

A Short Cross-Analysis of Brazilian Capoeira and Thai Sarama Music and Shared Ritual Practices

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South America's most famous forms of martial arts are, arguably, Brazilian jiu-jitsu (adapted from traditional Japanese Judo by a Brazilian family in the 1920s), and *capoeira*, an African descendant form that encompasses dance, music, and (mostly) non-contact athletic acrobatics. Both forms can be natively referred to as *jogo*—game—with the participants being players (*jogadores*). Capoeira *jogadores* (or *capoeiristas*) are distinct from jiu-jitsu fighters in that their martial art also requires cross-training in musical performance and an accompanying dance. This allows the analyst to acquire a unique insight into the musical component of the art when discussing performance practice in the context of ritual for capoeiristas.

In Thailand, an entirely different full-contact martial art using striking and clinching, known as *Muay Thai* (or “Thai Boxing”), derived from its predecessor, *Muay Boran* (“ancient boxing”), which was a form of open-handed combat popular during the eighteenth and early nineteenth centuries. Both capoeira and Muay Thai use music as part of a formalized ritual before and during physical competition as part of the “martial” practice (non-contact, semi-contact sparring, or full contact competitive events). Muay Thai matches are traditionally accompanied by their own form of music, *sarama*, as part of the pre-fight ritual (*ram muay*, or *phleng/pleng muay*),¹ as well as providing the musical accompaniment in direct response to the fighters in the ring. The ritualistic nature of the *sarama* performance also shares some striking musical features with capoeira, despite having no obvious shared ancestry.²

Though these martial arts are radically different in style and the role of their practitioners (from players to fighters), the similarities in music and ritual are striking. An acoustic analysis of musical examples from both arts finds that similarities include timbral, rhythmic, and melodic content, further suggesting unexpected commonality in the musical manifestations that have been discretely developed to accompany these popular “arts of war.” Thus, the scope of this paper is necessarily broad, and therefore it is important to state that the focus is not to belittle the study of either discipline—or to present the level of detailed analysis which a discrete treatment of either might be able to offer—but rather to see what fresh perspective might be obtained by including a comparison of the two musics. This article therefore focuses firstly on the common points between the two martial arts, then on the differences, before finally offering a reflection on these comparisons.

1. *Sarama* is unrelated to the character of the “elephant runner” from Hindu mythology known as *sarama* in Sanskrit, to whom the Thai refer as *Carapai*.

2. Interestingly, the first commercial gym to offer Muay Thai outside of Thailand was opened in Brazil in the late 1970s, though both Thai and Brazilian martial arts styles have since grown enormously in global popularity and availability, having dominated popular mixed martial arts competitions in Europe and the USA since the early 1990s.

COMMONALITIES IN BOTH ARTS AND MUSICS

There is a relationship between both martial arts in their commitment to physicality. At first glance, Muay Thai, the Thai art of boxing which includes clinching, kicking, and using the elbows and knees to damage an opponent in the ring, is not necessarily understood by the Western eye:

Young muay thai oblates, their rituals lacking grace, atonal music guiding their dumb dance, slap sole against the sacred head unseating spirit, sense and will to strive, the blessing bruise delivered with the knee then with the fist while gamblers sign the universal gestures of the trading pits amidst the building roar, fingering, hawking snot and smoking hard, making market, mocking merit, divided by the action in the ring the card and unmade partners on an upper bench. (Sherry Jr. 1997, 93)

In the above poem dedicated to Bangkok, Sherry Jr. makes his feelings clear about the music of Muay Thai, yet also indicates an understanding of the link between the music and the movements of the fighters in the ring, though the music is for the most part responding to the fighters, rather than the other way around. However, more than this, there is a somewhat symbiotic relationship between the two which is not immediately obvious to the Western gaze:

The music ties in, as there is an almost visceral relationship between musician and boxer; when the boxer fights harder, the music speeds up and becomes more elaborate; likewise, when the fighter becomes tired or weak, the music relaxes in order to allow the boxers to recuperate. (Forrestal 2013, 4)

Capoeira, like Muay Thai, is focused on striking movements (and in particular, kicking). The core movement of capoeira is the *ginga*, a movement derived from African dance, which literally means to “rock back and forth.” The roots of the dance form derive from the practice of slaves who used the dance ritual to hide the true martial nature of the forms. Capoeira is fundamentally based around motor responses to rhythms, usually from the Brazilian *berimbau*, a single stringed percussion instrument with a gourd at its base, played in three ranges, *gunga*, *médio*, and *viola* (low, medium, and high).

Rite and Ritual in Both Arts and Musics

In the West, we are often only exposed to the physical aspects of martial arts (in films, on television, or even by local practitioners). This seems to be a distinct disservice in the case of the two arts presented here, which have musical, spiritual, and dramatic elements that transcend the physical and combative elements of the practice. Both arts utilize dance as a form of ritual and expression, the ram muay in the pleng (musical accompaniment) and throughout the jogo in capoeira. Similarly, both use ritual to mark respect for the teacher and to God (or gods) at the beginning of a match, in the form of the *wai khru* or at the *pé-do-berimbau*. Thus we can see that in both forms, spirituality is of central importance, and that

specialized songs give the fighters a way to balance this in their pre-fight ritual; the *ladainha* solo in capoeira (an opening litany sung by the leader, typically the first berimbau), and the *sarama* in the pleng muay.

Another similarity between both cultures is the continuous use of music throughout the fight, though the *choa sen* (which is the second song of the pleng muay, played after the *sarama* once the fight begins) is different from the *chula*, *corrido*, and *quadra* in that the *choa sen* is mainly in response to the physical action, whilst the songs of capoeira dictate the physical actions (that said, as noted above, there is a symbiotic relationship between the players, or fighters, and the musicians involved). Both the *sarama* and the *choa sen* are typically performed by the same four-piece ensemble comprising players on two types of skinned percussion, the *khong*, and *khlong khaek* (a drum with two striking heads), a *ching* finger cymbal, which is common in Thai theatre and dance, and a reed pipe similar to a Western oboe known as the *pii chawaa*. Figure 1 shows the ensemble in performance.

Traditional dress for fighters includes *prajiat* armbands brightly colored to designate rank and flair, and a *mongkhon* headband, which is interwoven with a Buddhist mantra and given to the fighter after their trainer has recognized a certain level of experience (the *mongkhon* is unique to Muay Thai) (Prayukvong and Junlakan 2001, 88). Both items have



Figure 1. Four piece ensemble performing the *choa sen*. The *khong* and *khlong khaek* are positioned at the front of the ensemble with the *ching* and *pii chawaa* at the back (Pasch 1996).

some spiritual significance and are worn for good luck and confidence. Much like the Western superstition of “walking under a ladder” they should not be stepped on, dropped, or handled by others lest they lose their metaphysical powers.

The ram muay forms the first part of the ritual, and takes place before the fight accompanied by the sarama. Ram means dance, and thus ram muay refers to a “boxing dance.” The purpose of the ram muay is for the fighter to show respect to his/her training lineage and his/her coach, as well as to God, Buddha, and fellow humans (hoping for an honorable exchange with his/her opponent). Thus, firstly the fighter performs a wai khru, or a “prayer to teacher” (Pidokrajit 2012). *Wai* is a traditional Thai greeting (and farewell) that a visitor might carry out upon entry into a house, and is similar in form to the Indian *namasté*. The position of the hands and the depth of the bow indicate the level of respect in each wai khru. The fighter circles the ring and then places his/her hands together as though praying, whilst bowing the head. This action is carried out three times, representing the trinity of prayer (God, Buddha, humans). At one time this might have included symbolically asking the King (for whom the fight was performed) to forgive the violence that would soon follow. The fighter will then move on to the second portion of the ritual, the boxing dance itself. This consists of a more personal demonstration of the fighter’s individual style and might include a range of kicks, punches, elbows, and knees. The dance is for the benefit of the audience and is often used to show the fighter’s own lineage, including hints in his/her movements as to his/her gym, his/her background, and even his/her specific trainer. Thus the boxing dance allows the fighters to express themselves with the accompaniment of the sarama before the fight begins. The sarama has a light texture and a free rhythm, performed at a slow tempo with an emphasis on reverence and the sacred.

The choa sen accompanies the start of the fight and the fight itself. The tempo of the music is increased and more syncopated rhythms are chosen as the musicians improvise in direct response to the fight itself, reflecting the actions of the fighters—moments of intense activity in the ring cause frenetic, dense rhythmic sequences, though they do not stray from duple meter (Moore 1969). The choa sen continues in this manner with each bout having its own distinct musical flavor. Figures 2 to 5 illustrate the progression of the choa sen that will be analyzed in greater detail in the following section of the paper.

In capoeira angola, a traditional style, the percussionists (called the *bateria*) position themselves at the border of the *roda* (“circle” of players, wherein the game takes place). The ritual usually begins with an instrumental introduction followed by a *ladainha*, sung solo by the *mestre* (master) of the group, or the most experienced player if no *mestre* is present. This is less common in capoeira contemporanea groups, which tend to follow more eclectic protocols. The *ladainha* follows a narrative and translates to a litany in English. Once this is complete, capoeiristas then engage in call-and-response singing with the lead singer known as *louvação*, in which, much like the Thai wai khru, the jogadores will thank God and their own *mestre* before they begin their physical display (Assunção 2004).

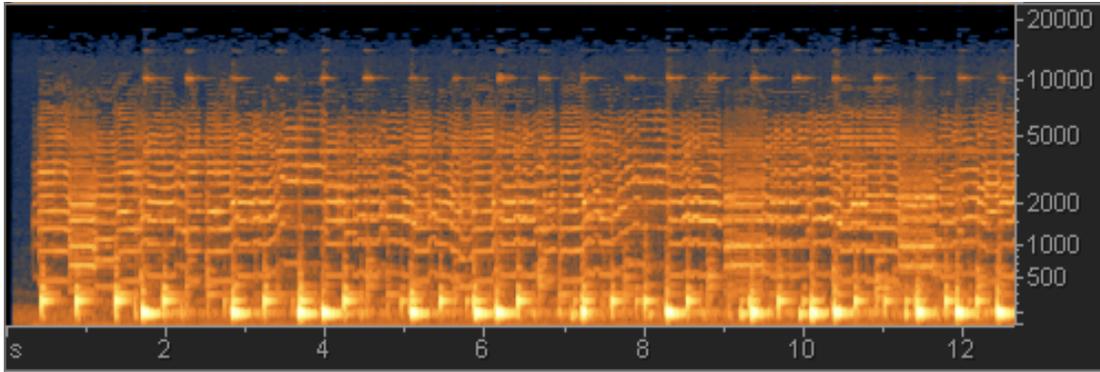


Figure 2. A spectrogram analysis of the first movement of the choa sen, taken from a field recording.³ This section accompanies the beginning of the fight. [Video Example 1](#) illustrates the progression of this example in its entirety.

Once both jogadores have entered the roda, the game begins, in direct response to the bateria. Unwanted lulls in the sound-space will result in breaks in the physical interaction and perhaps even a breakdown of the entire sequence, highlighting the importance of music and dance (Lewis 1995). As well as the ladainha and the louvação, three common song arrangements exist, prioritizing verse duration, or chorus response, chula, corrido, and quadra (though the exact proportions in each form may also vary according to the mestre).

Hierarchy and Place of Instruments

The first movement of the choa sen, shown in Figure 2, is characterized by a steady exchange between the khong and khlong khaek, which has a characteristic interplay which falls on or directly between the notes of the pulse dictated by the ching finger cymbals. These instruments can be seen distinctly in the spectrogram (the ching has high spectral energy at around 10 kHz, whilst the khong has the highest spectral energy concentrated at G2 at around 100 Hz, and the khlong khaek a note approximately at B3 or 250 Hz). The nature of the ensemble thus becomes clear in an acoustic sense—the deliberate and occasionally syncopated tuned percussion carries the low end of the frequency range (between 100 and 110 Hz, with associated harmonics at 220 Hz depending on the type of strike used on the drum), the ching providing a strong metronome in the high frequencies, whilst the mid frequencies are occupied by the warbling and wanderings of the pii chawaa reed, which gives the choa sen its melodic content. The pii chawaa is distinct in each of the movements of the choa sen. In this early stage, there is little variation or use of vibrato, but there are characteristic rasping sections which last for a full beat (as seen at approximately 9 and 11 seconds in Figure 2). These emphasize the movements of the fighters.

3. These recordings are of the in-house ensemble captured from inter-club competitions at Tiger Muay Thai & MMA Training Camp, 7/35 Moo 5, Soi Ta-iad, Ao Chalong, Muang, Phuket, Thailand, 83130 from June 11 to 15, 2012.

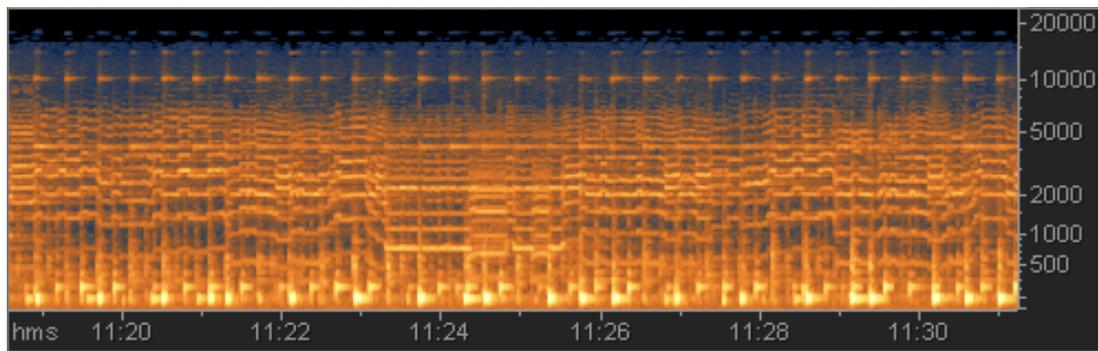


Figure 3. Spectrogram of the third movement of the choa sen, approximately in the mid-late stages of the fight. [Video Example 2](#) illustrates the progression of this example in its entirety.

In the later stages of the fight, various musical and acoustic changes can be seen in the choa sen as shown in Figure 3. Here, the tempo has now increased rapidly (to nearly double the speed of the first movement), and the ching is played in a more pronounced fashion—several higher spectral components above the 10 kHz fundamental can be seen in the spectrogram, suggesting a brighter timbre with more spectral prominence in the upper range. The reader might infer that this is in order to accent the downbeat, but when the ching is performed in this manner it is contrary to this, in order to accent the upbeat. With the exception of the upper ching partials, the spectral centroid (a weighted mean of the spectral energy) is predominantly across the lower middle frequency range. Spectral centroid is perceptually correlated with perceived brightness of a signal, suggesting a useful perceptual quantifier of the timbral characteristics of the ensemble. The use of rasping notes in the pii chawaa has been greatly curtailed, with longer periods of sustain and a new tremolo-like effect introduced. The pii chawaa is now more finely synchronized with the percussion instruments, and the syncopated rhythms of the tuned percussion are almost perfectly matched by the reed. The khong and khlong khaek themselves play a much denser rhythm, with much of the pattern comprising a call-and-response routine.

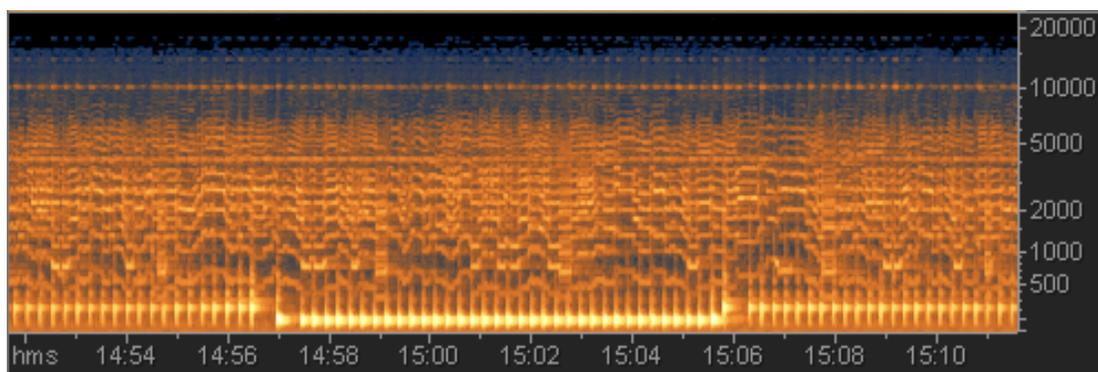


Figure 4. Spectrogram of the final movement of the choa sen which accompanies the last round. [Video Example 3](#) illustrates the progression of this example in its entirety.

These video files are taken from live performance in the field, and are broadly representative of the form discussed here. Given the improvisatory nature of both arts, an almost infinite amount of source material might be captured in this manner—though the listeners are advised that due to the restrictions of field recording technology when these recordings were made, the recording quality is not high definition or that which would be achieved by conducting a studio recording of the same performances.

The final movement of the *choa sen*, as shown in Figure 4, is even more distinct from the increasing intensity of the previous rounds—this movement will accompany the end of the fight. The atmosphere of the final movement is extremely intense and is largely dominated by the battery of percussion. The fighters understand these cues, and also the need to work hard and increase the intensity in the final round, giving the music a sense of symbiosis in the interplay between the action in the ring and the musical accompaniment. The strong upper harmonics of the *ching* are attenuated (though they remain somewhat present), indicating that the *ching* again plays downbeats as well as upbeats, and we see the previous progress replaced with an extremely rapid vamping motif. The tuned percussion instruments now take turns to follow the vamping *ching*, never overlapping with one another. Each transition is marked by a pause in the drums' otherwise constant pulse. The transition points are followed by a sustained note on the *pii chawaa*. Again, as with the previous movement, the rasping notes of the earlier stages of the fight are avoided by the *pii chawaa*.

The *berimbau* is a Brazilian musical bow which can create three distinct sounds, that of the open string, a buzzing created by muting the string lightly with a *dobrão* (a coin) or a stone, and a high sound which is created by forcefully stopping the string to create a tone with a different timbre from that of the open string alone, and up to two semitones higher than the open string note (Galm 2010). The string itself can be tuned by tightening or loosening the pressure. The *berimbau* creates rhythmic patterns in duples, triplets, and quadruples by combining the buzz with the low or high tone.

Depending on the chosen *toque* or *berimbau* groove, the first *berimbau* (*gunga*) may play several kinds of patterns, some more syncopated than others. In the example shown in Figure 5, *gunga* provides the pulse, playing a static bass line of sorts. The *gunga* is often played by one of the more experienced players and as such has license to improvise and to cue the *jogadores*. *Gunga* also has a particular spiritual and ritualistic significance in that its sound is used to summon *jogadores* to the *pé-do-berimbau* (foot of the *berimbau*) before they are allowed to enter the *roda*. The *médio*, perhaps tuned to the high note of the *gunga*, will play a complementary pattern, creating a dialogue between the two which is known as the *toque*. The *médio* is allowed a degree of improvisational freedom, which is further expanded upon by the third *berimbau*, the *viola* or *violinha* (the suffix *-inha* denoting “baby” or “little viola”) which is often tuned to the high note of the *médio* and performs almost entirely improvised

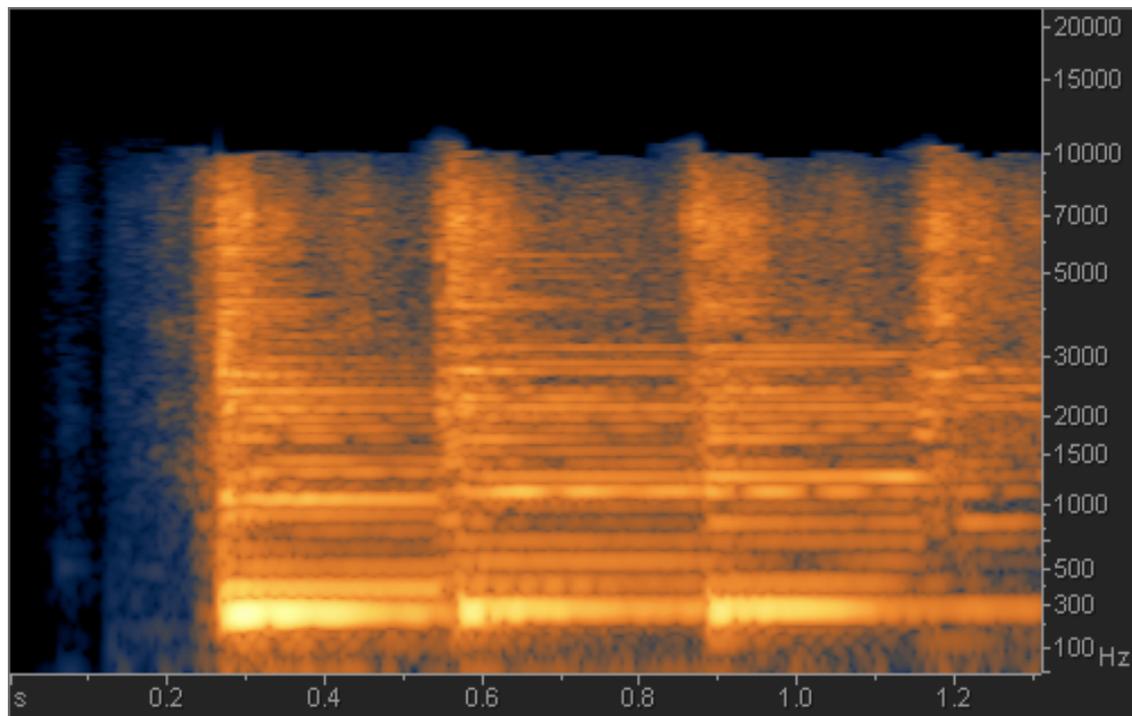


Figure 5. A spectrogram of the gunga berimbau at the beginning of a roda. [Video Example 4](#) illustrates the progression of this example in its entirety.

syncopated material, in contrast to the toque of the gunga and the médio.⁴ Relative tunings are not strictly adhered to, however—the mestre may decide to tune to some other variation (triads and fourths are common).

In addition to the two distinct notes and the buzzing sounds described above, berimbaus can generate a wah-wah effect by muting the gourd against the body of the player. The spectrogram of the gunga shows strong partials at around 264 and 281 Hz, with fundamental frequencies at 132 and 141 Hz respectively (as with the sarama, Western tuning is not relevant, but in concert pitch this approximately resembles an alteration between C₃ and C₃♯). On close examination the upper harmonic content of the second note shows a large number of string resonances up to around 6 kHz (Macin and Smith 2013). The gunga is then followed by the other berimbaus, which ape the rhythm at higher notes, as shown in Figure 6.

4. The interested reader is referred to Capoeira (2002) for transcriptions of berimbau toques and songs.

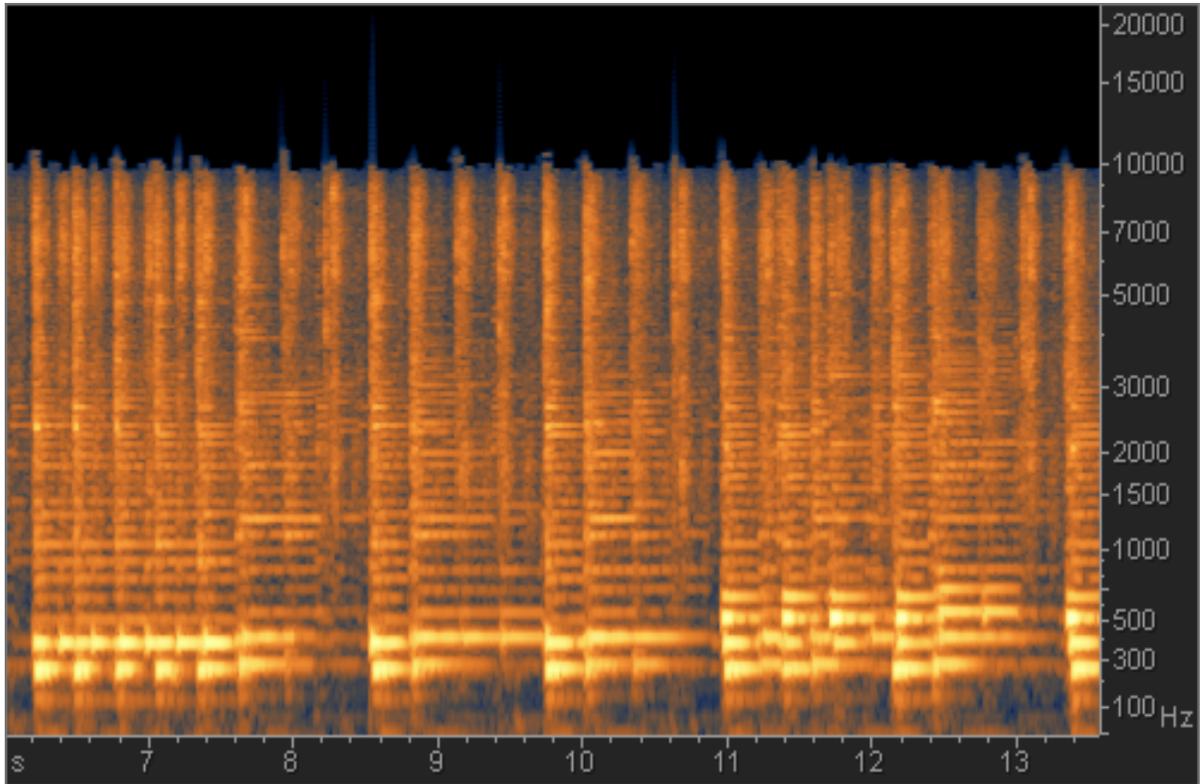


Figure 6. The médio and viola—second and third berimbau—join in with the gunga (the third berimbau enters at 11 seconds).⁵ [Video Example 4](#) illustrates the progression of this example in its entirety.

In this example, the *pandeiros*, a tambourine-like skinned percussion, improvise around the bateria, in a similar fashion to the khong and khlong khaek of the Thai sarama. The acoustic space, shown in Figure 6, now has a very similar spectral range to that of the Thai choa sen, with the *reco-reco* (a scraped percussion instrument) and pandeiro together carving out a strong, static meter as the ching did in the choa sen, whilst the tuned percussion gives a low rhythmic interplay, leaving a gap in the middle frequencies for the voice to enter, as it does towards the end of Figure 7 (approximately 22.5 seconds into the roda).

The solo voice of the mestre is echoed in a call-and-response by the chorus (though there are a variety of song structures, this is the most common, a corrido where the solo is matched by an equal length of chorus response). The overall spectrogram is significantly louder in the upper harmonics when compared with that of the choa sen. However, the remaining acoustic similarity to the choa sen, in terms of the use of low frequency and of overall instrumentation—a “pulse-giver” in the high frequency area, syncopated drums in the low-frequencies, regular rhythmic pulsation—are quite striking.

5. These recordings, of Mestre Rodrigo and Acer Capoeira ensemble, were captured during a capoeira percussion workshop, Plymouth University, Devon, UK, September 21, 2013.

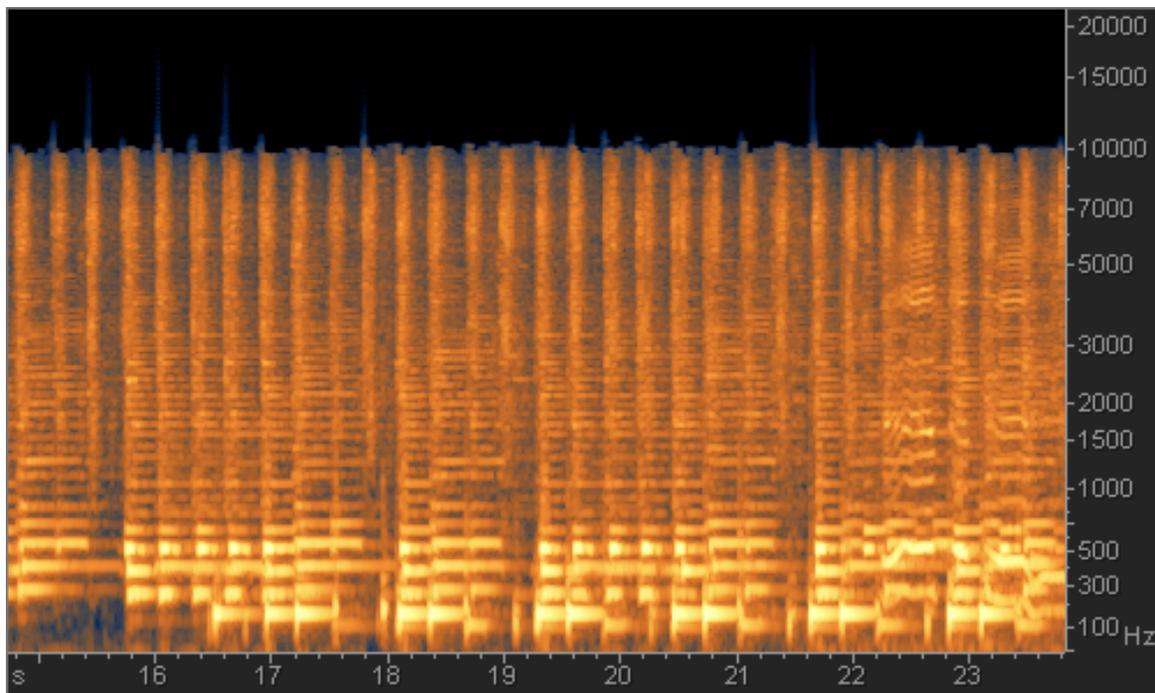


Figure 7. Spectrogram of the voice entering the roda—seen by the vibrato and new harmonics between 1 and 6 kHz at approximately 22.5 seconds. [Video Example 4](#) illustrates the progression of this example in its entirety.

DIFFERENCES BETWEEN BOTH ARTS

Clearly any analysis of the instrumentation and musical features of these arts requires some consideration of the ecological and ethnographic backgrounds in which they take place.

Religious and Spiritual Backgrounds to the Rite

Thailand is mainly Buddhist, and although there is no official religion, the King, and 94% are Theravadin, with small pockets of other religions, such as Islam in the Thai Malay population in the southern regions of the country (according to the most recent census which was conducted in 2000). The ram muay dance also reflects spiritual influences from folklore and indigenous Tai, which is characterized by ancestor worship and honoring local gods. This confluence of influences is reflected by fighters in their dance, and beyond, as it can even be seen in the decorations of their shorts. In Western boxing, it would not be unusual for both fighters to have different colored shorts, perhaps with a name or reference to some sponsor. In Muay Thai, the color of the shorts and decoration has a social significance which is partly spiritually derived. Pink shorts (which can seem quite incongruous to the Western eye, as pink often carries connotations of femininity) are in fact signifiers of Mangala, the Hindu god of war, and thus we see another contributory spirituality. Mangala descends from Mars, and rides a ram. Yellow shorts are also popular, associated with the King, Bhumibol Adulyadej, who is (in keeping with the mixed religious confluence of ancestor worship), considered a god, or rather

a reincarnation of a Hindu god (Kiti'āsā 2003). These Hindu associations are also seen in the animal insignia which occasionally adorn the fighters shorts: tigers, elephants, and snakes are all common. Thus, Buddhism alone does not adequately encompass the spiritual traditions that the fighters, music, and dance all encapsulate.

Brazil, by sharp contrast, is mostly Roman Catholic—in a census just 30 years ago, the country was almost entirely Catholic, though it now has a growing Protestant population. Capoeira, however, is forged in a combination of Catholicism and the imported religious traditions of the African slave trade, with indigenous American beliefs, as well as its own set of rites concerned with mediumship to achieve communication with deities and the spirits of ancestors. This hybrid of Catholic and African practices is referred to as *Candomblé* in Portuguese (Merrell 2005). Capoeira contains references to Catholic saints, which are veiled references to Candomblé *orixás*, deities from the traditional African religions whom the slaves practicing capoeira wished to continue to worship without angering the (mostly Catholic) slave traders from Portugal.

The lyrics in Figure 8 give praise to God, Jesus, and Saint Barbara, yet the Catholic names are substitutes—*Xangô*, for example, refers to a Yoruba god of thunder and justice, *Oxalá* to “white deity,” a deity reflecting purity and the light of consciousness. Thus, the rites and spiritual practices involved in capoeira have roots in spirituality and ancestry more than any specific religious connotations which might seem apparent at first glance. For a more detailed treatment of the integral nature of the spirituality involved, the interested reader is referred to Larrain (2005) and Merrell (2005).

<i>Quando eu chego no terreiro</i>	As soon as I get to the yard
<i>Trato logo de louvar</i>	I will give praise straight away
<i>Louvo a Deus primeiramente</i>	First, I give praise to God
<i>Louvo meu pai Oxalá</i>	I praise my father Oxalá
<i>Também louvo o pai Xangô</i>	I also praise my father Xangô
<i>E a Rainha do mar</i>	And also to the Queen of the sea (Iemanjá)
<i>Peço licença Deus de Angola</i>	I ask to Angola's god for
<i>Me dê o salão prá eu vadiar</i>	Freedom to play (capoeira)

Figure 8. Popular capoeira opening song “*Quando eu chego no terreiro*” (as listed on capoeiramusic.net – the lyrics can be interpreted as a metaphor for freedom from slavery, or literally in the singers’ praying for time to play capoeira freely).

Venue and Status of the Performers

Unlike Muay Thai, which is performed in a ring, capoeira is played in a *roda* (which also means ring in Portuguese, but in the case of capoeira is a circle or “round,” formed by the participants themselves). It cannot be played without the musical accompaniment of the ensemble, as shown in Figure 9.

Additionally, unlike Muay Thai, capoeira *jogadores* are expected to become musicians (both singing and performing in the percussion ensemble)—a failure to do so is considered a lack of development (*capenga*, which means crippled or hobbled) by other *jogadores* and their *mestres* (Downey 2002). This is another telling difference between the capoeirista and the Thai boxer—in one they are players, in the other they are fighters.



Figure 9. A capoeira ensemble performing in Cornwall, UK. Note the trio of berimbau, forming the *bateria*, on the right.

Differences in Instrumentation and Musical Form

Although there are clear similarities in the percussive nature of the ensembles, the use of narrative and call-and-response singing in capoeira is a marked distinction from instrumentation of the *choa sen*. The frequency range covered by the voices, as revealed in the acoustic analysis presented above, is in fact markedly similar to that occupied by the *pii chawaa* in the *sarama*.

Capoeira music is heterophonic in the performance of the *berimbau* (which is central to the instrumental and structural features of the music), with several stratified levels of musical expression occurring simultaneously (the call-and-response of the singers, the *berimbau* toques, and the percussion and pulse of the auxiliary percussion). This is in contrast to the music of the *wong muay* ensemble, which features one melodic instrument, two percussive instruments playing *hocket*-like rhythms, and a timekeeper. The percussion is tuned, however the pitches are not specific (so long as there is one lower-pitched and one higher-pitched drum). This distinction in pitch can be interpreted as a heterophonic practice, however I am under the impression that it functions to create variance and dynamic contrast.

CONCLUSIONS

Capoeira and Muay Thai have gained popularity outside of their homelands of Brazil and Thailand, respectively, but the spiritual and ritual aspects involved in the music and dance accompanying these arts are often neglected by the Western eye. The sound world accompanying both martial arts has distinct melodic, rhythmic, and acoustic similarities, which give context to the cultural evolution of the music and dance that is intrinsic to these arts for their native practitioners. The selection of instruments, and their corresponding acoustic patterns, seems to be designed in order to provide relatively small ensembles with a full range of frequencies. In capoeira, the *berimbau* may provide rhythm and syncopation, or set the pulse, depending on the *toque*, whilst the accompanying percussion sets the pulse (in the traditional capoeira *angola*, the *bateria* will be completed by *pandeiros*, *atabaque*, *reco-reco* and the *agogô* bell). In Thai *sarama*, the low tuned percussion provides rhythm and syncopation but is never used to set the pulse—contrary to the use of, for example, kick drums in Western popular music. Instead, the pulse is set by the small percussion, usually the *ching* cymbals, which share some acoustic range and purpose with the high percussion in the *bateria*.

This paper has briefly compared the acoustic features and ritualized practice of two martial arts and their accompanying musics, but there are many commonalities in other martial arts from around the globe. Malaysian *silat*, for example, is a martial art which is a blend of dance and music accompanied by reed instruments along with tuned percussion and gongs (Maryono 1998). Therefore much further work remains in both the specific music of these arts and in the traditional music accompanying traditional Japanese, Malay, and Indochinese martial arts.

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