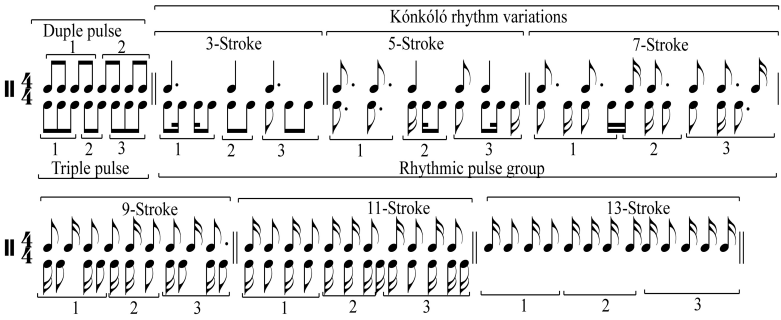


Figure 4: Re-creation (generation) of the *kónkóló* rhythms

beat timeline can be articulated over a 4-beat isochronous underlying pattern, as a rhythmic pulse group of duple pulse against triple pulse (2:3). The triple pulse rhythmic grouping thus creating the 3-stroke *kónkóló* rhythm in the second bar. Similarly, the second bar provide details of the internal rhythmic (re)organization of the 3-metric beat *kónkóló* timeline, used as the 3-stroke *kónkóló* rhythm, in realising the 5-stroke *kónkóló* rhythm, and the 5 and 7-stroke *kónkóló* rhythms generated from their antecedent timelines. Hence, through the *kónkóló* timelines the subsequent variations of *kónkóló* rhythm are generated, producing the 5, 7, 11, 13-stroke rhythms, and so on. Figure 5 shows how the different *kónkóló* rhythms are re-organized and played by the musicians to provide varied percussive and dance patterns unique to each Yoruba musical genres.

Such rhythmic complexity resulting from the generating features of the Yoruba *kónkóló* pattern, are common and fundamental principles of West African timeline rhythmic organisation and aesthetics in general. As mentioned in the introduction, Agawu refers to this complexity of African rhythmic organisation in his "generative approach" model. This generative complexity gives the *kónkóló* pattern its musical creativity, aesthetic flavor, and cultural uniqueness, since the *kónkóló* rhythms, which are ubiquitous in all Yoruba musical and dance genres, may be (re)created from any of the three forms of the *kónkóló* timeline, as well as back into each other (Oludare 2016b). It was observed that, in accordance with the shared affective motion experience (SAME) model by

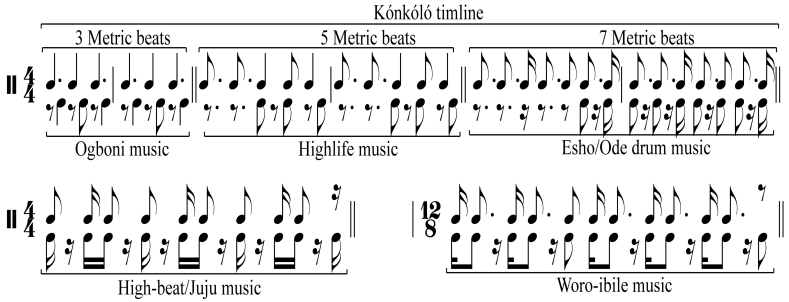


Figure 5: Re-organization of the *kónkóló* rhythms for different Yoruba musical genres

Molnar-Szakacs et al. (2012), through the *kónkóló* timeline's generation of the rhythmic organization of an individual song or piece of music, groups of musicians, dancers, and listeners are able to easily share their understanding and experience as they engage with any of the resulting *kónkóló* rhythms predominant syncopation and metronome sense features in musical practice. In addition, the Yoruba musicians and dancers are able to easily maintain rhythmic time and pattern, despite the prevalent syncopation which is characteristic of the music. This they do with a sense of subjective regulative beats, which may or may not be acoustically articulated. This rhythmic, social and affective knowledge and experience is expected to be comprehensible by the performers, dancers, and the listeners, which are also shared during their communal performances and interactions. It is this sense of rhythmic and time accuracy in rhythm production that Richard Waterman referred to as 'metronome sense' (1952). Ekwueme corroborated that this psychoacoustic "phenomenon of the metronome sense...apparently present in African musicians no doubt helps sustain the rhythmic vitality of their music" (2004, 167). In Yoruba music as an example, this metronome sense, through which rhythm and movement skills are manifested and learning and memory skills developed, is exhibited as a regulative or subjective beat throughout the *kónkóló* timeline. The musicians, dancers, and listeners therefore engage this timeline as a sense of metric periodicity, through which the rhythm, movement, and the attendant cognitive

complexity of each musical style is expressed (Temperley 2000; Oludare 2016b).

5.3. Movement Pattern: entrainment and dance

Entrainment has been described as "a process whereby two rhythmic processes interact with each other in such a way that they adjust towards and eventually 'lock in' to a common phase and/or periodicity" (Clayton et al. 2004, 2). Different scholars have written on how the engagement in rhythm and dance leads to entrainment among the performers and listeners, and some have proposed that an inherent experience in rhythmically complex music can enhance the ability to entrain and to socially interact via the music. Such works show "entrainment to be a flexible process that can adapt and accommodate many ranges of rhythmic complexity and...allows for a better understanding of music as a communicative and socially interactive process" (Clayton et al. 2004, 15). According to Naveda & Leman, "if one looks at the sociocultural displays in which music appears in most of the societies, it is difficult to ignore the recurrence of dance and music phenomena at the same time and spaces" (2011, 4). Hence, "dance may be strongly characterized by 'rhythmic order', which unfolds in spatial organization in time and diverse modes of synchronization and entrainment" (*ibid*., 6). Clayton et al. suggest that "entrainment to and through music needs to be seen as a particular case of entrainment in social interaction". (2004, 3). Lomax generalized entrainment as "the relationship between rhythmic style as displayed in music, dance and conversation and the correlation of rhythmic style with other 'cultural' factors" (*ibid*., 19). Using empirical music psychology methods, Witek et al. revealed "the extent to which syncopation affects meter perception and the ability to entrain... Since the body-movements associated with groove-based music are primarily entrained to the meter" (2014, 2). Hence, entrainment research within the fields of ethnomusicology and music psychology have brought together ideas from musical, cognitive, and cultural theory, thereby allowing a broader description of how musical experience, while individually unique in every case, is nevertheless always social in nature (Clayton et al. 2004, 22).

The three stages of entrainment in human cognition have been described as perception, synchronization and adjustment (Clayton et al.

2004, 15). These theorised stages can be used metaphorically and very broadly to articulate three stages of the function of the *kónkóló* timeline as a 'metronome sense', describing how entrainment is attained musically and also culturally by Yoruba traditional musicians, dancers, and listeners. In Yoruba music, the 'perception' stage of entrainment might be conceived of as the musical and cultural attention and importance given to the *kónkóló* timeline in all the musical and dance practices, and the learning of the rhythmic organization of the timeline during childhood. The second stage of entrainment in Yoruba music can be described as involving the so-called 'synchronization' of the unarticulated and articulated (which Agawu (2006, 30) referred to as "the unadorned and the adorned") rhythmic patterns and movement patterns into a whole event, towards the fuller comprehension of musical rhythms and body movements by the performers and listeners. The third stage of 'adjustment' in Yoruba music engages the externalized *kónkóló* patterns, learned from past experience, to either reproduce expected rhythmic activities or accommodate new rhythmic activities, through adjustments or improvisations. This broad, metaphorical idea of entrainment in Yoruba music can thus be conceived of as perceiving the *kónkóló* rhythms, learned from prior musical experiences, which subsequently primes the performers and listeners for particular expectations, through a synchronised and adjustment interplay between a participant and an event. In this case, the participants (musicians, dancers, and listeners) will share the events' rhythmic patterns as a form of musical communication, social activity and affective expression, in line with the shared affective motion experience (SAME) model.

This strong association of rhythm and movement in African music was also documented by von Hornbostel in his study of African music. He proposed that Africa rhythm is actualised in two phases: the hand lifting and muscle straining, followed by the hand dropping and muscle release. "Only the second phase is stressed acoustically; but the first, inaudible one has the motor accent" (von Hornbostel 1928, 52). This hand and body motor behavior in rhythm production by the musicians and the body, hand and leg movement by the dancers and audience has also been documented by African scholars. According to Agawu, the dancers "know where the main beats are and so coordinate foot movement with these unsounded parts of the topos". Nketia submits that "it

is generally the rhythmic structure that influences the [dancer's] pattern of movement. He derives his motor feeling from this rhythmic structure" (1982, 210). Speaking on how the dancers and listeners derive their movements and understanding from the timeline's metronomic sense, Nketia narrated that "the regulative beat" provides the "motor beat" which "may be articulated in bodily movement – in the lurching of the shoulders, wagging of the toes, shaking of the head, stamping of the foot and so forth" (1963, 78). Peñalosa (2009, 199) posited that "even with constant variation", the timeline provides a metronome sense by creating "an expectation in the listener's mind" (cited in Stover 2012, 138). Culturally, although the Yoruba dancers organise their movements around the *kónkóló* rhythm's asymmetric triple pulse, they also perceive the music in a duple-time pulse, in alignment with the steps involved in dancing. This is because, while the dancer's steps are punctuated on the on-beat, "African musicians often avoid sounding notes on this main pulse", and "the off-beat accentuation of percussive...accents complement and responds to dance movements" (Chernoff 1991, 1098). Chernoff further corroborates that "a musician might think in terms of triple-time to ensure proper hand patterns of playing techniques, but audiences and dancers tap their feet, move, or clap their hands according to the duple-time pulse" (*ibid*.).

The *kónkóló* timeline can also be viewed as a 'bi-asymmetric' rhythmic pattern, in which the musicians interpret the rhythm as articulated and unarticulated A and B sections. (see Figure 6). Agawu argues that "such built-in dynamism [of the timeline] may well constitute one source of the pattern's attraction for African musicians... qualities that make it especially appropriate for dance" (2006, 9). Traditionally, the *kónkóló* timeline may be employed by the Yoruba musicians as both the time marker and rhythmic pattern, in a simple performance that requires little or no improvisation, but the musical (rhythm structure), social and affective understanding and experience shared among each other during the musical performance and the associated cultural events. That is, like the SAME model, the musicians often prefer to externalize an interpreted meter of the timeline by articulating the B section and internalize the A section through silence (unarticulated), thereby creating an off-beat (syncopated) rhythmic organization. The listeners, however, often follow the music rhythmically by clapping the internalized A section

of the *kónkóló* timeline, while the dancer's movement most often than not marks the uninterpreted symmetric meter. The *kónkóló* timeline and rhythms are known to generate different musical meanings in Yoruba culture. This is because, through the *kónkóló* timeline's generation of the rhythmic pattern of each musical genres, the musicians, dancers, and listeners are able to easily understand and engage with any of the resulting *kónkóló* rhythm's predominant syncopation and metronome sense features in each musical genre, and share these experiences with each other. The dancers anticipate their body movements and dance steps from the timeline, which generates the rhythmic structure that influences the dancer's movement. That is, through the *kónkóló* timeline's generated rhythmic structure in the music, the dancers derive their motor feelings and dance movements.

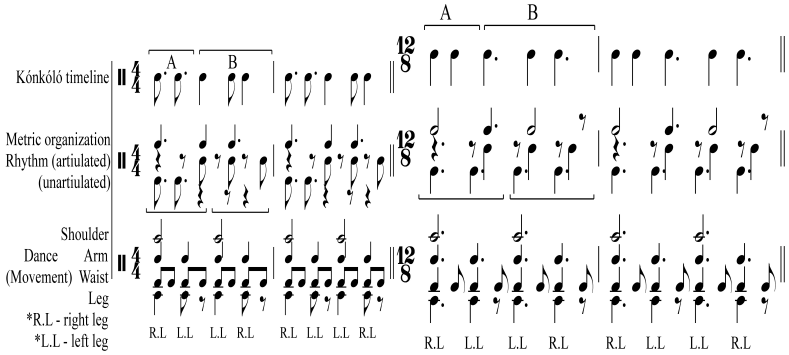


Figure 6: *Kónkóló* timeline and rhythm in highlife music, showing the dancer's body movement rhythms

Improvisations are usually played during the solo performance of the master drummer on the *Iya-ilu*, or by other instruments as interludes between the master drummer's solos. While the *kónkóló* timeline is developed into improvised rhythmic patterns, improvisations are also often derived linguistically by the master drummer, from the Yoruba language's speech rhythms. These include proverbs, praise chants, poetries, and idiomatic phrases (Euba 1990; Villepastour 2010; Osundina 2015; Omojola 2017). In this case, when the dancers recognise the speech, they synchronize their body movements to the syncopating rhythms of

the instruments' improvisations, in order to externalize both the musical and the cultural messages being communicated in the music, thus forming an additional layer of social communication (see Figure 7).

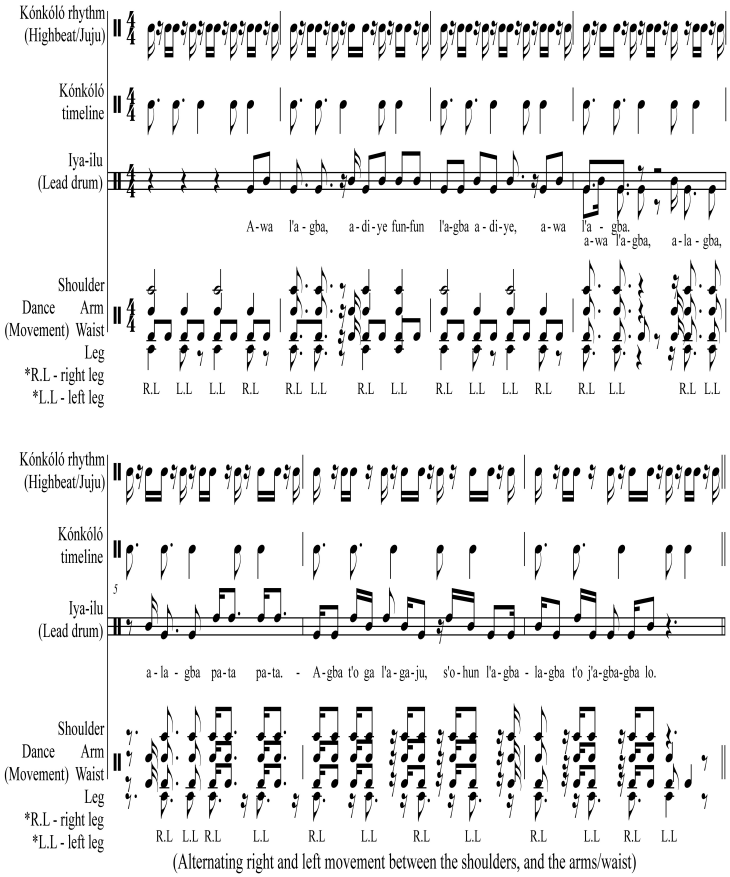


Figure 7: *Kónkóló* timeline and rhythm in high-beat/juju music with the lead drum improvisation, showing the dancer's body movement rhythms

5.4. Communication patterns: language, genre, and cultural events

Since the Yoruba language is a tonal language, the musicians are also able to communicate with each other, dancers and listeners, through tonal patterns played on traditional instruments. The most common instruments used for such communication are the talking drums. Although all the Yoruba drums can 'talk'– that is, communicate by varying their pitch– there are those which have the most capability to perfectly imitate the speech pattern in Yoruba language. This set of drums, which include the *dùndún*, *bàtá*, and *gángan*, function as speech surrogates and communicate through a specialized traditional mode, referred to as the Yoruba drum language (González & Oludare 2022). The drum language consists of three modes – the speech, drum, and song modes. While the speech mode is used to imitate only the speech rhythm and melody, with free rhythm, the drum mode is used to play fixed and danceable rhythmic patterns, and the song mode is used to imitate a voice singing a song, that is, incorporating both the speech and drum modes (Euba 1990; Villepastour 2010). While the *kónkóló* timeline generates the essential rhythmic organisation of the drum rhythms, the drummers themselves then select and employ different *kónkóló* rhythms to establish the type of musical genre and dance pattern being used for a particular song or piece of music, and to communicate this with each other, the dancers, and the listeners. Also, since each Yoruba cultural event has its unique sacred and secular personalities, aesthetics, functions, specific songs, as well as musical and dance genres, the *kónkóló* pattern played for each performance is always informed by the type of cultural event wherein it is used. Hence, the drummers and dancers communicate and share the expected movement patterns through rhythmic interaction with each other, for each music and dance performance. There are also instances where speech expressions commonly used in public spaces and on the streets, referred to as street languages, are incorporated as communication patterns in the drum music performances (Oludare 2022).[3] In addition, during each public performance, which involves regular social interaction between the performers and the audience, the group communication includes the use of the Yoruba spoken words, drum speech mode, *kónkóló* rhythmic patterns, clapping and dance movements, forming a rich, highly complex, communicative and social experience.

In Yoruba music, it is the rhythm, more than the melody or other elements, uniquely employed by the musicians that aids the identity formation of different musical genres and styles, as well as the identity connections with the listeners. Musically, the distinct rhythm pattern of each genre, be it vocal or instrumental, is unique to that genre, therefore creating its own stylistic identity. In the vocal forms, such as *ìjálá*, *ekún ìyàwó*, *àpàlà*, *sákárà*, *wákà*, *fújì*, *jùjú*, *highlife* and so on, each employ the *kónkóló* rhythmic patterns uniquely. It is interesting to note that, while *ìjálá*, *rárà*, and *ekún ìyàwó* are indigenous musical styles, *àpàlà*, *sákárà*, *wákà* and *fújì* are Islam-influenced neo-traditional musical styles, and *highlife* and *jùjú* are Christian-influenced popular musical styles, each musical style in the same category is still distinct rhythmically (Vidal 2012; Omojola 2012). Similarly, in the instrumental forms, although each instrument in an ensemble plays a different rhythmic pattern, the overall resulting percussive music is always based on the *kónkóló* patterns, which serves as its background and regulative rhythm. Culturally, the specific rhythm patterns employed in each vocal or instrumental piece of music thus indicates the function for which the music is employed. This is because function constrains form in African music, so all music is associated with a particular function (Akpabot 1998). Particular musical genres are used for particular socio-cultural functions, with each differentiated by their rhythmic patterns. These include religious (*orin èsìn*), kingship (*orin ìjòyè*), cult (*orin egbé*), kinship (*orin ìdílé*), cycle of life (*orin ìgbà*), work (*orin isé*), entertainment (*orin ìdárayá*) and dance (*orin àlùjó*) music. Be it for a sacred or social function, it is the rhythm employed in each piece of music that dictates the body movement and dance steps for the dancers, for a cultural event. This is because each rhythm has its associated movement and dance, therefore the musicians and dancers have a wide knowledge of different kinds of rhythms and movements. After all, "rhythm and movement are intuitively connected, as demonstrated through the widespread inclination to spontaneously move to music" (Schaefer 2014, 1). The various rhythmic patterns unique to each musical style also serve as a means of social identity formation and a connection between people, as individuals relate to each musical style according to their socio-cultural sensibilities.

Observation of the drum and dance performance and interactions between the performers and listeners, suggests that the *kónkóló* rhythm

pattern is also associated with social and affective features of musical communication, resulting in a shared affective motion experience (SAME). The perception and recognition of the *kónkóló* timeline by the performers and audience informs their understanding of how they should organise and respond to the specific rhythmic pattern being used in a musical or dance performance. Such perception and recognition is learned over many years of enculturation within a musical community, both via attending cultural events and joining in with clapping, singing and dancing, and via exposure to day-to-day music and dance activities. Thus, different rhythms are associated with celebratory (e.g. weddings), or melancholy (e.g. funerals) events, and in turn take on an affective aesthetic. That is, through such shared, affective musical experiences, either within a performance, or in a large communal activity, individuals gradually internalise specific rhythmic patterns and functions, and their attendant social and affective features. In other words, such a process represents how simple rhythmic, auditory features of a musical signal can provide semantic meaning (Molnar-Szakacs et al. 2012, 320). Music and singing using appropriate rhythmic organisation thus becomes a powerful tool within a community for sharing stories and experiences, teaching children language and social skills and bringing people together for important community events. Musical experience and perception, expressed through intentional, hierarchically organized sequences of motor acts from auditory information, generates different motional and emotional states of affective response and therapeutic benefits. "Music can be interpreted fundamentally as physical gestures emanating from another person – a person with emotions, moods and intentions – resulting in a shared affective motion experience (SAME)" (Molnar-Szakacs et al. 2012, 320). A wide range of related research has identified the ways in which music can be used to support language and other cognitive skills (e.g. Knapton 2015; Weinberger 1998), providing a rich area for future research into Yoruba music and musical culture.

6. CONCLUSION

This study focuses on the *kónkóló* timeline as a musical and cultural phenomenon. It examined through a generative approach how the *kónkóló* pattern is used as a creative process in Yoruba music, and how it relates

with the rhythmic, movement, communication, and cultural elements of Yoruba music. Preliminary findings confirm that the *kónkóló* timeline serves as the principal rhythmic pattern that delineates Yoruba music and dance, both musically and culturally. Through the timeline, the Yoruba musicians, dancers, and audience can engage with the music's intrinsic rhythmic organisation as both an artistic and a social experience. By exploring how it generates different musical and cultural attributes, the study established a link between the *kónkóló* timeline and some socio-cultural contextual layers in Yoruba music. These layers include the rhythmic organisation and creation of different variations of the *kónkóló* rhythm and musical genres, the movement (dance) patterns engaged by the musicians and dancers, and the communication between the performers and listeners based on the musical and linguistic elements associated with the *kónkóló* patterns. For example, it was observed that the drummers and dancers often internalise unarticulated, generative rhythmic patterns subjectively, in order to externalize and display complex rhythmic organisation in their performance. They also communicate musical and dance requests/suggestions between each other, using well-known, familiar rhythms/movements. Also observed was the use of rhythmic syllables with linguistic and extra-musical references, and the use of specific rhythms associated with specific functions and cultural events, such as dances, weddings, funerals, or healing, thus relating to social and affective responses.

Through the shared affective experience demonstrated between the musicians, dancers, and the listeners during their performance, these social and affective features of the *kónkóló* patterns were demonstrated in their musical functions and the associated cultural meanings they symbolize in Yoruba society. The SAME model posits that, "both physical movement of a performer and dynamic motion of sound help to create the visceral recognition of another person's presence and action" (Molnar-Szakacs et al. 2012, 323). The mastery of the *kónkóló* timeline and how it is used to communicate is therefore the gateway to understanding the rhythmic and socio-cultural characteristics of Yoruba music. In addition, it is worth considering that rhythm, be it in Western or African music, can contribute to movement, cognitive and social development. Molnar-Szakacs et al. suggest that, "the SAME model and the neural evidence supporting it suggest that creative, interactive

music therapy may be particularly effective for increasing empathy and in turn improving outcomes and wellness across a wide range of populations" (2012, 324). This study thus recommends further research in non-Western musical traditions to highlight the diversity of global music in fields such as music therapy, psychology, education, linguistics, among others, towards its potential therapeutic, educational and language communication benefits. This shall be addressed going forward, seeking to provide an original contribution to the understanding of the connections between traditional musicology, dance, and formal analytical approaches, in the study of the structure and semantics of music and dance in Yoruba drum music.

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Notes

[1] For more on the different rhythmic and syllabic notation of the *kónkóló* timeline, see: Jones 1958; King 1960; Nketia 1982; Euba 1988; Novotney 1998; Ekwueme 2004; Agawu 2006; Kubik 2010; Dada 2015; Copeland 2022.

[2] According to Nnalue (2017, 5), "non-lexical vocables...refer to...words used within a particular culture that do not have specific English (lexical) meaning attached to them and thus have to be interpreted in context".

[3] Street language can be described, in general terms, as a common way of speaking, engaged by the people in their day-to-day activities in public spaces, and on the streets.

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