Synergizing the 21st Century Digital skills in Art music composition based on African traditional music Idioms

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Abstract

The 21st century is an evolving era, characterized by revolutionary technological skills that influence various aspects of the arts, including music. This study explores the synergetic possibilities between 21st-century skills and indigenous musical idioms in the composition of African art music. The need for art music compositions that resonate with 21st-century listeners informs this study. By drawing from existing literature on indigenous musical creative skills, digital technological musical engagements, and other discourses on 21st-century musical sound creativity applications, this article presents data on these developments and their impact on art music composition through a comprehensive review of scholarly articles, case studies, and practical examples of music compositions that incorporate both traditional African and modern digital elements. The data is analyzed through the lens of creativity theory and current knowledge in the field of music composition. The study recommends deliberate collaborative engagements between art music composers and indigenous musical idioms, combined with evolving digital/technological skills; to create works that appeal to contemporary performers and audiences.

Keywords: Music composition, traditional music, 21st century, Digital skills

Introduction

The revolutionary technological advancements of the 21st century have influenced the art music creation space. Its impact is evidenced through its creation, distribution, and experiences (Smulovics, 2024). A wide range of digital tools and software are now at the disposal of art music composers and performers to enhance their productivity. For example, through the Artificial Intelligence like AIVA (Artificial Intelligence Virtual Artist) which engages machine learning algorithms to compose music, art music composers now explore new ways of experimentation and collaboration. This Human-AI collaboration is often initiated by the composer who provides a basic melody or theme which is further developed by AIVA by adding harmonies, rhythms, and orchestration (Newman et al, 2023).

The trend in art music composition within the context of creativity has evolved significantly over the centuries, reflecting broader cultural, technological, and philosophical shifts. Historically, its continuous expansion of creative boundaries stems from the Classical and Romantic eras, having its focus on form, structure, and the expression of human emotions. Composers like Beethoven, Mozart, and Brahms pushed the boundaries of musical form and emotional expression, showing how creativity could transform established traditions (Thebridge, 2006; Chapin and Kramer, 2009). The "20th Century Avant-Garde" era saw a radical break from tradition. Composers like Schoenberg, Cage, and Stockhausen explored new tonalities, atonality, and electronic music, challenging conventional notions of melody, harmony, and rhythm (Cleland, 2011; Salzman, 2002). Building on this foundation, art music composers' works today reflect a more interconnected and technologically advanced world (Gluck, 2008; Weinberg, 2005). Creativity in this context is about exploring new possibilities, challenging norms, and finding innovative ways to express the human experience.

From the African art music composition perspective, the integration of 21st-century digital skills into art music composition based on African traditional music idioms presents a fascinating confluence of technology and tradition (Ligeti, 2022). As a departure from the basic and manual way of notating music ideas, software like Sibelius and Finale aids in the transcription and arrangement of music, making it easier to incorporate complex African rhythms and scales into written compositions (Ekpo and Akor, 2018; Sapruta, 2020). Also, digital technology devices like Ableton Live, Logic Pro, and FL Studio enable composers to record, edit, and produce music with greater precision and creativity, making room for accurate blending of traditional African instruments and rhythms with modern electronic sounds (Kuhn and Hein, 2021). For research purposes, digital tools for data analysis provide help in the ethnomusicological study of African music, leading to a deeper understanding and reliable representation of traditional idioms for new compositions (Cornelis, 2013). These new modes of creativity/skills not only provide new tools and methods for composition but also enable the preservation and evolution of traditional African music in the contemporary digital age (Tzanetakis et al., 2007).

As a global phenomenon, technology has helped in lowering the barriers to entry for creating and sharing art, allowing more people to participate in the creative process. The fusion of technology and art has given rise to new genres and forms, such as digital art, interactive installations, and AI-generated works. New economic models for the creative composers are generated through digital platforms, by facilitating cross-

cultural exchange. Thus, artists are encouraged to draw inspiration from a global bed of ideas and traditions. Therefore, in an effort to explore the synergetic possibilities between 21st-century digital skills and traditional African music idioms, this paper highlights some key digital and technological skills relevant to contemporary music composition, examines the characteristics and creative potential of indigenous African musical idioms and analyzes the impact of combining these elements on the composition of African art music using the creativity theory and current knowledge in the field of music composition. The study contributes to the evolving discourse on African art music composition, offering insights into how traditional and modern elements can be synergized to create compelling art music for the 21st-century audience.

Creativity theory and current knowledge in the field of music composition

Creativity in music composition is a broad and dynamic topic that encompasses various theories and approaches. It involves understanding the cognitive processes, cultural influences, and technical skills that contribute to the creation of new and original music. For example, the cognitive aspect of creativity theories focuses on the mental processes involved in creative thinking and problem-solving (Bogunović, 2019; Collins, 2005). In music composition, these theories emphasize how composers generate, evaluate, and refine musical ideas (Schiavio et al. 2020). Another aspect of this theory encapsulates the role of social and cultural factors in shaping creativity (Kozbelt, 2020). They suggest that creativity is not just an individual trait but is influenced by the surrounding environment (Pearce & Wiggins (n.d.). The Psychodynamic aspect of the theory explores the role of the unconscious mind in creativity. It suggests that creativity involves accessing subconscious thoughts and emotions (Traylor, Overstreet & Lang, 2022). From the human physiological angle, the human brain is considered as core to creative processes, exploring how different brain regions and neural networks contribute to creativity (Beaty, et al.2016; Lindell, 2011). For example, "**Neuroplasticity"** explores the brain's ability to reorganize itself by forming new neural connections. Music composition can enhance neuroplasticity by engaging various cognitive functions (Beaty, et al.2016; Lindell, 2011). Analysis of the **"Brain Hemispheres"** shows that the right hemisphere is often associated with creative and intuitive thinking, while the left hemisphere is linked to analytical and logical processes (Abraham et al. 2012; Dietrich & Kanso, 2010). Therefore, composers use both hemispheres to balance creativity and technical skills.

Similarly, current knowledge in music composition focuses on different **techniques and tools available for Composition. Majorly, there are: "Traditional Techniques" (**these are existing indigenous and classical forms and structures that form the foundation for music creativity) (Ofuani, 2014), "**Technology and Innovation" (these are m**odern digital tools, software, and electronic instruments for creating and manipulating sounds) (Bauer, 2020), and "**Improvisation" (this entails the** spontaneous creation and development of music ideas). These three poles are keenly connected in actualizing a 21st-century compliant African art music composition. Moreover, it is important to note that, emotion and music composition are closely related. While it has been established that music is often used as a means of conveying feelings and moods (Douek, 2013), further research in affective computing explores how technology can interpret and respond to human emotions. Thus within the context of music composition, music creativity can evoke specific emotional responses.

However, the place of e**ducation and training in music, which includes both African traditional oral tradition training and Western music composition and performance styles and methodologies cannot not be undermined. M**usic composition programs that stem from colonization teach theory, history, and practical skills to develop students' creativity (Ligeti, 2022). This can also be achieved through m**entorship and apprenticeship approach (which is the typical traditional African oral tradition method of learning) (Nzewi, 1999). The advent of the 21st century and the apparent continuous growth of the music discipline have provided** insights and innovations that are capable of shaping the future of music composition, offering exciting possibilities for composers and their audiences.

Music composition as an act of creativity

Music composition is a significant aspect of creativity that closely interprets the personality of the individual(s) involved, and is often manifested as an original piece of music through the synthesis of various musical elements. This creative act can be analyzed from psychological, cultural, historical, and theoretical perspectives. The creative process in music composition starts with the composer's inspiration from various sources, such as nature, personal experiences, emotions, literature, and other art forms (Duarte & Konstantinidi, 2022). This initial inspiration spurs ideas and concepts that form the foundation upon which the basic musical elements (melody, harmony, rhythm, timbre, form and dynamics) are experimented and explored by the composer (Adolphe, 2019). Usually, composers organize their ideas into a coherent structure. The composer's choice of form in most cases influences the flow and development of the new work of art. Thus, themes and motifs of the new piece of music are developed to create unity and contrast.

Creativity in music composition is influenced by various factors, such as historical, cultural and musical traditions that the composers are familiar with (Schiavio et al. 2020). These influences as a phenomenon inform their musical language and aesthetic preferences. The emotional state and cognitive abilities of the composer to a significant extent can affect their creativity by influencing the mood, character and quality of their works (Douek, 2013). Also, the physical and social environments these composers are situated are crucial to their creativity (Brown, 2003). More relevant to this study is the exposure of the composer to music technological advances which are capable of expanding the possibilities for a more productive and contemporary compliant composition and experimentation.

Indigenous African musical idioms and creativity

Indigenous African musical idioms and creativity are an embodiment of rich and diverse musical expressions, traditions, and practices which are largely informed by the cultural, social, and historical narratives of indigenous African people(s). Each geographical region exhibits peculiar musical idioms and elements (Kubik, 1994). For example, West African traditional music is characterized by polyrhythmic drumming, the use of talking drums, and complex vocal harmonies. East African music is notable for the blend of traditional and modern styles. Central African music is an epitome of a rich polyphonic singing style. South African music is renowned for vocal harmonies and instrumentals. North African music on the other hand is heavily influenced by Arabic and Mediterranean sounds, featuring instruments and rhythms that are different from Sub-Saharan Africa.

Still, within each of these regions, ethnic groups are distinguished by their unique musical styles, instruments, and musical functions (Arom, 2018).

However, the concept of rhythmic complexity and polyrhythm is a general practice among Africans. The simultaneous use of two or more conflicting rhythms forms the hallmark of African music that creates a complex and dynamic sound (Agawu, 1995). Distinctive musical features like "Cross-Rhythm" and "Call and Response" are regular musical practices among African communities. African vocal techniques and styles such as choral singing and solo vocal styles are prominent characteristics of African music composition and performances (Sunday-Kanu & Nnodim, 2018). As a response to colonization and other cultural influences, comes the fusion of traditional and modern elements as well as the adaptation and evolution of new creative ideas that are offshoots of globalization and technological advances (Ekpo & Onyeji, 2020). While these may have posed undeniable challenges to the preservation of traditional music and practices. They can be helpful in documentation and revitalization efforts as well as the economic and creative growth of traditional African music.

African art music composition and creativity

African art music is a musical genre that blends traditional African musical elements with Western classical music forms and techniques (Scherzinger, 2004). It encompasses a wide range of styles and compositions, reflecting the diverse cultures and histories of the African continent. This form of music through its integration of African musical elements; such as rhythms, melodies, and instruments with Western classical music structures gives room for the exploration of new sonic landscapes and unique musical expressions (Agawu, 2011; Chapman, 2007). Through African art music, composers are availed the opportunity to incorporate traditional African instruments, to produce distinctive timbres and textures that depict authentic African aura. The African music's complex rhythms and polyrhythms are often leveraged for a rich tapestry of sound. As a practice, the melodies engaged often draw from indigenous folk tunes that reflect the cultural, social, and political contexts of the continent based on traditional African scales and modes (Scherzinger, 2004; Agawu, 2011).

21st Century Digital skills and Art music composition

In the 21st century, digital skills have become increasingly important across various fields, including the arts and music composition to be precise. As technology continues to evolve, musicians and composers are using digital tools to create, produce, and share their works. The advent of the 21st century gives prominence to digital technology and its corresponding skills in all fields of study including the arts and music composition to be precise. As technology continues to evolve, musicians and composers are using digital tools to create, produce, and share their work. The 21st-century digital skills have significantly impacted music composition in a variety of ways (Carl, 2020). With the ever-increasing access to advanced software and tools, composers are equipped to create, edit, and produce music with ease (Saputra, 2020). The availability of a wide array of high-quality virtual instruments and effects that are capable of producing sophisticated sound manipulation, now assist composers to experiment with different sounds and textures. Programs like Sibelius, Finale and MuseScore make it easier to write and arrange scores. These tools offer features that assist with orchestration and provide playback capabilities to hear compositions in real-time ((Saputra, 2020).

Modern synthesizers and samplers allow composers to create unique sounds that were not possible with traditional instruments. This has expanded the palette of sounds available for art music. Also, 21st-century digital platforms grant music composers access to vast libraries of recorded sounds and samples that can help them integrate diverse elements into their works, from orchestral to electronic sounds. Platforms like SoundCloud, YouTube, and Bandcamp enable composers to share their work with a global audience. They also facilitate collaboration between musicians and composers across different locations (Ramirez, 2020). Through the social media and online forums, composers can connect with peers and audiences, share ideas, and get feedback (Partti, 2020).

More recently, AI Composition Tools like OpenAI's MuseNet and AIVA use artificial intelligence to generate music, offering composers new ways to explore creativity and inspiration (Zulić, 2019). Analysis of large datasets of music is made easier and faster. Through the AI tools, music patterns and trends can be identified, assisting composers in understanding and incorporating new styles and techniques. New musical ideas are digitally generated, and composers are also able to explore complex patterns, and experiment with new forms of composition (Hernandez-Olivan et al., 2022). Tools like Max/MSP and Pure Data enable composers to create systems that generate music algorithmically, allowing for interactive and evolving compositions.

Leveraging on the 21st Century Digital skills in African Art music composition

The 21st-century digital tools and skills provide composers with ample exciting opportunities for innovation, creativity, and accessibility especially in African art music composition. Through the integration of modern technology with the creative act of art music composition, preserving and documenting indigenous music practices are made much easier and appealing to contemporary audiences. Therefore, being furnished with a wide range of competencies such as **music production software proficiency, sound engineering** and **audio editing, music notation software, digital distribution and marketing, online collaboration tools and data analytics for** audience engagement, there seems to be no excuse for generous creative output on the part of the composers in this dispensation.

As earlier pointed out in this paper, there exist outstanding benefits of **integrating digital skills in African art music composition.** Apart from the access to a vast array of sounds and samples and experimentation possibilities, it avails the composers, of virtual instruments that can mimic traditional African instruments, allowing for innovative blending of old and new sounds are made handy. Digital platforms give room for collaborations across disciplines, allowing composers to work with visual artists, dancers, and filmmakers, enhancing the multimedia experience of African art music. These digital technological innovations have significantly lowered the barriers to entry for music production by facilitating more participation in art music composition. Also, 21st-century digital archiving and distribution tools have effectively aided the processes of the preservation of traditional African music, making it accessible to a global audience and promoting cultural heritage.

While digital tools offer new possibilities, it is crucial to maintain the authenticity and integrity of traditional African musical elements. Ethical implications of creativity should be ensured through proper permissions and attributions.

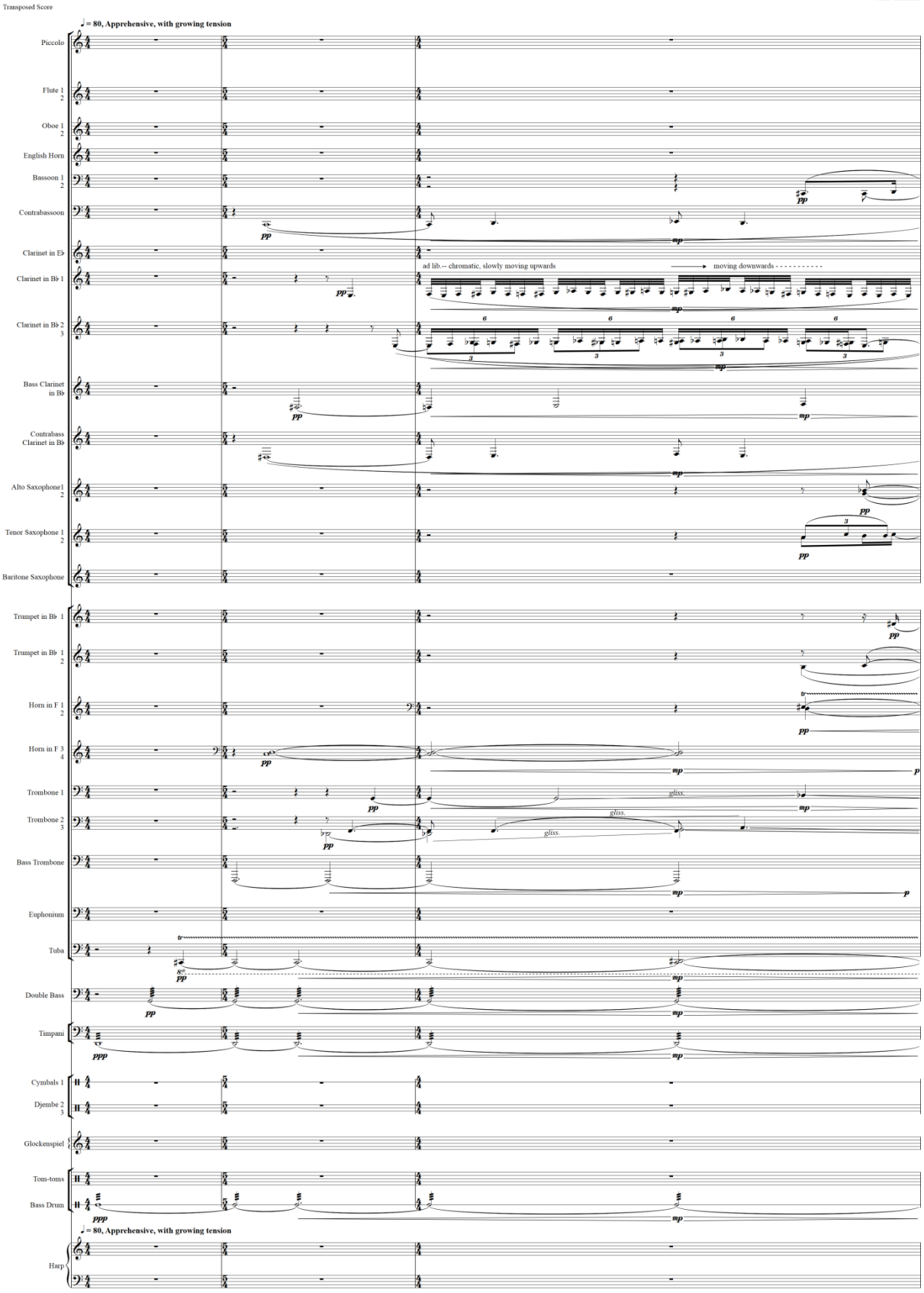
Since not all composers have equal access to digital tools and technology, especially those in less developed countries like Nigeria, to improve creative music outputs from such regions, training and support should be prioritized by respective stakeholders.

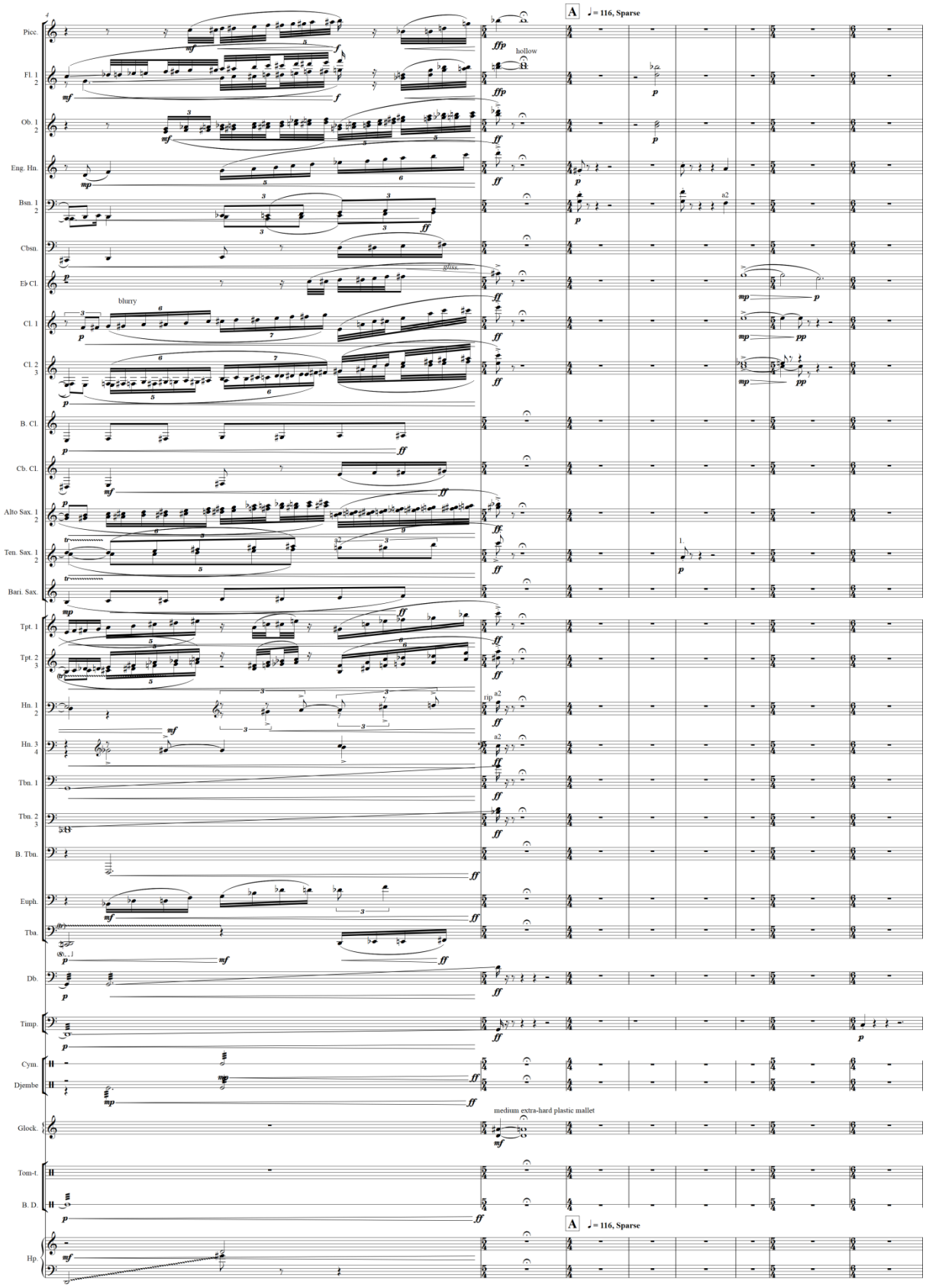
Meanwhile, several African art music composers have utilized these digital tools in one capacity or the other (Zulić, 2019). Music composition students and renowned art music composers in Africa and diaspora have engaged with at least the music notation tools while others like Nkeiru Okoye and Bongani Ndodana-Breen among so many who are more exposed and skilful in more advanced digital tools like the virtual instruments and digital workstations have been able to create orchestral pieces that incorporate African rhythms and melodies (Johnson, 2023). Also, Artists such as William Onyeabor and Nils Frahm have blended electronic music with African musical elements, showcasing the potential for cross-genre innovation. In terms of cultural heritage sustainability projects, organizations such as the International Library of African Music have digitized traditional African music recordings, preserving them for future generations and making them accessible online. Without a doubt, there exist unimaginable **prospects and opportunities for African art music composition through** Artificial intelligence which offers steady and fresh inspirations and perspectives on traditional forms. For example, **Virtual Reality (VR) and Augmented Reality (AR)** technologies (bauer & Bouchara, 2021) have the capacity to create immersive experiences, allowing audiences to engage with African art music in new and interactive ways.

Examples of African art music compositions that engage the 21st Century Digital Tools

Sankofa: A Symphony for Wind Ensemble

Sankofa was composed by Jamie Marie Thierma in 2015 as a doctoral research composition. Thierma used African influences to enhance her composition. The piece of music was based on West-African drumming and song. She submitted in her work that the title, *Sankofa* is attributed to the *adinkra* image that epitomizes the memory of the past, with a glance of the future. *Sankofa* is a fusion of ancient ideas into modern music which depicts the indigenous concept of *adinkra.Adinkra* is an ancient West-African symbols which represent certain concepts. The instrumental arrangements of the music are for standard wind ensemble, with accompanying instruments like the harp, piano and African djembe. The movement of *Sankofa* as explained by the composer is identified with an adinkra symbols (see Thierma, 2015:36). Each of the movement of the symphony is labelled with the symbols and carries the philosophy of the symbol attached as its central idea. The composer notably engaged with the 21st century digital tools in the notation of her music scores.


Transposed Score
Jamie Thierman
♩ = 80, Apprehensive, with growing tension
Piccolo
Flute 1 2
Oboe 1 2
English Horn
Bassoon 1 2
Contrabassoon
Clarinet in E♭
Clarinet in B♭ 1
Clarinet in B♭ 2 3
Bass Clarinet in B♭
Contrabass Clarinet in B♭
Alto Saxophone1 2
Tenor Saxophone 1 2
Baritone Saxophone
Trumpet in B♭ 1
Trumpet in B♭ 1 2
Horn in F 1 2
Horn in F 3 4
Trombone 1
Trombone 2 3
Bass Trombone
Euphonium
Tuba
Double Bass
Timpani
Cymbals 1
Djembe 2 3
Glockenspiel
Tom-toms
Bass Drum
Harp
ad lib.-- chromatic, slowly moving upwards
moving downwards
gliss.
pp
mp
p
ppp


A
♩ = 116, Sparse
Picc.
Fl. 1
2
Ob. 1
2
Eng. Hn.
Bsn. 1
2
Cbsn.
E♭ Cl.
Cl. 1
Cl. 2
3
B. Cl.
Cb. Cl.
Alto Sax. 1
2
Ten. Sax. 1
2
Bari. Sax.
Tpt. 1
Tpt. 2
3
Hn. 1
2
Hn. 3
4
Tbn. 1
Tbn. 2
3
B. Tbn.
Euph.
Tba.
Db.
Timp.
Cym.
Djembe
Glock.
Tom-t.
B. D.
Hp.
hollow
blurry
glass.
a2
1.
Tp.
medium extra-hard plastic mallet

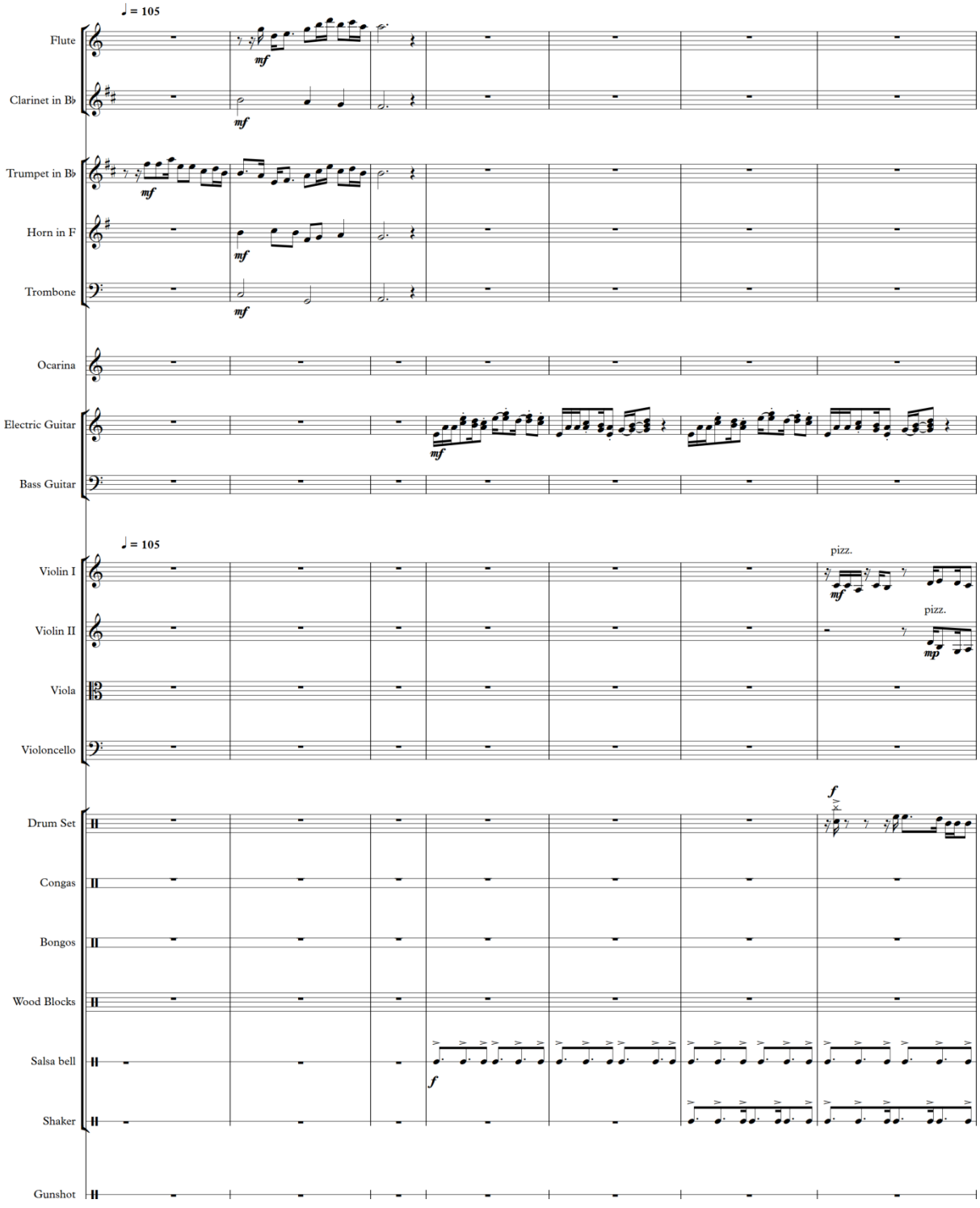
Ex 1: Excerpt from the opening episode of *Sankofa* Symphony for wind Ensemble (source: (Thierma, 2015)

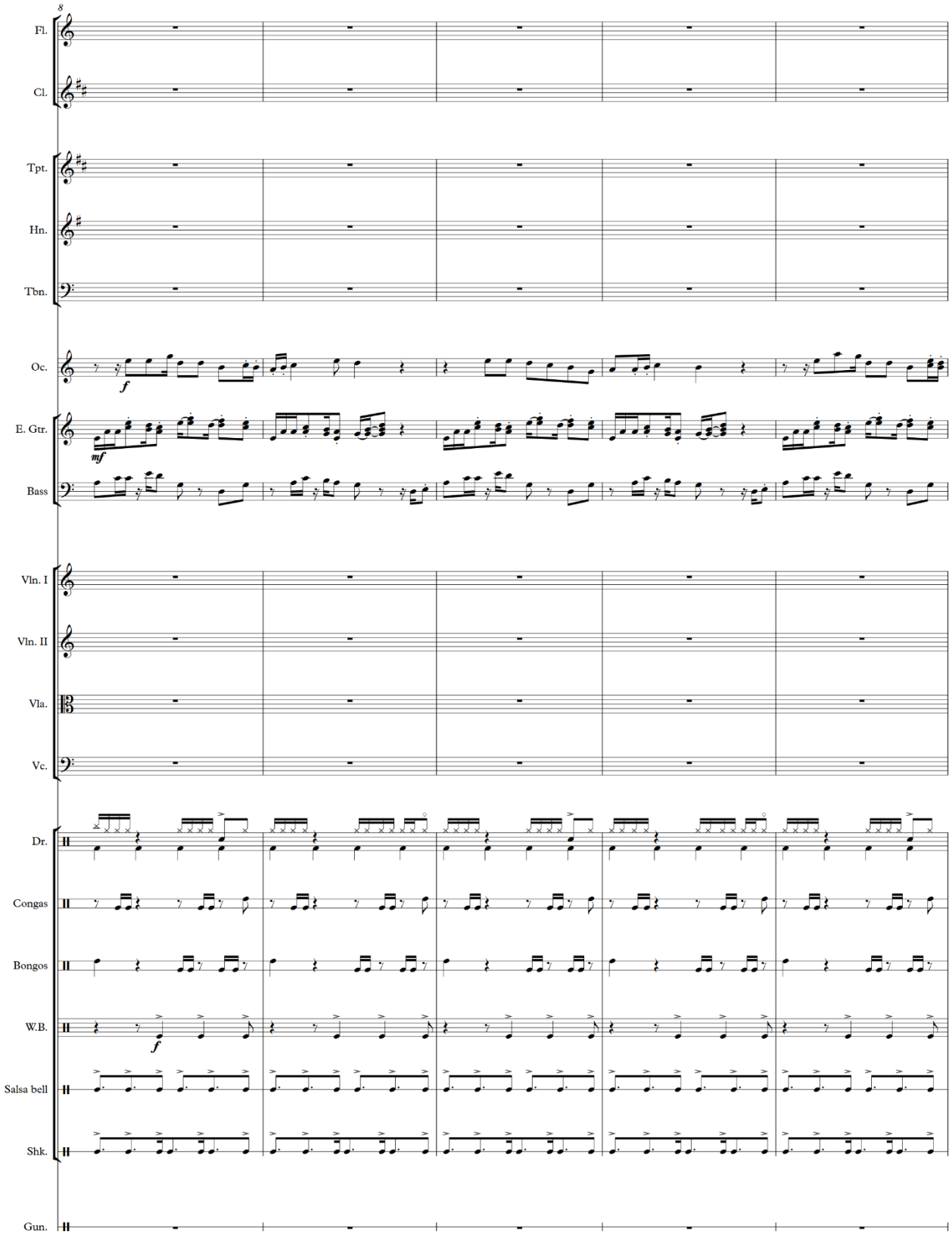
Keku: A contemporary symphony based on Traditional Jukun dance

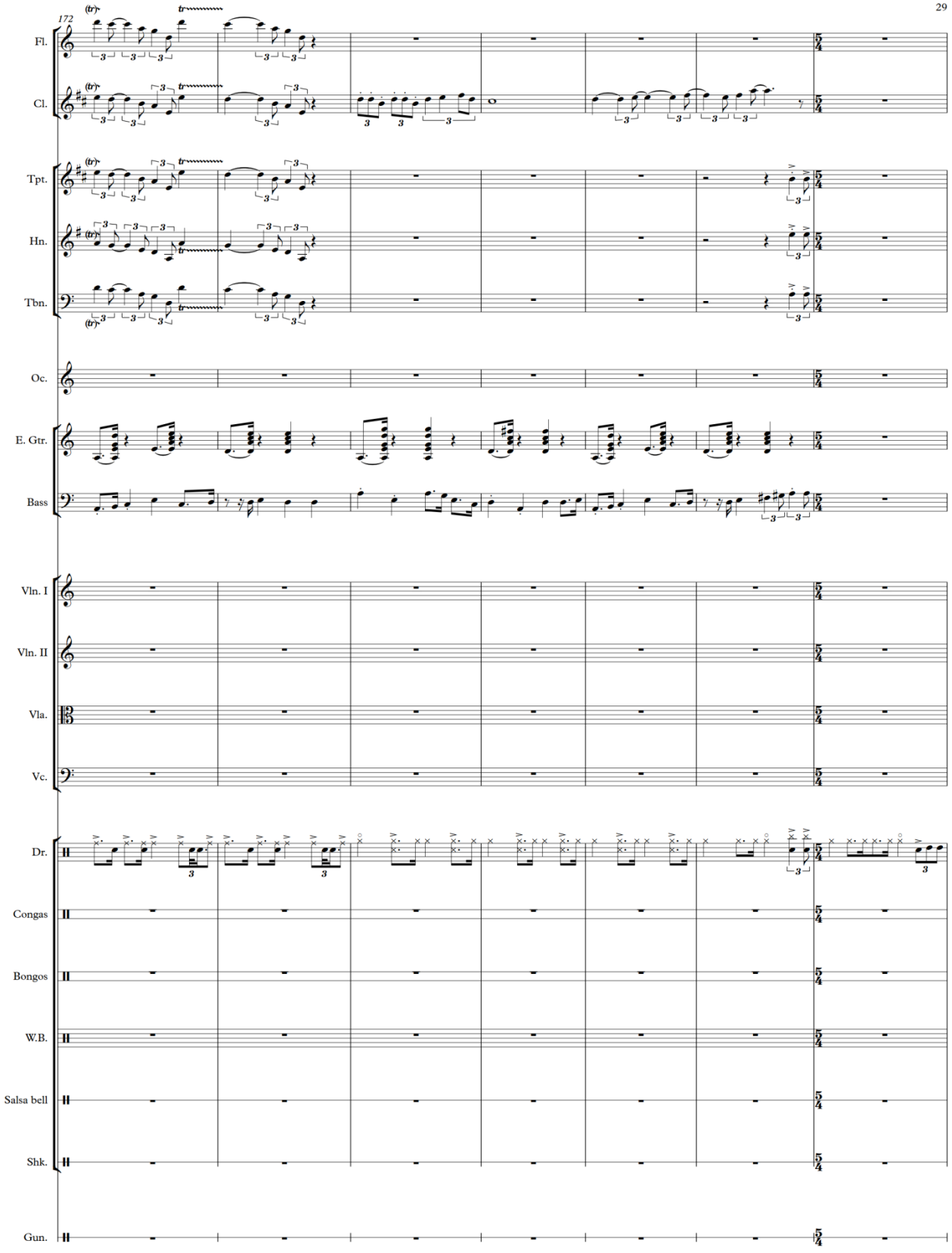
Keku contemporary symphony was composed by Omotolani Ebenezer Ekpo as a doctoral thesis in 2021. The composition is a creative application of the indigenous compositional, idiomatic and stylistic elements. The composition, though based on the indigenous idioms of the Jukun *Keku* dance music, draws its structural formation from the Western symphonic arrangement. It is in four movements, each of which is made of introduction, exposition, development, recapitulation and coda sections. The concept that informed the composition was the three major musical eras of Nigeria– the Pre-colonial, Colonial and the Postcolonial periods. As a contemporary symphony, it can be rightly described as an intercultural composition for the orchestra.

The symphonic arrangement is written for the Violin 1&2, Viola, Cello, Contra Bass, Flute, Ocarina, Clarinet in B flat, Alto-Saxophone, Horn in F, Trumpet in B flat, Trombone, Timpani, Drum-set, Bongos, Congas, Salsa-bell, Shakers, woodblocks, Electric Guitar and Bass-Guitar. The combination of the musical instrument, apart from satisfying the inter culturation of research composition, also satisfies the aesthetics and philosophical conception of the composition. The instruments are given appropriate roles in reference to the *Keku* dance. The style of the work captures the indigenous music, the classical organ music and the popular African styles: highlife, afro pop and jazz.

The music is in "Sonata" form. The movement apparently flows into one another in a cyclic form, just as it is in the indigenous *Keku* dance music. For example the third movement of the symphony engaged some element of electronic music. The transition to the third section of this movement (i.e popular Jazz style) engaged the contrapuntal treatment of harmony between the instrument sections in interpreting the use of ostinato in the performance of the indigenous music. In the second interlude, the ocarina plays the chord progression of highlife style in the relative natural minor of the home key. The Jazz section employs the Dorian minor mode peculiar to Jazz. This section also experiences a change of meter from 4/4 back 5/4 as a result of irregular rhythmic feature of Jazz. Imitating the performance of the indigenous music, the entire instrument comes together at the coda, to end the movement. The central mood of the work is lively, it combines the homophonic, heterophonic and polyphonic textures all through the movements with an intention of satisfying the 21st century audience. This creative expression was written through 6th edition of Sibelius music notation software, one of the 21st century music composition didgital tools.


♩ = 105
Flute
Clarinet in B♭
Trumpet in B♭
Horn in F
Trombone
Ocarina
Electric Guitar
Bass Guitar
♩ = 105
Violin I
Violin II
Viola
Violoncello
Drum Set
Congas
Bongos
Wood Blocks
Salsa bell
Shaker
Gunshot
mf
mp
f
pizz.


8
Fl.
Cl.
Tpt.
Hn.
Tbn.
Oc.
f
E. Gtr.
mf
Bass
Vln. I
Vln. II
Vla.
Vc.
Dr.
Congas
Bongos
W.B.
f
Salsa bell
Shk.
Gun.



Ex 2: Excerpt from the third movement of *Keku* Symphony (source: (Ekpo, 2021)

Conclusion and recommendations

The study reveals that the deliberate collaboration between art music composers and indigenous musical idioms, augmented by evolving digital and technological skills, can produce compositions that resonate with 21st-century performers and audiences. It highlights successful examples where such synergies have enhanced the creative process and outputs. It concludes that African art music composer's engagement with the 21st-century digital skills in their creative act of composition, especially those inspired by traditional African music idioms achieve relevant pieces of works that are appealing to contemporary listeners. The study further opines that leveraging on 21st-century digital skills in African art music composition offers a wealth of opportunities for innovation, creativity, and cultural preservation. By embracing digital technology, African composers can expand their artistic horizons, connect with global audiences, and contribute to the rich tapestry of global music. It however observed the need to carefully pay attention to some challenges related to access, cultural sensitivity, and economic factors to ensure that the benefits of digital technology are equitably distributed and that the integrity of African musical traditions is maintained. Through thoughtful integration of digital skills, African art music can continue to evolve and thrive in the digital age, enriching the world with its unique and vibrant sounds.

The study recommends that:

1. Art music composers should take advantage of various digital skills that enhances music composition productivity.
2. Experimentation with digital and technological tools should be integrated in institutional curricula.
3. Educational institutions and music programs should emphasize the importance of this integrative approach to music creativity, especially African art music composition.
4. Education stakeholders should provide adequate infrastructures that support digital music skill acquisition.
5. Training and retraining of educators on the digital music skill development should be prioritized for continuity and sustainability.
6. Adequate monitoring and feedback on creativity ethics should be put in place.
7. Emphasis should be laid on the sustainability of indigenous African music heritage.

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