Inventing New Marimba Performance from the African Balafon Music Practice

University of Antwerp
ARIA Antwerp Research Institute for the Arts University of Antwerp
Koninklijk Conservatorium Antwerpen
ARTESIS PLANTIJN HOGESCHOOL ANTWERPEN

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Adilia On-ying Yip

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Supervisors: Prof. dr. Kathleen Coessens & Prof. dr. Henk de Smaele

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Adilia On-ying Yip

Nieuwe Marimba Performance Uitvindingen vanuit de Afrikaanse Balafoon Traditie

Promotoren: Prof. dr. Kathleen Coessens & Prof. dr. Henk de Smaele

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To my parents

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ABSTRACT IN ENGLISH

The aim of this practice-based project is to search for new performance perspectives for the marimba (invented in the 1910s) by inquiring into the West African music tradition—the balafon of the Bobo and Bamana peoples living in Mali and Burkina Faso. Through a triangulation of research methodology—participant-observation (lessons with local musicians and interviews), literature (African ethnomusicology, phenomenology in music and music embodiment) and artistic practice (analyses and experiments in music)—I have gained insights into the artistic experience of stepping into the "unknown" balafon world. The written result is a discussion of how I have overcome the obstacles of learning, performing and listening to balafon music, and how these experiences have renewed and enriched my original artistic practice and ideas. Due to the music's oral tradition, the balafon polyrhythm and melodic materials are embodied in forms of bimanual (two-hand) coordination patterns rather than symbolic representation. Music-making is largely informed by the performer's motoric sensory, and body movement is given a crucial role in music communication and sensory perception. The second purpose of this research is, therefore, to apply these balafon practices to Western performance. Many preceding Western contemporary and classical musicians have initiated music projects to adapt African musical materials to their creative processes, e.g. "Drumming" (Steve Reich, 1971), but barely a work grows out of an inquiry into the embodied performance practice of the non-Western genre. This yields as artistic outcome—five commissioned compositions for the marimba and a concert program "In the Heat of the Moment".

Keywords: marimba, balafon, body movement, music embodiment

ABSTRACT IN DUTCH

Het opzet van dit op de praktijk gebaseerde artistieke onderzoeksproject is om op zoek te gaan naar nieuwe perspectieven in de uitvoeringspraktijk van de marimba (een instrument uitgevonden in de jaren 1910) door een studie van West-Afrikaanse muzikale tradities, meer bepaald in het balafonspel van de Bobo en Bamana in Mali en Burkina Faso. Door een triangulatie van onderzoeksmethoden—participerende observatie (lessen met lokale muzikanten en interviews), literatuurstudie (Afrikaanse enthnomusicologie, fenomenologie van muziek en muzikale belichaming) en artistieke praktijk (analyse en muzikale experimenten)—verwierf ik inzicht in de artistieke ervaring om de onbekende wereld van de balafon te betreden. Het geschreven resultaat is een beschrijving en bespreking van hoe ik de obstakels heb overwonnen in het leren, het bespelen en het beluisteren van de balafonmuziek, en hoe deze ervaringen mijn artistieke praktijk en ideeën hebben verrijkt. De orale traditie maakt dat de polyritmie en melodische materialen in de balafonuitvoering belichaamd zijn in vormen van tweehandse coördinatiepatronen, veeleer dan in symbolische weergave. Muziekuitvoering is in belangrijke mate bepaald door het motorische aanvoelen en lichaamsbeweging krijgt een cruciale rol in muzikale communicatie en zintuigelijke waarneming. De tweede bedoeling van dit onderzoek is daarom gericht op het toepassen van deze balafoonpraktijken binnen Westerse opvoeringen. Heel wat Westerse hedendaagse en klassieke muziekanten hebben muzikale projecten opgezet waarin Afrikaanse elementen werden aangepast en ingezet in het eigen creatieve proces (bijvoorbeeld “Drumming”, Steve Reich, 1971), maar zelden of nooit groeide zo’n werk vanuit de belichaamde uitvoeringspraktijk van niet-Westerse genres. De artistieke output van dit project resulteerde in vijf nieuwe composities die in opdracht werden gecreëerd voor de marimba en in het concertprogramma “In the Heat of the Moment”.

Trefwooden: marimba, balafoon, lichaamsbeweging, muzikale belichaming

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LIST OF PAPER PRESENTATIONS, LECTURE RECTIALS AND PERFORMANCES (2012-18)

1. Lecture-recital “Describe Experience: The artistic research on cross-cultural practices”, at *Doctors in Performance*, Lithuanian Academy of Music and Theatre, Vilnius, 4-6 September, 2018.
2. Video installation of “El Perjurio de la Nieve” at *Orpheus Institute 20 Years*, 13 November 2016.
3. Lecture-recital “Music Beyond Traditions” at *International Conference on Performance and Creativity*, Hong Kong Baptist University, 31 October-2 November 2016.
4. Lecture-recital “In the Heat of the Moment” at *ARTICULATE*, Royal Conservatoire Antwerp, 27 October 2016.
5. Lecture-recital “In the Heat of the Moment” at *Doctors in Performance 2016*, Royal Irish Conservatory, Dublin, 8-9 September 2016.
6. Lecture-recital “In the Heat of the Moment” at Witte Zaal, Royal Conservatoire Antwerp, 28 April 2016.

7 Lecture-recital “In the Heat of the Moment” at Bleek Kunstencentrum, Sint-Niklaas, 30 April 2016.

8. Lecture-recital “The Praxis of Rhythm” at “Music Research Festival,” Fontys School of Fine and Performing Arts, 4-5 April 2016.
9. Lecture-recital “In the Heat of the Moment” at International Multidisciplinary Scientific Conference on Social Sciences and Arts (SGEM), Hofburg Vienna, 8 March 2016.
10. Performance “Inner Sight Etudes” at *Onderbroken Stad*, Stadsfeestzaal Antwerp, 3-6 March 2016.
11. Performance with Moussa Dembele “Balafon Meets Marimba” at *Onderbroken Stad*, Stadsfeestzaal Antwerp, 3-6 March 2016.
12. Lecture-recital “In the Heat of the Moment” at *Intercultural Music Conference*, University of California, San Diego, 26-28 February 2016.
13. Lecture “Inventing New Marimba Techniques from its African Heritage” Hong Kong Institute of Education, 3 November, 2015.
14. Lecture-recital “Inner Sight Etudes” at *(Per)Forming Art Symposium*, University of Leeds, 20 September 2015.
15. Paper presentation “The Oral Tradition in Steve Reich’s Drumming (1971)” at EPARM Conference 2015, University of Music and Performing Arts Graz, 23-25 April 2015.
16. Performance *“*The Drumming Project*,*” at Gele Zaal, DeSingel Antwerp, 11-12 December 2014
17. Performance with Moussa Dembele “Balafon Meets Marimba” at Dag van de Wetenschap, 23 November 2014.
18. Lecture “Inventing New Marimba Techniques from its African Heritage,” at The Chinese University of Hong Kong May 2014.
19. Performance with Moussa Dembele “Balafon Meets Marimba” at Music Instrument Museum, Brussels, 5 June 2013.

20. Paper presentation “Balafon Meets Marimba—the Encounter of African and Western Percussion” at *HERE and NOW: Awareness and Flow in Music Performance*, 3rd Annual Orpheus Doctoral Conference (ODC) 29 May 2013.
21. Paper presentation “The Creativity in Artistic Research Method,” at *Between Madness and Method*, Third European Platform for Artistic Research in Music (EPARM Conference), Conservatoire National Superieur de Musique et Danse de Lyon, 18-20 April 2013.
22. Lecture Recital “A Practical Guide to the Balafon: Listen, feel and Move!” at *Intro in Situ*, Maastricht, 29 May 2012.
23. Performance with Gert Kilian “Balafon Meets Marimba” at L’aubarge de Badassac, Pailhes/Toulouse, 15 October 2012.
24. Paper presentation “Communicating Interculturally the Musical Matters of Idiophone Keyboard Performance—About rhythmic perception and notation” at *The Matter of Musical Experimentation*, organized by Orpheus Research Centre in Music (ORCIM) and University of York, 7-8 May 2012.

INTRODUCTION

Combining Artistic Research with Ethnomusicology and Phenomenology

The central aim of this research is to explore the potential of enriching the music practice and the percussion repertoire of the Western music world by investigating the West African balafon music practice. The outcomes will be developed in two forms: a literary form that discusses the problems and solutions of investigating a foreign music practice from an artistic perspective, and an artistic output in the forms of music scores and recordings that integrates both African practice and my personal experience.

These aims sound simple at first, as I—and most musicians and researchers—thought that taking some balafon lessons in Europe and surfing on internet would provide substantial sources for creativity and analysis. I did not feel very inspired, though, until I visited Mali and Burkina Faso and experienced the musical culture there for a short, but ample period of time. The reason was immediately apparent to me: the physical involvement in the West African music-making practice is the basis of the understanding of these musical materials. The *experience* of engaging as a musician in a new manner of playing music—both on the level of reflection and practice—yielded theoretical and philosophical insights. Balafon music structures began to make sense when I approached them by performing and learning with African musicians. Presently, I felt as if I am standing at the cross-point of two worlds: the world of the African balafon and presumably, my world of Western classical percussion. I am *submitting* myself to a foreign music practice that has, hitherto, been foreign to me. Such contact between traditions is more than a musical one. It is grounded in human encounters that require a thorough understanding of practice, viewpoint, custom and social behavior.

A multi-disciplinary research model that integrates artistic research methods with ethnomusicology and phenomenology is at the heart of this project. (Figure 1) The model provides me the necessary research tools and rigor to set up the central questions in the pursuit of a different musical practice. Apart from some standard artistic research methods

such as the development of questions, reflections and experiments, I implemented an empirical method derived from ethnomusicology, which is usually called participant-observation for observing and experiencing African practices.[1] These findings are, of course, confronted in the works of Africanists and supported by my interviews with balafon musicians in Africa and in Europe. The insights of phenomenology reinforce these theoretical and empirical views, as these are the tools that help me to understand and express my experience of the African tradition. Also, the phenomenological stance helps me to articulate in a more systematic way, the ineffable experience of playing music—the music embodiment, the playing of the instrument, the learning by ear and the experience of switching between two music practices. The focal point is the development of my experiential knowledge in the balafon music practice.

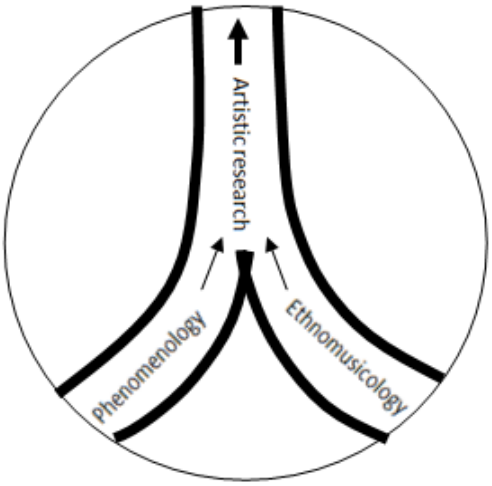

Figure 1: A multi-disciplinary research model of artistic research, ethnomusicology and phenomenology.

1. An artistic research into the marimba and the balafon practices

This research project was first triggered by a question the audience often ask me after concerts: “I have never seen a marimba before, where does it come from?” People usually expect a unique and imaginative answer, namely that the instrument has an exotic origin

[1] Please refer to page 7-8 for more explanations of participant-observation.

outside the Western music culture. They are overwhelmed by the marimba's timbre—far from their image of the typical drums and cymbals in a rock band. I would, then, explain briefly the possible origins of the marimba as told in literature—its relations to the Guatemalan marimba, certain instruments of the Indonesian Gamelan and the African percussion keyboards. I tell them that the marimba is a modern version of these instruments with a cultural background adapted by the Western music world. However, I gradually became doubtful to the truthfulness of my previous reading and raised a few questions: What actually is the ancient connection between the marimba and its ethnic roots, apart from basic structure and the playing mechanism? A careful study of the history of the marimba and its repertoire revealed that the theory could be void.[2] Despite the similarities in instrument construction (i.e., a keyboard and the resonators) and the bodily striking mechanism, the strongest connections of the ethnic origins and the marimba count the repertoires of modern, contemporary, jazz and world music. For instance, Ghanaian drumming inspired minimalist Steve Reich,[3] and Lou Harrison adapted the Gamelan in his compositions.[4]

[2] Invented in about 1918 by American instrument builder Deagan and Leedy (Deagan Resource, J.C. Deagan and U.G. Leedy built the first marimba, model number 350, during 1918 to 1925 in Chicago, USA), some say the prototype of the marimba was inspired by the African instrument, while some others claim the Guatemala marimba is the marimba's closest ancestor. The ethnic instruments possibly inspired the West to build a new idiophone keyboard, but the wooden keys and the resonating system of neither the details of an African, Guatemalan nor Indonesian idiophone match with the design of the 1918 prototype. Commercially, since the first half of the 20th century, the marimba was promoted as a concert instrument for solo and chamber music works. One of the earliest showcases of the instrument was in the Century of Progress Exposition held in Chicago in 1933, when Clair Musser conducted a hundred-marimbist ensemble and performed his arrangements of classical orchestral works, like "Bolero" by Eustacio Rosales. In 1940s, the marimba began to gain public attention as a solo concert instrument when composers Paul Creston and Darius Milhaud wrote and premiered concertos for marimba. Some later milestones in marimba compositions include "Works for Marimba", a collection of marimba repertoire composed by Keiko Abe between 1982-1986 and "Method of Movement for Marimba", the four-mallet technique manifesto by Leigh Stevens. Since the breakthrough in the 1940s, composers and marimbists have continued to push the boundaries of the instrumental art using a wide variety of compositional techniques: some of them have employed the techniques of the modernists and avant gardists—serialism, 12-tones technique and minimalism, etc.—in the marimba works, others have adapted folk and non-Western elements in the music. Hardly any evidence of an ethnic culture was spotted in this contemporary history.

[3] Reich, S. 2011. *Drumming for Percussion Ensemble*. New York: Hendon Music, Inc.

[4] Harrison, L. 1989. *Concerto for Piano with Javanese Gamelan*. Aptos, CA: Hermes Beard Press; Distributed by the American Gamelan Institute. Harrison, L. and R. Dee. 1973. *Suite for Violin with American Gamelan*. New York: Peer-Southern Concert Music.

Yet, the audience likes to hear stories about the origins of the marimba. “Wouldn’t it be interesting,” I considered, “to present the instrument’s ethnic potential in both practice and sound through a music performance?” Their curiosity aroused my own interest in the repertoire and performance practice of the marimba as it is related to its ethnic roots. I wanted to transform these mysterious origin theories into a source of artistic creativity. Among the three ethnic origins, my curiosity in African music outweighed the other two traditions for personal reasons: I already had experience in the Javanese Gamelan during my undergraduate education and the repertoire of the Guatemalan marimba does not seem to bring much technical challenge to my artistic practice.[5] In many ways, much Guatemalan marimba ensemble music can be considered a development of the Western technique of orchestration. For example, the indigenous *son*, *zarabanda* and dance-dramas in Guatemala are largely influenced by the European traditions of Spain and France.[6] Figure 2 is the score of *Contradanza*, a type of dance-drama called *costeño* that has adapted the French contredanse to the Guatemalan diatonic marimba ensemble.

https://vimeo.com/102068561

Video 1: A performance of *Libertango* by Adilia YIP (2009), and arrangement by Eric Sammut for the Western four-mallet technique. *Libertango* was originally composed by Astor Piazzolla in 1974 and scored for bandoneon, strings, piano, electric guitar, electric bass, marimba, flutes and percussion.

[5] I am also a member of a Mexican marimba quartet called “Motzu” who has a repertoire of the traditional music of Chiapas.

[6] Navarrete Pellicer, S. 2005. *Maya Achi Marimba Music in Guatemala*. Studies in Latin American and Caribbean music, ed. P. Manuel. Philadelphia: Temple University Press, 74-9, 82-6.

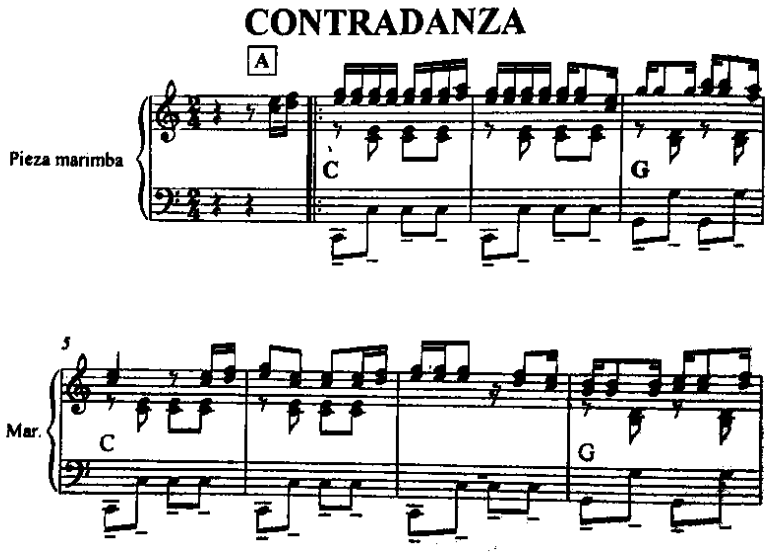

Figure 2: An excerpt of *Contradanza*, a type of dance-drama called *costeño.*[7]

In contrast, I expected that the polyrhythm in African music could offer more substantial technical improvements and innovations to my performance practice. Due to my limited knowledge of the genre, my first listening experience of the balafon was a shock. I could not appreciate the ultra fast tempo, the non-Western temperament and the powerful, loud strokes of the instrument. Nevertheless, these surprises have developed into enthusiasm. I wanted to understand how African musicians create such intensive energy in a performance. I wondered how they obtain their bodily sensation and superb coordination, as if they were playing a *game* of automatic physical movement. Although rhythms and beats sounded chaotic, the musicians clearly knew what they were playing. I became fascinated by the complex polyrhythm as a liberation containing natural, crude beauty, which gave me a feeling of spontaneity.

2. Joining artistic research and ethnomusicology

Out of curiosity and doubt, I began to dig into the percussion literature, the African ethnomusicology and recordings for more information; and since 2010, I studied the

[7] Navarrete Pellicer, *Maya Achi Marimba Music in Guatemala*, 82.

instrument with German balafonist Gert Kilian in Toulouse (France) and interviewed some African music performers and scholars in Belgium.[8] These activities offered me the basic knowledge of the genre and prepared me for my first workshop in Africa thereafter. In January 2012, I joined Kilian for a two-week balafon workshop with Youssouf and Kassoum Keita in village Konsankuy, Mali, to observe and participate in the people's cultural activities. The same workshop was organized again the following year in the city Bobo Dioulasso of Burkina Faso. I recorded my experiences in two ways. First, I recorded in a note book about my learning of the music and participating in cultural activities, and otherwise made notes on the villagers' daily activities. Secondly, I filmed my teachers' lessons, their manner of explaining balafon songs, and their arguments over musical definitions and the performances.

Participant-observation has offered me the experience of *being* in the balafon music practice. I could have learned this music by reading transcriptions and writings of Africanists, yet I felt that in order to truly feel and sense the music I needed to be involved in the practice and culture in the location where it lives. The hands-on musical and cultural experience of the music gave me insights about how the music should be played. I submitted to the practice—the oral tradition, the musical thinking, the holistic teaching approach, the embodied musical movement, and the functional aspect of the music. I recorded my mental and physical experiences—the sensing, thinking, and dreaming in the musical culture. In this stage of data collection, I began to reveal how I, the performer researcher, responded to the music. But at this stage, the level of participation was as a moderate one. While following every instruction given by the African teachers, I have maintained my personal view as a Western classically trained marimbist. I did not strive to *become* an African balafonist, since my purpose was to reflect on the process of adopting balafon techniques and practices, and to be able to discuss the resulting changes in my own artistic perspective and create new music with these

[8] I have interviewed four European balafon musicians: Gert Kilian, Paul Nas, Rachel Laget and Pieter de Zuitter. The interviews have offered a primary understanding of the learning experiences of foreign students and revealed how the African musicians teach students.

experiences.[9] Such detachment from the balafon helped me to obtain a comparative approach in this research.

Besides, I would like to emphasize the individuality of the performer-researcher in the process of participant-observation. As the performer-researcher is rendering the experiential feeling[10] of a foreign music practice, the mode of research contains contents that are made up of his/her subjective character. The manner in which I observed and understood from balafon culture was dependent on my own temperament, my cultural background, personality, gender and nationality. The research pertains to the idiosyncrasy of the artist-researcher, in which his/her tasks and methods are depending on his/her specific artistic research interests. For instance, I have chosen to obtain my knowledge by immersing myself in the balafon practice; whereas the central aim of a composer is an analysis of the musical forms and the adaptation of these ideas in his/her own compositions;[11] and a linguist and ethnomusicologist would investigate the diffusion history of a particular African instrument by tracking the history of the people's language usage.[12]

Learning and participant-observation as a research tool might have some weaknesses. Simha Arom (2010) stresses the importance of understanding music knowledge in preparing transcriptions, but he is also concerned about the feasibility of adapting to the native oral transmission approach.[13] We need to "keep close" to the practice, but participant-observation

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[9] DeWalt, K. M. and B. R. DeWalt. 1998. Participant observation. In *Handbook of Methods in Cultural Anthropology*, ed. H. R. Bernard, 259-300. Walnut Creek: AltaMira Press. Schwartz, M. S. and C. G. Schwartz. 1955. Problems in participant observation. *American Journal of Sociology* 60 (4): 343-53. Kawulich, B. 2005. Participant observation as a data collection method. In *Forum Qualitative Sozialforschung/ Forum: Qualitative Social Research* 6 (2), http://www.qualitative-research.net/index.php/fqs/article/view/466/996.

[10] Biggs, M. 2004. Learning from experience: Approaches to the experiential component of practice-based research. In *Forskning, Reflektion, Utveckling.*, 6-21. Stockholm: Vetenskapsrådet, 11.

[11] Yip, A. 2014. The creativity in artistic research method. In *ESMUC Digital Barcelona*. http://www.esmuc.cat/esmuc_digital/layout/set/print/Esmuc-digital/Revistes/Numero-31-octubre-2014/Espai-de-recerca.

[12] This was one tentative project of the diffusion history of arched harps and wind ensembles in Africa, handled by the Royal Museum of Central Africa, Tevuren. The title is "An interdisciplinary approach to African music history: Ethnomusicological and linguistic perspectives on the spread of arched harps and wind ensembles".

[13] Arom, S. 2010. *African Polyphony and Polyrhythm*, trans. M. Thom, B. Tuckett and R. Boyd. Cambridge: Cambridge University Press, 96-7.

cannot provide the parameters to overcome the boundaries of the researcher's cultural biases to create and maintain as a *close* contact with the African practice, as would someone either born into it, or immersed in it over a lengthy period of time. So how should we posit ourselves in the music culture and interact with the practice? And what is the definition of *close*? We need to consider a modus operandi of accessing the knowledge and work in an in-depth inquiry of our experience. John Blacking, a prominent scholar in both African and Western music unfolds his spiritual devotion in the Sub-Saharan music. Here is his remark in an interview with Keith Howard (1991):

> In the Sub-Saharan African music I learned, performance constitutes a scientific testing of one of the fundamental truths of life: all matter is a manifestation of spirit; in the process of playing, the process of allowing your body to submit to the musical act, you experience a sense of fellow-being with other humans and the world of nature. This is a mystical truth. In a sense, the experience reinforces all you have learned. The idea of possession has some relevance—playing Chopin and experiencing the spirit of Chopin (see also 1971). I am sure that many Western composers understand this without involving themselves in African or Asian music. Such was my block-headedness, my training, however, that I needed to find the key of African music to unlock enlightenment. And so, to me, thanks to my experience of African music, performance of Western music is a supreme joy.[14]

My learning experience of the balafon also unlocked my block-headedness in my ability to interpret and understand music in general; nonetheless, I could not claim that I experienced the *spirit* of West African practice (whatever that may be). Truly my performance on balafon was an interpretation of the spirit of the culture. Blacking did not explain clearly what the state of being *possessed* is though. This makes me wonder if I was at the heart of the balafon culture during the learning experience, and how problematic it is when the researcher assumes he/she possesses the knowledge to make presumptuous conclusions. I first look for answers in ethnomusicology and found some of them in the approach of John Miller Chernoff, a percussionist, author and ethnomusicologist in his book "African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms" (1979). I realize that it is my

[14] Howard, K., and J. Blacking. 1991. John Blacking: An interview conducted and edited by Keith Howard. *Ethnomusicology* 35 (1): 69.

task to bring *something* of a different order into our world of understanding and at the same time, recognize and appreciate this culture on its own terms. This *something* is the actions of the West Africans, observed by a performer-researcher who has his/her individual artistic and life experience of the musical, practical and cultural contexts of the balafon. The first layer in this endeavour is descriptive: I explain my personal experience of the activities in which I participated in, as well as my interactions with the people and the environment. What we care for is the researcher's phenomenal experience with the music, the confrontation between the *self* and the African practice. It is the experience of how "I" deal with every problem and circumstance when I was learning the instrument.

Chernoff points out that the second layer in this endeavour is interpretive: to make sense of *something* different from us by ways of our own words of our *tradition*. Our *tradition*, therefore, is stretched and adjusted to encompass these foreign terms. This process also helps us to understand ourselves. Chernoff says:

> In this respect, conveying my experiences with African music through the heritage of our traditions of understanding seemed to offer an opportunity not only to expand the relevance of what I had learned as an individual but also to indicate my sense of how those [my] traditions can respond to the challenge of such an undertaking. In such an investigation, we can learn as much about ourselves as about other people because we must see through our own eyes and we must find our own words to describe their world.[15]

Again, it seems that the real problem is not how *close* I am to the heart of the practice, but how to render my interpretations and observations, as well as the relevance of my personal anecdotes and the theories used in this context. In the balafon lessons, mimicking what the African teachers do is less ambiguous than asking them to explain themselves in words. The manual of the music is movement patterns and gestures: I understood what to do before I could think or talk about it. So in some situations, I need to find my own expressions

[15] Chernoff, J. M. 1979. *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms*. Chicago: The University of Chicago Press, 3.

to recount every encounter that is relevant. Hence, in the next steps of this chapter I will search for philosophical insights to expand the approaches of interpreting experience.

3. The ineffability in describing the balafon experience

We need measures to express those experiences that are beyond words, such as the knowing-how and the phenomenal experiences.[16] In her article "What, if anything, can be said about what is unsayable?" (2017) philosopher Silvia Jonas describes the basis of ineffability.[17] She explains her experience of describing how to play violin: "I know how to play the violin, but my explanations about how to hold the instrument and move the bow would not be enough to impart this knowledge to you. You would have to acquire knowledge-how to play a violin yourself, through practice."[18] Similarly, cooking also imparts the unsayable knowledge-how. You may receive a recipe of a Chinese main course (or another traditional cuisine) that tells everything that is needed: the amount of the ingredients and sauces, timing, the equipments, gas mark and a detail procedure of instructions, but still, you may have troubles to describe the exact *touch* of how everything works together. The sensibility of how to add layers of taste requires the experience of practice. I cannot quantify a pinch of salt, and define the texture and the taste in words either. Interpreting music notation may lead us to the same frustration of not getting the knowledge-how. Notation does not teach us how to move our body to produce the sound we want. The exact weight, loudness and tone colour of striking a note are ineffable experiences, only obtained through the practice and experience of the performer.

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[16] David Lewis (1999) attempts to distinguish the differences between physical information and phenomenal information. In the stance of hypothesizing the existence of phenomenal information, he offers an intermediate definition of phenomenal information: it is information about experience; more specifically, it is information about a certain part or aspect or feature of experience. Besides, he identifies that physical information and phenomenal information contain independent *qualia.* They are possibly exactly alike physically, yet differ phenomenally. When we get physical information we narrow down the physical possibilities, and perhaps we narrow them down all the way to one, but we leave open a range of phenomenal possibilities. When we have an experience, on the other hand, we acquire phenomenal information; possibilities previously open are eliminated; and that is what it is to learn what the experience is like. Lewis, D. 1999. *Papers in Metaphysics and Epistemology*. Cambridge studies in philosophy, vol. 2. Cambridge: Cambridge University Press, 270-3.

[17] Silvia Jonas identified four basic types of ineffability: the ineffable object, the ineffable truth, the ineffable knowledge and ineffable content. Jonas, S. 2017. What, if anything, can be said about what is unsayable? In *Aeon Magazine*, ed. S. Davies. https://aeon.co/essays/what-if-anything-can-be-said-about-what-is-unsayable.

[18] *Ibid.*

The bodily and mental state of changing from a marimba to a balafon is also an ineffable experience. I can tell the differences between the two keyboards (i.e. from a two-row chromatic marimba to a single row pentatonic balafon), the listening perspectives (i.e. marimba contains more pitches, the balafon has a buzzing effect and a sharp, crispy tone), the hardness of the mallets etcetera; however, I cannot put in words the exact control of my fingers, hands and arms when striking the keyboard with the rubber tipped mallets. Also, the energy of playing balafon music is unlike the sensitive emotions of playing the marimba. There might be words to partially describe this energy—exceptional fast tempo, dance-like, ecstasy, natural, trance-like, vitality—but further, the musical content becomes ineffable. I cannot describe the mental state of playing the music. No matter how comprehensive my description is, these phenomenal experiences are difficult to express in full details and might vary among individuals and contexts. The feeling of space and the audience, the physical contact with the instruments and the feeling of advanced coordination are hard to conceptualize and to reveal to others. There exists a semantic ambiguity[19] in communicating such experiential knowledge of performing.

In the following section I will formulate a method to interpret these ineffable experiences of music practice. Insofar I have identified three possible perspectives: first, the method of phenomenological *reduction*, in which the researcher sets aside extraneous materials and keeps coming back to the "things themselves"; next, the method of *possession* that the researcher dissolves in the external things and events, as I have mentioned already in the quote of Blacking's interview; and thirdly, the *prejudice* of the researcher's tradition that remarks his/her pre-understanding during the acts of participant-observation and interpretation. I will describe the inherent strengths and weaknesses of each method, and, in the end, offer a conclusion that suggests a suitable approach for such cross-cultural artistic research.

[19] Biggs, *Learning from Experience: Approaches to the Experiential Component of Practice-based Research*, 11.

4. When artistic research and ethnomusicology meet phenomenology

a) The phenomenological *reduction*

I would first like to continue to explain "ineffability" in terms of the uncertainty of defining the color red. Do I express red in the same way as you? When I tell you: "It is red," we can only understand each other if we are based on the same experience. We need to discern the existence of this color red that we are referring to. The color can recall different experiences in relation to an individual's experience. Red is a colour at the end of the spectrum next to orange and opposite violet. In terms of physics, red is an effect of light with a wavelength between 610 and 780 nanometres. Different types of red apple give different shades of red, so red represents, to some, the taste of different sweetness and crunchiness. Red also represents the traffic light, a sign of danger, operating at a loss or being in debt; but "a glass of red" means red wine in the moment of socializing or relaxation. In politics red represents communist or socialist. With such a wide variety of definitions, what is the *true color* of red? We can point to the table of types of apple to communicate the shade of red. (Figure 3) When we can *discriminate* the perceptual content and the existence of that red, then perhaps, we will be able to define the concept of the color that we mean.[20]

[20] Further, in the words of John McDowell, Jonas explains to us that if we are able to discriminate a piece of perceptual content, such as, a particular shade of colour, then we are also able to form a concept for it. As soon as we can discern the existence of a piece of content, in principle we are able to conceptualize it. *Ibid.*

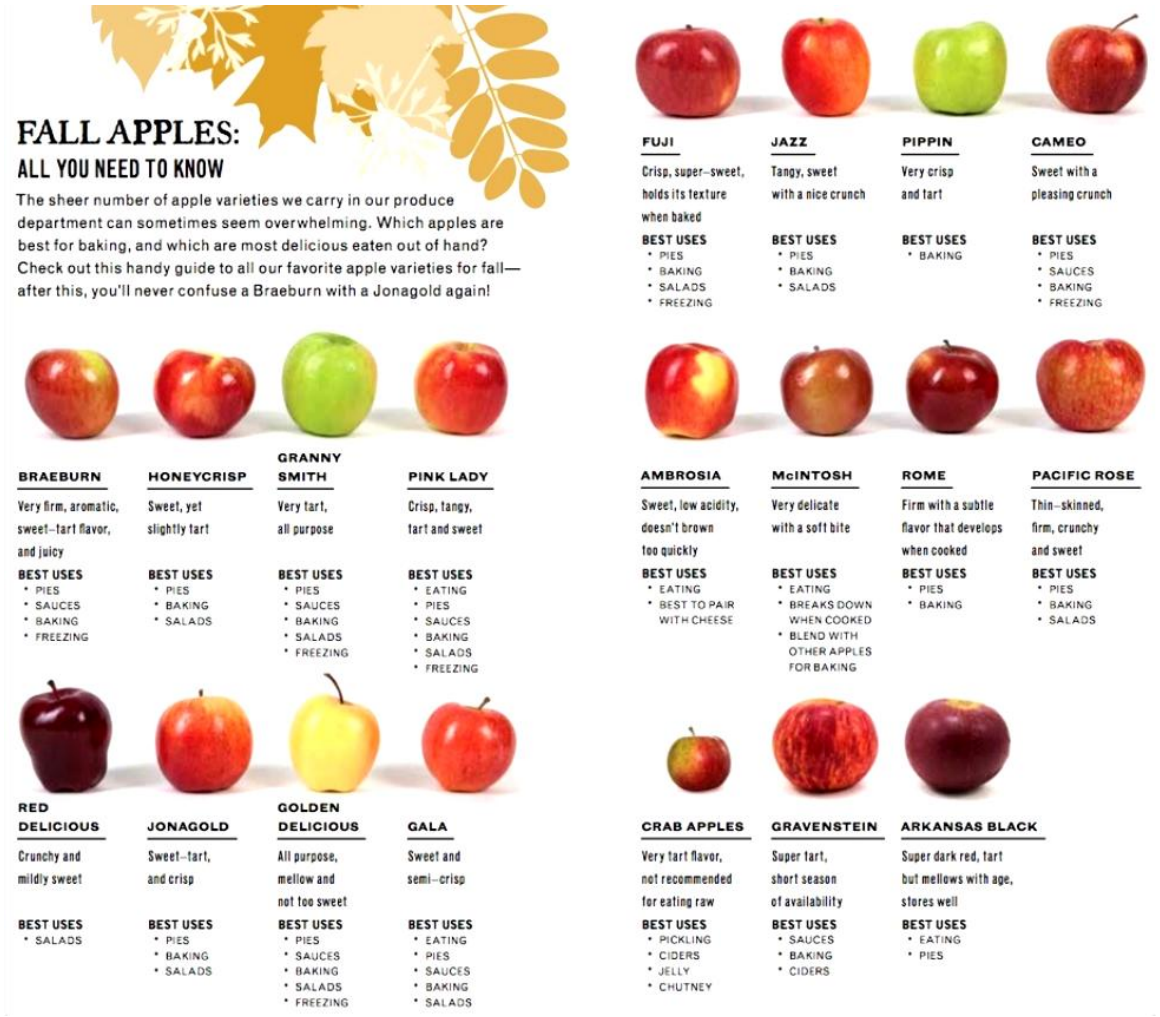

Figure 3: Different types of apples.

In the process of describing my experiences of red, the phenomenological stance asks us to go through a reduction procedure that I *set aside* or *bracket out* speculative add-ons that may keep me from saying what this color red I experienced. I could write pages to define what is red, but at the end I might still not be able to conceptualize what my perception of red is. The wavelength of red would not explain my experience of this color. I must put forth the conditions of how I experienced this *something.* The conceptual content of red is a subjective comment that is always related to the context of the experience.

Therefore, a person's definition of red changes continuously, because he/she will have different experiences over the course of time. This is linked to the development of such factors

as space, mood, culture, belief, knowledge and nature. I might define red as vivid and passionate for I saw some wild red roses blooming in a flower shop, while at another time red represents the "cutting-edge" style of a red shirt that I wore in a contemporary music performance last night. My definition of the balafon practice also changes according to the context of my experience. I describe the balafon polyrhythm in this research as cyclical because, as a beginner, I was in the context of learning how to play the music in a balafon ensemble. Yet in the future I might propose new theories on polyrhythm. For example, I could postulate that polyrhythm constitutes the fundamental rudiment of improvisation, because I focus on the improvisation skills after years of learning the repertoire. Both old and new hypothesizes are legitimate, but rooted in different contexts of experience. On the other hand, the context of experience also varies considerably from person to person. Based upon my experience of learning the balafon orally, my definition of polyrhythm is an experience of imitating embodied movement patterns and bi-manual coordination, and of course, listening of sound.[21] Some musicians would explain polyrhythm in terms of Western rhythm theories, a systematic division of rhythm, locating the first beat and the musical meter; while some would define polyrhythm with symbolic representation,[22] like the box notation of Adrian Egger and Moussa Hema (2006).

Following this line of investigation, the Husserlian phenomenology offers us *reduction* to highlight my experience from those unwanted perceptions—not meaning they are unimportant and dispensable—that are not describing the phenomenal experience of engaging in the African practice. I am exempted from the discourse of history and theory unless this knowledge can account for my balafon experience. Husserl calls it an *epoché*, a term borrowed from the ancient Sceptics to describe a general suspension of the judgment of the world.[23] During this wrestle between individuality and scientific objectivity, the phenomenological reduction offers a "way-out" to artists who want to neglect facts but focus

[21] Please refer to chapter 3 on African polyrhythm.

[22] Egger, A. and M. Hema. 2006. *Die Stimme des Balafon*. Hamburg: Schell Music.

[23] Bakewell, S. 2017. *At the Existentialist Café: Freedom, Being, and Apricot Cocktails*. London: Vintage Publishing, 40.

on their artistic experience. The Husserlian *epoché* asks phenomenologists to temporarily ignore the question "But is it real?" and focus instead on describing phenomena. It is a formal access to the human experience that clarifies how a person experiences his or her world.[24] Since then, I am enabled to talk about my personal musical experience as a serious topic while talking phenomenologically.

Phenomenology is essentially a method rather than a set of theories and—at the risk of oversimplifying—its basic approach can be conveyed in a two-word command: describe phenomena.[25] (Bakewell, 2016) I describe an object, event or activity that is itself presenting an experience to me. The point of rigor is to keep asking questions about the experience in order to describe the phenomenal experience as fully as possible. For example, I do not dwell on using plain words to describe how fast the balafon music is, but continue to elaborate the description with more questions: Is the tempo pushing to the limit of the musicians? How long can I play in this tempo? Am I still conscious about bimanual control, or do I switch to an automatic involuntary control? Phenomenology requires us to persistently come back to the experience of "things themselves": to bail out extraneous materials and get to the heart of the experience.[26] I need to strip off theories and perceptions that keep me from focusing on describing the phenomena. I do not quantify the exact speed of this tempo, i.e. beats per second, because these numbers do not represent how fast this speed feels to me. But what could be supportive is, perhaps, to measure and analyze empirically my bodily responses to this speed.[27] My bodily experience is what I can speak about with certainty and I must focus on describing my phenomenal experience.

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[24] *Ibid.*, 43.

[25] Bakewell defines "describe phenomena" by breaking it up into two elements: the first element *to describe* is the job of a phenomenologist. This is the activity that Husserl kept reminding his students to do. It means stripping away distractions, habits, clichés of thought, presumptions and received ideas, in order to return our attention to what is called the "things themselves". The second element is *phenomena*, which denotes any ordinary thing or object or event as it *presents itself to my experience*, rather than as it may or may not be in reality. *Ibid.*, 40.

[26] *Ibid.*, 43.

[27] Investigations on human response to musical tempo are found in performance research. Godøy, R. I. and M. Leman. 2010. *Musical Gestures: Sound, Movement and Meaning*. New York: Routledge.

b) Possession of the spirit of the balafon: the dissolving theory

Apart from the Husserlian phenomenology, the *possession* theory is another approach of describing experience. The method first establishes an intimate relationship between me perceiving the experience, and the object or the event that is presenting an experience to me. The interpretation of this approach comes from the experience of synchronizing with the *spirit* of this foreign culture. Already told above, Blacking (1991) suggests that we have to play Chopin and experience the *spirit* of Chopin. Ideally speaking, the approach conveys *assimilation* of the performer's *self*—both our body and mind—to the musical practice, so that we experience a sense of "fellow-being" with this other culture. The method sounds vague at first glance; but further on, I doubt about its viability as I could not picture exactly the ways of *disintegrating* my consciousness and my individuality to *become* a constituent of a foreign *spirit*.

In views of phenomenology, Sartre (1939) terms such *possession* "digestive philosophy". With disgust, he thinks past philosophers were stuck in it like being stuck in the slimy spider spit.[28] He believes one cannot dissolve *things* in consciousness. We see a tree as where it is (i.e., at the side of the road, in the midst of the dust, alone and writhing in the heat), but it cannot enter into our consciousness because it does not have the same nature as my consciousness. I would relate the experience of a foreign practice to a tree here, despite of their fundamental differences since, in both cases, we are dealing with an *external thing*. We shall consider consciousness and the world (the balafon practice) as one stroke—the world is essentially external to consciousness, while the world is nevertheless essentially relative to consciousness.[29] My consciousness *interacts* with the world but does not *dissolve* in it. This is how Sartre describes the repelling force of possessing an external object in our consciousness:

[28] Given by Sartre, the digestive theory comes from French philosophers Brunschvicg, Lalande, and Meyerson. Léon Brunschvicg (1869-1944), author of *Le progrès de la conscience dans la philosophie occidentale* (1927) and *De la connaissance de soi* (1931). André Lalande (1867-1963), author of *La psychologie des jugements de valeur* (1928) and *Vocabulaire technique et critique de la philosophie* (originally 1926). Émile Meyerson (1859-1933), author of *Identité et réalité* (1912) and *Du cheminement de la pensée (*1931). Sartre, J. P. 1970. Internationality: A fundamental idea of Husserl's phenomenology. *Journal of the British Society for Phenomenology* 1 (2): 4-5.

[29] *Ibid.*

> To know is to "burst toward," to tear oneself out of the moist gastric intimacy, veering out there beyond oneself, out there near the tree and yet beyond it, for the tree escapes me and repulses me, and I can no more lose myself in the tree than it can dissolve itself in me. I am beyond it; it is beyond me […] You certainly knew that the tree was not you, that you could not make it enter your dark stomach and that knowledge could not, without dishonesty, be compared to possession. All at once consciousness is purified, it is clear as a strong wind. There is nothing in it but a movement of fleeing itself, a sliding beyond itself. If, impossible though it may be, you could enter "into" a consciousness, you would be seized by a whirlwind and thrown back outside, in the thick of the dust, near the tree, for consciousness has no "inside."[30]

As such, I can describe and understand the content of the tree, but I could not *assimilate* with a tree. Of course, a practice would not repel me; I can involve or confine in its culture and be a member of it. But even so, I cannot unconvincingly abandon my *subjective character* in order to dissolve in a foreign culture.

So what are the claims in the "dissolving theory" that could help us to find the right approach in this artistic-ethnographic research? I would like to consider *possession* from two perspectives: the presence of my subjective character that *predisposes* my experience of playing the balafon,[31] and the lack of the requisite quality in me that blocks me from fully comprehending the African people. From the first line of thought, the presence of my *subjective character* seems to repel *possession*. I embody my own pre-understanding and experiences, and they may, or may not, comply with foreign practice. My cognition is defined by my background, my character, my habits and my history; and invariably, my judgments are grounded in my being a classically-trained musician, raised in a Chinese family, who has studied in a missionary school and later lived in Europe etcetera. Such subjective character is not only noticed in me as an individual human being but, in spite of my having the same biological composition and heartbeat as African people, I presume that I am essentially *different* from them in terms of cultural, epistemic, and perceptual thinking. Our experiences in our own world made us who we are. I cannot avoid these background experiences and

[30] *Ibid.*
[31] Nagel, T. 1974. What is it like to be a bat? *The Philosophical Review* 83 (4): 439-42.

inevitably, these experiences mask and filter my conception of what it is like to be an African musician.

Conversely, the second line of thought claims that there is a *soul* in the balafon tradition permanently denied to me by the limits of my nature. We cannot *re-create* or *simulate*—by the current technology—the historical scene of Chopin. Nor can we travel back in time to that era to participate in the same activities Chopin had experienced. Such differences of time and space discourage us—an observer but not participant—to *possess* fully Chopin's spirit. In a concert of Chopin, we can only conceive an interpretation of Chopin's spirit by the performer; or the listener interprets Chopin's spirit from the music with his/her own imagination. We can only imagine the behavior and intention of Chopin who is culturally and historically different from us based upon our own individual imagination of how he *would* prefer to do in this certain musical passage. We can get closer to Chopin's life by reading his letters, autobiography, and narratives from his colleagues, friends and family, but the range of our knowledge is limited: I conceive what it would be like for me to behave like him, but I do not know what it is like *to be* Chopin.[32] In this sense, my participant-observation in balafon workshops gave me the information to perform the acts of an African by adding, subtracting or modifying my present experience to this imagination; however, I am restricted to the resources of the experience of my own mind and body. I miss this requisite *soul* of African musicians that allows me to *re-construct* what it is like to be one of them. There are many gaps between my *self* and the African *spirit*.

What if I will live in Africa for the next thirty years? I would certainly know much more about African culture and may become a proficient balafonist. Not only the musical knowledge, but also the general environment would transform me into a different person. Nonetheless, it

[32] This line of thought is inspired by Nagel's famous metaphor of the bat. Our imagination will not help us to comprehend the experience of a bat, a mammal who has webbing on one's arms, a very poor vision, perceives the surrounding world by a system of reflected high-frequency sound signals, and spends the day hanging upside down by its feet in an attic. *Ibid.*, 439.

seems nothing in my present mind can predict what would be this new form of me after these conversions and metamorphoses. The original subjective character would probably diminish following the new events in Africa. Therefore, I do not need such conversion, because the main purpose of my activity is to compare the new balafon experience with my original artistic practice, and to interpret the changes that happened to that artistic practice. Becoming a balafonist would need a more in-depth research, for example, the investigation of different musical interpretations and repertoire endorsed by each balafonis. This is not the subject of investigation in this project.

C) The prejudice of understanding others

The last method of interpreting the ineffable experience is the stance of *prejudice* offered by Hans-Georg Gadamer (1976) and Lawrence Ferrara (1991). It is a method that indicates the importance of the artist-researcher's *tradition* in the process of investigating the *present* research subjects.[33] In echo to the ethnomusicological method of Chernoff, prejudice enables us to recognize essentially the uniqueness of the balafon tradition. As Gadamer defines, "Prejudices are biases of our openness to the world. They are simply conditions whereby we experience something—whereby what we encounter says something to us."[34]

Based on prejudice, uniqueness is a relative term that happens only when we compare our own tradition to that of the African. African musicians would not essentialize the fact that their movement pattern is a non-symbolic representation of rhythm in their music practice. It is us, the foreign participant-observer, who identifies such characteristics that do not exist in our culture; we relate our traditions to the African practice. In some ways, it is not so much our judgment as it is the prejudices of our tradition that constitute our reasoning.[35] Tradition is the understanding we gained in the past, and it influences our present understanding of things. In

[33] In here, the *traditions* and the *present* have no ontological relationship between the traditional and the present state of the balafon music culture. I speak about the contact of the *traditions* of the artist-researcher and the *present* form of the balafon experience.

[34] Gadamer, H. -G. 2008. The universality of the hermeneutical problem. In *Philosophical Hermeneutics, 30th Anniversary Edition*, ed. and trans. D. E. Linge. 2nd ed. London: University of California Press, 9.

[35] *Ibid.*

the words of Gadamer, the temporal present is part of a stream of history that grows from the past and moves toward the future.[36] Our past forms the consciousness that inevitably restricts us in describing and understanding a certain reality or logical significance of the foreign object or event.

Hence, my experience of the balafon is filtered by prejudice of who I am and my position as an artist-researcher. I cannot suspend my prejudice when facing the present, while such mode of understanding operates on the ground of my tradition, culture and education. I did not approach the balafon with an empty consciousness, but my ability of experience originates in the prejudice of being who I am. Prejudice impacts on all acts of interpretation and it is the basis of our experience. Nevertheless, prejudice does not dictate the work of the researcher. There is a symbiotic balance between the historical tradition and the present research objects that the two worlds are substantially interacting with each other. My experiences in the past cast meaning on my present experience of the balafon, and inspire me to consider what the culture can mean to my artistic practice. As Gadamer says, without prejudice, the world would remain closed. The constraints of one's tradition are feeding the researcher's creativity to interpret the differences. I consider prejudice to be a channel that helps the researcher to account for what he/she experiences, shining light on the meaning and language that interprets the phenomenal experience, while acknowledging the specific perspective.

As such, prejudice points out the incompatibility between my tradition and the African practice. But rather than separating the two practices, prejudice literally invites us to put myself in the other's shoes, and does not assert our original thinking onto the African musicians' approach. I would know when I shall or shall not reconcile the two practices. For instance, Western rhythm theory cannot unfold the structure of balafon polyrhythm, because it is inadequate in notating the rhythmic grooves and caused confusions among the

[36] Ferrara, L. 1991. Should the method define the tasks? In *Philosophy and the Analysis of Music: Bridges to Musical Sound, Form and Reference*. Bryn Mawr: Excelsior, 34.

workshop participants. But the concept of *tactus*—the medieval European concept of pulse—can help us to understand the pulse that integrates the parts of the polyrhythm.[37]

5. Conclusions

Henceforth, at the disposal of describing experience, the artistic-research model will incorporate these three lines of philosophical insights into the ethnographic participant-observation. First, I require the prejudice approach to assume a position that I can retain my *self* in the method—my individuality and tradition of being a marimbist-researcher—as the background for any interpretations and assumptions of the African practice. Then, I should work on an analogy of my experience by reducing knowledge that is out of the experiential content. The Husserlian phenomenology has asked us to "keep coming back to the things themselves" as the ground of describing our experiences. The dissolving theory remarks the importance of staying *close* to the practice and to attempt to engage and participate in the practice.

To this end, ethnographic participant-observation contributes practicality to these idealistic philosophies, while vice versa, these theories add knowledge to the ways of understanding and describing the African practice. The phenomenological philosopher Merleau-Ponty declares that we perceive the world with our body.[38] Similarly, participant-observation is an act of engaging bodily in the practice to perceive the African phenomena. Through learning the music and participating in the people's activities, I have focused on describing my experience of the physical movement of playing the music, but also reduced other possible factors that can explain the music practice, such as dance choreography and verbal language in West African music. They are not unimportant, but they simply do not appear in my field of vision and bringing meaning to my *self* as performer. Rather than *becoming* an African musician, the goal in this project is to be *influenced* by the African practice. We do not necessarily assimilate into the other's tradition to learn about it, but surely,

[37] Please refer to chapter 3 for more explanation of *tactus*. Arom, *African Polyphony and Polyrhythm*, 206.
[38] Merleau-Ponty, M. 2002. *Phenomenology of Perception*, trans. C. Smith. New York: Routledge, 206.

we have to go there and stay there to acquire the music practice. We cannot experience the practice by being told about it, no matter how thorough the book could be.[39] The dissolving theory, thus, is understood as an indirect indication that we shall take the chance to familiarize ourselves *from within* with music.

In conclusion, this artistic-research model shapes my dissertation on the basis of my performer's experience of learning and performing balafon music in West Africa. I accentuate the presence of the artist-researcher, and the individual *self* is the ground of investigation and the subject of perception. My artistic viewpoints are the backbone of this dissertation. In the first chapter, I will describe my participant-observation in the framework of learning and performing the balafon with African musicians. The second chapter will be a theoretical and philosophical investigation into the perception of motion and sound in African music. Based upon trial and error in communicating rhythm with the African musicians, I will discuss my perception and observations of polyrhythm in the third chapter. The fourth and fifth chapter will focus on the perception of motion and deduce the possible movement idioms embodied in the balafon practice. At last, I will insert the reflections of creating new music practice and repertoire in chapter six and seven: chapter six will cover the experience of working on the six commissioned works and the concert program "In the Heat of the Moment", and chapter seven will discuss the case study of Steve Reich's "Drumming" (1971).

[39] Lewis, *Papers in Metaphysics and Epistemology*, 262-5.

CHAPTER 1

IN THE DAWN OF CHANGE

Adapting to the performance practice of the West African balafon

Introduction

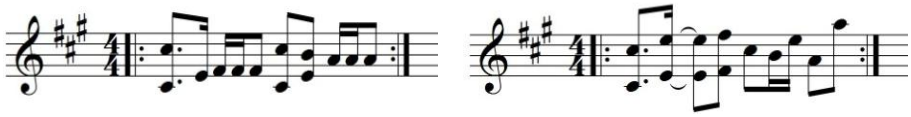
With immense energy and technical dexterity, the hardly explicable musical experience of the balafon has drawn my attention to the ethnic origins of my practice. However, getting to know the balafon music means more than playing new notes, rhythms and scales. In view of my Western classical training, I was exposed to a totally different musical-cultural setting, an adventurous journey of stepping into a *new* way of thinking and practicing music. I had to learn how to understand and accept a different music culture I am unfamiliar with.

In the beginning the main problem was to adapt physically to the technical difference in playing the balafon: the marimba is a double row, well-tempered 12-tones keyboard, whereas the balafon is a pentatonic single row keyboard.[1] But later, the real challenge I had to face was the clash between the practices of the balafon and the Western classical marimba. It seems my years-long classical music training was insufficient when changing to this new domain. The subjects I have learned in music conservatories, like the *solfège* system, score reading and music theory did not provide all necessary skills to adapt quickly to the balafon teaching approach. In the tradition of oral transmission, the balafon performance practice is communicated and passed on without using any forms of notation. Besides, it is taught holistically, for instance, the polyrhythmic lines are demonstrated by both left and right hand without separation. Thus, I had to comprehend the music by listening and imitating the teacher's demonstration on the instrument, and unfortunately, I often failed to memorize and analyze the polyrhythmic music after two to three demonstrations. In my very first balafon workshop given by European musician Gert Kilian, to my surprise, I needed almost one afternoon to grasp the polyrhythm of the song *Sanata*. The composition is written out as a 4/4

[1] The balafon we used in this field study is built by Youssouf Keita. This instrument is tuned in pentatonic scale in the basis of the Western temperament.

rhythm in four measures and the melody of the song is played in single notes or in octave doubling (Figure 1).

Pattern A Pattern B



Melody

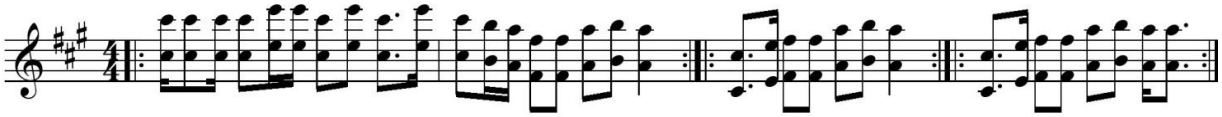


Figure 1: Song *Sanata*, patterns A and B, and melody. Transcribed by Gert Kilian.

In this chapter, I will discuss some issues of switching to the balafon practice. The "trial and error" experience has produced significant impacts on my artistic views and offered insights to be developed into new theories of music performance and artistic creations.[2] Divided in three topics, I will first describe the workshops and the research method used in this project; second, I will give a full account on the balafon structure and its playing technique; and lastly, I will unfold my experience of learning the balafon practice.

1.1 The balafon workshops: learning how to play the instrument

Research into music practice requires us to focus on a few things: how the African musicians think and perceive music, and how the African musicians actually *do* when playing music. Through the two workshops in Mali and Burkina Faso, lessons, rehearsals and performances with both European and African balafon musicians,[3] I have gained the ineffable,

[2] New compositions for marimba are created and collected in concert program *In the Heat of the Moment*: *Sound Portrait V* by Enric Riu (2015), *Mal/oxin Suite* (2016) by Michiel De Malsche, *Inner Sight Etudes* (2015) by Cornelia Zambila, *El Perjurio de la Nieve* for four hands on marimba (2016) by Juan Albarracín and *Transposons* (2017) by Dr. Cheong Li.

[3] I have created a program *Balafon Meets Marimba,* a duo of balafon and marimba, with Moussa Dembele on balafon. Concerts were held at Stitching Intro, Maastricht on 29 May, 2012; Music Instrument Museum, Brussels on 5 June, 2013; Dag van de Wetenschap of The University of Antwerp on 23 November 2014; ARIA Onderbrokenstad, Stadsfeestzaal Antwerp, 4-6 March 2016. The first concert of this program was a collaboration with Gert Kilian at L'aubarge de Badassac, Pailhes, France on 19 October, 2011.

embodied knowledge of playing the instrument, which is seldom in the spotlight of an African study.[4] This research takes shape from the experiences of learning *how* the balafonists approach their instruments, the repertoire, the tradition and their fellow ensemble musicians. I can easily name a few examples of using learning as a research tool in other ethnographical studies: John Baily (2001) emphasized the importance of learning the Herati *dutār* and the Afghan *rubāb* is that it allows one to understand the music from the *inside*.[5] John Blacking (1967) gathered valuable data through learning how to sing the Venda children songs with local teachers, as he could learn from mistakes immediately and began to learn what was expected of a singer and what tolerances were allowed.[6] Kubik (1960) wrote a number of in-depth field studies about the African xylophones and their musical materials based on his studies with African teachers.[7]

In January 2012, the workshop was organized in a small village called Konsankuy in Mali. Not even shown on map, Konsankuy is a small village located at the south-east of Mali. After flying to Bamako, the capital city of Mali, we traveled by bus for about 8 hours (731 kilometers) to Sokoura, then, walked 2 kilometers to Konsankuy. At night, we stayed at the Catholic missionary in Sokoura. The second workshop took place one year later in Bobo Dioulasso, the second biggest city of Burkina Faso where Youssouf Keita's atelier is established. The music tradition of this region belongs to the Mande people, one of the biggest tribe in Mali, and the music we learned came mainly from two tribes called Bamana and Bobo. The workshops were organized by Gert Kilian—a German balafonist who lives in France—with the griots Youssouf

[4] In the vast literature on African music, there is rarely a discussion on the performance practice of pentatonic balafon; Kilian (2009) and Charry (2000) described the instrument, the musical theory and the music culture, but they did not examine the embodied performance experience of the balafon musicians. Kubik (1979) discussed the perception of patterns and movement in relation to the recognition of rhythmic and melodic materials in African music, which he called "inherent patterns". Kubik, G. 1979. Pattern perception and recognition in African music. In *The performing arts: Music and Dance*, eds. J. Blacking and J. Kealiinohomoku, vol. 10, 221-250. The Hague: Mouton.

[5] Baily, *Learning to Perform as a Research Technique in Ethnomusicology,* 85-98.

[6] Blacking, J. 1995. *Venda Children Songs: A Study in Ethnomusicological Analysis*. 2nd ed. Chicago: University of Chicago Press.

[7] Kubik's field studies were mainly conducted in East Africa, including the Kiganda xylophone of Northern Uganda, the Mangwilo xylophone of Northern Mozambique, the Embaire xylophone of Southern Uganda. Kubik, G. 1960. The structure of Kiganda xylophone music. *African Music* 2 (3): 6-30. Kubik, G. 1964. Xylophone playing in southern Uganda. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 94 (2): 138-59.

Keita and Kassoum Keita of the village.[8] Including myself who is a native Chinese living in Belgium, there were in each workshop six European participants from Holland, France and Switzerland. French was the main language we have used to communicate with the griots, and Kilian was our translator when we had problem to understand. Next to the lessons of the Keita brothers, I also took lessons with other West African balafonists, including Moussa Dembele and Mandela, who practice a similar balafon tradition of the Bobo and Bamana tribes as the Keita.[9]

Each workshop lasted for twelve days and the teachers taught us ten songs. The daily teaching routine was divided into three sessions: demonstration of the music patterns in the morning, individual practice in the afternoon, and to end the day, the teachers played the song again—both complete duo performance of the song and analytic demonstration of combining the patterns, i.e. superimposing pattern A against B, pattern A against C, as well as the melody against each pattern etcetera—for the participants to film. In particular, I also filmed some moments of the lessons when the teachers were explaining—verbally and physically—the music patterns and the responses of the participants. These discussions revealed what the musicians would practically do on their instruments. Another interesting moment for observing the practice is, indeed, during concerts, rehearsal sessions, parties and work events happened occasionally in the village or in different corners of the city. The teachers and villagers had organized farewell concerts on the last day of the workshop, which were also good chances for the participants to meet and collaborate with balafonists from the neighbourhood.

[8] Griot is a family of musician, story teller and praise singer of the village.

[9] Moussa Dembele is all-around musician of balafon, kora and djembe. He is a cousin of the Keita brothers. He lived in Bobo Dioulasso in the same neighborhood of Youssouf Keita's atelier. He meets Youssouf regularly and they often perform together. Moussa Dembele is now living in Belgium and he visits his country on occasion. Mandela (Oumarou Bambara) is a balafon musician from Bobo Dioulasso and resides in Paris. I had some lessons with him during the second field trip and he is an acquaintance of the Keita brothers. I also attended a workshop of Guinean balafonist Seydouba 'Dos' Camara in Gent, Belgium.

Youssouf always started the day with the story of the song. These songs have a variety of themes: to educate the people, to celebrate, to cheer up workers in the fields and etcetera. For example, *Commis* is based on a story that happened during the French occupation: a man imitated the French officials by wearing a pair of trousers, because at that time, only officials were allowed to wear these. It is a metaphor to pass on a message to the people: “It is not what you have that makes who you are. A person should not be judged by his outer appearance.”

After the story, Youssouf demonstrated the song on the instrument. He usually began with the melodic theme, and then, the patterns. The melodic theme is the centre of the song that is played in octave doubling, and the patterns are composed of elements extracted from the main melody but organized in a polyrhythmic structure. The Keita brothers organized the music into short structures, i.e. the melody, patterns A, B, C and sometimes a shuffle pattern D. A pattern is made up of two linear melodic fragments played by the two hands, using one mallet in each hand. It requires a high level of independent hand coordination. Figure 2 shows a Western music transcription of *Borodomborola* prepared by Kilian to notate the melody and patterns. The repertoire is passed down from their father, griots and balafon teachers; nevertheless, the organization of patterns is a musical decision of each individual musician and ensemble group. For instance, Mandela, a balafonist in Bobo Dioulasso organized the patterns of song *Awa Ba* in longer phrases. (Video 2)

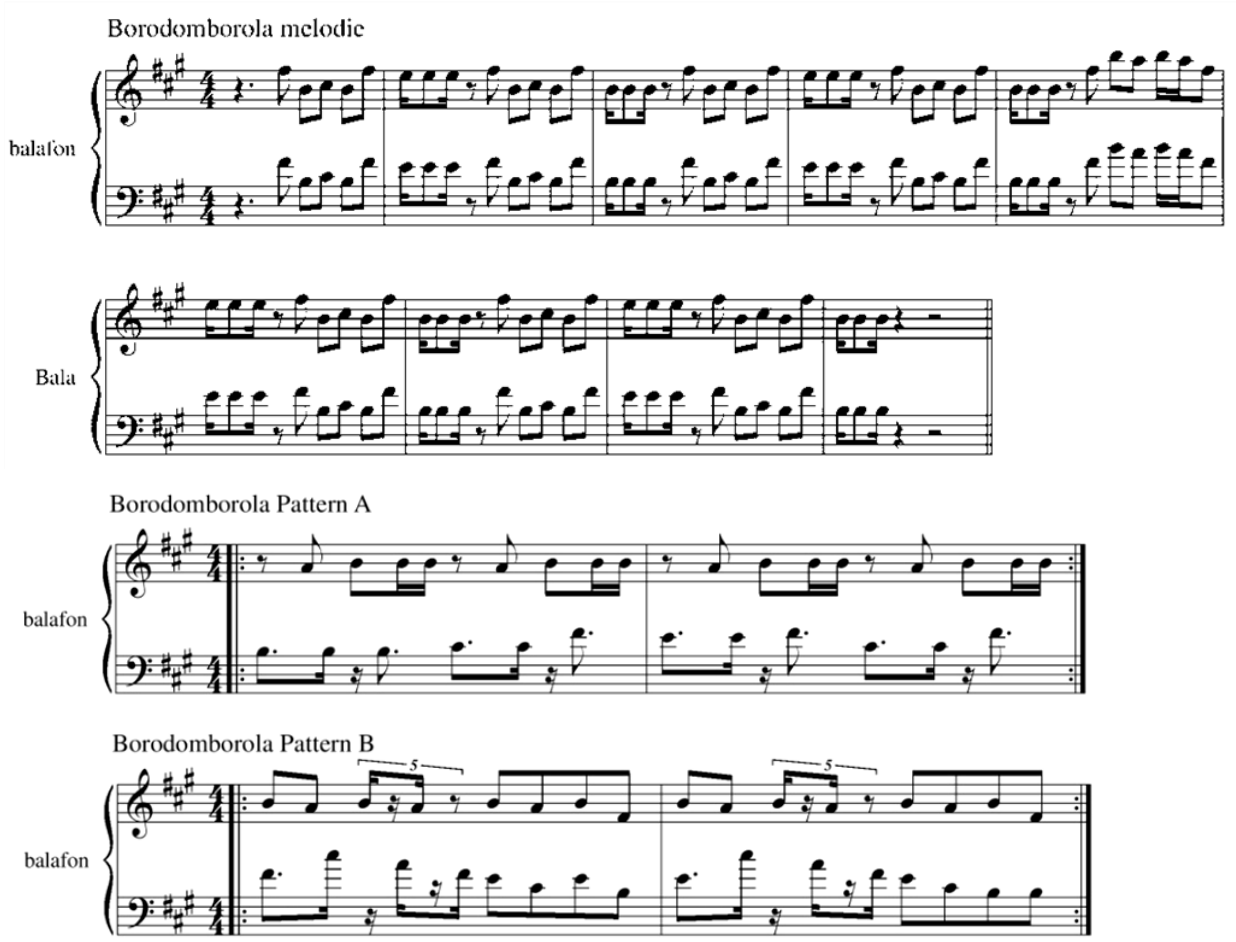


Figure 2: Western notation of *Borodomborola* (melody, pattern A and pattern B), transcribed by Kilian (2009) collected in the booklet of Dvd *The Balafon.*[10]

[10] Kilian, G. and A. Keita. 2009. *The Balafon with Aly Keita and Gert Kilian*, ed. P. Nasse. Dvd. France: Improductions, 69-71.

https://youtu.be/nftzHeiaP4U

Video 1: Song *Borodomborola* by Super Zamaza, an ensemble formed by Aly, Youssouf and Kassoum Keita.[11]

https://youtu.be/GdEf5g73EYE

Video 2: Mandela was teaching us song *Awa Ba.* Recorded by Adilia Yip.

1.2 The instrument and playing technique

The diverse types of balafon (or called *balafo*, *balafoon* or balaphone)[12] in West Africa can be compared to the vast number of villages, languages and ethnicities existing in each country. In other regions, the balafon can be also called *bala*,[13] *baan*[14] and *gyil*[15] in West Africa. Each construction and tuning system is endorsed by a specific group of musicians and builders,

[11] *Ibid.*

[12] Balafon is a name generally applied to all West African keyboards. (Kilian, 2009, Egger and Héma, 2006) In Bobo/Bamana language *balafon* is a compound of two words: *balan* is the name of the instrument and *fô* is the verb *to play*; therefore, balafon performers are also called *balafola*.

[13] *Bala* refers to the heptatonic instrument used by the Maninka and Susu peoples in Guinea and Mali. (Charry, 2000)

[14] *Baan* is a pentatonic, twenty-three keys percussion keyboard of the Sambla people of Burkina Faso. (Strand, 2009)

[15] *Gyil* is a pentatonic, fourteen-slat percussion keyboard, the traditional instrument of the Dagara people of northern Ghana and Burkina Faso, and of the Lobi of Ghana, southern Burkina Faso, and Ivory Coast.

who belongs to the same region and ethnicity and comes from one griot family and village.[16] The Keita family endorses a single-row pentatonic balafon, the main musical instrument they use in rituals and daily activities, which is built by my teacher Youssouf Keita, the owner and builder of the Keita brand. The instrument usually consists of 20 slats made of rosewood. The wooden slats of the bass notes are bigger in size (i.e. the lowest note of a Keita balafon is pitch F#2, 61 cm in length) and gradually reduced to half in the higher register (i.e., the highest note, pitch E6, 32 cm in length). Underneath the keyboard are the resonators made of natural calabashes. Each calabash is chosen carefully to match with the sizes and tuning of the wooden slats. The builders know how to shave off, or how to add to the calabashes in order to tune them to their respective slats. Calabash is a plant of the *cucurbitaceae* family, like pumpkin and melon, which has a shell that becomes as hard as wood after it is emptied and dried out. The special buzzing effect is produced by membranes that cover the small holes on the calabashes. The builder cuts out one to three small holes of 1 cm in diameter on the shells, then later, cover them with a thin membrane like snake skin or bat wing, or even the cigarette paper.

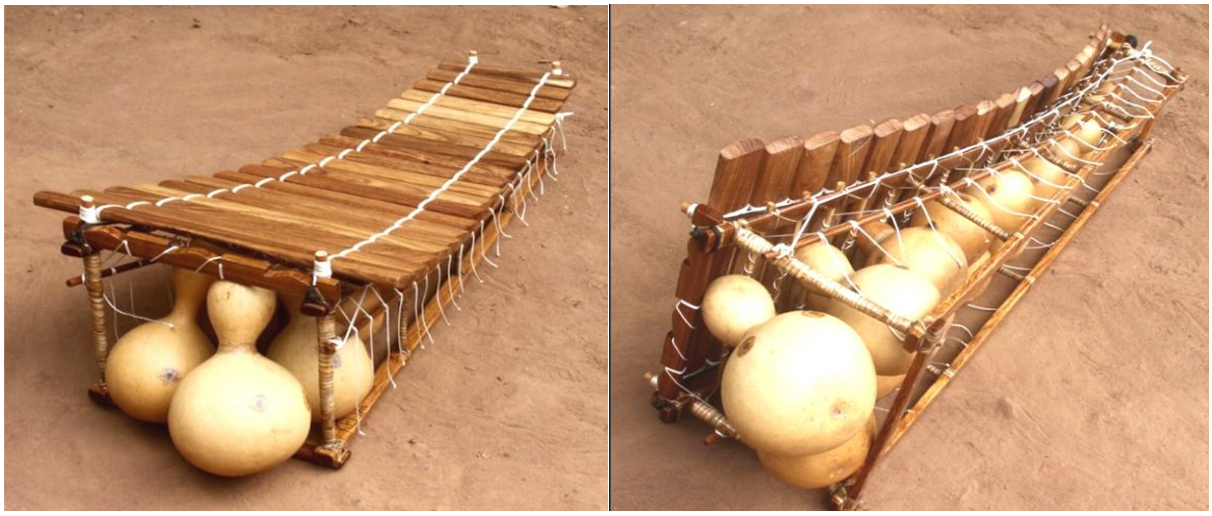


Figure 3: Photos of a balafon manufactured by Youssouf Keita. Photo credit: Youssouf Keita.

[16] Kilian and Keita, *The Balafon with Aly Keita and Gert Kilian, 47-8*. Charry, *Mande Music*, 13. Julie Strand (2009) has listed the gourd-resonated xylophones found in Burkina Faso according to the ethnic groups. Strand, *The Sambla Xylophone: Tradition and Identity in Burkina Faso,* 256.

Sound is produced by striking the wooden slats with rubber tipped mallets, which have a round head that is densely wrapped by latex, mounted on a thick wooden stick with a diameter of three centimetres. The latex band produces a cushioned impact, so that it gives a rounder sound and a supple contact on the wooden slats. The two sticks are not necessarily balanced in weight and size. The left hand takes a slightly softer and bigger mallet which is heavier in weight than the mallet of the right hand. The relatively softer mallet gives better results for lower notes, while the harder mallet creates clearer tones and is more suitable for the high registers.

In most cases, balafon musicians hold one mallet per hand. There are two ways to hold the mallets: we[17] call it the "match grip" when the mallets are controlled by the thumb and the forefinger, and the "traditional grip" if we hold the mallets between the forefinger and middle finger. Both ways are acceptable to all balafon musicians.[18] (Figure 4) Sometimes the teachers would hold two mallets in one hand, using four mallets in total. These extra two layers are always one to two wooden slats in parallel to the original melodies. For instance, the outer mallet of the right hand plays the original melody of the pattern while the inner mallet plays the extra layer; and similarly, the inner mallet of the left hand plays the melody while the outer mallet plays the extra layer. The teachers did not specify the function and meaning of the extra melodic lines, but they only claimed that these lines are needed for adding sound volume to the performance. The extra mallets are neither used for enriching the harmonic progression nor the polyrhythmic structure of the original two-mallet design, as in the four-mallet grip of the Western marimba.

[17] The teachers didn't specify how to call these ways of holding the mallets. These names "matched grip" and "traditional grip" are given by Gert Kilian.

[18] Kilian and Keita, *The Balafon with Aly Keita and Gert Kilian*, 53, 56.

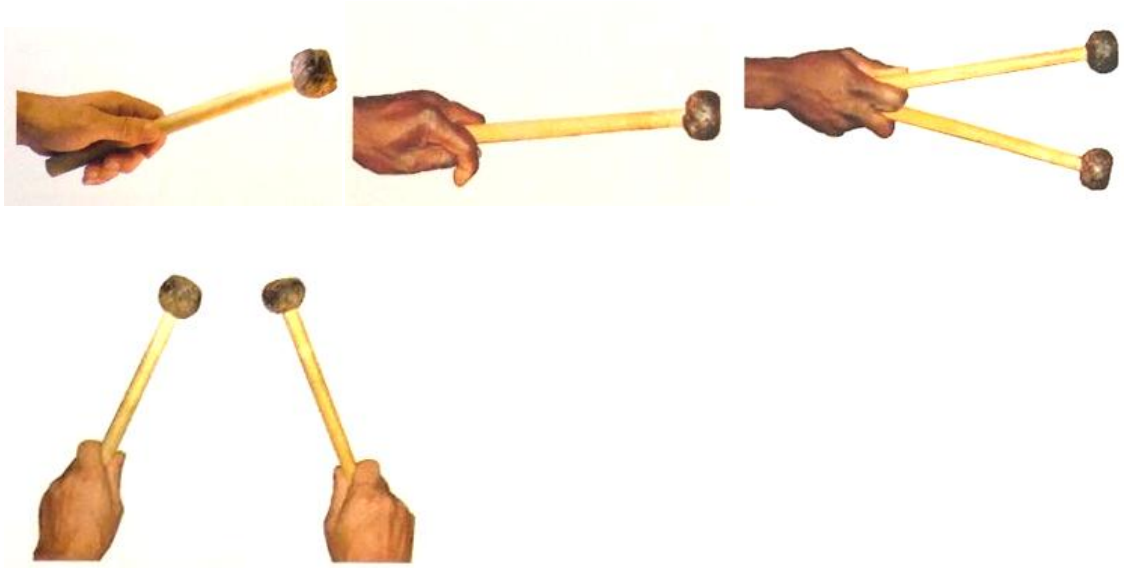


Figure 4: The two photos on the left show the match grip, the middle photo shows the traditional grip and the right photo shows how to hold two mallets in one hand. Photo credit: Gert Kilian and Marc Salama. Kilian, *The Balafon with Aly Keita and Gert Kilian*, 53.

Furthermore, the use of a Western well-tempered pentatonic scale in the balafon tuning is not common among the African idiophone traditions. In the studies of Boone[19] (1936) and Africanists, the idiophone keyboards are tuned in various five-note, seven-note, diatonic or equidistance scales, in which different geographical areas have their own specific tuning schemes. Youssouf would use an electronic tuner to check the frequencies of each wooden slat, and the Keita family opt for the Western tuning approach to promote their music and instruments to the Western world, rather than keeping the original tuning scheme that would give a totally different listening experience.[20] Besides, the tuning and the amount of keys can be tailor-made upon request. Youssouf designed a new instrument for Aly Keita to play with jazz bands in Europe. They call it the "marim-balafon" or "bala-rimba", a double-row balafon that is tuned in chromatic scale like a piano keyboard. He has also made C# pentatonic scale balafons for Dutch balafonist Paul Nas. All these acts indicate the Keita musicians are willing to adapt some Western practices in their own for the purpose of building contacts with the outside world.

[19] Boone, O. 1936. *Les Xylophones du Congo Belge*. Tevuren: Annales du Musée du Congo Belge.

[20] I have tried to ask about the original tuning system, but Youssouf carried away and said the tuning is not important to learn.

Figure 5: Photo of a “marim-balafon” or “bala-rimba”, a double-row chromatic balafon manufactured by Youssouf Keita. Photo credit: Youssouf Keita.

1.3 The experience of learning the balafon practice

In this part I will describe four problematic situations of learning the balafon with the African teachers: a) the confrontation in rhythmic concepts, b) clashes in other musical concepts, c) learning without symbolic representations, and d) the integrated polyrhythmic lines. These situations have alerted me that my original Western practice is not the only approach to understand music. They are the preludes to the deeper reflections and explanations of my balafon experience in the forthcoming chapters. These experiences have enlightened my music thinking in the perspectives of music embodiment, pragmatism and integration.

Most confusions of learning the music were caused by the difficulties in communication with Youssouf and Kassoum. On the one hand, the teachers’ explanations were always ambiguous to us. The teachers did not use verbal language to conceptualize what they do, but the Western participants were used to rely on systems, language and notation as the media of transmitting and preserving music. On the other hand, it was also difficult for the participants to “learn by ear”—listening and imitation as the sole methods of music transmission. We lacked the flexibility of adapting our Western mindset and skills to the oral tradition of the balafonists.

Hence, the challenges of learning balafon were brought by oral tradition, a text-less communication method that operates mainly through listening and imitating the sound as well as observing body movement patterns. Language, naming system and analysis are not involved in teaching and communicating music, while musical knowledge is taught via the physical actions of creating sound.[21] From my learning experience, I comprehend the balafon music through practicing the music, as if there is a language of bodily gestures. Such type of oral transmission is specific to the balafon culture of Youssouf and Kassoum Keita in their region, but in some oral traditions, for example, the Sambla *baan* in the southwest region of Burkina Faso, musicians give names to the wooden slats of the instrument.[22] (Strand, 2009) And the oral tradition in North Indian *raga*, pitch and rhythm are embodied in a tonal language and are transmitted through vocal demonstration and repetition.[23] (Clayton and Leante, 2013) The following four sections records what happened when the participants failed to meet the conditions of the balafon oral tradition:

a) The confrontation in rhythmic concepts

During the workshops, participants always felt frustrated to understand the African rhythm. At one moment, Gert Kilian remarked in despair: "Do they (Africans) really *have rhythm*? They just don't know what rhythm is." In Western vocabulary, we would not hesitate to use the word *rhythm* to describe the time events in African music; however, the word is so far lacking in the African lexicon.[24]

[21] Foley, J. M. 2013. Oral tradition. In *Encyclopedia Britannica*. https://www.britannica.com/topic/oral-tradition.

[22] Strand, *The Sambla Xylophone: Tradition and Identity in Burkina Faso,* 164-173.

[23] Clayton, M., and L. Leante. 2013. Embodiment in music performance. In *Experience and Meaning in Music Performance,* eds. M. Clayton, B. Dueck and L. Leante. New York: Oxford University Press, 198-206.

[24] Further, according to Agawu, Jones in his seminal work "Studies in African Music" (1959) has written extensively on African rhythm in Ewe music, but hardly any single term in the Ewe language is found coherent to rhythm in English. Agawu, V. K. 2003. *Representing African music: Postcolonial Notes, Queries, Positions*. New York: Routledge, 62-3, 151-71. Charry in *Mande Music* claims that he has not come across an extensive vocabulary related to rhythm. He vaguely defines rhythmic events of the Mande balafon music as "the flow of events over time" to clarify the absence of an exact vocabulary of rhythm in the verbal language of the Mande People.The Mande people is a large family of the ethnic group of West Africa who speaks the Mandé languages of the region. Mandé groups include the Soninke, Bambara (Bamana), and Dyula. Charry, *Mande Music*, xvii, 325.

We also had problems to identify the first beat of the music, counting of beats and the rhythmic weight. In the lessons, Youssouf did not explain verbally where exactly the first beat of the patterns is, or count the rhythm for us to understand the groove, but asked us to listen and imitate him. Since the first day of the workshop, Kilian asked the musicians to count the beats before their demonstrations. Kassoum was reluctant to the request, while Youssouf only indicated the pulse without counting.

As such, hand coordination has become a parameter to comprehend the polyrhythm. This is, perhaps, the only original method that Youssouf uses to define and explain the time lapse between each note of a pattern. The balafon polyrhythm is a superimposition of the left and the right hand rhythmic layers, using one mallet in each hand. The left hand rhythm becomes the reference to the right hand's, and vice versa. The coordination and integration between the two hands is the way to conceptualize rhythm; in other words, the rhythmic relationship becomes vague if only a single line melody is played. The following video 3 and 4 of song *Commis* show the confusion of understanding the polyrhythm when it is played alone. In chapter 3 *The praxis of African rhythm,* I will continue to discuss how to understand and conceptualize the balafon polyrhythm.

https://youtu.be/wg76rUvGed4
Video 3: The pattern C of song *Commis* without accompaniment. Recorded by Adilia Yip.

https://youtu.be/Y6KaB_PuQ8E

Video 4: The pattern C of song *Commis,* accompanied by Gert Kilian on pattern A. Recorded by Adilia Yip.

b) Other clashes in musical concepts

Apart from rhythm, the communication of musical details is only viable through physical actions instead of words. Youssouf tried to explain a double note fragment called *flam*[25] (figure 6) in song *Commis* pattern A, i.e., the left hand note is played a little earlier than the right hand note. (Video 5) This is obviously an ornament but not a strict rhythmic pattern; but since such fragment is rare in the balafon repertoire, Kilian[26] suggested the *ghost* note of the left hand is equal to a semi-quaver—the smallest time value—in his transcription (figure 7). Youssouf only asked us to play the two notes "nearly together", listen well and imitate how he played. We can also consider this as an example of the flexibility and freedom in interpretation given to the balafonist. I think we would have a different transcription, if Youssouf insisted this is a ghost note and Kilian did not assume the Western concept is correct.

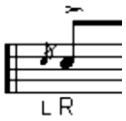


Figure 6: The Western notation of flam.

[25] *Flam* in Western classical percussion is a drumming rudiment that has an ornamental ghost note and a main note.

[26] Kilian has over twenty five years of playing balafon music and has been learning the Keita's repertoire for at least five year's time.

https://youtu.be/GEt0udMcIus

Video 5: Song *Commis* pattern A. Recorded by Adilia Yip.

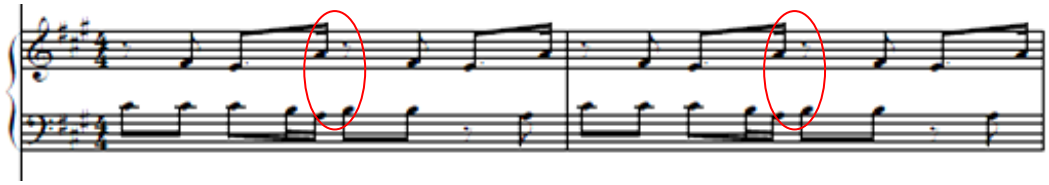


Figure 7: The transcription of *Commis* pattern A by Gert Kilian. The circle marks the *flam* fragment which is played in unison in this transcription.

The Bobo and Bamana musicians would sing the pitch and strike on the wooden slat to show us which note to play,[27] rather than using names, symbols or letters to identify the identical looking wooden slats.[28] They would show it on their balafon or play right next to the student on the same balafon, so the student can observe the movement trajectories from the same side of the instrument. Youssouf would say, “Look! This is the correct way! [Playing on the balafon] This hand plays here [emphasized hitting motion and sound] and then, now

[27] A similar phenomenon has been described in studies of popular music. Lilliestam (1996) has used the phrase “playing by ear” in his article to describe the oral transmission practice in popular music. By interviewing musicians of the popular genre, i.e. jazz and pop, he described how they communicate rhythmic and melodic concepts, the timing synchronization and their methods to learn and remember music without the aid of notation and written forms. Lilliestam, L. 1996. On playing by ear. *Popular Music* 15 (2): 195-216. In another study, Johansson (2004) investigated the strategies used by rock musicians to identify unfamiliar guitar chord progressions. He suggested that ear playing is learned by doing it; a musician has to understand the music styles thoroughly, or embodied, so that he or she feels the chord progressions and formulas on an instrument and knows in what styles they are used, and the contexts in these styles. Johansson, K. G. 2004. What chord was that? A study of strategies among ear players in rock music. *Research Studies in Music Education* 23 (1): 94-101.

[28] Though, naming or appointing family roles to wooden slats is seen in Sambla *baan*. Strand, *The Sambla Xylophone: Tradition and Identity in Burkina Faso,* 164-73.

comes this note." The teachers also described the physical distance on the keyboard. They said the number of wooden slats that the hand has to space out for the next note. When the consecutive *do* to *re* should be played, they would say "the next key on the right", but for *do* to *sol*, which is spaced out by three keys, they would ask you to jump over two wooden slats or show you on the balafon. These instructions are metaphorically compared to moving chess pieces tactically on a game board.

Youssouf also teaches his son in such practice.[29] The father and son did a sing-along in video 6: Youssouf showed his son the music patterns on one instrument and the young boy followed the movement trajectories of the mallets. Just after a short while of copying diligently, the boy could practice the music on his own. We only hear the singing and the balafon sound in the whole process without verbal explanations.

http://youtu.be/qAUw7ISZ6sw
Video 6: Youssouf teaches his son balafon. Recorded by Youssouf Keita.

[29] It is not surprising to ethnomusicologists that during the teaching process of African instruments, patterns of movement are imparted *physically* by the teacher to the student. According to Kubik (1979), a xylophonist in southern Cameroon teaches by holding his student's hands and giving direct impulses to them until the student has absorbed the movement pattern and stroke at the correct instant. Kubik, *Pattern Perception and Recognition in African Music*, 227. Koetting (1970) also wrote about his experience with a Ghanaian who was asked to teach drum-playing to a group of university students, which the students learnt and even performed the music largely based on the physical movements required to produce the music. Koetting, J. 1970. Analysis and notation of West African drum ensemble music. *Selected Reports in Ethnomusicology* 1 (3): 119.

As such, copying the bimanual coordination is the core of the practice. From the lessons of Youssouf and Kassoum, the embodied movement becomes a vehicle of communicating the musical materials. Next to listening, I consider movement trajectories as the visual representation of rhythm and melody. In this research, the video camera is set in two ways to reveal the coordination patterns in two perspectives: in video 7, the camera is set above the balafon which shows the horizontal movement on the balafon; and in other videos such as video 3, 4 and 6, the camera is set in front of the balafon to give a better view of the vertical movement of the arms. While the vertical movement trajectories visualize the waiting time in the air, the horizontal movement trajectories help us to identify the pitch materials. I will give a detailed analysis of the body movement patterns in chapter 4 *The idiom of body movement in performance* and chapter 5 *The movement idiom in balafon music: an analysis using movement representation graphs (MRG)*.

http://youtu.be/lt3HQu1LP6A
Video 7: The top view of the balafon, song *Kebini* performed by Youssouf Keita. Recorded by Adilia Yip.

c) Learning without symbolic representations

The workshop participants use different methods to notate the songs. Kilian sticks *solfège* name tags on the balafon and transcribed the music in Western notation. Nas uses symbols to represent the five pitches and marks the symbols on a grid square graph to notate timing (figure 8).[30] I did not need to read symbolic notation since I got used to the oral learning

[30] Nas, Paul, transcription of song *Nambara Mogo.* The notation is a close reminiscent of the Time Unit

approach, and I would refer to the videos when my memory faded. The transcriptions appeared in this research are only used for analytical purposes but not for learning the music.

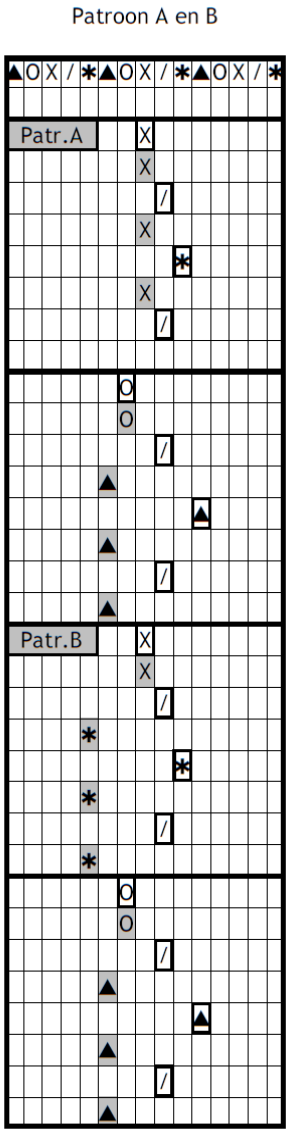


Figure 8: An excerpt of Paul Nas's notation of song *Nambara Mogo.*

If notation would be preferred over oral transmission in the balafon practice, will the perception of learning and understanding the music change totally? The difference between notation and oral transmission lies in whether we perceive the music materials from symbolic

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Box System (TUBS) developed by Philip Harlan in 1962. This system is widely used by ethnomusicologists, for example, Koetting (1970) in his analysis of West African drum ensemble music. Koetting, *Analysis and Notation of West African Drum Ensemble Music*, 115-46. The notation system used in *Die Stimme des Balafon* is another inspiration to Nas's notation. Egger, A. and M. Hema. 2006. *Die Stimme des Balafon*. Hamburg: Schell Music.

representation or from the music itself. We do listen by ears in both cases, but when we read notation, music is translated from notational signs—staff, notes and symbols—and sound is perceived in form of visual image. Notation becomes a finite, visible product of sound, rather than the sound itself and the physical ways of creating sound, i.e. sound-producing movement.

The balafon oral tradition mediates the *knowledge-how* of playing the music. Music is perceived via sound and the embodied movement patterns. There is no other means of encoding sound. The intensity of the arm movements—the height, speed and force of striking on the instrument—conveys the physicality of producing the groove, timbre and dynamics of the music. I learn how to play the music by observing the actions of the balafonists, while listening to its sound—the most important information of the learning process—reveals to me the goal of my actions. Of course, oral tradition requires us to have proficient aural skill, observation skill and imitation skill. Inattentiveness and poor listening skills surely result in poor performance. However, notation provides us the reciprocal concept in dynamics, articulation, interpretation, melodic contour and time relationship, which is a representation of *what* to execute, but only vaguely on *how* to execute. Such ambiguity in notation often leads to diverse musical interpretations of a single musical passage, because the *knowledge-how* is tacit. And therefore, I may specify my teachers' balafon oral tradition as "audio-visual tradition".

Nonetheless, Western musicians tend to neglect the importance of oral tradition—the skills of listening and imitation—as notation is the sole method of music communication. Notation is merely a tool to *define* and *record* the musical qualities, such as *forte f*, *fortissimo ff* and accentuation marks for different dynamic levels, but does not revealing to us the actions and approach of creating the right sound and musical style. The balafon experience has reminded me that listening and imitation are the crucial components of music playing, rather than the skill of decoding the notational symbols back into sound and movement patterns. In *Gestural Affordances of Musical Sound,* Rolf Inge Godøy (2010) discussed the splitting of music into a *score* part and a *performance* part due to the use of notation:

> Western musical culture has been able to create highly complex organizations of musical sound with large-scale forms and large ensembles, thanks to the development of notation […] We could claim that Western musical thinking often tends to ignore the fact that any sonic event is actually included in a sound-producing gesture, a gesture that starts before, and often ends after, the sonic event of any single tone or group of tones. In other words, Western musical thought has not been well equipped for thinking the gestural-contextual inclusion of tone-events in music…[31]

As such, I am concerned in how little attention we have paid to the sound-producing movement. I argue that the Western classical music training focuses too much on the technique of reading and the analysis of musical sound. Most people have been spending effort in describing the effect of sound and the listening experience; but in this dissertation, I am concerned with discerning the bodily experience of making music. The discussion will continue in chapter 2 *"The performer's body is present": musical motion versus music-producing movement in performance.*

d) The integrated polyrhythmic lines

Lastly, the Western analytic approach seems to oppose the integrated thinking of balafon music. Based upon a holistic approach, every part of a balafon composition is intimately interconnected and explained to us by referring to the whole. For instance, the polyrhythm is always taught in an integrated manner. The teachers would break up lengthy patterns into groups of five notes (left and right hand together) to help students to digest long phrases. They would not ask us to dissect the contrapuntal structure into separate hands and practice each polyrhythmic layer independently. Different from the Western classical approach, the essential first step of learning a piano polyphony, for example, "Fugue in G Major" BWV 860 (1722) by J.S. Bach (figure 9), is to analyze the polyphonic structure. A pianist would identify the recurrences of the original theme, then, practise constructively each layer by one hand. He/she begins to practise both hands together after the single hand practise embodied its part. The discussion of integration in polyrhythm will carry on in chapter 3 *The praxis of African rhythm.*

[31] Godøy, R. I. 2010. Gestural affordances of musical sound. In *Musical Gestures: Sound, Movement and Meaning*, eds. R. I. Godøy and M. Leman. New York: Routledge, 109-*10.*

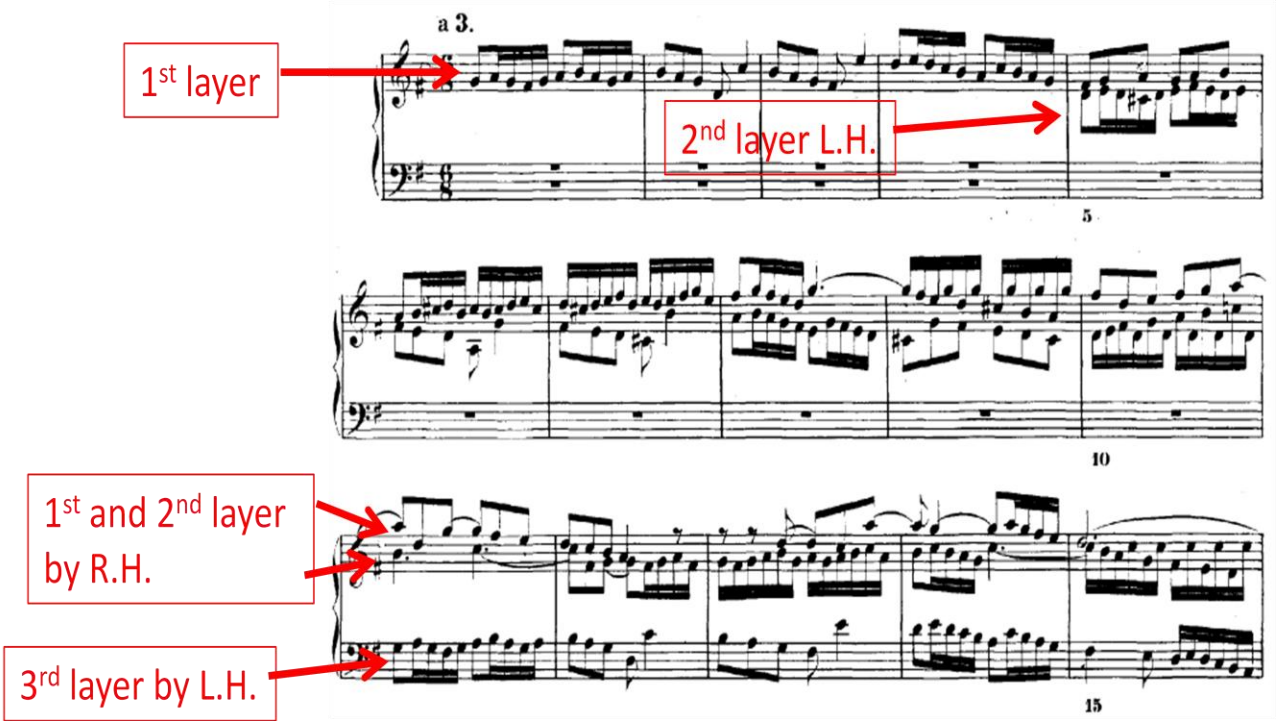

Figure 9: The beginning passage of piano work *Fugue in G Major,* BWV 860 (1722) by J.S. Bach.[32]

1.4 Reflections on my artistic practice

The balafon encounter was the turn of my life and my career as a musician. From the outside, it has brought positive influences to my artistic ability, like the aural skills of polyrhythm, the control of bimanual coordination and my skills of conceptualizing and imagining syncopated rhythms. In a deeper sense, the experience in oral tradition revealed that I have neglected the sheer beauty of allowing my body to respond to music. The obstacles of changing from the marimba to the balafon have shed light on a new inquiry into the triangular relationship between my body, the instrument and the musical contexts. Once my goal was once to improve the technical proficiency of reading complicated musical notes, but now, the meaning of music is how my body and my consciousness interact with other factors of performance.

[32] Bach, J. S. 1866. *Prelude and Fugue in G Major, BWV 860*, ed. F. Kroll. Bach-Gesellschaft Ausgabe/ Bach Society Edition. Leipzig: Breitkopf und Härtel, 54.

Somehow paradoxically, I also gained flexibility through adapting to an unfamiliar musical practice. Learning how to understand *other* as well as myself challenged my old believes, pushed me to think beyond the normative, conventional Western practices. Interesting perspectives have arisen from the confrontations between my original artistic practices and the unknown tradition. These are the crucial steps in a creative process and the same thinking method can be repeated in the future. Practising the tradition of an *other* enables us to reflect on our own tradition, furnishing our way of doing art. And yet, although Western practices dominate the mainstream Western world, we should not neglect the fact that non-Western is at the origin of many of our Western music works. The experience guided me to find ideas for new music creations that have the potential to enrich the world of Western percussion. (Chapter 6 *Artistic outcomes: Five commissioned works*)

Lastly, the balafon experience has taught me how to interpret a music tradition that is different from my own. I do not tend to over-simplify how impossible it is to get to the core of the balafon culture: to put oneself in another person's shoe[33] and to understand the balafon from the angle of the African musicians requires a life-long personal development in cultural awareness. But all is possible if we have the attitude to *listen* to what the musicians and others have to show us. Then, through our body and our mind, we will gain valuable experience. Practicing the balafon in its setting is an experience of re-learning to be a different performer as well as a better person.

[33] Stone, R. M. 1985. In search of time in African music. *Music Theory Spectrum* 7: 139-48.

CHAPTER 2

THE PERFORMER'S BODY IS PRESENT[1]

Music motion versus music-producing movement in performance

In "African Negro Music" (1928), Erich von Hornbostel offered a motion theory that shook the ground of African ethnomusicology. He claimed that African music is formulated by the motor mechanism of drumming. Musical sound is a by-product of motor reflex and therefore comes second:

> African rhythm is ultimately founded on drumming. Drumming can be replaced by hand-clapping or by the xylophone, what really matters is the act of beating; and only from this point can African rhythms be understood. Each single beating movement is again two-fold: the muscles are strained and released, the hand is lifted and dropped. Only the second phase is stressed acoustically; but the first inaudible one has the motor accent, as it were, which consists in the straining of the muscles. This implies an essential contrast between our rhythmic conception and the Africans'; *we proceed from hearing, they from motion*; we separate the two phrases by a bar line, and commence the metrical unity, the bar, with the acoustically stressed time-unit; to them, the beginning of the movement, the arsis, is at the same time the beginning of the rhythmical figure; up-beats are unknown to them.[2] [Italics by author]

The argument very likely makes a racist impression to most contemporary readers. It posits a wide and unbridgeable gulf between African and modern European music;[3] and the use of the old-fashioned word *Negro* is now seen as discriminatory. Ruth Stone (2007) suggested that the oft-quoted controversial phrase, "We proceed from hearing, they from motion," pertains to disgraceful prejudice about Africans, determined by evolutionist attitudes that took precedence in the early twentieth century.[4]

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[1] The phrase comes from performance artist Marina Abramović.

[2] von Hornbostel, E. M. 1928. African Negro music. *Africa: Journal of the International African institute* 1 (1): 52-3.

[3] Waterman, C. A. 1991. Uneven development of Africanist ethnomusicology: Three issues and a critique. In *Comparative Musicology and Anthropology of Music: Essays on the History of Ethnomusicology,* eds. B. Nettl and P. V. Bohlman. London: University of Chicago Press, 170-3.

[4] According to Ruth Stone, Hornbostel was working in an intellectual climate of cultural evolutionism, that the Africans were held to be less culturally evolved than Western Europeans, and body movement was conceived as more instinctive and less rational at that time. Stone, R. M. 2007. Shaping time and rhythm in

Despite of the outdated style of writing, Hornbostel's controversial statement provokes reflections upon my understanding of the African music practice. Before my experience of learning the balafon, I tended to consider music as "mind-activity" and motion does not impart a functional role in the creative process, but merely the actions of making the musical instrument vibrate. I was not concerned with such comparison of motion and sound, because somehow in my idea of performing music, body movement is operated by an *auto-pilot*. I did not think about my movement before I moved, and not necessarily thinking what I was physically doing. My original concept of sound and motion is close to what Kofi Agawu (2003) described: "Motional patterns do not take precedence over the resultant sound; rather performers work with relative notions of sound […] The motional system of European music is equally evident wherever individuals make music. Turn off the sound on your TV while an orchestra is playing and observe the movement of string bows. The uniformity should assure you that European music could be said to constitute a motional system, no different from African music."[5]

I speculate that the Cartesian tradition is one crucial reason why the notion of bodily involvement in music has seldom attracted the attention of Western classical musicians. The Western ideals of creation, conception and abstraction in classical music embrace the Cartesian logic of metaphysical asymmetry between mind and body. The mind is conceived as superior over the body.[6] While the mind is thought to be the locus of conceptual ideas and thinking of the musical sound, the body is only regarded as the irrational, intrinsic auxiliary product of musical sound. For instance, theoretical analyzes, such as the Schenkerians and set theory,[7] are included in most classical music education to provide students the cognitive

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African music: Continuing concerns and emergent issues in motion and motor action. *Trans—Revista Transcultural De Música* (11).

[5] Agawu, K. 2003. *Representing African Music: Postcolonial Notes, Queries, Positions*. New York: Routledge, 105-7.

[6] However, Cartesian theory has prompted discussions and arguments in the following centuries. According to Joe Cruz (2014), the first opponent is princess Elizabeth of Bohemia, who questioned Descartes's theory about the causal interaction between the mind and the body. Cruz, J. Why there is no mind/body problem. In *TEDx Talks Williams College*. Massachusetts, 2014. https://www.youtube.com/watch?v=luJqHjqOBsM.

interpretation of music. Motion is mainly discussed by performers in method books for learning and teaching how to play the instrument.[8] Music theory certainly affects the practice of composers as well as that of performers, but seldom would a theorist tackle the meaning of music from the performative approach.[9] They describe the tonal movement—from unsolved to resolved—but detach themselves from the phenomenal experience of listening to and performing music. On the contrary, Nicolas Cook (2001) suggests to theorists to articulate the perspective of *musicking*, to "study music as performance". Music should be understood as both process and product, and it is the relationship between the two that gives us *performance*. Hornbostel's movement theory, therefore, gives us insights on analyzing African music from its music-producing movement rather than from its tonal movement, and helps us to see how bodily motion may play an important role in African music. Motion is not a mere submissive perspective, subservient to the sonic aspect suggested by the formalistic musical scores.

Furthermore, I will borrow the theory of musical idiosyncrasy by Kathleen Marie Higgins (1997) to speculate about the possible reasons behind our privileging of the sonic over the motion aspect. On the one hand, idiosyncrasy is a mode of behaviour or a way of thought that is peculiar to an individual. By comparing the listening experience of people who have different characters and backgrounds, she concludes that each individual listener gives his/her own personal meanings and values to what is heard: "Differences certainly abound, among listeners with similar backgrounds as well as between listeners from different musical cultures."[10] On the other hand, Higgins also argued that music in the Western classical world is often seen as a class of objects and physical processes that can be examined through the lens of reductionism, positivism and other scientific methods. Western classical music therefore

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[7] Straus, J. N. 2005. *Introduction to Post-Tonal Theory*. 3rd ed. New Jersey: Pearson Prentice Hall.

[8] Albert, L. 2016. *Movin' Grips: Body Controlled Marimba Sound Production—Acoustic, Judgmental and Artistic Evaluation of the Albert Method of Movement in Marimba Education.* PhD., University of Antwerp.

[9] There are different types of research on musician's movement. Schneider, A. 2009. Music and gestures: A historical introduction and survey of earlier research. In *Musical Gestures: Sound, Movement, and Meaning*, eds. R. I. Godøy and M. Leman. New York: Taylor & Francis, 69-100.

[10] Higgins, K. M. 1997. Musical idiosyncrasy and perspectival listening. In *Music and Meaning*, ed. J. Robinson. Ithaca, New York: Cornell University Press, 102.

celebrates *objectification*, an ideal of analysis that music is regarded as materials, structures and formalistic scores.[11]

Consequently, the aesthetic appreciation in Western classical music attends to the listening experience of the *musical movement* of pitches and rhythm, the "tonally moving forms": the development of sound over time from the beginning to the end of the work. Such *musical movement* is generally confined to two categories: the *tonal motion* and the *rhythmic motion*. In brief, motion occurs when an unstable harmony resolves to stable harmony, for instance, the typical progression of dominant seventh chord to tonic chord gives a sense of moving from tension to calmness. Such change of mood ultimately provides the forward motion, in which tension means energy that is unresolved. Tension in rhythmical motion results from various forms of temporal *conflict*, such as: syncopation, complex polyrhythm, *out of phase* rhythmic groupings (*in phase* means the sense of resolved) and the metrically weak cadential endings.[12] As such, music thinking is grounded in the scientifically based, objective musical laws of harmonic and rhythmic progressions. Musicians are like playing a game of organizing and placing musical objects—pitch and rhythm—to create a variety of musical motions. While Igor Stravinsky wielded the barbaric rhythms and dissonances to excite the audience in "Rite of Spring" (1913), Arnold Schoenberg meticulously calculated the mathematical connections between every pitch in "Pierrot Lunaire" (1921) which give controversial, extreme acoustic effects that challenge the Romantic listeners.

However, *music objectification* does not apply in some non-Western traditions and non-classical genres, for their music-making are causally correlated to functionality. According to Feld's field study in 1990, music is used by the Kaluli tribe of Papua New Guinea to map locations within the rainforest and to reinforce connections to ancestors. The central aesthetic goal in Kaluli music is *lift-up-over-sounding*, a textural ideal of overlapping non-synchronous

[11] *Ibid.*, 85. By referring to Raffman (1988), Higgins points out that the predominance of the score is the basis of philosophical analysis in Western music; and besides, the *perceptual ineffability* of a listener is based on the abstraction of objective structural descriptions and categorizations defined by music scholars.

[12] *Ibid*., 57, 64.

musical layers and an interaction of various timbered voices. The Kaluli do not practice the same ideas of temporal and participatory features of music as do the Western music aesthetics, but they experience music in the context of the functionality of the music and performance.[13] *Music objectification* is also disclaimed by some Western contemporary composers. In order to break away from the conventional classical musical laws, contemporary composers would search for a new listening experience for their audience by re-balancing motion and sound. In *Light Music* (2004), composer Thierry de Mey asks the performer to perform movement, while the sound is played by the tape.[14] Therefore, based upon the musical idiosyncrasy of the music creator, motion and sound impart different roles in the music making.

To this point, Hornbostel's theory is not controversial at all; he has invited us to speculate about the crucial role of motion as the *source* of creating the sound we hear. Our pre-understanding in the Western classical music seems to carry us away from acknowledging motion as the action of sound production, and that the performer's body is *present* in the music making. Motion conveys *body movement* as well. Without an instrumentalist to pluck a string, to blow into the mouthpiece, to strike a key or a singer to sing, music won't happen. For instance, Shove and Repp (1995) stressed the importance of thinking in *body movement*:

> "Why have so many theorists failed to acknowledge that musical movement is, among other things, *human* movement? [...] In many cultures this close connection of music and body movement is so obvious as hardly to deserve comment. In Europe, however, the remarkable development of musical notation and of complex compositional techniques over the last few centuries has encouraged a focus on the structural rather than the kinematic properties of music, at least of so-called serious music."[15]

Body movement is neither a mere physical mechanism nor interface to sound production; it is the *source* of sound and imparts a functional role in the creativity of formulating, making and performing music. Empirical studies on human movement arise since

[13] The example is quoted from Higgins. *Ibid.*, 91.

[14] De Mey, T., J. Geoffroy and C. Lebreton. 2004. *Light Music*. https://vimeo.com/24453131.

[15] Shove, P. and H. R. Bruno 1995. Musical motion and performance: Theoretical and empirical perspectives. In *The Practice of Performance: Studies in Musical Interpretation*, ed. J. Rink. Cambridge: Cambridge University Press, 58, 64.

the turn of the twentieth century, and in recent decades, a number of contemporary researchers focused on the performer's sound-producing movement and gestures of musical expressiveness in performance.[16] Hornbostel's theory has inspired Africanists to research deliberately into the musical meaning of *body movement* in African music. John Blacking (1955) investigated into the motor concepts of the African rhythm. He observes the drummer lifts up his or her arms to prepare for the striking action on the drums. The arms are in tension on the preparatory beat but relaxation on the downbeat. Blacking (1955) also analyzed the connection between music and dance, and concluded that the preparatory beat in African dance is equal to the first beat of a Western dance.[17] Gerard Kubik (1979) discussed the stance of motion patterns in African music and devised an analytical method of using silent films to analyze music by means of movement.[18]

Nevertheless, Hornbostel's statement "only the second phase is stressed acoustically" has led to a philosophical inquiry into the perception in music-making: can music be a dichotomy of musical sound and motion? My experience of playing and learning balafon music with African musicians shows that the sonic aspect is neither ignored in the music-making, nor is treated as a second priority subsequent to the motor actions. Sound and motion are never two separate entities in the African's music imagination. We are sure about the physical

[16] To list some of the research in movement and gesture: the seminal book on gesture and movement "Musical Gestures: Sound, movement and meaning," (2010) defines different kinds of movement in a performance, namely sound producing, communicative, ancillary or sound facilitating, and sound accompanying. Jesenius, A. R., M. M. Wanderley, R. I. Godøy, and M. Leman. 2010. Gesture in performance. In *Musical Gestures: Sound, Movement and Meaning*, eds. R. I. Godøy and M. Leman. New York: Routledge, 12-68. Sylvie Gibet (2010) devises the sensorimotor control model of sound-producing gestures. Gilbet, S. 2010. Sensorimotor control of sound-producing gestures. In *Musical Gestures: Sound, Movement and Meaning*, eds. R. I. Godøy and M. Leman. New York: Routledge, 212-37. Sofia Dahl (2004) investigates the striking velocity and timing of playing accents on drum. Dahl, S. 2004. Playing the Accent: Comparing striking velocity and timing in an ostinato rhythm performed by four drummers. *Acta Acustica United with Acustica* 90 (4): 762-76. Sofia Dahl and Anders Friberg (2004) analyze the expressiveness of musician's body movements in performances on marimba. Dahl, S, and A. Friberg. 2007. Visual perception of expressiveness in musicians' body movements. *Music Perception* 24 (5): 433-54. Jane Davidson (2007) investigates the role of body movements both globally and locally in expressive musical performance. Davidson, J. 2007. Qualitative insights into the use of expressive body movement in piano performance. *Psychology of Music* 35 (3): 381-401.

[17] Blacking, J. 1955. Some notes on a theory of African rhythm advanced by Erich von Hornbostel. *African Music* 1 (2): 12-20.

[18] Kubik, G. 1979. Pattern perception and recognition in African music. In *The Performing Arts: Music and Dance*, eds. J. Blacking and J. Kealiinohomoku, vol. 10. The Hague: Mouton, 227.

pleasure of striking the drums, but the musicians also work seriously on the rhythmic grooves and singing melodies. Ensemble musicians would listen diligently to each other, so that music performing is obviously more than beating physically. In a street rehearsal in Bobo Dioulasso, djembe master Salia Traore, the leader of the ensemble gave instructions to his musicians and explained the musical materials and structures through demonstrating both sound and movement. He judged his musicians by hearing without referring to the synchronization of physical gestures, as in some non-Western traditions like the Japanese Taiko in which the synchronization of movement is the essence of a unison performance.[19]

https://youtu.be/1a1O7qjoA80
Video 1: Salia Traore rehearses *Boro Demborola*[20] with his ensemble. Recorded by Adilia Yip.

Based upon the above theories and my personal observations, I will in this chapter discuss motion experience from two perspectives: 1) the primordial perception of motion in listening and performing, and 2) a hypothesis on how the cultural idiosyncrasies and function attributes in African music feed to the role of motion in the music-making. I will first examine the musical experience of human beings—the primordial sensation of music—of both listener and performer, and trace the sensory transmission pathways of the listening and the movement experience. Such examination will provide the proof to the two different roles of

[19] Winther, J. 2005. The embodiment of sound and cohesion in music. *American Behavioral Scientist* 48 (11): 1410-21

[20] According to Paul Nas, this is one version of *Boro Demborola*, although it sounds totally differently from the version of Aly Keita and Gert Kilian. Keita, A., and G. Kilian. 2006. Song *Boro Demborola*. Improductions. https://www.youtube.com/watch?v=WFoYSPtUL8c.

motion, i.e., the musical movement and sound-producing movement. For instance, a listener would *focus* on musical movement, while a performer on sound-producing movement. Due to these different focal points, the two parties perceive different experiences of motion and sound in a music performance.

The second perspective will focus on how human beings perceive motion in music regarding their traditions and cultures. Through discussing my experience of learning and performing on the balafon, I will discern how functions and cultural purposes define musical movement and sound-producing movement. These two lines of investigation will help me to deduce the plausible answers to the problems identified in Hornbostel's theory: first, how shall we understand and interpret the statement "we proceed from hearing, they from motion"? And second, can musical sound and motion be justified as a dichotomy of perception? I will offer my conclusions as a closure to this chapter.

2.1 The primordial perception of motion in listening and performing

a) The global experience of music

I would first determine what the senses of listening to music are. Certainly, music is about the hearing of sound and is never detached from the auditory experience; however, the sonic dimension of music is also related to imagination, memories and recollections within a person. As such, a listener would perceive music in different forms and is not necessarily a sensory perception received from the outside world. Music doesn't have to exist in the form of sound frequencies or needn't be produced by such objects as musical instruments, radios or multi-media. Nevertheless, music can be transcribed into symbolic forms and preserved in graphical notations or five-line staff scores, and then, transformed back to its audible form when a person reads them and play it on sounding instruments be they acoustic instruments, voices, or sound electronics. Besides, one common condition of people who have synaesthesia is the association of sounds with colours, in which they can sense different colours when musical notes and/or keys are played. Music also triggers my imagination and feelings, so auditory experience comes with an image or emotion.

However, can the perception of musical sound be detached from other sensations, like Hornbostel described motion in African music? Listening to music is an experience that involves multiple faculties of sensation, a conjunction of the senses including tactile motion, time, emotion, memory, and synaesthesis; thus, sound and motion are tightly coupled in the listening experience. In "Listening and Voice: Phenomenologies of sound" (2007) Don Ihde holds that "the primordial sense of experience is global" and disputes the concept of *reduction* to experience. He also notes, "phenomenologically I do not merely hear with my *ears*, I *hear* with my whole body."[21] As a music listener, I literally cannot detach my auditory sense from other sensations: sitting inside a concert hall, I am in an environment of multiple sensorial experiences, but not being there to listen to music alone. I am informed by the movements and gestures of the performing musicians. While watching the musicians moving on stage, I observe their movement through my eyes. If I close my eyes and not watching, the musical sound would still stimulate the sense of movement. I am *moved* by the musical sound both synaesthetically and physically. On the one hand, the musical sound is a propelling force that gives me a sense of moving forward with time, and also, an invisible force that is virtually moving my body and giving different levels of pressure on my flesh. On the other hand, I would respond to rhythmic groove by doing small involuntary gestures, like nodding or by tapping my feet. Some people mimic the motion of the guitarists strumming chords, dance with the music in the style of waltz or hip-hop, or just naturally move their body following the musical flow. According to Rolf Inge Godøy (2010), musical sound stimulates the sensation of motion, and it has the great power to make us move or to create movement imagery in our minds.[22]

Furthermore, music performance is a holistic experience that the sensory departments of motion and sound function together as one unit. [23] As phenomenologist Maurice Merleau-Ponty (1945) denotes, "one does not behold as spectators the relations between the parts of our body, and the correlations between the visual and tactile body: *we* are ourselves the

[21] Ihde, D. 2007. *Listening and Voice: Phenomenologies of Sound*. 2nd ed. Albany: State University of New York Press, 42-4.

[22] Godøy, R. I. 2010. Gestural affordances of musical sound. In *Musical Gestures: Sound, Movement and Meaning*, eds. R. I. Godøy and M. Leman. New York: Routledge, 103-25.

[23] Merleau-Ponty, M. 2002. *Phenomenology of Perception*, trans. C. Smith. New York: Routledge, 3-12.

unifier of these arms and legs, the person who both sees and touches them."[24] [Italics by author] In other words, "we" is the *self* of the performer, the noetic center that unifies and processes the sensorial information perceived from the outside world, as well as directing the responsive actions through the body. "We", basically, do not possess the ability to disconnect the senses: while I am moving my arms and wrists to strike the marimba, my proprioception guides the sense of distance that the arms and legs would move accordingly in the space to reach the particular wooden keys. Such involvement of motor sensory, proprioception and tactile sensory (and also the auditory sensory of sound and visual information of the score) are intrinsic, involuntary coordination of our senses, in which "we" is not the spectator who *put* each single sensory department together to function as one machine, but "we" is the unit that carries out various distinctive functions simultaneously and unconsciously. "We" is both the performer's mind and body, situated in a field of stimulations that comes from both inside and outside the body. Music performing is "body-as-experiencing": we are related to the world of things *through* our body which serves as the faculty to perceive external senses, and acting senses that are generated by the mind that is inside the body.[25]

b) The sensory transmission pathways of the performer and the listener

Hence, as a listener is literally being *moved* by music, motion to him/her is the *musical movement*, i.e., the listening experience of the dynamic development in the music induces the sense of motion. But to a performer, motion adheres to an extra function—*the music-producing movement*—the performer's body moves to create the *musical movement*.[26] Through movement, the performer creates musical sound and expresses and communicates his musical intentions to the outside world. Thus, the possible connotation of "sound precedes motion" suggested in Hornbostel's statement does not apply in our music experience: sound should not be regarded as the logical, sensible product of the mind, while motion does not merely symbolize some involuntary, reflex actions of the body. However, performer and

[24] *Ibid.,* 150.
[25] *Ibid.*, 203.
[26] *Music-producing movement* is adapted from *sound-producing gesture* by Godøy in the context of musical gestures. *Ibid.*, 109-10.

listener have different experiences of motion and sound due to their intentions in the musical performance. I will explain the different sensory transmission pathways of the two parties by referring to the "action and perception model" (figure 1) of Marc Leman (2008):

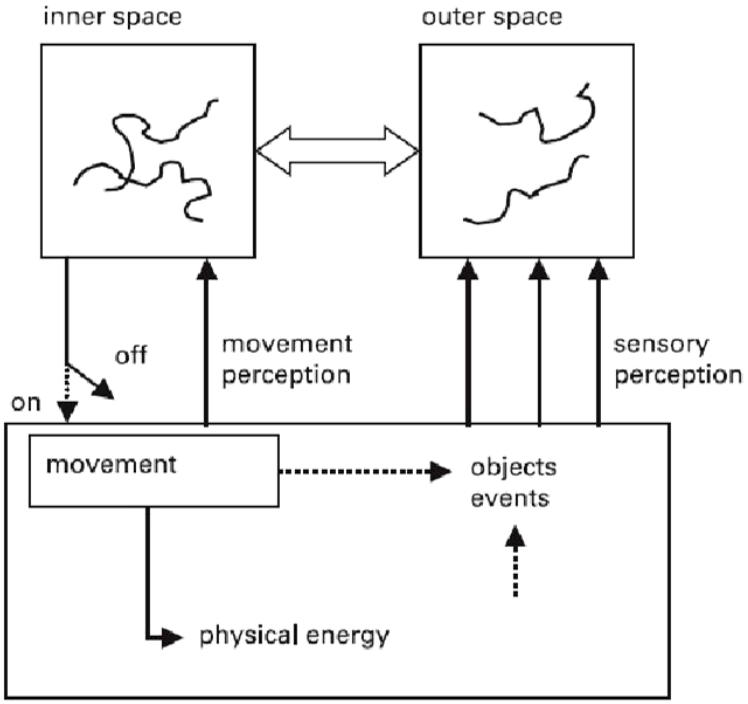

Figure 1: Action and perception model of our consciousness. Leman, M. 2008. Corporeal articulations and intentionality. In *Embodied Music Cognition and Mediation Technology.* Cambridge, MA: MIT Press, 89.

According to the model, inner space and outer space are the representational spaces of the performer's metaphysical external and internal environments of perceiving or sending out signals via the sensory receptors. The outer space represents the department that perceives information from the external environment surrounding the body, which are the receptors and effectors that define external stimuli and signals that occur to the body. The outer space is basically afferent in nature as it brings sensory information from the peripheral body to the mind centre. Conversely, the inner space is created by the apparatus of sensing movement and action to direct impulses towards the external environment. This space involves the sensory receptors of movement that both receive and execute impulses, including the muscular receptors, visual receptors and musculo-articulatory receptors. It is both a centre of the

deliberate efferent processing—conveying and conducting sensory information outwards to the peripheral body—as well as an afferent processing that the peripheral body senses and delivers impulses to the centre mind.

The sensory transmission pathway of a performing musician can be analyzed as a two-way process: first, as the performer performs *music-producing movement*, his centre mind sends out signals to the peripheral body to perform the motion. These signals are sent out from inner space, which is a reservoir that contains the knowledge of executing motion, such as, the learned sequences of movement trajectories to be performed on the instruments and the gestures of expressing emotions. Secondly, the performer receives impulses and responses of the motion performed by him/herself. While executing *music-producing movement*, a performer may predict the sonic effect of his actions. One may hum the tune before the physical actions[27] or imagine sound by reading the notation before physically making sound on the instrument.[28] (Brodsky, Kessler, Rubinstein, Ginsborg and Henik, 2008) An experienced performer may possess movement imagery, the mental rehearsal of the physical movement patterns.[29] (Broughton and Stevens, 2009) Interestingly, a listener experiences a different sensory transmission pathway. A listener's experience always begins at the outer space of the perception system. It is an afferent process that sound is perceived from the external world. Unless the listening experience originates from the listener's music imaginary generated from recollections as such, the route then begins at the inner space.

Hence, due to the different intentions of the musical experience, motion and sound are assigned to different roles upon the sensory transmission pathway. If the performer's intention is to create the musical sound, his focus will be what he has to play and how to play it. On

[27] Jazz pianist Keith Jarrett hums when he is improvising or playing on the piano. Jarrett, K. 1984. Solo concert in Tokyo. https://www.youtube.com/watch?v=KPgEoDt_Duc.

[28] Such experience is called notational audiation. Brodsky, W., Y. Kessler, B. Rubinstein, J. Ginsborg, and A. Henik. 2008. The mental representation of music notation: Notational audiation. *Journal of Experimental Psychology: Human Perception and Performance* 34 (2): 427-45.

[29] Broughton, M., and C. Stevens. 2009. *Physical Movement and Imagery in Professional and Undergraduate Student Solo Marimba Practice*. Paper presented at International Symposium on Performance Science, Auckland, NZ.

stage, a performer forges his many years of work and training, abounding his deep understanding, knowledge and thoughts. His listening experience is absolutely different from the listener. The listener possibly has no sense about the musical intentions of the performer when listening to the music performance. Then, the listening experience of the performer would never be the same as the listener. A pianist who has devoted years to mastering the instrument reports that she cannot relax when listening to piano recording. She can no longer listen without focusing on the performer's playing technique as if she herself was mentally *working* on it. A performer's listening experience is riveted towards how to execute the technique and articulation.[30]

Therefore, as the intention of the performer is to create musical sound, his/her first step of the sensory pathway is about motion, and sound is the origin as well as the goal of the movement. This is the fundamental, primordial condition of how performer creates musical sound, but has nothing to do with the musical culture and practice of the performer. Thus, this line of investigation proves that Hornbostel's statement "we proceed from hearing, they from motion" is invalid, because both hearing and motion are causally related, and the performing experience of both Western and the West African musical cultures proceed from both hearing and motion.

c) The *focus* of senses in the performing experience

Due to different intentions, although both performer and listener are experiencing music in one physical space, they *focus* on different perspectives of the music: a listener perceives the movement in sound, but a performer executes the movement of making sound. In a performance, I—the performer—focus on the sound-producing movement, while the audience is the receiver of the musical movement. I hereby quote Ihde's (2007) notion of *focus* in listening experience to validate my hypothesis:

[30] Unless the listener is a knowledgeable listener who has performed or educated intellectually about the music structure, he might be more aware to the musical intentions of the performer. Higgins reported a similar observation on listening to a piano work that she has performed before. Her attention becomes riveted and has difficulty attending to conversation. Higgins, *Musical Idiosyncrasy and Perspectival Listening,* 94.

> "I can *focus* on my listening and thus make the auditory dimension stand out. But it does so only relatively. I cannot isolate it from its situation, its embedment, its "background" of global experience. In this sense a "pure" auditory experience in phenomenology is impossible, but, as a focal dimension of global experience, a concentrated concern with listening is possible. Auditory experience can be thematized relatively, in relation to its contextual appearance within global experience."[31]

From this, I can give numerous examples to illustrate how *focus* may change our experience of senses. In a concert, the lights in the audience are dimmed but the stage spotlights are switched to the optimum, because we are supposed to put our eyes on the performing musicians to enhance the listening experience. Sight-reading is hard for many musicians because one needs to practice a good habit of multi-tasking: maintain a quick response between the eyes and the written notes while being able to hear and move simultaneously in the music. Both situations show us that when we *focus* on one sensory experience, we might perceive this stimulus stronger than the other senses. Thus, the maturity of a musician could be judged by the balance of his senses when performing. For instance, there exists a discrepancy between the motion sensory and the sense of time. A correct, steady time sense is essential to a percussionist, but the tricky part is that the time sense could be possibly disturbed by the muscle movement. If I am focusing too much on solving a difficult arm movement, for instance, jumping a distance of over two octaves, I may neglect to keep my internal time sense. The muscles do not essentially *embody* the internal time sense of my mind, it may paradoxically *deceive* the perception of time.[32] The performer's *focus* on a particular sense may skew the judgement of other perceptions. I can also give an example from our daily life: when I am reading a book, I cannot *hear* what the radio is playing because my attention is set relatively on the written text. I could not spare my mind for the musical contexts. Music

[31] Ihde, *Listening and Voice: Phenomenologies of Sound*, 44.

[32] According to scientific reports, subjective time passes slowly for people who are in depressed state, and they may use phrases such as "time seems to drag" to describe their experiences. However, people with depression are also reported to have more realistic perceptions in some cognitive tasks, labeled "depressive realism". Therefore, it is already proved that time perception is a relative notion depends on the psychological and physiological qualities of a person. Kornbrot, D. E., R. M. Msetfi and M. J. Grimwood. 2013. Time perception and depressive realism: Judgment type, psychophysical functions and bias. *Plos One* 8 (8): e71585. https://doi.org/10.1371/journal.pone.0071585.

only passes my ears and becomes the background mood set for my reading. And vice versa, my attention would be set relatively on the sound and not knowing what my eyes are scanning.

As such, Hornbostel's theory "we proceed from hearing, they from motion" fails to offer us a complete view of motion in a performance. Motion can exist in terms of the action that creates sound (sound producing movement), the tonal movement of the sound (musical movement), the imagery of movement and the vehicle of music communication (please refer to chapter 4 and 5 on movement idioms). These different disguises of motion reorient the existing knowledge of the relationship between motion and sound: a music experience can begin from motion or sound and it is dependent on one's intentions and focuses in the music performance. Our experience is directed by the *focus* of our senses, aiming at one sense among the *background* of the global experience. Therefore, Hornbostel's statement will turn into a better argument if we revise the statement "only the second phase is stressed acoustically" to "only the second focus is accoustic". The next section I will continue to explain how a performer of a different musical genre perceives motion and sound differently.

2.2 The artistic idiosyncrasy in different music cultures

In the West African music culture of my study as well as in current Western music, the musical experience of a performer may tend to *focus* on music-producing movement over musical movement based on traditions and specific conceptual needs. This dimension of cultural or artistic idiosyncrasy, therefore, provides supportive evidence to Hornbostel's empirical observations that motion outweighs sound in African music. In terms of Higgin's concept of idiosyncrasy, one's culture and personal background influence the musical experience in both performing and listening. I adapt the concept of *tradition* in Lawrence Ferrara's (1991) discussion on analytic method to describe such background influence.[33] *Tradition* informs the intention of the music practitioner, guiding the individual to formulate his own method and approach to delegate different roles to motion and sound in the creative process. For instance, Japanese Taiko drumming is a music tradition that defines motion

[33] Ferrara, L. 1991. Should the method define the tasks? In *Philosophy and the Analysis of Music: Bridges to Musical Sound, Form and Reference*. Bryn Mawr: Excelsior, 33-4.

differently compared to the Western music world. The ensemble drummers work on the unity in performance by means of the synchronization of the movement patterns while sound is a kind of side-effect. They *focus* on the unity of the bodily configurations: the striking movement on the drums and the dance-like gestures around the drums. Motion becomes the principle in both pedagogical and rehearsal processes. The master trains and evaluates the apprentice drummers in terms of motion unity, while the resultant sound is regarded as the symbol of unity of the movement patterns.[34]

In Western contemporary music and sound art, experimental musicians and artists are stimulated by philosophical and conceptual ideas in their music creativity, like the notion of music embodiment, while the musical sound is not the priority in the compositional process. They leave behind the recognized conventional musical laws—be it in the style of classical, jazz or pop music—but focus on transforming their thoughts into sound. A performance is created on the basis of improvisation or an intuitive, sensorial experience. In my commissioned work "Inner Sight Etudes" (2016)[35] by composer Cornelia Zambila, we had created a blind-folded performance to metaphorically describe the performer's explorations in an unknown musical culture. The musicians use different kinds of *score* to communicate the concepts for sound improvisation: movement score, memory score, tactile score and smell score etcetera. Through this performance, I reflect on my sensorial experience in music performance and the embodied movement of playing the balafon. Zambila considers music as the musicians' tool to reflect on concepts and thoughts through improvisatory processes, but not necessarily well structured and written-out musical compositions. Music performance is for her an experimental medium that triggers the audience's experience.

[34] Winther, *The Embodiment of Sound and Cohesion in Music*, 1410-21.

[35] *Inner Sight Etudes* is a commissioned work of this PhD project. The full cycle was premiered at the ARIA launch *Interrupting the City* in Antwerp on 4-6 March, 2016. The first three movements were premiered at the (Per)forming Art Symposium at the University of Leeds on 20 September, 2015. An article of the performance is published later in Yip, A. and C. Zambila. 2016. *(Per)forming Art : Performance as Research in Contemporary Artworks.* Conference proceedings of (Per)forming Art Symposium, ed, A. -M. Halay, University of Leeds, 69-86.

I may reaffirm that motion bears an important role in the balafon tradition. My observations of how the Keita musicians teach, learn and communicate the music have shown that learning through mimicking movement is also crucial in the Western practice.[36] I found learning the movement in the oral tradition helped me from the elementary stage of memorizing the balafon tunes, to the abstract understanding of tacit *knowledge-how* of swinging the mallets and the right *touch* with which to strike the instrument. (Refer to chapter 1, 3 and 4) The embodied music-producing movement acts as a vehicle of communicating music in oral tradition, and movement coordination becomes a representation of music.

Music producing movement is also assigned a functional purpose in the balafon practice. For the sake of accommodating the suitable singing range of particular situations, the balafon ensemble would move the key orientation of a song one position up or down to *transpose*[37] the melodies. Youssouf tried to teach us this technique in the lesson using the song *Kebini* by instructing the group to change the starting note of pitch F# to the next slat pitch A; however, the technique was not as simple to the learners as he thought it would be. Tuned in pentatonic scale, *transposition* by moving physically to the adjacent notes changes the intervals of the melody. The *transposed* music, thus, sounds totally different in the new version except for the rhythm. The balafonists told us that the songs sound the *same*, but we could only agree that the *transposed* version sounds familiar. Muscle memory is given a functional meaning in the music practice, while melody is seemingly endorsing a more flexible definition than it does in the Western practice. Our African teachers declared to hear no differences when listening to musical intervals, no matter it is a third, fourth or fifth apart. Two melodies that sound melodically non-identical to the Westerners are the same to them.[38] Perhaps certain African traditions possibly possess different aesthetic standards and musical thinking.

[36] Violinist Shinichi Suzuki advocates a holistic method in teaching music to young children. The method is inspired by the natural acquisition of the mother-tongue language, that the child is immersed in an environment of learning music via imitation and repetition. Suzuki, S. 1993. *Nurtured by Love: The Classic Approach to Talent Education*, ed. W. Suzuki, 2nd ed. Miami: Alfred Music.

[37] Transpose is the term Gert Kilian and I have used to call such technique, due to the fact that our African teachers did not provide any verbal descriptions. Valerie Naranjo commented that her teachers of gyil has called it “sequencing”.

[38] Blacking, J. 2000. *How Musical is Man?* Seattle, Washington: University of Washington Press, 6.

http://youtu.be/It3HQu1LP6A
Video 2a: The top view of the balafon, song *Kebini* performed by Youssouf Keita. Recorded by Adilia Yip.

https://www.youtube.com/watch?v=xq03Qu01C9s
Video 2b: *Transposition* of Song *Kebini.* Recorded by Adilia Yip.

As shown in these videos, Youssouf can shift the same set of movement patterns to the adjacent wooden slats. We might revise the definition of *transposition* in the music dictionary: the process or operation of moving a collection of notes (pitches or pitch classes) up or down by means of physical movement. This new concept of *transposition* was hard in the beginning for my movement is inconsistent with the sound I play; the *transposed* sound becomes unpredictable. The only way to succeed is—paradoxically speaking—to switch off my ears and not to be deceived by what I hear from the playing. I had to trust my spatio-motor ability and recall the movement patterns. Such innate ability accomplished the task and testified the potential of muscle memory in music playing. Another example of *transposition* is seen in the performance of *Dondoria* by Aly Keita.

https://youtu.be/xhQsLJ1RxWQ
Video 3a: *Dondoria* performed by Aly Keita. Kilian and Keita. 2006. Dvd *La Balafon*. Improductions.

https://youtu.be/fRBvCoI8P-o
Video 3b: Aly Keita performs Dondoria in a live concert with *transposition.* 2009. Published by Brigitte Garcie.

Lastly, I hypothesize that African musicians focus on motion as music imparts functional attributes in the people's daily activities, and the social function of integration and solidarity. In Konsankuy, balafon music is performed to accompany the field workers and various kinds of parties, and the griots perform music in rituals and ceremonies to spread moral messages. We would not compare the aesthetics of Western music to African music, as the latter is not a pure artistic object created for sole appreciation. African music is appreciated in the contexts of doing *something*. For instance, cross rhythms and rhythmic grooves emerge from the physical actions of children playing games and workers stamping letters.[39] The people create

[39] Collins, J. 1996. Children games. In *Listening to the Silence: African Cross Rhythms*. Films Media Group. http://fod.infobase.com/p_ViewPlaylist.aspx?AssignmentID=MAUNNW. Collins, J. 1996. Postal workers in Ghana. *Listening to the Silence: African Cross Rhythms*. In Films Media Group. https://youtu.be/0dw47fZLpSw. Another music composition created at the University of Ghana post office. The workers made music while cancelling the

and enjoy music while performing those actions. Also, the high performance of physical coordination is not only observed in African dancers and athletes, but also in the two-hand coordination of the musicians. (See also chapter 4) Therefore, I deduce that motion is possibly the origin of African music as it fulfills the practical needs of the people in daily situations.

Conclusion: Do we proceed from *hearing,* they from *motion*?

In a nutshell, I confirm both motion and sound are the intentions of West African performers; however, their musical movement is informed by the physical movement of playing their instruments and the functionality of the music. In Western music, the performer's focus on music-producing movement is dominated by the musical concepts of creating sound. Musical movement informs the music-producing movement of the performer.

I am only partially agreeing to the black-and-white statement of Hornbostel on motion and sound. In the beginning of the chapter I have posed two questions: how shall we understand and interpret the statement *we proceed from hearing, they from motion*? Also, can musical sound and motion be justified as a dichotomy of perception? I would first answer the latter question: motion and sound shall not be understood as dichotomy of perception. In the primordial sense, one can focus relatively on either musical sound or motion according to one's intention, but none of the senses would be vanished from the background of perception and separated from its global sensual experience. We can neither reduce motion nor sound from the experience of music. The sensory transmission pathway and Leman's action-perception model are applicable to explain every individual musical experience, regardless of culture and identity.

Then, the answer to the first question is also found in the analysis on focus and intention. From the two divergent natures of motion—the music-producing movement and the musical movement—I convey that the balafon performers proceed from the music-producing

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stamps. Locke, D. 1992. Africa/Ewe, Mande, Dagbamba, Shona, BaAka. In *Worlds of Music: An Introduction to the Music of the World's Peoples*, ed. J. T. Titon, 5th ed. New York: Schirmer Books, 86-89. https://www.youtube.com/watch?v=oXe0F5TRIhA.

movement due to culture and traditions. Taking into account the functional attributes and aesthetic concerns, motion stands out in the West African's music experience because it pertains to the origin and the functional role of the music. The source of sound is motion; motion is at the fore. The effect of sound is crucial in African music performance, but sound is informed by the physicality of the performer and the functionality in the music. In Western music, the motion of producing music is concealed. Western performers focus on the effect of sound, while the music-producing movement is embodied and engaged tacitly in the process of reaching the desired sound effect. For example, motion is not inscribed in the Western notational communication, which differs from the oral tradition, in which motion is a crucial form of transmitting music. Motion in Western music is an auxiliary to the creation of sound. The musical movement informs music-producing movement and the focus of music experience is directed towards the musical movement.

Summing up the two answers, I may conclude that *we proceed from hearing, they from motion* is not entirely wrong. It seems Hornbostel's theory has fostered an indispensable gulf between the Western and the African views on motion and sound; but once we look at it rigorously from the perspectives of primordial sense and idiosyncrasy, this early twentieth century theory gains vitality and leads us to new insights in studying motion in music. Thus, I would revise the controversial statement into *we focus on musical movement, they on music-producing movement.*

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CHAPTER 3

THE PRAXIS OF POLYRHYTHM

Praxis is the enaction, embodiment or realization of a theory, lesson, or skill; it refers to the act of engaging, applying, exercising, realizing or practicing ideas. From my experience of learning and participating in the balafon music practice, I observe that rhythm in African music grows out of action. Music is considered as a pragmatic practice that is embodied in forms of sound, performance and movement. Learning and understanding music is a custom of *doing-it*. For instance, the process of propagating knowledge involves the oral and aural tradition. Music is also linked to social function. Some basic concepts of polyrhythm can be traced ostensibly in the daily activities performed by the people of the community, for example, in the games of children, working groups, the preparation of food, street performance and religious activity. The praxis of rhythm implies the integration of independent physical actions and the integration of function and music.

In this chapter, I will discuss the praxis of balafon music in terms of musical theory, performance practice and the social cultural aspects of its tradition. These three aspects will serve as the fundamental principles of the argument “polyrhythm is praxis” and will be elaborated in two parts of this chapter: I will first focus on the musical perspectives of praxis, and part two will be the social-cultural implications of African polyrhythm.

I will describe in part one the concept of praxis observed in the musical structure of the balafon polyrhythm. Firstly, one outstanding feature of the polyrhythm is the integration of fragments that are *conflicting*, yet *similar*, co-existing and juxtaposed as one total form. Secondly, the African musicians understand, explain, or *dive* into the musical structure by means of bodily actions and coordination. Musical concepts are represented through movement patterns, opposite to the Western classical world which uses theories such as meter, pulse, harmony, symbols and pitch class. After a short ethnomusicological literature review on the topic, I will determine the characteristics of praxis by referring to my own

experience of learning balafon music with musicians of the Bobo and Bamana tribes. We will see how these observations may synchronize with some existing African rhythm theories. The experiential account will take off from the participants'—the foreign learners and I—difficulties in understanding polyrhythm during the lessons. Lastly, I will explain how the ideas of holism and integration have helped me to find the right approach of learning, and how I infer the theories of isochronous timeline and cyclical structure as the fundamental concepts to understand African rhythm.

In part two, I will look at the social cultural aspects of African rhythm to illustrate the relationships between music and functionality. As a generalization, functionality in African music is analyzed in two ways: the social functions of connecting people through inviting them to dance, to sing and to clap, or to participate the balafon ensemble; and the practical functions to reach certain purposes, such as to cheer up workers, to preach good morals and to praise God. Based upon my participant observations and field studies of Africanists' (Wachsmann, 1953, Blacking, 1955, Senghor and Halperin, 1956, Chernoff, 1991, Collins, 1996 and Adamo, 2012), I will investigate the relationships between polyrhythm and the daily actions of the local people, and trace the potential connections to the formation of African rhythm.

3.1 Understanding African polyrhythm from a pragmatic perspective

Based upon past ethnomusicological research, I will begin the discussion by summarizing the reasons behind the *choice* of rhythm as the core subject of investigation in this chapter. Next, using my participant observation as the point of departure, I will develop my arguments from the experience of learning and teaching African music from a pragmatic, holistic approach. Such practice-based experience of problem-solving provides the insights into the praxis of African polyrhythm.

3.1.1 Rhythm as an indication of the African music culture

Why do most Western ethnomusicologists focus on rhythm in the first place? Why does rhythm come to the fore in all discussions concerning the pragmatic side of African music, and not any other musical features? Whilst most Africanists focus on the differences between African and Western music aesthetics, the outstanding characteristics of West African music are probably its emphasis upon rhythm as well as upon a percussive concept of music performance.[1] Nevertheless, some scholars significantly research rhythm in order to gain insights about the music's meaning. They aim at a most thorough understanding of the music culture through investigating African rhythmic organization. John Miller Chernoff (1991) investigates African rhythm in such a way and thus sheds light on a cultural orientation that is different from what we normally find in Western music. Rhythmic characteristics reveal modes of participation and interaction that are the crucial elements of the African music aesthetic and sensibility.[2] According to Kofi Agawu (1987), the vitality of the dance music of the Anlo-Ewe is best understood and appreciated in the context of a larger scheme of rhythmic expressions which embrace just about all aspects of West African traditional life. He hypothesizes that African music is an integrated context: events that are normally described as *functional* are directly linked to those that are *artistic*. Separating the two as distinct features—functional and artistic—is ultimately irrelevant.[3] Also, J.H. Kwabena Nketia (1962) claims that it is important to analyze African drumming as a cultural activity that has a

[1] Kofi Agawu (1987) offers us a detailed review of the writings of early Western explorers and colonial administrators. The interests into rhythm can be dated back since 1819, the remarks on the exotic alienated music genre by Thomas Bowdich on Ashantee people's ceremonial music. Some general observations include irregular rhythms, cacophony of drums and music, incoherence, repetition as an organizing principle, the importance of drumming, and the constancy of music making and etc. Agawu, V. K. 1987. The rhythmic structure of West African music. *The Journal of Musicology* 5 (3): 400-3. A.M. Jones (1954) emphasizes boldly: "Rhythm is to the African what harmony is to Europeans and it is in the complex interweaving of contrasting rhythmic patterns that he finds his greatest aesthetic satisfaction." Jones, A. M. 1954. African rhythm. *Africa: Journal of the International African Institute* 24 (1): 26. Robert Kauffman (1980) was inspired by Senegalese poet and Leopold Senghor's view, that rhythm is the "driving force" in African music and dance. Kauffman, R. 1980. African rhythm: A reassessment. *Ethnomusicology* 24 (3): 393. To Richard Waterman (1948) and David Temperley (2000), despite of the diversity in their research approaches, they were attracted to rhythm for its outstanding characteristics. Waterman, R. A. 1948. "Hot" rhythm in Negro music. *Journal of the American Musicological Society* 1 (1): 24. Temperley, D. 2000. Meter and grouping in African music: A view from music theory. *Ethnomusicology* 44 (1): 65.

[2] Chernoff, J. M. 1991. The rhythmic medium in African music. *New Literary History* 22 (4): 1093.

[3] Agawu, *The Rhythmic Structure of West African Music*, 403.

meaning beyond structure. He advocates the search of meaning within African music through rhythm, and stresses the fact that the formal structure and contexts of use often interact.[4] Some theories about West African rhythm, such as "crossing the beats" or "multiple main beats" are based on analysis of the procedures of playing and listening to drums. Not only bringing order into what appears to many Westerners as *chaos*, but demonstrating an integral expression of culture and life.

As such, a thorough investigation of African rhythm provides the gateway to understand West African musical culture; yet, rhythm is a vocabulary that we have taken as granted to explain all temporal phenomena occurring in African music of different regions, but absent in many African languages. In "Mande Music", Eric Charry (2000) reports that he has not come across an extensive Mande vocabulary related to rhythm. He vaguely defines rhythmic events of the Mande balafon music as "the flow of events over time," trying to clarify the absence of an exact vocabulary of rhythm in the verbal language of the Mande People.[5] Strand (2009) did not experience dissonance in saying "rhythm", as it is justified by the practice of French-speaking Sambla musicians to use the French equivalent "rhythme", but she found no specific or technical music vocabulary in the Sambla language that parallel Western music terminology.[6] Africanists of other West African regions report similar observations. A.M. Jones (1959) has written extensively on African rhythm in Ewe music, but hardly any single term in the Ewe language corresponds to the word *rhythm* in English.[7] Charles Keil (1949) claims that the word rhythm "really has no single equivalent in [the music culture of] Tiv".[8]

[4] Kwabena Nketia, J. H. 1962. The problem of meaning in African music. *Ethnomusicology* 6 (1): 3.

[5] This remark is important information to this study because the publication specifically describes the music of the Mande people, the ethnic group focused on in this research. My balafon teachers and the villagers of Konsankuy—a mix of Bamana and Bobo people—is a sub-ethnic group of the Mande people. The Mande people are one of the largest population of the ethnic groups in West Africa. Charry, E. 2000. *Mande Music*. Chicago: University of Chicago Press, xvii, 325.

[6] Strand, *The Sambla Xylophone: Tradition and Identity in Burkina Faso,*155-6.

[7] Agawu, *The Invention of "African Rhythm"*, 387.

[8] *Ibid.*, 388.

Perhaps language is meant only to record what is verbalized and not to mirror patterns of behaviour.[9] Although the term *rhythm* never really existed verbally in these African languages, it is certainly impudent to claim the concept of *rhythm* as an unimportant fable in African music. However, can we find a cross point between the rhythmic concept in African music and Western theory? Until today, there are different opinions about reconciling the two. James Koetting (1970) could not match concepts of the West African drum ensemble music with Western musical terms;[10] however, Tellef Kvifte's (2007) approach of reconciling the Western theoretical view of perceiving rhythm and meter offered us a contrary stance.[11] By considering theorist Justin London's (2002) definition of rhythm—coordinated and connected temporal pattern[12]—Kvifte applies the Western notion of *rhythm* as part of the African concept. In an earlier contribution by Jones (1954) on drumming analysis of a Bemba dance, the possible outcome of defining the African rhythms using Western theory is the integration of diverse meters (i.e., mixing 2/4 and 3/8) to represent the syncopations and staggering entry points of the polyrhythmic layers.[13] I argue Jones's theory fails to illustrate the practical side of performing such *multi-meter*. I will carry on the discussion later in this section.

Others search for reconciling Western and African notions of rhythm as ways to obtain synchrony between different music cultures. By embracing African rhythmic phenomena within their generic Western definition of rhythm, some Africanists assume clarity in the analysis and equality (i.e., race, status and aesthetic quality) when comparing other's music culture to their own. Attention is drawn in such an approach to the *similarities* between music concepts in different cultures. For instance, Jay Rahn (1996) uses Western music

[9] *Ibid.*

[10] Koetting, J. 1970. Analysis and notation of West African drum ensemble music. *Selected Reports in Ethnomusicology* 1 (3): 116.

[11] Kvifte, T. 2007. Categories and timing: On the perception of meter. *Ethnomusicology* 51 (1): 65-66.

[12] London (2002) distinguishes meter from rhythm. While rhythm involves the phenomenal pattern of durations and dynamic accents, meter is defined as a stable, recurring pattern of temporal expectations. Such temporal expectations contain peaks in the listener's expectations coordinated with significant events in the temporally unfolding musical surface. London, J. 2002. Cognitive constraints on metric systems: Some observations and hypotheses. *Music Perception: An Interdisciplinary Journal* 19 (4): 529, 531.

[13] Jones, *African Rhythm*, 41.

structural terms, like diatonic, consonance, dissonance or chord rhythm, to portray "the highly integrated wholes" of rhythmic relationships in African music;[14] and David Temperley (1983) reconciles these views with some important Western theories on rhythm and meter perception, such as those of London (2005) and Lerdahl and Jackendoff's (1983) "Generative theory of tonal music" (GTTM).[15]

3.1.2 The problems of learning and performing balafon polyrhythm

How can we approach African polyrhythm from the experience of learning and performing the balafon polyrhythm? The personal experience of playing the music and the artistic researcher's investigation can offer indispensible insights into the invaluable idiosyncratic views and artistic experience of the African music-makers. As Klaus Wachsmann (1982) remarks, we are pursuing the knowledge of the conditions of music making when the maker is sensing, thinking, or dreaming into the music.[16] Important insights are offered through finding the practice-based answers and meanings of music.

In the following, I will describe my experience of learning polyrhythm: a) learning the first beat and the starting point of the rhythm; b) counting beats, meter and pulse; c) basic rhythmic pattern; and d) holistic teaching approach. I will offer my methods in adapting to the balafon music practice, for instance, discerning my hypotheses of the African rhythmics in the concepts of integration, isochronous timeline and cyclical structure.

a) Learning the first beat and the starting point in the rhythmic phrase

In different demonstrations, the first beat and the starting point of the same pattern always slightly differ. My teachers are able to start at random points of a pattern and join the ensemble after irregular breaks. We sometimes observe minor modifications of rhythmic and melodic materials. My teachers know exactly the connecting fragments and the counterpoint

[14] Rahn, J. 1996. Turning the analysis around: Africa-derived rhythms and Europe-derived music theory. *Black Music Research Journal* 16 (1): 71-89.

[15] Temperley, *Meter and Grouping in African Music: A View from Music Theory*, 65-96.

[16] Wachsmann, K. 1982. The changeability of musical experience. *Ethnomusicology* 26 (2): 197-215.

between the independent polyrhythmic lines, which explains why they can join the ensemble at ease and start at any section of a pattern.

Although Youssouf and Kassoum work together in performing and teaching, it seems that they recognize different starting points for the same pattern. Also, they do not necessarily play the same first beat consistently in every demonstration. They have never specified rules about the first beat and the starting point of a rhythmic pattern. This was often unfathomable to the learners and created confusion. (Video 1) This tacit knowledge shines light on a remarkable practice of freedom in music interpretation, that musicians are granted the possibilities to express their idiosyncratic styles and intentions in a song's musical patterns.

https://youtu.be/MhPpWqanGeU

Video 1: *Gjnasso* pattern A, B and melody, showing an argument between the foreign learners and the teachers over the starting beat of the music. Recorded by Adilia Yip.

b) Counting beats, meter and pulse

Basically, Youssouf and Kassoum recognize the general pulse embedded in the polyrhythmic layers, but the Western concept of meter[17] is apparently invalid in the practice

[17] According to the *Encyclopedia Britannica*, the conventional definition of meter is, "rhythmic pattern constituted by the grouping of basic temporal units, called beats, into regular measures, or bars. In Western notation, each measure is set off from those adjoining it by bar lines. A time (or metre) signature, found at the beginning of a piece of music, indicates the number of beats in a measure and the value of the basic beat. For example, $^{3}/_{4}$ metre has three quarter-note beats per measure. The time signature implies that an accent regularly occurs on the first beat of each measure. Simple metres are duple (*e.g.,* $^{2}/_{2}$, $^{2}/_{4}$), triple ($^{3}/_{4}$, $^{3}/_{8}$), or quadruple ($^{4}/_{4}$, $^{4}/_{8}$)." Editors of Encyclopedia Britannica. 2013. Metre. In *Encyclopedia Britannica.*

of playing balafon. In my balafon lessons in Europe that occurred before my first workshop in Mali, Gert Kilian, who is a French-German balafon teacher and jazz musician had suggested various parameters to help himself and other foreign learners to understand African rhythmics. These parameters are largely influenced by his Western jazz education and pedagogical approaches. Present with us in our workshops, Gert gave the pulse and counted beats before the African teachers began the demonstrations. He tried to locate the *first beat* from the demonstrations and identify the musical meter in the music. The following video of *Gjnasso* melody (video 2) shows the discussion between Kilian and the teachers on pulse and counting beats.

https://youtu.be/1LYiP5XM2r4
Video 2: *Gjnasso* melody, showing the hesitation over the first beat. Recorded by Adilia Yip.

The teachers' responses to Gert's questions on meter—whether a particular piece is in triple or duple time for instance—were always vague. The discussions always turned into debates. As the patterns began at different points of the pulse in the phrase, the general structural design does not imply a strict musical meter (or time signature). We may sense triple and duple time from individual polyrhythmic lines, but meter is ambiguous when these lines are juxtaposed and synchronized. Referring to the transcription of *Patoma* (figure 6), we could not apply a meter to the music because the starting point of each pattern—according to the demonstrations of Youssouf and Kassoum—is allocated at different points in the

https://www.britannica.com/art/metre-music.

cyclical structure. The music has pulse, but the meter and the first beat are obscure when I was playing with an ensemble. Nevertheless, sometimes the villagers would dance along in time with music, which could have given me information about the groove and rhythmic weight. For instance, the short dance movement excerpt in *Sama Ouara* seems to coincide with the *tactus* pulse suggested by Simha Arom.[18]

https://youtu.be/MpzinUI4cS0
Video 3: Song *Sama Ouara.* Recorded by Adilia Yip.

Youssouf gave pulse in his demonstrations in response to Kilian's and students' requests. They did so meaning to help us to learn the rhythm in our Western way, but ironically, the tempo of the counting was sometimes different from the tempo of playing. And in the case of some complicated rhythm patterns Youssouf seemed uneasy to count beats. So after all, what do counting beats and meter mean to the African musicians? The act of counting was symbolic to the students rather than an event that bore actual meaning according to Western rhythmic principles, for example, the concept of time division, a uniform metrical design of strong and weak beats.

[18] The discussion of *tactus* continues in page 104-6, and please refer to video 3 of *Sama Ouara* performance and video 12 of the farewell party.

c) Basic rhythmic pattern[19]

In the lesson of *Diarabi Ouotoro*, Yousouf did not demonstrate with the pulse, but he played with a pair of shakers a basic rhythmic pattern that gave a groove to the composition. The new act slightly complicated our learning slightly, but no one taking the lesson complained at first. I think such a basic pattern *enriched* the rhythmic sense of the polyrhythm in comparison to the regular, monotonous pulse. Video 4 shows Youssouf's demonstration of *Diarabi Ouotoro* with shakers playing the basic rhythmic pattern and figure 1 is the Western transcription of the basic rhythmic pattern. The swing feeling of the first two beats of the pattern is roughly transcribed into a triplet motive. Later on, video 5 shows the regular pulse and video 6 shows the final result after the group practiced with the regular pulse.

https://youtu.be/LUB479UK89Y

Video 4: *Diarabi Ouotoro* accompanied by the basic rhythmic pattern with shakers. Recorded by Adilia Yip.

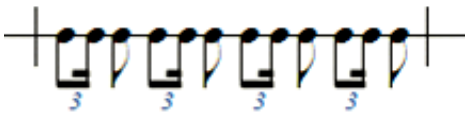


Figure 1: Transcription of the basic rhythmic pattern of *Diarabi Ouotoro.* Transcribed by Adilia Yip.

[19] The term is borrowed from the study of Kauffman. Kauffman, *African Rhythm: A Reassessment*, 409.

https://youtu.be/knhu0VoT9Sc

Video 5: *Diarabi Ouotoro* accompanied by the regular pulse. Recorded by Adilia Yip.

https://youtu.be/_ZyLZgr2IB4

Video 6: Final result after the group practised with the regular pulse. Recorded by Adilia Yip.

I suggest that the nature of such a basic rhythmic pattern resembles its bell pattern.[20] (Pantaleoni, 1972, Chernoff, 1979 and Iyer, 1998) Reported by numerous Africanists of various regions of the African continent,[21] the bell pattern is a consistent pattern that adds a metallic colour and a sense of uniformity to elaborative instrumental solos and ensemble parts.

[20] Pantaleoni, H. 1972. Three principles of timing in Anlo dance drumming. *African Music* 5 (2): 58-60. Chernoff, J. M. 1979. *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms*. Chicago: The University of Chicago Press, 43. Vijay, I. 1998. *Microstructures of Feel, Macrostructures of Sound: Embodied cognition in West African and African-American musics*. PhD. dissertation. University of California, Berkeley, 50.

[21] The bell pattern exists in the music traditions of the Yoruba people, Ewe people, Anlo-Ewe people and Shona-Bantu people. According to Agawu (2006), the standard pattern exists throughout West and Central Africa, as well as parts of the African diaspora. *Ibid.*

Notably, the musician who is responsible for the basic rhythmic pattern needs to have a stable sense of time. According to Pantaleoni, the bell player's function in Anlo-ewe drumming is to maintain the consistent timing of the ensemble. The bell player must keep strict and steady timing independently since the bell pattern is the backbone that coordinates the other drumming patterns, as an Anlo drummer would say "You must always fit with the bell."[22] Also, Chernoff metaphorically describes the bell pattern as "the heartbeat which keeps things steady."[23] Quite the contrary, the basic pattern in Youssouf and Kassoums' ensemble is performed by a musician who can flexibly attune to the timing and acceleration of the balafon soloist and the ensemble. He joins in after the singer and the soloist defined the tempo and his main function is to add a metallic colour to the ensemble. (Video 7)

https://youtu.be/Axvhosy4Ydg
Video 7: The ensemble plays *Hanouzou*. The basic rhythmic pattern is performed by the bell player who sits in the middle. Recorded by Adilia Yip.

d) The holistic approach and oral tradition

The last difficulty in learning the rhythm of balafon music was due to our need to adapt to the holistic teaching methods and the oral tradition. Contrary to the Western principles of analysis and dissection,[24] the African approach requires a *new* mind-body relationship of playing music: on one hand, I had to cope with the coordination of playing two

[22] Pantaleoni, *Three Principles of Timing in Anlo Dance Drumming*, 58.
[23] Chernoff, *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms,* 43.
[24] Refer to chapter 2 on the Cartesian mind-body dualism.

independent polyrhythmic motifs, each in one hand; and on the other hand, I had to learn by ear and imitation because of the music's oral/aural pedagogy. To help us, Youssouf would break up lengthy bimanual patterns into shorter fragments of around five notes; however, he would *never* separate a bimanual pattern into two separate left and right hand lines as we commonly do in the Western music world. Sometimes the teachers lost patience as they expected for the students to be able to play particular polyrhythms after a few demonstrations.

As such, the embodied coordination of movement becomes the vehicle with which to explain polyrhythm. Referring to the video of *Fermante* (video 8), rhythmic relationships are defined by means of the hand movements. Youssouf moved his arms slowly to clarify the interlocking sequences of the hands, whether at a certain moment the two hands play together or separate. Coordination is the teaching language of polyrhythm, the faithful *movement score* of the balafon music.

https://youtu.be/EbP5yyHTqrs
Video 8: Youssouf teaching *Fermante.* Recorded by Adilia Yip.

3.1.3 Some hypotheses on the African polyrhythm: integration, cyclical structure and isochronous timeline

Triggered by the aforementioned problems of learning, I would like to establish three hypotheses to explain how to understand balafon polyrhythm. Based upon a pragmatic perspective, I argue that African rhythmic is a) an integrated, cyclical structure, b) leaves behind the Western definition of meter, and c) contains the perception of isochronous timeline.

a) An integrated, cyclical structure

Based upon my learning experience, the most outstanding evidence of integration is identified in the holistic teaching approach endorsed by my African teachers. For instance, we needed to understand the polyrhythm in terms of bimanual coordination. One needs the reference of one hand to the other in order to conceptualize the time lapse of each note; but rather, we need the reference of the other hand to conceptualize the rhythmic relationships of polyrhythm. Apparently, the only way to learn polyrhythm in my experience is to break long patterns down into constituents. I practiced both hands repeatedly and watched my teachers' videos numerous times until I got it. I must learn to perceive rhythmic figures as totalities. Thus, polyrhythm exists as an integrated structure in the balafonists' teaching. I can compare such learning system to the principles of the Suzuki method, in which case I do not learn the alphabets of a word, but I learn by repeating the words and sentences. I did this when I was learning my mother-tongue language.

To a listener, polyrhythm is an integrated *scaffolding* of various rhythmic elements. Patterns, layers and parts are interdependent, but they integrate to form a resultant musical texture. Such texture is not always clearly identifiable to its original constituent musical patterns. This leads us to the notion of *inherent patterns*, a listening phenomenon observed by Gerard Kubik (1979). Constructed in its specific way, the independent layers form auditory sub-patterns of polyrhythm that are not produced intentionally by the musicians, but the listener perceives these resultant integrated textures.[25] There can be countless combinations of these sub-patterns: the listener might focus on the longest consecutively repeating sequence, the most obvious rhythmic figures in the highest register, the recurring long singing melodies, or the music can be a sound mass that consists of a large amount of randomly occurring tones.

Further, I will discuss my experience of integration in a balafon ensemble. I propose balafon music can be seen as a stack of repetitive polyrhythmic patterns plotted on an

[25] Kubik, G. 1979. Pattern perception and recognition in African music. In *The Performing Arts: Music and Dance*, eds. J. Blacking and J. Kealiinohomoku, vol. 10. The Hague: Mouton, 223-5.

integrated cyclical formula. In my imagination, *Barica* is represented in a spiral shape as such (Figure 2):

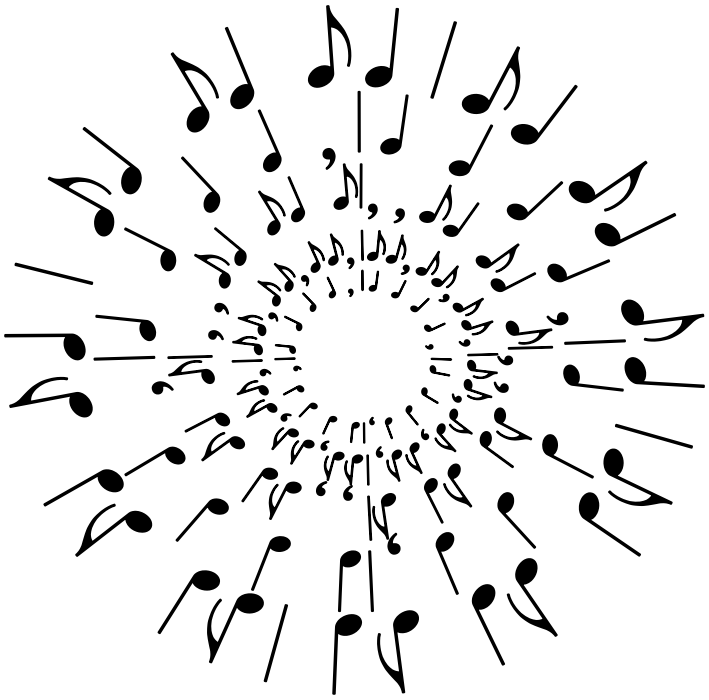


Figure 2: A conceptual representation of the cyclical structure in *Barica.* A sketch by Adilia Yip.

I have prepared the transcriptions of *Gjnasso* and *Patoma* (figures 3 and 4) in order to visualize the cyclical organization of patterns in one balafon song. I follow my teachers' demonstrations to determine the starting note of a pattern and remark them with dotted grouping lines. A pattern begins after the dotted line and it ends where the pattern is about to repeat itself. Based on this assumption, we see clearly that the variation patterns could begin at any point of the cycle. The individual layers are not integrated by a uniform metrical design of stressed and unstressed beats. Meter is, therefore, for me impractical in such structure as I would likely *lose* the count and fail to connect my part to the melody and other variation patterns. I need to identify the connecting points rather than think metrically. Just as a Ghanaian percussionist of Anlo-Ewe drumming, C. K. Kadzekpo (1995) describes, "One of the integral beat schemes is dominant and the rest are perceived in *cross rhythmic* relationship to it." In my opinion, the layers are attached to each other by means of

fragments that are similar in nature, which I will call the *coherent fragments.* To me, these are the reference points to which I know I connect to other patterns. I have circled some examples of coherent fragment on the scores of song *Gjnasso* and song *Patoma*. (Figure 3 and 4) They are my personal suggestions and may vary according to individuals and contexts. These coherent fragments could be similar in either rhythmic or melodic character, and could be both as well. This approach helps me to orient my part in the cyclic repetition and to know how to connect to other ensemble parts. Unfortunately, in this research I could not understand the logic behind such construction in the repertoire, but my hypothesis serves as the practical explanation of my ensemble experience.

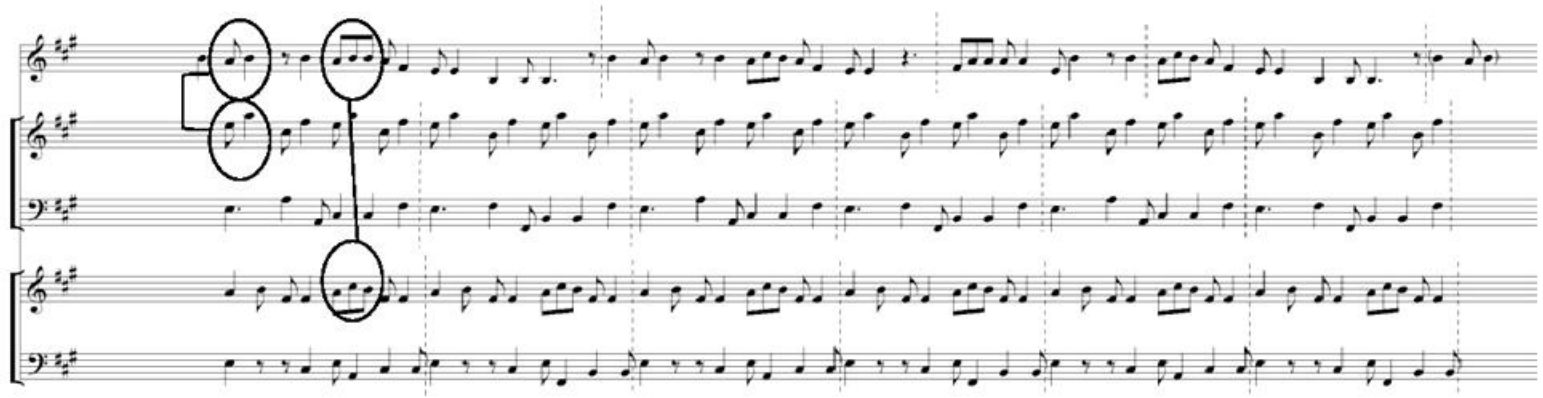


Figure 3: Transcription of song *Gjnasso*. Transcribed by Adilia Yip.

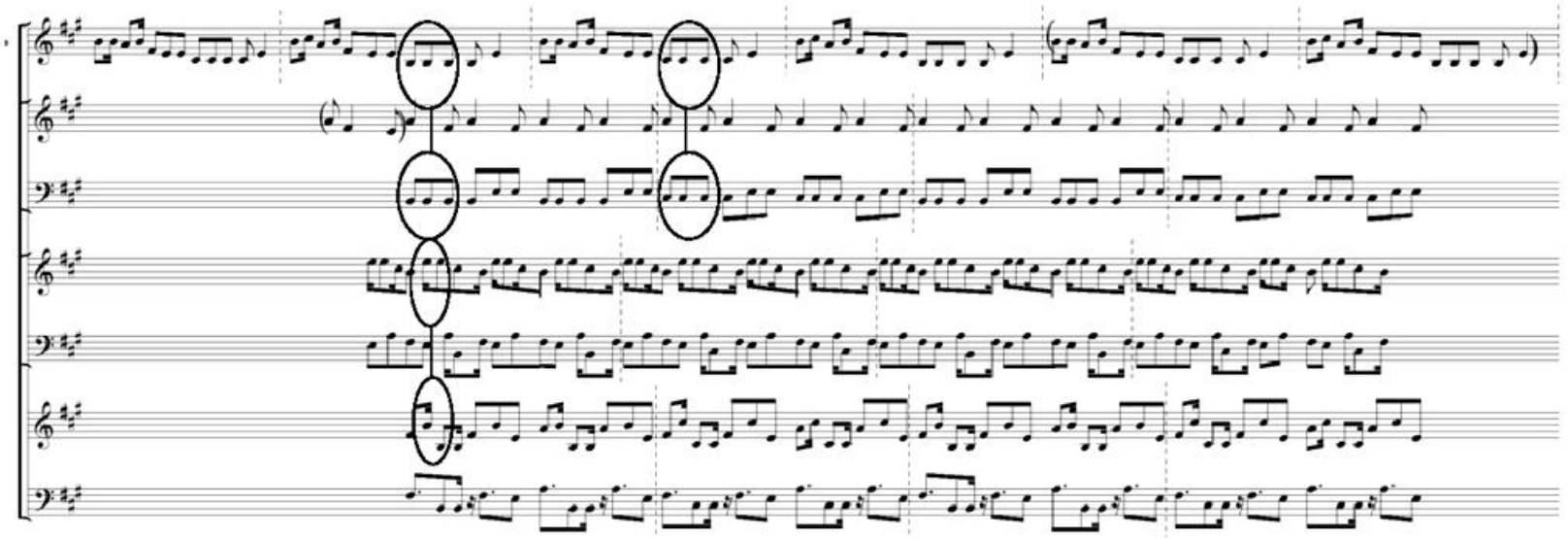


Figure 4: Transcription of song *Patoma*. Transcribed by Adilia Yip.

Hence, integration is the foundation of perception and comprehension of music, whose main purpose is to cooperate with others and merge together. As Africanist Willie Anku (1997) said, "The most significant aspect of *multi-rhythm* perception in drumming is that the various composite patterns are heard in integration and not as isolated units."[26] His informant, the Akan master drummer Okyrema Asante, is able to perform alone a popular band drumming composition which is usually performed by a full drum ensemble. This is not a typical technique in Akan drumming, but he can do so due to his ability to integrate the isolated units of polyrhythm.[27] Chernoff (1979) observed the same phenomenon in the practice of Anlo master drummer Gideon Folie Alorwoyie. More than once in the seminal book about his field experience, he emphasized the interdependence among ensemble musicians where, even in improvisation, the true quality of the lead drummer's improvisation was not only to highlight his expertise; but more importantly, to mingle and interact with other drummers. Improvisations of a great drummer would be meaningless without the corporation with other repetitive rhythms.[28]

b) Leaves behind the definitions of meter

As such, meter is not essential in West African musical and pragmatic contexts. Generally speaking, as the African musicians do not count rhythm, why should we employ a theoretic meter in analyzing polyrhythm? Koetting (1970) claims that a metrical approach to West African drums ensemble "obscures the true character of the patterns as they are conceived and played."[29] However, Jones's (1954) theory of *multi-meter* (figure 5) complicates the narration and analysis of the actual experience of performing the music.

[26] Anku, W. 1997. Principles of rhythm integration in African drumming. *Black Music Research Journal* 17 (2): 212-3.

[27] *Ibid.*, 213, 228-9. Further, Anku in this paper discusses the presence and the recognition of the emergent and resultant rhythms in polyrhythm. The perception of time synchronization of the various composite parts of the ensemble is to a great extent embedded in the performers' awareness and expectancies.

[28] Chernoff, *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms,* 112.

[29] Koetting, *Analysis and Notation of West African Drum Ensemble Music*, 123.

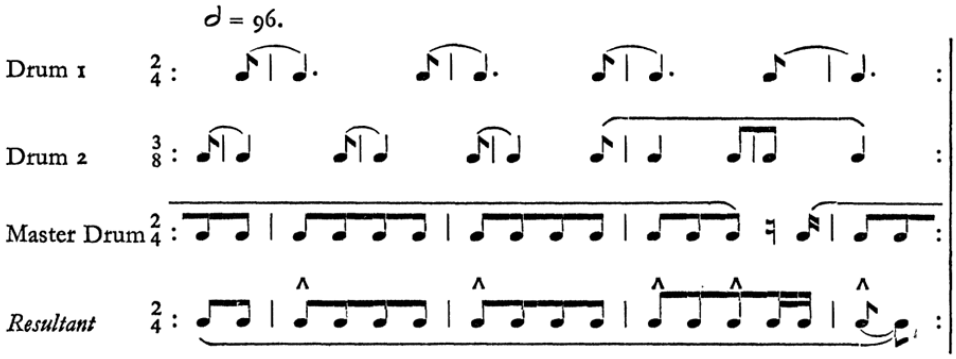


Figure 5: Illustration extracted from Jones's article on multi-meter. Jones, A. M. 1954. African rhythm. In *Journal of the International African Institute*, 24/1: 41, fig. 21.

In my experience of performing Western percussion, the rationale of *dividing* the hands motorically into two meters—the bimanual coordination (i.e., 3 against 2, 2 against 5)—is common, but the use of multiple meters almost never happens. This concerns the technical possibilities and training of Western musicians. One cannot listen to two meters simultaneously, as the percussionist tends to cancel the effects of one meter by the other. The result is not the simultaneous perception of two contrary meters but one meter would be *incorporated* into the other.[30] (Iyer, 2008) On the other hand, Jones's multi-meter theory obscures the naturalness of African rhythms, because apparently the balafonists would not think and practice music in such perspective. What is lost sight in Jones's theory is the fact that he misses the head-on, primary approach in experiencing the ways and practise of performing the music. The theorist positioned himself as a third person observer and relied only on recordings and informants in his analysis. An observer's approach is valuable as it provides an *objective* interpretation of the formal structure of the music; however, the experience of performing the music, the practice of the people and their music thinking can hardly be revealed through such indirect method. Moreover, the *objectivity* of the data depends on the informant's perspective of the music. My informants, who are my balafon teachers, are experts in performing the music; but like many performers, they do not necessarily reflect on the deeper meaning of cultural difference and performance practice. Youssouf's verbal description on rhythm was always vague. I asked about his concepts on

[30] Iyer, *Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West African and African-American Musics*, 45.

rhythm and his views on our difficulties in learning polyrhythm, he always gave the same remark: "Rhythm is all about listening and feeling. The only thing you have to do is to listen how I play it. You don't need to count one, two, three, four. Follow this [he tapped and sang the pattern of song *Barica* (please refer to figure 6) which was the most difficult rhythm to the group in the first workshop]." I have also interviewed Rachel Laget and Pieter De Zuitter,[31] two European balafonists who also travelled to West Africa for lessons. They could not describe much about their embodied experience of learning rhythm, but advised me to follow what the teachers do on the instruments, and go to them again when my memory and feelings of the music are fading away.

Simha Arom (1991) refuted those who affirm meter must exist in music cultures as the approach to define rhythmic events. He denied the claims of those who think the elements which "produce meter also produce rhythm" or "meter is already rhythm".[32] While rejecting *meter weight* as the essential definition of the African rhythm perception, he drew similarities between the medieval term *tactus*[33] and the perception of pulse in African rhythmics. Based upon the concepts of neutral, unmarked, intrinsic element, *tactus* made it possible to remark a direct coordination of the rhythm durations in every part of a polyrhythm, but without recourse to an intermediate level in the hierarchy of grouping beats in two, three or four beat measures.[34] (Arom, 1991) The current conventional rhythm terminology and system only existed since the appearance of European polyphony during the second half of the seventeenth century. As he says:

[31] The interviews were held in 2011 before my first balafon workshop in Africa.

[32] Arom, *African Polyphony and Polyrhythm: Musical Structure and Methodology*, 195-6.

[33] Tactus is a 15th and 16th century term for a pulse, i.e. a unit of time measured by a movement of the hand, first discussed in detail by Adam von Fulda in *De musica*, 1490. One tactus actually comprises two hand motions, a downbeat and an upbeat (*positio* and *elevatio*, or called, thesis and arsis). Each motion was equal in length in duple time (*tempus imperfectum*); in triple time (*tempus perfectum*) the downbeat was twice as long as the upbeat. In the words of Andrew Lawrence-King (2013), tactus is the long note-value that musicians count, divided into inner beats to measure each shorter note of the music. Brown, H. M., and C. Bockmaier. 2001. Tactus. In *Oxford Music Online*. www.oxfordmusiconline.com. Lawrence-King, A. 2013. *Rhythm—What Really Counts?* https://andrewlawrenceking.com/2013/09/08/rhythm-what-really-counts/.

[34] Arom, *African Polyphony and Polyrhythm*, 206.

> "These [music cultures that are absence of any definitive rhythmic organization] include Medieval and Renaissance polyphony, which they realise [the rhythm realizations] are based on the principle of *tactus* alone. How is it possible to say that the ear cannot perceive musical duration without recourse to "weighting", when it is a well-known fact that the rhythmic of the *ars nova*, despite its complexity, involves no regular accentuation? Even without expecting the theoreticians of rhythm to go so far as to take account of extra-European music, we can only wonder that they can so easily ignore a procedure which was still current in the West only four centuries ago."[35]

Therefore, such coincidence reaffirms one important message of this chapter: the current Western rhythmic system, i.e., meter, is *not* the *natural law* of musical time of mankind. Yet, the retrospect of *tactus* does not imply African music is a pre-modern, undeveloped concept in the European music history; on the contrary, *tactus* came into sight due to its exclusion of rhythmic weight and the correlation of bodily sensation to pulse, while these qualities are missing in the interpretation of rhythm in the Western music world. Arom's *tactus* has inspired me to explain my embodied experience of playing the polyrhythm, a music practice that is endorsed by current African musicians. (Please refer to the next section)

c) The sense of time in African music: isochronous timeline

To this end, Arom's *tactus* encourages us to search beyond the current Western terms to describe the experience of performing polyrhythm. I will use the concept of isochronous timeline, which I define briefly as "a mutual and coordinated sense of time"[36] to determine

[35] *Ibid.*

[36] Arom (1991) also uses the term *isochronous* to describe time organization in African polyrhythm. He says: "*Isochrony* itself means only equality of duration and has nothing to do with accent ranking. But musicologists often use this term in connection with measure to mean not only that a given quantity never changes, but also that it is structured in a given way […] Isochronous pulsation is the basic structural element of the period. Whether the figures it contains are binary or ternary, or a combination of these, the period is defined by the *invariant* number of pulsations which constitutes its temporal framework." Arom, *African Polyphony and Polyrhythm: Musical Structure and Methodology*, 191, 211. Besides, I argue the appropriateness of Vijay Iyer's (1998) definitions on isochronous timeline and meter in his study on rhythm cognition in African music. Iyer defines isochronous timeline as the Western sense of "conductor's pulse" pre-set to the musicians for counting beats and keeping the tempo steadily. He adapts the generic definition of meter to become usable to describe the African music phenomenon; meter is therefore, defined as "a periodic grouping of a musical time unit; it can connote but *does not strictly imply* a hierarchy of weak and strong beats." Iyer, *Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West African and African-American Musics*, 15, 43.

the presence of a mutual, perceptual clock that anchors the polyrhythmic layers into a whole entity. This perceptual clock, however, is not made up of gear mechanisms, but the two-hand coordination. Isochronous timeline means the equal duration pulsations which are resulted from the coordinated and syncopated beats played by two hands; it has no implications of rhythmic weight and hierarchy of musical meter.

Isochronous timeline is a term borrowed from "isochronous motor sequence" to remark the physicality and coordination imparted in such perceptual clock. In experimental psychology, isochronous motor sequence specifically points to the motoric aspect of coordinating bimanual patterns based upon a constant cycle of subdivided time intervals. (Krampe, Kliegl, Mayr, Engbert and Vorberg, 2000) When pianists are asked to perform two simultaneous non-isochronous sequences (i.e., 3 beats against 4) the isochronous motor sequence, which is a common reference time frame emerges when merging the left and right hand lines.[37] The isochronous timeline denotes the time sensation that emanates from the performer's bimanual coordination. Referring to the schematic illustration[38] of *Barica* pattern A (figure 6), successive taps of the left and right hand are plotted on an isochronous timeline. The timeline is a cycle made up of smallest isochronous intervals, which is, representing the smallest subdivision beats to be timed in the composition.

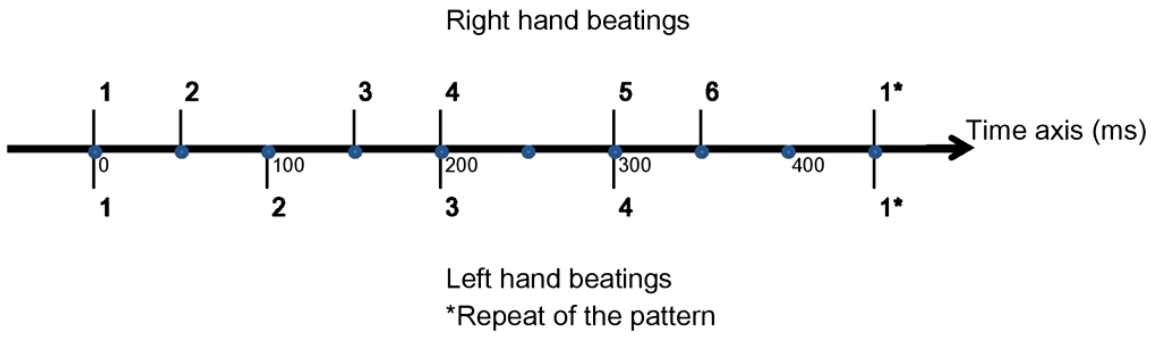


Figure 6: The schematic illustration of the pattern A of *Barica*. A sketch by Adilia Yip.

[37] Krampe, R. T., R. Kliegl, U. Mayr, R. Engbert, and D. Vorberg. 2000. The fast and the slow of skilled bimanual rhythm production: Parallel versus integrated timing. *Journal of Experimental Psychology: Human Perception and Performance* 26 (1): 206-208.

[38] Krampe, Kliegl, Mayr, Engbert and Vorberg (2000) identified two types of bimanual control (called in this research as two-hand coordination) in polyrhythm performance: integrated timing and parallel timing. *Ibid.*

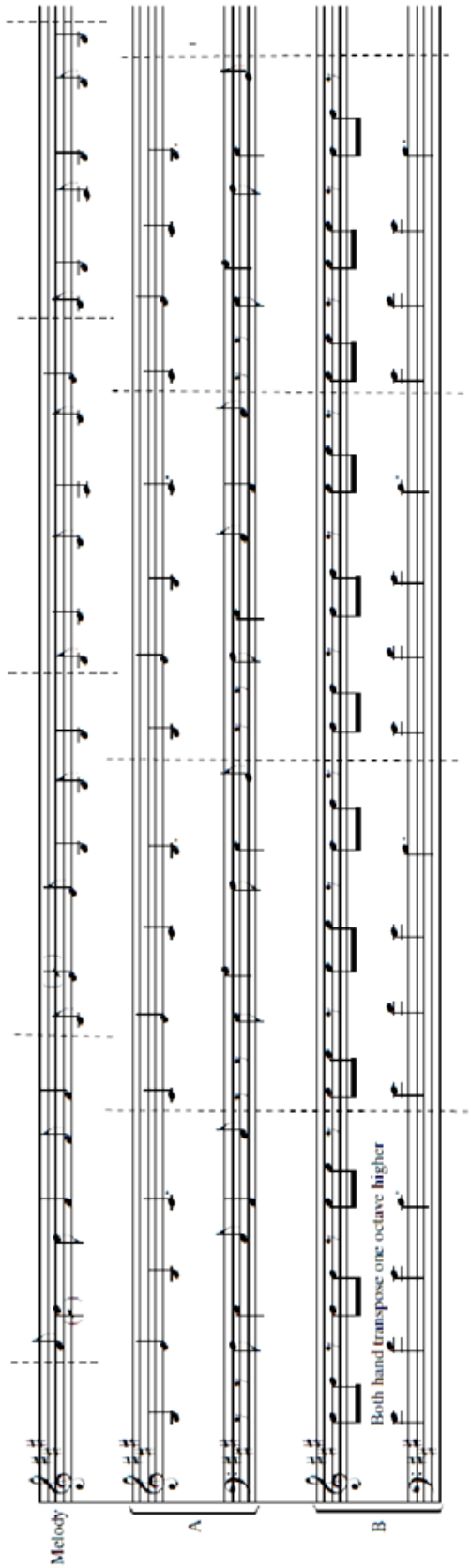


Figure 7: The Western transcription of *song Barica*, the melody, pattern A and B. Transcribed by Adilia Yip.

Further, the concept of the isochronous timeline is used to describe the time organization of a balafon ensemble. In ensemble performance, I am *situated* in an array of uninterrupted, short cyclic formulas that are regulated by the isochronous timeline. Rather than a metronome that ticks in front of the ensemble, I am sharing a collaborative timing with fellow musicians. Such timeline does not prescribe *a priori* time sense, but a resultant time that is co-defined and maintained by the musicians. The leader, who is the master soloist, gives a musical call[39] to invite the musicians to join in, every member would then adjust to the timing of the others. Ensembles, especially jam sessions, could have a very short moment of *chaos* to attune among members, but quickly the ensemble would establish the isochronous timeline. Such a collective time sense develops through each musician's responses to others. The tempo would change constantly following the musical events of improvisation and acceleration. Towards the end of the performance, the timeline becomes obscure due to the tremendously fast tempo.[40]

3.2 The social-cultural implications in African rhythm

The second part of this chapter will discuss some socio-cultural implications observed in the balafon praxis. In the vast African continent, the functions of music are narrowed down to two purposes: to invite participation and to accompany social activities. Music and actions are interrelated: the music is formed and performed based upon the functionality and the rhythmical nature observed in community activities; and secondly, the music emerges from bodily actions in daily working routines, games, religious gathering or social rituals. As Alan Merriam (1962) notes, a practice-based investigation shall not overlook the music's connection to the social contexts of life: "Its use in, and integration into, almost all aspects of life […] Music as such does not exist apart from its context or, to the contrary, the context may well determine the conceptualization of the music. This is functionality in its deepest

[39] Similar observation is seen in Koetting's (1970) field report on West African drum ensemble, which he writes, "From that point each intermediate drum and lesser drum, rattle, and gong enters at a certain place—or one of several permissible places—in the pattern of the previously entering player with whom he has a primary time relation, meaning that the two adjust their timing first to each other and only after that to the other performers." *Ibid.*, 122.

[40] Kvifte, *Categories and Timing: On the Perception of Meter*, 76.

sense; whether other African people conceptualize music in this manner is as yet unknown."[41] Based on some insights offered by Africanists and my participant-observation, I will account the African custom of motion from two perspectives: 1) identifying the African rhythmics in people's daily activities and 2) the social and practical functions.

3.2.1 Identifying the African rhythm in people's daily activities

Rhythm derives from the rhythm of the actions, and is an unintended, but inevitable product of the actions of the people; rhythm is rendered from the rhythm of people's bodily movement. In the following example, the musical rhythm is the rhythm of the women's stomping actions, walking in and out the circle and the small dance steps.

During my stay at Konsankuy, there was the annual festival day, when women of the village come together to make onion sauce for a whole year. Dancing and stomping in a big circle, the women smashed a large quantity of onions, after which they put the mash aside under the sun to dry. Accompanied by a drumming ensemble, their actions could be analyzed in three steps: they first threw the smashing pole in the air, the pole dropped into the trough, and lastly, lifted the pole after it smashed the onions. The movement of the women was unified by the rather strict and steady rhythm of the drumming ensemble. Therefore the ensemble carried the role of helping the women to maintain a good work flow. The performance of the ensemble was guided by the movement of the women. For instance, the tempo of the ensemble needed to synchronize with the women's pace. The ensemble played slower and less notes when the women felt tired and slowed down, but after a short while of slower movement, the ensemble sped up again and the women were brought back to an energetic working mood. The rhythmic pattern (figure 8) is constantly played throughout the onion preparing event. The directions of the stems pointing up marks the right hand and down for the left hand respectively. Alongside there are other instruments in the ensemble such as metal scraper, different sizes of dun dun drums and hourglass shaped drums.

[41] Merriam, A. P. 1962. The African idiom in music. *The Journal of American Folklore* 75 (296): 123.

https://youtu.be/hhI4ft654OI

Video 9: Women working in the fields to prepare onions. Recorded by Adilia Yip.

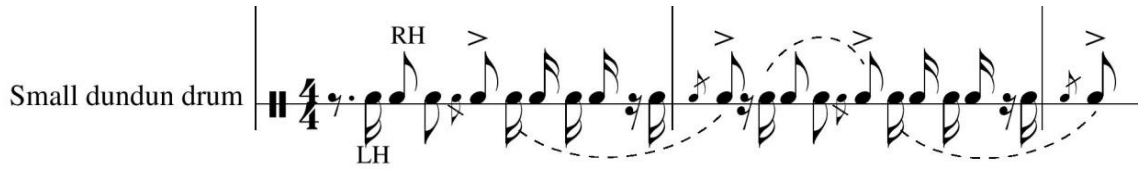


Figure 8: A Western transcription of the basic rhythmic pattern performed on the small dun-dun drum, a long-shape wooden drum with skin stretched across both sides. Transcribed by Adilia Yip.

As such, the drumming ensemble was mimicking the women's actions of throwing, dropping and lifting of the pole. The moment the pole smashed the trough is clearly the strong beat for both drumming and dance. When the sticks were thrown into the air, the drummers played an embellishing pattern to signal a half second of silence, as if to prepare for the instant that the poles crushed the onions. The powerful crush contained the most energy and focus from all participants. The movement of the women was the origin of the rhythm. The momentum of the lifting and the gravitational free falling of the heavy pole were embodied in the rhythm of the ensemble. The motion of crushing the onions was controlled by the drummers' tempo and groove.

African rhythm is also identified in games of children. In the documentary "Listening to the Silence: African cross-rhythms", musician and writer John Collins observes that the rhythm sensibility is embedded in the daily life of the Ewe, Ashanti, Ga, and Frafra peoples of Ghana. In general, the high level of bimanual coordination and control in the polyrhythm of African musicians is readily observed in the children's games and musical bands, food-making, postmen stamping mails,[42] dances in rituals and many other working routines and social participations. Polyrhythm is, somehow, a blueprint of the rhythm in African people's lives, culture, work and education. Simple, but different rhythmic body movements are juxtaposed in a variety of combinations, forming different polyrhythmic structures. For example, there is a little cross-rhythm game performed by a Ghanaian boy: by rattling his teeth with his hands, he created one rhythm; and by moving his mouth, he created the second rhythm. While juxtaposing with his lively marching steps, he stomped the steady pulse. (Video 10)

[42] A video of postmen stomping mails. Collins, J. 1996. Listening to the Silence: African Cross Rhythms. Films Media Group. https://youtu.be/0dw47fZLpSw.

http://fod.infobase.com/p_ViewPlaylist.aspx?AssignmentID=MAUNNW

Video 10: Children's game (2:18- 3:05). Collins, J. 1996. *Listening to the Silence: African cross rhythms*. Films Media Group.

From the different rhythmic characteristics identified in the daily actions, we shall no longer consider polyrhythm as a practice exclusive to musicians, but an intrinsic habit given to every person. The high rhythmic coordination ability—the two-hand coordination[43]—is recognized in the aforementioned daily activities. Chernoff's (1991) opinion coincides with my observation. From his field experience, he concludes that the facility of West African polyrhythm is something that they learn as they grow up. Because of life-long cultural acquisition, one feels close to his own cultural traits, although he/she may not be able to analyze cultural features.[44] The cultural environment determines how a person conceives and consumes music. I presume a drastically different outcome if the organ of the Catholic church is replaced by a balafon and drums ensemble. I would concede the instrumental accompaniment of a church hymn should provide a polyphony that is in counterpart to the choir, which is unlike the organ that plays chords or polyphony that supports the singing hymn. (African church music, video 11 and 12 and Catholic church music, video 13) As a person's taste and familiarity of music are influenced and determined by his/her cultural

[43] *Two-hand coordination* is an adaptation from Gert Kilian's term *two-way coordination* in balafon method *Balafon Beat: Exercise and Pieces for Balafon*. It means while one hand plays the accompanying ostinato, the other plays the melody or even the improvisatory solo. I made this adaptation for a clearer terminology to denote an action of the hands. Kilian, G. 2011. *Balafon Beat: Exercise and Pieces for Balafon*, ed. J. Sponsel. Frankfurt: Zimmermann.

[44] Chernoff, *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms,* 94.

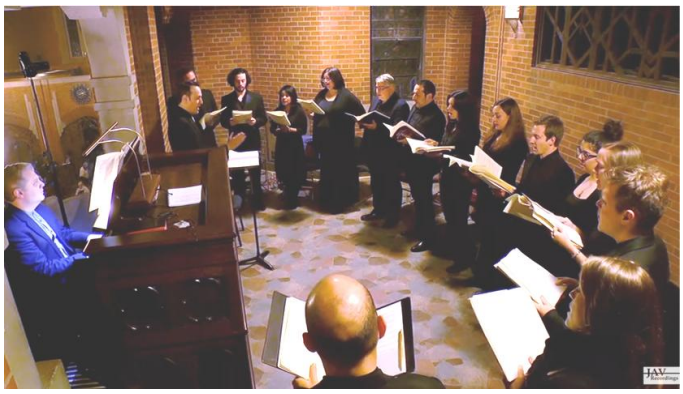
background, he/she would be a knowledgeable listener, as if he/she has studied the music. As such, the definition of *rhythm* is pertained to movement coordination and a structure of integrating multiple layers. For me, polyrhythm sounds familiar enough that I can sing one or two famous balafon *riffs* without effort.

https://youtu.be/9mc-gGg5ceI

Video 11: Song *Tansinu Bwenu*, sung by the Catholic church choir in village Konsankuy, Mali in a rehearsal. The title is in Bamana/ Bobo language, which means “Announce the good news (of Jesus Christ)”. Recorded by Adilia Yip.

https://youtu.be/I0Jggm-Kwdk

Video 12: Song *Wa Lara Màa Debwenu Na* sung by the Catholic church choir in village Konsankuy, Mali in a rehearsal. The title is in Bamana/ Bobo language, which means “Belief and faith in God”. Recorded by Adilia Yip.



https://youtu.be/1VEnix3jDYg

Video 13: *Salve Regina,* a hymn to Mary sung at a Catholic parish "Our Lady of Refuge" in Brooklyn. 2016. Director: Daniel Brondel, organist: Stephen Tharp. Brondel, D. 2016. *Salve Regina* sung at a Catholic parish. JAV Recordings.

3.2.2 Practical functions and social functions

Based on the above assumptions, the next step is to discuss the functionality inscribed in African rhythm. I identify two types of functions: practical functions and social functions. First, rhythm in Africa is an auxiliary element that guides people's actions and integrates the rhythmical sense of each individual to accomplish the task together as a group, such as enhancing work pace and mood, as well as synchronizing the actions. One good example is the ensemble which performed on the onion day. As a kind of cheerleading team to lift up the work vibe, the ensemble synchronized the women and acted as the moderator of the pace. The ensemble played faster when the women were energetic or needed to keep their progress; but it slowed down when the women looked exhausted.

Each composition also carries a specific meaning. Some titles and lyrics contain educational purposes, such as propagating good morals, while others narrate stories of a person or activities in daily life. *Fanta Mangkane* is a song intended for solidarity and fund raising for an old, sick woman; "Fanta" is a common female name in the area. *Anke Bara* is a work song that means "well done", performed after a day of hard work in the fields. *Yaruba Tsong* is a work song in which the action of ploughing soil is symbolized in the music fragment. It is performed in the fields when workers pull the plough to turn the soil over, clear weeds and cut furrows in preparation for the planting of seeds. The song also prays for good harvest.

Musicians and villagers recognize every composition and they know which composition is assigned to which event and function. Nevertheless, it seems these stories and purposes are not embodied in the musical forms. Despite its transforming of coordinative actions into musical polyrhythm, the balafon repertoire always expresses a positive attitude and the same energetic forward movement regardless of the story told in the lyrics. Whether it is a tragic death or an uplifting working song, emotion, meaning and intention are only mentioned in the lyrics but not expressed in the musical contexts. A song performed in a funeral might resemble that of a birthday party. Field work songs like *Anke Bara* and *Yaruba Tsong* do not sound robust in style, while a thank you song like *Barica* is similar to another dance rhythm without extra delicate expressions.[45]

On the other side of the coin, balafon music implies social functions that aim at the participation and integration of people. When a balafon ensemble performs in the village, almost everyone sings, claps their hands and participates in group performance with a rather open attitude. Every person participates without hesitation and joins the ensemble by either picking up an instrument, or following the accustomed dance choreography. Music is a social tool performed in festivities to activate the crowd and to stimulate interactions among participants. The success of the ensemble is judged in terms of the vitality of its participants, for example, in how fast and how long the participants could dance. Our teachers organized a big farewell party for our workshop by inviting another balafon ensemble from the nearby village. (Video 14) The ensembles were continually open to fresh rhythmic variations, pushing the technical level and the tempo to the highest possible.

[45] This information is confirmed by Kilian and the balafon teachers. However, in many African societies, there is special music for individuals at various points of their lives, for example, special music for different types of work, for courtship, for marriage, for healing, for death, for particular families, for particular times of the year. Chernoff, *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms,* 33-6.

https://youtu.be/wViIfYscPgw

Video 14: Balafon ensemble live performance and dance at the farewell party at village Konsankuy, Mali, January 2012. Recorded by Adilia Yip.

African music is a non-contemplative art, formed collaboratively by both musicians and participants. We may note integration of the two parties in other forms of social activities other than work coordination. For example, the consistent groove of the music is inherently embedded in the dance steps of the party participants.[46] (Blacking, 1955, Senghor, 1956 and Adamo, 2012) Pulse and tempo of the music are performed by dancers shaking their leg-bells and leg-rattles, or some other sound devices attached to their bodies or clothing.[47] (Chernoff, 1991) Blacking (1955) analyzes rhythmic accents by observing the body movement in rhythm. African drummers lift their arms on the strong beat of the music, and then, strike the drum on the weak beat, the African dancers lift their bodies on the strong beats of the music and drop on the weak beats.[48] We also learn how music is integrated into spoken language. Wachsmann's (1952) observation explains to us how balafon music is made for dance and based upon the language used in the lyrics, I would like to quote shortly from his study: "In

[46] John Blacking (1955) investigates into the dance step to observe the strong and weak beats in African music; Leopold Senghor (1956) mentions the rhythm of steps and gestures of narrators and musicians, that the rhythm of physical movement has become another major determinant of the African time sense; and a recent study by Giorgio Adamo (2012) collects video documentation of music and dance repertoires to draw conclusions on relationship between music and body motion. Blacking, J. 1955. Some notes on a theory of African rhythm advanced by Erich von Hornbostel. *African Music* 1 (2): 12-20. Senghor, L., and E. P. Halperin. 1956. African-Negro aesthetics. *Diogenes* 4 (16): 23-38. Adamo, G. 2012. *Music in the Body: Video Research in Central and Southern Malawi (2008-2011)*. Paper presented at Readings in ethnomusicology: a collection of papers presented at ethnomusicology symposium 2012, ed. M. Strumpf. University of Dar es Salaam, 173-186.

[47] Chernoff, *The Rhythmic Medium in African Music*, 1093.

[48] Blacking, *Some Notes on a Theory of Rhythm Advanced by Erich M*. von *Hornbostel*, 13-4.

Uganda music, as in much other [African] music, form is the by-product of several processes which include the participation of single persons and groups, the dance formation adopted by these persons and groups, and the application of commas, semicolons, and full stops in speech when word groups, phrases, and paragraphs are shaped. Genuine solo performances, in which either speech or physical rhythm are realized alone, do not exist. Neither the mother singing a lullaby nor the solo harpist really gives a solo performance."[49]

Conclusions

Therefore, I conclude that African rhythm stresses pragmatic over theoretic, holism over atomism, and integration over separation.[50] African rhythm is formed, performed and practiced based upon the praxis of actions and integration, and it offers us an alternative perception and concept of working with musical time: the Western system of meter, counting, notation and time division contain the tendencies to reach rhythmic complexity and scoring for a combination of instruments. While anyone can enjoy the robust energy of the sophisticated balafon polyrhythm, true understanding lies in the integration and coordination between rhythmic layers, and the superimposition of the conflicting, yet similar patterns. Technically, the balafon teachers that I encountered are concerned with listening and imitation skills. Rhythm is represented by movement coordination.

In a nutshell, the experience of learning African rhythm has enriched and renewed my knowledge of rhythm; moreover, it has given me insights to understand rhythm of a culture hitherto foreign to me. The trial and error learning experience and various problems in communicating rhythmic concepts have showed that the only method that we could incorporate is by following the teacher's oral tradition practice. We could only grasp the soul of the music by *avoiding*—ideally speaking—the use and adaptation of our Western rhythmic principles.

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[49] Wachsmann, K. 1953. Musicology in Uganda. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 83 (1): 55-6.

[50] Agawu, *Structural Analysis or Cultural Analysis? Competing Perspectives on the "Standard Pattern" of West African Rhythm*, 6.

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CHAPTER 4

THE IDIOM OF BODY MOVEMENT IN PERFORMANCE

In chapter two I discussed how various experiences and observations of learning the balafon have shed light on the understanding of music-producing movement of a performing musician; in this chapter, I will describe how the balafon experience of music embodiment, i.e., from reading symbolic notation to holistically imitating bodily gestural information, and changing from the instrumental shape of the marimba to the balafon, have shifted my perception and artistic practice. I will deepen the understanding of the embodied experience of a musician by asking the following questions: how is music-producing movement engaged in the process of performing and creating? How is movement involved in the environment of performance?

I will begin this discussion by illustrating the tight bonds between fundamental experiential factors in music performance: the performer's *self*, the intentions (includes musical ideas, expressions and concepts) and prevailing idioms, the performer's body, instrument, practice, score,[1] movement, and last but not least, the sound. Each of these has its role in the environment of performance, being categorizable as either the subject (i.e., the performer's *self*), object,[2] agency, or culture (habit and behavior). For instance, the musician, who is both *self* and subject in a performance environment, transforms his/her musical concepts (object and culture) into sound (object) through the body, by performing on the musical instruments (object). This is represented as *agency*[3] on figure 1, the spider graph of the factors and roles in performance. In this case, the concepts, musical ideas and

[1] Score in here means the composed music concepts that are prescribed to the performer, whether it is notated in symbolic forms or in oral tradition.

[2] As a simple definition, a subject is an observer and an object is a thing being observed; and in the doctrine of perceptual phenomenology, "our perception ends in objects, and the object once constituted, appears as the reason for all the experiences of it which we have had or could have. Merleau-Ponty, M. 2002. *Phenomenology of Perception*, trans. C. Smith. New York: Routledge, 67.

[3] Kathleen Coessens refers the musician's body as a human *agency*—a physical interface—in expressing musical and creative ideas. It reveals itself as a sensorial controller, sensing the resonance of the sound and interfering with it.

expressions—the performer's intentions—share the role as *subject* of the performance with the performer's *self*. The performer's *self* represents the presence of the performer, the symbiosis of the performer's intentions and his/her body. Through the performer's body, the performer's *self* perceives and processes sensorial experience. These experiential factors, rather than staying intact as independent elements, are tightly coupled as a united entity, and their qualities map with one another, mutually informing and synchronizing. At the same time, these factors are crossing different roles and each role pertains to several factors. Figure 1 provides an overview of the experiential factors and roles in performance:

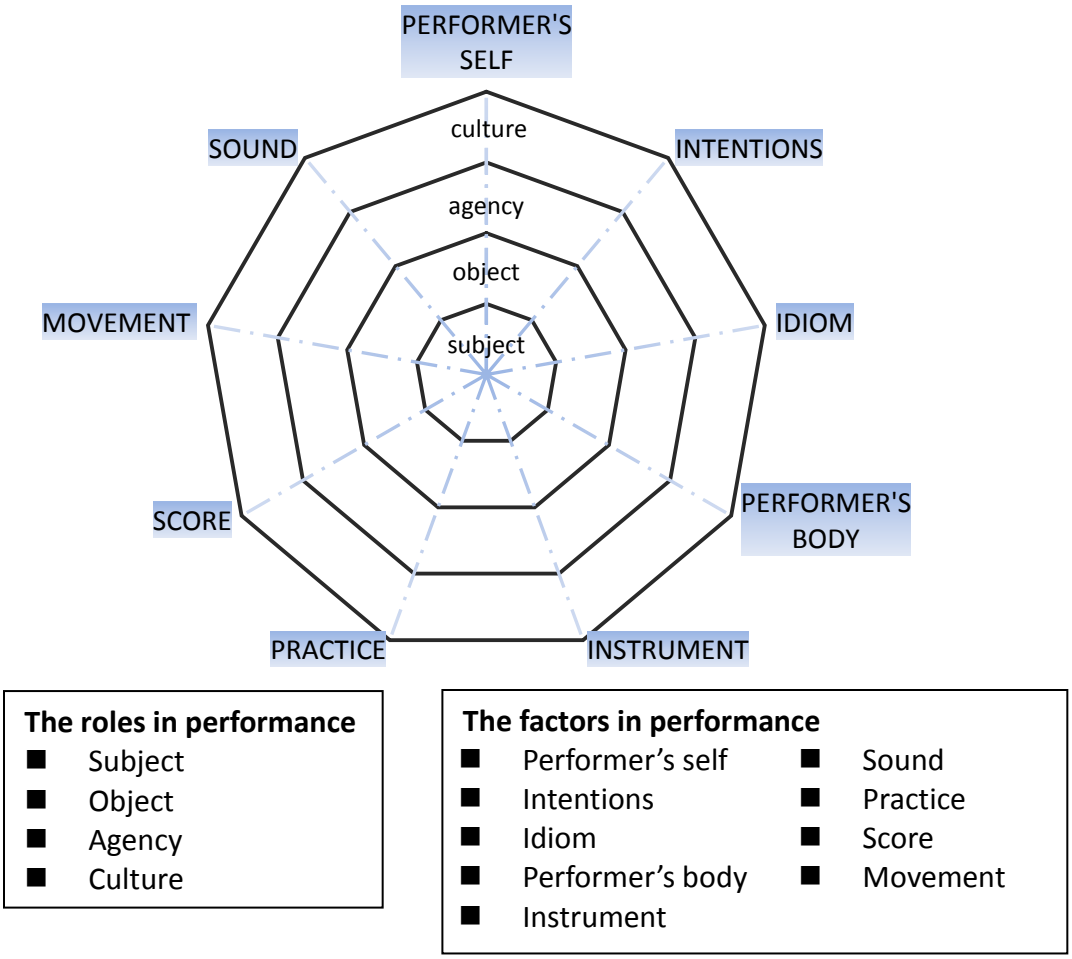

Figure 1: The factors and roles in performance represented in a spider graph. Illustration by Adilia Yip.

A singer's body is both an agency and a subject, for he/she is the physical interface of expressions and senses of the performance; nevertheless, his/her body is also the object that resonates like a mechanical musical instrument. The performer's *self,* actions and instrument offer another entangled relationship: the actions of a performer playing on a musical instrument constitute a habitual practice that constantly unites the instrument and the *self*, and, on the other hand, the *self* incorporates the instrument.[4] The score is a kind of mediator: it is the agent of transmitting the music concepts of a composer and, as such, dictates the performer's actions and concepts.

Determined by the characteristics of the art work and the performance, different factors interact and influence one another in different modalities. In the environment of the performing musician, the shape of a musical instrument filters and masks objects such as concepts, idiom and movement. The instrument can be considered as the partial subject that shares the center role with the performer's *self* in the performing environment, dominating additional factors.

Henceforth, I will focus on the formation of movement idiom in this chapter. In the *Cambridge Dictionary*, idiom is defined as "the style of expression in writing, speech, or music that is typical of a particular period, person, or group."[5] I argue that movement idioms are formed based upon different factors of performance, such as the shape of the instrument, and the musician's artistic concepts and intentions. As such, the first two topics of this chapter will look at the coupling and mapping of musician's bodily actions and the shape of the instrument. While the first topic will consider how the shape of the instrument is incorporated into idiom of movement, the second will consider the reverse of how performer's concepts and movement determine the instrument and the idiom. The third topic will discuss the process of embodying a movement idiom.

[4] And more, this argument refers to Merleau-Ponty's reflection on body as object. He questions: "Is not my body, exactly as are external bodies, an object which acts on receptors and finally gives rise to the consciousness of the body? Is there not an 'interoceptivity' just as there is an 'exteroceptivity'?" Merleau-Ponty, *Phenomenology of Perception*, 76, 91.

[5] *Idiom.* In *Cambridge Dictionary.* http://dictionary.cambridge.org/dictionary/english/idiom.

For the first topic, I will start the discussion from ethnomusicological research on embodiment and orientation. This will offer insights into the impact of different musical instruments on embodiment, explaining how the shape of the instrument is imprinted in the musical idiom and style. These observations will then be deepened in both a theoretical and practical way: first by relating these observations to the approaches of Western philosophers Kathleen Coessens (2018), Merleau-Ponty (1965) and Immanual Kant (1768-1787), and secondly, by relating them to my own experience of performing the balafon and its practice.

Conversely, the second topic considers how musician's concepts and movement may influence the construction of the instrument and the movement idiom. Concepts and technical possibilities of playing an instrument are guided by the intentions of musicians, the subject and the performer's *self*. Supported by my observations of practical and technical aspects of playing the marimba and the balafon, I will hypothesize how the shape of the instrument is formed by the musical concepts and technicality of the musicians.

The third topic will discuss how a performer embodies a movement idiom. I will proceed from the comparison of learner's experience in jazz and neurology to discuss the process of embodying a movement idiom through examining the performer's habitual practice and the ability of motor imaging. Subsequently, these observations and findings set the background of the movement idiom of balafon music in the next chapter.

4.1 Mapping movement patterns to the shape of an instrument

The coupling between musician's bodily movement and an instrument's construction will be developed by referring to studies of ethnomusicology. We will first approach this relationship from an observational point of view, and secondly, by considering the instrument as the orientation for the performer's movement.

4.1.1 Some ethnomusicological insights

John Blacking (1955a, 1955b, 1961 and 1991) offered two pioneer empirical studies in which he departed from analyzing the movement patterns of performing on instruments, enlightening a new research methodology that was different from past conventional approaches. His first study is a two-part analysis of the musical aspects (transcriptions) and the physical aspects (instrument structure and techniques) of eight recorded tunes of the Butembo Nyamule flute from Congo, recorded by Hugh Tracey in 1952 at Butembo, performed by Katsuba Mwongolo, a Nande herdsman who roamed the highlands on the eastern border of the Congo (1955). In this investigation, Blacking applied an experimental analysis to draw conclusions about the relations between the physical properties of the instrument and the music played on it. He reconstructed the fingerings and blowing techniques of Mwongolo's flute that were used in these recordings by comparing it with a similar four-holed flute "Nyamulera" from Uganda, an item in the collection of the International Library of African Music.[6] He stressed the significance of movement when investigating African music. Here is the momentous remark that inspired researchers afterwards:

> "The main purpose of this paper has been to show that a *physical* analysis of the instrumental music of Africa may often prove more enlightening than a purely musical analysis. This may seem obvious to any performing musician: a pianist who plays the Etudes of Chopin or many pieces by Liszt cannot help being conscious of the sheer physical pleasure of numerous passages, and noticing how the music grows out of physical movement. And yet as far as I know there has been no attempt to analyze the music of Africa (or any exotic, unwritten music for that matter) according to the physical properties of the instruments on which it is played. We often read such remarks as: "the basic step is the third", or "the fourth seems to be the most important interval in the music of this tribe". If such remarks refer to predominantly instrumental items, they are probably platitudes, since the significant intervals may arise from the nature of the instruments used."

[6] Blacking, J. 1955. Eight flute tunes from Butembo, East Belgian Congo—An analysis in two parts, musical and physical. *African Music* 1 (2): 36-52.

In the analysis on the kalimba[7] tunes from Nsenga, Blacking (1961) concluded that there exist no musical patterns common to different melodies; but when the fingerings[8] and rhythm are compared, some recurring patterns of fingerings appear, inextricably linked to different patterns of polyrhythm.[9] Blacking confirmed in an interview more than thirty years after these analyzes, the importance of considering the aspect of movement when analyzing African music:

> "For me, it was essential to understand the close relationship between the body—the structure, movement, and feeling of the body—and the production of musical sound. I learned the relationship from my analysis of African music. In Nsenga kalimba music body movements play a major role in the construction of melodic patterns."[10]

For John Baily, these insights and observations by African ethnomusicologists on movement (von Hornbostel, Blacking and Kubik[11]) have all pointed to one common factor: musician's bodily movement is inevitably bounded to the shape of the instruments. Baily reasoned from these African theories and confirmed the tight coupling between movement patterns and the shape of the instrument:

> "There is recognition of the importance of studying the movement patterns used for playing an instrument. A musical instrument is a transducer, converting movement patterns into sound patterns […] The physical characteristics of an instrument influence, to a varying extent, the structure of the music played on it in such a ways that those aspects of the music may be said to be generated from the instrument. Or an instrument may be constructed to suit particular motor patterns in order to fulfill certain musical requirements."[12]

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[7] Kalimba is a form of lamellaphone which consists of a set of flexible metal keys (sometimes made of other materials) that are plucked with the thumbs (also possible, but less often, with other fingers too).

[8] Specifically, the kalimba keyboard is divided symmetrically and the thumbs of the two hands play the right side and the left side respectively, where the low tones are allocated in the center and moves outwards to both ends for the higher tones.

[9] Blacking, J. 1961. Patterns of Nsenga kalimba music. *African Music: Journal of the International Library of African Music* 2 (4): 26-43.

[10] Howard, K. and J. Blacking. 1991. John blacking: An interview conducted and edited by Keith Howard. *Ethnomusicology* 35 (1): 69.

[11] Gerhard Kubik (1965, 1972) uses the method of analyzing motional pictures to observe the exact "spacing" of the notes to be struck, as a matter of fact that learning the correct body posture and movement of performing on the instrument is of crucial importance.

[12] Baily, J. 1985. Music structure and human movement. In *Musical Structure and Cognition*, eds. P. Howell, I. Cross and R. West. London: Academic Press, 242.

Baily continued by examining the human sensorimotor system of playing an instrument to speculate on the interaction between the structures of the human body and that of the instrument. In 1973-1974, Baily conducted an investigation of the fourteen-stringed Herati dutār (hereafter referred to as dutār), an instrument found in Afghanistan. It is a modern standardized version of the two-stringed dutār, a long-necked lute used in the period of 1950-1965. (Figure 2a) The dutār was intentionally given certain features borrowed from the Afghan rubāb, so that it could also perform rubāb music. Thus, the fourteen-stringed dutār is a fusion of the shape of the two-stringed dutār and the system of fretting to give the musical scale of rubāb.[13] Solely speaking about the physical technique, both the dutār and the rubāb pertain to a similar plucking mechanism; however, an important difference between the two is the number of strings: the dutār has only one melodic string (out of fourteen strings), so that the note positions are arranged in a single row, a linear array; whereas the rubāb has three melodic strings with the note positions allocated across them, arranged in a tiered array. (Figure 2b)

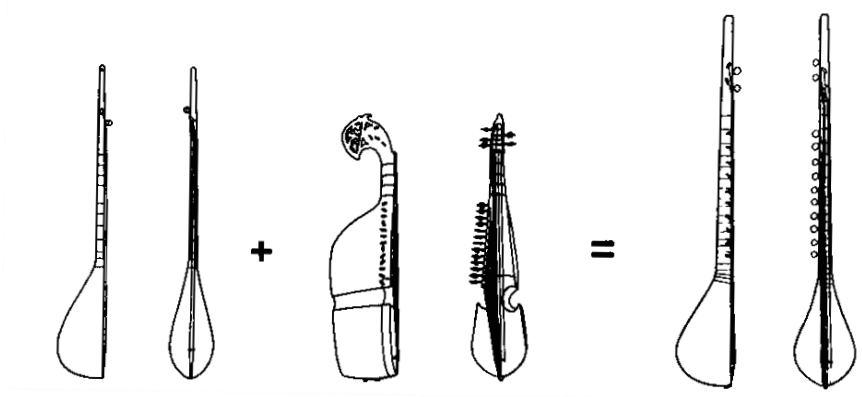

Figure 2a: Illustrations of the instruments from left to right: two-stringed dutār, rubāb and fourteen-stringed dutār. Baily, *Music Structure and Human Movement*, 244-5.

[13] The rubāb is a short-necked lute whose body is carved out of a single piece of wood. It is covered by a membrane over the hollow bowl of the sound-chamber, which the bridge is positioned above. It has three melody strings tuned in fourths, two or three drone strings and up to fifteen sympathetic strings.

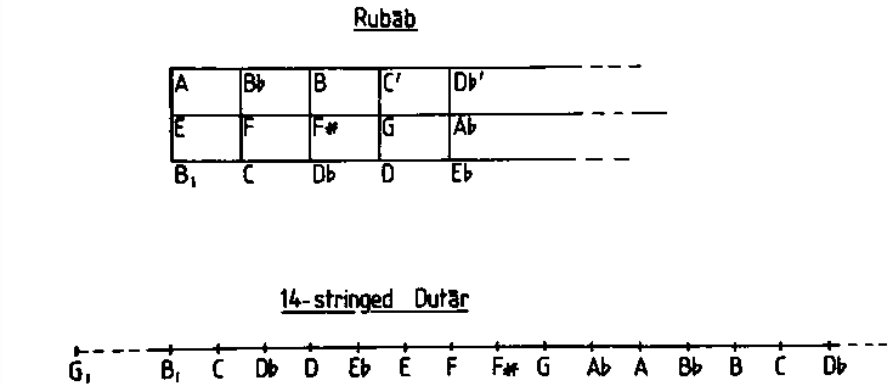

Figure 2b: The spatial layout of notes on rubāb and fourteen-stringed dutār. *Ibid*.

From Baily's extensive comparison between the dutār and the rubāb on repertoire, scales, intervals and rhythm organization, some obvious differences in spatio-motor sensory—movement patterns, spatial patterns and fingerings—of playing the two instruments emerged. One interesting example is the different physical movement of playing a scale, quoting from Baily:

> "When rubāb tunes are played on the dutār, the situation is very different. Scalar patterns now require ascending and descending sequences of hand movements. On the rubāb, the left hand can operate within a tactuokinesthetic field, whereas, on the dutār, visual information is more likely to be required to plan and control accurate movements of the left hand. Thus, scalar motional patterns fit less well on the dutār than on the rubāb."[14]

4.1.2 The musical instrument as the orientation of the musician's body

I will complement the theoretic approach of the ethnomusicology literature with my personal experience of performing on idiophones and my participant observation study. After learning about thirty balafon compositions with my teachers, I started to incorporate the way of playing the music. Unexpectedly, I began to remark that each piece in the repertoire follows a subsequent set of common language traits in physical movement. To my interest, this idiom embedded in the music happens only in the listening aspect of the music. The music is also recognizable in its forms of movement and coordination patterns. The recognition of such becomes part of the bodily experience of playing on the instrument. The music seems to

[14] *Ibid*., 253.

contain certain types of recurring patterns that are recalled consistently in each composition. These patterns seem to be simple linear rhythmic fragments in groups of three to four notes, but became confusing when superimposed. Literally speaking, I began to understand roughly the next moves of my hands in terms of direction and spatial distance, also, the time lapse before the next strikes. Before all parts of the musical construction are revealed, this sense of knowing what should come next in, both sound-wise and physical-wise, helped to advance my skills of learning the music. The video below shows the movement trajectories of the hands in *Kebini*:

http://youtu.be/It3HQu1LP6A

Video 1: Song *Kebini*, a demonstration showing the movement trajectories. Performed by Youssouf Keita in the balafon workshop in Burkina Faso, January 2013. Recorded by Adilia Yip.

So where does this sense of prediction come from? John Miller Chernoff (1991) suggests that there exists a "standard pattern", an idiomatic rhythmic pattern in African music that is fundamental to every African musical tradition, and it supports many pieces in many traditions' repertoires.[15] What is the origin of this "standard pattern" in balafon, and what are the underlying idiomatic factors that shape and filter this commonness among these patterns that I experienced, be it movement, rhythmic or melodic pattern? When the musician's body is on stage, his or her bodily actions have to interrelate with the shape of the musical instrument and the idiomatic musical language. Different instruments—idiophone, membranophone, chordophone, aerophone, and even, electrophone[16]—require various bodily mechanisms for

[15] Chernoff, J. M. 1991. The rhythmic medium in African music. *New Literary History* 22 (4): 1096.
[16] von Hornbostel, E. M. and C. Sachs. 1961. Classification of musical instruments: Translated from the

mastering the musical techniques to make an instrument sound, or to perform different technical levels of music repertoire, and generally every performer's state of mind is forced to take into account all factors of performance (figure 1). One possible way of thinking would be to reduce the bodily experience of performing into a mere interaction between the two physically existing objects—the instrument and the musician's body. From this perspective, out of all experiential factors of the performance environment, the instrument is a significant physical presence to the musician to express his/her musical ideas and thoughts.

Therefore, the instrument filters, shapes, affords, and denies the bodily actions. The choice to partake (or share) with this odd entity—neither part of the performer's body nor separate from it—is a necessary condition. As the instrument imposes a complex of pre-determined performance practices and behaviors—a mix of habit and history—the performer needs to work with more filters, more masks.[17] As such, the shape of the instrument is the eloquent, crucial precedential factor that defines the movable space of the performing musician's body, and that precedes the musician's intention in composing, performing, improvising and imagining. Thus, the instrument becomes the pre-condition of the sensibility in space and time of the musician. It orientates the musician's movement, despite of being an object outside the body.

In "Mapping the Musician's Body", philosopher, pianist and improviser Kathleen Coessens speculates on the exertion of the shape of the instrument to the performer's movement.[18] For a performer of a musical instrument, all movement within space and time is determined by his or her instrument as she says: "depending upon the instrument, different planes of movement with its own parameters of time and space predispose the corporeal

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original German by Anthony Baines and Klaus P. Wachsmann. *The Galpin Society Journal* 14: 3-29. Instrument families. In *Musical Instrument Museums Online*. http://www.mimo-international.com/MIMO/instrument-families.aspx

[17] Laws, C., W. Brooks and S. Östersjö. 2016. Performance, subjectivity and experimentation. In *Orpheus Institute 20 Years—Rethinking the Practices of Music*.

[18] Coessens, K. 2018 (forthcoming). Mapping the musicians' body. In *Bodies of Evidence*, eds. C. Laws and S. Stewell. Leuven University Press.

actions of the artist." This instrument, which is the external object of the musician, plays a primary role in presupposing the physical dimensions of the performing body's movements in space and the frequency of acting out these movements. Therefore, despite of the performer's inner sensibility, music can be considered as an enactment of the dynamic relationship between the performer and the musical instrument. To determine this, I will refer to Coessens's analysis on the spatial plane and energetic plane of movement. Then, I will adopt principles from Immanuel Kant's theory on sensibility and transcendental embodiment to determine how the shape of the instrument predisposes the musician's body movement, and how it is embodied in the creation of music.

Let us first analyse the spatial plane of movement. A pianist's movement planes are visualized in figure 3. Corresponding to the shape of the instrument, the grayish rectangular space represents the piano keyboard and the area drawn by the arc represents the spatial plane of the pianist. Thus, the pianist has a symmetrical horizontal plane of physical action with considerable exertion of force and impact of arms, wrists and fingers. We can add more details to this theory, such as the distance that exists between the white diatonic keys and the black accidental keys, requiring small scale, half-step movement of the fingers. For the cellist, in contrast, the spatial plane is asymmetric and contains two distinct types of motor movement between the right and left arm and hand. Sound is created by the right hand by pushing and pulling a bow against strings, or by plucking them, and the left hand manipulates the instrument's fingerboard by pressing, sliding, and "shaking" to create different pitches and effects (such as vibrato). This creates different impact spaces that constitute rather contrasting movement patterns between right and left sides of the performer. Moreover, the tactile contact of the cellist is rather direct compared to that of a pianist. Though a pianist has direct touch with the instrument by pressing its keys, yet, the sound is produced by initiating a series of mechanics involving each keys hammers striking on strings that are mounted on the soundboard. In contrast, a cellist touches the instrument's strings directly by causing friction of bow hair against strings, which is then resonated by a hollow wooden body.

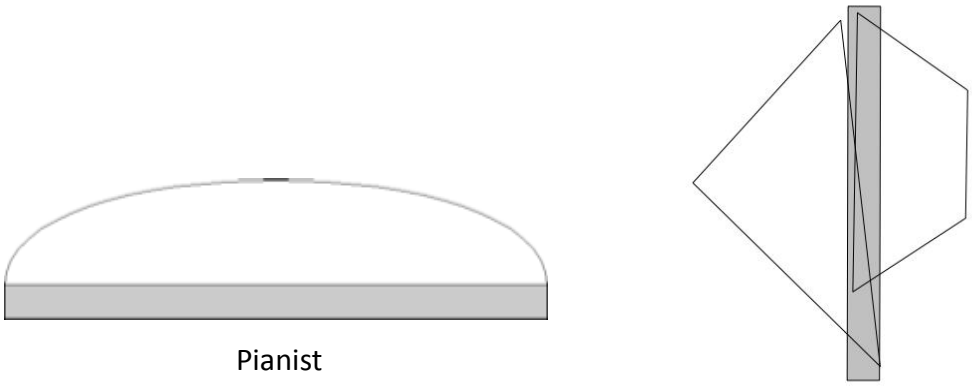


Figure 3: Two visualizations of the spatial plane of a pianist and a cellist. Coessens, K. 2018 (forthcoming). Mapping the Musicians' Body. In *Bodies of Evidence*, ed. by C. Laws and S. Stewell, Leuven University Press.

Further, the second part of my theory underlies the energetic plane of the musician's movement—the force and resistance, the effect and affect—and is tied to the construction and the playing mechanism of the instrument. Energy is released from different parts of the body, depending on the specific actions involved in playing the instrument. A trumpeter is preoccupied with the coordination of breathing (including diaphragm inflation and deflation), and the embouchure of the lips, while a violinist focuses mainly on movement of the shoulders, arms, wrists and fingers. Specific body parts of both instrumentalists are carefully trained to control force and resistance. The playing of idiophones requires muscle coordination training that is different than either the string player or the keyboardist. Controlled by the extract and release of the arm muscles, the wrist joint permits the movement of the hands in one plane. The hands hold the mallets, carry their weight and resist the force of gravity to keep the mallets from falling. When holding two mallets in one hand, the fingers act on the positions of the mallets in the hands to change the distance between the two mallets in order to play different pitch intervals.

Therefore, Coessens's discourse on mapping the instrument's shape to the musician's movement provides insights on the ways actions are performed differently according to the

shape of the instruments, leading to a deeper analysis of the trajectories of the hands on the balafon and the marimba. Although the balafon and the marimba require similar movement mechanisms of the arms, the movement idioms differ according to the different structural designs of the instruments. Figure 4a and 4b illustrate the spatial planes of the balafon and the marimba:

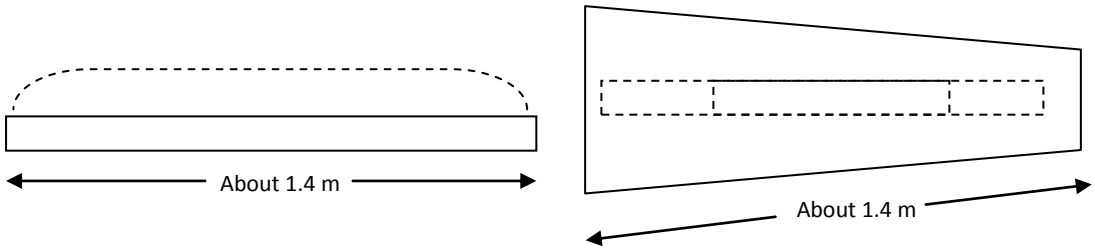


Figure 4a: Two visualizations of the vertical and the horizontal spatial planes of the balafon. Illustration by Adilia Yip.

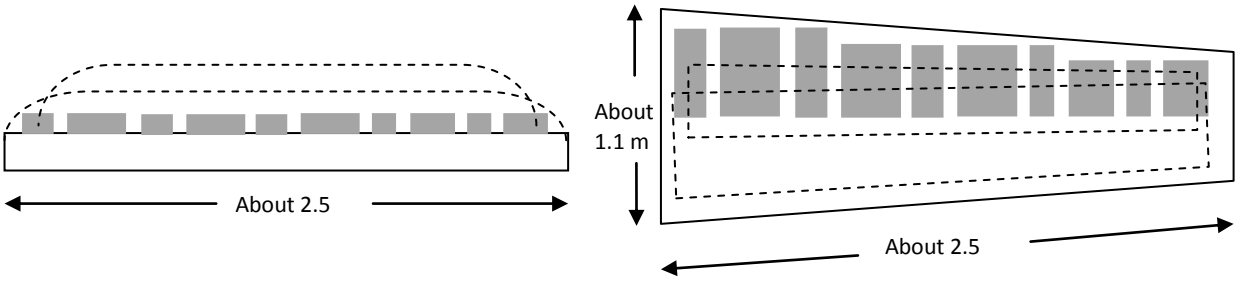


Figure 4b: Two visualizations of the vertical and the horizontal spatial planes of the marimba. Illustration by Adilia Yip.

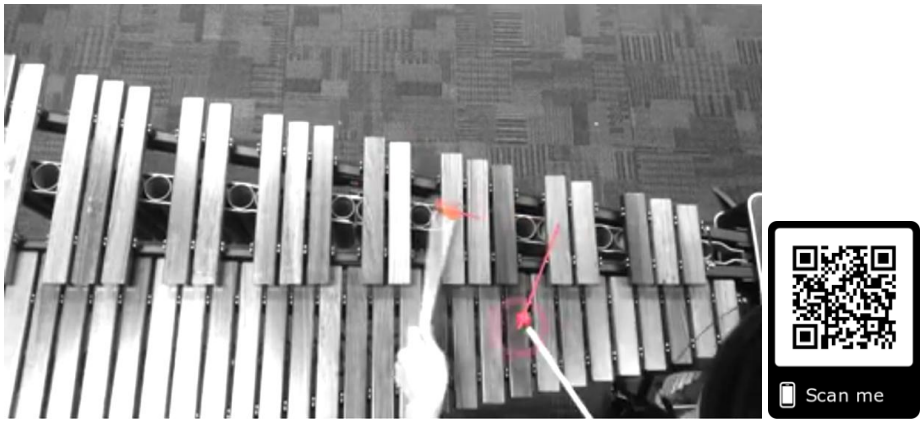
The four diagrams represent the traditional ways of playing on the two instruments. The grey squares represent the accidental keys which are a step higher than the diatonic keys in white and are organized in groups of two and three keys, in a manner similar to the piano, which means that the smaller squares represent groups of two keys while the bigger squares three keys. The dashed lines mark the field of action of the performer. These dashed lines form squares and they overlap to indicate how the spatial planes are shared by the hands, despite

of the fact that, in most circumstances, the right hand controls the right side of the instrument, while the left hand the left side. I have included the dimensions of the instrument to show the actual distance that the body needs to move.

From observing these movement planes, it may seem that balafon playing is simpler compared to the marimba. Balafon playing constitutes only horizontal movement of the hands. While the marimba consists of a double-rowed keyboard, the movement plane of the balafon can be imagined as a uniform line in which the single spatial plane of the keyboard gives a sense of moving in a natural, spontaneous and direct way (figure 4a). In contrast, the spatial plane of the marimba requires musicians to move partially, and cautiously, in vertical motion over the bi-level keyboard, as well as, moving among the "black keys" that are separated by wide gaps (figure 4b). Such basic comparisons on the construction of the two instruments show, paradoxically, the variables that occur in their idiomatic musical language. For instance, the single row balafon demands that the musician focuses on developing the bimanual coordination needed to play polyrhythm, and the music is contingently built upon parallel movement both musically and physically.[19] In contrast, the technical challenge of marimba's two-mallet technique emphasizes the evenness of the alternating strokes between two hands. Most beginners must spend long period of fundamental training on this technique with numerous exercises, including practicing scales (major, minor, whole-tone, chromatic, blues scales, etc.), so that a musician can produce even strokes with physical ease.[20] Since it is a Western instrument, marimba is pertained to the aesthetics of the Western music world in which monophonic melodies are expected to be interpreted in the same lyrical style as other strings and winds instruments. Video 2 shows the two-mallet technique on xylophone, a high-pitched diatonic percussion keyboard mainly used in orchestra music.

[19] In most cases two mallets in one hand is only to strengthen the melody harmonically, with no intentions on polyphonic constructions.

[20] A classical method book on two-mallet technique: Goldenberg, M. 2002. *Modern School for Xylophone, Marimba, Vibraphone*, ed. A. J. Cirone. London: International Music Publications.



https://youtu.be/F-CNJ7yv5T4

Video 2: This video is a performance of xylophone excerpt from "Porgy and Bess", an opera composed by George Gershwin in 1935. Performed and created by percussionist Shota Miyazaki, the animation in the video shows the movement patterns of playing with two mallets. Miyazaki says, "This is exactly what percussionists are thinking…" The red lines and shapes visualize the movement trajectories of how a percussionist moves physically to embody the music. Some repeating patterns and shapes of these red lines may suggest the movement idiom embedded in this excerpt.

Interestingly, Coessens's theory synchronizes with Immanuel Kant's (1768-1787) thesis on transcendental embodiment and human sensibility and Merleau-Ponty's (1965) theory on sense experience. While Coessens considers the instrument as the orientation to the performer's body, Kant considers the human being's *feeling*—our sensibility[21] of the object—determines the orientation and position of the object. Based on Kant's theory, space and time are two *a priori*[22] forms of the intuitive feeling of the human being. Space is the necessary condition of all relations in which I intuit objects as *outside of myself*; and time is the necessary condition of my intuition of me and of *my inner state*.[23] The human body is able to recognize objects (i.e., from celestial bodies to maps of the earth, from natural creatures to artefacts) in terms of their different orientations. However, determining the orientation of an object does not infer from its mere position and order in a region. For instance, when we speak about the

[21] Sensibility implies the *feeling* and awareness of the person. It concerns the experience coming directly from the person himself, which is distinguished from the third person observation implied in empirical and anthropological observations.

[22] *A priori* refers a reasoning that proceeds from theoretical deduction rather than from observation or experience.

[23] Nuzzo, A. 2008. *Ideal Embodiment: Kant's Theory of Sensibility*. Bloomington: Indiana University Press, 30.

position of an object, the human body is the reference point to its position (i.e., the shop is 500 meters from here); or in some circumstances, the orientation of an object is determined by its relativity to other objects, i.e., the supermarket is next to my office building. The orientation of an object is also determined by theoretic parameters. Geography provides us the exact location of a city, for instance, Brussels is located on the latitude of 50.85 and longitude of 4.35.[24] While space cannot be a property or relation of the things in themselves, reference is required to the region—our human body—in which the position of the object is then determined. Thus, concerning the orientation of the musical instrument, I am the reference point that determines its orientation, and I determine my distance and physical connection between my body and the instrument.

This can be further elaborated by Merleau-Ponty's observation of "sense experience". We shall pay attention to the quality of an object: it contains vital value but not *dead* qualities, varying depending on its state and circumstance. Here are some examples: the light of a candle seems warm and sweet; however, its appearance changed for children when they burn themselves. It becomes literally repulsive.[25] For those who have never seen a balafon, if they see Kassoum Keita playing at the opposite side of the balafon, the instrument will be recognized as a keyboard on which the bass register is set on the right side of the performer. (Figure 5) A young child who has never seen a violin performance might conceive different ways of making sound with the instrument. The sense of experience of an object always involves the human body as the point of reference. The quality and orientation of an object change in relation to the presence of the human body. We first grasp the meaning embedded in the object itself by the experience of the human body, this heavy mass that has the first contact with the object. The orientation and the quality are determined by the *association* or *affinity* between the object and the body.[26]

[24] http://www.worldatlas.com/eu/be/where-is-belgium.html
[25] Nuzzo, *Ideal Embodiment: Kant's Theory of Sensibility*, 52.
[26] *Ibid.*, 52-3.

Figure 5: Kassoum playing at the opposite side of the balafon. He is playing the bass register with the right hand, and the high register with left. Photo credit: Adilia Yip.

Henceforth, the body discloses duplicity of its (subjective and objective) being: on one hand, it is the reference point of sensing the experience of external oriented objects; and on the other hand, it is an *object* that senses orientation. It is this sensibility, the *feeling* of orientation of our body that sets the ground for our judgment of space. For instance, despite their external similarity, we perceive the difference between our left and right hand—one glove cannot fit for both hands, as the thumbs point to opposite directions.[27] One can hardly alter the sensibility of natural orientation, as our body predisposes the left hand works for the left field of the body, and the right hand for that of the right. Usually a right-handed feels that his/her right hand is stronger and more skilful, and that his/her movement is better facilitated when starting on the right side. IF one were to hold the bicycle handle bar with arms crossed over (i.e. right hand on left handlebar and vice-versa) his/her sensibility of balance and direction would be disabled. Then, ironically, who could actually perform the "Macarena dance" of twisting the positions of arms in the process of evacuating an aeroplane?[28] (Figure 6)

[27] *Ibid.*, 38-9.

[28] Macarena was an international hit in the 1990s, which people were fascinated in learning the unique dance steps. It continues to be a popular dance at weddings, parties, and sporting events.

Figure 6: Safety information of flight. Source of photo: Ryanair.

The conclusion is that the musical instrument becomes the orientation of the musician's sensibility of space by predisposing the various spatial and energy planes of his/her movement. The positions of the slats of the idiophonic keyboard forms part of this orientation, while the whole instrument constitutes the unitary space of the musician's body, his environment and performance habitus. The presence and absence of external objects are only variations within a field of primordial presence, a perceptual domain of my experiencing body (and mind).[29] On the other hand, the body itself is one of these oriented objects of experience, positioning itself as the reference point to the unitary space of the instrument, the centre of of all external objects. This forms rather a duality in the musician's sensibility of space; the musician him/herself being the reference point to the orientation for the instrument, while the instrument is the object that defines the orientation of the musician.

4.2 Mapping the musician's concepts and intentions to the shape of the instrument

Leaving the discourse of orientation of the musician's body aside, the next step of this reflective analysis concerns intentionality: why are instruments designed as they are? An instrument accommodates a musician's physical possibilities and compositional concepts. In this part I will first consider how musicians' intentions and capabilities are incorporated in the construction of the instruments; then, I will exemplify what musicians do to go beyond the limits of the instrument's original sound spectrum.

[29] Nuzzo, *Ideal Embodiment: Kant's Theory of Sensibility*, 92.

4.2.1 Coping with the needs of the musicians

Despite the natural physics of acoustics, an instrument is constructed according to the intentions of both the musicians and of the instrument's inventors. For instance, the marimba endorsed the arrangement of the black and white piano keyboard, as the instrument is made for playing the twelve-tone compositions of Western classical music.[30] But this is a classical dilemma of whether the chicken or egg comes first: I may assume that the balafon is made for its pentatonic scale repertoire, but vice versa, the repertoire can be created based upon the tuning and construction of the instrument. The balafon builders are concerned with adapting their instrument for profitable sales and marketing. Youssouf Keita, builder of the balafon, endorses a pentatonic scale of the Western well-temperament 12-tone tuning, instead of the traditional tuning passed down from his elders. Since hardly any idiophone keyboards in Africa would endorse a strict well-tempered tuning, I doubt if this is the original tuning of this region, but probably, an influence of the Western culture.[31] (Boone, 1936, Kubik, 1960, 1962, 1963, 1964, Rouget and Schwarz, 1969, Johnston, 1973, Strand, 2009) For instance, Charry (2000) could not find two instruments by two builders that were tuned in the same equiheptaphonic tuning (i.e., seven-note scale in evenly intervals). But if builders are working strictly with an equiheptaphonic tuning, how would it be possible that the tunings are so varied?[32] Apparently, the conception of an equal seven-note scale is conformed by the tuning preferences of the builders and the regions that they come from. Unfortunately, I failed to get more answers from Youssouf, as it seemed to me he did not like this question at all. Only we are sure that the Western pentatonic scale helps them to work with European musicians and students.

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[30] Another example: the Gamelan instruments from Indonesia endorses two tuning systems: *sléndro* is a system with five notes to the octave, fairly even intervals, while *pélog* has seven notes to the octave, with uneven intervals, usually played in five note subsets of the seven-tone collection. The two tunings are used in all instruments, including the metallic keyboards (gendér, peking, saron and slenthem), gongs (bonang) and wooden keyboard (gambang).

[31] Boone, O. 1936. *Les Xylophones du Congo Belge*. Tevuren: Annales du Musée du Congo Belge. Kubik, G. 1960. The structure of Kiganda xylophone music. *African Music* 2 (3): 6-30. Kubik, G. 1962. The endara xylophone of Bukonjo. *African Music* 3 (1): 43-8. Kubik, G. 1963. Discovery of a trough xylophone in northern Mozambique. *African Music* 3 (2): 11-4. Kubik, G. 1964. Xylophone playing in southern Uganda. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 94 (2): 138-59. Johnston, T. F. 1973. Mohambi xylophone music of the Shangana-Tsonga. *African Music* 5 (3): 86-93. Rouget, G. and J. Schwarz. 1969. Sur les xylophones équiheptaphoniques des Malinké. *Revue De Musicologie* 55 (1): 47-77.

[32] Charry, Mande Music, 13, 165-6.

Presumably, a pentatonic scale that sounds out of tune to the Western ears will certainly decrease the interests of foreign students. Besides, Aly Keita commissioned Youssouf to build a chromatic instrument called "marimbalafon" to perform with his band in Europe.[33] Such are the examples of how modern balafonists modify their instruments to cope with the commercial world.

The point is not to argue whether or not musical intentions come before the invention of the instrument, but to develop the idea that musicians and builders adapt the structure of the instrument to cope with their needs. These intentions filter towards the most appropriate idiomatic style in the music and, nevertheless, shape the musician's bodily movement. One notable example of this is the invention of four-mallet marimba technique. Four-mallet technique[34] opens up new musical and compositional possibilities, comparable to what a pianist can do on the piano, such as harmonic progression and polyphony. It also offers possibilities to solve some awkward movement patterns when using only two mallets on the double-rowed, extensive keyboard. This technique opened up a tremendous growth in both repertoire and training exercises and etudes, including alternating strokes (rotating the two mallets in one hand), single strokes (the independent control of one mallet, while holding two in each hand) and interval control (opening and closing the two mallets in one hand to perform various intervals).[35]

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[33] As told by Youssouf Keita.

[34] There are various kinds of four-mallet grips, mainly divided into "independence grip" and "crossed grip", depending on the method of holding the two mallets in one hand. The first independence grip "Musser grip" by Clair Omar Musser (1901-1998) is probably dated back in the 1920's, which later inspired the invention of "Stevens grip" in the 1970's by Leigh Howard Stevens. Other renowned marimbists Keiko Abe (1937-) and Nancy Zeltsman (1958-) use and write about "traditional grip", which is the earliest among different types of crossed grips invented around 1900 by an unknown inventor. Another type of crossed grip, the "Burton grip" was invented by vibraphone virtuoso Gary Burton (1943-) in the 1960's. Zeltsman, N. 1995. Traditional four-mallet grip. *Percussive Notes* 33 (4): 50-54. In an online video lesson on Burton grip, its inventor Gary Burton claimed that it is a revised version grew out of traditional grip. Burton, G. 2009. Gary Burton demonstrates the Burton grip. https://www.youtube.com/watch?v=pfHoqV1ng5M. Ney Rosauro wrote on a instrument company blog about his specific extended Burton grip. Rosauro, N. 2012. *Crossing Grips Extensions*. http://yamahacorpus.tumblr.com/post/110736856921/crossing-grip-extensions.

[35] Stevens, L. H. 2000. *Method of Movement for Marimba*. Asbury Park: Keyboard Percussion Publications. Zeltsman, N. 2003. *Four-mallet Marimba Playing: A Musical Approach for All Levels*, ed. R. Mattingly. London: Hal Leonard. And a recent online four-mallet lesson series: Gaines, J. 2012. Sequential studies for 4 mallet marimba. http://vicfirth.com/julia-gaines-4-mallet-marimba-lesson-01/.

4.2.2 Creating beyond the limits—new compositional ideas, extended techniques, transcription and arrangements

To realize their compositional ideas, composers must adapt their creativity to the limits of the instruments that they are writing for; nevertheless, they explore instruments' technical and acoustic potentials and extend the possibilities of the recognition of those instruments by the general public. This leads to further innovation: modernist composers in the late 19th century and 20th century found new directions in music aesthetics by bringing the audience to a new world of tonality. They shifted from the harmonic enrichment and melodic sophistication in Romanticism (i.e. in Wagner's opera and Mahler's symphonies) to sound-based compositions,[36] such as, according to James McHard, the first piece of modern music is Debussy's "Prelude to the Afternoon of a Faun" (1892-4), which saw the dawn of an intuitively sound-based music. Debussy replaced the conventional functionality of harmony with a new approach to sound. For instance, parallel harmonic progression was Debussy's favorite harmonic idioms. Sounds rolled through vague patterns and colors emerged in shifting patterns. Shortly thereafter, among others, Schoenberg created a radical, new harmony based on fourths ("First Chamber Symphony", 1906) and Stravinsky composed his exotic "Petrouchka" with bi-tonal chord combinations and octatonic scale configurations.[37]

Apart from explorations in tonality and other theoretic compositional ideas, modern composers also pushed the limits of the instrumental technique to obtain unusual sounds and timbres. They redefined an instrument by employing some unconventional, unorthodox extended playing methods. Some of them have even tested performers' technical abilities. Some extended techniques on the marimba include placing a piece of aluminum foil (or paper, plastic bag, etc.) on the marimba bars to create an additional vibration, or using special mallets

[36] Sound-based music is music that is created by the manipulation and transformation of raw materials from one characteristics state to another. It focuses on the qualities inherent in sound; i.e., composition focused solely on natural phenomena that access the very doorways to comprehension by the ear and the mind. McHard, J. L. 2001. *The Future of Modern Music—A Philosophical Exploration of Modernist Music in the 20th Century and Beyond*. Michigan: Iconic Press, 21-2.

[37] *Ibid.*, 25-6.

that are made of plastic or wrapped with a leather to create special timbres.[38] In "43 Sunsets" (2017), Vasiliki Legaki (1976-) asks the performer to place a plastic mallet in between the marimba bars, so that it jumps when the performer strikes on adjacent bars to create a special interlocking effect.[39]

Extended technique is also designed for other Western instruments. In Alban Berg's string quartet "Lyric Suite" (1926) movement six "Largo desolato", we can hear many special sound effects that the composer has worked into the texture of the composition. The extended techniques used to create these effects include playing on the bridge of the instrument, using the wooden part of the bow, or playing near the fingerboard to create a flute like sound.[40] Some decades later, Helmut Lachenmann's "Pression" (1969) for cello uses non-traditional performance methods to avoid classical hierarchical structures such as prioritizing work over performance and compositional traditions over pure sound. The performer is asked to squeeze, press, jerk, slide, hit and strike various parts of the instrument and the bow.[41] And in "Guero" (1988), Lachenmann treats the piano as "a six-manualed variant […] of that Latin American [percussion] instrument". But more than simply writing for the scraping, plucking or striking different surfaces of the piano such as the edge of the wooden keys and the strings, the composer is interested in rethinking conventional music-making habits, pushing the established auditory-motor relationships, and developing new performative and perceptual skills by adding to the pianist's technique.

[38] Abe, K. 2007. Voice of Matsuri drums. In *Works for Solo Marimba*. Tokyo: Xebac Music Publishing.

[39] Legaki, V. 2017. *43 Sunsets*. https://soundcloud.com/vasiliki-legaki/43-sunsets-2017-for-solo-five-octave-marimba. Premiere performance at the Sorodha International Composition Competition 2017, Antwerp.

[40] Steinhardt, A. and M. Chung. 2015. Webern and Berg—Berg's dissonant love story. In *In the World of the String Quartet: The Explorers—Schoenberg, Webern, Berg, Ives, Cage and Reich*. Curtis Institute of Music. https://www.coursera.org/learn/string-quartet/lecture/Pu1rb/bergs-dissonant-love-story.

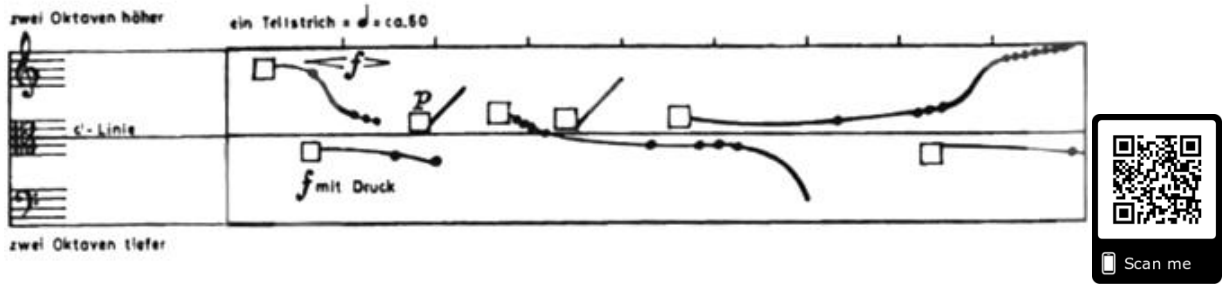
[41] Orning, T. 2012. Pression—A performance study. *Music Performance Research* 5: 12-3.

https://youtu.be/y7Gzrake8nI

Video 3: Video of “Pression” (1969) composed by Helmut Lachenmann and performed by David Stromberg. Published by performer in 2013.

https://youtu.be/sVHl-pqaIYM

Video 4a: Performance of “Guero” (1969) composed and performed by Helmut Lachenmann. Recorded in Bonn, 2011.



https://www.youtube.com/watch?v=3MChTWNDAg8

Video 4b: A video of the score “Guero” with sound.

Another method of expanding the potential of an instrument is seen in the creations of transcription and arrangement. For instance, as the marimba is an invention of the 21st century,[42] many compositions of the Baroque, Classical and Romantic period are transcribed for the marimba to enrich the literature (e.g., J. S. Bach, Beethoven, Chopin, Saint-Saens, Rimsky-Korsakov, Tchaikovsky and Falla). Among all these composers, J.S. Bach is one of the most popular choices for transcriptions to mallet instruments. Originally written for violin and keyboard, his "Chaconne"[43] and the "Prelude and Fugue in B-flat Major"[44] are adapted for the marimba. However, as these compositions are meticulously created for the specific instrumental idioms of the violin and the keyboard, not all features are transferable to the capabilities of the marimba. Some of these marginal elements have made the transcriptions into "virtuosic showpieces",[45] while consequently, largely contributing to the development of the marimba's instrumental idiom. For example, one marginal element that pushes against the limits is found in the three-voice "Fugue". The technical challenge of the fugue lies in the skills of *singing* and *phrasing* each voice by using only one mallet, in which traditionally, marimbists use two-mallet technique to play only one of these melodies. Moreover, the three-note figures in "Prelude" have become a famous etude of training the one-hand alternating mallet technique.

[42] Please refer to the introduction for more explanations.

[43] *Chaconne* is the last movement of J.S. Bach's "Partita for Violin No.2" BWV 1004, transcribed by Jean Geoffroy for solo marimba. Geoffroy, J. and J. S. Bach. 1997. *Chaconne*. Paris: Editions Henry Lemoine.

[44] *Prelude and Fugue No. 21 in B-flat Major* BWV 866 is originally written for keyboard, transcribed by Leigh Howard Stevens for solo marimba. Stevens, L. H. and J. S. Bach. 1998. *Prelude and Fugue in B-flat Major.* Asbury Park: Keyboard Percussion Publications.

[45] On the website of percussion scores and instruments vender Steve Weiss Music, the *Prelude and Fugue* is hailed as "virtuosic showpiece for marimba based on the pattern 2343," and rated as level 5+, higher than the most difficult technical level the site has given to compositions. Publisher Alfred Music Publishing categorized the work as "early advanced level".

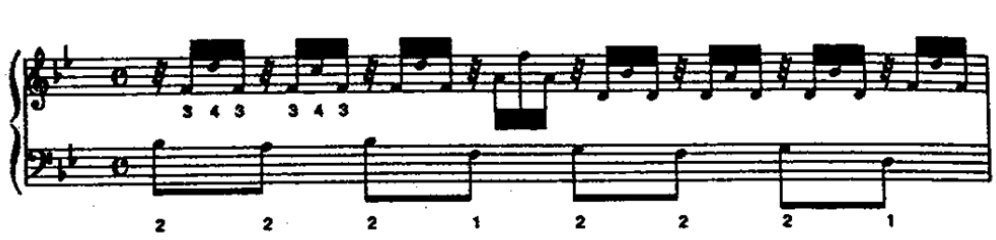


Figure 7a: The "Prelude" m. 1, Stevens, L. H. 1988. *Prelude and Fugue No. 21 in B-flat Major* BWV 866, Keyboard Percussion Publications.

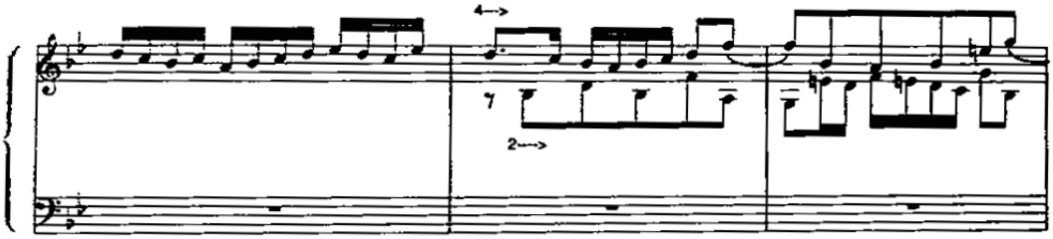


Figure 7b: The "Fugue" mm. 4-5. *Ibid*.

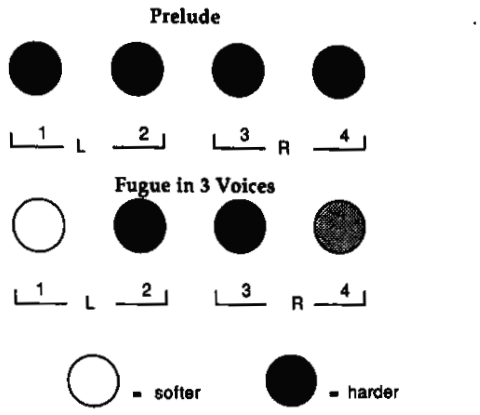


Figure 7c: The schema of mallets: the white represents the soft mallet and the hardness of the mallets increases with the darkness of the circles; number 1 represents the left-most mallet held by the left hand, while 4 is the right-most mallet held by the right hand. *Ibid.*

Therefore, the instrument and its performance technique are constantly revised by the needs and creativity of the musicians. Youssouf, the balafon builder modifies his instruments to attract European learners and audience, while the Western instruments are modified to produce new sonorities to surprise the audience and enrich the original sound spectrum. Composers see such direction as a way to add new creativity to his/her works, and performers have to acquire new techniques and sensations of performing the instrument. Musician and instrument are in an interactive relationship: the instrument predisposes the idioms of sound-producing movement, but on the contrary, the artistic and practical intentions of musicians modify the instrument's shape and performance technique.

4.3 Embodying the movement idiom

After describing how movement idioms have emerged from this triangular oscillation of instrument, idiom and bodily movement, this section will focus on the process of embodying such idiomatic movement language when the performer practises music. In the Western music pedagogy, the purpose of constant practicing different scales, chords and progressions is to initiate the spatial-motor system to internalize the ways of the hands playing these musical idioms, that the performer will feel at ease with technical finesse when dealing with different compositions of diverse stylistic, rhythmic and tonal modalities. Hence, performer experiences somatically the idiomatic musical language of a composition and internalizes these experiences into physical shapes and bodily movement patterns. Jazz pianist David Sudnow (2001) wrote deliberately about his reflections on each level of learning the techniques of jazz until he became a true jazz musician with a satisfactory improvisation level. In the beginning, the main task of Sudnow was to identify and to memorize different harmonic features on the keyboard. He mapped the movement patterns of these features as movement formulas of his fingers, and visualized harmonic features as steps and shapes. Here is a quote of how he described the struggle of *grabbing* in the earliest stage in jazz:

> "Over the course of my first days, much time was spent doing initial grabbing, trying to get a hold on chords properly, going back and looking at them as named notes, grabbing again, repositioning the hand to get into a chord with a comfortable hold so it could be grasped as a whole; finding ways of sinking into a chord that didn't involve the sounding of neighboring tones; arching the hand appropriately so the fingers came down with a correct spacing and trajectory relative to the shape of the chording hand; balancing the different intensities of pressure so as not to lose balance, the edges of neighboring notes not extraneous spots to be avoided but edges whose tactile appreciation became part of a natural hold on a settled-into chord… the scope of my looking correspondingly grasped the chord as a whole, seeing not its note-for-noteness but its configuration against the broader visual field of the terrain."[46]

He practiced repeatedly until these features got embodied and became his "second nature". Gradually, he realized the scales and chords become *gestalts*, like they become a whole, without having to think about them consciously. Finally, after years of accumulating specific experiences of many thousands of ways to move, he gradually mastered the essence of improvisation with the development of a finely shaped rhythmic coordination that synthesizes such movements into true jazz sentences.

Furthermore, Paul Berliner (1994) discusses the cognitive experience of music imaging, concerning the embodiment of idiomatic music language experienced by instrumentalists of jazz and most Western music: "seasoned players can also instantly construe phrases as physical movements. When listening to solos, Rufus Reid sometimes visualizes corresponding finger patterns on the neck of the bass, and pianists commonly imagine their hands assuming idiomatic movements on the keyboard."[47] These self-retrospections from Sudnow and Berliner provide some verbal phrasings that help to explain my intuitive predictions and my musical experience of the idiomatic movement language on the balafon. During the process of learning with my teachers, I have gradually acquainted myself with the musical *culture* of the balafon, embodying the physical movement and the tactile sensation of playing the instrument, as well as the idiomatic musical language that is used in the repertoire. The experience can be

[46] Sudnow, D. 2001. *Ways of the Hand: A Rewritten Account*. Massachusetts: The MIT Press, 12-3.

[47] Berliner, P. F. 1994. *Thinking in Jazz: The Infinite Art of Improvisation*. Chicago: The University of Chicago Press, 100.

compared to a pianist who acquired the style of Beethoven's sonata after playing the whole collection and is now able to draw conclusions upon Beethoven's signature compositional approach. Referring to my balafon experience, balafon musicians seem to know the *tricks* of coordinating the body movements that allow them to compose polyrhythm (or *cross-rhythm* as others call it).[48]

In other words, performer repeatedly summarizes and internalizes the motor imagery[49] of the music patterns during practice, which is then, leads to such intuitive prediction of idiomatic movement patterns. This process involves the consolidation of specific motor tasks into an embodied memory by our muscle memory, or called motor learning in cognitive neuroscience research.[50] (Fritz and Wolfe, 2005) Jens Haueisen and Thomas R. Knösche (2001) write how professional pianists develop the coupling between auditory perception and motor ability.[51] Playing a musical instrument such as the piano requires such precise mapping between a musical note (sound) and the finger used to execute that specific note on the keyboard (movement), that motor imagery is thought to be active even in the absence of movement on hearing sound.[52] (Zatorre, Chen and Penhune, 2007)

[48] Collins, J. 1996. Listening to the Silence: African Cross Rhythms. In *Films Media Group.* http://fod.infobase.com/p_ViewPlaylist.aspx?AssignmentID=MAUNNW and https://youtu.be/0dw47fZLpSw.

[49] Broughton, M. and C. Stevens. 2009. Physical movement and imagery in professional and undergraduate student solo marimba practice. Paper presented at International Symposium on Performance Science, Auckland, NZ. According to Melaine Gregg, Craig Hall and Andrew Butler (2010), movement imagery, the mental rehearsal of visual and kinesthetic properties of movements, is a cognitive strategy that can benefit motor skill acquisition and performance enhancement in movement contexts. Gregg, M., C. Hall and A. Butler. 2007. The MIQ-RS: A suitable option for examining movement imagery ability. *Evidence-Based Complementary and Alternative Medicine: ECAM* 7 (2): 249-57.

[50] Fritz, C. and J. Wolfe. 2005. How do clarinet players adjust the resonances of their vocal tracts for different playing effects? *Acoustical Society of America* 118 (5): 3306-15.

[51] Haueisen, J. and T. R. Knösche. 2001. Involuntary motor activity in pianists evoked by music perception. *Journal of Cognitive Neuroscience* 13 (6): 786-92.

[52] Zatorre, R. J., J. L. Chen, and V. B. Penhune. 2007. When the brain plays music: Auditory-motor interactions in music perception and production. *Nature Reviews Neuroscience* 8 (7): 547-58.

Conclusions

To conclude, after an endeavor of playing an instrument's repertoire, a musical style of a composer, a scale, a mode, a harmonic progression or a rhythmic pattern, the body of a performer would extract, filter or summarize these musical materials into a sensation of movement. I consider such sensation as the idiom of musical movement, which symbolizes the experience of self-embodying and internalizing these music materials. I would immediately know *what to play* on the balafon and the marimba, because I embodied these movement and musical idioms. Idiom, therefore, becomes the *knowledge* of music, the *knowledge* of *predicting* the movement patterns on the balafon after learning some compositions with my African teachers.

Nevertheless, idioms also interacts with the performer's *self*—the artistic idiosyncrasy and subjectivity of the performer. In the balafon practice, the movement idioms are always interpreted slightly differently by the balafonists I have met during the workshops. Granted the freedom to define the accompanying patterns and the texture of the compositions, balafonists are predisposed by the movement idioms of their instrument but each person adds their individual character to these idioms. We can distinguish some individual styles among the compositions taught by Youssouf Keita, Aly Keita, Mandela and Moussa Dembele: Moussa and Mandela endorse longer melodic patterns compared to the patterns taught by the Keita brothers. In particular, Youssouf's version of *Naramamogho* is different from his brother Aly, although they learned the songs and techniques together from their father and other griots. Usually, Youssouf endorses short phrases of upward motion (i.e., pattern A left hand of figure 8a, refer to chapter five for more examples of Youssouf's interpretation), while Aly is keen on a consecutive upward and downward motion (i.e., pattern A left hand of figure 8b). Despite of such variance, the two balafonists claimed that these divergent performances as *the same*. I may conclude that movement idiom exists within the balafon repertoire, but it contains variable sound and movement options that allow individual interpretation and subjective opinion of the musicians.

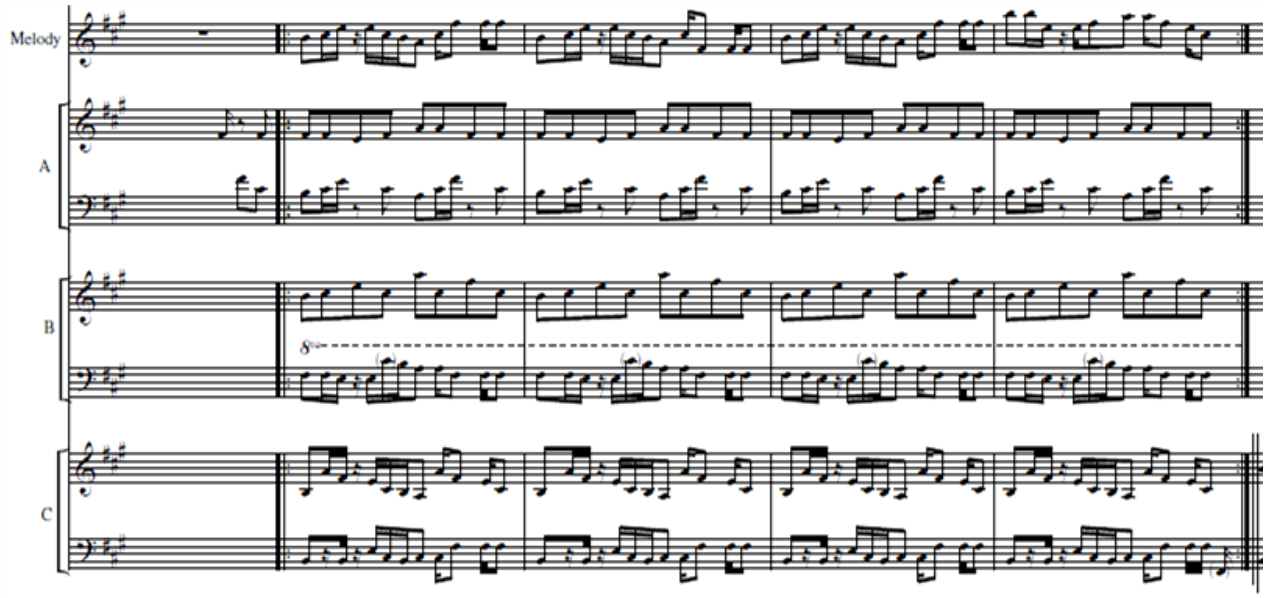


Figure 8a: Youssouf Keita's version of *Naramamogho* in Western notation. Transcribed by Adilia Yip.

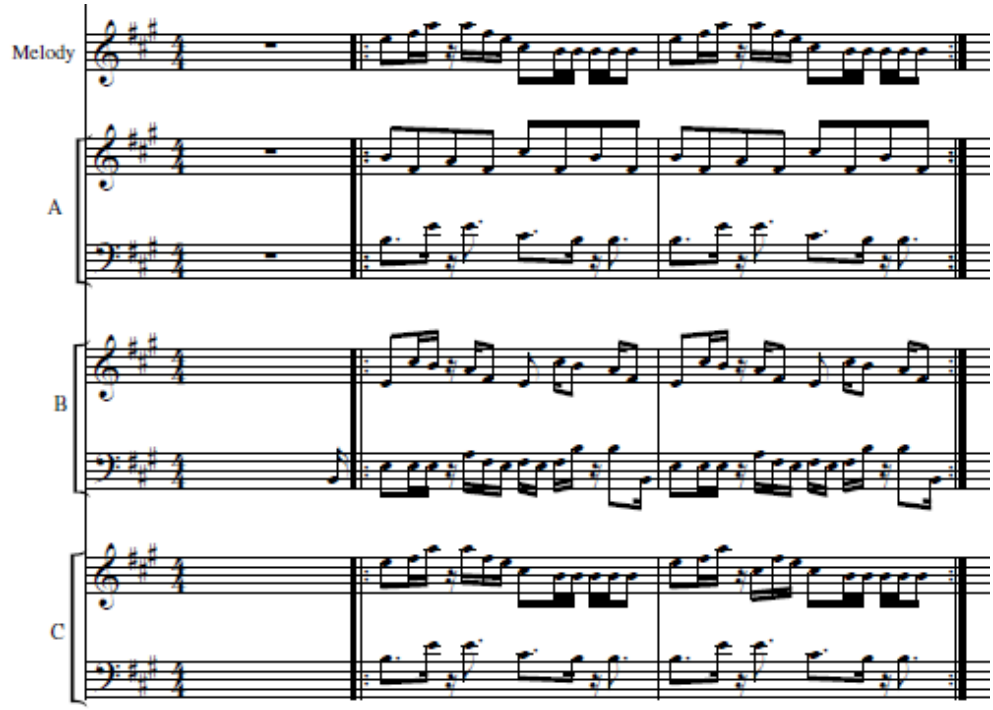


Figure 8b: Aly Keita's version of *Naramamogho*, Western notation transcribed by Gert Kilian. Kilian and Keita, *La Balafon*, 72-4.

In summary, movement idiom is emerged from different interactions of the performance factors. First, movement idioms are predisposed by the physical shape of the instrument. The instrument is the orientation that guides the performer's movement. Secondly, there are the performer's musical concepts and intentions imprinted in the formation of the instrument. Although it is impossible to hypothesize the original "making of" of the instrument, I argue that the musicians' concepts and intentions have contributed to the shape and technical requirements of the instrument. Subsequently from these two arguments, there is, thirdly, the embodiment of movement idioms, the performer's habitual process of learning how to play the instrument and the repertoire. Such process is in two-fold: the performer first *embodies* the movement patterns embedded in the musical score, then, these movement patterns are *summarized* and *internalized* into idioms. Idioms, hence, transcends to the *knowledge* of the performer over his/her instrument and repertoire. Idiom, therefore, remarks the causal, interactive relationships between the performer's body, the musical concepts and the shape of the instrument.

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CHAPTER 5

THE MOVEMENT IDIOM IN BALAFON MUSIC

An analysis using Movement Representation Graphs (MRG)

Based upon the findings in chapter 4, I will use an analytic approach to illustrate the movement idiom of balafon music in this chapter. A method and tool "Movement Representation Graph" (MRG) is devised for this analysis to visualize the movement patterns of playing on the balafon. We will focus on the repertoire taught by Youssouf and Kassoum Keita during my two workshops in Mali and Burkina Faso.

5.1 Movement Representation Graph as the analytic method and tool

What I will call MRG is a method that is designed to analyze the movement patterns of balafon music, which are the movement idioms pertinent to the instrument and the repertoire of Youssouf and Kassoum Keita. Drafted on grid squares, the music patterns are transcribed as dots, lines and shapes. The dots symbolize the notes of a music pattern, while the lines are drawn to connect the dots which represent the hand movement from one point to the other on the keyboard. The resultant shapes formed by the dots and lines visualize the movement of the hands moving over the physical space of the balafon against time. The physical space of the balafon is plotted on the vertical y-axis and the time development on the horizontal x-axis. Time is divided into square units. Each unit represents the minimum arbitrary value to be represented in the music, for instance, equivalent to the semi-quaver of the Western rhythm system. The solid lines represent the right hand while the dashed lines represent the left. Pauses, like the rest symbols in the Western notation, are shown by breaking up of the connecting lines; the end of a line marks the completion of a movement pattern.

As such, the MRG illustrates the physicality of the hand movements in terms of space and time. It visualizes movement patterns in a two dimensional graph of dots, lines and shapes, showing the distance the hands need to move and how much time is needed to move

between the strokes. From the steepness of the lines we can examine the impetus of the hand movement: a larger degree of inclination means a more abrupt, vigorous move of the hands, and a mild slope means an easier and slower movement of the hands. Although the degree of inclination is not a quantified entity, it helps in this analysis to illustrate the within-hand relationships of the movement patterns. As an example, the MRG graph of *Fanta Mangkene* shows us clearly how the right hand pattern is made up of two figures of different impetus (figure 1): the first figure starts with a rather symmetrical revolving hand movement (A-C#-A), and is then followed by an asymmetrical hand movement. The shapes of the lines visualize the trajectory of the hand: for instance, the two slopes of the first figure are almost the same, while the second figure constitutes a mild slope that represents moving to the adjacent slat and a steep slope represents a quick movement to cross a greater distance of two wooden slats in the same period of time.

Figure 1: A right hand pattern of *Fanta Mangkene.*

The MRG is a development from the transcription methods offered by musicians and ethnomusicologists of African music. Some of these transcriptions are targeted at learners who don't use the Western notation system. In *Die Stimme des Balafon*, Adrian Egger and Moussa Héma (2006) drafted musical patterns on grid squares and in particular, they inserted an extra illustration of the balafon on the left of the y-axis to visualize the top view of the balafon.[1] The filled-in dots represent the music notes played by the right hand, while the empty dots represent those of the left hand. This spectacular system transcribes the physical movement patterns of the hands onto graph paper which has inspired the main concepts of the MRG.

[1] Egger, A. and M. Hema. 2006. *Die Stimme des Balafon*. Hamburg: Schell Music, 34.

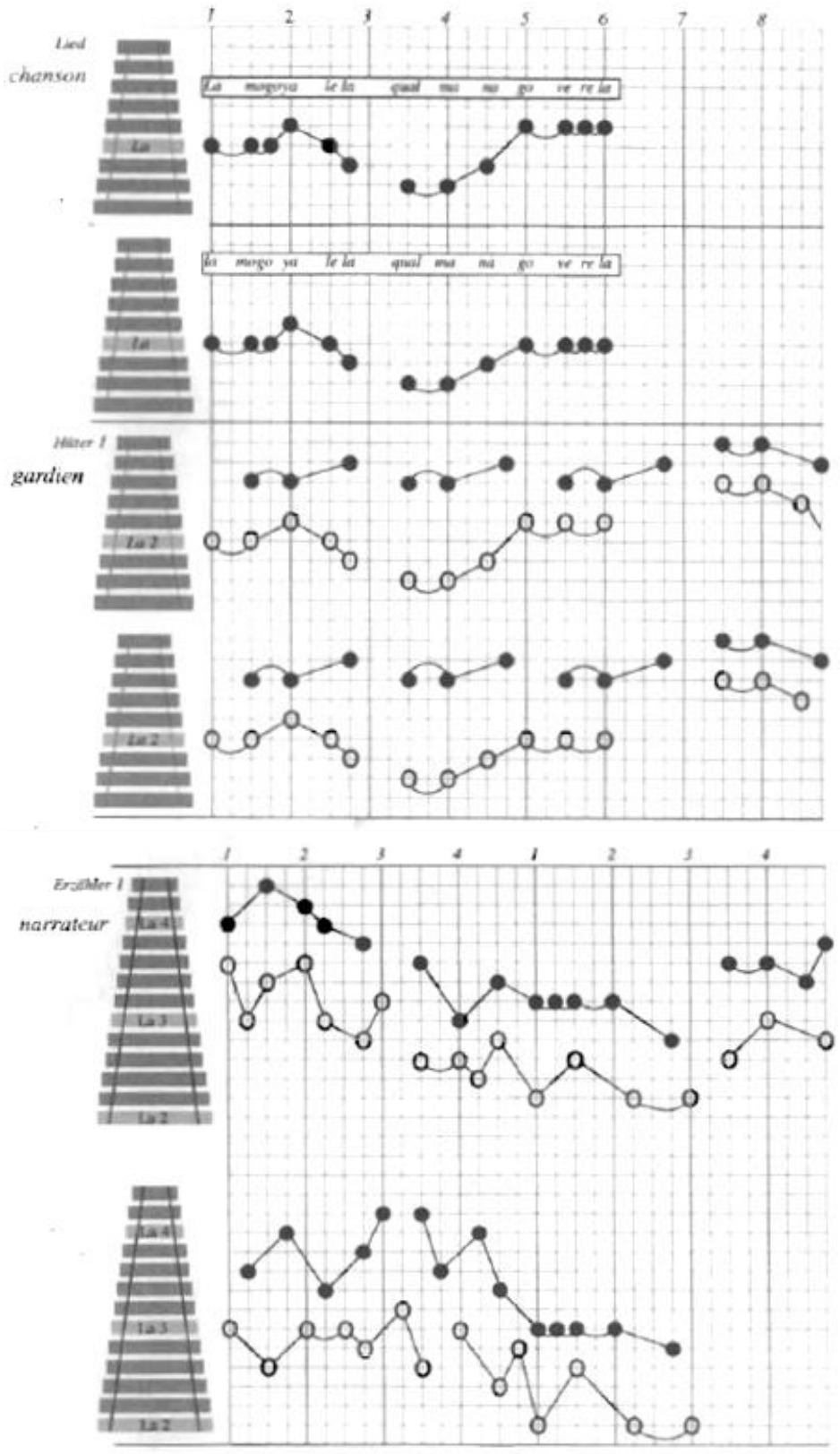
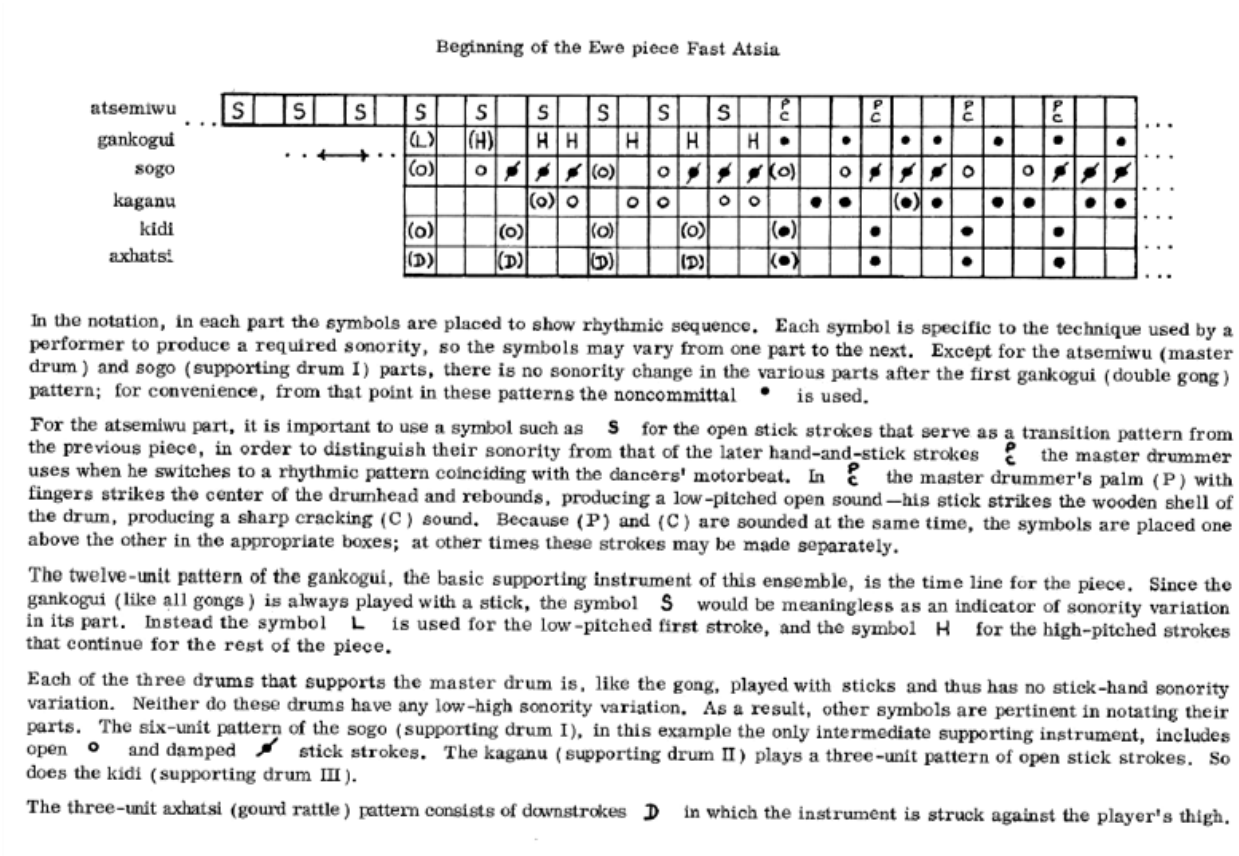


Figure 2: Balafon notation of *Lamogoya*. Egger, A. and M. Héma. 2006. *Die Stimme des Balafon*, Hamburg: Schell Music, 34.

The MRG also integrated ideas from the Time Unit Box System (TUBS) developed by Philip Harlan in 1962, a simple system for notating musical events that happen over a period. It is widely adopted by ethnomusicologists such as James Koetting (1970) in his analysis on West African drum ensemble music.[2] Using a similar approach as *Die Stimme des Balafon*, the TUBS visualizes the drum strokes on a grid square graph, but instead of jotting the strokes on the cross points where the y-axis and x-axis meets, the boxes in TUBS are marked with different symbols to represent different stroke types. Blank boxes indicate the pauses between strokes.



Beginning of the Ewe piece Fast Atsia

atsemiwu
gankogui
sogo
kaganu
kidi
axhatsi

In the notation, in each part the symbols are placed to show rhythmic sequence. Each symbol is specific to the technique used by a performer to produce a required sonority, so the symbols may vary from one part to the next. Except for the atsemiwu (master drum) and sogo (supporting drum I) parts, there is no sonority change in the various parts after the first gankogui (double gong) pattern; for convenience, from that point in these patterns the noncommittal • is used.

For the atsemiwu part, it is important to use a symbol such as S for the open stick strokes that serve as a transition pattern from the previous piece, in order to distinguish their sonority from that of the later hand-and-stick strokes P/C the master drummer uses when he switches to a rhythmic pattern coinciding with the dancers' motorbeat. In P/C the master drummer's palm (P) with fingers strikes the center of the drumhead and rebounds, producing a low-pitched open sound—his stick strikes the wooden shell of the drum, producing a sharp cracking (C) sound. Because (P) and (C) are sounded at the same time, the symbols are placed one above the other in the appropriate boxes; at other times these strokes may be made separately.

The twelve-unit pattern of the gankogui, the basic supporting instrument of this ensemble, is the time line for the piece. Since the gankogui (like all gongs) is always played with a stick, the symbol S would be meaningless as an indicator of sonority variation in its part. Instead the symbol L is used for the low-pitched first stroke, and the symbol H for the high-pitched strokes that continue for the rest of the piece.

Each of the three drums that supports the master drum is, like the gong, played with sticks and thus has no stick-hand sonority variation. Neither do these drums have any low-high sonority variation. As a result, other symbols are pertinent in notating their parts. The six-unit pattern of the sogo (supporting drum I), in this example the only intermediate supporting instrument, includes open o and damped stick strokes. The kaganu (supporting drum II) plays a three-unit pattern of open stick strokes. So does the kidi (supporting drum III).

The three-unit axhatsi (gourd rattle) pattern consists of downstrokes D in which the instrument is struck against the player's thigh.

Figure 3: TUBS notation. Koetting, J. 1970. Analysis and notation of West African drum ensemble music. *Selected Reports in Ethnomusicology* 1 (3): 129.

[2] Koetting, J. 1970. Analysis and notation of West African drum ensemble music. *Selected Reports in Ethnomusicology* 1 (3): 116-46.

5.2 The purpose of Movement Representing Graph

The MRG is used for different purposes. In this section, I will explain the usefulness of MRG for this analysis, first by referring to two studies on movement in ethnomusicology; secondly, by showing how the MRG can avoid the pitfalls of Western music analysis concepts.

a) Ethnomusicological approaches

John Blacking and Gerard Kubik offer interesting seminal studies and methods for analyzing movement in African music. In the analysis of kalimba music, Blacking (1961) claims that a traditional Western music analysis may not yield promising results, and that we have to concentrate on movement for gaining new views unlike those that are new to us. This opinion is in accord with my experience of understanding balafon music. In the beginning of this project, I remarked that an analysis of the harmonic progressions in the balafon compositions could not lead to fruitful results. A theoretical analysis of the relationships between the major and minor pentatonic harmonies did not shine light on either the theoretic or the pragmatic understanding of balafon music. Tuned in A pentatonic scale, the music contains regular interchange of tonal centers, leading tones and an array of octave, third, fourth, fifth and sixth intervals, but it does not suggest a musical trajectory that develops in the sense of harmony. One might call the music a “pacific consonant sound mass”. Balafon music is not constructed in the sense of changing between stable and unstable tones, but consists of patterns that giving only a partial effect of resolving a melancholy mood (patterns that consist of a minor third interval, i.e., F#-A and C#-E) to a joyful sound (patterns that consist of major third, i.e., A-C# and major fifth intervals, i.e., A-E).

Apart from the MRG, an alternative approach of analyzing sound-producing movement is Kubik’s method of watching *silent* films (1965, 1972 and 1979). By watching performance videos that show only the image but not the sound, both sonic and non-sonic dimensions (the *silent beats*) of the musical patterns are revealed through visual images. This highlights the importance of understanding West African polyrhythm by observing movement patterns. Some polyrhythmic elements in African music are not perceivable by mere listening, such as

the cross rhythm performed by the Ghanaian boy mentioned in chapter 3.[3] The intricate rhythmic relationships between polyrhythmic layers and the coordination schema are enclosed in the methods of playing musical patterns, but are not exposed to the listener in the form of sound. Therefore, Kubik's method allows observation of subtle rhythmical movement features without any disturbance from the hearing perception.[4]

b) An alternative for Western music concepts

Subsequently, the MRG helps to avoid the use of Western music concepts in this analysis. As the balafon music and its practice is not part of the Western music world and its terminology, it is difficult to adopt Western music analysis principles. For instance, what does "interval" mean in the context of African music? From the definition of *transposition,* it seems "interval" is defined differently in the African context than what we recognize in the Western music world, or perhaps such idea does not exist in the balafon practice. (Refer to chapter 1) Balafon musicians *transpose* their music by moving the melodic materials to a position of a variable tonic. Although the relative distance between bars is kept, the intervallic combinations of the music are reorganized.

Another example is the Western five-line staff, which is found to be inefficient for notating balafon music. As the balafon only contains five notes in every register, we actually do not need a five-line staff. As the notes drawn on the lines and spaces of the five-line staff represents half tone, drawing a pentatonic scale on a five-line staff gives empty spaces that do not contain any musical meaning. As such, the twelve spaces on the five-line staff are not necessary to notate the balafon's pentatonic scale. As an alternative option, we might notate this five-note scale on each line the five-line staff, and mark the register of the note with a symbol. Adapting the Western notation to the transcription of balafon music will result in some unknown major second and minor third intervals, which do not represent how a

[3] Collins, J. 1996. *Listening to the Silence: African Cross Rhythms*. Films Media Group. http://fod.infobase.com/p_ViewPlaylist.aspx?AssignmentID=MAUNNW.

[4] Kubik, G. 1965. Transcription of Mangwilo xylophone music from film strips. *African Music* 3 (4): 35-51. Kubik, G. 1972. Transcription of African music from silent film: Theory and methods. *African Music* 5 (2): 28-39.

performer perceives and experiences music. However, such approach is used when it is necessary to explain balafon music in Western music terms and principles. In the analysis of the coherent fragments (chapter 3), Western notation is used to provide understanding of the music from a Western music point of view.

In contrast to this, the MRG reveals the somatic experience of playing the balafon, and offers also an analytic tool that can classify the shapes of the movement patterns, which are pertinent to the movement idioms embedded in the repertoire. As John Baily (1985) says, "When a corpus of instrumental pieces is analyzed, unity may emerge at the level of movement, suggesting that performance is in some sense based on a motor grammar."[5] The MRG allows us to focus on the physicality of a five-note tuning system and of the musician's bodily movement in relation to time and space. It also helps to conceptualize the experience of changing from marimba to balafon, switching between a double row twelve-tone keyboard and a single row pentatonic keyboard.

5.3 Analysis

My analysis includes nine of the compositions I have learned from Youssouf Keita and Kassoum Keita during my field studies: *Sama Ouara*, *Hanouzou*, *Djara Allah*, *Pojaro*, *Patoma Nje Nje*, *Fanta Mangkene*, *Commis*, *Naramamogho* and *Barica*. I will adhere to the repertoire of my teachers as they have taught me in workshop, leaving outside the possibility that there may exist various versions of a single composition. Movement idioms in balafon music may leave room for the artist's individual interpretation. For instance, I have learned several versions of *Naramamogho*, from Aly Keita and Gert Kilian in *La Balafon*, and from Adrian Egger and Moussa Hema in *Die Stimme des Balafon*. I have also learned two distinct versions during my lessons with Moussa Dembele and Mandela, of *Fanta Mangkene*.

[5] *Ibid.*, 242.

My search for the most analytical method starts from the comparison between balafon performance practice and my earlier artistic experience on the Western marimba. One crucial difference between the two practices lies in the ways in which the hand playing a single line melody. The balafon entails two-hand coordination, a specific technique of playing a melodic phrase by one hand using one mallet. This lends to fast single hand strokes and frequent large distance jumps from note to note. In contrast, while one-handed technique is mentioned in marimba training, it is usually avoided in the repertoire in preference to the standard "two-mallet with two hands" technique. Playing a melody with one hand is not sensible according to the logic of movement in the marimba performance practice.[6] By comparing the linear shapes of the MRG, I will summarize three distinctive features of Youssouf's and Kassoum's balafon repertoire:

1) recurring repetitive fragments,

2) octave interval, and

3) double notes.

By revealing the trajectory of the hands playing on the instrument and the repertoire I may infer, from my own experience of playing the music, the movement idioms of the balafon music. For more convenient reading in the following section, I will use numbers to mark the movement patterns:

line 1- pattern A right hand,

line 2- pattern A left hand,

line 3- pattern B right hand,

line 4- pattern B left hand, and so on…

Please note that the starting points of the patterns in the following examples are not the actual starting points of the music patterns. These excerpts are extracted from the MRG

[6] Goldenberg, M. 2002. *Modern School for Xylophone, Marimba, Vibraphone*, ed. A. J. Cirone. London: International Music Publications.

graphs solely used for the purpose of illustrating the characteristics of movement patterns as explained in the text. In the appendix you may find the MRG graphs of all compositions.

1) Recurring repetitive fragments

Rather than an incautious error, the two synonyms “recurring” and “repetitive” are used together in this discourse to describe short repetitive fragments that recur continuously and consistently throughout a composition. These fragments are made up of two to four notes and form an extended musical bass line that juxtaposes with another elaborate, long melodic phrase. Four types of recurring repetitive fragments are identified: a) two-note alternating movement, b) single note repetition, c) downward zigzag, and d) upward zigzag.

1a) Two-note alternating movement

Two-note alternating movement is counted as one of the most common patterns in this category. It is a repetition of two adjacent notes on the balafon, which means, we hear a siren-like effect of either a major second or a minor third interval due to the Western equal temperament pentatonic scale tuning that my teachers (and their music tradition) endorsed. It requires a consistent fan-shape revolving movement of the hands on two adjacent wooden keys. In some cases this movement perpetuates from the beginning till the end of the composition. For instance, the two-note alternation in *Fanta Mangkene* line 1 repeats consistently throughout the whole composition. There are two quasi appearances in line 2, 3 and 4. In line 2, the two-note alternation holds almost identical features as line 1 except three different musical qualities: firstly, the fragment is given totally different pitches; secondly, it begins and ends with a single note repetition; and lastly, the left and right movement change from parallel motion to a between-hand alternating motion. The two-note alternating figure is also employed in pattern B (line 3 and 4), but they are incorporated in the single note repetition phrases like line 2. Line 3 contains an upside down two-note alternating movement, while line 4 is an almost identical copy of line 2 except having an extra delay at the highest point of the siren figure.

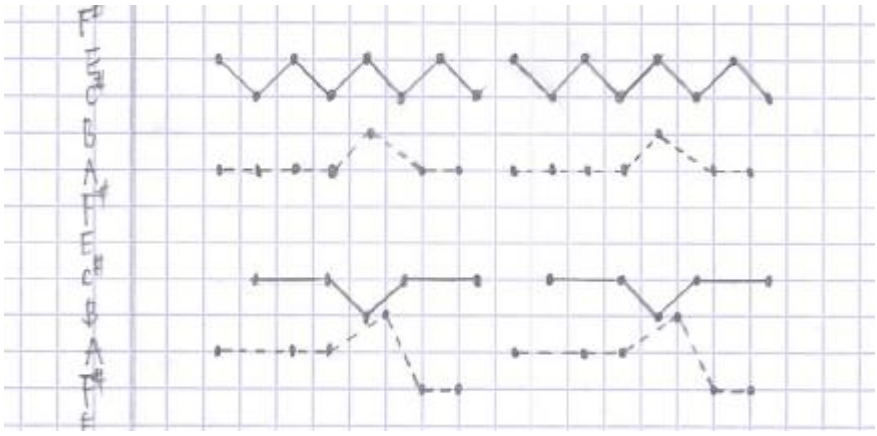


Figure 4: Two-note alternating fragment in *Fanta Mangkene*, pattern A (line 1 and 2) and pattern B (line 3 and 4).

Besides, the two-note alternation is prominent in *Hanouzou*. The siren-like feature occurs in the melody, line 1 (consistent continuation) and 2 (half of the pattern). These alternations are given the same pitches (A and F#), and, as a result, two or more voices move in octave parallel motion or in unison.

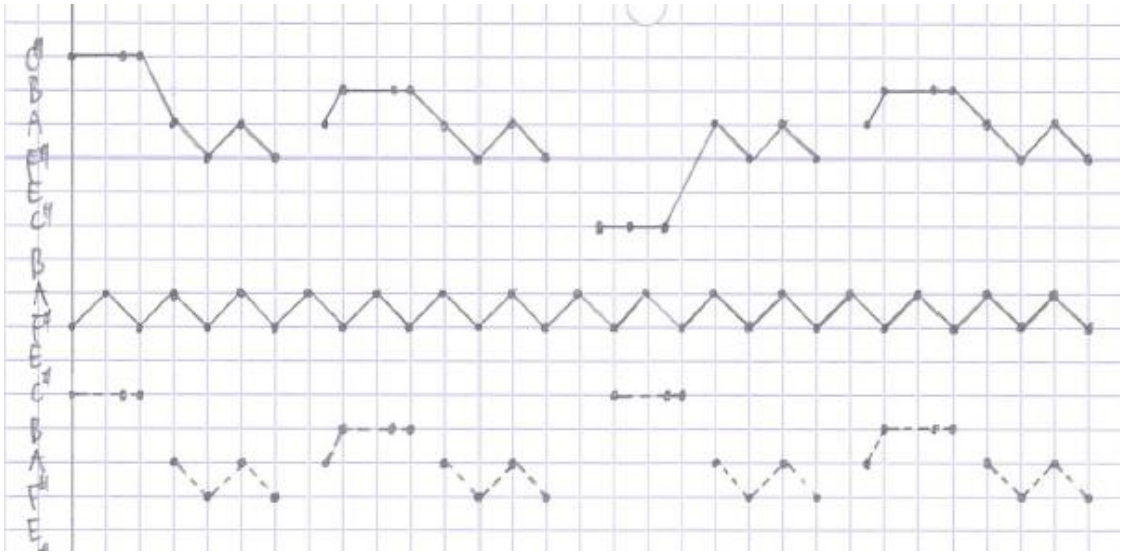


Figure 5: Two-note alternating fragment in *Hanouzou*, melody and pattern A (line 1 and 2).

We remark also some quasi appearances of the two-note alternating movement. For instance, an extra note is added to the symmetrical two-note alternating figure, offering an extension that stays on the same note, or move to an upper note or a lower note. These

features are found in *Barica* (line 4), Djarah Allah (line 6), *Naramamogho* (line 1, 2 and 3) and *Sama Ouara* (line 1). Thus, some alternating figures are turned into zigzag movement. In *Naramamogho* line 1, the two-note alternating figure is extended by a jump in the opposite direction, i.e., B-F#-B-E, giving a movement trajectory of downward-upward-downward.

The two-note alternation fragment is also identified as the main thematic material in certain compositions, such as *Patoma* (line 1), *Commis* (melody and line 1) and *Naramamogho*. *Patoma* line 1 contains a non-symmetrical alternating figure that spreads over three square units of time, while a similar sonic figure is re-used in the melody but organized in contrary motion. Both the melody and line 2 in *Commis* contain the symbolical fast moving two-note alternating fragment (i.e., over one square unit of time). And lastly, all patterns of *Naramamogho* are central to the stylistic characteristic of two-note alternation, but disguised in various rhythmic and melodic organizations.

1b) Single note repetition

The single note repetition is another common movement idiom that exists in almost every composition. It contributes to the generic polyrhythmic design and the rhythmic counterpoint. There are numerous examples to illustrate these stylistic characteristics. In *Patoma*, the repetitive note of the melody is duplicated in line 2. In *Barica*, the lively short double notes in line 3 are the thematic materials of the composition, and are also found in the melody but in a different disguise. In *Djara Allah* the consistent double note theme is found in every fellow pattern. The extensive single note repetition in *Pojaro* melody reappears in the shorter fragments of the fellow patterns.

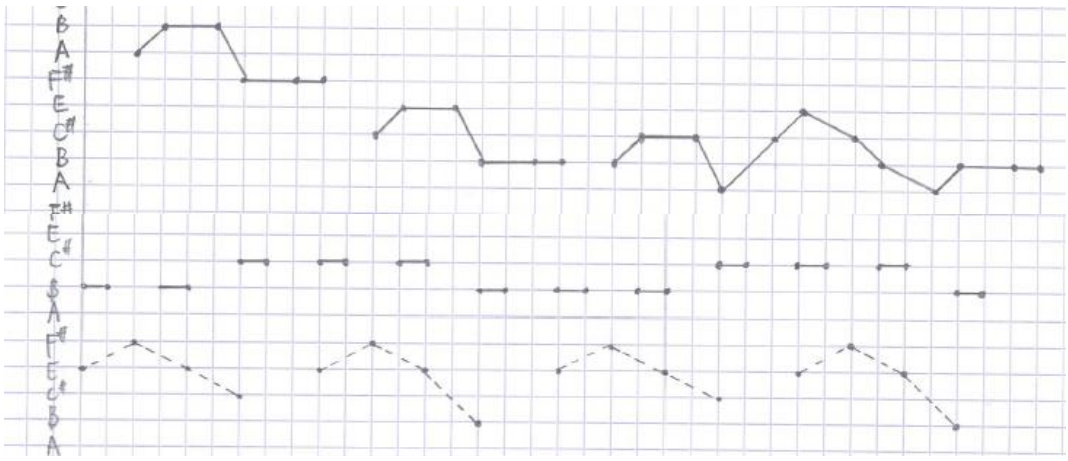


Figure 6: Single note repetition in melody and pattern B (line 3 in solid lines) of *Barica.*

As such, the single note repetition is not used for sustaining pitch but is, in most cases, for strengthening the thematic materials of the melody. In *Naramamogho*, the left hand melody of pattern B (line 4) contains repetitive notes that strengthen the repetitive notes of the melody, but at the same time, is in contrary motion to many sub-patterns of the melody. The doubling notes of line 4 and line 3 (the right hand rhythm) form a unique melodic line that gives a polyrhythmic design. In *Sama Ouara*, the repeating notes in the melody, line 2 and line 4 are almost identical in design; however, they contain subtle rhythmic syncopations in the beginning first two notes that give a sense of irregularity to the unifying parallel notes of the general picture. Line 4 of *Hanouzou* contains two groups of double notes (C# and F#). They syncopate with the ongoing two-note alternating pattern of line 1, but also strengthen the repeated single notes of the melody.

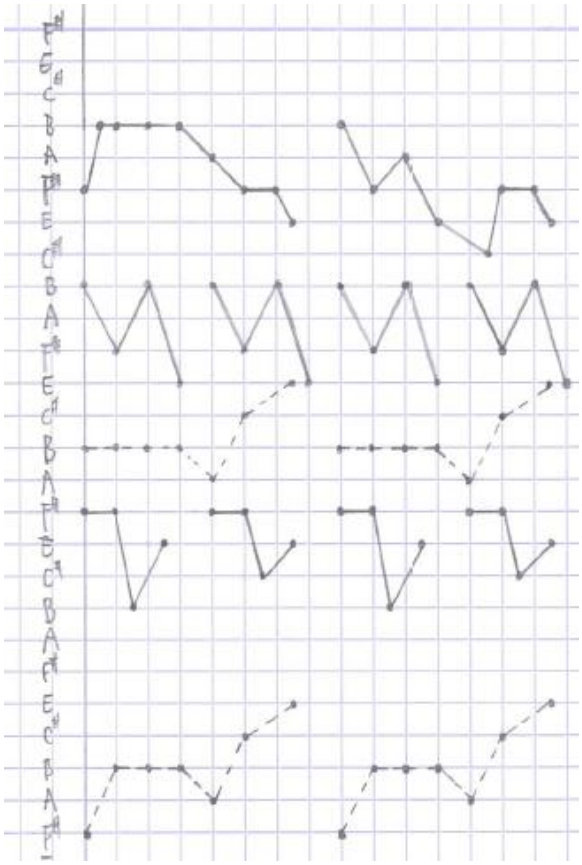


Figure 7: Single note repetition in *Sama Ouara* (melody, line 2 and line 4).

1c) Downward zigzag movement

Another type of recurring repetitive fragment creates a zigzag movement. Depending on the overall direction of the pattern, I will classify the zigzag figures into 1) a downward zigzag movement and 2) an upward zigzag movement. These zigzag patterns are organized in ABAB or AABB forms, a binary system of two sub-patterns. “A” and “B” are not two distinct figures but closely related; they move in the same orientation (i.e., both figures in *Pojaro* line 3 are downward). At least two notes of “A” and “B” are in common in both pitch and duration. In *Pojaro* line 3, the AABB form contains two sub-patterns landing on two adjacent notes: first on “A”, then on “F#”. Meanwhile, the melody of *Pojaro* also constitutes downward zigzag movement figures. By breaking up the melody into seven sub-phrases, we can see that the same downward zigzag figure constitutes the third, fourth and seventh sub-phrase (C#-A-B-F#)), with the exception of the fifth sub-phrase which is *transposed* physically to a lower adjacent note (B-F#-A-E). These downward zigzag figures are in contrary motion to the upward

figures in line 4 and pattern C (line 5 and 6). Also, *Commis* line 4 consists of downward zigzag figures organized in ABAB form. Both "A" and "B" contain abrupt jumps over two wooden keys and three wooden keys respectively, i.e., A-C#-F#-E and A-B-F#-C#.

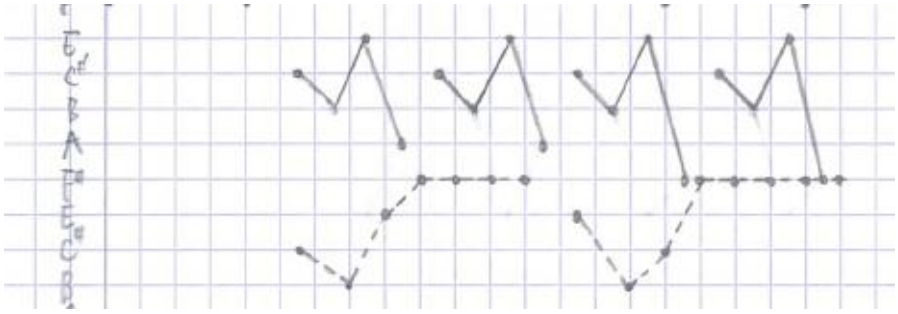


Figure 8: Downward zigzag movement in *Pojaro* line 3 (the pattern in solid lines).

There are some examples of a line incorporates a zigzag downward figure in a two-note alternating movement, such as in *Naramamogho* (line 3), *Sama Ouara* (line 1) and *Djara Allah* (line 5 and 6). An extra note is attached to the fan-like revolving movement, for example, the first note in *Naramamogho* line 3, A-C#-F#-C# and the last note of *Sama Ouara* line 1, B-F#-B-E.

1d) Upward zigzag movement

The upward zigzag movement contains the same structural design as the downward zigzag, except the overall direction of the pattern points upward. Nevertheless, this feature appears less than the downward movement in the repertoire. Some notable examples include *Patoma* line 4, *Djara Allah* line 4, *Barica* line 1.

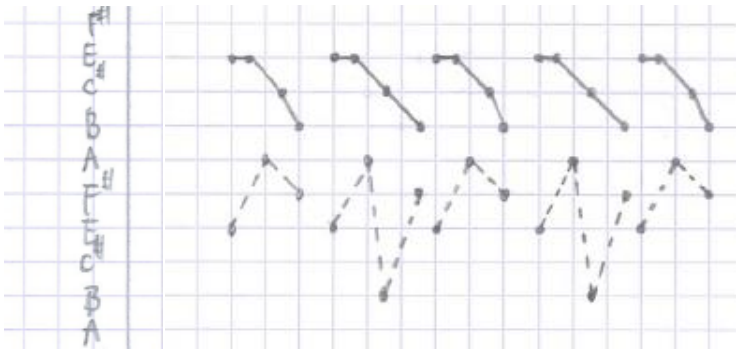


Figure 9: Upward zigzag movement in *Patoma* line 4 (the patterns in dashed lines).

2) The octave interval[7]

In the balafon repertoire that I studied, an octave interval is one movement idiom that is used to create both musical and physical excitement. While maneuvering a wider distance (i.e., four wooden keys apart) may cause mistakes, it still is part of much music, as in the melody of *Fanta Mangkene*, *Patoma* (line 5) and *Djara Allah* line 2. Even more importantly than for excitement, the octave is used to reinforce monophonic melody and highlight the thematic materials. It is a common practice to perform the melody as octave doubling.

As such, the octave interval also exists between the two hands. For instance, the left hand line 2 in *Djara Allah* first begins with an octave jump, and then, moves on in parallel motion with the right hand in line 1, in octaves. Some other notable examples are: *Djara Allah* (line 5 and 6); *Pojaro* (line 3 and 4); *Patoma* (line 5 and 6), and (line 3 and 4) and *Commis* (line 1 and 2).

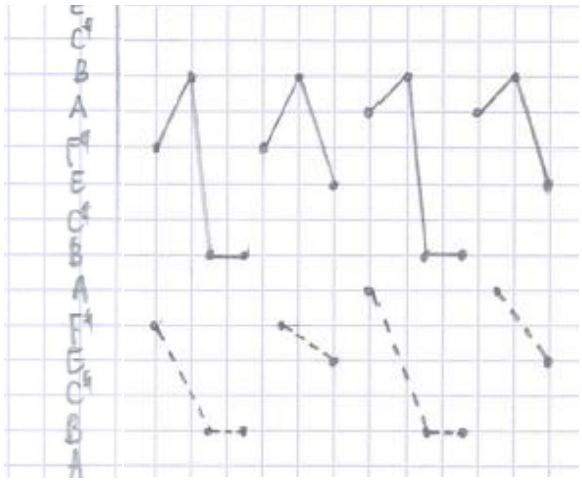


Figure 10: The octave interval in *Patoma* pattern C (line 5 and 6).

[7] The term interval is used in this context to describe musicians' bodily movement, the physical space between the wooden slats.

Henceforth, a good physical sensibility of the octave interval is inevitable. It is more difficult to play octaves on balafon than it is on marimba, because the balafon has no second register to help identifying its intervals. Nevertheless, balafon musicians have a good somatic sense of an octave interval, no matter whether it is a jump within one hand, or the doubling of a melody by two hands in parallel motion. They have no need to cautiously count how many wooden slats lie between an octave or other intervals, as the hands have embodied the exact spatial distance when they envision intervals.

3) Double notes

The third category of movement idiom is the double notes, a rapid two-note pattern played by one hand, or split into a two-hand pattern. A double-note figure is like an ornamental note pair that is shorter and more abrupt than the single note repetition (category 1b), and also, considered as musicians' trick to show off their technical proficiency. The figure often appears in the last part and climax of the composition as it creates excitement to the music with high velocity. In *Djara Allah* pattern C line 5, the original two-note alternating figure is doubled constantly throughout the piece, and importantly, the pattern is played when the music is building up to the climax of the performance.

In addition, another notable characteristic of the double notes is the intention to decorate the original polyrhythmic design of the composition. For instance, lines 5 and 6 of *Djara Allah* are organized in octave parallel motion, but due to the double notes given to the end of the fragments, the original octave parallel motion is disturbed. In the first place, the double notes do not happen in every fragment; they only happen every two groups while other groups retain an octave interval. This creates an exciting technical challenge adding syncopation to the original octave parallel motion. The movement of playing these double notes can be compared, metaphorically, to a tape that suddenly stops rolling and winds back to its original position.

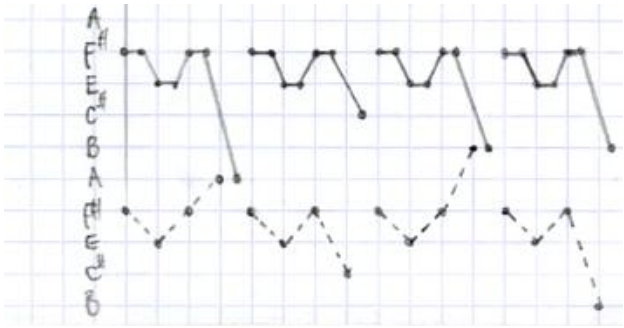


Figure 11: Double notes in *Djara Allah* pattern C (line 5 and 6).

Other appearances of double notes are found in *Pojaro* (line 3 and 4), *Sama Ouara* (line 1 and 2), *Naramamogho* (line 1 and 2) and *Fanta Mangkene* (line 3 and 4). In *Pojaro*, line 3 contains extra notes that add to the sustaining horizontal repetitive line 4. The double notes in line 2 of *Sama Ouara* disturb the regular, evenly timed zigzag pattern of line 1. The same effect can be observed in the juxtaposition of line 1 and 2 in *Naramamogho*. The double notes in *Fanta Mangkene* line 3 and 4 create a special effect because the two rhythmical lines *meet* and *interchange*.

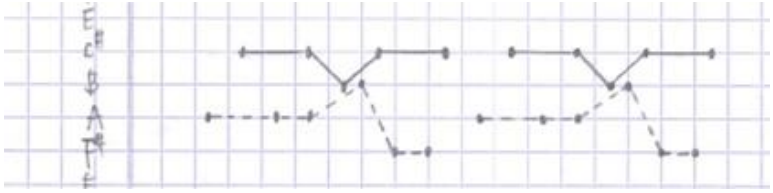


Figure 12: Pattern B (line 3 and 4) of *Fanta Mangkene* that contains double notes.

Conclusion: the future work on velocity and force of movement

In summary, the movement idioms of balafon music are classified according to the linear shapes of the musical patterns jotted on the MRG graph. Through comparing and categorizing these graphical representations, the movement idioms in balafon music are identified as the two-note alternating movement, the zigzag movement, the single note repetition, the octave interval and the double notes. However, at this stage of the research, I could only study the aspects of space and time, but was unable to explore further the relationships between velocity and force in these the movement patterns. In addition to the MRG graphs, new computer programs and multi-media equipment (i.e., films, camera,

animation and specific montage technique) will be needed in the analysis to study these aspects.

While space and time on the MRG graph visualize the trajectory of the hand and the idioms of movement of balafon, velocity and force further illustrate the interpretation of the idioms of the music and the preferred performance practice of the repertoire. I suggest an investigation into velocity and force may bring extra dimensions to this analysis and offer us the empirical data to analyze the performer's interpretation of the music, which means, the technique, the groove and the articulation of the music. Velocity and force occur when a performer moves his hands from point A to point B on the keyboard. Consider that the hands are masses that move over a certain distance during a fixed period of time, a movement pattern pertains to a specific velocity. As a result of space and time, velocity may help us to deduce the fastness of the hands when playing a movement pattern. This would offer another layer of information that could help to determine the experience of the performer. Further on, from the velocity of the moment we can infer force. Force can be considered in three aspects—the momentum of the hands moving between notes; the use of gravitational force; and the use by the arms and wrists of lifting force. This information reveals the magnitude of strength and energy that the performer must summon.

Although the MRG graph can show velocity by means of the degree of inclination of the lines, it cannot provide quantified empirical data about hand velocity. The magnitude of force is also undisclosed. This analysis eludes this deeper investigation. Hopefully, the subject may be discussed in the future with the help of new technology and research methods.

CHAPTER 6

ARTISTIC OUTCOMES

Five commissioned works

After the above discussion about learning and performing on the balafon, the second part of this dissertation contains artistic creations and experimentation. The main purpose of these artistic collaborations is to enrich the marimba repertoire using ideas from the balafon practice in an effort to renew Western music practices. These collaborations also serve as a method to validate the artistic values of balafon practice as it pertains to my artistic development, and explore the potential of connecting the marimba to the African mallet instrument tradition. This intercultural journey has offered me insights and materials to create the concert program "In the Heat of the Moment" and the test case of *Drumming* (Steve Reich, 1971). I hereby sum up the concepts I have discussed so far:

1. Oral tradition—the technique of learning by ear and by imitation
2. The principles of cyclical structure, isochronous timeline and integration of balafon polyrhythm
3. Bodily movement and coordination patterns as vehicle of music communication
4. Bimanual coordination technique
5. The idioms of movement in balafon music
6. The interpersonal bond and group flow in balafon ensemble
7. The perception of movement of the performer

Since 2014, I have been working with five different composers to create new compositions for this project. Below is the repertoire list:

Sound Portrait V | Enric Riu (2015)

Mal/oxin Suite | Michiel de Malsche (2016)

Inner Sight Etudes | Cornelia Zambila (2016)

De Perjulio de la Nieve | Juan Albaraccin (2016)

Transposons | Li Cheong (2017)

Based upon their specific interests and approaches in composing, the composers have brought different musical styles to the program: In “Sound Portrait V”, Enric Riu has drafted three linear graphs to portray the street performances he had watched in Mali. These linear shapes represent the shape and trajectory of the hand movement of playing the balafon, and serve as the communicative tool between the composer and the performer. “Mal/oxin Suite” is a narration of the energetic grooves of the West African music. Composer Michiel De Malsche has adapted some challenging balafon techniques in the work, such as bimanual coordination and polyrhythm. “Transposons” by Cheong Li is to experiment the transposable value, i.e., the capability to create, reverse and regenerate musical contents, of some idiomatic musical patterns of the balafon repertoire.

Besides, there are two chamber music works in the program: “El Perjurio de la Nieve” and “Inner Sight Etudes”. “El Perjurio de la Nieve”, Juan Albarracín imagined what could be the historic encounter of African and Western musicians. Written for duo marimbists, the work centers on some significant balafon musical styles, i.e., cyclical structure, ambiguous first beat and bi-tonality, and gives a sense of cultural confrontation by asking the musicians to interpret the theme in three contradictory music styles. In “Inner Sight Etudes”, Cornelia Zambila has designed a music cycle of eleven movements to reflect on the experience of embodying an unknown music practice. Perform with a blindfold, I have to improvise with some metaphysical ideas suggested by the composer, such as, textures and natural phenomenon. Rather than working with fixed musical materials and structure, the improvisation is based upon idiomatic movement patterns and coordination techniques of the balafon and the marimba.

The discussions and collaboration process varied according to each composer's concepts and communication method. At first, I shared my knowledge and experience of the balafon, and explained what kind of music I would like to have from him/her. We have always come to a consensus of the main direction of the work, since all of them were interested to explore the potentials of the balafon practice in their own musical languages. Besides, some composers already had past experiences with African culture or world music. As Enric and Michiel had also visited West Africa, we had some interesting conversations about our trips. Cheong has never been to Africa, but he has been working on several world music projects. His intercultural music research echoes to my balafon experience.

After one to two times of exchanging ideas, the composer had two to three months to work on his/her own. Most of them contacted me again after they had completed the work, or at least, a draft of the work. Enric, Michiel and Cheong have worked on the composition independently. They reached me after they have completed the work and we discussed the music interpretations and fine-tuned some technical details in one rehearsal, i.e., correcting passages that are beyond my technical capabilities. For "El Perjurio de la Nieve"**,** Juan has asked us—me and my duo partner—to decide the structure of repetitions. Also, he preferred to explain the interpretative instructions rather than writing them down, so we have worked together for three rehearsals. Nevertheless, "Inner Sight Etudes" required the most rehearsals and discussions. Cornelia preferred to teach me the structure and concepts of the entire work of eleven movements. She guided my learning process of each *score*—the movement score, the memory score etcetera—of each movement, instead of a communication through written instructions. We have worked together for seven to eight rehearsals to prepare for the premiere performance.

In the following, I will further explain the concepts behind each composition and disclose the internet links of the performances. The text serves as an extended program note to accompany the viewing of the performances.

The program notes

Sound Portrait V for solo marimba | Enric Riu (2015)

The work is a joint venture of the composer and the performer. Enric wanted to emphasize the additional creative role designed for the performer. We were both working on our own PhD projects, searching for different answers through the creative process of "Sound Portrait V". Chronologically, "SP V"—the short form we used in emails—is the fifth work of the composer's research on the composer-performer partnership. While I was researching the potential to use movement patterns as a communicative tool in a marimba repertoire, Enric investigated the possibilities of a co-creative partnership between the composer and the performer. The result is an open format: a graphical score of dots, lines and time scales that communicate the movement patterns of playing music. Divided into three parts, the composition builds up from a texture of two mallets to four mallets, and lastly, a free improvisation that combines materials from the first two parts. The graphical score gives me the guidelines of moving around the idiophone keyboard, but I am given the liberty to choose the best materials—the exact note, harmony, rhythm and tempo—to realize my musical imagination.

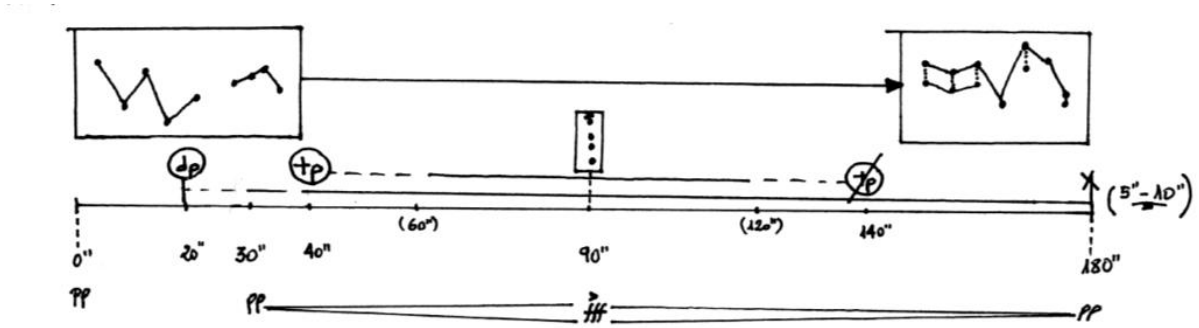


Figure 1: The score of "Sound Portrait V" second movement.

After two to three public performances, I have added a video projection of my movement to the performance. I wanted to highlight my perception of movement, therefore, I have set the video camera on the top of the marimba—which is the angle of the marimbist looking at the instrument and the audience—and the images were transferred to the projection screen in real-time during the performance.

https://youtu.be/i_duk6LjaJw

Video 1: “Sound Portrait V” with real-time projection, performed by Adilia Yip, at Gele Zaal, Royal Conservatoire Antwerp, 2016. Recorded by Adilia Yip.

I have invited Enric to join this project without knowing he had done volunteer work in Mali for a few times. Therefore, Enric had already some ideas of the balafon before knowing my experiences. He was fascinated by the music performances in the local rituals and festivals and experienced the balafon culture through watching the street performances. What attracted him were not the musical materials, but the gestural aspects of the performers. Similar to me, he also observed that the musicians were performing a set of embodied movement patterns on the drums and balafons, despite of concerning with the acoustic affect. He was utterly impressed by the energy and mood delivered by the music in different corners of the neighbourhood. Such different experience of performing and listening to music was one of the most unforgettable memories of his visits in these villages and towns. As a listener, he could not understand how the music *works* musically. Since every action was in full speed and volume, he was distracted from the musical materials but enjoyed watching the ways of the hand movements and how the patterns evolved during the performance. Eventually, he summarized some gestural patterns from his memory of watching these musicians and applied these patterns in the creation of “SP V”.

El Perjurio de la Nieve for four hands on marimba | Juan Albarracín (2016)

Written for 4 hands on one marimba, the work repeats the same polyphony for three times, interpreted in three different styles—the static midi style, the romantic style, and the African style. In the rehearsal, the marimba duo and the composer discussed the general structure and number of repetitions of each section and, together, figured out the appropriate method to interpret the music. The composer wanted to express how different interpretations may impart different musical experiences, and therefore, the same notation is performed as different music compositions. The following are the guidelines of the interpretations:

The static midi style:

a) no phrasing, dynamic contour nor groove;
b) sound mechanical, very boring like in sight-reading;
c) controlled strokes—limit the height of the mallets and keep them always in the same level of height and movement.

The Romantic style:

a) create expressive phrasings, do more rubatos (like playing the short phrases of J.S. Bach's fugue);
b) narrate a beautiful story throughout the whole piece;
c) build up the polyphonic voices since the introduction, take care of the harmonic progression of changing from tonic to subdominant to dominant and follow the development of the bass line;
d) be expressive also in the body gestures and be more dramatic but not relax;
e) meticulous stroke styles.

The African style:

a) flow from the heart;
b) be groovy and rhythmical;
c) play in a relaxed way and embody the rhythmic syncopations (each silence is a stroke);
d) energized focus and increase the tempo to the end;
e) not to be expressive, but enjoy the music like dancing in a celebration.

https://youtu.be/YqYveuh4Ed4

Video 2: “El Perjurio de la Nieve” (25:26-33:00), performed by Adilia Yip and Ricardo Lievano at Witte Zaal, Royal Conservatoire Antwerp, 2016. Recorded and edited by Adilia Yip.

The whole composition develops from a two-note siren like motif; which is later, extended into a four-measure phrase. While each hand plays one phrase, four hands result in polyphony of four lines. Based on a bi-tonality system of juxtaposing distinct harmonies, each line contains a monophonic character and sounds independent from other layers. For example, the juxtaposition of the F major chord and the g minor chord introduces a sudden and slightly uncomfortable feeling to the uniform harmonies. The syncopation and counterpoint of the four-measure phrase were created through diminution, cancellation as well as expansion; on the other hand, the polyphonic layers start at different points in the four-measure phrase, giving a canonic effect and a sense of consistent cyclical movement.

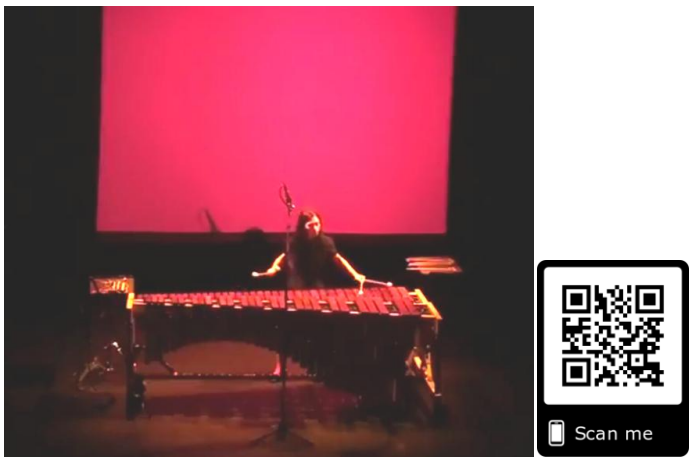
Apart from a front view—the performers and the audience are face-to-face—I have been exploring the effect of viewing the performers from the side, i.e. filming the four hands from the left side of the performers. The design was aimed to draw attention to the up and down movement of the four hands and to show the intensity of each interpretation. In the video, the hands were moving close and away from the camera, while the focus of the filming was changed constantly following the music. The video heightens the sense of the constant looping and conveys the three different types of gestures—the midi, the Romantic and the African—of the hands.

https://youtu.be/FGBi2REvH0c

Video 3: Video installation of “El Perjurio de la Nieve” for four hands on marimba, performed by Adilia Yip and Ji-hoon Lee. Recorded by Natasja Aerts in 2017.

Mal/oxin Suite for solo marimba | Michiel de Malsche (2016)

“Mal/oxin Suite” is a three-movement dance suite inspired by griot singing of West Africa. The lyrical melodies are supported by energetic rhythmic grooves and solid bass lines, based on common modes like D Dorian and A Dorian. In addition, Michiel has adapted bimanual coordination, a crucial coordination technique observed in balafon music, so that the improvisatory-like melodic patterns in the right hand are juxtaposed to the left hand’s two-measure repetitive phrase. While writing the work, the composer was singing the griot melodies and mimicking the marimba four-mallet technique on the piano with four fingers, two of each hand.



https://youtu.be/SxJiH0OwfHY

Video 4: “Mal/oxin Suite”, performed by Adilia Yip at Gele Zaal, Royal Conservatoire Antwerp, 2016. Recorded by Adilia Yip.

The title “Mal/oxin” refers to Maloxine, a drug prescribed to the patients who are suffering from malaria in West Africa. Ironically, Maloxine does not cure the disease but only hides the symptoms. If someone is infected with Malaria Tropica, the most deadly form of malaria, taking the drug can be very dangerous because it made the symptoms unobvious for the doctors to diagnose.

The collaboration, therefore, has recalled Michiel’s past memories of travelling in Africa. In 2000, Michiel wrote a book about daily life in West Africa. He had recorded a CD with local musicians in the Fouta area—the semi-desert region along the border of Sénégal and Mauritania—and in other areas of Sénégal. The result was a semi-anthropological documentary, recording the experience of a young 19 year-old Belgian boy who had a great passion for music, human nature and adventure.

Michiel’s first encounter with the balafon happened on a special occasion. As a music student, he had the opportunity to perform the opening act for the concert of Mori Kante, the Guinean balafon and kora griot who has became world famous after the recording of “Yeké Yeké” in Paris. “Yeké Yeké” used to be Michiel’s favorite Afro-pop song when he was a child. In its original form—not the commercial production—“Yeké Yeké” is based on a common balafon rhythm in Guinea.

Inner Sight Etudes | Cornelia Zambila (2016)

#1 Walking to the Shadow

#2 Five Senses of Fire

#3 Lullaby

#4 Chorale

#5 Polyworld-Action and reaction duo

#6 Move inside the Polyworld

#7 The polyphonic chorale

#8 Passacaglia-Remembering the lullaby

#9 Touching the lullaby

#10 The cluster

#11 Fading ghost

"Inner Sight Etudes" is a sensory performance that consists of eleven short movements for both marimba solo and duo. It uses experimental means to transmit the performer's experience of exploring an unknown music tradition to the audience. "Inner Sight Etudes" is a *game piece* of different sensorial excursions. By using a blindfold, the work encourages the performer to focus on discharging the embodied movement patterns but not to be bounded by form and materials. During rehearsal, the performer followed only the verbal and sound instructions of the composer. Eyesight is the sense that we rely upon to read the score and to see the instrument, so I needed to *feel* the shape and the distance of the instrument with my proprioception of sensing distance and direction. The performance metaphorically describes the experience of searching in the dark. I have also integrated some marimba extended techniques in the improvisation, such as using paper, specially made mallets, string bows and the blowing onto the instrument to make music. In addition, Cornelia has designed a stage light setting to enhance the theatrical effect of the performance.

https://youtu.be/YqYveuh4Ed4

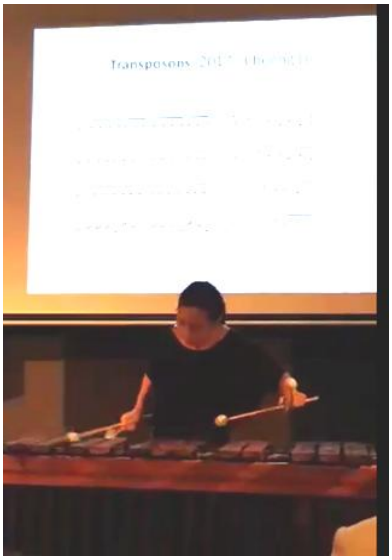
Video 5: “Inner Sight Etudes” (at 33:09 of the video), performed by Adilia Yip and Ricardo Lievano at Bleek Cultureelcentrum, Sint-Niklaas, 2016. Recorded and edited by Adilia Yip.

We have communicated all musical concepts through various “sensorial scores”. The first movement “Walking towards the shadow” is an improvisation based on the *memory score* of instant flashbacks, resulting in a narration of four sequential and continuous scenarios that are as short movies. In contrast, the second movement “Five senses of fire” sketches the short, disrupted, yet consecutive nature of fire as if in a sequence of snapshots. These images changed abruptly without transitions and followed no pre-set order, leading to shorter phrase length and acute timbral articulations. The sensory scores of smell, touch, pressure, temperature and visual imagery trigger various *images* of musical sounds. These senses are transformed into an intricate design of rhythm and pitch which is channelled through the marimbist’s ingrained muscle memory.

The *sound scores* are also used in multiple ways. The simple melody in the second movement “Five Senses of Fire” is later recalled in the third movement “Lullaby”, the seventh “Chorale II”, the eighth “Passacaglia” and the tenth “Returning to the Cluster”. A *sound score* is also used in the action-reaction game between two marimbists. The second marimbist’s improvisation becomes the *score* of the blindfolded first marimbist; while conversely, the first marimbist must respond immediately to the music played by the second marimbist. Moreover, the action-reaction game continues in the form of *movement score.* The second marimbist imitates the movement patterns (waving in the air) of the first marimbist. (Please refer to appendix A for more information on this composition and my performance experience.)

Transposons for solo marimba | Cheong Li (2017)

"Transposons" has provided us another manner of adapting balafon practice in the Western contemporary repertoire. Cheong explored the transposable value—the capability of regenerating new musical ideas and materials of several idiomatic balafon patterns. Divided in two parts, the first part has a written score, and the second part contains models for improvisation. In the first part, Cheong states the basic patterns and their development—the theme and the head of the composition—based on several idiomatic styles of balafon repertoire and improvisation. The second part suggests various improvisatory models for the performer to develop his/her own materials and ideas from the basic pattern.



Scan me

https://youtu.be/qCh_LuVkSk8
Video 6: "Transposons" (at 36:28 of the video), performed by Adilia Yip in lecture-recital "Describe experience: The artistic research of cross-cultural practices". *Doctors in Performance*, 3rd Festival Conference of Music Performance and Artistic Research, Lithuanian Academy of Music and Theater, Vilnius. 6 September 2018.

In other words, Cheong named the work "transposons" to metaphorically describe the transposable value embedded in the skeletal musical patterns of this work. In genetic science, a transposon is a DNA sequence that can change its position within a genome. It has the capability to create or reverse mutations, and alter the cell's genetic identity and genome size. Strictly speaking, "Transposons" is not an improvisation-composition, but an etude that offers training in the modulation of melodic and rhythmic materials. Cheong has suggested numerous types of modulation. The performer can choose from adding, deducting or shifting the accent of a rhythm, moving the down beat of the basic pattern to the next beat, or

reversing the alternation of up-down-up to down-up-down. Also, as the marimba consists two rows of keys, another way of modulation is to configure his/her movement trajectories to strike either the accidental keys or the diatonic keys. And since the performer holds two mallets in each hand, he/she can modulate by adding clusters and different intervals to the basic patterns.

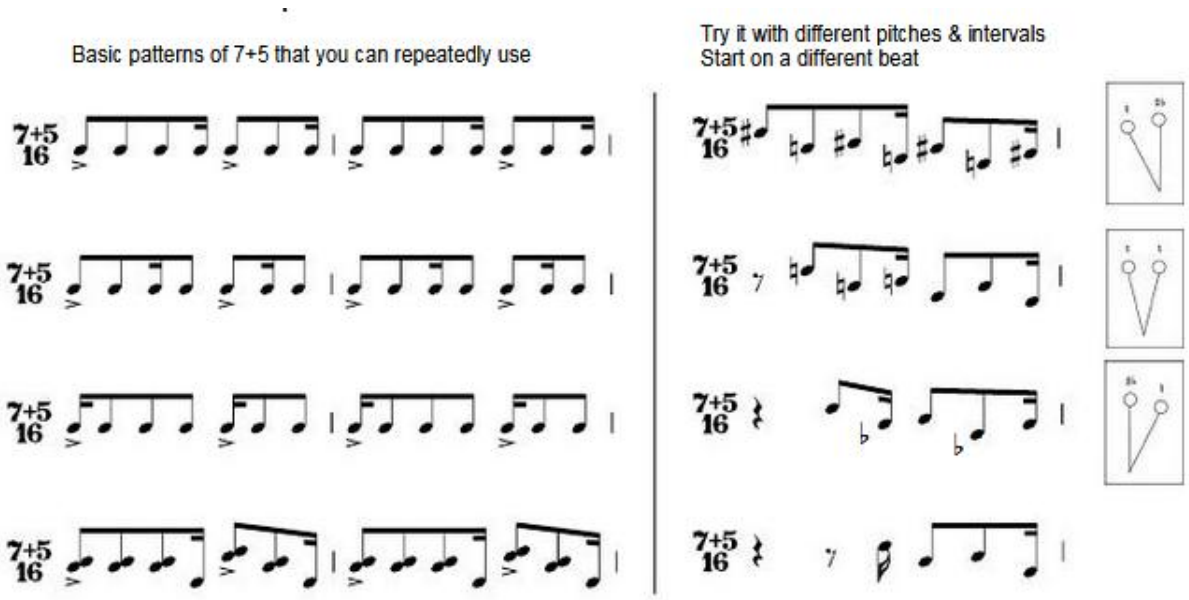


Figure 2: The suggested improvisation patterns in “Transposons”.

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CHAPTER 7

ORAL TRADITION IN CONTEMPORARY ENSEMBLE PRACTICE

A test case on Steve Reich's "Drumming" (1971)

Introduction

A test case is a heuristic investigation into the feasibility of applying an oral approach in the ensemble practice of "Drumming", a minimalism work written by Steve Reich in 1971. Situated at a triangulation of different music ensemble practices—oral tradition in the ethnic balafon ensemble, working with conductor and score in a student ensemble in "Music for 18 Musicians" (Steve Reich, 1974-6), and the *oral tradition* during the premiere of "Drumming" back in 1971—this test case has invited eight percussionists to follow the modified method of the balafon oral tradition in the process of learning and rehearsing "Drumming". Here is an internet access to watch the performance at the Gele Zaal of the Royal Conservatoire Antwerp on 11 December, 2014**:**

https://youtu.be/OiKuV8EPNAc
Video 1: "Drumming" (Reich, 1971) performed by the students of the Royal Conservatoire Antwerp on 11 December 2014. Recording of Royal Conservatoire Antwerp.

According to my experience as a classically-trained marimbist and percussionist, a well synchronized ensemble performance could be a luxury. To *synchronize* means two or more objects or non-objects occur at the same time or rate; and in the context of a music ensemble, I would highlight the meaning of "when someone or something agrees with another party, and

two or more subjects coordinate and combine."[1] More than to be synchronized in time, to be synchronized in a music performance urge for *group flow* among the musicians—a strong interpersonal bond that suggests that every performer belongs to one centralized mindset. Performers can empathetically anticipate and comprehend other's music interpretation and respond accordingly. In this chapter I will, first, compare my different ensemble experiences. Then, find out how to improve group flow and interpersonal skill in ensemble.

7.1 The adhesive force in "Music for 18 Musicians"

In the Western sense, faithful interpretation of the musical score and the conductor's instructions are the methods that guarantee unison in ensemble. I would borrow the physics theory of adhesion to describe this Western thinking. Adhesion is a force that holds two objects (persons) that are different in character. Such an attracting force is like glue; it is external to the objects themselves and sticks particles of different substances together. Often this external force comes from the gestures of the conductor that guides the large ensembles, choirs and orchestras; a force that controls the music performance from outside the circle of performing musicians.[2] (Rasch, 1979 and Yarbrough, 1975)

My past experience of performing Reich's "Music for 18 Musicians"[3] concedes with the theory of adhesion. The conductor was the adhesive glue that synchronized the individual performers, and the performers were committed to the conductor's instructions, cues and analyzes. Even so, most performances of "Music for 18 Musicians" went well without a conductor (Please refer to video 2 for a performance by Synergy Vocals and Ensemble intercontemporain), so did we really need a conductor in this minimal work? My past concert was a correct, synchronized performance but lacked confidence and enthusiasm a bit. In my

[1] Synchronize, in *Online Oxford Dictionaries*, Oxford University Press, 2017. https://en.oxforddictionaries.com/definition/synchronize

[2] Rasch, R. A. 1979. Synchronization in performed ensemble music. *Acta Acustica United with Acustica* 43 (2): 121-31. Yarbrough, C. 1975. Effect of magnitude of conductor behavior on students in selected mixed choruses. *Journal of Research in Music Education* 23 (2): 134-46.

[3] After the success of "Drumming" in 1971, Reich wrote *Music for 18 Musicians* which has a musical structure that resembles the earlier work.

opinion, the presence of a conductor could not help us to reach the state of flow and good social connection. In this case we focused too much on the notes and failed to build the centralized mindset.

https://youtu.be/ApnbymNz9dE

Video 2: "Music for 18 Musicians" by Synergy Vocals and Ensemble intercontemporain on 12 April 2014 at La Cité de la Musique, Paris. Published by Ensemble Intercontemporain, 2014.

Classical ensembles rarely discuss the practice of *flow* or being in *the zone*, a mental state of performing in which the performers are fully immersed in a feeling of energized focus, full involvement and enjoyment in the process of the activity.[4] Philosopher and dancer Barabara Gail Montero (2017) describes *flow* as follows:

> "On this model of expertise, there is no intervention of conscious control, let alone doubt or indecision. Performance simply occurs, one movement after the other, with the inevitability of water running downstream. There is no need to search for ideas, because the ideas find you; there is no need to try, instead you just *do*."[5]

Flow exists too in the context of a musical ensemble. More than reaching for an inspired, optimal state of performance, group flow is a state of empathy that the members are in an intimate interpersonal relationship. When a jazz ensemble is performing at its peak, the performers experience together a subjective feeling that such *flow* is a property of the entire group as a collective unit. (Sawyer, 2006) The performers are engaged in a *group flow*—a centralized mindset during the co-creating process. In this game of "give and take", the group

[4] Mihaly Csikszentmihalyi describes *flow* as a positive psychology to reach optimal performance. Csikszentmihalyi, M. 1990. *Flow: The Psychology of Optimal Experience*. New York: Harper Perennial.

[5] Montero, B. G. 2017. Against flow. in *Aeon Magazine*, ed. S. Davies, https://aeon.co/essays/the-true-expert-does-not-perform-in-a-state-of-effortless-flow.

creates an open communicative channel. Each performer is receptive—listening to the others. He/she fully attends to what the others are doing, even when one is playing an impressive solo above the accompanying lines.[6] As Carmen Lundy puts it, she feels the singing overpowered her body, that it seems something is singing through her body, like she does not have the control for what she is singing. The performers are literally propelled by the group flow, an emergent phenomenon of the group that each individual is responding to it.[7] (Sawyer, 2006) There is not yet an exact method of how to build group flow in an ensemble, but from my experience, a successful ensemble requires that each performer make effort to attain similarity in musical interpretation. It involves, therefore, fundamentally a good musical communication among members during both rehearsal and performance, and the investigation must proceed by each performer examining the interpersonal interaction within the ensemble.

Unfortunately, the musicians in the student ensemble (that performed this piece) interpreted the musical patterns independently and did not resolve to a unison interpretation. Not only the score result in a manifold of music interpretations, the musicians are also restricted to specific body movement and thinking in sound. As a matter of fact, since different instruments require different physical approaches to produce their sound, instrumentalists will not understand the music notation in the same way. In a mixed ensemble like “Music for 18 Musicians”, the bass clarinetists and percussionists must agree on the interpretation of slurs, duration of notes, articulations and volume. The bass clarinetist can sustain a whole note with one breathe but the xylophonist needs to play tremolo—strike with two hands alternately—to give a note an extended time duration.

A proficient musician might prepare several interpretations of the music patterns and communicate with his/her colleagues about the interpretation; yet furthermore, one must learn how to entrain to the group flow. Performing in an ensemble is like engaging in a group conversation, since one must participate in the group flow of the conversation as well.

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[6] Sawyer, K. R. 2006. Group creativity: Musical performance and collaboration. *Psychology of Music* 34 (2): 153, 159.

[7] *Ibid.*, 154.

Dialogue is built upon anticipation and comprehension: while I am interpreting my own thoughts, I have to anticipate what my comrade is going to say. On the other hand, my comrade needs to anticipate my ideas before he/she makes a statement. Alfred Schutz (1970) defines good interpersonal musical skill as follows: "Each co-performer's action is oriented not only by the composer's thought and his relationship to the audience but also reciprocally by the experiences in inner and outer time of his fellow performer."[8] I shall interpret Schulz's definition into a four-dimensional interaction system: 1) the inner time represents the performer's musical thinking and manifold interpretations of the score—the existence of one's self; 2), the outer time is that of the fellow performers and the conductor, who are physically external to the performer; 3) the score that is given to the performers to decipher; and 4) the manner in which the performers manipulate the dynamics of the audience. Thus, performers may not consciously opt for the best interpretation, but more importantly, they are empathetically involving themselves in the group flow of the ensemble. Whether the performers can work together as a total whole is dependable on their empathy, as well as their interpersonal bond.

To this end, some properties of the balafon oral tradition may help one to improve interpersonal skill in two ways: firstly, learning the music collectively by ear crucially enhances interpersonal skill and empathy;[9] secondly, the leader and the teacher of a balafon ensemble offer the performers a centralized source of contents and interpretations, yielding a unison interpretation.

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[8] Schutz, A. 1970. *On Phenomenology and Social Relations*, ed. H. Wagner. The University of Chicago Press. 214.

[9] Here are some examples of Western musicians use oral tradition in their own musical contexts. Composer Ben Johnston (2006) emphasizes the importance of oral tradition in the intonation of microtones in string quartets. Performers can succeed naturally in such abstract technique if they listen to each other well enough. He said: "They do not have to compute this or even analyze the music to discover what it needs to bring it in tune. No, this is done 'by ear': Simply by listening for maximum clarity in the intervals that comprise the ensemble sound." Secondly, Western musicians learn music interpretation by listening to recordings and performances of renowned artists. Pianists would listen to Alfred Brendel for the superb interpretations of the compositions of Mozart and Beethoven. Oral tradition, thus, replaces the language of explaining the knowledge-how. Even to the most intellectual musicians and teachers, they heightens tentatively the emotional awareness of the music to explain the knowledge-how, like "play that more warmly," or "this passage needs a sense of angst". Johnston, B. 2006. *Maximum Clarity and Other Writings on Music*, ed. B. Gilmore. Urbana and Chicago: University of Illinois Press, 431-2.

7.2 The oral tradition in the balafon ensemble

In a balafon ensemble, the sole intention of each performer is to integrate the music into a united whole. Imagine how tens of thousands of starling birds are flying in flocks or murmurations without colliding. Similarly, a balafon ensemble is a group that changes the shape of the music cooperatively. In the same manner that an adhesive force exists in a Western classical ensemble, the balafon performers are bonded by a cohesive force. Each performer simulates the musical interpretation and intention of the leader and other co-performers. Without a conductor, they build a group flow by entraining to each other.

The soloist, who is the leader of the ensemble, is the reference of musical content and the structural development. He/she is the most knowledgeable person in the ensemble, and gives instructions to the other performers. He/she is responsible for controlling variation of the musical patterns played, and gives a stimulating improvisatory solo. The role of the balafon soloist is close to that of the master drummer of a West African drum/dance ensemble. When the master drummer switches to a new pattern, other drummers respond in an appropriate manner of statement-response, lending to a performance in which the complex rhythmic structures change seamlessly from one pattern to the next.[10] Unlike a conductor figure, the balafon soloist, like the first violinist of a Western string quartet or the leading performer in a piano duet, makes most artistic decisions for the group.[11] (Murninghan and Conlon, 1991, Goebl and Palmer, 2009)

The leader interrupts when something is not correct, and discusses form and structure with the other performers. Then group then agrees on the same approach. These discussions are not considered as interruptions, but as an ordinary, routine method of synchronization. While Western performers rely on a conductor to make authoritative decisions for the group,

[10] This information is obtained from Robert Schwarz on Reich's compositional aesthetics. Reich was intrigued by the African method of organizing the percussion ensemble in performance. Schwarz, K. R. 1981. Steve Reich: Music as a gradual process part II. *Perspectives of New Music* 20 (1): 233.

[11] Murnighan, J. K. and D. E. Conlon. 1991. The dynamics of intense work groups: A study of British string quartets. *Administrative Science Quarterly* 36 (2): 165-86. Goebl, W. and C. Palmer. 2009. Synchronization of timing and motion among performing musicians. *Music Perception: An Interdisciplinary Journal* 26 (5): 427-38.

African balafon groups solve performative problems through dialogue and demonstration. Such oral approach encourages an open communicative channel among the musicians and the inclusion of the individual's musical ideas. These qualities are observed in the video of Salia Traore practicing with his drum ensemble:

https://youtu.be/1a1O7qjoA80

Video 3: Salia Traore and drum ensemble plays Song *Boro Demborola* in Burkina Faso, January 2013. Recorded by Adilia Yip.

One might not be surprised by the uniformity of interpretation and technique shown in the performance of Super Zamaza, the ensemble formed by Youssouf, Aly and Kassoum (video 4), since the Keita musicians were nurtured the same musical cultural environment and learned their repertoire and practice from family members—sharing a centralized source. Like many professional musicians, the Keita brothers and cousins have been learning music from their father since they were young. When they grew older, Youssouf and Aly went on study with griots in Kouana, a nearby village of Konsankuy.[12] Griot[13] families are central to the music tradition of their villages. Students inherit knowledge and skill from their families. Griot status, like other social status in West Africa is hereditary, and the musical tradition generally passed down through generations within a limited number of families. Youssouf suggested that these

[12] Interviewed by Phillipe Nasse, Aly Keita told that he studied with the griots Zouratie Coulibaly and Daga Coulibaly from village Kouana. Kilian, G. and A. Keita. 2009. *The Balafon with Aly Keita and Gert Kilian*, ed. P. Nasse. Dvd. France: Improductions, 22.

[13] Griot (in French, or Jeli in English) is the historian, storyteller, praise singer, poet and/or musician of a village. Kilian and Keita, *The Balafon with Aly Keita and Gert Kilian*. Charry, E. 2000. *Mande Music*. Chicago: University of Chicago Press, 90-4, 105-7.

traditions have led to the musical unity of Super Zamaza as well as the preservation of the repertoire and practice.[14]

https://youtu.be/nftzHeiaP4U
Video 4: Song *Borodomborola* by Super Zamaza. Kilian and Keita, *The Balafon with Aly Keita and Gert Kilian.*

Further on, I will explain the test case "Drumming" (Reich, 1971) in three steps: first, a short analysis and historical background of oral tradition in the performance practice of "Drumming"; second, I will describe the test—the principles and materials; and lastly, a heuristic evaluation based on the interviews of the eight ensemble percussionists and the audio and visual data.

7.3 Oral tradition in the premiere of "Drumming" in 1971: the historic background and a short analysis

a) The background of "Drumming"

In 1970-71, Steve Reich composed "Drumming" after his lessons with traditional drummer Gideon Alorwoyie in Ghana. Reich integrated Ghanaian drumming in his minimal compositional techniques, and applied the oral music practice—learning the music via listening and imitation—in the creation of the work. During rehearsals, Reich taught his

[14] This hypothesis is provided by Youssouf Keita. However, this observation on the traditional practice does not emit the possible influences caused by colonisation and emigration. After certain age, Youssouf and Aly moved out of Konsankuy, so it is likely that their traditional styles have been influenced by foreign cultures since then. Aly went abroad to Germany and formed numerous jazz and world music bands with Western musicians. Youssouf has an atelier in Burkina Faso to manufacture the instrument and promote the balafon tradition. Only Kassoum stays in Konsankuy and fulfills the responsibilities of a griot.

ensemble how to play the music by referring to the rhythmic patterns that he had jotted down in his notebook during his lessons in Ghana. The manuscript was made after the entire work was completed, and it circulated among classical percussionists. Only in 2011, Reich made the first definitive full score in order to reduce disappointing performances caused by the ambiguous markings on his manuscript. For instance, he had heard the music patterns played *ad libitum* by nine drummers for as long as 50 minutes, which is what the length of "Drumming" is supposed to be.

However, some public opinion seems to deviate from Reich's expectation. Adam Sliwinski, a percussionist of *So Percussion,* shared his opinion on the newly published score on his personal blog. He described that his past experience of learning "Drumming" was akin to *oral tradition*. He and his group learned the music by imitating and listening to the demonstrations of their teachers and from Reich and his original ensemble percussionists. Although the new wonderful, definitive score of "Drumming" is published and documents the necessary performance practice as the composer wishes, Adam guesses that he will always pass on his own interpretation of "Drumming" by keeping the oral tradition as he had experienced.[15]

In spite of Reich's concerns for an authentic performance and the preservation of the musical content, the score of eighty pages has complicated the analysis and perception of the minimal structure. And the score, in fact, blocks the interpersonal communication within the ensemble. From my experience of the student ensemble of "Music for 18 Musicians", some performers tend to orient introvertly and place their focus on the printed music. It was likely that the performers were barred from the group flow due to reading during repetitions and turning pages. Without the score, the performers would have memorized the complete work and liberate themselves to be able to focus on interaction.

[15] Sliwinski, A. 2011. *Oral Tradition: What's in the Score?* http://adamsliwinski.blogspot.be/2011/11/oral-traditions-whats-in-score.html.

b) A short analysis

"Drumming" is a minimalist composition written for twelve performers: nine percussionists, two singers and one piccoloist. Percussion instruments include bongo drums, marimbas and glockenspiels. Following the composer's instructions of free repetition, "Drumming" usually lasts between 55 to 75 minutes.[16]

Figure 1: The basic rhythm pattern of "Drumming". Illustration by Adilia Yip.

The entire work is made up of one basic rhythmic pattern, a cycle of twelve beats (figure 1). New patterns are then formed at the second, third, fourth and fifth crochet beat of the twelve quaver-beat cycle of the basic rhythm pattern. Reich was especially fascinated by the African polyrhythmic process of superimposing a pattern which has its own individual downbeat.[17] These four variations and the original form juxtapose with each other to give different polyphonic structures. Roughly divided into four sections, each section is connected from one to the other seamlessly like a mass of sound transforming constantly in different sonic shapes, textures and volumes. These transitions are created by the ever-changing rhythmic structures and instrumentation throughout the work. Section one is written for four drummers on four pairs of bongos, organized in a non-consecutive order of B-G#-A#-C#-C#-A#-G#-B.

[16] The premiere lasted for 81'35", took place on 16 December, 1971 and performed by Gary Burke, Steve Chambers, Ben Harms, Russ Hartenberger, Frank Maefsky, Art Murphy, James Ogden, James Preiss (percussion); Jon Gibson (percussion, piccolo); Steve Reich (percussion, voice, whistling); Jay Clayton, Joan LaBarbara, Judy Sherman (voice). The recording with Deutsche Grammophon/Universal Classics in 1974 lasted for 84'29"; the version in CD *Steve Reich and Musicians* (Nonesuch/ Elektra, 1987) lasted for only 56'42"; the versions by Ictus ensemble (Cypres, 2002) and So Percussion (Cantaloupe Music, 2005) lasted for 54'49" and 74:02 respectively.

[17] Schwarz, *Steve Reich: Music as a Gradual Process part II* , 231-3.

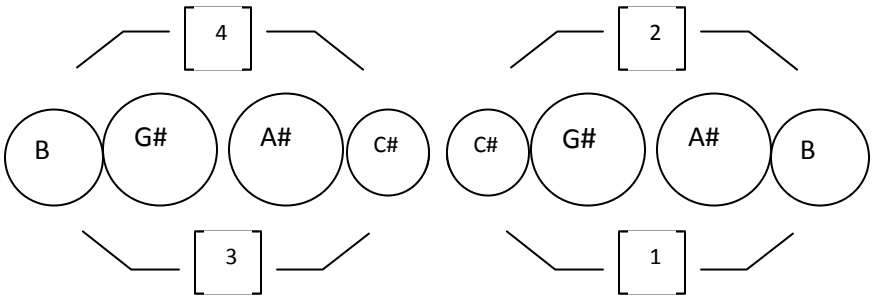


Figure 2: A diagram of the bongos showing the actual organization and tuning. The numbers represent the four drummers: drummer 1, 2, 3 and 4. Illustration by Adilia Yip.

The work first begins with the process of *addition.* Started out with a single beat played by two drummers, the time rests were gradually replaced by one beat at a time. After sixteen measures, the twelve quaver-beat basic rhythmic pattern is formed completely; then, the remaining two drummers join in. One of these two drummers plays an elaborate solo passage, while the other drummer plays the basic pattern which has the second beat of the cycle as downbeat. Then the music transforms to different textures through the processes of addition, reduction and phase shifting, and the constant fade in and fade out create organic transitions between the patterns.

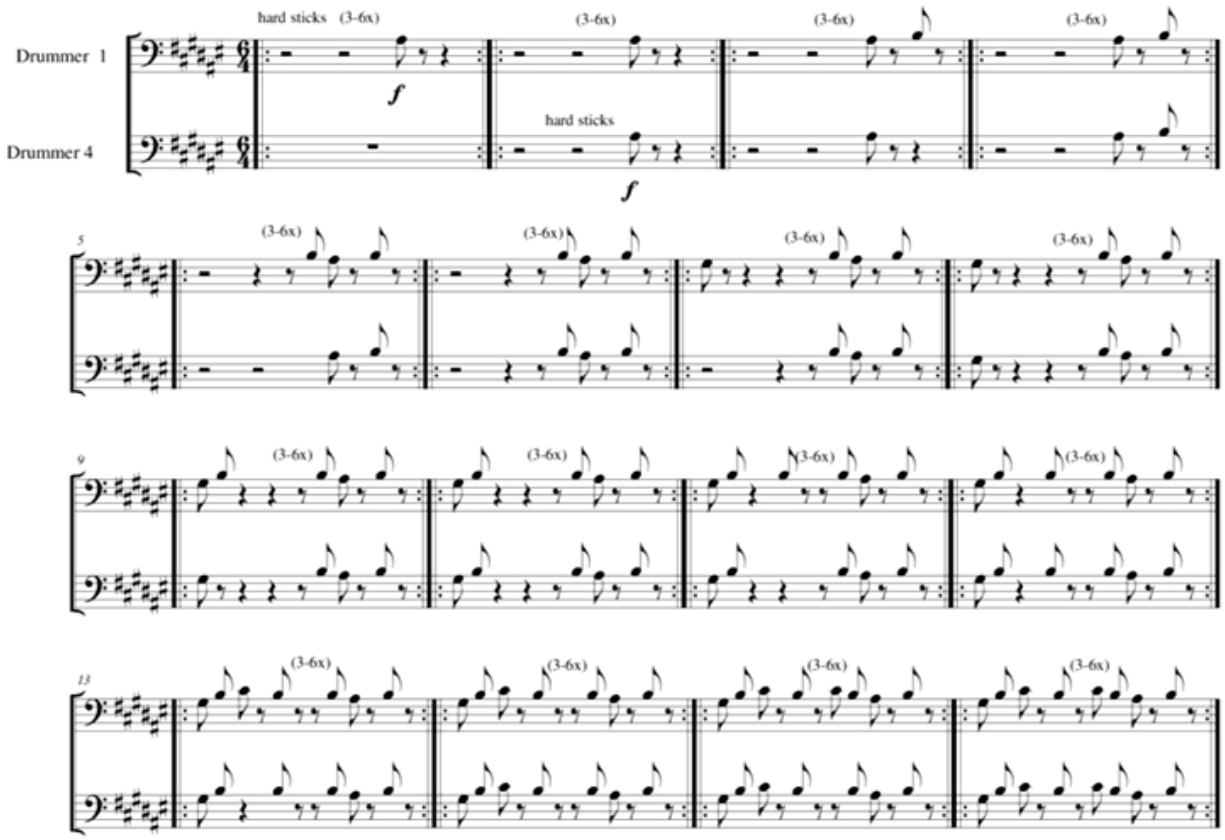


Figure 3: The first addition process in section one for four bongos players. Reich, S. 2011. *Drumming*, New York: Boosey & Hawkes, 2.

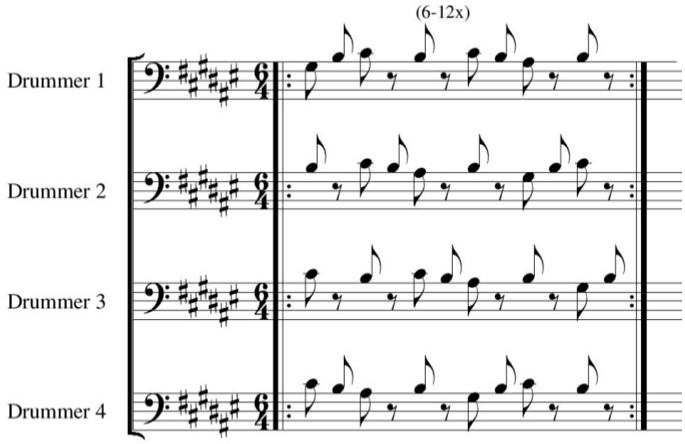


Figure 4: Juxtaposition of four versions of the basic rhythm pattern, begin at the first beat, the third beat, the second beat and the forth crochet respectively. *Ibid.*, 10.

Through the development of the instrumentation, the music passes from one section to the next like a wave. In section two, the sharp attacks of bongos gradually change to the melodious marimbas, with the accompaniment of the soprano and alto voices (section two); then, from the evangelic glockenspiels decorated by the sounds of whistle and piccolo (section three), the reduction and addition processes begin again. In section four, the structure redevelops to the full *tutti* ensemble that brings us to the grand finale.

Returning to section two, the nine percussionists are allocated different standing positions at the three marimbas. Some players are asked to stand at the opposite side of the marimba, so that, the music register of two players can overlap, i.e., player 1 stands opposite to 2, and player 5 stands opposite to 6). We could have five players playing on one marimba at the same in this design.

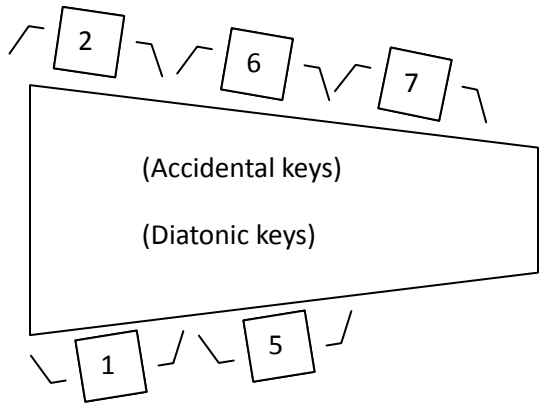


Figure 5: A diagram showing the standing positions of marimba 2 assigned for the five marimba players. Illustration by Adilia Yip.

Section three is written for four percussionists on three glockenspiels. Same as part two, the percussionists are assigned with individual standing positions to optimize the use of space on the instruments. The section ends with a reduction process, which is in fact, a retrograde of the addition process that happened in the beginning of section one.

After the glockenspiel reduces to the final single beat, one marimba player and one drummer open up section four with a new addition process, gradually building up to the *finale* which has the fullest polyphonic structure and richest sound. It constitutes three players on glockenspiel, three on marimba, three on drums; accompanied by piccolo, and soprano and alto voices. Now, one percussionist plays on one instrument to give an open, grandioso style. There are only three types of rhythm in the *finale*, i.e., the first, the third and the fifth crochet beat of the basic rhythmic pattern as the downbeat; therefore, resulting the optimum rhythmic density that can sustain power and concentration of the music till the last note of the composition.

7.4 The principles and materials of the test

I designed the test on the basis of two principles. The first: the ensemble was asked to learn by ear without scores; the second, a leader-follower relationship.

a) Learning by ear

The score of "Drumming" provides information of *what* to play, but gives much room for the performers to decide *how* to execute it. If each performer only focused on his/her own distinct interpretation, the polyrhythmic structure of twelve parts in "Drumming" would have turned into turmoil. The basic rhythmic pattern can be interpreted in either a ternary or binary groove (see figure 6), and then, each pattern that begins on other beats leads to more rhythmic possibilities. Therefore, altogether these patterns sum up to uncountable combinations of rhythmic grooves.

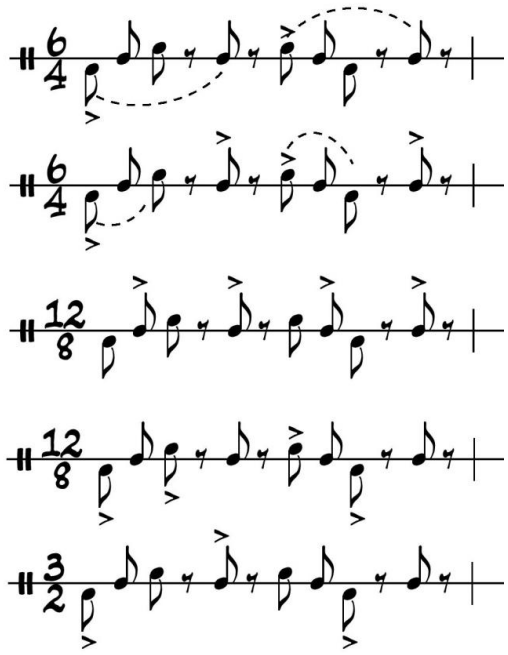


Figure 6: Five possible rhythmic interpretations of the basic rhythm pattern, downbeat on the first beat of the twelve-beat cycle. Illustration by Adilia Yip.

The collective learning style in the test offered the performers a centralized source of musical knowledge and a unified musical mind. Although such dictation limited the freedom of interpretation, the method showed the exact interpretation of the music and shortened the discussions on the fine-tuning each interpretation during rehearsals. The collective mode increased the interpersonal communication of the ensemble. We discussed the music openly and the performers knew they needed to give their opinion when something was unclear—an open channel that involved every participant. This strengthened the trust and the mutual respect between the performers, resulted in a sustainable social bond to reach a centralized mindset.

b) The leader-follower relationship

The second principle is the leader-follower structure. I was the coach of the ensemble. I made decisions about musical interpretation and prepared study materials for the students. During the rehearsals, I explained and adjusted the interpretations of each performer, and taught the musical structure and techniques based upon my analysis. I have also invited percussion professor Koen Wilmaers to give opinions on students' performance in the rehearsals.

I also performed in the ensemble in section one, three and four. My responsibilities included guiding the processes of addition, reduction, and the phase shift technique, and cueing the entries of each part (video 5 and 6ab). But unlike the leader of a balafon ensemble, I did not give solo improvisations due to the requirements of the score. Another important task was to control the tempo and the dynamic evolution by playing the constant repetitive pattern.

https://youtu.be/kC6E2bTHSu4
Video 5: Teaching the reduction and addition processes to the bongos players. Recorded by Adilia Yip.

https://youtu.be/o35GmFGQuaI
Video 6a: Teaching the bongo players phase shift in the first rehearsal. Recorded by Adilia Yip.

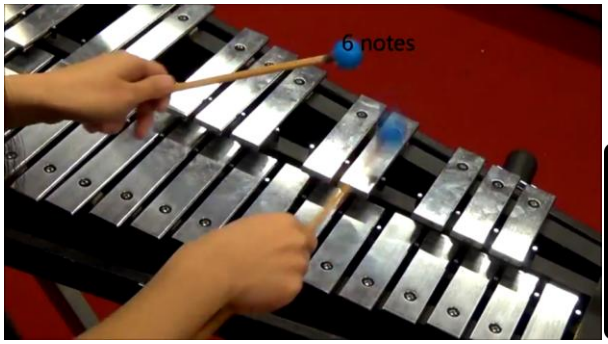
https://youtu.be/midXPjZFaEA
Video 6b: Teaching phase shift to marimba player in the first rehearsal. Recorded by Adilia Yip.

I prepared two types of study materials for the student ensemble: online videos of the music patterns that show the sound and hand movement (video 7, 8 and 9); and an event table of the musical structure (figure 7 - refer to the appendix for the full set). I have used these materials to replace the practice of one-on-one teaching because we could not afford the time. As a module of the curriculum, I had to prepare the performance within eight three-hour rehearsals. The detriment of these materials was, indeed, I could not experience the process of teaching the music and observe the students' response. The video format also hindered the explanation of the musical structure. I had to write out the musical events systematically in the table format. Limited to research scope of the percussionists' acceptance of the oral practice, I only prepared the materials for the percussionists, but the singers and the piccoloist used scores throughout the process. Here are some of the video instructions and the event tables:[18]

https://youtu.be/7PcALa8A1hQ
Video 7: Instructions for the bongo player in section 4. Recorded by Adilia Yip.

https://youtu.be/IP_ivEIyO8c
Video 8: Instructions for the marimba player in section 4.

[18] Please refer to the appendix for complete event tables and all video links.



https://youtu.be/kzHLLGRVliQ

Video 9: Instructions for the glockenspiel player in section 4. Recorded by Adilia Yip.

Drumming events/ Part 1 bongos/ Page **2** of **4**

Adilia	B beat 1	B beat 1	- Fade out B beat 1 (2 bars) - Rest 2 bars (change to hard sticks) - Fade in (2 bars) - Continue 2 bars						Continue 14 bars
Koen	B beat 3	B beat 3			- Fade out B beat 3 (2 bars) - Rest 2 bars (change to hard sticks) - Fade in (2 bars) - Continue 2 bars				
Maarten	x	-Fade in B beat 1 (2 bars) -Continue 2 bars	B beat 1	- Fade out B beat 1 (2 bars) - Rest 2 bars - Fade in B beat 3 (2 bars) - Continue 2 bars	B beat 3	- Fade out B beat 3 (2 bars) - Rest 2 bars - Fade in B beat 5 (2 bars) - Continue 2 bars	B beat 5	Fade out (2 bars)	
Tiit	- Fade in B beat 3 (4 bars) - Continue 6 bars - Phase shift to beat 4 - Continue 16 bars - Phase shift to beat 5 -Continue 8 bars	B beat 5					- Fade out B beat 5 (2 bars) - Rest 2 bars (change to hard sticks) - Fade in (2 bars) - Continue 2 bars		

Figure 7: An example of the event tables created for the bongos players of section one, page 2. Please refer to appendix for all tables. Prepared by Adilia Yip.

7.5 Evaluation

The two performances have received positive comments from the audience. Below is a summary of some reactions:

"It was a convincing musical performance."—an expert in contemporary music

"The ensemble formed a strong trance moving from section 1 to section 4, changing smoothly from the sonority of the bongos to the marimbas, the glockenspiels and finally arrived to a full ensemble in the finale."— administrative staff and dancer

"It was a powerful performance. The ensemble transmitted a focused energy to the audience."—visual artist

After the two performances, I interviewed the percussionists to reflect on their process of learning and rehearsing. The questions are formulated under these aspects:

a) Satisfaction of the concerts

b) The feasibility of the oral approach

c) Improvement in listening skills

d) The interpersonal skill and group flow among the performers

e) Learning the patterns of co-performers

f) Music analysis in oral tradition

g) Concluding remarks

a) Satisfaction in the concerts

All eight persons felt satisfied about the concerts and everybody agreed that the concerts were good performances. (Refer to video 1 for the full performance) Five students felt good synchronization among performers and that the group had performed in unity. In particular, three of them expressed that they felt connected to their co-performers and the whole ensemble had the same feeling on stage. The ensemble brought the audience to a sensation of *trance*, and the performers felt something similar: they felt a higher level of unity

and a different feeling towards playing music. To name this *different* experience, the students used words like zone, concentration, trance or moving flow in their descriptions.

Three students did not give extra feedback to the results of the concerts, but they very much enjoyed being part of the project. Two of them explained that they do not have much interest in performing minimal music. They feel that the music is merely a repetition of simplistic musical patterns.

b) The feasibility of the oral approach

All students agreed that the oral transmission approach is feasible. The instructions of tempo and phrasing were clear in the videos; however, it was difficult to learn the music structure through videos. It became clear with the help of event tables. Everybody felt confused during the first rehearsal, and in particular, four students reported that the "Drumming" project was their first experience in minimal music, and they did not understand the music.

Five students agreed that in comparison to notation, the videos provide extra musical information, including movement patterns, meter, groove, phrasing contour and tempo. Such format gave them an impression of the musical style, and subsequently, it influenced their interpretation. In the recording of first rehearsal, the basic rhythmic pattern of the drummers in section one is recorded for a comparison of musical interpretations. We can hear that the drummers had acquired the phrasing of the video demonstration; and later in the third rehearsal, the drummers had a more confident sound. The rhythm, articulation and tempo were in good control. (Video 10)

https://youtu.be/JkG0NzKEYQQ
Video 10: A link of the sound results of three bongo players performed in the first and the third rehearsal. Prepared by Adilia Yip.

Oppositely, three students preferred notation. Two of them could not explain the exact reason, but they felt insecure without the score in front of them; they needed some kind of reading reference in the rehearsals. One of them suggested that in order to achieve the same results, she would listen to the recording when learning the new music; however, she also confessed that she did not do so regularly due to her lack of discipline.

However, most students reported that they adjusted their interpretation in the process of rehearsing. They fine tuned their interpretations while listening to their co-performers. Two students admitted that they performed their own interpretation different from the videos, as they thought they were not required to imitate them (video 11). This means, even when musicians learn from one source, I cannot control the amount of information absorbed and adapted in due course.

https://youtu.be/a-r1kaKaKWg
Video 11: Adjusting the interpretation in the first rehearsal. Recorded by Adilia Yip.

c) Improvement in listening skills

Six students agreed that the oral transmission approach offered an open channel to listen to their co-performers. Most of them realized that they should listen more attentively in their future ensemble rehearsals, since in their opinion, they had focused too much on reading the score in the past. Two of them appreciated that they had this chance to try such a different ensemble method. This verified the fact that the more attentively a musician listens, the better he/she performs.

d) The interpersonal skill and group flow among the performers

Five students agreed that the oral approach stimulated interpersonal communication between performers (video 12), since they needed to discuss the music structure and needed to agree about cues and synchronization. They also had to find out the counterpoint with other musicians through discussing the music together. Under such circumstances, they felt a better social bond in this ensemble: most of them felt himself/herself being part of a team working towards a unified target. They agreed to use the term “group flow” to describe this experience of unity, although three of them were not sure if such sensation could be called so.

Interestingly, all students described the same method of synchronization. One would relate his/her part to those who have different timbres. For example, a marimbist tended to listen to the bongos, as bongos gave the most obvious sound effect among all instruments in section four. They would also relate to a musical part that was constantly repeating throughout a section, as it would give them a secure time reference. However, three students did not experience any special phenomenon in terms of social interaction. To them, the interpersonal relationship was similar as it had been to their earlier experience of using scores.

https://youtu.be/hV0rM-cjiac

Video 12: Communication and assistance among the students. Recorded by Adilia Yip.

e) Learning the patterns of co-performers

I have asked the students whether or not they had obtained a good knowledge of the entire composition. The affirmative answers were given by most of the same students as those who had answered other questions to the affirmative. The same three students preferred score reading. On the contrary, four students felt that collective learning in rehearsals helped them to grasp the overall picture of the work. By observing rehearsals they learned about the complete structure and the materials played by other instruments. The remaining two students paid attention to the parts that were musically in parallel to theirs. Their knowing these parts helped them to ensure correct entries and synchronization.

f) Music analysis in the oral tradition

Four students admitted that they usually do not analyze the compositions that they are involved in within other ensemble projects. They usually rely on the conductor for instructions. One of them explained that it is common that students do not prepare their music before coming to rehearsals and, rather sight-reading it. It seems that the oral/aural approach stimulated the students to study the analyzed structure and to memorize the music. Four students mentioned that the analysis had helped them to learn the structure effectively. One student claimed that the approach of using analyzed materials helped him to learn the composition “by heart”. He described that the music was embodied in him, which he had never experienced in his previous minimalist music performances.

h) Concluding remarks

Eventually, five students confirmed that the oral/aural approach has brought positive influence to their ensemble practice. Four of them would consider applying this method in their future rehearsals, depending on the kind of music that they play. The consistent ratio of 5:3 in almost every category shows that three students are not convinced by this test. They prefer scores for the sense of security more than for technical need, and all three of them expressed little interest and understanding in minimalist music. One student disagreed to the oral approach because she had to wait for the others while they were correcting mistakes. She

did not find this to bring her extra information about the composition. She felt that students' discipline was an important factor to the effectiveness of rehearsals. The last remark was that the oral approach needed better organization and time management, which was agreed by a number of other participants.

Therefore, the results have met the main purposes of the test. The modified oral approach is approved by the majority of the ensemble in test. Despite a clear explanation, some students appreciated the chance of having a new experience. And importantly, the test has stimulated the students to reflect on their past behavior in ensemble projects and rethink the details of the practice.

Conclusions

In my personal experience, the most precious finding in this heuristic test is the importance of human interaction in ensemble practice. Despite any immaturity, the performance of the student ensemble in "Music for 18 Musicians" could be optimized if we had better cared to build an interpersonal connection. The centralized mindset and group flow in minimalist repertoire can be best achieved by an interpersonal, uniform cohesive bond, rather than an adhesive bond. The balafon oral tradition, in fact, is not the best option for the performance of Western music, due to its limitations in terms of storing and transmitting heterophonic music. Yet, as a study tool, it perfects the Western ensemble practice in terms of interpersonal relationship and group flow. The test case contributes a new oral ensemble practice that rests on three notions: an open interpersonal communication, imitation of each other's parts, the anticipation and comprehension of other's musical intentions. Although it lacks scientific measurement, the current data illuminates new ideas on revising the contemporary ensemble practice. It has changed substantially my approach to working with other musicians, not only for minimalist compositions but for all kinds of repertoire. On the other hand, this method had the capacity to give new definition to conventional Western ensemble training, giving us the starting point to build a consistent, systematic method for both student and professional ensembles.

CONCLUSIONS

In conclusion, this artistic research has constructed a model of "I", based upon the performer-researcher's experience of learning, understanding and interpreting a foreign music practice. "I" imparts three different roles during my balafon excursion: "I" as an explorer of an unknown musical world, observes and participates in the African tradition; and in the process of learning the music, "I" became a different performer who embodies the balafon practices; then finally, "I" as the interpreter who describes her cross-cultural encounter. These roles happened chronologically at different research phases. The first phase—the explorer—embarked upon since the first moment of the research project. It was the beginning of the intercultural music journey. "I" was in a state of searching and recognizing that which was different from her home ground. Then, the second phase remarks the emergence of a new artistic character. The performer-researcher's original thinking patterns and artistic practices are altered during the exposure to new influences. "I" has entered the second phase without notice. The performer-researcher summarized her experience after the first two phases. She interpreted what she had encountered during the excursion, analyzed and theorized her personal experiences. The artistic creations and experimentation are, therefore, the artistic interpretations of the experience. Intermediate interpretations also appeared when "I" was still in the mist of understanding the phenomena. Concepts that were not clear were reaffirmed or revised when the researcher had gathered more knowledge about the subject. I would now like to give summary of my research activities and findings according to the model of "I":

a) <u>Recognizing the knowledge</u> has happened through "doing-it"—the participant-observation of the African music practice, my experience of learning and imitation, the bodily sensations of playing the balafon, and observing and joining African daily activity. Since my primary concern was to play the balafon, movement had become the crux of the matter. I perceived the balafon phenomena from a pragmatic viewpoint: the embodiment of movement

trajectories and movement pattern as a communicative tool of music (chapter 1); the revision of Hornbostel's statement "we focus on musical movement, they on music-producing movement" (chapter 2); polyrhythm is formed by integrating coherent parts and resembling the people's actions (chapter 3); the movement idioms of the balafon repertoire (chapters 4 and 5).

The so-called unpredictable, exciting excursions of "I" were, rather disappointingly and ironically, predictable developments that were filtered and molded by the performer-researcher's pre-understanding. In the discourse on method, Lawrence Ferrara (1991) says, "One's ability to experience anything originates in his primary prejudices."[1] I interact, per se, with all factors and actors in the balafon music environment—the performer's self, intentions, the instrument, the idioms, the performer's body, sound, practice, score and movement[2]—but I can recognize those experiences as knowledge only if they correspond to my pre-understanding. These are my prejudices—culturally, mentally and physically—who form the basis of my reception and understanding of the unknown practice. The researcher is not a blank slate (tabula rasa), but a human being that comes with his/her *self.* "I" operates on the basis of the subjective character of *self*—the cultural prejudice of the researcher, which decides the fundamental pre-understanding of the balafon. And without the mental prejudice—the intentions, aims, goals, methodology and research questions—recognition becomes directionless and incoherent. My views as a performer have predisposed my rationale behind the data collection, what to record and edit. It has even pre-decided what phenomenon I would perceive. The biological prejudice of "I" also restricts the selection of data in terms of the physical constraints such as hearing—absence or presence of perfect pitch, ability to distinguish an interval of three cents, microtonal scales, rhythmic sensitivity, etcetera.[3] (Gourlay, 1978)

[1] Ferrara, L. 1991. Should the method define the tasks? In *Philosophy and the Analysis of Music: Bridges to Musical Sound, Form and Reference*. Bryn Mawr: Excelsior, 34.

[2] Refer to the factors and roles in performance (figure 1) of chapter 4.

[3] Gourlay, K. A. 1978. Towards a reassessment of the ethnomusicologist's role in research. *Ethnomusicology* 22 (1): 1.

b) Emergence of a new artistic character is a gradual, subconscious process when "I" was embodying the balafon music practice and promoted to the next artistic level. On one hand, I have acquired technical skills, such as bimanual coordination, aural skills in polyrhythm. I have also gained deeper philosophical insights into music embodiment, music perception and movement. One example is the new approach of working on a new marimba composition. Inspired by the balafon *transposition* technique, I began to focus on my movement of playing music; movement patterns have become the representation of music. I would analyze the movement trajectories of my arms and deduce the idiomatic movement patterns of the composition. Besides visual and auditory devices, the muscle and sensorimotor system is another eminent encoding device in music.

Since then, the balafon knowledge and techniques have become the foundation of my artistic practice. The balafon oral tradition has reminded me of the importance of interpersonal relationships in contemporary ensemble practice. (Chapter 7) I have worked with six contemporary composers to invent new works for marimba. Several balafon practices and aesthetics are expressed in these compositions (Chapter 6). In the blindfolded performance "Inner Sight Etudes", my orientation of playing the instrument is not directed by eyesight, but solely my proprioception and spatial awareness of the keyboard. Polyrhythm training has provided me the coordination and listening skills to play the polyrhythmic and bi-tonal construction of "Le Perjurio de la Nieve". And "Transposon" offers a training to apply balafon movement patterns onto the marimba.

Moreover, the balafon experience has reformed my understanding of culture in music. An ethnographic investigation is essential to reveal the composer's adaptation of folkloric music and music of non-Western influences. These music cultures, in fact, entail different interpretations and approaches. For example, we should research into the song and dance style of the Hungarian folk songs used in Béla Bartók's "Mikrocosmos" (1926-1939). Due to the popularity of Astor Piazzolla's nuevo tangos in the Western world, most people recognized the Argentinean tango as being based on compositions that have well-structured form and a

regular metrical time; however, this is not the tango performed in local bars and concert halls. The music actually endorses, for instance, a free tempo and elaborated improvisatory style.[4] As such, the balafon experience has taught me the importance of deciphering the cultural traits embedded in music. These are the valuable details that bring out the spirit of a musical work.

c) Formulating the interpretation is the phase that "I" seeks to communicate the experience of the unknown music practice. Divided into two parts, the artistic works express the emotional aspect of the balafon experience (please refer to the program notes and videos in chapter 6), while the theoretical and philosophical insights and reflections were described in chapter one to five. Through artistic creativity and language, interpretation brings the foreign experience into our Western world of understanding. Interpretation is rooted in the assumptions and the hypotheses of the balafon experience; the role imparts a dual meaning: while I was making sense of my experience of learning and performing the balafon, I attempted to reveal the music practice on its own terms through documentation. For example, as movement pattern was the vehicle of communicating the balafon music during the lessons of Youssouf and Kassoum Keita, I had interpreted the polyrhythm as such: it is constructed on the basis of bimanual coordination and organized in a cyclical structure.

I also had to confront the confusions in language usage when formulating interpretations. Not only the term *rhythm* is absent in the African lexicon,[5] even *music* could be an indefinite term in this context.[6] Klaus Wachsmann (1971) hesitates to assume that musicians of the world are on one mind to describe what music is. Of course, music as an art form of sound is present in Africa. But music in the world covers such a multitude of phenomena that *music*—in its modern Western definition—may fail us when we need to acknowledge the functionality—social and participatory—of African music. The African musical form assumes cultural idiosyncrasy for its participatory and social functions in daily activities.

[4] Varassi Pega, B. 2014. *Creating and Re-creating Tangos: Artistic Processes and Innovations in Music by Pugliese, Salgán, Piazzolla and Beytelmann*. PhD dissertation, Leiden University.

[5] Refer to chapter 3.

[6] Wachsmann, K. P. 1971. Universal perspectives in music. *Ethnomusicology* 15 (3): 381.

(Chapter 4) By adding my personal anecdote of learning the music, I enrich the Western definition of music. For example, transposition in balafon music is carried out by "moving the entire composition to the next position", a musical function dependent on embodied movement patterns.

Therefore, the context of music originates in the experiences which "I" recognized and acknowledged as music. Interpretation is subjected to how "I" diagnose the experience. In writing about the experience, I must *discriminate* the narratives of Africanists as accessories, then, compare those with my experience. For example, Simha Arom's (1991) explanation of *tactus* is an accurate account of the African pulse, but it does not relay my own practical experience. It is an interesting and original concept, but is excluded as a hearsay in the context of "I". Interpretation derives from the individual experience of "I" and focuses on what I am most certain about in my circumstance.

The final remarks

After all, the model of "I" has released an ample amount of questions about Western music practices, and my intercultural encounter has stimulated reflections on the manner in which I understand a foreign music culture. In this period, human beings can travel freely and frequently, and in so doing, are constantly interacting with people from different worlds. Intercultural contact is inevitable in many people's daily experience; and through internet and social media, we readily receive information about other cultures. Gradually, the boundaries of "home-world" and the "other-world" become blurry as Edmund Hurssel (1970) has described in his lecture on the future of European man.[7] An ancient Greek traveler would have been astounded by the fact that there were Indian and African worlds too, beyond his/her Greek life-world. Modern people know a lot about these outside worlds, but do we always acknowledge the distinctiveness of their cultural idiosyncrasies and respect these differences? Technology has reduced the physical distance between cultures and human beings, but it has

[7] Bakewell, *At the Existentialist Café: Freedom, Being, and Apricot Cocktails,* 131-2. I have replaced the original "alien-world" with "other-world".

not yet, and probably will not, totally elucidate people's cultural roots, practices and worldviews. The dissimilarities between African and Western practices have led to valuable discoveries in this artistic research.

I can still remember the feeling of practicing the balafon in the sand storms in Konsankuy. Gusts of strong wind had whirled up vast amounts of fine sand particles into the air. My mind was fogged by the yellowish grey smog, the harsh wind and the all-pervading sand. But once the gust had stopped, the air sat still and the same Konsankuy looked suddenly different to me. The sand storm had given me a new precious experience of life in this land—the differences between it and our lives and experiences. It inspired me to start my research by telling of my agony of having sand in my teeth—my errors during the learning process, the uncomfortable feeling of hearing "out-of-tune" wooden slats, and the confusion of changing my approach to that of the balafon musicians. These discomforts were the sparks that invented new ideas. This wind has delivered to me the wisdom of understanding the African practice. We should identify the similarities and make use of the sophisticated characters of those unlike ourselves; we are world beings[8] and music is not a universal entity. This wind will continue to advance my future research projects and my artistic practice.

[8] *Ibid.*

APPENDIX A

INNER SIGHT ETUDES

Adilia Yip and Cornelia Zambila

[A book chapter revised for this dissertation. Yip, A. and C. Zambila. 2016. In *(Per)forming Art : Performance as research in contemporary artworks, c*onference proceedings of *(Per)forming Art Symposium*, ed., A. -M. Halay, University of Leeds, 69-86.]

1. The compositional processes and scores

Performance acts as a starting point for the composition "Inner Sight Etudes" (2016). This piece results from the joint efforts of the performer (Adilia Yip) and the composer (Cornelia Zambila). Yip, a classically trained marimba performer, has commissioned Zambila, a contemporary composer and violinist, to design an experimental work for marimba that reflects the balafon music experience. By employing various paradoxical compositional parameters, such as, non-symbolic scores and sensorial experience, "Inner Sight Etudes" presents an extension of the balafon oral tradition and musical practice whilst simultaneously establishing a particular compositional practice that breaks away from Western conventions: for instance, the performance is also the compositional process, and the co-creation of this piece (between the composer and the performer) means that the performer no longer acts solely as an interpreter of the composer's music, but contributes to its composition as well.[1]

"Inner Sight Etudes" consists of multifaceted compositional processes that all point to a central concept: composition is created in the *now*—improvisation is the crucial compositional process containing transitory movements and imagination on the part of the performer. The composition lives in its performance and, likewise, the performance is an ever-changing composition. According to Bruce Benson (2003), the nature of improvisation is transitory: improvisation endures a continuing development that both composition and performance are

[1] After a co-working period from July 2015 to February 2016, the full cycle was premiered at the *ARIA Launch—Interrupting the City* in Antwerp on 4-6 March 2016. The first three movements were premiered at the *(Per)forming Art Symposium* at the University of Leeds on 20 September 2015.

evolving together to become something new; however, it is also genetic, historical-based and changing according to the experience of the composer, performer and listener.[2] Here is a quote of Benson's "The Improvisation of Musical Dialogue: A phenomenology of music":

> From musical energeia (activity) grows an ergon (product)—but an ergon that still remains within the play of musical energeia, and from which it cannot be disconnected… What comes into being in musical energeia is something that composer, performer, and listener all have a hand in creating.[3]

In addition to this, the transitory nature of the blindfolded performer's improvisation is fuelled by the fact that she was constantly searching in the dark. The performer's role—as a paradoxical practice—is to offer new musical possibilities in each performance instead of delivering a specific pre-planned, well-practiced performance. Such an approach means that the composer had to guide the performer to internalize the *formulas* of improvisation, but not to memorize the successful tunes and rhythms happened in the last performances and rehearsals. For instance, the composer recorded six melodies that gradually increase in technical difficulty that serve as the training exercises on the spatiality and proprioception of playing the marimba. Another process involved is synesthesia, where the performer's senses, experience, imagination, memory and emotion are transformed into music performance. For instance, the performer had to articulate the different experiences of watching short movies and snapshots, and translate these experiences into music. Also, the music performance is a result of imagining and remembering sensorial experience like facial shapes.

The process behind "Inner Sight Etudes" involves investigations and experiments into the acts of performing and composing, summarized in a four-step pragmatic approach: first, observing and comparing the performance practices of Western classical music and West African balafon music which can be done, for example, via literature reading and a participant-observation experience; second, based upon the first step, the composer designed interactive

[2] Benson, B. E. 2003. *The Improvisation of Musical Dialogue: A Phenomenology of Music*. Cambridge: Cambridge University Press, 125-6.

[3] *Ibid.*

compositional parameters and mechanisms to investigate the performer's performing experience and reaching new technical and musical levels; and third, undergoing co-working test sessions to *decode* the musical concepts from composer to performer; and lastly, the performer practiced the mechanisms (designed by the composer) and connecting all eleven movements into one complete cycle.

In order to represent and investigate the oral tradition of the balafon, "Inner Sight Etudes" is an experimental game piece that provides the performers with certain parameters to encourage the performer to focus on the internal experience of performing music. This is done by eliminating the sense that most performers commonly concentrated on, for instance, eyesight for reading the score and viewing the instrument. Eyesight is prominent in marimba playing, mainly due to the construction of the instrument. For instance, the marimba's wooden keyboard constitutes a wide horizontal plane of two meters and the size of each wooden slat increases from the high register to the low register; also, different striking positions on one wooden slat can produce different sensitive timbres.[4] As such, eyesight is crucial in executing exact striking points on the instrument; nevertheless, we tend to neglect that the senses of hearing, physical awareness, and spatial awareness are just as important. We need to strengthen these abilities in our training too.

With this in mind, the blindfolded experience creates a challenge to the marimbist. Blindfolded in every performance, rehearsal and collaborative session, the marimbist is only referring to "non-visual scores" given by the composer to communicate the music. Musical information is communicated via different types of *scores* in each movement of the work to represent the musical materials and concepts. Each score implies a specific etude of strengthening the ability of hearing, physical movement and spatial awareness, and also, provides the parameters to investigate the sensorial experience of performing. Below is an outline of the titles in the eleven-movement cycle:

[4] La Favre, J. 2007. *Tuning a Marimba Bar and Resonator*. http://www.lafavre.us/tuning-marimba.htm.

1. Walking towards the shadow
2. Five senses of fire
3. Lullaby
4. Chorale I
5. Polyworld-action and reaction duo
6. Move inside the polyworld
7. Chorale II
8. Passacaglia—Remembering the lullaby
9. Touch the face
10. Returning to the cluster
11. Fading ghost

https://youtu.be/YqYveuh4Ed4
Video 1: *Inner Sight Etudes* (at 33:09 of the video), performed by Adilia Yip and Ricardo Lievano at Bleek Cultureelcentrum, Sint-Niklaas, 2016. Recorded and edited by Adilia Yip.

In the first movement "Walking towards the shadow", memory and instant flash-back images encourage an improvisatory process. Through music, the performer describes the adventure of approaching either a mystical or familiar shadow in four steps. This movement is a narrative of four sequential, continuous scenarios like short movies. Contrastingly, the second movement "Five senses of fire" sketches the short, disrupted, yet consecutive nature of fire like a sequence of snapshots. These images and mannerisms of fire are always kept in the performer's mind, and change abruptly without transitions and have no pre-set order.

Hence, the interaction with these two types of imagery results in contrasting phrase lengths and timbral articulations. The short movies in the first movement give rise to unbroken melodies under continuous development, while the employment of snapshot images in the second stimulate short musical fragments that are directionless. Besides, the performer uses extended techniques of the marimba, such as, generating overtones by striking different positions of the wooden bars, using tailor-made mallets and objects (i.e., paper) to create sound effects, and humming the resonant pitches of the marimba's lower register.

Despite the ambiguity of these themes, the composer and the performer were nevertheless able to communicate the musical concepts without the use of symbolic representation, i.e., the traditional Western classical notation. The composer has used various *scores* that engaging senses—other than sight—to guide the performer's imagination and creativity, and to outline the structural forms for the performer to improvise around. The performer followed the composer's set mechanisms and rules of creating; thus, the performance is the performer's personal creation based upon these structures and concepts, but applying her own musical materials of the marimba and the balafon. For instance, the composer has used a method named "sensory theatre" to recall the senses of fire and to stimulate the performer's improvisation. These various sensorial parameters—smell, touch, pressure, temperature and visual imagery—have stimulated the automatic, involuntary imagination of musical sounds and the embodied movement of playing the marimba and the balafon.

Sound scores are employed in various movements of "Inner Sight Etudes" and are used in a multitude of ways. In the second movement "Five senses of fire", the simple melody developed in the ending is later recalled in movements three "Lullaby", seven "Chorale II", eight "Passacaglia" and ten "Returning to the cluster". The sound score, thus, is the basic material of the retrograde process of the general structure. In the fifth movement "Polyworld", we have an action-reaction game between two marimbists. The second marimbist's improvisation is the sound score to the blindfolded first marimbist, who was improvising based

upon this sound score she has just heard. Reversely, the second marimbist needs to bring in new materials in response to the first marimbist's improvisation.

However, the roles of the first and second marimbist are reversed in movement six "Move inside the polyworld". In opposite to movement five, the first marimbist in movement six performs sets of physical patterns in the air for the second marimbist to imitate. The first marimbist now takes the lead and her movement patterns act as a movement score for the second marimbist. In movement ten "Returning to cluster", another type of movement score was employed. The blindfolded performer had to sense the horizontal distance of the keyboard for the exact chords and notes, and thus, such process of searching and locating the music materials have become the performance.

2. The musical structure

In the beginning, the structures and compositional materials are first generated through improvisations in the first three movements "Walking to the shadow" and "Five senses of fire", a realization of the performer's idea of shadow and fire. Afterwards, these structures and materials are re-used consistently and intensively in later movements: firstly, the hand strokes in movement two, "Five senses", are transformed into the mallet strokes employed in movement three, "Lullaby". The simple melodic theme created in movement three "Lullaby" reappears in movements eight "Passacaglia" and ten "Returning to the cluster". In a similar vein, the improvised dynamic contour in movement four "Chorale I" is a recapitulation of that in movement one, "Walking towards the shadow". Finally, the structural development in movement five, "Polyworld", recapitulates that of movement two "Five senses". Onwards from the central point of movement five, movement six to ten implies a retrograde journey of movements one to five. The last eleventh movement is the coda. The musical themes of the cycle's second half are like a mirror reflection to the first five movements. (Figure 1)

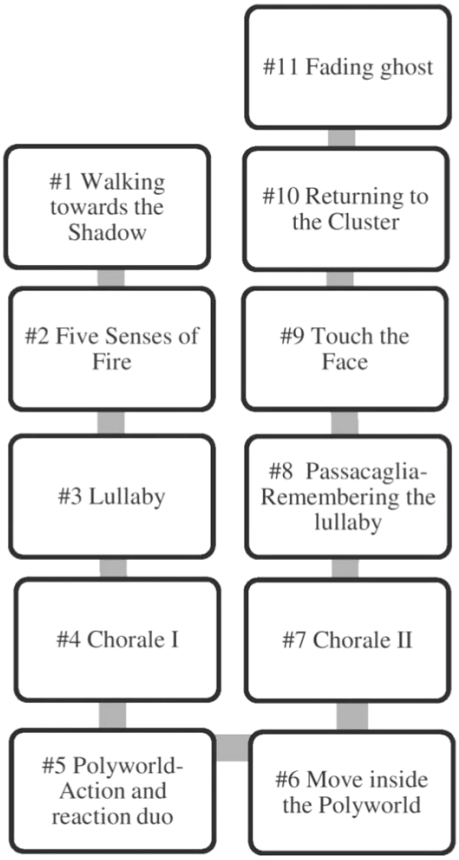


Figure 1: Graphical representation of the musical structure, illustrated by Adilia Yip.

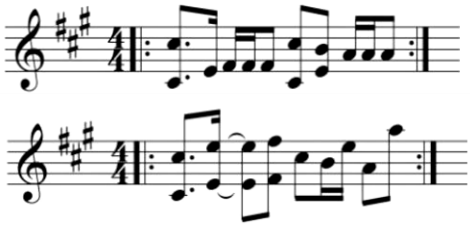
3. Individual backgrounds: narratives from the performer and the composer regarding their personal artistic experiences

"Inner Sight Etudes" combines the marimbist's experience of performing the marimba and the balafon with the composer's conceptual investigations into certain compositional process, such as researching the sensorial experience of folk musicians and blind musicians. Such investigations led to the composer's experimental work "Inner Eye" (2012-13), which she has investigated the internalization of music and the use of non-visual scores. As such, "Inner Sight Etudes" presents a new collaboration between the two parties: while the performer adheres to the musical parameters set up by the composer (i.e., form, structural and thematic designs), the performer performs with the technical and musical knowledge of both marimba and balafon, using her own personalized interpretation and imagination to realize the music concepts. What follows are the marimbist's and the composer's commentaries about their

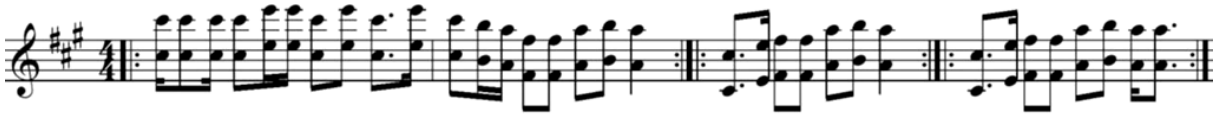
collaboration, their individual artistic experiences and investigations during the formation of "Inner Sight Etudes":

a) Adilia Yip: The Balafon field study

Being a Western art music performer of marimba and percussion, my experience of the balafon oral music tradition has had a significant impact on my artistic views. During the very first balafon workshop I attended in Europe with Gert Kilian, I was surprised by the obstacles of learning via oral transmission. Before this experience, I was used to reading visual scores and had not considered any possibilities beyond the symbolic representation of such visual scores.



Pattern A and Pattern B



Melody

Figure 2: Song *Sanata*, pattern A, pattern B and melody, transcription by Gert Kilian.

To my surprise, it took almost one afternoon to grasp the full idea of song *Sanata*, which contains two simple balafon patterns in 4/4 time for four measures and the melody of the song played in single notes or octave doubling. (Figure 2) At first, I found it disconcerting to adapt physically to the techniques of the balafon. For instance, the marimba is a well-tempered twelve-tone keyboard with a double row, whereas the balafon is a pentatonic keyboard with a single row.[5] In order to elaborate my point: imagine playing on a vast keyboard that has the white keys only, without the visual reference of the black keys in groups of two and three keys.

[5] The balafon I used during this study is built by Youssouf Keita. This instrument is tuned in pentatonic scale according to the Western temperament.

The following videos of song *Barica* demonstrate the complex polyrhythm of juxtaposing binary and ternary rhythmic patterns. It also gives an idea of the advanced bi-manual control "Two-hand coordination" where the balafonist can improvise with one hand while the other hand performs a repetitive short phrase. The first video comprises the song's melody and musical patterns; the second video is a complete version of the song:

http://youtu.be/sFFMJQNsSL8
Video 2: Song *Barica* melody and patterns performed by Youssouf and Kassoum Keita, filmed by Adilia Yip in 2012.

http://youtu.be/55JiT8h7A3s
Video 3: Song *Barica* performed by Youssouf and Kassoum Keita," filmed by Adilia Yip in 2012.

A greater challenge was caused by the balafon oral practice itself. During 2012-13, I travelled to Mali and Burkina Faso twice to learn balafon music with local balafon musicians Yousouf Keita and Kassoum Keita. According to balafon oral tradition, the teachers expected their students to learn polyrhythms by listening to integrated rhythmic layers and observing

their physical coordination. These polyrhythmic layers are approached as a whole and never dissected into independent contrapuntal layers. This very technique is also present when my teacher teaches his son new balafon patterns. He shows the balafon pattern's hand movements, and the whole process needs no verbal explanation.[6]

Here are two videos showing the teaching approaches of Youssouf: teaching the bi-manual technique "two-hand coordination" in the lesson of *Fermante* (video 4), and teaching his son in his atelier (video 5):

http://youtu.be/5AsQn1iM3hE
Video 4: Youssouf teaches 2 ways coordination technique in song *Fermante*, filmed by Adilia Yip in 2012. The image illustrates the reaction and discussion of the participants, Gert Kilian (right) and Carl Nollen (left).

[6] It is not surprising to ethnomusicologists that during the teaching process of African instruments, patterns of movement are imparted "physically" by the teacher to the student. According to Kubik, a xylophonist in southern Cameroon teaches by holding his student's hands and imparting direct impulses to them until the student has absorbed the movement pattern and stroke at the correct instant. Kubik, G. 1979. Pattern perception and recognition in African music. *The Performing Arts: Music and Dance* 10:227, eds. J. Blacking and J. Kealiinohomoku. The Hague: Mouton. Koetting also wrote about his experience with a Ghanaian who was asked to teach drum-playing to a group of university students, which the students learnt and even performed the music largely based on the physical movements required to produce the music. Koetting, J. 1970. Analysis and notation of West African drum ensemble music. *Selected Reports in Ethnomusicology* 1 (3): 119.

http://youtu.be/qAUw7ISZ6sw
Video 5: Youssouf teaches his son balafon music, recorded by Youssouf Keita.

I felt that the technique-oriented subjects I studied in music conservatories such as the solfège system, score reading, and music theory could not provide all the necessary skills required for learning the balafon repertoire in the traditional way. The transmission of musical materials—rhythm and pitch—is done through numerous repeated demonstrations and unlimited attempts and failures to learn the correct musical patterns. The distinction between this and Western classical music lies in the different conceptualizations of music. In the oral tradition, music exists purely as audible sound, and therefore patterns of physical movement become one vehicle of communicating music. Although one listens with their ears when performing with visual notation, when one reads with such notation, music is translated into the form of notational signs (i.e., staff and note-heads), which turns music into a finite, visible product that a performer can depend on in rehearsals and concerts. This seems paradoxical: the musical sound is perceived by interpreting visual images, but this visual notation is not the music itself. Imagination, expression, hearing, emotional and compositional processes, and, moreover, the sensory experiences (synaesthesia and metaphysical thinking) are beyond the symbols on paper. The balafon oral tradition has taught me that visual scores are nothing more than symbolic representations, whereas music itself is embodied in our movements and senses and, most importantly, music should always exist in its audible form. In the balafon oral tradition, the patterns of physical movement become a vehicle for transmitting musical knowledge. This video shows a bird's eye-view of playing the balafon. It demonstrates the horizontal movement trajectories. It is a performance of the song *Kebini*:

http://youtu.be/It3HQu1LP6A

Video 6: The top view of the balafon, song *Kebini* performed by Youssouf Keita, filmed by Adilia Yip in 2013.

I would identify the differences between the practices of score reading and oral tradition through analyzing the cognitive processes of goal imaging[7] and motor production.[8] In score reading, the perception of sound is developed from reading the visual cues of the printed notation, which is also in sight-reading. Music is decoded in symbolic forms rather than sound itself. But in oral tradition, music is transmitted and stored in the memory in form of sound and movement. The production of sound begins from learning the music by ear, rather than deciphering sound from notation. Therefore, the goal imaging in oral tradition exists in auditory information and movement. Goal imaging is coupled with motor production, and sound is embodied and prompted by recalling the mechanism of particular arm movement schemas or the physical gestures of playing an instrument.

As such, I have invited Cornelia Zambila to design a work that can reflect on the cognitive processes of sound production. We created a blindfolded performance because we want to observe, and possibly, to enhance what my kinaesthetic sensory can do in performance but without the assistance of sight. By being a blindfolded performer, I have forced my ability of music embodiment to respond to a variety of musical concepts, structures, emotions and images that Cornelia designed. The embodiment of music exists in the

[7] Lehmann, A. C. and K. A. Ericsson. 1997. Research on expert performance and deliberate practice: Implications for the education of amateur musicians and music students. *Psychomusicology: A Journal of Research in Music Cognition* 16 (1-2): 40-58.

[8] Woody, R. H. and A. C. Lehmann. 2010. Student musicians' ear-playing ability as a function of vernacular music experiences. *Journal of Research in Music Education* 58 (2): 101-15.

imagination of the movement patterns, which is named as ideokinesis (ideo-thought, kinesis-movement) by marimba virtuoso Gordon Stout;[9] (Stout, 1990) or as kinaesthetic imagery[10] in the empirical research of Mary Broughton and Catherine Stevens (2009). Such ability occurs in the practices of both professional and student percussionists, where the professional players possess a higher level of such ability. Movement imagery is anecdotally reported to be important in developing expertise.[11] When eyesight is prohibited, I improvised music by naturally performing my embodied movement patterns, and sound is translated into movement patterns. Each of the major scales, chromatic scales and pentatonic scales of the marimba constitute specific physical movement patterns. I also imagined myself playing the balafon, in which I applied the embodied polyrhythm coordination and idiomatic movement schemas in the improvisation. (Please refer to chapter 4 and 5 on the idiomatic movement pattern)

b) Cornelia Zambila: The "Inner Eye" project

Where is the music? This is a question I would like to start with because I have the impression that music exists in different ways and dimensions. Is music something in the composer's mind, or written down on the score? Is it something residing on the tip of a conductor's baton? Is music in the keys of the piano or does it exist in the perception of the audience? Even though music is split into so many different dimensions, both in the understanding of it and in the practice of it, can we comprehend music as the space between these dimensions? In other words, can we comprehend it as a medium for communication and the exchange of emotion?

As both a composer and a performer, I am engaged in a sort of cognitive dissonance between the two dimensions of composition and performance. I used to write visual scores

[9] Stout, G. 1990. *Ideo-kinetics: A Workbook for Marimba Technique*. New Jersey: Keyboard Percussion Publications.

[10] Broughton, M. and C. Stevens. 2009. Physical movement and imagery in professional and undergraduate student solo marimba practice. Paper presented at *International Symposium on Performance Science*, Auckland, NZ., 532.

[11] *Ibid.*

that are restricted to my emotional processes. Comparatively, these scores inhibited the performer's emotional expression. Therefore, I searched for a new compositional process that would *free* me from these creative boundaries and that would allow music to truly come from the performer. In other words, a process that would allow the performer to engage more closely with the music and take advantage of the notion that they are not forced to engage with a means of performance that is not in line with their way of existing (via senses). In this way, composition can become an authentic medium for the performer's expression.

While thinking about these questions, I encountered two types of musicians: blind musicians and folk musicians. In order to immerse myself in their musical world, I collaborated with them as a performer and observed their rehearsal processes as well as their creative and performative processes. As part of my compositional research, I interviewed several blind musicians in order to find out about their methods for internalizing their repertoire and how they accessed visual scores. In order to engage with their perspective, I put myself "in their shoes" and organized the project "Inner Eye",[12] which involved experimental composers composing original works for me to perform on a violin as if I was blind.

https://vimeo.com/155170648

Video 7: Inner Sight Etudes research presentation, created by Cornelia Zambila in 2015.

[12] The first experimentation took place in Den Haag in 2012-13. I asked composers to write new works that I could learn and perform without using my eyes. The preparatory process took 7 months, counted from the moment the composers joined the group till the first concert. Out of ten preliminary concepts, I worked with two audio scores, one tactile score and two cases of mixed sensory inputs; however, the mentally-composed score and the remote skype performance were unsuccessful. Others turned out to be exact notated music, game pieces and instruction-based works. The working processes constitute traceable linear process of improvement, trial and error reconstruction, and re-adapting to newer concepts.

These two types of musicians (blind musicians and folk musicians) have several things in common which provide a means of transforming a compositional process from a fixed visually-notated principle to a more dynamic "performative compositional" approach (or "performance composition"). The most significantly common techniques that are observed in both blind musicians and folk musicians are the extensive use of memory and the highly multi-sensorial approach to learning music. In other words, the learning takes place in a unity of motoric, tactile and aural senses. For instance, to ask a folk musician—who plays a bowed-string instrument—to change the bowing directions of a tune can result in music of a noticeably different sonic quality. During my time working with blind and folk musicians, I was unable to use the visual scores that I was familiar with in my composing process; instead, I had to learn how to compose with the "performative-compositional" approach.

Through such approach, music becomes a holistic reality rather than as being dissected into different dimensions like score, the conductor's baton and etcetera. It is a compositional process that engages more closely with the performer's method of internalizing music. Therefore, the performer is given the chance to express authentically their own artistic presence; they are not only an interpreter, but also a composer in this case. The *score* in here is not a reference of a past, fixed, notated compositional process; rather, it triggers a dynamic perpetual compositional process which is in the process of *becoming* during the actual performance. From a technical point of view, this entails a balance between the musical inputs of the composer and the performer. The information that the *score* gives should not suffocate the performer's expression, but it should also not be too *free* that the composer's intentions are unclear. This is a *score* which is empty of my catharsis as composer, but reserves space for that of the performer and the audience. It presents the search for a new *ritual*[13] between the composer, the performer and the audience. The performer does not simply execute a translation of the visually-notated music written by the composer, but participates in a game

[13] Ritual is hereby defined as actions and behavior that are done in accordance with social custom or normal protocol within a community. It is applied in this context to describe the partnership and music practice between musicians. A ritual is also understood as a performative structure consists of individual customized and personalized processes that happen inside a society and a community. A ritual manages to mirror between the inside (the inner-self of an individual, performer or composer) and the outside (the society, or the audience).

piece that brings his/her own emotion into the performance so that it can collaborate with the emotion of the composer.

The project “Inner Sight Etudes” is largely based on the knowledge I obtained from “Inner Eye”. It also brings new insights to my research in general. What follows is some of the compositional processes in “Inner Eye”:

> Petra Strahovnik (Slovenia) created a piece for violin and live electronics which was visually notated in detail. I had to learn this by ear and make sure the sense of sight did not affect my learning process. I learned this 20–25-minute work, note by note, with the help of the composer who also vocalized the particular sonic effects she wanted. The learning and performing processes were done in such a way that I had no visual images of the piece apart from my own imaginary visual representations which are unavoidable.
>
> Similar to Strahovnik, Juan Albarracín (Argentina) employed a type of audio score but obtained different results from Strahovnik. Albarracín composed an abstract six-phrase melody that he has employed in most of his tonal compositions. Although it is a short melody, the constantly changing tonal structure and the unusual metric placement of rhythmic figures made the learning process quite difficult. However, interestingly, as he sang the melody to me, I found out I had internalized the emotion of the composer’s voice in my violin playing. Surprisingly, I could still remember 95% of this melody when we re-used it in a project two years later.
>
> Aurelie Lierman (Belgium) changed her compositional approach and processes more than a few times. However, the prevalent elements of her processes included translating the human voice into articulations on the violin and reacting to parts of her field recordings from her research trips to Africa. The final score involved an interaction of live analogue electronics based on pre-composed materials and rules.
>
> Lastly, Momoko Noguchi (Japan) employed a tactile score. We negotiated the guidelines of this score and decided that we would devise a set of rules that determined my reactions to the sensation of brush when it moved across my skin. We searched for the most direct and obvious synesthetic translations that would be understood by the audience.

After two years of developing my compositional process in the direction of game piece, I have developed my own compositional style. Since 2015, I have collaborated with marimbist and researcher Adilia Yip in the formation of "Inner Sight Etudes" wherein we combined our artistic experiences and practices. I am interested in the following balafon music practice, which can also be applied to my own research area: first, music as an embodied action, as a series of sounds and movement in a gestural unity; second, music as an *aural* tradition;[14] third, the notion that transposition and other means of altering the score—such as rhythm and improvisation—are triggered by multi-sensorial representations rather than purely auditory principles. Finally, and most importantly, I am interested in the notion that music is a communal process that allows performers to relate and interact directly with each other without the added barrier of a visually-notated score.

4. Conclusions

To this end, "Inner Sight Etudes" has helped the performer to improve the senses—other than that of sight—in performing marimba. Forbidding the performer to *see* is the unconventional method to enhance these abilities: first, the performer's aural skill has improved. As sight is not permitted, hearing was the most reliable means of engaging with the instrument. This can be compared with the well-developed hearing ability of people who are visually-impaired. They gained profound hearing over the years because hearing is their major sensorial connection to the world. The blindfold becomes a tool of helping the performer to increase their aural sensitivity in performance, as well as triggering his/her intuitive timbral explorations.

Secondly, the blindfold is a tool in the exercise of some essential techniques of marimba and percussion performance: the spatial sense and proprioception, as well as the ability of ideokinesis (Gordon, 1990) and kinaesthetic imagery (Broughton and Stevens, 2009). Although without vision, the daily practice has developed the performer's neglected senses

[14] The *aural* tradition involves a fixed visually-notated score, the employment of long-term memory and an emphasized multi-sensorial representation when compared to symbolic notated score.

and techniques. We—both the composer and the performer—were surprised by the exponential technical development during the blindfolded training. In the beginning of learning the work, the performer often failed to locate the desired notes, and even, loses the orientation of standing next to the instrument. Compare with other instruments, marimbists do not have an intimate tactile contact with their instrument. The marimbist is, in fact, not *touching* the instrument, but he/she is in contact with the instrument by sensing the vibration produced by the mallet head striking the wooden slats, and transmitted through the shaft of the mallet to the performer's hands. Besides, playing marimba involves overt arm movements, in which the performer has to strike a wooden slat that is out of sight, for instance, stretch out to the high register of the marimba while standing at the bass register.[15] But these difficulties were solved during the rehearsal period of "Inner Sight Etudes", and even, the blindfold has helped to improve the technical capability of the performer.

We also observe that the work has achieved a different social interaction between the performer and the audience. We thought the blindfold would hinder the presence of the performer on stage, or lead to a certain hierarchy that the performer loses her power of addressing her musical thoughts to the audience; and perhaps, the audience can leave the performance without the performer noticing. However, observed from the reactions of the audience, the audience were very much engaged with the blindfolded performance, and they were curious about what the performer can do without eyesight. They were intrigued by the processes of searching and improvising, and tried to understand the performance.

Despite the technical skills and musicality of the performer, some people were impressed by what senses above that of sight can do. It was, to them, an alternative kind of virtuosity beyond the conventional Western classical music practice. For instance, there were some moments the performer has struggled to maintain contact with the instrument, but she

[15] And for percussion, the movement plane of the performer is defined by the position of the drums which is changeable and not restricted to fixed planes. Compared to wind instruments, the performer is in closer tactile contact with their instruments, as the keys and the mouthpiece tend to restrict the body movement in smaller, fixed movement planes. (Chapter 4)

could quickly retain her position and technique to continue the performance. This revealed the enormous ability of the senses, and reminded the audience of their ownership of these abilities and encouraged them to explore it too. Besides, some audience were emotionally touched by the moment when the blindfolded marimbist was struggling to trace the sound of the second marimbist in movement nine “Touch the face”. They felt the performer was isolated in the darkness and desperate to reach out to the sound of the second marimbist, which symbolizes the bright outside world.

In a nutshell, we have sought an innovative compositional process and a place for non-visual scores in Western musical practice. The performer has developed her knowledge in music embodiment and technical improvement, as well as enhanced the sensorial awareness of performing; whilst the composer resumed her investigation into the “performance-composition” and consolidated her research on compositional process and music internalization. The work has demonstrated how the roles of the composer and the performer are interchangeable and achieving a co-working relationship. Thus, forming and performing are two operating factors that feed each other and intensify though an improvisatory-compositional process.

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APPENDIX B

THE CREATIVITY IN ARTISTIC RESEARCH

[A paper presented in the 3rd European Platform for Artistic Research in Music (EPARM), Conservatoire National Supérieur de Musique et Danse de Lyon, 18-20 April 2013. Published on ESMUC digital platform, 31 October 2014, http://www.esmuc.cat/esmuc_digital/layout/set/print/Esmuc-digital/Revistes/Numero-31-octubre-2014/Espai-de-recerca]

Artistic research is considered as a dualistic concept, a combination of art and research. On one side, artistic research deals with art, concerning sensitivity, intuition and abstract concepts; on the other side, it contains a research component, which requires rational thinking, system and method. While art celebrates creativity, research emphasizes method. The two items are usually considered as contradictory.

I would like to reflect on the two-way relationship of method and creativity. The idea is shown in a simple diagram. The first arrow is going from creativity to method. It represents the notion of creativity bringing method into existence. A short definition of creativity: it is the genesis of thinking, like ideas, rules and interpretation, through imagination and intuition. It brings a theory, a concept or an artifact into existence. Thus, creativity is imbued in the process of forming a research method and vice versa, method is an inevitable product of creativity.

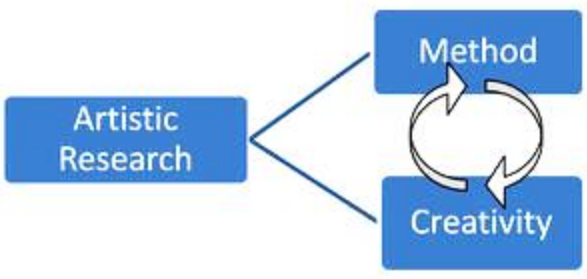


Figure 1: Two-way relationship of method and creativity, illustrated by Adilia Yip.

Another arrow is drawn from method to creativity. Method pertains to different roles in different kinds of research. Taking scientific research as an example, method is equivalent to mathematical equation or laboratory formula, which is a well-defined pathway of inquiry; but in artistic research, method is not designed to solve a math problem, it is like a open-ended pathway, guiding an artist in how and what to create to demonstrate his/her viewpoints and to answer the research question. It is undeniable that creativity is provoked by method when the research proceeds. Research method is to inspire and brings out artistic outcomes—the artifact, interpretation and practice.

But one criteria of creativity in method should not be neglected: the originality of an individual that is imbued in the creative process, one interesting causal factor that never two creative minds are exactly the same. A term artistic idiosyncrasy is used specifically in this article to describe the originality of the artist, the eccentricity and peculiarity that is embedded in his/her artistic creation. In other words, if we assume creativity creates research method, then artistic idiosyncrasy imbued in creativity is also embedded in the formation of research method.

I am going to discuss two examples of artistic research to exemplify the above viewpoints—my research project "Investigating New Marimba Performance Techniques from its African Heritage"[16] and the "Confrontation" project by Wim Henderickx. The projects share the same initiative—to combine the Western and non-Western musical styles in one composition.

As a performer in classical percussion and marimba, the aim of my project is to explore new performance techniques and musical interpretation to enrich the present repertoire of the instruments. The sources of inspiration come from the balafon music of the West Africa, the music traditions in Mali and Burkina Faso.

[16] This is the old title of this study.

Both performances require the same physical mechanism of the arm, but contain diverse musical and technical styles. I was fascinated by the polyrhythmic structure of the African genre and the energetic atmosphere that traditional balafon musicians are able to project in a performance; as well as the high level dexterity in the playing technique that always impresses every Western percussionist. As such, I would like to reproduce and translate these African nuances in my performance. Here is a performance of song *Barica* by Youssouf and Kassoum Keita:

http://youtu.be/55JiT8h7A3s
Video 1: Song *Barica* performed by Youssouf and Kassoum Keita," filmed by Adilia Yip in 2012.

https://vimeo.com/102068561
Video 2: A classical marimba performance *Libertango* by Adilia YIP.

Here is a plot of the research method (illustration by Adilia Yip). There are three steps: field study, analysis of balafon music and to produce new works.

First, I started the project with "field study": to learn the balafon music with the traditional musicians in two workshops in Africa, so as to observe the performance technique and music interpretation in the tradition. And definitely, it is important to interact with the local culture and to collect music samples in the field—during the two workshops. I observed that traditional musicians pursue a holistic approach in teaching and learning. And due to the oral tradition, balafon music is communicated only via listening and imitation, without any traces of notation. I have also learned the coordination technique "two-way coordination" with the traditional musicians, which is a parallel motor control between the left and right hand, that the left hand can play a repetitive phrase while right hand is improvising independently, or vice versa. The differences in performance practice and playing technique have become interesting material for making new repertoire for the marimba. Here is the video of learning the technique with Youssouf Keita during the workshop:

http://youtu.be/5AsQn1iM3hE
Video 3: Youssouf teaches 2 ways coordination technique, filmed by Adilia Yip in 2012.

http://youtu.be/qAUw7ISZ6sw
Video 4: Youssouf teaches his son balafon music, recorded by Youssouf Keita.

Let's move to the second project. In 2003, Het Zuiderpershuis, a cultural center for world music in Antwerp had commissioned composer Wim Henderickx to create a music project that combined the Western and African genre. The aim was to promote multiculturalism in the society via a music project, a fusion between the Western and non-Western tradition. The composer gave the work the title "Confrontation", which refers both to the encounter of two diverse music traditions, and to the stage where an equal number of African and Western musicians play on their own instruments. The setting was designed to let the two musical cultures to enter into a *confrontation*, but also to *melt* together. Here is another flow chart to illustrate the proceedings:

Henderickx had merged the Madinga drumming and dance music of Burkina Faso with this with his own Western composing concepts. The performance was a mixture of improvisation and notation. The instrumentation is a combination of African and Western percussion, such as: djembe, dundun and balaphon of the African tradition, and marimba, chimes and all kinds of drums and percussion instruments of the Western world. Therefore, the Western and African components are both constituents of the composition. The original version was created in Burkina Faso in 2003, jointly performed by Belgian percussionist Gert

François and African master drummer Adama Dramé and their ensemble groups, each made up of four percussionists. The two groups of musicians rehearsed together in Burkina Faso, and were taught and conducted by the composer himself.

https://youtu.be/hhVNzne2Sq8
Rehearsal of “Confrontation” (2003), a project by Wim Henderickx, with courtesy of the composer.

Henderickx	Yip
Field study in the ending phase	Field Study in the starting phase
1) Adjust the stylistic difference between Western and African musicians	1) Study the playing technique and music practice of balafon music
2) Experience the African music practice	2) Collect music samples

If I compare the order of the procedures of the research method, Henderickx’s order is then an inversion of mine and we gave opposite roles to the component “field study”. In Henderickx’s project, the field study is to rehearse with both African and Western musicians to prepare a performance, more specifically: 1) to adjust the stylistic incoherencies between the Western and African musicans, especially in the rhythmic groove and to find a common ground in musical interpretation and technique, 2) to experience the African music practice, mainly in learning and discussing musical expressions through oral transmission methods. For my project,

the field study is a methodological tool to collect musical concepts from a foreign tradition, then to inspire new performance ideas for the Western instrument.

Conclusions

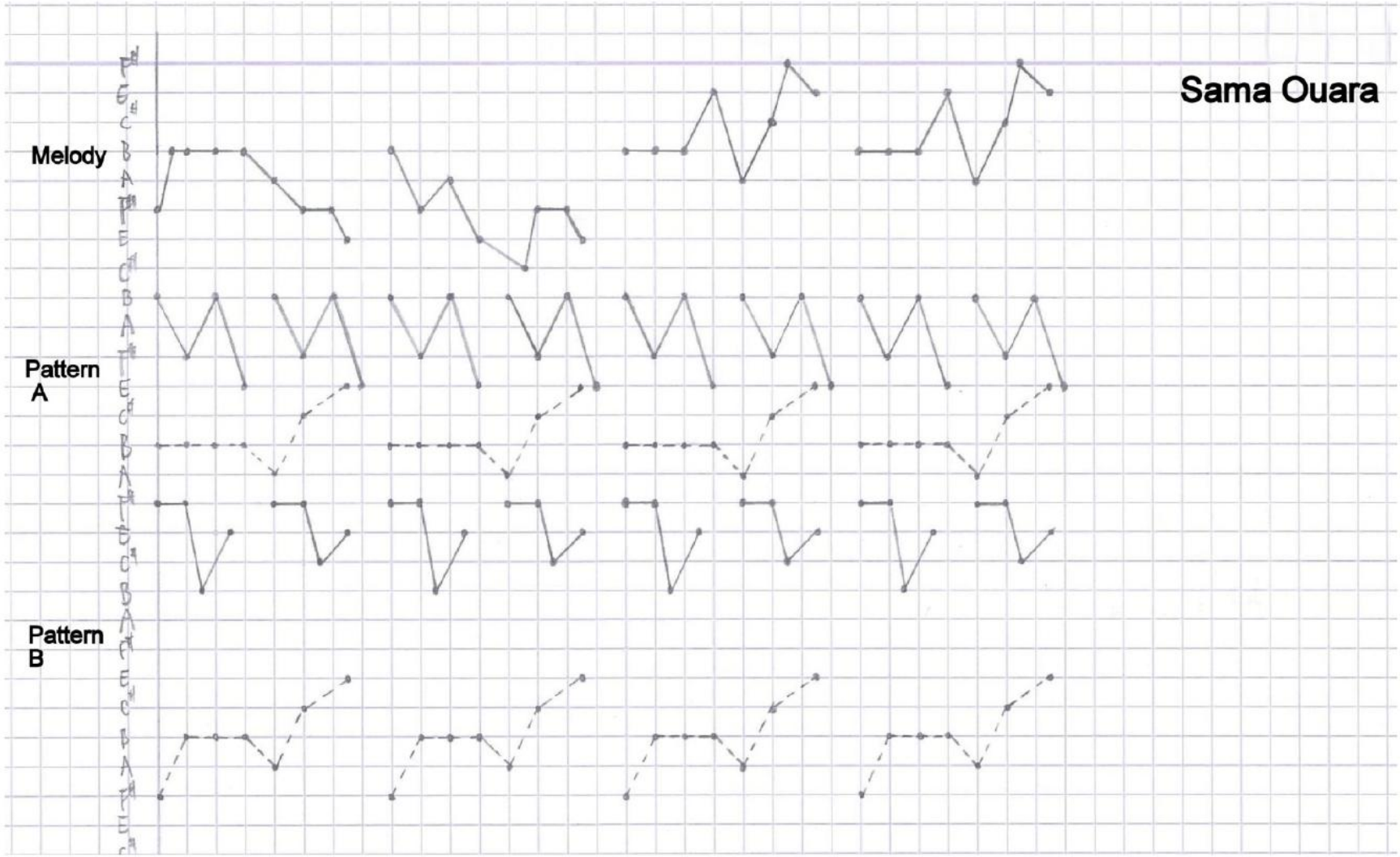
In artistic research, can one method apply to different kinds of research projects, and yield the same product? I think the answer is no.

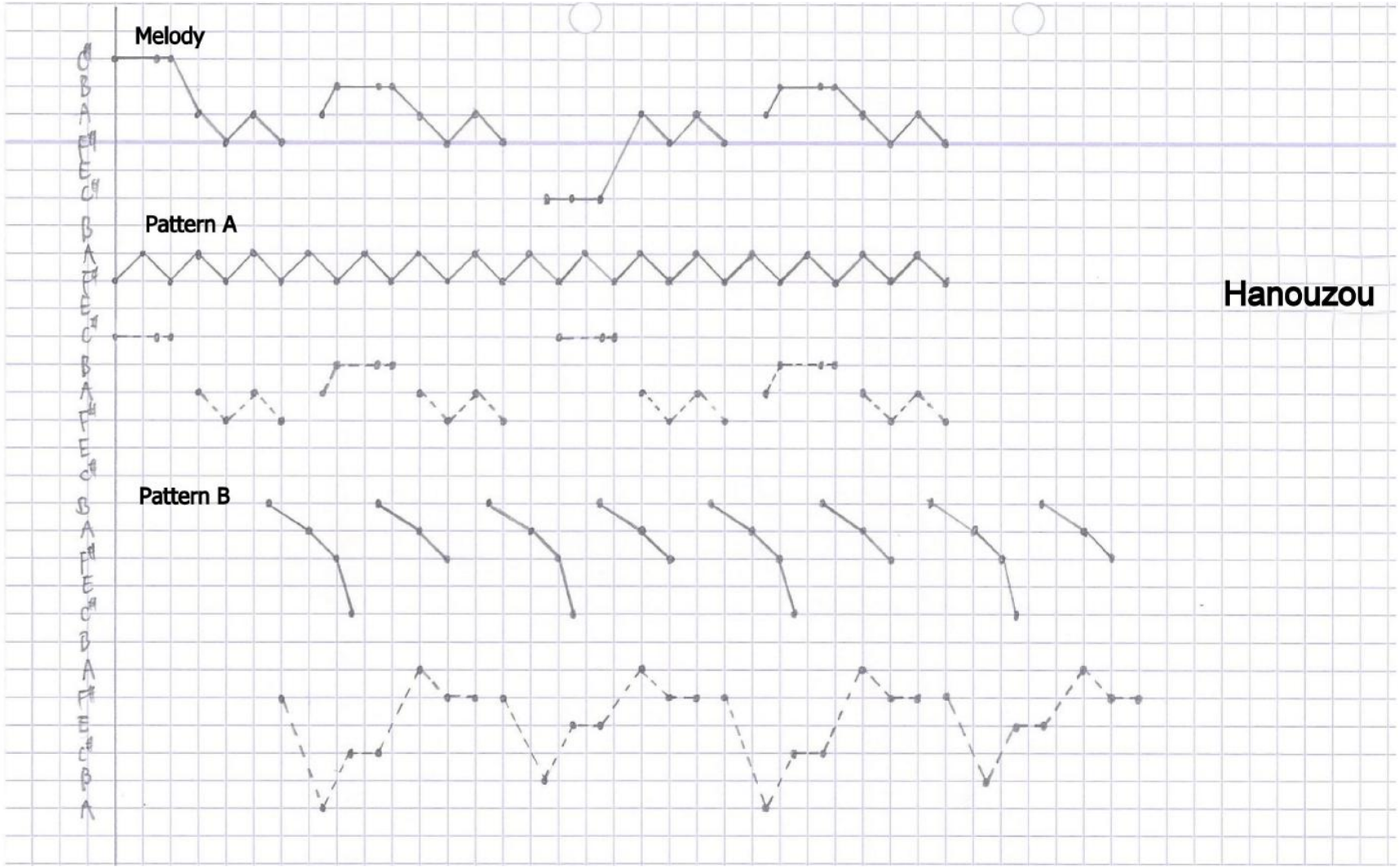
Although the initial purpose of both projects is to apply African musical styles in the new percussion works, I have designed diverse methods to carry out the investigations from Henderickx. It is indisputable that the creation of these methods are directed by the artistic originality and objectivity of each individual. Method in an artistic research is created in accord to our peculiar artistic character—the artistic idiosyncrasy that is embedded in our respective musical roles. For instance, whether the field study is arranged in the beginning of the investigation for data collection, or in the end to create an experimental ground, is pertained to the pragmatic artistic views of the musician/artist, depending on his/her approach of observing the art. As a performer, the field study is the priority of the investigation. The set-up allows me to be a participant-observer: to acquire the balafon playing technique—the dexterity and coordination techniques observed in lessons, rehearsals and performances with the traditional balafon musicians. I departed my investigation from the playing technique of the balafon performance and the final goal is to translate these additional technical skills into the Western marimba repertoire. I see the African performance technique and interpretation as a source of inspiration to enrich my own artistic domain. While in the Confrontation project, Henderickx has first considered the music theory of the genre. The Confrontation score acts as a common ground for the two opposite ensembles to understand and compromise on the playing technique and the music interpretation to become one united ensemble. The performance technique and interpretation are used as research tools that help to link the two opposite musical styles—to let them *confront* and *melt* into one form. As such, the analysis of playing technique is at a subsequent order of the investigation and it allows us to observe the reactions of the musicians at different situations of artistic communication.

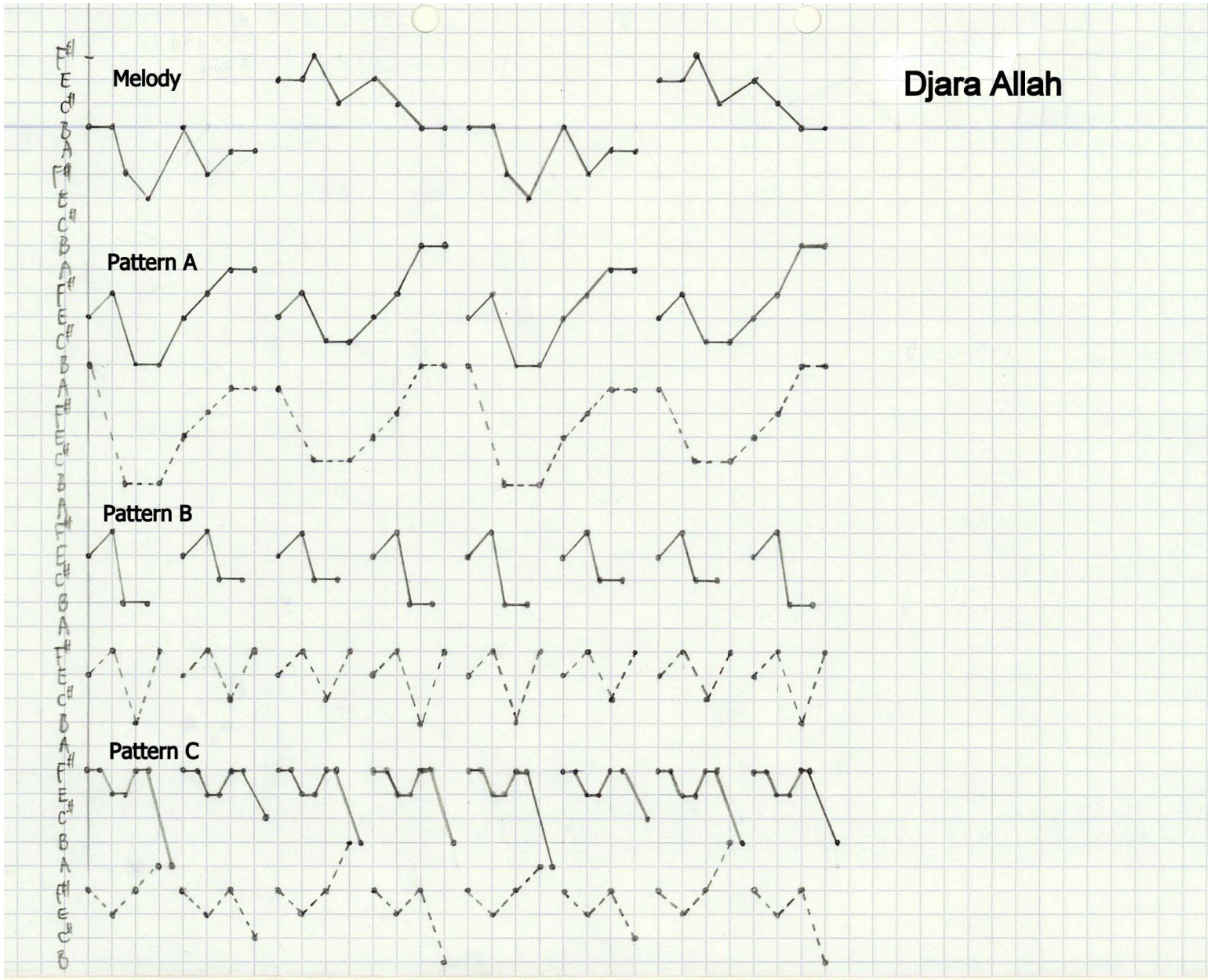
From the comparison of the artistic research methods of a composer and a performer, I confirm that artistic idiosyncrasy imbued in creativity is embedded in method. I hereby conclude with a rewording of two propositions in this conference call: “artistic idiosyncrasy *perverts* research objectivity”, should be “research objectivity *contains* artistic idiosyncrasy; and, ‘research methods *pervert* artistic practice”, should be “research methods *generate* artistic practice”.

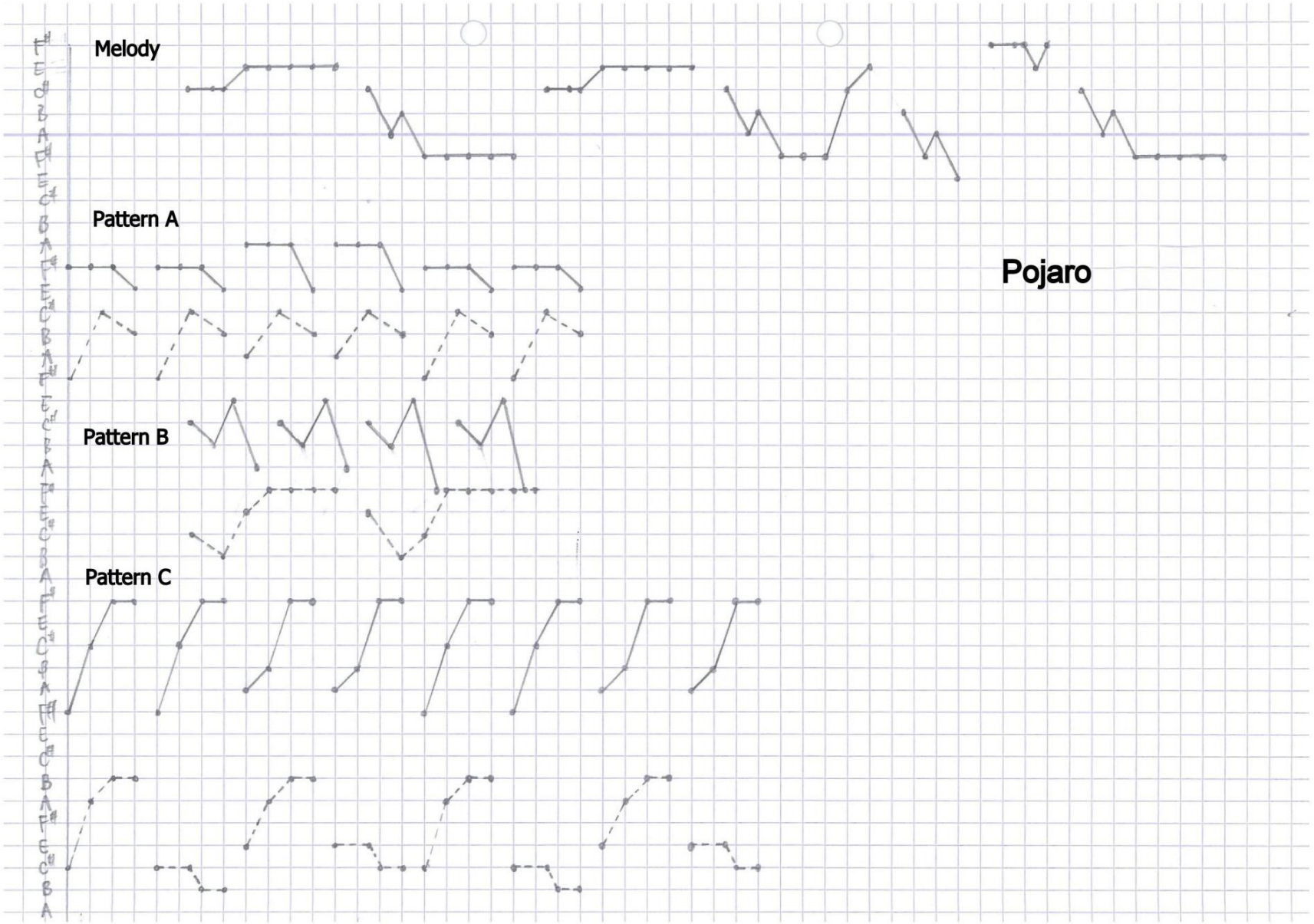
APPENDIX C

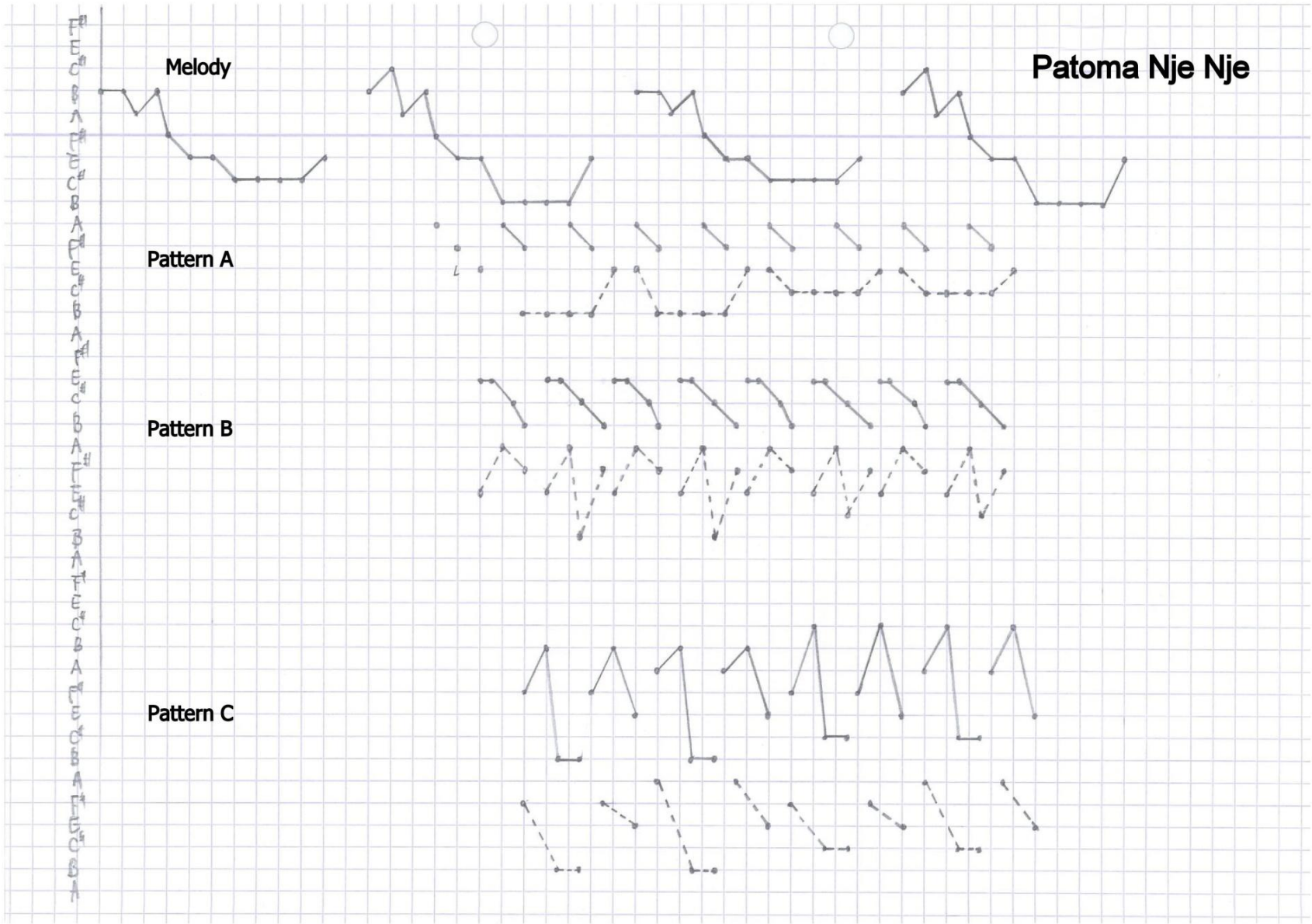
Nine Movement Representation Graphs (MRG)

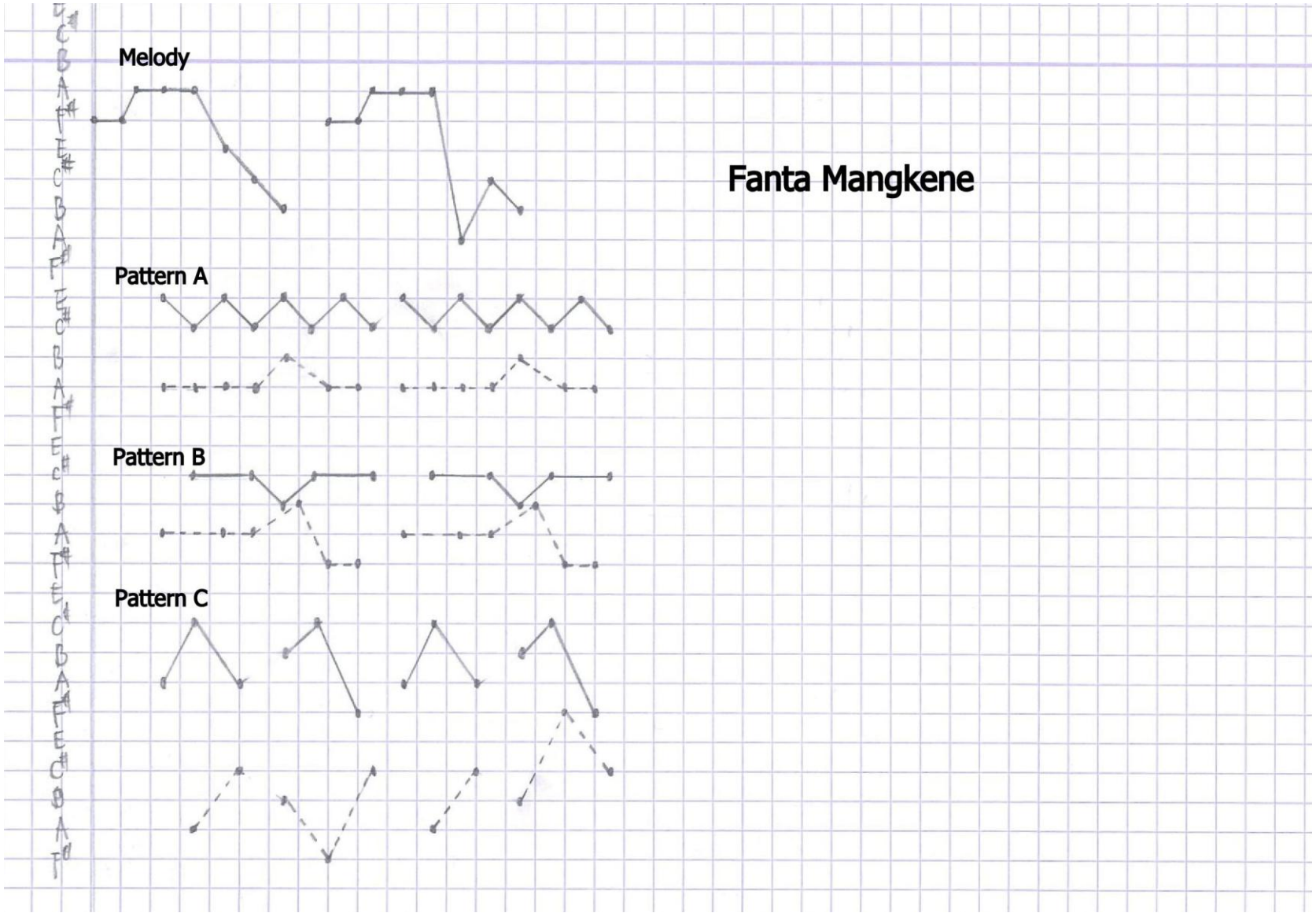


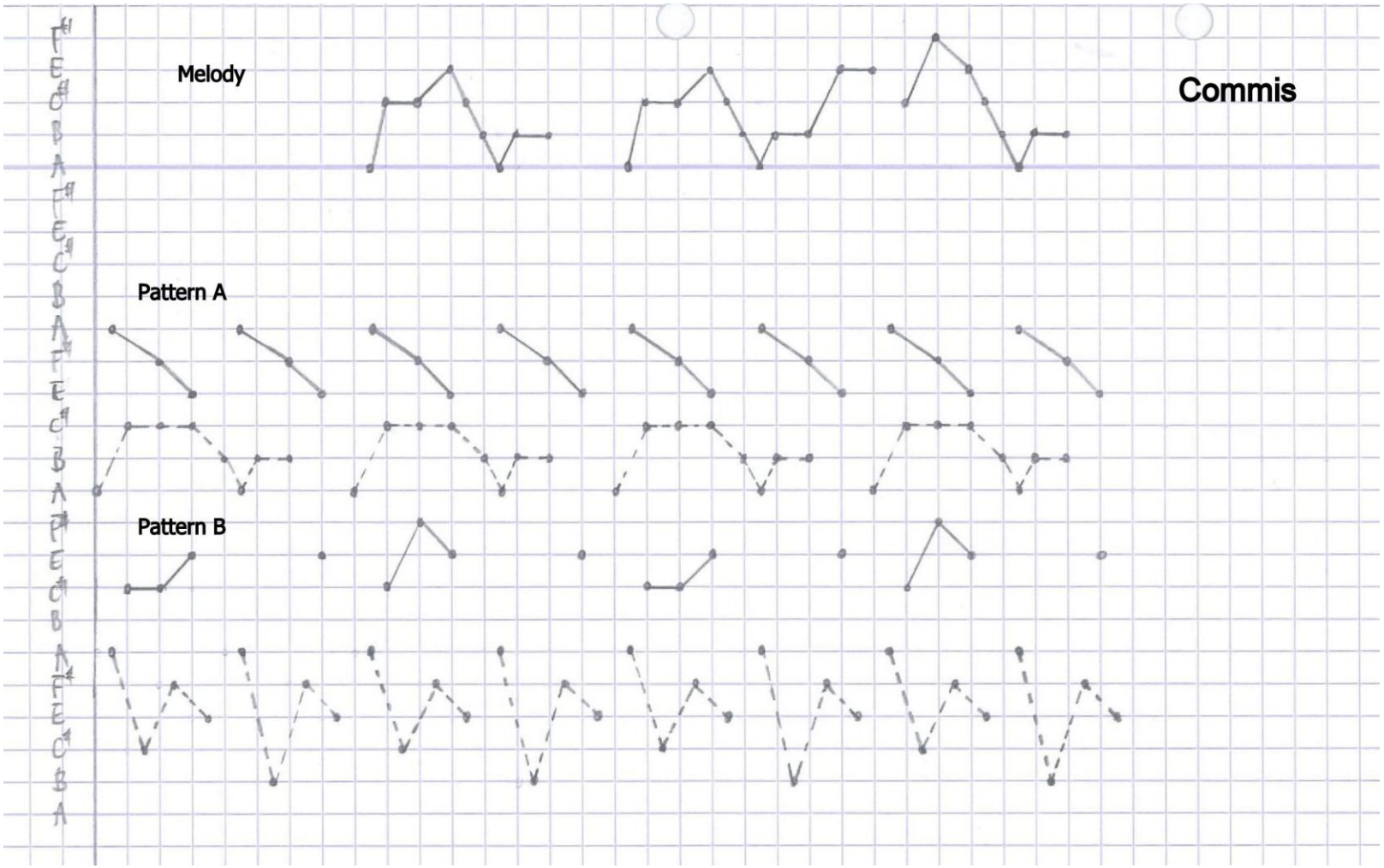

Melody
Pattern A
Pattern B
Hanouzou

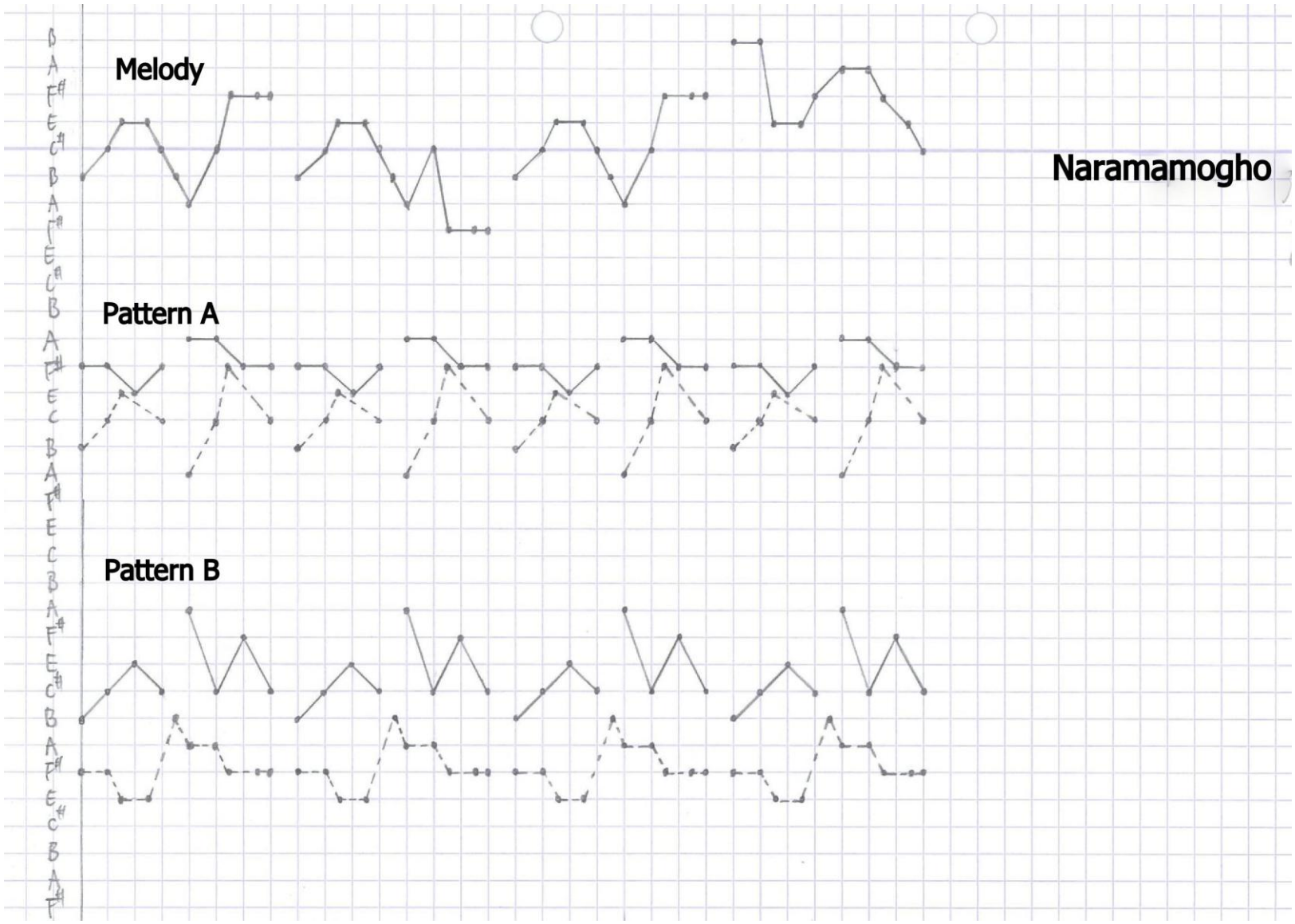

Djara Allah
Melody
Pattern A
Pattern B
Pattern C

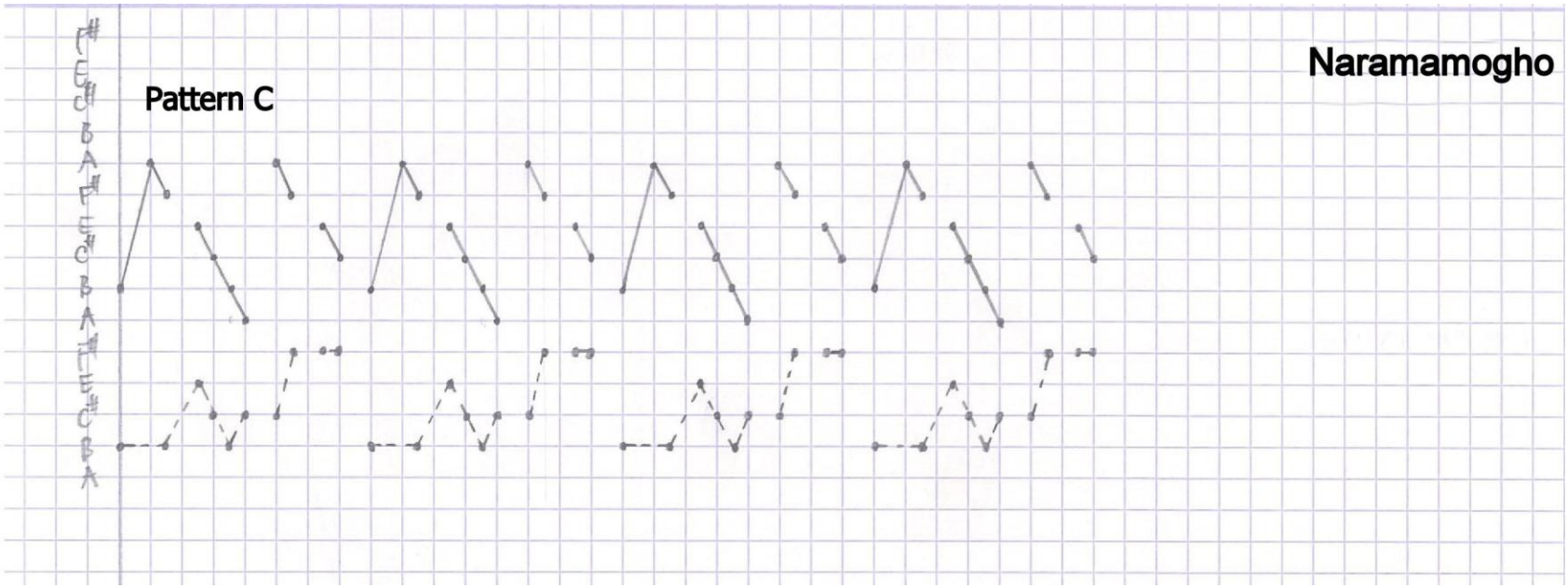

Melody
Pattern A
Pojaro
Pattern B
Pattern C

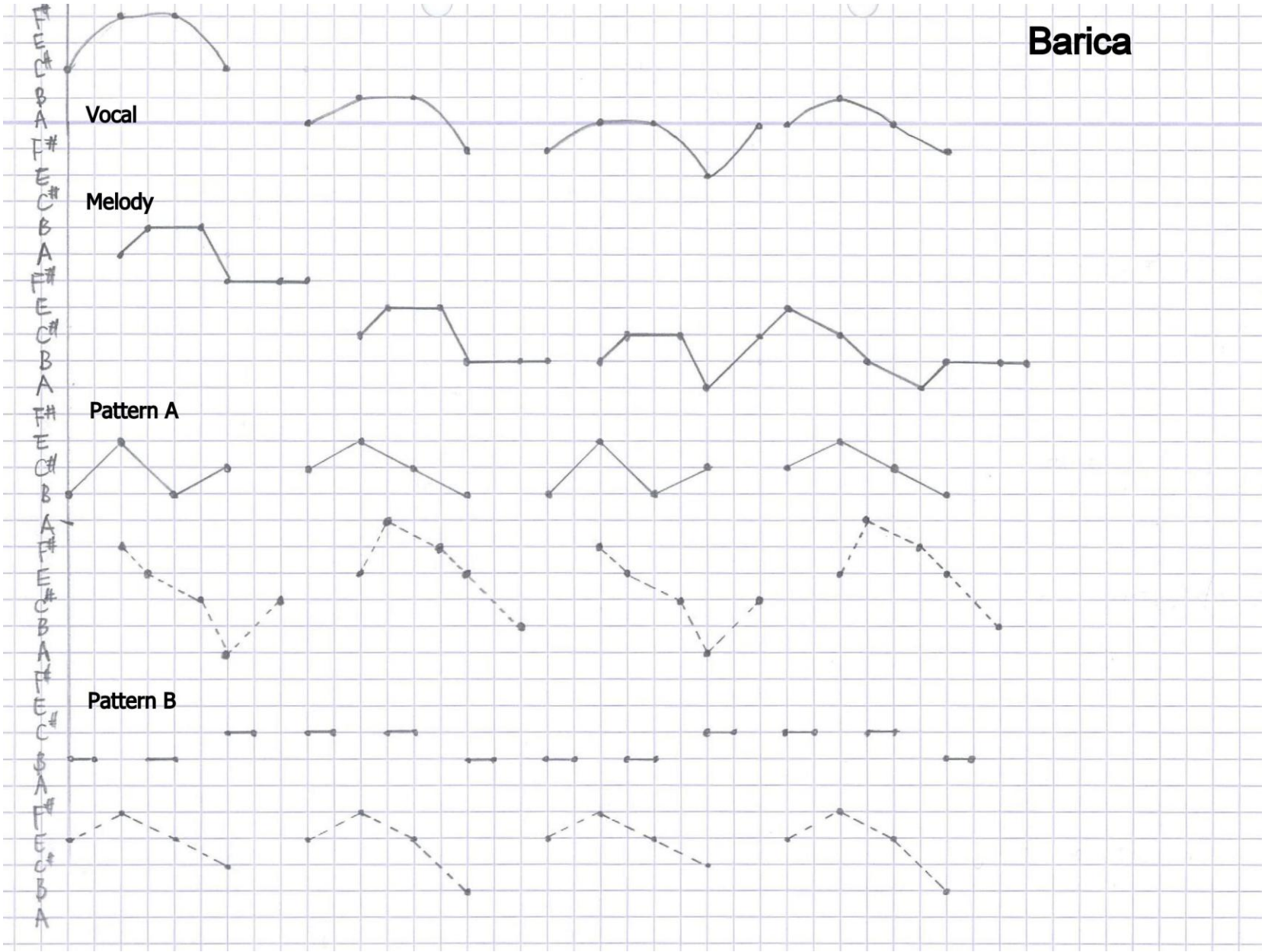

Patoma Nje Nje
Melody
Pattern A
Pattern B
Pattern C


Melody
Pattern A
Pattern B
Pattern C
Fanta Mangkene


Melody
Commis
Pattern A
Pattern B


Melody
Naramamogho
Pattern A
Pattern B


Pattern C
Naramamogho


Barica
Vocal
Melody
Pattern A
Pattern B

APPENDIX D

VIDEO INSTRUCTIONS OF DRUMMING PROJECT

Part 1 Bongos-player 2 Pattern A https://youtu.be/b3aONa56-hc
Part 1 Bongos-player 3 Pattern A https://youtu.be/xK3UU_UVmfw
Part 1 Bongos-player 4 Pattern A https://youtu.be/YvKYmaVlp4M
Part 1 Bongos-player 2 Pattern B/C https://youtu.be/tQQhlfOsToo
Part 1 Bongos-player 3 Pattern B/C https://youtu.be/IKKoDX6QKaQ
Part 1 Bongos-player 4 Pattern B/C https://youtu.be/a8cf4gDnkBY
(I was player 1 in this part)

Part 2 Marimba-player 1 https://youtu.be/KlBBT7eVG4M
Part 2 Marimba-player 2 https://youtu.be/ZxbydB7pDX8
Part 2 Marimba-player 3 https://youtu.be/z9KMLGAeWqE
Part 2 Marimba-player 4 https://youtu.be/a48YtW5-8KQ
Part 2 Marimba-player 5 https://youtu.be/GhYOvMiiulU
Part 2 Marimba-player 6 https://youtu.be/gmx_PEOwlmk
Part 2 Marimba-player 8 https://youtu.be/eXDq8kBe-oU
Part 2 Marimba-player 9 https://youtu.be/Vy7VytvXfPo
(I was player 7 in this part)

Part 3 Glockenspiel-player 2 https://youtu.be/GWtKfv9tenw
Part 3 Glockenspiel-player 3 https://youtu.be/hOFIfXLgJbE
Part 3 Glockenspiel-player 4 https://youtu.be/2L3YIg3cqDw
(I was player 1 in this part)

Part 4 Tutti- Sander (drums 1) https://youtu.be/7PcALa8A1hQ
Part 4 Tutti- Tiit (marimba 1) https://youtu.be/IP_ivEIyO8c
Part 4 Tutti- Koen (glock 1) https://youtu.be/kzHLLGRVliQ
Part 4 Tutti- Jef (marimba 2) https://youtu.be/4Jee7GcIOPo
Part 4 Tutti- Maarten (drums 2) https://youtu.be/_-5cLQglNV4
Part 4 Tutti- Sylvie (glockenspiel 3), Benjamin (drums 3), Ken (marimba 3)
https://youtu.be/26tB8uknOLU
(I performed glockenspiel 2 in this part)

APPENDIX E

Drumming events/ Part 1 bongos/ Page **1** of **4**

Adlia	Addition	A beat 1 (6 bars)							A beat 1 (8 bars)	Reduction	Addition (Pattern B) Change to soft sticks	B beat 1
Koen	x		-Fade in Pattern A beat 1 (3 bars) - continue 3 bars - phase shift to beat 2 - continue 4 bars	A beat 2	- Phase shift to beat 3 - Continue 4 bars	A beat 3	- Phase shift to beat 1 together - Pattern A beat 1 (4 bars)	Fade out (4 bars)	x	x	x	- Fade in B beat 1 (4 bars) - Continue 4 bars - Phase shift to beat 2 - Continue 16 bars - Phase shift to beat 3 -Continue 8 bars
Maarten	x		x	Fade in solo (5-6 themas + Dynamics!) - Fade in Pattern A beat 1 (3 bars) - Continue 6 bars - Phase shift to beat 2 -Continue 4 bars	A beat 2				x	x	x	x
Tiit	Addition	Pattern A beat 1 (6 bars)	Fade out (3 bars)	x	x	- Fade in solo - Pattern A beat 4 (6 bars)		A beat 1	A beat 1 (8 bars)	Reduction	Addition (Pattern B) Change to soft sticks	Fade out (4 bars)

Adilia	B beat 1	B beat 1	- Fade out B beat 1 (2 bars) - Rest 2 bars (change to hard sticks) - Fade in (2 bars) - Continue 2 bars						Continue 14 bars
Koen	B beat 3	B beat 3			- Fade out B beat 3 (2 bars) - Rest 2 bars (change to hard sticks) - Fade in (2 bars) - Continue 2 bars				
Maarten	x	-Fade in B beat 1 (2 bars) -Continue 2 bars	B beat 1	- Fade out B beat 1 (2 bars) - Rest 2 bars - Fade in B beat 3 (2 bars) - Continue 2 bars	B beat 3	- Fade out B beat 3 (2 bars) - Rest 2 bars - Fade in B beat 5 (2 bars) - Continue 2 bars	B beat 5	Fade out (2 bars)	
Tiit	- Fade in B beat 3 (4 bars) - Continue 6 bars - Phase shift to beat 4 - Continue 16 bars - Phase shift to beat 5 -Continue 8 bars	B beat 5					- Fade out B beat 5 (2 bars) - Rest 2 bars (change to hard sticks) - Fade in (2 bars) - Continue 2 bars		

Adilia	Transition to C (8 bars) (Middle 2 repetitive quavers to C#)			C beat 1 (16 bars)		- Fade out C beat 1 (2 bars) - Rest 2 bars(change to soft sticks) - Fade in (2 bars) - Continue 2 bars					
Koen	B beat 3	Transition to Pattern C 12 bars (first 2 repetitive quavers to C#)		C beat 3 (16 bars)				- Fade out C beat 3 (2 bars) - Rest 2 bars(change to soft sticks) - Fade in (2 bars) - Continue 2 bars			
Maarten	x	x	x	x	- Fade in C beat 1 (2 bars) -Continue 2 bars	C beat 1	- Fade out C beat 1 (2 bars) - Rest 2 bars - Fade in C beat 3 (2 bars) - Continue 2 bars	C beat 3	- Fade out C beat 3 (2 bars) - Rest 2 bars - Fade in C beat 5 (2 bars) - Continue 2 bars	C beat 5	Fade out 2 bars
Tiit	B beat 5	B beat 5	Transition to Pattern C 12 bars (Last 2 repetitive quavers to C#)	C beat 5 (16 bars)						- Fade out C beat 5 (2 bars) - Rest 2 bars(change to soft sticks) - Fade in (2 bars) - Continue 2 bars	

Adilia	C beat 1 (8 bars)	Marimba fade in and continue for 10 bars	Fade out 8 bars
Koen	C beat 3 (8 bars)		
Maarten	x		
Tiit	C beat 5 (8 bars)		

Ben	Pattern A (connect	A	A		A		A	A	A	A		A		Continue
Ken	part 1) - Fade in (8 bars) - After drummers fade out , continue for 10 bars	-move to marimba 2 (opposite side) in 2-4 bars - B1	B1		B1		B1	B1	B1	B1		B1		10 bars
Sander	-Ken+ Sander fade out (2 bars)	Move to marimba 1	- B2 beat 1 (5 bars) - Phase shift to beat 2 - continue 5 bars - Cue singers		B2		- Continue 8 bars - Phase shift to beat 1 - Continue 4 bars - fade out 4 bars	x	x	- C3 beat 1 Fade in (2 bars) - Continue 4 bars - Phase shift to beat 2 -continue 8 bars - Cue singers		C3		
Jef	x	x	x	Singers	- B2 beat 2 Fade in (4 bars) - Continue 4 bars - phase shift to beat 3 - continue 4 bars - Cue singers	Singers		x	x	x	Singers	-C3 beat 2 fade in (8 bars) - Continue 8 bars -phase shift to beat 3 -continue 4 bars -cue singers	Singers	
Sylvie	x	x	x		x		x	x	C1 (opposite side)			C1		
Maarten	x	x	x		x		x	x	C2	C2		C2		
Adlia	x	x	x		x		x	x	x	x		x		x
Koen	x	x	x		x		x	x	x	x		x		x
Titts	x	x	x		x		x	x	x	x		x		x

Ben	A	Continue for 20 bars	Fade out 10 bars	x	x	x	X (move to glock)	glock	glock
Ken	B1		B1	Fade out 10 bars	x	x	X (move to glock)	glock	glock
Sander	C3		C3	C3	Fade out 10 bars	x	X	x	x
Jef	C3		C3	C3		x	x	X	x
Sylvie	C1		C1	C1	C1	Fade out 10 bars	x (move to glock)	Glock	glock
Maarten	C2		C2	C2	C2		x	x	x
Adilia	D beat 1 (opposite side)		D	D	D	D	Continue 10 bars	Continue when Glockenspiels 8 bars fade in	Fade out 8 bars (Glockenspiels play forte)
Koen	D beat 2 (0pposite side)		D	D	D	D			
Titts	D beat 3 (opposite side)		D	D	D	D			

Adlia	x	x	A beat 1	A beat 1	A beat 1	A beat 1	A beat 1	Whistle	**Directly change** to B beat 1 (4 bars)	B beat 1	piccolo	B beat 1	B beat 1
Sylvie	Connect part 2	x	A1	A1	A1	A1	A1		A1	A1		A1	A1
Ben	- Fade in (8 bars) - After marimbas Fade out , continue for 8 bars -**Sylvie + Ken** phase shift to beat 1, Continue 2 bars, then fade out 2 bars	Pattern 2 bars	Fade out 5 bars	Rest 5 bars	- Pattern A, Fade in 5 bars -Continue 5 bars - Phase shift to beat 2 -Continue 5 bars	A beat2	A beat 2		A beat 2	**Directly change** to B beat 2 (4 bars)		- Continue 4 bars - Phase shift to beat 1 - Continue 2 bars - Fade out 2 bars	x
Ken		x	x	x	x	- A beat 2 fade in 5 bars - Continue 5 bars - phase shift to beat 3 - continue 5 bars	**Directly change** to B Beat 3 (5 bars)		B beat 3	B beat 3			x

Adilia	B beat 1	B beat 1	B beat 1	Piccolo	Continue 6 bars	B beat 1	B beat 1	- Fade out 6 bars - Rest 6 bars - D Beat 1 Fade in 6 bars -Continue 6 bars	D beat 1	B beat 1	- Adilia + Ben continue 3 bars - Reduction process - Part 4
Sylvie	**Directly change** to C beat 1	C beat 1	C beat 1			C beat 1	C beat 1	C beat 1	Fade out 6 bars		
Ben	x	- C beat 1 Fade in 2 bars - Continue 2 bars - Phase shift to beat 2 -Continue 5 bars	C beat 2			Transition pattern (1 bar)	**Directly change** to D beat 2	D beat 2	D beat 2	- Continue 8 bars - Phase shift to beat 1 - Continue 3 bars - **Ken** Fade out 3 bars	
Ken	x	x	- C beat 2 Fade in 2 bars - Continue 5 bars - Phase shift to beat 3 - Continue 4 bars				**Directly change** to D beat 3	D beat 3	D beat 3		

*** The empty squares means continue the same strikes/ patterns as before →

** X means empty bars

* Drummers play always one degree softer than other instruments

Addition- add up to 8 notes (EVERY entry equals to 3-6 bars repeats in Addition)

Koen Gk 1	x	x	x	x	x	II	II					III					IIII					𝍸					𝍸 I
Adilia Gk 2	I	I	I	I	I	I	II				III					IIII					𝍸					𝍸 I	
Titts Ma 1	I	I	II	II	II	II	II	III					IIII					𝍸					𝍸 I				
Jef Ma 2	x	x	x	x	II	II	II		III					IIII					𝍸						𝍸 I			
Sander Dr 1	x	I	I	II	II	II	II			III					IIII					𝍸						𝍸 I		

Koen Gk 1					𝍸 II					𝍸 III	Continue 3 bars			- Phase shift to beat 2 - Continue 3 bars
Adilia Gk 2				𝍸 II					𝍸 III					
Titts Ma 1	𝍸 II					𝍸 III						- Phase shift to beat 2 - Continue 3 bars		
Jef Ma 2		𝍸 II					𝍸 III							
Sander Dr 1			𝍸 II					𝍸 III						
Maarten Dr 2	x	x	x	x	x	x	x	x	x	Fade in pattern A (3 bars)			- Phase shift to beat 2 - Continue 3 bars	
Sylvie Gk 3	x	x	x	x	x	x	x	x	x	X		X	X	X
Ken Ma 3	X	x	x	x	x	x	x	x	x	x		x	X	X
Ben Dr 3	x	x	x	x	x	x	x	x	x	x		x	x	x

Koen Gk 1			- Phase shift to beat 3 - Continue 3 bars				- Phase shift to beat 4 - Continue 3 bars	
Adilia Gk 2								
Titts Ma 1	-Phase shift to beat 3 -Continue 3 bars				- Phase shift to beat 4 - Continue 3 bars			- Phase shift to beat 4 - Continue 3 bars
Jef Ma 2								
Sander Dr 1								
Maarten Dr 2		- Phase shift to beat 3 - Continue 3 bars				- Phase shift to beat 4 - Continue 3 bars		
Sylvie Gk 3	X	X	X	Fade in Glock A1 beat 3 (3 bars) *				
Ken Ma 3	x	X	X	Fade in Marimba A1 beat 3 (3 bars) *				
Ben Dr 3	x	x	x	Fade in Drum A1 beat 3 (3 bars) *				

* Drummers always sounds one degree softer than other instruments*

Koen Gk 1			- Phase shift to beat 5 - Continue 3 bars	Singers + Piccolo	Continue 6 bars	Crescendo poco 6 bars	The one LAST note *FORTISSIMO*
Adilia Gk 2							
Titts Ma 1	-Phase shift to beat 5 -Continue 3 bars						
Jef Ma 2							
Sander Dr 1							
Maarten Dr 2		- Phase shift to beat 5 - Continue 3 bars					
Sylvie Gk 3							
Ken Ma 3							
Ben Dr 3							

APPENDIX F

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