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Considering Anisochronous Meters and Polymeters in Afro-Brazilian Music: Analytic and Didactic issues

ABSTRACT

The analysis of performances pertaining to the corpus of Afro-Brazilian music reveals a musical organization generally composed by recurrent temporal patterns, called fundamental traits or ‘characteristic devices’, which could reveal specific ways of structuring the musical time coming from Bantu and/or Yoruba cultures.¹ At least one of these kinds of temporal organization doesn’t exist in the Western music.¹ It is constituted by a complex structure composed of simultaneous ‘rhythmic lines’. Some of them, isochronous, fits the standard Western definition of meter. The others work as implicit ‘time-line patterns’ for instrumental, vocal and dance performance and can be considered as ‘non-isochronous meters’. This work puts forth the hypothesis that the whole network of these isochronous and non-isochronous rhythmic lines forms a polymeter. But such an hypothesis induces analytic and didactic issues: from an analytical point of view, Agawu denies the existence of polymeter for African and Afro-Diasporic music. On their side, didactic issues emerge when some Afro-Brazilian music is taught to Western² student: their study opens a path to a cognitive-oriented understanding of how some Afro-Brazilian traditions are organized on a metrical plan. Based on three Afro-Brazilian widespread music traditions (*samba*, *maracatu de baque virado* and *coco*), this paper proposes to analyze each Agawu’s criterion (‘own metric frame, metric dissonance, metric polyphony’, ‘coexistence/cooperation’) and its respective relevance in front of recent literature. The related concepts of ‘polycentrism’ and ‘cometricity/contrametricity’ are discussed.

1. INTRODUCTION

1.1 Background

Despite an important ethnic mixing between the populations (native Indians, slaves, settlers), the analysis of Afro-Brazilian music reveals the presence of musical paradigms, also called ‘characteristic devices’ (Pressing, 2002), similar to

those observed in numerous Sub-Saharan music performances, in particular in West Africa.

The first one is often called ‘time-line patterns’ (N’Ketia, 1961). Its presence is confirmed by several studies on Afro-Diasporic music. For example, see Acquista (2009) concerning the *tresillo* $\odot \cdot \odot \cdot \odot$ pattern.

1.2 Aims and Repertoire Studied

This study focuses on a corpus of three widespread Afro-Brazilian music traditions: *samba*, *maracatu de baque virado* and *coco*. A dense description of each tradition, if indeed such a thing is possible, is out of the focus of this paper. Only examples and/or generic models are given.

This study puts forth the hypothesis that these anisochronous meters, in coexistence with isochronous meters, form a polymetric network (Figure 1), a statement that induces analytic and didactic issues.

From an analytical point of view, the concept of polymeter could help explaining a major part of the temporal organization of a lot, perhaps all, of Afro-Brazilian music.

On their side, didactic issues emerge when some Afro-Brazilian music is taught to Western students or pupils. On an extended view, it questions the cultural specificity of metric organizations and their ‘communicability’, a problem which could potentially shed a new light on the domain of interculturality in music education.

1.3 Method

The proposed study brings together views from (ethno)musicology, cognitive psychology and music education. Focused on intercultural music teaching and learning, it is assumed that only a crossed approach allows the rise of new findings. Firstly, the concepts of anisochronous meter and polymeter are presented. Secondly, analytic and didactic issues are discussed, especially by challenging Agawu’s (2003) polymeter definition criteria.

2. TWO DISTINCT BUT CONNECTED PARADIGMS

In this study, a meter will be taken as a ‘dynamic attending’ (Jones 1989), an ‘attending mechanism’ (Iyer 1998), a ‘projective process’ (Hasty 1997, 103) based on the initial assumption of Seashore (1936) that ‘attention may be periodic’ (Huron 2006, 176). So, it is a psychological process and must not be mingled with the concept of ‘measure’ in Western standard notation.

2.1 Anisochronous Meter

Some specific patterns, called ‘timelines’ (N’ketia 1961), constitute the backbone of a lot of Afro-Diasporic music. Ku-

¹ This study takes in account the massive and permanent crossing of cultures (Amselle 2001). But, despite this phenomenon, some cognitive boundaries are the result of perceptual divergences between people differently enculturated (Guillot 2011, 2015). Especially here, anisochronous meters are globally absent of all classical Western music (London 2012), which remains the core of music education.

² It is assumed that most Afro-Brazilian music is a combination of Western influences — especially tonal melody and sometimes harmonic structure — and (West-)African influences — especially cyclic meters, ‘syncopated rhythms’ and microtiming. So, a ‘Western’ musician is likely to not be familiar with the specific temporal structures evocated in this study.

bik (1979) is convinced that this paradigm is a stable element in African music history, already present in the 16th century, and perhaps earlier. A good example is given about a Ghanaian war dance, where ‘every act of drumming, singing, and dancing is timed in accordance with the recurring musical phrase played on an iron bell or gong’ (Locke 1984, 114). Today, taking into account that a meter can be regular without being isochronous, these timelines are considered as ‘non-isochronous meters’ (London 2004) or ‘anisochronous meters’ (Guillot 2016). Evidence of perception of such patterns as meters is given by Magill and Pressing (1997).

A similar principle seems to be present in a lot of Afro-Brazilian music and dance traditions (Mukuna, 1979; Kubik, 1979; Sandroni, 1997; Fonseca, 2002). Such a meter can be explicitly materialized or appear by emergence. For example, in the *candomblé*, the *loas* (praises) are learnt by singing the lyrics, and by simultaneously playing the time-line pattern on a bell generally called *gã* or *agogô*. In the *samba*, the major part of the performance follows, more or less, at least one specific pattern (Sandroni 1997) not necessarily played by a musician.

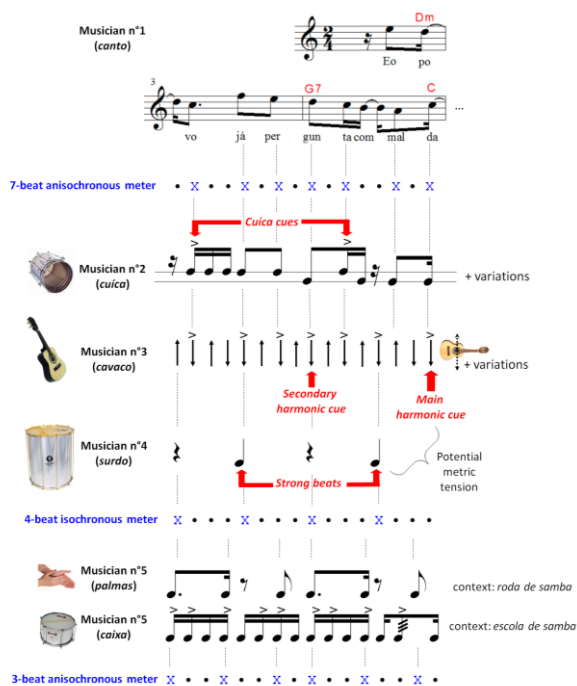


Fig. 1. Diagram showing how singers and some instruments of *samba* are ‘linked’ to anisochronous and isochronous meters. The upper part of the figure shows a short excerpt of ‘Onde esta a honestidade’ from Sandroni (1997); the lower part shows examples of standard patterns (here not varied, in a kind of generic form) played by typical instruments. Meters are notated with Kubik’s (1999) technique. The figure shows the nested isochronous and anisochronous meters, and the potential metrical tensions (only one is indicated) induced by the contradictory locations of metrical keypoints.

2.2 Polymeter

2.2.1 Definition

The second ‘characteristic device’ of Black-Atlantic rhythmic Diaspora is called ‘polymeter’ (Pressing 2002). The idea that some African music would work polymetrically isn’t new; for example, the concept of polymeter is defined as ‘the

interplay of two or more metrical frameworks’ (Waterman 1952, 212), as ‘the simultaneous use of different meters’ (Chernoff 1979, 45) or as ‘the presence of two (or more) concurrent metric frameworks’ (London 2012, 66). Jones (1979) relates the possibility for African Eve musicians to hear the same pattern by the way of 3 distinct meters. Despite a lack of scientific ground, the polymetric thesis is already coined in samba by Browning (1995, 9-10): ‘Samba is a polymeter, layered over a 2/4 structure. But the strong beat is suspended, the weak accentuated’. Based on these propositions and my own experience as a musician, I suggest that most, perhaps all, of Afro-Brazilian music is organized as a polymeter. These meters share the same subdivisions and are synchronized between themselves. Because of the co-existence of several music lines, they form a ‘polyphonic polymeter’ (Rundall 2011, 210). But, on its own, defines a polymeter as the

simultaneous use of more than one meter in an ensemble composition. Each functional component of the texture, be it an instrument or a group, is said to expose a distinct rhythmic pattern within its own metrical frame, apparently without any obvious regard for a larger coordinating mechanism. Constituent meters do not collapse into each other or into a larger meter, but persist into the background, creating a kind of metric dissonance or metric polyphony. Philosophically, polymeter indexes coexistence, not (necessarily) cooperation. (Agawu 2003, 79.)

Agawu’s definition sounds like a dead-end for a potential application to Afro-Brazilian music. Underlined criteria³ will be discussed later in this study, in front of recent literature.

2.2.2 Model

In order to give more substance to my assumptions, a circular diagram inspired by Toussaint (2002) allows to modeling the metrical organization of a given piece of music. The circular diagram shows the complete polymeter, which can be divided, in Afro-Brazilian music, into 8, 12, 16, 20 or 24 non-isochronous subdivisions — 16 and 8 in the examples of Figures 2, 3 and 4. The meters are represented as polygons. Each dot is weighed in function of the metrical importance of the pulse, following the representation proposed by Lerdahl and Jackendoff (1983): from 1 (representing weak metrical weight) to 3 (strong metrical weight) aligned dots. When a pulse pertains to more than one meter, it has one weight per meter.

³ Underlines not in original text.

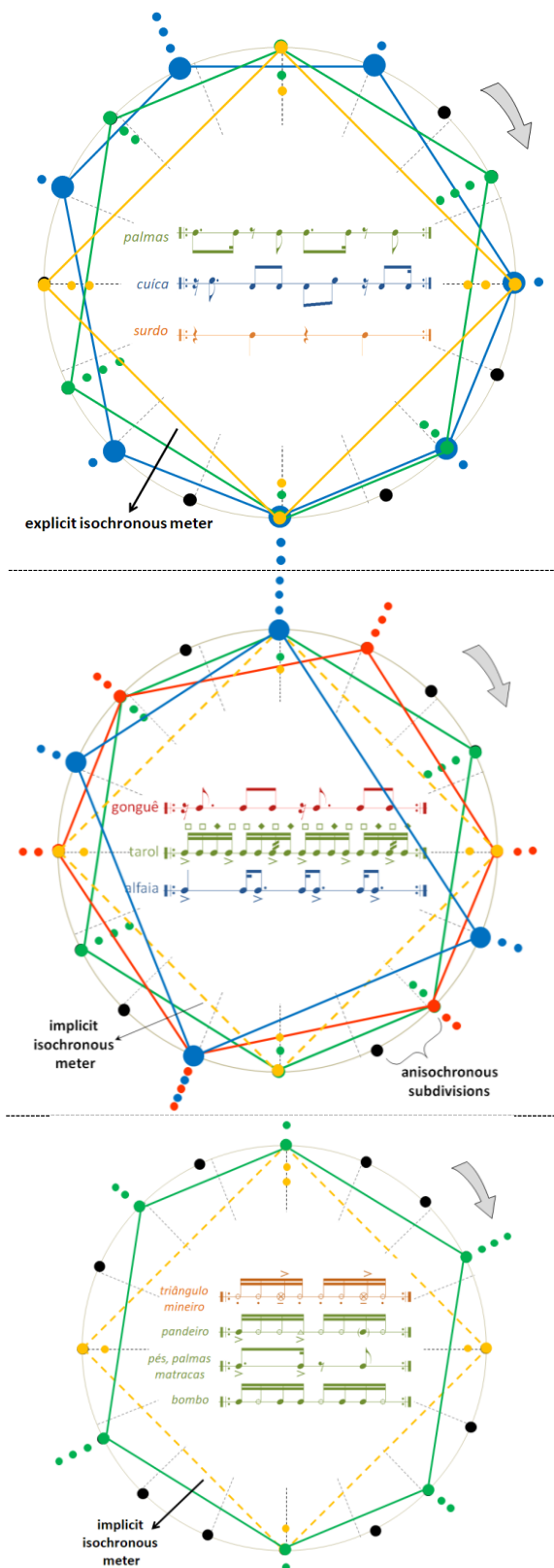


Fig. 2-3-4 (up to down). Inspired by circular diagrams, models of the complete polymeters of 3 ‘standard’ music styles (*samba*, *maracatu de baque virado*, *coco*). It is divided in 16 (slightly anisochronous) subdivisions (black dots on the circle). The meters are represented as polygons and are synchronized between themselves. Each subdivision is weighted in function of its metrical importance in each meter: from 1 (low weight) to 3 (strong weight) aligned dots. A given pulse can have multiple weights.

Coco is presented as a 16-basic pulses cycle for homogeneity purpose.

3. ANALYTIC AND DIDACTIC ISSUES

3.1 Analytic Issues

In this paragraph, Agawu’s (2003, 79) criteria are discussed in front of recent literature:

- ‘Simultaneous use of more than one meter’;
- ‘Own metric frame’;
- ‘Constituent meters [...] persist in the background, creating a kind of metric dissonance’;
- ‘Polymeter indexes coexistence, not (necessarily) cooperation’.

The discussion is organized in four topics directly linked to Agawu’s criteria (‘distinct metric frames’, ‘coexistence/cooperation and coordinating mechanism’, ‘polycentrism’, ‘metric dissonance’) and two induced, but correlated, topics (‘synchronization’, ‘contrametricity’).

3.1.1 Distinct Metric Frames

By the way of a parametric study, Guillot (2008) shows that all the patterns of the *gonguê* (bell) of a piece of *maracatu de baque virado* are variations of a kind of timeline pattern. It is highly probable that the same work could be done, not only with almost all instruments of this musical tradition,⁴ but at least, with all musical traditions presented here and perhaps, all Afro-Brazilian music. Given that perceived complexity of a pattern is influenced by metrical structure (Temperley 2001), it could be stated that a given timeline play a role by limiting the perceived complexity of patterns linked to it. Nevertheless, from a psychological perspective, it remains challenging to check that a given rhythmic pattern is really ‘thought’ by a musician in a peculiar meter and not in another one.

3.1.2 Coexistence/Cooperation and Coordinating Mechanism

Because of the presence of several music lines, coexistence and cooperation — in the sense of co-operation — are inherent characteristics. Concerning an eventual ‘larger coordinating mechanism’, all that can be observed is that, for a given music tradition, these meters are always arranged in the same way, although the many other possible arrangements. For example, in the *arrasto* pattern in *maracatu de baque virado* (Figure 3), there are seven other possibilities — with one 16-beat meter and one 8-beat meter — but, according to our knowledge, only the one presented here is used in this tradition. An interesting characteristic — without any explanation for the moment — is that, cyclically speaking, the *gonguê* meter $\bullet\ominus\bullet\bullet\ominus\bullet\bullet$ (Figure 2) is exactly the same than the *palmas*’ one $\ominus\bullet\bullet\ominus\bullet\bullet$ of *samba* (Figure 1) or *coco* (Figure 3), a very widespread pattern in Afro-Diasporic music (Kolinski 1973).

3.1.3 Synchronization

Based on my personal experience, I put forth the hypothesis that, in (probably) all forms of Afro-Brazilian music, the mu-

⁴ In figure 3, only the typical patterns of three instruments are transcribed. But, generally, there are 1 to 4 other *alfaias* playing similar patterns, some of them fixed, other varied, but following the same timeline. Idem for *tarol*.

sician makes dynamic inferences based on a compound temporal reference framework, like a ‘dynamic polysynchronization’ — even if this expression is not entirely satisfying.

Meter synchronization and perception is largely studied, even concerning anisochronous meters. For a recent review, see Hendriks (2016). Concerning polymeters, the related literature (e.g. Kolinski 1973, Agawu 2003, London 2004) generally states that a musician cannot entrain himself/herself on multiple meters at the same time, but only dynamically switch his/her focus on a specific layer of a polymetric system. But, in reality, only few experiments were conducted, and are not directly applicable to any Afro-Diasporic music. For example, Magill and Pressing (1997) study polyrhythm perception, and Poudrier *et al.* (2013) work on polymeter perception Western contemporary music as a background. Thus, the polymetric hypothesis must be challenged with new and specifically designed experimental methods for, at least, Afro-Brazilian music.

3.1.4 Polycentrism

Pressing (2002) notes that ‘Atlantic rhythms’⁵ act as a kinetic framework in which the principle of polymetry is one of the above-mentioned ‘characteristic devices’. He states that ‘nearly all of these have at their heart the establishment of perceptual multiplicity or rivalry’ (Pressing 2002, 285). This position could be strengthened by studies on dance performance. Agawu (2006) recalls the importance of integrating African dancers’ movements into the musical analysis, a statement working as an evidence for everyone who ever performed music for/with dancers. Naveda (2001) shows how isochronous meter is expressed in performances of *samba no pé*.⁶ Moreover, Graeff notes that:

the movements of the different parts of the body are able to represent simultaneously and alternately the elementary pulses, the beats, the time-line pattern and the improvisation.⁷ (Graeff 2014, 19.)

In their descriptions of the *samba* dance, Naveda and Leman (2009) use the expression ‘polymetric lines’ from Africanist literature and suggest a ‘polymetric engagement’ of the dancer. This idea could be reinforced by the old-but-promising concept of ‘polycentrism’ (Günther 1969; Welsh-Asante 2001), born in the field of African and Western contemporary dances in order to describe how some parts of the body can move independently from other parts.

3.1.5 Metric Dissonance and Productive Tensions

Polymeter can create a space for productive metric tension, which could be named as a ‘collaborative competition’ and based on Krebs’s (1999) concept of ‘metrical dissonance’: I claim that the interference between the metric structures produces a metric dissonance — the ‘competition’ — with a kinesiogenic power — resulting from the ‘collaboration’ — which generates, at least, dance movement. This metric dissonance can be reinforced by melodic/harmonic cues located on specific subdivisions. It seems that in almost all songs in the style called *samba de raiz*,⁸ most important harmonic changes ap-

pear at the very end of what could be a four-beat measure (Figure 1). I put forth the hypothesis that a similar type of metric dissonance appears in other kinds of Afro-Brazilian music, a statement which will be discussed in further studies.

3.1.6 Contrametricity

This last point doesn’t take part of Agawu’s polymeter definition, but can be taken as a result of former discussions, moreover connected to the notions of metric dissonance and productive tensions. Speaking about West African rhythms, Magill and Pressing (1997, 190) write that ‘time lines or bell patterns betray asymmetric construction and sound syncopated to Western ears’. The concept of ‘syncopation’, defined in Western music theory, is widely used in music education and by scholarly studies. Some of them, especially in the field of ethnomusicology, replace the term ‘syncopated’ by ‘contrametric’, but I argue that they are only synonyms in specific cases. Indeed, the terms ‘commetric’ and ‘contrametric’ have generally been used by following the definition proposed by Kolinski (1973), but without referring to the author’s entire analysis. For his part, Arom (1985, 242) describes ‘contrametricity’ — without any reference to Kolinski — as follows: ‘the relationship of rhythmic figure to the pulsation is *contrametric* when accents, changes of tone colour, of (failing these) attacks occur *predominantly on the offbeat*’⁹.

Arom admits only one kind of ‘pulsation’, defined as ‘the isochronous, neutral, constant, intrinsic reference unit which determines tempo’ (Arom 1985, 202). But, while numerous scholars use the definitions of commetric and contrametric terms in reference to only the Western metric system (e.g. Arom, Chemillier *et al.* 2014, Toussaint 2014), Kolinski quite rightly noted that:

with regard to the widely distributed pattern 3 + 3 + 2 it is important to determine in each situation whether we deal with a contrametric organization within a regular metric framework or with a commetric organization within an irregular metric framework.¹⁰ (Kolinski 1973, 500.)

This assertion can be verified in all examples presented in this study. Before him, Sachs (1953) said approximately the same thing (Kvifte 2007). Thus, it is important that any use of term ‘contrametricity’ be accompanied by a precise definition of its reference, that is, the meter in relation to which a given rhythmic accent or pattern appears congruent (commetric) or noncongruent (contrametric). If my hypothesis about polymetricity is assumed, then contrametricity must be evaluated in relation to each meter. For example, in *coco* (Figure 2), the patterns of *pés* (feet), *palmas* (hand clapping), *matracas* (wooden plates or wooden-sole shoes) and even *bombo* (low-pitch drum) would be perceived as extremely contrametric in a Western perspective, which adopts the isochronous meter as a reference. But, following an Afro-Brazilian one, especially $\bullet\bullet\bullet\bullet\bullet\bullet$ meter, it would be extremely commetric.

On his side, Toussaint (2014) uses the term ‘syncopation’, which is probably worse, because it refers directly to Western theory of music. More interesting, he defines the criterion of

⁵ ‘Afro-Diasporic music’ seems to be a little better expression, but still incomplete.

⁶ E.g. *samba* in feet.

⁷ Translation of the author.

⁸ *Samba* of the roots.

⁹ Terms in italics from Arom.

¹⁰ Here, it seems very clear that the expression ‘irregular metric framework’ could be advantageously replaced today by the expression ‘anisochronous meter’ or ‘non-isochronous meter’.

‘metric complexity’ of the son *clave* (Cuba). Unfortunately, this criterion is based on Western metric system, like one proposed by Keith (1991). If the polymetric organization hypothesis is verified on a perceptive point of view, I propose to define a ‘degree’ of cometricity/contrametricity (Koliniski 1973) of a given musical event relatively to each meter.

3.2 Didactic Issues

Here are mainly discussed perceptive issues which induce didactic issues. Indeed, Guillot (2011) shows that an exogenous (and so, inadequate) perception by the teacher — and potentially, by the student — of microtimed pulses can deeply disturb a teaching-learning situation in intercultural context. It is assumed that a similar phenomenon can occur with meters.

Another issue appears with Afro-Brazilian music which has harmonic changes hooked on an anisochronous meter, as in a lot of forms of *samba*. Figure 1 shows that the major harmonic cue is positioned at the very ‘right’ of the cyclic pattern, which corresponds, in standard Western notation of *samba*, to the last note of a 4/4 meter¹¹ divided in 16 semiquavers. In a big part of Western music, the major harmonic change appears one semiquaver later, on the first strong pulse of the isochronous meter. This difference leads to difficulties to correctly hear when occurs the harmonic change (music perception), or to play it at the right place (music production).

A correlated issue concerns the relationship between cyclic Afro-Diasporic patterns and more linear Western conception of music (Guillot, 2004). The listening/performing of a large amount of Afro-Brazilian music — and especially *samba* — shows that a lot of melodies, harmonically speaking, can be analyzed as — what Western music theory calls — an *anacrusis*. An example is shown in Figure 5.

Fig. 5. Melody and harmonic chords of the first bars of the *samba* song ‘Se você jurar’ (Silva 1931) in a 4/4 transcription. (Guillot 2004, 37.)

The melody of Figure 1 is a more ‘extreme’ example, where the melodic tension grows on a larger duration. Guillot (2004) shows that this phenomenon leads to some misinterpretation by

Western musicians. One of the most representatives is given by the adaptation of ‘Festa para um rei negro’ (Rio de Janeiro carnival tune from 1973) where the French arranger broke the relationship between meter and harmony by a 2-beat shifting.

Another very classic ‘misunderstanding’ of Afro-Brazilian music by Western musicians occurs when only an isochronous meter is expected, leading to a ‘false’ meter inference. For example, in *samba*, it is common to hear *samba* shifted by one isochronous pulse, or in the pattern *arrasto* of *maracatu de baque virado*, to take the long anisochronous meter as an isochronous one (Figure 2).

Even if it would finally be taken as granted that such a ‘dynamic polysynchronization’ was impossible, switching among meters is probably a classic operation, for example in *samba de raiz*, where the verses sound more focused on 4-beat isochronous and 3-beat anisochronous meters, and the choruses more on 7-beat anisochronous meter. In order for musicians to adopt the best possible interpretation in this kind a musical style, this switching is an important feature that is worth acquiring during learning process.

A last issue concerning polymeters is linked to the question of polycentrism in dance performance, a topic which would need a dedicated study.

On a didactic plan, what could be done to avoid all these issues? In music education, it seems that Human perception can be a barrier to learning processes. In an intercultural context, this problem becomes critical. It doesn’t vary in function of the kind of institution — music school or obligatory school — but depending on the pedagogical aims. Two cases must be considered.

The first one is the most common. At French school, the more detailed official prescriptions in terms of intercultural music education were published in 2008. They were probably the most advanced in Europe at this time (Meunier 2010). But, despite its modernism, the instructions remain vague and don’t give precise tracks about how to succeed in this mission. While the majority of teachers stay apart from the problem by only making ‘chronological and geographical juxtapositions of the main musical artworks’, a very little part of them tries to teach some Afro-Brazilian pieces of music. Unfortunately, French teachers are not really prepared for intercultural music education. And, in order to avoid a too superficial approach and make a minimum of sense for the student, such a goal strongly implies the partial ‘re-creation’ of the ‘native’ conditions of performance. Without any doubt, this remains a very huge, didactic — and philosophical — problem that shows its limits in a lot of intercultural courses, even in formal institutions.

In the second case, which seems to be rarely set up by the teachers, it could be very valuable to work bases of time perception — without any regard to any specific musical tradition. Indeed, it is known that, in all school disciplines, time is a very important key for the learning process (Suchaut 2008, Tartas 2010). Music, generally speaking, is a time-based art. But musical time organization is potentially different in every culture. Western pulsed music is mostly structured by isochronous meters. Music acculturation starts in the very early childhood (even in mother’s belly) and concerns both pitch domain and time domain (Trehub 2001). Most part of West-European people are not familiar with anisochronous meters, unlike, for example, Albanian or Turkish people (e.g. Goldberg 2012). Following my experience as a musician and

¹¹The most used meter for transcriptions of samba is 2/4, but I assume that, taking account of the 7-beat anisochronous meter (see Figure 1 or blue polygon in Figure 2), using of a 4/4 meter is a more relevant option.

musical director in Afro-Brazilian music, I spent much time to observing that the structuring role of these particular meters is not perceived/understood by most of Western musicians. Indeed, the musical parts in relationship with such anisochronous meters are only taken as rhythms, moreover as syncopated ones, because the reference is grounded to the isochronous meter — which always exists, in any case. Moreover, it was often very difficult to avoid — good — musicians ‘sticking’ on isochronous tactus while playing ‘syncopated’ rhythms, leading to a bad musical result. While reading music, it seems that such Western musicians have 2 barriers to break. The first one is the isochronous tactus. The second one is the barline. It may appear as obvious that a good way to palliate these problems could be the use of orality. Although it works very well with beginners, it is more complicated with advanced musicians because of the visual representations — induced by Western music standard notation — they can build instantly by so listening music. This specific and problematic enculturation could be prevented at School by giving children the opportunity to be immersed in alternate musical time organizations like Afro-Diasporic ones. I put forth the hypothesis that it could help widening their musical mind and allowing them to develop new generic skills.

4. CONCLUSION

In this study which deals with Afro-Brazilian music, concepts of anisochronous meter and polymeter are discussed from two perspectives.

On an analytic side, the discussion of Agawu (2003) criteria and the evaluation of the concept of polycentrism allow to make new statements which strengthen the idea that Afro-Brazilian music is polymetrically structured by the coexistence of explicit/implicit isochronous/anisochronous metric structures, with a relation of ‘collaborative competition’ (Guillot 2016) among them. The possibility to take more than one meter as a reference implies to redefine the duple Kolinsky’s cometricity/contrametricity concept. Such an organization of the musical time could be considered at the same time as a kind of kinetic space of intrinsic metric tension with kinesigenic properties and as an audio space in which the musician can do a weighted, dynamic polysynchronization. Generally speaking, anisochronous meters seem not to be perceived as meters, but as rhythms, by Western musician. Indeed, these rhythms sound syncopated and harder to play than if they were taken as the product of a meter (and its related expectation). Moreover, relationship between meters and main harmonic changes, and especially those linked to a kind of anacrusic organization, often are not understood and lead to misinterpretation.

On a didactic side, several issues are direct consequences of what was described formerly, logically taking into account that in intercultural music education, it is fundamental to take into account the cultural background of the student/pupil. Several characteristics linked to polymetric organizations (harmonic changes, anacrusis, false inference, switching among meters, polycentrism) constitute important barriers for students, but also for school teachers. Keeping a minimum of connection with the endogenous conditions of a given piece of Afro-Brazilian music can lead to a very complicated didactic situation. So, another option is proposed: teaching fundamen-

tals of Afro-Brazilian — and so, probably Afro-Diasporic — music could widen students’ approach to music.

In conclusion, it seems important to recall that developing interculturality in music education remains a philosophical and political goal that requires a real examination of the involved musical organizations. Such an attention requires a crossed approach where (ethno)musicology, cognitive psychology and music didactics work together and interfertilize themselves.

More widely speaking, examining alternate ways to ‘think’ time could allow a more general, more phenomenological, and indeed, more efficient method to teach students (and perhaps, young pupils) about meter and perhaps, time in music.

KEYWORDS

Polymeters, Anisochronous Meters, Afro-Brazilian Music, Analysis, Cognitive Psychology, Didactics.

REFERENCES

- Agawu, V. Kofi, 2003. *Representing African Music: Postcolonial Notes, Queries, Positions*. New York (NY): Routledge.
- Acquista, Andrew, 2009. *Tresillo: A Rhythmic Framework Connecting Differing Rhythmic Styles*. Master diss. Long Beach (CA): Bob Cole Conservatory of Music/California State University.
- Amselle, Jean-Loup. 2001. *Branchements: anthropologie de l’universalité des cultures*. Paris: Champs Flammarion.
- Chemillier, Marc *et al.*, 2014. ‘La contramétricité dans les musiques traditionnelles africaines et son rapport au jazz’, *Anthropologie et sociétés* 38: 105–37.
- Fonseca, E. J. de Macedo, 2002. ‘O toque da campânula: tipologia preliminar das linhas-guia do Candomblé Ketu-Nagô no Rio de Janeiro’, *Cadernos do Colóquio* 5/1: 8–19.
- Goldberg, Daniel, 2012. ‘Playing with Sums: Reconsidering Additive Rhythm in Balkan Music’, paper presented at the *2nd International Conference On Analytical Approaches to World Music (AAWM 2012)*. Vancouver (BC): The University of British Columbia.
- Graeff, Roda Nina, 2014, ‘Fundamentos rítmicos africanos para a pesquisa da música afrobrasileira’, *Revista da ABET* 9.
- Guillot, Gérald, 2011. *Des objets musicaux implicites à leur didactisation formelle exogène: transposition didactique interne du suíngue brasileiro en France*. PhD diss. Paris: Université Paris-Sorbonne.
- , 2015. ‘Transculturation et notion de frontière musicale sous l’angle de l’anthropologie cognitive: diffusion de la microtemporalité afro-diasporique en Occident’, paper presented at the *SFE/BFE joint conference*. Paris: Musée du Quai Branly.
- , 2016. ‘Hypothesis of Polymetric Structures in Afro-Brazilian Music’, paper presented at *4th International Conference On Analytical Approaches to World Music (AAWM 2016)*. New York (NY): The New School.
- Günther, Helmut, 1969. *Grundphänomene und Grundbegriffe des afrikanischen und afro-amerikanischen Tanzes*. Graz: Universal.
- Hasty, Christopher, 1997. *Meter as Rhythm*. Oxford/New York: Oxford University Press.
- Huron, David. 2006. *Sweet Anticipation: Music and the Psychology of Expectation*. Cambridge (MA): The MIT Press.
- Iyer, Vijay. S., 1998. *Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West African and African-American Musics*. PhD diss. Berkeley (CA): University of California.
- Kolinski, Mieczyslaw, 1973. ‘A Cross-Cultural Approach to Metro-Rhythmic Patterns’, *Ethnomusicology* 17: 494–506.
- Krebs, Harald, 1999. *Fantasy Pieces: Metrical Dissonance in the Music of Robert Schumann*. Oxford/New York: Oxford University Press.

- Kubik, Gerhard, 1979. *Angolan Traits in Black Music, Games and Dances of Brazil*. Lisbona: Junta de Investigações Científicas do U.
- , 1999. *Africa and the Blues*. Jackson (MS): University Press of Mississippi.
- Lerdahl, Fred, and Jackendoff, Ray, 1983. *A Generative Theory of Tonal Music*. Cambridge (MA): The MIT Press.
- Locke, David, 1984. 'Africa/Ewe, Mande, Dagbamba, Shona, BaAka', in Jeff Todd Titon (ed.), *Worlds of Music: An Introduction to the Music of the World's Peoples*. Boston (MA): Cengage Learning.
- , 2009. 'Simultaneous Multidimensionality in African Music', *African Music* 8/3: 8–37.
- London, Justin, 2012. *Hearing in Time: Psychological Aspects of Musical Meter*. Oxford/New York: Oxford University Press. (1st ed. 2004.)
- Magill, Jonathan. M., and Pressing, Jeffrey L., 1997. 'Asymmetric Cognitive Clock Structures in West African Rhythms', *Music Perception* 15: 189–221.
- Meunier, Olivier, 2010. 'L'éducation interculturelle en Europe aujourd'hui', paper presented at the symposium *Musiques de tradition orale et éducation interculturelle*. Paris: Cité de la musique.
- Mukuna, Kazadi W., 1979. *Contribuição bantu na música popular brasileira*. São Paulo: Global.
- Naveda, Luiz, and Leman, Mark, 2009. 'A Cross-Modal Heuristic for Periodic Pattern Analysis of Samba Music and Dance', *Journal of New Music Research* 38/3: 255–83.
- N'Ketia, J. H. Kwabena, 1961. *African Music in Ghana*. Accra: Longman.
- Poudrier, Ève, and Repp, Bruno, 2013. 'Can Musicians Track Two Different Beats Simultaneously?', *Music Perception* 30/4: 369–90.
- Pressing, Jeff, 2002. 'Black Atlantic Rhythm: Its Computational and Transcultural Foundations', *Music Perception* 19/3: 285–310.
- Rundall, Jacob D., 2011. *Polymeter: Disambiguation, Classification, and Analytical Techniques*. PhD diss. Urbana-Champaign (IL): University of Illinois.
- Sandroni, Carlos, 1997. *O feitiço decente – Transformações do samba no Rio de Janeiro (1917-1933)*. PhD diss. Brazil: Universidade Federal do Paraná.
- Suchaut, Bruno, 2008. 'Le rôle de l'école maternelle dans les apprentissages et la scolarité des élèves', paper presented at the *Conference for AGEEM 2008*. Bourges.
- Tartas, Valérie, 2010. 'Le développement de notions temporelles par l'enfant', *Développements* 1/4: 17–26.
- Temperley David, 2001. *The Cognition of Basic Musical Structures*. Cambridge (MA): The MIT Press.
- Toussaint, Godfried T., 2002. 'A Mathematical Analysis of African, Brazilian and Cuban Clave Rhythms', in Reza Sarhangi (ed.), *Proceedings of BRIDGES*. Towson (MD): Towson University, 157–68. (<<https://archive.bridgesmathart.org/2002/#gsc.tab=0>>, accessed 25/04/2023.)
- Trehub, Sandra E., 2001. 'Musical Predispositions in Infancy', *Annals of the New York Academy of Sciences* 930: 3–16.
- Waterman Richard, 1952. 'African Influence on the Music of the Americas, Acculturation in the Americas' in Sol Tax (ed.), *Acculturation in the Americas: Proceedings and Selected Papers of the 29th International Congress of Americanists*. Chicago (IL): The University of Chicago Press.
- Welsh-Asante, Kariam, 2001. 'Commonalities in African Dance: An Aesthetic Foundation', in Ann Dills and Ann Cooper-Albrigh (eds.), *Moving History/Dancing Cultures: A Dance History Reader*. Middletown (CT): Wesleyan University Press, 144–51.