

Analytical Approaches to World Music Conference 2018  
Full Abstracts (rev. 11 May)

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# The Elasticity of Meter and Temporality in Performing Iranian Classical Music

## Introduction

This paper studies the elasticity of meter and temporality as a prominent aspect of Iranian traditional music. Often referred to as “non-metronomic” by local musicians, the rhythmic-metric instability and shifting temporal frames exist not only in the *radīf* repertoire of Iranian classical music, but also in everyday practice of various *gūsheh-hā*—short pieces of *radīf*—with ‘free’ and ‘stretchable’ metric structure. While sounding as ‘non-measurable’ to some non-native listeners, this feature is expected as a regular element of variety in aesthetics of Iranian music performance. By analyzing the rhythmic structure of *radīf* as a source of musical creation and focusing on local aspects of performative interpretation of musical time, I suggest the correlation of three factors as lingual, compositional, and performative/individual characteristics, defining the elasticity of time in Iranian music performance. I will demonstrate a wider and more classified image of the inner-relationship between the local perception of time namely lingual forces and metric elasticity including the flexible rhythmic relativity in Iranian music.

## Analysis

### I. Lingual Characteristics

Vocal-centrality, a significant feature of Iranian classical music, is rooted in close integration with Persian poetry. The rhythmic system of Persian poetry as of Greek, Arabic, and Sanskrit is ‘quantitative’ in which the number of syllables, their duration, and order of appearance play the key role in distinction of agogic accents and rhythmic structure of music. Accordingly, the metric diversity based on long and short syllables and the time interval between them form various cyclic patterns that build the musical *adwār* (rhythmic cycles). Within the repeating course of these cycles, as I discuss, the contrast and exchange of accentual energy formed by the performers’ individual narration between the vocal or instrumental parts, the instrumental responses to the vocal parts, and the ending rests of the cycles add to the rhythmic elasticity of performance.

## II. Compositional Characteristics

Persian *radīf*, the contemporary repertoire of Iranian classical music, gives the musician a set of live cells to implant a body of composition or improvisation. *Radīf* is a collection of many *gūsheh-hā*, classified in a chronological order in twelve *dastgāh-hā* (modes). The rhythmic structure of *gūsheh-hā* classified as “fixed-meter, free-meter, and stretchable/elastic-meter” (Azadehfar 2011), gives the performer or improvisor models of rhythmic interpretation based on appreciation of *radīf*. Although some *gūsheh-hā* are identified with specific types of rhythmic structure, the system of *radīf* is quite flexible in terms of creativity and interpretive variations of tempo and rhythm. As my example (Figure 1.) shows, the stretchable-metered *gūsheh Chāhār-bāgh* from *radīf* provides an organic compositional ground for the composer to create metric-rhythmic variations and new interpretations (Figure 2.) which is intensified by the call-and-response between the four-beat vocal section contrasting the three-beat instrumental part (Audio [link](#)). Additionally, I suggest that applying ‘ornamentations’ namely *tahrīr* (melismatic embellishment) based on poetics of Persian poetry, as well as the flexibility of tempo in applying the ‘repetition’ and ‘ending’ of phrases, act as composer’s/improvisor’s tools to compose/create diverse or variable musical time-frames.

## III. Performative/individual Characteristics

In a broader context, the lingual and compositional factors are brought into performative function by performer’s individual sense of aesthetics and interpretation. Scarcely directed by the music notation, the performer’s cognitive and expressive ability to interpret ‘delays’—a performative quality close to groove or tempo rubato—is dependent on the experience gained through years of *radīf* training and the individual’s talent. Moreover, I suggest that various interpretations of the ‘accents’—whether structural, phenomenal, or metrical—have their roots not only in the cultural context, but also in performer’s effort to intensify the contrast between the phrases, emphasizing on the grouping, breaking the regularity of the piece, and cultivating an individualized musical narrative.

## Conclusion

Although not determined precisely within the notation, the elasticity of rhythmic patterns, meter, and tempo is a distinct, yet common aspect of Iranian music performance. This aesthetic quality is developed through technical and human aspects of musical culture which I analyze in three categories: 1) lingual characteristics and the integration of classical music with Persian poetry and

its ‘quantitative’ structure; 2) compositional characteristics of the diverse metric frames of *gūsheh-hā* as fixed, free, and stretchable, and their enactment as structural elements of composition and improvisation; and 3) individual/performative characteristics, regarding the performer’s individual interpretation and emotional representation of time and rhythmic fluidity while performing. Going beyond the frames of “global rhythm” (Hijleh 2012), this study focuses on theory and human practice of local rhythmic frameworks and the act of individual narratives within Iranian musical culture.

چهارباغ  
چشمو بچهره زرد من  
نظری ز راه خدا کنی  
که اگر کنی بجز در من  
تو جان کشیده در من  
کوزنی بر تیسرم در من

1) Chāhār-bāgh from Saba's radīf of santūr (2000, 66)

Cycle of poetry	Chi sha vad	bi chih	ri yi zar	dī man	Na za rī	zi rā	hī va fā	ku nī
Pattern of Shorts & Longs	U U -	U -	U U -	U -	U U -	U -	U U -	U -

چشمو بچهره زرد من  
نظری ز راه خدا کنی  
که اگر کنی بجز در من  
تو جان کشیده در من  
کوزنی بر تیسرم در من

2) Chāhār-bāgh from Saba's radīf of santūr, modeled by Azadehfar (2011, 202)

Figure 1



3) Instrumental version of Chāhār-bāgh from Pāyvar's elementary radīf of santur (1996, 31)

Figure 2

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## **Makampedia: Unveiling the locally rhythmical and metric character of *free-rhythm* Taksim performances with the use of musical analysis**

The current study examines the rhythmical and metric aspects of phrases organization in the classical form of Ottoman *Taksim* performances. Taksim, in the context of Ottoman music, is mainly used either as a prologue, an epilogue of a composed piece or as a bridge between two compositions which are composed on the same or on different *makams* (modes). It is considered to be a functional pre-structured improvisation following the *seyir*, the pathway of a given makam; a non-metrical, flowing rhythm performance that its rhythm develops without the underlying template of a meter or continuous organized pulsation.

Currently taksim phenomenon is being taught, discussed and analyzed by musicians with a focus on melody and the use of concepts of melodic development and melodic gravity. Terms such as melodic attraction, direction and hierarchy are implemented to formulate the context of melodic development and utilise it in traditional and academic educational environments. This form of performance is taking place without the existence or suggestion of any underlying pulse from another instrument and is considered and treated, until today, as *time-less* or *rhythm-less* (lacking pulse) and *meter-less* or *free-metered* (lacking metric organization). Thus, it is a common practice to transcribe and notate taksim performances use of note values and the subject of rhythmical presence and its portraying in taksim performances is a subject that has been seldom discussed. Recent computational musical analysis investigates the relevance of rhythmical presence in Taksim. Our research contributes to this line of inquiry by utilizing manual transcription and analysis of performances from masters of the Taksim field. Our analysis revealed clear rhythmical patterns and metric organization of structures in Taksims. These structures were decoded and modeled to be utilized as improvisational strategies. With the use of basic music theory, the strategies were transformed into practical examples and further used in introductory and advanced courses of Taksim training at the Turkish department of Codarts, University for the Arts, Rotterdam. The transcription and analysis process that will be presented in the conference formed a protocol which is in use by a group of performers and researchers. The common protocol is open and will allow maximum usability, accessibility and interaction not only to its current users and contributors but to future ones as well, aiming to the expansion of the didactic and research possibilities in the field of modal improvisation, in a collaborative effort. The findings of the analyses are organized and presented in various layers of annotations (structural, technical, stylistic, melodic, rhythmic layers e.t.c.), synced with the audio of the transcribed material and registered on a digital score with the use of specialized software (<https://goo.gl/yvDt5w>). Furthermore, the melodic (pitch) curve of the improvisation is generated, projected on a staff and synced with the original audio, providing an additional visual representation of

elements such as ornamentation and dynamics in a transparent manner, a significant addition to the representation of such a melismatic genre on a static score (<https://goo.gl/zd3e6m>). All the analyzed material is catalogued and becomes accessible through a database. That will permit musicians, researchers, theoreticians and musicologists the possibility to use its content and insights for in-depth, large scale observations and analytical procedures that can shed light into the correlations of seemingly disconnected elements. The aim of the Makampedia database, is to gather, register and analyze a large part of the recorded performances of masters of the Taksim filed as well as their use of metaphoric language during lessons and interviews. The combination of those two aspects will serve various purposes; It will allow us to juxtapose the descriptions of an inconsistent theory with praxis, it will maintain the wealth of an endangered music genre and it will create educational possibilities by presenting the extended universe of an idiosyncratic and idiomatic genre.

This study widens the perception of musical phrasing and melodic flow, bridges the gap between non-rhythmic and metric improvisational strategies and provides tools for taksim music education and performance.

The outcome of the research has been put into practice and is under evaluation in various modules of the Turkish Music curriculum at Codarts, University for the Arts, Rotterdam. By expanding the group and collaborating with more musicians and researchers we aspire to contribute to the discourse on the inconsistency of praxis and theory in the Makam field and highlight the wealth of this genre as a consequence of its musical diversity.

The format of the presentation will be lecture/recital where live music performance will be used to support the research.

On the link below you can find snapshots from the procedures described and two videos with examples of the outcome; one taksim improvisation by Ercument Batanay and one by Cinuçen Tanrıkorur

[goo.gl/2N2VQY](https://goo.gl/2N2VQY)

## **Theory and Performance Practice in South Asia: Have Changing Ideas about Meter Influenced the Way Rhythms are Played?**

Historiographies of music analysis have often emphasized how theories, both descriptive and regulative, have influenced subsequent new compositional techniques. However, less attention has been paid to the ways in which ideas about musical syntax have influenced the performance practice of existing musical vocabularies. In this paper, I explore how, at various moments in the twentieth century, the idea that musical meters are based on latent isochronous pulses has influenced the performance practice of rhythms that were previously conceptualized through more flexible or ambiguous frameworks. Using percussion music in South Asia as a case study, I elucidate some of the ways in which changing conceptions of meter have interacted with changing aesthetic priorities in musical performance.

Rhythmic frameworks from around the world appear in many forms, and music scholars in recent decades have described and interpreted them in increasingly refined ways. Contemporary theories of hierarchical pulse-streams acknowledge the existence of both isochronous and non-isochronous meters, whilst recognizing that musical deviation from mechanically even timing is common in performance. However, cyclic rhythms in which the pulses are systematically performed in mathematically irrational proportions do not easily fit into conventional definitions of meter, since it is difficult to identify in them an isochronous pulse referent. All of these rhythmic phenomena can be found in various repertoires in South Asia; these repertoires span from tribal to classical musics, and they display a range of explicitly articulated theoretical concepts.

Elsewhere, I have argued that the system of underlying counts nowadays attributed to many South Asian rhythmic frameworks is for the most part a modern interpretation, which

contrasts with many traditional conceptualizations of rhythm. These newer metric understandings originated with South Asian musicologists in the twentieth century who, inspired by anti-colonial nationalist ideals, attempted to theorize the indigenous musics of their newly emerging nations. Largely ignoring traditional concepts of rhythm, these nationalist intellectuals instead theorized rhythmic frameworks as cycles of isochronous pulses, where pulse-groupings of different lengths related to each other in simple integer ratios. While the ancient Sanskrit musical treatises have indeed described poetic and musical rhythms in terms of absolute ratios of duration, in practice, South Asians have historically conceived of rhythmic frameworks through a variety of other concepts – e.g. in terms of verbal formulas, or the number of stressed beats – which allowed for rhythmic feels characterized by metrical ambiguity. Here I pose the question: after these rhythmic frameworks were theorized in terms of isochronous pulses in the twentieth century, and after these new theories were disseminated through nation-wide education systems, did South Asian drummers begin to play rhythms in a more metrically-defined way?

Global music histories offer many precedents for theories of music influencing subsequent practice, however, in this context there are several variables besides metrical theorizing that could have influenced shifts in performance practice - when such shifts did in fact take place. In this presentation I analyze historical recordings from India and Sri Lanka in order to demonstrate how changing ideas about rhythmic frameworks have been reflected in certain changing performance practices. I also analyze some of the newer rhythmic techniques that have been enabled by a conceptual shift towards metrical counting. Further, I discuss the phenomenon whereby some rhythmic performance styles have changed while others have not, and I address some of the ideological factors that have influenced these processes.

Having drawn attention to the complex ways in which the act of theorizing music can interact with traditions of performance practice, I conclude by calling for an increased critical awareness about a) the assumptions and objectives inherent in our methods of musical analysis, b) the impact that theories can have on musical practice, and c) the kind of explanations and implications favored by the research questions that we pose.

Empirical evidence for the theory of swing-based meter in Malian dance-drumming

*Rainer Polak (Max Planck Institute for Empirical Aesthetics)*

## Introduction

The talk opens with a timing analysis of a short excerpt of a drum trio recording from Bamako: Despite considerable rhythmic complexities, all ensemble parts exhibit an amazing degree of fidelity to a basic ostinato whose two durations per beat relate by approximately 57:43 ( $\approx 4:3$ ); the beat span itself is strictly isochronous. This little example is used to illustrate a problem in the theoretical distinction between rhythmic structure and expressive variation (microtiming, microrhythm), which constitutes the classic model for the interpretation of performance timings (Clarke, 1985, 1987; Clarke & Doffman, 2014). We lack established criteria for the critical definition of the reference structures from which expressive timing variations would deviate. The conventional assumption of durational values in musical notation to represent nominal reference frameworks has long been criticized (Bengtsson, 1987) and obviously is irrelevant for non-written music. Recent propositions suggest to focus on experience-based perceptual expectations which the listeners entertain (Fabian, Timmers, & Schubert, 2014; Honing, 2013).

## Hypotheses

The theoretical mainstream both in Africanist ethnomusicology (Arom, 1985; Kubik, 1988; Waterman, 1952) and “Western” psychology and music theory (Clarke, 1999; Fraisse, 1982; Large & Jones, 1999; Large & Palmer, 2002; Large & Snyder, 2009; Lerdahl & Jackendoff, 1983) assumes categorical rhythm perception and metric pulse—two core concepts to describe reference structures for rhythm perception—to rest on the human tendency to recognize and anticipate iso-periodicities in rhythmic patterns (Madison & Merker, 2002; Merker, Madison, & Eckerdal, 2009; Ravnani & Madison, 2017). A shuffle with a swing ratio of 4:3 from this perspective would appear as an expressive timing deviation from a structural 2:1 rhythmic ratio, or 1:1:1 ternary metric subdivision of the beat. By contrast, Polak (2010) proposed the alternative hypothesis that swung subdivisions themselves characterize the temporal reference structure in the context of Malian dance-drumming. This proposition was based mainly on the analysis of performance timings of jembe music from Bamako, which found repertoire-specific swing timing patterns to be highly consistent within pieces, across different tempos, rhythmic patterns, instruments, performers, and performances.

## Empirical findings

This alternative hypothesis of “swing-based meter” violates basic assumptions of well-established theories. Therefore, further empirical studies have been carried out in order to test its plausibility. Polak and London (2014) studied two further traditions of dance-drumming from Mali and reported the same swing timing patterns as in jembe music to be recursive across different metric density levels. Whereas the above studies measured only some characteristic phrases in some recordings, Polak, Jacoby, and London (2016) analyzed a corpus of complete recordings. Again, the subdivision timing patterns—isochronous in some pieces, non-isochronous in others—appeared consistent in each piece of repertoire. Furthermore, the degree of timing variation within ensemble parts and the performance asynchronies amongst ensemble parts were not significantly larger in the swung pieces than in the non-swung pieces. The present talk also reports a study (Polak et al., in press), where experienced musicians’ tapping along with slow and fast two-element rhythms (“shuffles”) was tested in Germany, Bulgaria, and Mali. While all groups were at ease with a “regular” shuffle (ratio=2:1) at both tempi, German and Bulgarian—but not Malian—musicians strongly distorted a rhythmically softer and mathematically more complex shuffle ( $\approx 4:3$ ) in the direction of 2:1 at the fast tempo.

## Conclusions

Empirical findings of (i) consistency of performance, (ii) recursivity across metric levels, (iii) affordance of ensemble entrainment, and (iv) culture-specific rhythmic prototypes (e.g., a 4:3 prototype for two-element rhythms) which cannot be mapped to isochronous meters converge in lending support to the hypothesis that listeners experienced in Malian dance-drumming may use non-isochronous beat subdivisions as part of a temporal reference framework; the same subdivisions may appear ambiguous to listeners of other cultural backgrounds. This is consistent with the hypothesis that non-isochronous, “swung” subdivisions can have a metric status and function for listeners familiar with Malian dance-drumming. It is well established that there is much cultural diversity in the styles and meanings of performance practices; the surveyed findings suggest that basic mechanisms and reference frameworks of sensory rhythm perception may be liable to cultural variation, too.

Empirical musicology and the cognitive sciences have increasingly influenced music theory making since the 1980s. A major problem in this trend has been its ethno-centric confinement to Euro-American musics and subjects. This talk proposes (and aims to demonstrate) that there is much to gain for analytical approaches to world music from applying empirical methods—

e.g., analyses of audio corpora and experimental hypothesis testing—to feed data-rich, grounded music theory building.

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# A case study of ethnography and computational analysis as complementary tools for analyzing dance tunes

Andre Holzapfel

## Introduction: corpus analysis and ethnography

This paper presents a case study, in which ethnography and music corpus studies iterate and mutually inform each other. Corpus studies may provide macro-level information about traits of the music contained in a corpus, approaching music as an acoustic object (Molino (1990)). On the other hand, ethnography enables close-reading that provides the complementary aspects of music performance and reception, and embeds the acoustic object in its sociocultural context.

## Background and motivation

In the beginning of my research on Cretan music, the driving motivation was to identify similarities and differences between Cretan dance tunes using computational approaches. In the course of my experiments, I obtained a larger set of corpus-analytic results that were at that point hard for me to interpret.

Throughout the following years, I conducted field work in concert events and music seminars in Crete. This way, I was able to gain insight into the context, in which the artefacts in the corpus are embedded within festivities and other social events in Crete. It became clear to me that certain contrasts in the melodic repertoire are related to specific phases within the dances. Additionally, differences between apparently similar dance tunes are related to differences in the steps of the dances and the larger aesthetic concepts as expressed by the musicians.

Cretan music, established as a term only throughout the 20th century, was often analyzed with focus on identity (Herzfeld, 1985; Dawe, 1996; Magrini, 2000). Whereas its formal aspects were analyzed, for instance, by Theodosopoulou (2004), a systematic consideration of relation between the social processes in dance and the formal aspects of musical style remains yet to be approached.

In this paper, I will present corpus analytic results from recordings of a specific Cretan dance tune family, the *Pidichtos* (Leaping dance) of eastern and central Crete. The local dances within this dance tune family coincide in the period of their dance steps, but differ regarding their directional patterns in the dance movement. The Maleviziotis is arguably the most wide-spread member of this tune family, as the local variant of the central Cretan area of Heraklion. However, especially in festivities in the east of Crete, the local variant of the area of Siteia - the Stiakos - is frequently encountered. Musically, most musicians emphasize their close relations, and in this paper I will conduct a corpus-analytic approach to emphasize their differences in terms of their melodic material. Subsequently, I will present the perspectives of the Cretan musicians on these tunes, and on the interactions with dancers that occur while they are performing. The outcomes of these interviews will provide a deeper interpretation of the context of formal melodic aspects that were provided in the corpus analysis.

## Corpus Analysis

A combination of pitch analysis and pattern matching methods (Şentürk et al., 2014) enabled me to determine frequent melodic patterns in a corpus of recordings. The corpus was compiled from the recordings of the Thalitas and Crinnos projects<sup>1</sup>, which aimed at the documentation of the lyra and violin traditions in Crete, respectively. In this corpus, dance tunes are labeled using the name given to the tune by the performer, and using this information 25 recordings of the Stiakos and 27 recordings of the Maleviziotis were identified. I applied computational pitch analysis methods to the recordings of the Maleviziotis and Stiakos. Using this pitch analysis, I computed pitch contours of four measure segments, which would typically either include one phrase or two renditions of a shorter melodic phrase. The corpus can then be searched for re-occurrences of pitch contours as an estimation of the re-occurrence of played melodic phrases. It is worth emphasizing that this method was checked for its accuracy using the available manual analyses for another dance (Sousta), which resulted in consistent results between computational and manual analysis.

The analysis was conducted aiming at two insights: first, the amount to which melodic phrases are shared between the recordings of the Maleviziotis and the Stiakos, and, second, which are the characteristic phrases that are widely used in the Stiakos, but not in the Maleviziotis. The results indicate that the largest parts of the durations of the recordings phrases are used that are shared between the two dances. Regarding the second aim, the emerging contrasting melodic patterns revealed striking differences between two dance tunes, which solely from a corpus-analytic perspective stood in contrast with statements of many musicians and dancers about these tunes being strongly related.<sup>2</sup> During my presentation, I will present these corpus analytic results in greater detail, which will otherwise also be published in the context of my upcoming dissertation.

## Musicians' perspective

In the course of the years following my first corpus analytic attempts on Cretan music, I conducted field work in concert events and music seminars in Crete. In the context of this paper, the main strategy to shed light on the differences and commonalities within the Pidichtos dance tunes was to collaboratively analyze performance recordings with Cretan musicians. In specific, four renowned players were asked to comment on their own performances, using high quality audiovisual recordings. In addition, a larger series of semi-structured interviews with these and other musicians and dancers was conducted, and these interviews revealed their views on aspects such as the interaction between musicians and dancers, musical form in the Pidichtos, as well as gender and historical aspects of Cretan dance. The combination of collaborative performance analysis and interview analysis revealed emic interpretations of the initially observed differences between the melodic patterns of the two Pidichtos forms.

From the point of view of my consultants, the specific repertoire of the Cretan Pidichtos dance reflects the formation of contrasts between eastern and western Crete, and between old and new style. Musicians and dancers assign this contrast to the ethos of the Cretans in the specific areas and periods, and see their music as immediately related to these contrasts. By relating results of ethnography and computational analysis, I will give an example of how the concepts of local style find expression in specific patterns in the acoustic object, using the melodic patterns obtained from computational analysis as a starting point. The observed differences relate to the new style of the Pidichtos being focused on the *ortses*, *i.e.* the ecstatic phases of the dance. This focus led to a

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1 The recordings for the analysis stem from the Thalitas (<http://thalitas.ims.forth.gr/>) and Crinnos (<http://crinnos.ims.forth.gr/>) projects, which represent an outstanding past effort to document Cretan music.

2 A few examples of 4-bar melodic patterns of this completely automatic analysis is provided in the supporting files 1 and 2, respectively. It is important to note that the pattern analysis takes only the frequency of the main instrument into account, and ignores rhythmic and timbral aspects.

change of dance style, away from an older form that incorporated two different phases of dance steps. This reduction in variety regarding dance expression correlates with the observed focus of repetitive staccato phrases in the newer dance tunes, whereas the older forms of the dance tunes - reflected in the Stiakos recordings - utilize longer melodic phrases (see Figure 1), and their extended elaborations.

## Conclusion



Figure 1: Three phrases of the Stiakos that emerged as central, both from collaborative performance analyses, and from computational analysis.

In the next iteration between corpus analysis and close-reading, I intend to discover musical phrases in the available recordings that occur exclusively within specific small local groups of musicians. The reasons why these phrases were forgotten or neglected in wider geographical contexts will be discussed with consultants in the next research excursion to Crete. Regarding future field work, I intend further interviews with dancers that will aim to investigate how they verbalize their experiences while dancing.

It is important to point out that the more detailed results presented at the conference will also be included in my dissertation that I aim to conclude in 2018, and that will be available online.

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# ACOUSTICAL CHARACTERISTICS AND VOCAL TIMBRE NUANCES OF THE CRETAN RIZITIKA SINGING IDIOM

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**Key words:** Rizitiko, singing, acoustical, Formant, Vibrato, recording, origin.

## Introduction

Various European singing styles are being currently examined and their acoustical parameters (1) (2). Rizitiko singing is spread all over the island of Crete. There is a noticeable differentiation between singers from different Cretan regions due to the pronunciation of idiomatic diphones (consonant with a following vowel) such as ki, ke, ro, ra, gi, which witness the origin of a singer and can change dramatically the acoustical parameters of a song.

In this presentation, we explore the general characteristics of the Cretan Rizitiko singing style sung by men (vocal range, formant tuning, vibrato rate and vibrato extend). We present the acoustical differences between the singers and what is the impact that the origin of the singer can give to the act of Cretan singing. A comparison between the singing styles of the recorded voices with Nikos Xylouris measurements included.

## Materials and Methodology

Five (5) studio recordings were made using - state of art – equipment. Moreover, these recordings consist of one (1) Rizitiko song, sung by four (4) Cretan singers and one non-Cretan (from Athens). The recorded Rizitiko was the same for every singer who have different origin (Hania, Rethymnon, Heraklion, Anogia<sup>1</sup>). The method included the following procedure:

- ^ It was found the singer's voice extend (registro)
- ^ All singers performed the same Rizitiko song
- ^ Note selection of the Rizitiko by the singers
- ^ All hard-disk recordings were accomplished with the use of an Electro-Glotto-Grapher (EGG) that it was put to the singers and a high end condenser microphone

Finally, all recordings accomplished at the same professional acoustic environment. One Diphone of the Rizitiko song (se psilo vouno) is presented.

## Results

### Formants

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1 Anogia belong to the County of Rethymnon. The singer from Anogia has been selected because have unique idioms and pronunciation. The legendary singer Nikos Xilouris -who has been analysed- had the origin from Anogia.

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The measurements have shown that for the characteristic diphone “ki” of the singing word “Haraki”, Xylouris has the lowest formant value for **F1** compared to all five recorded singers. Specifically, Xylouris used a small opened jaw position that resulted to a **F1** of 351.19Hz. The movement of his articulators resulted to the value of 2.500 Hz for **F2**. Very close to Xylouris, is the **F2** of the singer Menelaos (2.346 Hz). Menelaos has the same origin with Xylouris (Anogia1). Aggelakis-singer from Rethymno- measured at 2.3815Hz at **F2** which is close to the maximum **F2** of Xylouris. This similarity – apart from the origin- it shows elements of imitation to the legendary voice of Xylouris, that some Cretan singers adopts.

At **F3** Xylouris gave the lower formant value, while Haritakis (from Heraklion) provided the higher (2.978 Hz). This is due to the fact, that Haritakis was shaping a big curve behind his teeth.

### Vibrato Extend

The higher Vibrato Extend (62.64 Hz) was performed by Xylouris, although his performance of the song was lower in terms of the Tonic compared to the others singers. Menelao's performance provided the lower Vibrato Extend (11.5 Hz) although he has the same origin with Xylouris (Anogia).

### Vibrato Rate

The lower Cent value was given by Menelaos and Eutyhis (0.05 cents) while the performance of Xylouris provided the higher Cent value (0.34 cents) which is almost a three-Tone difference.

Between the above Cent values, Haritakis, Miltos (non Cretan singer) and Aggelakis performed the same Vibrato Rate (0.15 cents) which is almost three (3) semitones difference in comparison to the Vibrato Rate of Xylouris.

## Conclusions

Five -state of the art- recordings -and a sixth Xylouris included- analysed and measured. Although these would not be characterised as a “large” sample, it is a first representative cartography of the Rizitiko singing act. Nevertheless, this working sample has shown that different origin adopts a characteristic pronunciation due to position articulators (F1, F2 and F3) (3,4,5,6,7) that a certain Cretan area adopts during the act of singing. This gives to Rizitiko singing style a particular nuance, depending upon the origin of the singer. Analytic Tables and Figures will be given.

Finally, although the registro (voice range) is the same for all singers, the vibrato rate and extend (8,9,10,11,12) varies between the singers. The purpose of these recordings and for the others will follow, are to give the elements (acoustical parameters) that a specific Cretan region adopts.

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## **From ethnomusicology to cognitive psychology of music: Simha Arom's *model* and the reception of Cretan traditional music.**

### Introduction

The *model* in ethnomusicology is a concept which was introduced and elaborated by S.Arom, a central figure in the field of European ethnomusicology. Trying to understand the architecture of central African musical idioms where he realized a longitudinal field research, Arom had presented a methodology of analysis of indigene productions based on *model* and *modelization* (Arom, 1991). The *model*, notion inspired by linguistic paradigms is a “methodological tool for the comprehension of every system of traditional music whatever his cultural origin”, according to the author (Arom, 1991). It is generally a simplified structure, common in all realizations which a traditional oral piece includes. In this regard, the model is conceived as the origin of variation and the basis of improvisation. Moreover S. Arom had proved, using an original experimental methodology, that models are not only or simply theoretical projections of a scientific but they are structures which exist in musicians' minds and direct the act of improvisation. African musicians, the subjects of Arom's research for example, are able to nominate their model (*akone*) which means that they can recognize and use models when they play music.

### Analysis

Starting from these considerations we attempted to investigate the question if *models* can participate in the procedure of reception. How can listeners use *models* in order to appropriate and identify an oral piece? Trying to apply these problematics to Cretan traditional music, oral par excellence, we first have analyzed three versions of a Cretan dance in order to find the invariable minimal structure to which are subject. Our material is based on three musical recordings -variations of a famous Cretan dance melody named *chaniotikos syrtos*. The *modelization* (procedure of detection of a model) follows semiological principles. So we proceed by a paradigmatic analysis of the three versions of the piece. If every version as an oral entity uses repetition and variation, that means that it can be reduced at a minimal unit, a *reduced model*. In a second phase, we compare these models in order to find an underlying structure, common to three reduced models. It emerges that this invariant structure is finally a sort of code, composed by accentuated musical elements equivalent to accentuated dancing steps. Musical dynamics and choreographic dynamics are combined here and create a gestural code specific to this culture and this repertory. So the *model* of *chaniotikos syrtos*

which is assimilated in contexts of interactivity and shared rhythms has the characteristics of a temporal dynamic schema. Trying to study empirically the “cognitive reality” of model of *chaniotikos syrtos*, we have constructed an identification experiment. How can listeners recognize or identify versions of an oral piece? The main hypothesis which is studied here is that the *dynamic schema – model of chaniotikos syrtos participates at the identification of the piece*. So if this dynamic schema is disturbed, the subjects cannot recognize. Using 9 stimuli, melodies which are based on musical material of *chaniotikos syrtos*, we can study an independent variable of two modalities: regularity-non regularity of dynamic schema.

### Conclusion

Results proved that when dynamic schema is pertinent that is it satisfies the temporal needs and expectations of listeners, they can recognize the melody as the *haniotikos syrtos*. So via this experiment we could demonstrate how the gestures of time witch join here music and dance, schematized and coded in a model, can direct musical memorization. We will finish by noting that the perspective which is developed here is related to recent discoveries into music psychology, essentially those who are influenced by the theory of *Communicative musicality* (Malloch and Trevarthen 2010) which argue that musical meaning, before his comprehension with the aid of analytic categories, is an experience which is felt and communicated through the body and the interactive communication.

## **Music and music networks in the Aegean: the example of Naxos island**

### **Introduction**

How can one talk about the music of a place that has been at a crossroads of peoples and cultures for millennia? Is it feasible for ethnographic research to meet systematic musicological analysis? And yet, how is it possible that the musical instruments act as "bridges" in order to understand the historical and cultural path of a region, and to reveal relations and interactions often unexpected? On the basis of field research performed in the island of Naxos, this paper will propose a model of musicological analysis based on tools offered by ethnomusicology and organology and, on the other hand, by music network analysis.

### **Background in Music Network Analysis**

A key element of network analysis is that it enables the imaging of relationships and interactions between individuals or various kind of elements. This analysis has been used in a wide range of sciences and applications, from mathematics and communications to anthropology. Regarding the study of the musical phenomenon, the analysis of networks has, indicatively, been used by Jacques Attali (2009 [1985]). In his monograph on political economy, Attali highlights the interconnection of Western art music with the socio-political changes of the last five centuries. It has also been used by anthropologist Ruth Finnegan (Finnegan 2013) for the analysis of the musical life of a small town in Britain. In Greece, the music network analysis has been used for the study of the Aegean Archipelago, through an anthropological (Kavouras 1997) and sociological perspective (Chtouris 1995, 1997). A first attempt to implement it in the field of organology and ethnomusicology was made by Haris Sarris (Sarris, Kolydas, & Kostakis 2010).

### **Background in the ethnomusicological and organological research in the Aegean**

Ethnomusicology flourished in Greece from the 1980s onwards (Kallimopoulou 2009). Almost all the surveys so far concerned mainly the collecting of lyrics, music recordings and transcriptions in an effort to achieve a mapping of the country's musical phenomenon. Systematic researches on the music of the Aegean, following the methodology of the era, were made (indicatively) by Samuel Baud-Bovy for the music of the Dodecanese (1990 [1935, 1938]) and of Crete (2006) and by Spyros Peristeris (1968). With the flourishing of ethnomusicology and social anthropology from the 1980s, the interest of the research has shifted mainly towards an anthropological perspective, leaving the research of the music phenomenon to a second degree. Concerning organology, Liavas (1986) pioneered with a study on the organological transformation of the pear-shaped lyra. Today, through an increasing number of studies both organological (Schinas 2015, Sarris 2007) and musicological (Spiropoulos 2012) issues concerning the music of the Aegean are highlighted.

### **Our contribution**

Our paper is an analytical framework for the musicological analysis of the music traditions of the island of Naxos. We believe that Naxos is a very interesting research area. It is a large island with a rich rural hinterland, which was at the heart of history in the wider region of the Aegean for centuries. The architecture of Naxos strongly reflects the passing from Prehistoric, to Ancient, Medieval, Byzantine and Modern times. Historical archives and bibliography have extensively described the historical path of the region. But what about music? It is known that music as an intangible product is destined to be lost at the end of each performance. Here lies the heart of our

research question: how can one talk about the music of a place like Naxos, given that recording technology exists only for the last decades? Are these recordings indicative of the music of the island or bear the mark of the logic and the intermediation of the music industry? Through which analytical tools can you “listen” to the island's music behind and beyond its current image? At this point comes our research proposal, which is based on our research in Naxos. Considering that a music performance in a place like Naxos has above all an intertextual character, we propose a deconstructional approach as the first step. The data coming out of such a deconstruction are analyzed and evaluated through the perspective of music networks. Homogenous or heterogenous elements such as music modes, playing techniques, music forms, practices of ornamentation, etc., as well as the cultural context, urbanization, commerce, will be considered as branches of a network outstretched through the Aegean, as well as through the Balkans and the Near and Middle East. On the other hand, using the diffusion of innovation theory (Rogers 2003 [1962]) alongside the networks, we will outline the particular role played by musical instruments on the history and the repertoire of the Aegean. Considering musical instruments as branches of the same network, we will investigate their particular technical and aesthetic elements, in close connection with the historical and social context. The nodes of a network are the points where the abovementioned branches meet and interconnect both locally and supra-locally. Defining a node is, in our view, equivalent to the formulation of a research question. Hence, a research question about the music of Naxos can be considered as a node of a network comprised of technical and organological elements.

We believe that through the methodology we propose we can answer a number of questions of musicological and organological character such as: what is the relation of the spreading of the violin in the Aegean with the urbanization and diffusion of European ideas? How did the urban repertoire of Asia Minor interweave with the native rural repertoire of Naxos in each region at different times? How does the technique and aesthetics of the tsabouna bagpipe grafted the violin and how the tsabouna, in some cases, is reborn through the technique and aesthetics of the violin? In our paper, we will not be concerned with the mapping Naxos' music, but with the understanding of the logic and mechanisms through which music is created every time.

**Keywords:** music network, diffusion of innovation, deconstruction, intertextuality, Aegean, Naxos, musicological analysis

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## **A Brief History of Ottoman/Turkish Music Theory via its Music-Theoretical Instruments**

Since ancient times, musical instruments reflect the musical system in which they operate. Moreover, it seems that almost every early theoretician used certain musical instruments to show music-theoretical issues such as interval ratios, pitches and scales.

This study addresses the significance of such kind of music-theoretical instruments, focusing on their theorizing and representing functions in the Ottoman/Turkish music theory. It scrutinizes the written sources of Ottoman/Turkish music theory from the 9<sup>th</sup> to 20<sup>th</sup> centuries in order to draw parallels between the evolution of music theory and different preferences for “music-theoretical instruments” over the centuries.

Ottoman/Turkish music theory was primarily based on the late medieval (9<sup>th</sup>-13<sup>th</sup> centuries) Islamic music theory studies. The ancient Greek and Roman musical thought had a great influence on these early Islamic music-theoretical writings. In this regard, the early Islamic theoreticians considered music as a branch of mathematics (*quadrivium*), along with arithmetic, geometry, and astronomy. They explained the intervallic ratios through the divisions of a single string in a Pythagorean manner, by using an “imaginary” monochord (there is no evidence to suggest that a “real” monochord was used)<sup>1</sup>.

Apart from the theoretical usage of “single string”, the “primary” music-theoretical instrument of this music-theory tradition was the *oud* (a short necked lute, Figure-1) which was also “the best known, the most widespread, and the most noble instrument” [3]. The *oud* maintained its theoretical importance from the 9<sup>th</sup> century (earliest preserved manuscripts) to the 17<sup>th</sup> century. During that period, theoreticians described and named the pitches (and even the scales) according to the finger positions of this instrument.

In the 15<sup>th</sup> century, there were two main music-theoretical approaches among the Ottoman theoreticians: One group were following the traditional (mathematical) approach by using

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<sup>1</sup> Within the Greek-Roman writings, the term “monochord” was used as a synonym (in a narrow sense) for the term “*kanôn*” (κανών) (which literally means “rule” in Greek and Latin). Conversely as the name “mono-chord” implies, the usage of these two terms was not limited to “one string” instruments [1, 2]. By this means, although the Arabic open-string instrument *kânûn* (which also means “rule” in Arabic) evidently derived its name from the Greek word *kanôn*, it is interesting to note that the Islamic theoreticians never used this instrument for theoretical purposes in their writings.

alphabetical notations, tablature representations, and finger-position-based nomenclature through the *oud* strings. The other group of theoreticians adopted a relatively *practice-oriented* approach to explain the theoretical aspects of the same music tradition. The latter group of theoreticians were not particularly interested in the mathematical ratios. Furthermore, they did not use any notational system. They described the scales and modes verbally, by using a flexible, nonstandard, and complex pitch-naming system based on inter-pitch relations. Our study shows that this system was closely related with the strings of the *çeng* (a type of harp, Figure-2) which was a very popular instrument of the 15<sup>th</sup> century. While the *oud* maintains its importance as a primary music-theoretical instrument in these writings (maybe just as a tradition), the *çeng* also was used as a theoretical instrument<sup>2</sup>. These writings may be considered as a transitional stage for the pitch-naming process.

In the 17<sup>th</sup> century, theoreticians began to use standardized names for all the pitches. This radical change of music theory led inevitably to the use of another “primary” music-theoretical instrument, the Ottoman *tanbur* (a type of lute with a very long neck, Figure-3). It was possible to show all the pitches and intervallic distances on this instrument.

After the 17<sup>th</sup> century, some theoreticians used the *ney* (a type of end-blown flute, Figure-4) for theoretical explanations. But this looks like rather a socio-cultural preference, because the *ney* was considered as a holy instrument especially by the *Mevlevi* Order (whirling dervishes).

Apart from these above-mentioned instruments, there are also some secondary instruments used for theoretical purposes. This study proposes a novel approach to trace the evolution of Ottoman/Turkish music theory via its primary and secondary music-theoretical instruments.

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<sup>2</sup> These writings include also some chapters devoted to the tuning-systems of *çeng* and the ways of making transposition on this instrument.

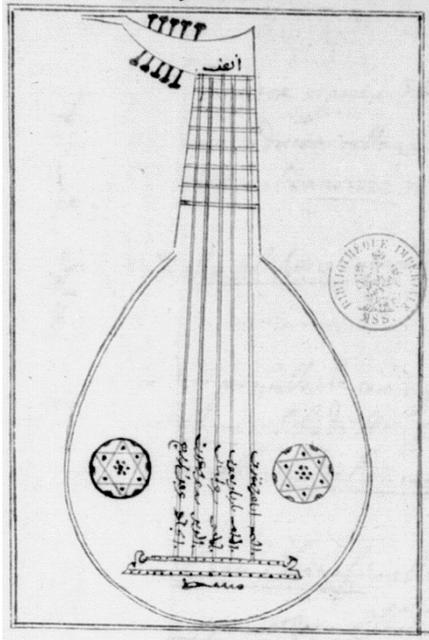


Figure-1. Oud

[Bibliothèque nationale de France; Français 9531, f. 485]

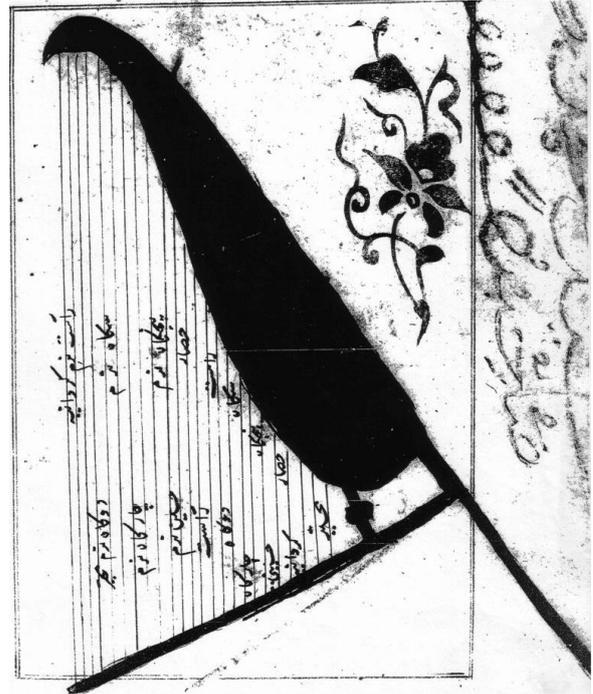


Figure-2. Çeng

[Bibliothèque nationale de France; Suppl. Turc 1424, f. 29a]

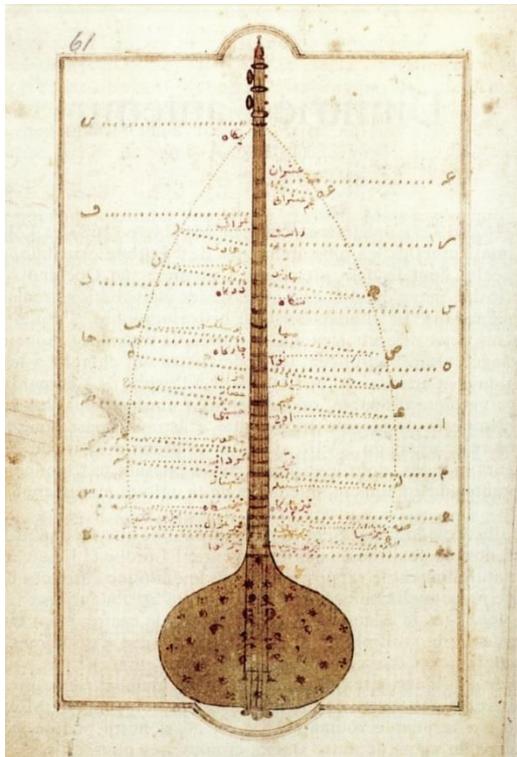


Figure-3. Ottoman tanbur

[Kantemiroğlu, *Kitâbu 'İlmi'l-Mûsîkî 'alâ vechi'l-Hurûfât*, volume I. (Ed. Yalçın Tura), YKY, İstanbul, 2001, p. 212]

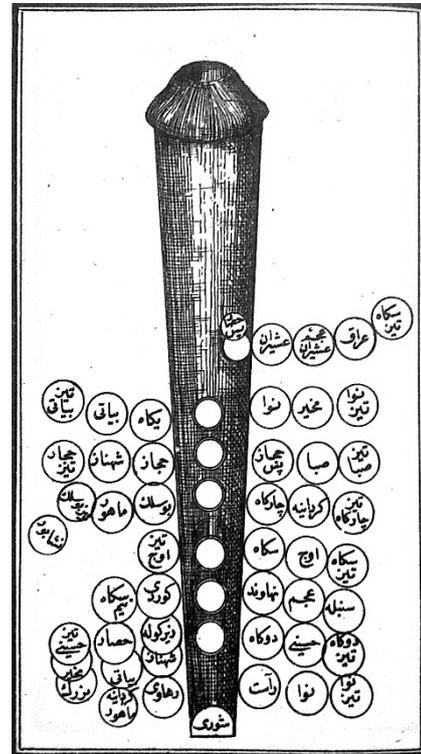


Figure-4. Ney

[Mehmed Haşim, *Mecmû'a-i Kârâhâ ve nakşâ ve şarkıyyat*, İstanbul, 1853, p.74]

## “Improvisation is not the right word!”: Native Terminology and Performance Techniques of Azerbaijani *Mugham* Creativity

### Introduction to approach

Creativity is complex in Azerbaijani *mugham*. A performance involves variation, extension, ornamentation, exhibition of one’s idiosyncratic style, and modulation (types of creativity discussed below, and the topic of my dissertation, Dessiatnitchenko 2017). Most of these features are performed spontaneously, and therefore *mugham* performance can be identified as being “improvisatory.” However, in conversations with Azerbaijani musicians, I encountered a certain frustration with the term “improvisation” and an effort to define musical creativity using sophisticated indigenous vocabulary. For some musicians, “improvisation” brushes aside the paramount significance of tradition. Others point out its problematic applicability as a foreign word that entered local discourses through the views of Soviet scholars from Russia, when tremendous effort to establish national composition schools emphasized the dichotomy of composition vs. improvisation as a hierarchy. Above all, musicians stress that the term simply does not do justice to the complexity of creative processes that take place when *mugham* is performed. In other words, using one umbrella term “improvisation” is deemed to be incorrect because it is not reflective of the complexity of creativity. Therefore, musicians are keen to use different Azerbaijani words and phrases that identify specific ways of being creative with the *mugham* musical material.

In this presentation, I use data from three years of fieldwork in Azerbaijan, comprised of learning how to perform *mugham* on the *tar* with masters who are representatives of various lineages. I use phenomenology to show how musical creativity can be analyzed starting from a close look into local terminology and associated musical structures. This approach sheds light not only on how musical structures are manipulated but also the experience that is involved, revealing crucial parameters of creativity. I take into consideration critiques of musical ethnotheory, and argue that a phenomenological investigation of how sound structures are created in the moment of performance closely represents a local way of musical thinking.

### Analysis

Using musical examples from *segah mugham*, I investigate words and phrases for different types of creativity that are widespread among Azerbaijani *tar* musicians and the musical structures they stand for. Specifically, based on musicians’ descriptions of musical phenomena and audio/video examples of performances on the *tar* recorded during my lessons, I identify the following different categories of creativity:

### 1) Variation

*Mugham təfəkkürü* (*mugham* thinking) is the main term for simple variation of the learned system (“strategic” creativity, as noted by During 1987: 23). This main type of creativity is essential to *mugham* and is continuously employed throughout a performance. There are instances when *mugham təfəkkürü* leads to what is referred to as *təfəkkür partlayışı* (explosion of thinking), *təxəyyül partlayışı* (explosion of imagination), and *vəhy* (revelation) when simple variation shifts gear and becomes music that is “new” or beyond the memorized and standardized *mugham* system.

### 2) Idiosyncratic style

Terms for unique manner of performance include *barmaq* (finger), *yol* (path), *ləhcə* (accent, for singers), *nəfəs* (breath, for singers). A *mugham* musician seeks to find his or her own idiosyncratic style that is rooted in his or her respective lineage. Usually, this style forms based on one’s own way of using various techniques and miniscule decorations, referred to as *shtrix* and *xırdalıq*, respectively.

### 3) Creation of entire new sentences

New musical phrases are created through *gezişmə* (walking) using one’s idiosyncratic style. This kind of creativity is rare and is particularly praised.

### 4) Modulation

Two terms for modulation are *keçid* (passageway) and *intiqa* (change). Modulation that is not standardized is extremely rare and characterizes creativity of most talented musicians. In addition, there are phrases used to describe modulation: “*Ona nərdivan getirin*” (Bring him/her a ladder), “*Muğamdan muğama keçmək lazımdır ki, isti-soyuğu bilinməsin*” (One must transition from one *mugham* to another not as from hot to cold) and “*Muğamın qol-qabırğasını sındırdı*” (*Mugham*’s hands and ribs have been broken) (Chelebiyev 2009).

### Findings based on the approach

When Azerbaijani creativity is approached with an analysis of native vocabulary and associated musical examples important aspects of creativity come to the surface. There is a clear distinction between creativity within the standardized model and “new” music beyond the model.

Experience of heightened creativity manifested in (a) unique styles, (b) creation of new sentences, and (c) unconventional modulation (forms of creativity that depart further from the model) is most often linked to inspiration that arises from sung poetry. Musical innovation, it seems, is triggered by the musicians’ engagement with *mugham* meanings from sung texts.

Musicians’ discourses about creativity can also be situated within the current trend of nativism that is taking place in post-Soviet Azerbaijan (for discussion of nativism in post-Soviet

Uzbekistan, see Levin 1993). The observed proclivity to discuss creativity using Azerbaijani terms, while relying less on Russian and Western vocabulary, makes sense in light of the current socio-political context in Azerbaijan.

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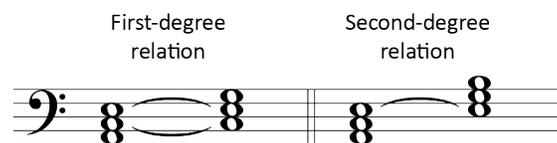
## ***Arion*: Harmonizing Theory and Ideology in Practice**

### **Introduction**

*Arion: The music of Hellenes as preserved from antiquity to the present* is a 1917 collection of harmonized Greek music of the monophonic tradition. Its repertoire ranges from ancient Greek music to Byzantine melos and Greek folk music. The collection is prefaced by an extended introduction, in which the authors, Adamantios Remandas and Prokopios D. Zacharias, propose a programme of restoration of Greek music, which would consist of three stages: collecting the pieces; ‘extracting’ the elements of Greek music from the ‘deep consciousness of the Greek people’; and, lastly, cleansing the pieces of all foreign substances. The ultimate goal of this endeavour is to retrieve the melodies ‘in their ancient (Greek) harmonic, melodic and rhythmic beauty and grace’ (Remandas & Zacharias 1917, λστ’). Interestingly enough, one of the means employed to pursue this goal is harmonization, inasmuch as Remandas and Zacharias are convinced that the esteemed qualities of ancient Greek music hibernate within Greek folk music, waiting to be ‘brought to life by the kiss of harmonization’ (Vlagopoulos 2015, 286). The proposed presentation aims at facilitating the understanding of *Arion* as ideology in practice through the critical appraisal of the discursive import of the harmonizing practices theorized in its introduction and implemented in the harmonized examples that comprise it.

### **Analysis**

The theoretical framework of harmonization proposed in *Arion*’s introduction rests upon an uncompromising conviction to the primacy of non-functional diatonic (and pronouncedly homophonic) polyphony. Within the limited horizon of possibilities afforded by the seven ordered diatonic collections acknowledged by Remandas and Zacharias, each one beginning with a different note of the natural scale, the chord relations allowed for are the ones characterized as either ‘first-degree’ or ‘second-degree’ relations depending on the number of common tones in pitch-class space (Example 1). However, despite the theory’s provisions with respect to the treatment of dissonances and the employment of seventh and ninth chords, there is little information about the heuristics of harmonizing a given melody. One needs to turn to the actual harmonizations of the collection to deduce these heuristics.



*Example 1.* First- and second-degree chord relations according to Remandas and Zacharias (1917, κη’)

The case-study analyses of selected harmonized examples from *Arion*’s collection, through the methodological lens of the theory it proposes, illuminate the deductive processes involved in defining a melody’s modal center (at times mutable), its chordal and non-chordal tones, its implied harmonic rhythm, and, as a consequence, the alleged harmonic constitution of its construction. However, the comparative examination of some of these melodies, as transcribed (and harmonized) in *Arion* and in other folk songs collections, and as actually sounded in early recordings, reveals that they were

subjected to an extensive process of normalization of their intervallic and rhythmic components. In this respect, the process of harmonization may be interpreted as a disciplinary attempt to cleanse Greek folk music and recuperate the diatonic purity of its glorified past.

### **Conclusions**

Within the ecology of contemporaneous research from different fields, such as folklore studies, musicology, and musical composition, *Arion* substantiates the value of Greek folk music not as a source of artistic inspiration, but as evidence of cultural continuity with ancient Greece (Herzfeld 2007). This qualified validation serves a dual purpose: on the one hand, to protect the Greek national programme against allegations that Greek culture had been irrevocably corrupted by foreign, mainly Eastern, influences. On the other, to offer privileged access to European modernity, as ancient Greece was considered the cradle of European civilization. But the authors set also an applied goal: through the spreading of the reformed Greek music in schools and in concerts, to contribute to the development of the Greeks' musical perception and to indicate possible routes for the improvement of European music.

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## Deconstructing dipoles: the term ‘Minor’ in Smyrna.

keywords: modality; syncretism; fusion; de-territorized repertoires; eastern-western

### Introduction

The epicentre of this paper concerns the *gazel* form, popular in Ottoman music, which we see in Greek-speaking discography as *manes* or *amanes*.<sup>1</sup> Thus, the music form itself refers to one quite stereotypical pole: the East. The *manes* on which I shall focus constitutes a very dynamic entity, which developed into a production matrix, a musical pattern for new melodies, but it also experienced multiple unadulterated repetitions, in the context of urban popular music, with whatever this entails in the significant issue of repetition. The fundamental axe on which I shall focus is the appropriation and the implementation by Greek musicians in Smyrna. The term ‘Minor’ appears in Smyranean discography circa 1910.<sup>2</sup> This term automatically refers to the other stereotypical pole: the West. It concerns a *manes*, performed by Giorgos Tsanakas with the Smyranean *estudiantina*.<sup>3</sup> Since then, the very same musical matrix is recorded at least another 20 times, in Smyrna, in Constantinople, in Athens and in New York.<sup>4</sup> The titles on the labels vary. Undoubtedly, the issue is complex. One of its overwhelming aspects is the fact that Smyrna is attracted to the term ‘Minor’, which is in discord with its usual usage, that is, the minor scale in European music. The use of the term from the Smyrna aspect denotes more an entity rationale, the multiple implementations of which, but also its interpretations and subcategories found in discography, can redefine, not only the discourse concerning Smyrna, but also that of the condition of cosmopolitanism in general.<sup>5</sup> In addition, Angela Papazoglou, a Greek-speaking Christian resident of Smyrna and wife of Vangelis Papazoglou, mentions in her memoirs that ‘everybody would request their own Minor, and they would all yearn to hear it’ (Papazoglou, 1994: 9). This statement gives the impression that in Smyrna, by using the word ‘Minor’ they mean the lyrics, which is the only element that varies each time this specific tune is recorded.<sup>6</sup> The paper will be structured on two central axes: on the one hand, all socio-historical components shall be examined, in order to map the network from which the term stems and the context in which it functions.

### Socio-historical background

The stimulus for the pursuit was a radio broadcast interview given by Stellakis Perpiniadis to Sophia Michalitsi in the 1970s.<sup>7</sup> Perpiniadis was a singer and a protagonist in the *rebetiko* scene.

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<sup>1</sup> Regarding *gazel* and *manes* see indicatively: Feldman (1993); O’Connell (2003); Pennanen (2004); Kounas (2010); Kokkonis (2017: 97).

<sup>2</sup> In terms of music in Smyrna see Karakasis (1948); Solomonidis (1957); Kalyviotis (1997); Kounadis (2003); Ordoulidis (2017a, 2017b and 2017c).

<sup>3</sup> Gramophone 1558y – 10-12866, 1908.

<sup>4</sup> See for example: *Smyrna manes minore*, Favorite 4487-t – 1-55017, February 1911; singer: Lefteris Menemenlis. *Smyrna minore*, Victor B 22339-1 – VI-72192, December 4, 1918; singer: Marika Papagika. *Minore manes*, Odeon GA 1309, 1928; singer: Kostas Nouros. *Manes tis avgis minore*, HMV OW 117 – AO 1008, 1931; singer: Antonis Ntalgas.

<sup>5</sup> Regarding the condition of cosmopolitanism in Smyrna see Georgelin (2007).

<sup>6</sup> A reference to the *Minore Manes*, accompanied by a music transcription, can be found in Karakasis (1948: 439).

<sup>7</sup> In the 70s, Sofia Michalitsi-Tanga is a radio broadcast producer and works at the National Broadcasting Foundation, subsequently at the ERT ‘Second Programme’, at which she seems to have been the director in 1977, while in 2009 she takes on the post of director at the Radio Station of the Church of Greece (The information is from the personal channel of Giorgos Papastefanou on YouTube and from an article in the newspaper *Eleftherotypia* on 10/10/2009).

Perpiniadis says: ‘The Minore was Minore. It is foreign, it is Romanian’. Following that, he sings the following:



Subsequently, Perpiniadis mentions that he is acquainted with the musician who ‘regulated’, as he characteristically mentions, the multiple forms resulting from this melody. It is very likely that he is referring to Giovanikas, pseudonym of Ioannis Alexiou, also known as Giagos Vlachos, a musician who was born and lived in Galatsi, Rumania, subsequently moving to and playing a leading part in Smyrna.<sup>8</sup>

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During a series of broadcasts recorded at the state radio station, she interviews a series of musicians of the rebetiko. These broadcasts have been publicized in the last few years on the internet, and in fact the sound is satisfactory enough to allow us to identify the speakers with certainty. The problematic point is that no further evidence is given for the validation of the broadcasts in question, and mainly their date. Perpiniadis interview: <https://youtu.be/W4wVlfxrOpY> (visited on 26/10/2016).

<sup>8</sup> Regarding Giovanikas (young Giovan) see Karakasis (1948).



## Analyzing selected performances/recordings

Transcriptions of certain recordings shall be cited. The comparative and analytical methodology used aims to solicit the *modeness*<sup>10</sup> detected in the musical matrix in question. Although the musicians perform the same work, the final text is never the same: the gravitations vary, the ornamentation, the tempo, the harmony; as well as the instrumentation and the style of the voice.<sup>11</sup>

Title	Company	Matrix number	Catalogue numbers	Singer	Year	Place	Pitch	Rhythmic pattern / tempo	Instrumentation
Minore	Gramophone	1558y	10-12866	kos Tsanakas	1908	Smyrna	Em	3/4 - ~82	violin, santur
Smyrna minore	Victor	B 22339-1	VI-72192	Marika Papagika	1918	New York	Gm	3/4 - ~56	violin, santur, cello
Minore manes 'Skliro to pepromeno mou'	Odeon	GO 2067	GA 1766	Chomatopoulou	1934	Athens	Em	3/4 - ~63	violin, oud, piano
Manes tis avgis	Pathe	80065	70045	Ntalgas	1928	Athens	Cm	4/4 - ~122	harmonica, guitars (2)

Table 1: Examples of variations found in the Minore recordings

All of these characteristics play an important role in the shaping of the aesthetic of each performance, which help us to decode and understand the fluidity of urban popular music of the past century.<sup>12</sup>

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see Kalyviotis (1997); Conejero (2008); Christoforidis (2009 and 2017); Murray (2013); Ordoulidis (2017a, 2017b and 2017c).

<sup>10</sup> The term 'modeness' is preferred instead of the term 'modality', in order to associate various cultural, historical and anthropological definitions; composition style, technique and performance practice, performance issues etc. In Greek 'modality' is translated as 'τροπικότητα' (tropikótita), while 'modeness' as 'τροπισμός' (tropismós). 'Τρόπος' (trópos) means 'way', 'manner'. In essence, the issue raised is the conduct of a musical entity, whose technical characteristics, with musical analysis as an axis, could be considered rhythm, melody, harmony, etc. Placing the entity in its entirety as a focal point; examining how it functions factually: context, performance, performance technique, interaction, transmission-reception, mediation and so on.

<sup>11</sup> The methodology for the analysis derives from, but is not limited to, the following works: Manuel (1990); Stokes (1992 and 2010); Pennanen (1999); Brackett (2000); Tenzer (2006); Moore (2007 and 2012); Scott (2009); Feldman (2016).

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## AAWM 2018 Full Proposal

**Title:** “Balinese Solo Drumming and the Western Drumset”

**Author:** Adam King

### Introduction

*Kendang bebarongan* is a form of improvised Balinese solo drumming which has recently experienced a surge in popularity due to the emergence of festival style competitions. Scholars Michael Tenzer and Wayan Sudirana have made important contributions on *kendang tunggal* (bare-handed solo drumming), however, this study explores *kendang bebarongan* (solo drumming performed with a mallet) and as such seeks to compliment the work of Tenzer and Sudirana.<sup>1</sup>

As a long-standing student and performer of the Balinese *kendang* and the Western drumset, this presentation draws on practitioner knowledge from two contrasting musical traditions as a way of identifying organizational principles within *kendang bebarongan*, and how they may be applied to the drumset to create an alternative rhythmic vocabulary.

### Analysis

The focus of this analysis is a solo drumming section known as the *kawitan*.<sup>2</sup> Initially, the *kawitan* may appear like long streams of through-composed rhythmic material, however these rhythms can be categorized, and will be termed here as “motifs”. These motifs comprise cellular hand patterning that ranges from four to twelve rhythmic attacks.

A useful concept in this analysis is “rhythm/sticking cells” (RS cells).<sup>3</sup> RS cells refers to sticking patterns and resultant rhythmic outcomes that emerge through the ordering of left and right hands, used to create rhythms on the *kendang*. To illustrate this concept, one of the primary snare drum rudiments is the single paradiddle which is conceived of as a single resultant pattern. However, if performed on a double-sided drum like the Balinese *kendang*, individual rhythms emerge from the left and right hands, as seen in Figure 1.



**Figure 1.** Single paradiddle with resultant left and right-hand rhythms

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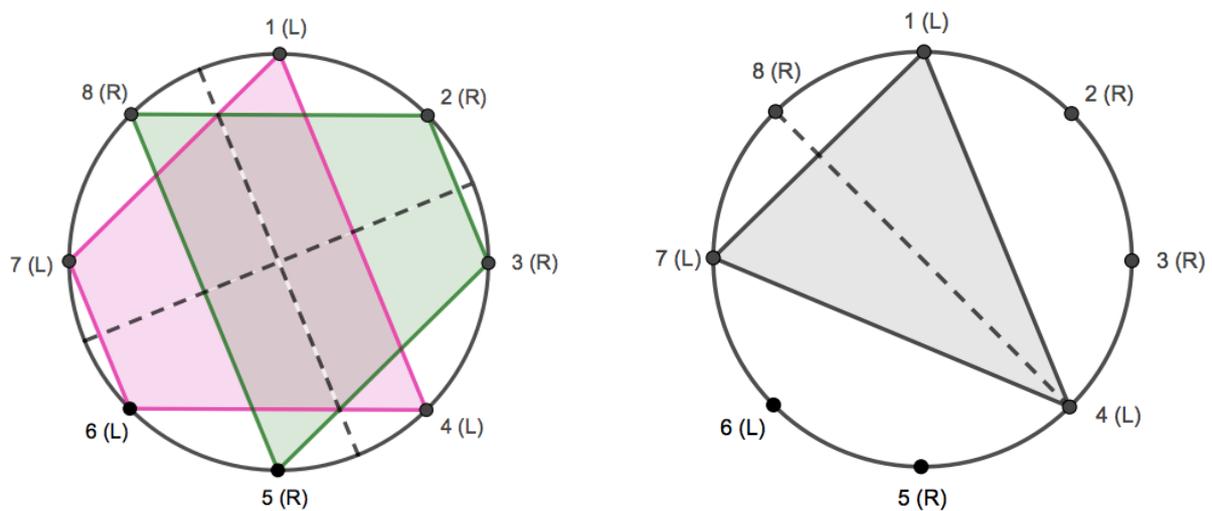
<sup>1</sup> | Wayan Sudirana, “Kendang Tunggal: Balinese Solo Drumming Improvisation” (MA, University of British Columbia, 2009).

Michael Tenzer, *Gamelan Gong Kebyar: The Art of Twentieth-Century Balinese Music* (Chicago and London: University of Chicago Press, 2000).

<sup>2</sup> Supporting video submitted.

<sup>3</sup> Simon Barker, *Korea and the Western Drumset: Scattering Rhythms* (Ashgate Publishing, Ltd., 2015), 25.

An alternate method of viewing RS cells in *kendang bebarongan* utilizes a visual geometrical approach. Inspired by Godfried Toussaint, it employs a polygon notation system to identify organizational principles within the drumming.<sup>4</sup> Figure 2 presents two diagrams of a *kendang bebarongan* motif with eight rhythmic attacks. The diagram on the left displays the motif's hand patterning, whilst the diagram on the right displays the resultant rhythm. Rhythmic attacks are indicated from 1-8 around the circle, with 1 being the starting point whilst hand patterning is indicated in parentheses. The polygons within this diagram are colored to convey distinction between the two hands. When viewed in this manner the hand patterning exhibits mirror symmetry, indicated in the diagram by dotted lines, which displays the two axes. The resultant rhythm diagram on the right of the figure also exhibits mirror symmetry with the rhythmic outcome emerging as a result of the accented left-hand slap stroke: “pak”.



**Figure 2.** *Kendang bebarongan* motif: hand patterning and resultant rhythm showing mirror symmetry using polygon notation system

Upon analysis of all eleven motifs in the *kawitan*, mirror symmetry is present at both hand-patterning and resultant rhythm level. This suggests that mirror symmetry is a primary organizational principle in the rhythmic vocabulary of *kendang bebarongan* drumming.

## Demonstration

This section offers a demonstration of a process I have developed for applying *kendang bebarongan* motifs to the drumset. The snare drum rudiments provide a vocabulary for drumset players to create rhythmic patterns and improvised solos.<sup>5</sup> However, this vocabulary does not afford the possibility of rhythmic counterpoint. The organizational principles in *kendang bebarongan* allow for the development of a layered approach to drumset performance through a process I have developed which “decouples” the left and right hands. Through the decoupling process, left-

<sup>4</sup> Godfried T Toussaint, *The Geometry of Musical Rhythm* (CRC Press, 2013).

<sup>5</sup> Dennis Theodore Brown, “History and Analysis of Jazz Drumming to 1942” (Ph.D., University of Michigan, 1976).

hand rhythms retain their original rhythmic rate whilst right hand rhythmic rates are halved. This process is then applied to the bass drum by halving the right-hand rhythmic rate yet again. The result is a layered texture that resembles the stratified layering present in Balinese gamelan generally.<sup>6</sup> As will be demonstrated, the developed *kendang bebarongan* motifs for the drumset can be streamed freely, or applied to a governing metric structure.

## Conclusion

This presentation outlines an original analytical system for categorizing *kendang bebarongan* rhythms through visual geometry and the RS cells concept. The application of these materials to the drumset offers practitioners a model for engaging with a world music tradition to generate alternative rhythmic vocabularies. Furthermore, the analytical method set out here has broader implications for the analysis of other forms of Balinese drumming, and double-headed drumming traditions around the world.

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<sup>6</sup> Tenzer, *Gamelan Gong Kebyar: The Art of Twentieth-Century Balinese Music*, 52.

## Cello-Drumming in Indonesian Keroncong

Keroncong, the string-band music of Indonesia, traces its roots to the introduction of Western string instruments to the archipelago beginning in the early sixteenth century. By the mid twentieth century the genre had absorbed influences from a wide range of styles: Indonesian folk traditions, European art song, jazz, Hawaiian music, Japanese popular music, Central Javanese gamelan, and other forms.

Historically, ethnomusicologists have favored “traditional” ensembles over conspicuously hybrid and popular genres in Indonesia. Despite being far more widespread as compared to gamelan, keroncong has been underrepresented in the ethnomusicological literature. Some have suggested that keroncong and campur sari have been partly responsible for the perceived marginalization of “classic” and beloved forms of court gamelan in Central Java. As a result, the academic study of keroncong has occasionally needed “defending” (Kornauser 1978). The scarcity of detailed analytical studies suggests that the form may not be deserving of (or may not withstand) rigorous musical analysis. This paper redresses the lacunae.

Although Yampolsky has provided analyses of the harmonic structures of the asli, stambul, and keroncong langgam subgenres (1990, 2010), detailed analyses of the intricate keroncong langgam Jawa style are rare, although its melodies are widely known throughout the nation. Keroncong langgam Jawa is deeply inspired by Central Javanese gamelan. It is performed in two modes, also called slendro and pelog, and incorporates the tempo/density (irama) shifts characteristic of Javanese gamelan. The high ukulele (cak) is often associated with the gamelan’s siter or bonang, the mid ukulele (cuk) with the kenong, kethuk and kempyang, and the cello (selo) is analogous to the kendang drum (specifically the ciblon). The selo player imitates the drum’s sharp, high pitched “tak” tones by striking the body of the instrument, while imitating the drum’s various open and muted tones on the strings. Often the selo performer follows the pitch contour of the melody, although some performers stay in a single position, using a limited pitch set that might be unrelated to the mode, to further evoke the kendang. Although gamelan repertoire is rarely transferred to the keroncong ensemble (some Nartosabdhoan melodies notwithstanding), keroncong tunes have often been transferred to the gamelan repertoire (e.g. Yen Ing Tawang). Despite this mutual influence, very few musicians play both keroncong and gamelan in Central Java. However, in the hands of an experienced performer of keroncong langgam Jawa, the selo can sound almost indistinguishable from a kendang. Despite this similarity, I never encountered a selo player who could actually play kendang.

The principal question I explore in this paper is: How is it selo players have absorbed the sophisticated feel and timbres of kendang performance practice without direct experience? I present the first detailed transcriptions and analyses of selo performances and compare them with common kendang playing techniques and patterns. Kendang and selo performance practice converge in ways that appear difficult to account for by casual osmosis, as if the complex patterns were simply “in the air,” as one selo player proposed. It may be that early (and now deceased) innovators of kroncong langgam Jawa had experience in both styles and that the continued resemblance results from stylistic conservatism; but little evidences of this exists. Whereas particular macro-rhythmic patterns are sometimes shared between selo and kendang, it is more often the highly subtle forms of micro-rhythm at particular structural points that link the two practices. Because these structures are difficult to notate in either Javanese cipher or Western notation, their appearance in both genres suggests the presence of a uniquely Central Javanese time-feel: a deep Javanese “groove” and rhythmic sensibility transcending style and instrument. A challenge of this paper is to account for this congruence without falling into essentialist notions of Javanese musicality.

Methodologically, I will use fieldwork recordings to compare selo microtiming to the comparatively isochronous onsets of the cak ukulele, and kendang microtiming to the stable onsets of the peking metallophone. Using the statistical and visualization techniques outlined in [REDACTED] 2013 and [REDACTED] 2016 I will demonstrate the ways in which selo and kendang performance practice embody a deeply Central Javanese sense of groove.

# Challenges in computational modeling and generation of Carnatic percussion music

## 1. INTRODUCTION

There is an increasing interest in developing computational strategies for the analysis, modeling and generation of non-western music. [1], [2], and [3] constitute some of the earlier examples in this area. Our earlier work [4] used an n-gram approach for modeling Carnatic percussion generation. N-gram transition probabilities up to a five-gram were estimated by counting the frequency of the strokes in the training corpus. The size of n-grams was set to up to a five-gram because we wanted to test how past information and size of accumulated memory could affect and change the generation process. The generation process used these data to generate new strokes events sequentially. Given a sequence of strokes, a stroke event was generated based on the weighting probability of the most likely stroke to follow given the previous strokes. The main drawback of this method was that it failed to successfully capture the long-term structure and grammar of this particular idiom and being only successful in capturing local and short term phrasing. In our present work, we aim to overcome these issues by introducing a new data-driven approach of modeling the tala cycle based on a set of arithmetic partitions which capture reliably the rhythmic structure of the tala. We also implement two novel grouping methods to segment the strokes into syntactic valid phrases. Based on this analysis, we developed a new application that improves the generation of South Indian rhythms and enhances the interaction of the user by adopting data visualization techniques during the generation.

## 2. METHODS

### 2.1 Dataset and preprocessing

The training corpus consisted of 23 percussion solo compositions and groove patterns in aditala (8 beat-cycle). The main difference of grooves versus compositions is that grooves consist of short groove phrases that are repetitive in nature over any tala cycle whereas compositions consist of korvais which are multi-part (usually 2) compositions that can last over multiple cycles which are repeated three times. Each part generally adheres to the rules of arithmetic progressions.

Each stroke was coded according to our traditional method described in [4]. The normalized velocity values of the strokes were obtained by computing an onset detection function [5], and estimating its amplitude level according to the strength of the stroke.

### 2.2 Approach

To synthesize and generate the talas, we modeled the 8-beat aditala cycle into a series of arithmetic partitions of 32 pulses, assuming a beat subdivision in 4 parts. Each partition consisted of combinations of groupings of stroke sequences that formed the duration of the talas. In our study we used 6 templates of partitions of groups of pulses (fig.1), all adding to 32 pulses. The templates of partitions have been validated in terms of the grammar and theory of this music idiom by direct discussion with Carnatic music expert musicians. Given an audio recording, first we obtain an automatic transcription of a sequence of time-aligned events of all stroke types, their durations (IOIs) and velocities. All the recordings were merged into a text corpus of sequences of strokes. Two approaches for grouping the sequences of strokes into rhythmic patterns were used. The first was based on the segmentation of strokes taking into consideration the proximity and the distance between each stroke IOI and their adjacent strokes [6]. The second one was based on a well-formed grouping dictionary of solis which are short motivic sequences of strokes. The grouped sequences of strokes from both approaches were analyzed and clustered by similarity using k-means clustering. In order to generate the talas we used groupings from the clusters that could be encountered in a cycle of a typical Carnatic percussion groove and concatenated them using the durations of the arithmetic partitions. To visualize and project the centers of the clusters in a 2D space we used the t-Distributed Stochastic Neighbor Embedding (t-SNE) method [7]. T-SNE is capable of capturing much of the local structure of the high-dimensional data, while also revealing the relationships between the centers of the clusters in a low 2D space.

		Tala				
Partitions	8   4   8   4   8					
	3   5   4   3   5   4   3   5					
	6   7   6   7   6					
	6   3   4   6   3   4   6					
	3   3   3   4   3   3   3   4   3   3					
	4   3   7   4   3   7   4					
<b>32 duration</b>						

Fig. 1. Partition templates of aditala cycles.

### 3. RESULTS

The results from the analysis were used to develop an application (CAMEL) that can emulate Carnatic-style percussive sequences by creating rhythmic grooves. The model was implemented as a Max patch that used as inputs the partitions, the clusters of the groupings, their durations and the coordinates of the cluster centers after the t-SNE data visualization analysis. Figure 2 depicts a screenshot of the Max patch. The user can interact with the clusters of groupings by travelling in the 2D space and generate talas of preference based on a set of template partitions in various tempo of choice. He can also filter smaller rhythmic values, or create variations by having the program probabilistically choose between different stroke collections of the same duration in the cluster.

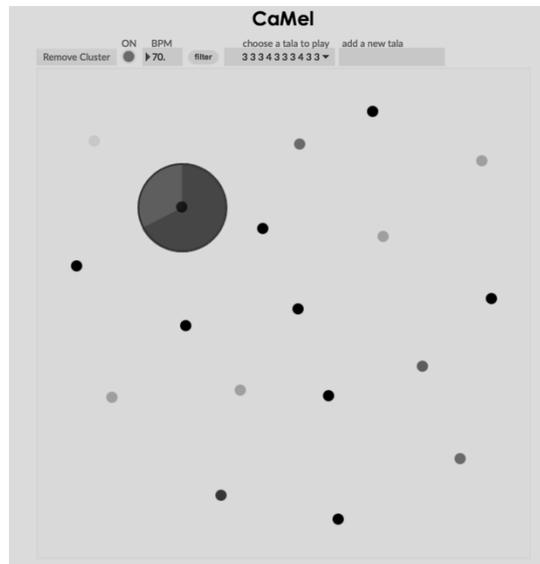


Fig. 2. User interface for CAMEL.

### 4. CONCLUSIONS

This work presents a new data-driven approach for generating new Carnatic style rhythmic patterns. The approach we adopt in this study improves previous work on Carnatic music generation by modeling the aditala cycle using a set of rules. These are based on different arithmetic partitions with a duration that sums to the length of the tala cycle. The creation of these tools can be used in music education as a means of actively enculturating lay people into this music style and interacting with musical styles beyond the Western ones. Future work will also test the method on a larger dataset of recordings and evaluate the effectiveness of the method by conducting a perceptual study using a group of professional Carnatic musicians.

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## **Title: “Cross-Cultural Resonance in the Cadential Hemiola”**

### **Introduction**

When perusing the world of music from a global perspective, it is not difficult to find cross-cultural similarities in what in the West we might define as scale, mode, harmony, or meter. This phenomenon was predicted by two central tenets of anthropological comparative method, as noted more recently by meta-ethnographer James Clifford:

1. An established principle of anthropological comparative method asserts that the greater the range of cultures, the more likely one is to find similar traits.
2. A second principle, that of the “limitation of possibilities,” recognizes that invention, while highly diverse, is not infinite. (1988:191)

While recognition and identification of such affinities on the level of what the cultural anthropologist John Blacking would have referred to as the “surface structure” (1971) is important in its own right, in this paper I explore the possibility of a deeper, cultural-performative resonance between two historically unrelated cultures in the process known in the West as the cadential hemiola.

The cadential hemiola as commonly understood today began as a Baroque-period practice occurring at cadences, often marking section or piece endings, in which three beats were distributed over two measures in triple meter (Willner 1991; see also chapter 4 of Mirka 2009). Over time other kinds of beat distributions at cadence points would be similarly labeled, including the practice in rock music of quadruple meter becoming triple

(Biamonte 2014:paragraph 7.4). In this presentation, however, I am interested in the existence of alternating groupings (rather than simultaneous) of twos and threes occurring at formal, cadential junctures in what in Western music theory we would identify as bars of 12/8 and 6/4 (12/4 and 6/2 at slower speeds), or a composite bar of 6/8 and 3/4 (Hiljeh 2016:36).

True to the second principle of the anthropological comparative method, it is not surprising to find various world traditions that play with the possibility of variously dividing a 4-beat/pulse, triple division bar or collection of beats into two and threes. What is significant in the context of this paper is that two very different genres and cultural traditions — Anglo-American indie/alternative rock and South Korean folk drumming — both choose to do so at section and piece endings, drawing the listener’s attention to such formal markers through the temporary displacement of where the beat is or might be felt.

### **Analytical Samples**

Two sets of cross-cultural examples are analyzed based on placement of the cadential hemiola. The first set will compare its use as a section marker: 1) as a pre-chorus in the song “Floaty” by the American rock band Foo Fighters (from *Foo Fighters*, 1995); and 2) as a bridge between an opening phrase (non-repeating) and a final phrase that internally repeats in the South Korean folk drumming (*pungmul*) rhythm *gilgut* (literally “road ritual”). The second set will compare the use of the cadential hemiola as an extended ending of a composition/performance: 1) as a bridge and final (modified) chorus in the song “Lamplight” by the British rock band Bombay Bicycle Club (from *I Had the Blues But I Shook Them Loose*, 2009); and 2) as a closing cadential pattern

(*maedoji*) found at the end of movements in the “right side” Jeolla-province entertainment-oriented performance (the *pan ’gut*).

### **Further Thoughts**

Rhythmic-formal play that toys with listener expectation set up by entrainment and beat grouping suggests a cognitive base to such cross-cultural resonance in musical composition and performance practice. Further research that includes non-Western samples informed by local insights will help refine and broaden the explanatory power of cognitive neuroscience and its use in musical scholarship.

## Examples

Drum Legend (above: Western drum set; below: *janggo* [Korean hourglass drum; RH = right drum head, LH = left drum head])

ride cymbal  
hi-hat  
snare  
bass drum

stick, RH  
mallet, RH  
mallet, LH

Example 1a: “Floaty” (1995) by Foo Fighters, verse

Drum Set

Example 1b: “Floaty” (1995) by Foo Fighters, pre-chorus

Drum Set

Example 2: *Gilgut*, complete rhythm (\* could be notated as 3/2 and 6/4)

*janggo*

3

4

Example 3: "Lamplight" (2009) by Bombay Bicycle Club, bridge and final chorus

Drum Set

2

4

7

9

11

13

15

X4

X2

Detailed description: The image shows a drum set score for the bridge and final chorus of the song "Lamplight" by Bombay Bicycle Club. The score is written on a single staff with a drum set icon. It consists of 15 measures. Measure 1 is in 6/4 time. Measure 2 is in 12/8 time and has a repeat sign with 'X4' to its right. Measure 4 is in 6/4 time and has a repeat sign with 'X2' to its right. Measures 7, 9, 11, and 13 are in 12/8 time. Measure 15 is in 6/4 time and ends with a double bar line. The notation includes various rhythmic patterns such as eighth notes, quarter notes, and rests, with stems indicating the drum set parts.

Example 4: *Maedoji* closing cadential pattern

*janggo*

4

6

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## The Influence of Timbre on Emotion Perception

### Background

The perception of emotion in music depends on various factors including but not limited to tempo, mode, and timbre. Timbre has been considered to influence emotion perception: abstracting and examining timbre individually has confirmed that listeners are able to rate perceived emotion of short sound samples, equalized for pitch, loudness, and duration, from different musical instruments (Eerola et al., 2012; McAdams et al., 2017). Investigations of timbre have suggested that tones with an emphasis on higher harmonics may suggest anger, fear, or surprise, while tones with prominent lower harmonics may suggest pleasantness, happiness, or sadness (Gabrielsson & Lindström, 2010). Studies comparing Western and Indian classical music have similarly noted a correlation between timbre and emotion conveyed in music (Balkwill & Thompson, 1999), though have not systematically investigated this relationship. Thus, this study aims to establish whether Western listeners recognize emotion conveyed in Indian melodies utilizing Indian timbres through reliance on familiar psychophysical cues in an unfamiliar musical context.

### Methodology

This study investigates the *cue-redundancy model*, proposed by Balkwill and Thompson (1999), in which emotion perception in music is achieved through a combination of both perceptual (universal) cues and cultural-specific cues. Here, we apply the model to Bollywood melodies and focus on timbre: the role timbre plays in perceiving emotion in music was investigated both independent of and in interaction with other musical parameters. Participants provided ratings for two tasks: one examined timbre along with melody, mode, and tempo, and the other investigated timbre alone. In the first task, two unfamiliar melodies exhibiting contrasting intended affect were utilized; each was presented in two contrasting timbres, tempos (M.M. = 96 and 132), and modes (major and minor). The timbres employed included the sarod, an unfretted plucked string instrument, and the bansuri, a transverse bamboo flute. Participants rated the stimuli from negative to positive perceived emotion using a 9-point Likert scale. The second task utilized six samples identical in pitch (D4), and duration (1s), but differing in timbre. Three Western timbres (harp, guitar, flute) and three Indian timbres (sarod, bansuri, dilruba) were presented. Using the same scale as the previous task, participants rated the individually presented sounds.

### Results

For the first task, an ANOVA yielded significant differences ( $p < .05$ ) in timbre, tempo, and mode: the sarod timbre, faster tempo, and major mode received a more positive affect rating. No significant difference, however, emerged for melody. For the second task, an ANOVA again yielded significant differences ( $p < .05$ ) between timbres, with the Western guitar receiving the most positive affect ratings, and the Indian dilruba (bowed string instrument) receiving the most negative ratings. However, sound intensity served as a potential confound with timbre: a forthcoming follow-up to this task, with results to be reported here, addresses this issue and includes two more melodies for scrutiny, extending and expanding the study.

### Conclusion

The present study demonstrates the musical features appearing to carry emotional weight as timbre, tempo, and mode. Aligning with the literature, timbres with a greater brightness level correlated to more positive affect, whereas those with a lower brightness level to more negative affect ratings. The most novel contribution of this study is the lacking significance of melody on affect ratings in this context: the most polarized differences in affect ratings arose between stimuli presenting the same

melody but different mode, tempo, and timbre. This debunks Deryck Cook's (1959) proposed *language of emotion*, which asserted a correlation between melodic intervals and emotion, and claimed to transcend various world musics. The results from this study do not support such a proposition, but instead demonstrate the importance of timbre – as well as tempo and mode - in musical experience.

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## Building bridges: two case studies of music in film (long proposal)

The unfolding of a story in films depends mostly on what the eyes see and not what the ears hear (Boltz, 2004: 1194). The meaning, however, can be shaped, altered, even planned in advance through music. The paper will address the function of music in two sequences of the following films: the beginning (00:00-03:25 min.) of 'Leaps and Bounds' (Dir. Petter Næss, 2007) and 'Crossing the Bridge: The Sound of Istanbul' (Dir. Fatih Akin, 2005). In the case of the former, the nondiegetic music, or extra fictional music according to Larsen (2012), of the opening titles features a vocal, modal, taksim-ish introduction by Nizamettin Arıç, which is a contemporary Kurdish singer. Then, a creative counterpoint takes place with the entrance of ECM artist Petter Nils Molvær and his idiomatic Scandinavian ambience: a no more microtonal and, typically, reverberated wandering in Aeolian and Dorian modes on top of pads-strings with looped and processed percussion, possibly bridges Manfred Eicher's vision with the surrounding area of Arıç'. Besides, film music as it should be inaudible (Gorbman, 1987: 73), does not have to be innovative regarding its idiom, orchestration and dexterity of musicians. It is its placement respecting the narrative and, subsequently, the spectators. The musical fusion of two distant areas is not novel, as well; Shankar's *Song For Everyone* (1984) featured Zakir Hussain and Trilok Gurtu discussing with Jan Garbarek.

In the case of 'Crossing the Bridge: The Sound of Istanbul', which is a music documentary (therefore with mostly diegetic music) about rock and hip-hop music in Istanbul, Sezen Aksu (a Turkish pop music singer) performs (01:14:48-01:20:12) with Alexander Hacke's guitar and a Fender Rhodes (an instrument highly related to Chick Corea) to provide the Real Book-notated accompaniment. Afterwards, the sea's designed sound takes us to witness musicians performing on a boat crossing Bosphorus; the delayed electric saz' maqam meets Hacke's shoegazing bass. As cited (2018) in IMDb 'director Fatih Akin takes us on a journey through Istanbul, the city that bridges Europe and Asia, and challenges familiar notions of east and west'.

The Conceptual Metaphor Theory (CROSSING THE BRIDGE metaphor) and Conceptual Blending Theory from the domain of cognitive linguistics are often applied to music (Antović, 2011) and particularly film music (Vouvaris & Tasoudis, 2017). In both films and their excerpts, different musical idioms co-exist and blend with each other, producing a fused one; traditionalist eastern cultures and modernized west ones are accompanied by opposing soundscapes. This creative dialogue between music, as recognizable/stereotyped icons, and narrative can promote meaning construction and, thus, it will be the focus of this paper, being seen through the lens of the aforementioned theories. Standard notation and a DAW environment can support the presentation.

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## Introduction

The way in which Greek folksong entered Greek art music has been variously studied.<sup>1</sup> This is not the case, however, with the Greek pop/rock music. The present paper aims at an analytical/critical approach to how Greek folksong interacted with pop/rock mannerisms in the following two albums of different epochs: "Greece Goes Modern", Mimis Plessas and the Orbiters, 1967 and "Riza" [Root], Villagers of Ioannina City (VIC), 2014.<sup>2</sup>

## Analysis

With analytical observations on micro- and macro- formal structure, pitch and rhythm, texture and instrumentation, the present paper reveals two approaches to the traditional material, both imaginative and creative, but essentially different in their aesthetic and cultural means, goals and contexts.

The first album aestheticizes folksong by asserting a place for Greek melodies within the western, flourishing at that period, cosmopolitan rock culture of the young. The album was first heard during a radio programme sponsored by and advertising Fix beer. It comprises ten folksong melodies from what was institutionalized and homogenized at that period as the Greek folksong.<sup>3</sup> Greek folksong is here perceived only through its dance qualities. Moreover, the fact that the melodies are presented without their ontological compatriot, the lyrics, facilitates access to an international audience and makes their melodic, rhythmic and harmonic elements open to 'modernization'. Analysis reveals interesting aspects of this process. Instrumentation comprises a rock band with the addition of philicorda, clarinet and flute. The last two represent traditional instruments, although they are played in a western way. In the majority of the pieces the structure outlines the following schema: introduction, with the presentation of the melody in its original melodic structure and meter - main section, on a popular metric/rhythmic pattern of the era (shake dance, bossa nova, etc.) - the return of the introduction. *Lemonaki*, the first track of the album, gives a representative example. The traditional melody is introduced within the *Kalamatianos* 7/8 metre. In its second appearance the seventh of the mode (B) is lowered, offering a dominant seventh chord (Example 1), which initiates an harmonic journey on a segment of the circle of fifths in the ensuing main section and a bridge to its shake dance style. Additionally, the lowered seventh is assimilated by the only harmonic movement of the core section: i-bVII-i - an alien motion to the mode of *Lemonaki*. The introduction returns abruptly at the end, in its original key. As in most of the tracks, Greek melody is perceived as a stable cultural value from which the main 'modernized' tune emanates or with which it discusses.

The second album essentially offers an experiential amalgamation of traditional and rock elements and an artistic proposal for a modern life based on traditional values. It is essentially a concept album on the Epirotic way of living. Epirus has a lively cultural tradition, in which the polyphonic song and the traditional clarinet (*clarino*) do have a central place - the trademark of VIC visualizes the centrality

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<sup>1</sup> See Frangou-Psychopedis, 1990, Tsougras, 2012, Kokkonis, 2017.

<sup>2</sup> Both albums have been uploaded on YouTube.

<sup>3</sup> See Kallimopoulou, 2017a.

of *clarino* (Image 1). The *clarino*, with its rough and melismatic, often microtonal, sound, asserts the traditional basis of the music. However, the dialogue of a rock/stoner aesthetic with the Epirotic musical tradition is much deeper and mainly focuses on an imaginative and polyprismatic exploration of pentatonicism - a common element in both musical traditions. Analytical observations in the present paper uncover how this osmosis deepens throughout the album, via formal, melodic, textural and harmonic parameters and an increasing emphasis on the lyrics.

### **Context-Conclusions**

Both approaches to Greek folksong are also discussed within the changing, in time, perception of folksong within Greek culture. During the 1960s it was not folksong, but the urban/popular song cultures that dominated as markers of a modern Greek cultural identity.<sup>4</sup> In addition, folksong was added with negative connotations after its extensive use by the Greek Dictatorship (1967-1974).<sup>5</sup> The music of VIC reflects the deep re-evaluation, re-vitalization and institutional support of folksong from the 1980s onwards.<sup>6</sup> In other words, music analysis on these albums reveals essential musical representations of the different creative dynamics that folksong has carried within modern Greek culture.

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<sup>4</sup> See Chardas, 2017.

<sup>5</sup> See Papaeti, 2015.

<sup>6</sup> See Kallimopoulou, 2017b.

## **Quantitative evaluation of music copyright infringement**

### **Background**

Unfounded music copyright lawsuits inhibit musical creativity and waste millions of taxpayer dollars every year. A major reason for this is that evaluating musical similarity requires specialized expert testimony by musicologists, who tend to use subjective, idiosyncratic, and time-consuming methods. Such analysis has traditionally focused on melodic similarities as represented by standard staff notation, which is hard for lay juries to evaluate (Cronin, 2015; Fishman, 2018).

### **Aims**

Our aim was to develop and test objective methods in order to supplement subjective musicological analyses. To do so, we adapted automatic sequence alignment algorithms from molecular genetics to develop a "percent melodic identity" (PMI) method that was initially developed to measure the cultural evolution of folk music from different cultures.

### **Methods**

This method automatically quantifies the percentage of identical pitch classes shared between two melodic sequences (Savage & Atkinson, 2015). This method includes the feature of random permutation to provide not only descriptive measures of similarity but crucially allow inferential statistical testing to determine whether two melodies share significantly more notes than would be predicted by chance for any two melodies constructed from the given scales. We applied the PMI method to a corpus of 20 pairs of melodies from the Music Copyright Infringement Resource (Cronin, 2016) that had been the subject of legal decisions and that had previously been analyzed using automatic methods (Müllensiefen & Pendsch, 2009).

### **Results**

Our analysis found that PMIs below 50% usually result in decisions of no infringement (11/13 cases), while PMIs above 50% usually result in decisions of infringement (5/7 cases). Importantly, each of the four outlying cases could be explained by contextual factors not related to melodic similarity. For example, two songs sharing the same title/hook lyrics "Love is a Wonderful Thing" were found liable for infringement despite a PMI of only 36%, while the jury's verdict that the BeeGee's "How Deep Is Your Love" infringed on "Let It End" (PMI = 61%) was overruled by a judge who ruled that the plaintiffs had failed to provide evidence that the BeeGee's had access to "Let It End". Random permutation analysis confirmed that all PMIs over 50% were significant ( $P < .05$ ) and all PMIs below 40% were non-significant ( $P > .1$ ), but provided mixed results for PMIs between 40-50%.

### **Conclusions**

Our results demonstrate that automatic melodic comparison provides important objective information that can help evaluate music copyright infringement cases. It also highlights the need to combine measurements of melodic similarity with contextual factors (e.g., access, lyrics). Our findings build on those of Müllensiefen & Pendsch (2009) by adding a measure of statistical significance to

melodic similarity and by providing a simple PMI metric that is easily interpretable juries, judges, and other non-musicologists. In the future, we aim to test these predictions on a wider sample drawn from the 170 decisions compiled at the Music Copyright Infringement Resource (Cronin, 2016), analyze factors that contribute to these results and their exceptions in more detail, compare results against perceptual measures of similarity, and develop a free online tool that will allow anyone to automatically calculate PMIs from existing melodic databases and/or enter their own custom melodies for comparison. Our methods provide promise for creating a more efficient and just system for evaluating music copyright infringement that combines both objective and subjective components.

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(extended abstract)

## **A New Approach in Analysis of Melodic Movements in Collective Pieces: Melodic Contours of *Gūsheh-ha* in Iranian *Dastgāhi* Music**

### **Introduction**

Persian classical music (*mūsīqī-i dastgāhi*) is based on a large collection of *gūsheh-ha* (melody types) organised in seven *dastgāh-ha* and five auxiliary systems, *āvāz-ha*. This collection is known as the *radīf*. For a performance of traditional music, a performer selects a number of *gūsheh-ha* from one specific *dastgāh* or *āvāz* to use as a framework for his or her improvisation.

### **Aims and Objectives**

Most of the previous studies in the subject of Iranian musical music are particularly interested in modal systems of *dastgāh-ha* and the arrangements and functions of notes and their alteration within a tetrachord and pentachord. It is in spite of that accustomed listeners to Iranian music, pay little or no attention to microtones and their complicated arrangements. The listener normally follows the melody and its movement throughout the piece. In this project I present a new approach by which one can analyse the nature of melodic movements, and at the same time compare the collection of pieces (*gūsheh-ha*) played in every *dastgāh*.

### **Background**

Studying melody has been always included in the studying of the contour. For both music creators including composer and music improviser melody is a central thematic material around which other musical aspects find their roles (see for instance Hindemith, 1940; Perricone, 2000; Kachulis, 2003; Bradford, 2005 and Azadehfar 2017a). Melody also plays a central role in the work of musicologists and ethnomusicologists in analyzing musical structure (see for instance Meyer, 1956; Rosen, 1971; Narmour 1974; Azadehfar 2017b). Studying melody also is a key concept in the psychology of music (see for instance Lerdahl and Jackendoff 1983; Dowling, W.J. and T.J. Tighe. 2014). Melodic contour has been defined in various ways in the literatures. Daniel Müllensiefen et al. (2009) summarized those definitions offered as follows:

- as contour classes (Huron, 1996)
- as Fourier coefficients (Schmuckler, 1999)
- as polynomial coefficients (Müllensiefen & Wiggins, 2009)
- as interpolation lines (Steinbeck, 1982; Zhou & Kankanhalli, 2003)
- as symbol sequences (Parson, 1975; Kim et al., 2000; Pauws, 2000; Müllensiefen & Frieler, 2004)
- as step curves (Juhász, 2000; Eerola & Toiviainen, 2004)
- as matrix of interval relationships (Friedmann, 1985; Marvin & Laprade, 1987; Quinn, 1999)

### **Analysis**

In general, we can consider three main factors in every examination of melodic contours including directions, intervals and time values. Indeed the emotion of the listener from exposing to each melody comes from a combination of those three elements plus the way performers present such features. For the purpose of systematically studying and categorizing the melodic shapes of *gūsheh-ha* of the *radīf* of Iranian traditional music, I designed a system. In

this system I study all main *gusheh-ha* of seven *dstgaāh-ha* and five *āvāz-ha* from the *radīf* (here the version of Mīrazā abdullāh used as the main reference) and categorize the melodic shape of each in one of the ten kinds of movement as follows: ascending, descending, level, with very limited tonal material, arc, and the pendulum, an undulating type of motion. For each *gūsheh* I recognized two types of melodic movements, structural and momentary movements. I used my own experience of familiarity with *radīf* as a musician and comparison of several versions of *radīf-ha* by various Iranian masters to distinguish the structural elements from momentary musical incidents in this study.

Using this method, I studied all main *gusheh-ha* of *dstgaāh-ha* of Iranian music including 106 pieces and categorize the melodic shape of each in one of the 10 melodic shapes including ascending, descending, level, arc, pendulum, etc. melodic motions. For each *gūsheh* I recognized two types of melodic movements, structural and momentary movements. Studying melodic structure of *gūsheh-ha* in this project revealed that most melodies tend to move level in a very limited tonal range. Pendulum movements and sequential descending melodies are also used in configuration of melodic shape of the *gūsheh-ha* of this *dastgāh*. I know it is odd to present any table in abstracts, but I thought it may help to make sense what my suggested approach looks like I present it here) Here is an example of suggested table including the 10 categorized melodic movements.

Main <i>Gūsheh-ha</i>		Melodic movements										
Name of <i>dastgāh</i> or <i>āvāz</i>	Name of <i>gūsheh</i>	Pendulum	Arc		Level (with very limited tonal material)	Descending			Ascending			
			Inverted Arc	Proper Arc		Straight	Sequential	Terrace	Straight	Sequential	Terrace	
Dastgāh Shūr	darāmad	○			○	●						
	Rohāb	○			●							○
	Zirkeh-salmak						●					
	salmak						●					
	Mollānāzī	●						○	○			
	Uzzāl	●										
	Safā				●							

Dobeytī							●				
Bozorg			●	○							
Kuchak				●							
Khārā				●							
Razavī	○			●							
Shahnāz	●								○		

Table 1) Classification of various melodic movements in *dastgāh Shūr* (the sign ● represent the structural movements and the sign in ○ stands for momentary movements)

## Conclusions

No approach works better than living in a society for learning, performing and experiencing everyday life to make sense of their music and their culture. Nonetheless, for the purpose of categorizing the musical elements, a systematic approach of study which eventually leads to a sort of comparative examination of data is still working accurately, as long as we have the cultural specifications on board. The approach I presented in this study helps to examine the qualitative phenomena of melodic movement in various *gūsheh-ha* of *dastgāh-ha* and their subdivisions to acquire a general picture of one of the elements of form in Iranian traditional music.

Based on these findings I summarized the central features in melodic shape of *gūsheh-ha* of the *radīf*. Out of 106 *gūsheh-ha* from various *dastgāh-ha* and their subdivisions *āvāz-ha* which studied in this project, pendulum movement of melody and moving level with the very limited tonal material have the highest rank in various melodic shapes and movements. As well as having pendulum and level melodic contours as the main melodic movements we face a second kind of movement with takes place at the same time in another level of melodic form of the pieces which is sequential descending of the melody. The findings of this study also revealed that some types of melodic shapes such as “inverted arc,” “sequential ascending,” and “terrace descending” appears very rarely in melodic movements of Iranian melodies. The findings of this study also showed that ascending melodic movements are not popular in melodic structure of *dastgāh-ha*. Moreover, melodies in traditional music of Iran are usually tended to move in level with a very limited tonal material or having a wave shape outline.

Key words: Melodic contour; world music analysis; Iranian musical structure; *dastgāh* structure; Middle East musical structure

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EXTENDED ABSTRACT

This contribution may be considered either as paper or poster presentation, complemented by an entire score and my recordings from different rehearsals (Istanbul, 2011) —which I exclude from this abstract.

Please read footnote 1 on page 1 concerning other existing recordings.

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## MAQĀM AND BEYOND:

## A UNIFIED THEORY IN JULIEN JALĀL ED-DINE WEISS'S LAST COMPOSITION

## INTRODUCTION

The French qānūn player Julien Jalāl Ed-Dine Weiss (1953-2015) is remembered as founder of the Al-Kindi Ensemble with which he brought the Aleppian tradition to the world stage.

Weiss saw the maqām phenomenon as a conglomerate of many local contexts. As a solution to an old discrepancy between tuning theory and practice, he constructed a new qānūn with extended pitch supply in just intonation. After his death, his legacy has not gained a following, being mainly perceived as the attempt of a foreigner, while most of his instruments were lost in the Syrian war and his transcriptions from the repertoire remain unpublished. Even lesser known are his compositions in which he experimented with his arithmetic theory. My analysis explores his last work, *Spiritual Journey*<sup>1</sup>. Considering the validity of historical form concepts, I ask by which structural means Weiss's amalgamation and transformation of scales from various sources is supported.

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<sup>1</sup> The full title is *Spiritual Journey, Sinfonia Sacra*. On Weiss's request, I provided a clean copy of the score over the years 2011–14, along with transposed sheet music for the first performance at Beiteddine Festival (Lebanon) in 2011. Excerpts from the concert can be listened to on youtube: <https://www.youtube.com/watch?v=PYFUkGj3iqI> (from alkindiensemble), <https://www.youtube.com/watch?v=SZT0egO3cvc> (from Sabine Châtel, Weiss's agent), along with a full, private recording of *Spiritual Journey* by Patrick Mollière: <https://www.youtube.com/watch?v=waa5wTXdAcY>; all links accessed November 30, 2017. My own recordings from 2011, either with Weiss alone or with the Al-Kindi ensemble, are not publicly available.

## CONVENTIONS

Pitch content is labelled using Arabic names. Intervals are shown in ratios and cents (c)<sup>2</sup>, alterations in Weiss’s microtonal symbols. The note *Rast* is positioned at D4.<sup>3</sup>

## THEORETICAL FOUNDATION

Considering all local traditions, intonation in maqām music is more complex than written treatises and 24 notes per octave suggest (During, 1985, 108–18; Marcus, 1993). Pitches tuned as quarter-tones in the Arab world are only a comma lower than their upper neighbors in Turkey (D’Erlanger 2001–V, Özkan 2006, Signell 2006); in Aleppo they were located half-way between.

Although it seems impossible to fit such diversity—let alone glissando, portamento, and vibrato (D’Erlanger, 2001–V, 28; During, 1985, 118)—into one theory, Weiss believed that it could be grasped using arithmetic ratios. His qānūn includes Pythagorean and syntonic commas along with four different “quarter-tones” within every Pythagorean apotome.<sup>4</sup>

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<sup>2</sup> 1,200 cents equal one octave or 12 tempered semitones.

<sup>3</sup> Establishing the axis D4–A4 as harmonic basis made it easier for Weiss to tune all instruments on pitch standard A4 = 440 Hertz. This method of notation also appears in his transcriptions from the repertoire, such as in Harun Yahudi’s *Küll-i Külliyyāt-i Fahte* in maqām *Ḥusaynīy* (Al-Kindi, 2006) where the finalis *Dukah* is placed on D4. In contradiction, Tura’s notation (2001, No. 22) departs from E4 and Wright’s (2000–I, 48), using Turkish standard notation, from A4.

<sup>4</sup> Weiss invented many different tuning systems from which two different *qānūn* models were built. Their only difference lies in the reversal of the central (“Arab”) ratios within each Pythagorean major semitone. These systems have been described in detail (Pohlit 2012). For this proposal, I introduce only the first of them.



## ANALYSIS

## Principal Structure

The score is divided into four movements, each introduced by a new rhythmic cycle [ʿuṣūl]. Tied to a common fundamental note (D), the whole work may be compared to the Turkish and Arab *fasıl*<sup>5</sup>, but also to a classical symphony<sup>6</sup>.

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<sup>5</sup> The *fasıl* is either a whole concert format or a collection of pieces around a given maqām (Özkan 2006: 89). It may comprise exclusively vocal or instrumental pieces or a combination of them. Modulations are limited and introduced by an improvised *taqsīm* outlining every scale before it appears in composition. In his 17<sup>th</sup> century treatise Dimitrie Cantemir described it in “highly specific terms” (Feldman 1996: 180) regarding the succession of forms.

<sup>6</sup> The succession of the four movements appears obviously close to the classical symphony—the first being the longest and composed in the most characteristic, modulating form genre while the other three feature more static entities tied to shorter rhythmic cycles. Both the *Meditation* and the *Tšahār-Mezrab* unite a potpourri of ideas; the latter, episodically, recapitulates melodic material from the first movement, in this similar to a *Rondo*.

**Table 2:** Principal Structure of *Spiritual Journey*

	Modal Structure	Rhythmic Cycles ('Uşul)
1.	“ <i>Peşrev</i> ” in Maqām <i>Nahāwand</i> H1–7 T	<i>Zenjir</i> “ <i>Mevlāna</i> ” (235/8 = 99+37+99) <i>Muḥammas</i> (112/8)
2.	“Coda” in Raga <i>Tōdī</i>	<i>Zenjir</i> “ <i>Jupiter</i> ” (47/8 = 7+19+7)
3.	Meditation <sup>7</sup> in Maqām <i>Nahāwand</i>	<i>Nim Devr-i Revān</i> (14/16) <i>Ḥafīf</i> (32/4) <i>Bereşşān</i> (16/8) <i>Faḥte</i> (20/4) <i>Zenjir</i> “ <i>Holy Grail</i> ” (144/8 = 12+13+14+15+16+17+18+19+20)
4.	Iranian <i>Tšahār-Mezrab</i> in — Iranian <i>Nawā</i> — Maqām <i>Nakrīz</i> — “Just Intonation Blues”	<i>Yürük Semâ’i</i> (12/8)

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<sup>7</sup> Upon its first performance on July 30<sup>th</sup> 2011 at Beiteddine Art Festival (Lebanon), *Spiritual Journey* formed the center of a larger presentation, *Stabat Mater Dolorosa, Muslim and Christian Praise to the Virgin Mary*, which included contributions by Greek-orthodox and Arab masters of religious chant. The middle section (*Meditation*) was extended to a Sufi ceremony [Dīkr] with participation of the Mawlawīyyah of Aleppo;

<http://www.beiteddine.org/event-details.asp?eventId=248>, accessed November 25, 2017. This in mind, the entire format may also be likened to the *Mevlevî Ayîn*, the musical ceremony of the Whirling Dervishes.

The first movement resembles the Ottoman *Peşrev*. It modifies both the older and the modern form of this genre by containing seven main sections (*Hânât*, H1–7) and repeating a long, uniform *Teslim* (T) only once<sup>8</sup>:

**Fig. 1:** Progression of the First Movement (*Peşrev*)

H1 → H2 → H3 → T → H4 → H5 → H6 → H7 → H3 → T

Movements 2–4 string together different structures, each introducing new rhythmic cycles and featuring a high ambitus and implied polyphony.<sup>9</sup>

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<sup>8</sup> In the old *Peşrev* until the 17<sup>th</sup> century the ritornello in the main maqām was called *Mülâzime* [from Arabic *lâzim*: *necessary*] and formed the central part of the piece. It was uniformly repeated after each of three *Hânât* in the pattern H1-M-H2-M-H3-M (Feldman 1996: 336, Popescu-Judetz 1999: 70, Wright 2000-II: 532). The term *Teslîm* [*surrender*] belongs to the modern structure where the ritornello shortened and could be composed as different endings for each of four *Hânât* which in turn featured greater diversity (Feldman *ibid.*).

<sup>9</sup> Movement 3 of *Spiritual Journey* is reminiscent of *Meditation* from 1994 which appeared on two compact discs from *World Network* (*Takasim & Sufi Chants*, 1994, and *Sufi Soul/Echos du Paradis*, 1997) and coordinates different improvisations over a recurring bass accompaniment.

Regarding the *Tšahâr-Mezrab*, Weiss's technique of qânûn playing was influenced by the possibilities of the Iranian santûr early in his career. He was well-versed in the related literature, such as Faramarz Payvar's *30 Chahâr Mezrâb for the Santûr* (1956). *Waşla Bağdadîyya*, a solo suite composed for the 1986 *Babylon International Summer Festival* and recorded for the 1989 Auvidis album *Musique Classique Arabe*, finishes like *Spiritual Journey* with a section alluding to the same virtuosic genre.

## Modes

The tonal axis D–A is never abandoned<sup>10</sup>, but the diversity of scales likens the score to the Ottoman *Küll-i Külliyyât*.<sup>11</sup> Some species are tuned in Turkish, some in Arab fashion, although a preference for major semitones<sup>12</sup> makes the piece quite Turkish<sup>13</sup> while some quarter-tones may be explained by the Turkish “attraction theory”.<sup>14</sup>

*Nahāwand* (H1, H2, H4, and ||:T:||), the main maqām, is a chimera of natural and harmonic Minor. The latter’s *Hijāz* tetrachord, raising the sixth degree by a comma, brings *Nahāwand* in close relationship with *Nawā-’Ātar*, the subsequent mode.

<sup>10</sup> At Beiteddine, an Indian *tānpurā* was repeating the drone D–A uninterruptedly.

<sup>11</sup> According to Dimitrie Cantemir (Feldman 1996: 294, Popescu-Judetiz 1999: 56), the *Küll-i Külliyyât* may be an improvised *Taqsim* or a composed form (the instrumental *Peşrev Küll-i Külliyyât-i Fahte* or the vocal *Kâr-ı Nâtk*). The combination of scale content may be entirely up to the artist (Feldman, *ibid.*); however, in the 17<sup>th</sup> century, makām *Husaynīyy* was not only “the most widely used” maqām (Feldman 1996: 236), it was given “a privileged position in the modal hierarchy” (Popescu-Judetiz 1999: 56) due to its range and capability of embedding other maqāmāt. The modulations in Cantemir’s verbal instructions for the *Taksim-i Külli* (notated in Popescu-Judetiz *ibid.*: 58-60, Fig. 16, and schematized in Wright 2000-II: 377), combine *Husaynīyy* with very different modal genres, such as *Şabā* and *Huzām*. In the first movement of *Spiritual Journey*, the role of *makâm-i küllî*—if it applies—is given to *Nahāwand*. The only unusual fact, in comparison, remains the coexistence of scales tuned in Turkish and Arab fashion.

<sup>12</sup> On Weiss’s *qānūn* all melodic major semitones, to be played from one course of strings to an adjacent one, are harmonic (16/15 or 111.73c). Consistent with its arithmetic calculation, the Pythagorean apotome (2187/2048 or 113.69c) figures as augmented prime and can only be performed within one single course of strings (Table 1).

<sup>13</sup> Conventional *Hijāz* and *Nakrīz* are tuned similarly in Turkey and Arab countries of the Middle East. The professional Arab *qānūn*, in particular models built before the 1970’s, may contain an additional tuning lever for the production of their characteristic major semitone and, thus, six disposable pitches on a course of strings (Pohlitz & Weiss 2014: 209).

<sup>14</sup> The custom of raising or lowering a note in the direction of melodic motion, noted by D’Erlanger as a practice of “glissando” (D’Erlanger 2001-V: 28), distinguishes Turkish from Arab performance practice. Its most graspable example may be the common lowering of the seventh degree of maqām *Rast*—from *’Awj* to *’Ajām*—in descending motion (Özkan 2006: 115, Signell 2008: 67).

Being interested mainly in the symmetry implied by *Hijāz*, Weiss used *Nahāwand*'s Pythagorean sixth only for keeping the fourth B flat–F natural pure.<sup>15</sup>

**Fig. 2:** *Nahāwand* and *Nawā-ʿĀtar* in H1 (App.)

The figure consists of three musical staves. The top staff, starting at measure 26, shows a melodic line with a bracketed section labeled "Hijāz tetrachord" (B, C, D, E) and a boxed section labeled "perfect fourth" (B, F). The middle staff, starting at measure 31, shows a melodic line with a bracketed section labeled "syntonic comma" (B, C) and a boxed section labeled "symmetry around A". The bottom staff, starting at measure 41, is titled "Comparison: Nawā-ʿĀtar on Rast" and shows two melodic lines: "Nakrīz" (B, C, D, E) and "Hijāz" (B, C, D, E, F, G). The "Hijāz" line is circled, and the "Nakrīz" line is boxed.

<sup>15</sup> For Weiss, *Nahāwand* was basically a Minor scale, having evolved under notable influence of Westernization. In Turkey where raising the sixth degree by a comma is canonical, the scale is explained as a transposition (*şed*) of *Būsalīk* (Özkan 2006: 208). The third degree is always a Pythagorean minor third in all regional contexts. For example, ‘Ali al-Darwīš’s from Aleppo (D’Erlanger 2001–V: 29, Fig. 9) labelled the lower, Pythagorean third over *Rast* as *Kurdī Nahāwand*, the upper, harmonic third as *Kurdī Hijāz*. Regarding its second form (“harmonic Minor”), lifting the third degree and transforming the first pentachord into *Nakrīz*, respectively, will produce *Nawā-ʿĀtar*. This connection is not at all unusual, and Weiss may have thought of it as one compound scale, since he considered a fully “harmonic *Nahāwand*” as highly effective—not only in terms of acoustic resonance, but in particular in the Arab world (where the scale is written from C natural) because harmonic tuning would avoid undesired conflict with open strings (Weiss 2009–14).

**Fig. 3:** All Maqāmāt and Pitches of the First Movement in Chronological Order

The figure displays 13 musical staves, each representing a different Maqāmāt or Pitch. The notation includes notes on a five-line staff and intervals indicated by brackets with numbers below them. The Maqāmāt and their corresponding intervals are as follows:

- H1, 2, 4, T:** *Nahāwand*. Intervals:  $\frac{32}{27}$ ,  $\frac{128}{81}$ ,  $\frac{16}{15}$ ,  $\frac{8}{5}$ .
- H1:** *Turkish Nawa-'Aṭar* and *Hijāz*. Intervals:  $\frac{6}{5}$ ,  $\frac{16}{8}$ ,  $\frac{16}{15}$ ,  $\frac{8}{5}$ .
- H2:** *Hijāz*. Intervals:  $\frac{16}{15}$ ,  $\frac{16}{15}$ .
- H3:** *Arab Rast*. Intervals:  $\frac{39}{32}$ ,  $\frac{27}{22}$ ,  $\frac{5}{4}$ .
- H3:** *Arab Bayātī*. Intervals:  $\frac{13}{22}$ ,  $\frac{11}{10}$ ,  $\frac{10}{9}$ .
- H4:** *Turkish 'Irāq*. Intervals:  $\frac{16}{15}$ ,  $\frac{16}{15}$ .
- H4:** *Turkish 'Awj-Ārā*. Interval:  $\frac{16}{15}$ .
- H4-5:** *Turkish Hijāz-Kār*. Intervals:  $\frac{16}{15}$ ,  $\frac{16}{15}$ ,  $\frac{16}{15}$ .
- H5-6, 7:** *Nakrīz*. Intervals:  $\frac{6}{5}$ ,  $\frac{16}{15}$ .
- H6:** *Turkish Rast*. Interval:  $\frac{5}{4}$ .
- H7:** *Turkish Banjkāh (Pençgāh)*. Intervals:  $\frac{5}{4}$ ,  $\frac{10}{9}$ ,  $\frac{45}{32}$ .
- H7:** *Arab Muḥayyar*. Intervals:  $\frac{12}{11}$ ,  $\frac{12}{11}$ .
- H7:** *Turkish Musta'ār*. Interval:  $\frac{6}{5}$ .

“Super-symmetrical” *Tōdī* (movement 2) is deduced as distant “relative” of maqām *Huzām*<sup>16</sup>. A similar operation engenders “Just Intonation Blues” (last movement).<sup>17</sup>

**Fig. 4:** Comparison between Turkish *Huzām* & “Super-Symmetrical *Tōdī*” (Weiss)

Turkish *Huzām* Written from the Lower Sixth Degree

Alteration of the Fourth Degree (B):

“Super-Symmetrical *Tōdī*” in Just Intonation, Written from the Lower Sixth Degree:

“Super-Symmetrical *Tōdī*” on D

<sup>16</sup> Based on *Dukāh/Dūgāh* (D4 natural) , Weiss’s “Super-Symmetrical *Tōdī*” is roughly identical with the scale of *Hiṣār Kurd*—*Hiṣār* being a transposition of *Nawa-’Ātar* on *Dukāh* and *Hiṣār Kurd* a variation featuring a minor instead of a major second (Weiss 2009–14).

<sup>17</sup> Weiss’s “Just Intonation Blues” scale is built of two *Hijāz* tetrachords.

## Melody

The melodic unfolding (*seyir*) relies on permuted cells merging into larger periodic units.<sup>18</sup> Temporary dominants are reached without inserted cadences: Weiss rather unsettles the metrical symmetry in order to stress pitch changes.<sup>19</sup>

**Fig. 5:** Cell Structures, Opening of H1 (App.), in Assymmetric Periodicity

26

a b

30 → [2<sup>nd</sup> Phrase]

pitch change around IV<sup>th</sup> degree

31

Variations

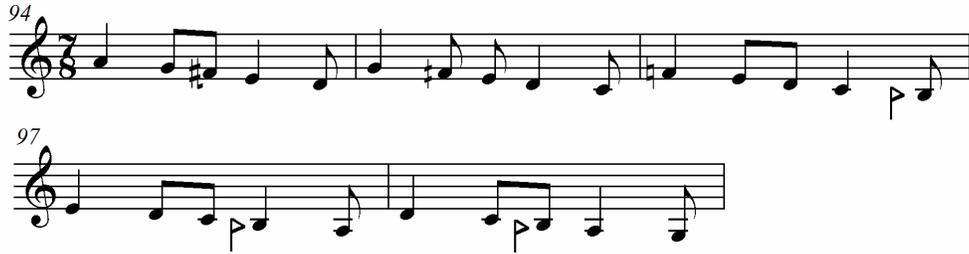
39 a c c a c

<sup>18</sup> While all measures in 10/8 are divided similarly into 2+2+3+3, the whole texture emerges from only two metric ideas, one accentuating the rhythmic structure (Fig. 5 & App., m. 26), the other dissolving it into eighths (m. 27).

<sup>19</sup> In the Ottoman *Peşrev*, a modulation is usually supported by a small cadential formula (Turkish: *asma karar*). Each H of *Spiritual Journey*, however, progresses like an interrupted chain. This can be observed in H1, m. 38–40 (App.) where Weiss creates momentary unrest by introducing a disfigured Turkish *Sikah* pentachord on B3 natural-“minus-comma” (*Kaba Nim Hışar*) and thus both continuing and breaking the symmetry of the superordinate periodic sequence. His decision for this alien note came late when the score was already finished. The insertion is, however, supported by the rhythmical stress it receives from five consecutive quarter-notes. Although the new scale, *Nawā-’Ātar*, is already reached in the following m. 39, the uncertainty is prolonged unto the resolution in A4 (*Nawā*, the dominant degree) of m. 40. The effect is similar to the turning of a page and signals the new maqām in unconventional fashion.

Often, such units are sequenced, sometimes including gradual alteration.

**Fig. 6:** Gradual Micro-Chromatic Alteration, H3



When scales remain steady, they grow into larger fields, motifs being juxtaposed in separate registers.

**Fig. 7:** Register Fixation, Maqām Remaining Steady, H5



H2–7 are variations of H1, each filling one cycle of ’uṣūl “*Zenjir Mevlâna*”. Strong similarities can already be found in their opening ascent<sup>20</sup>, a formula equally implied in T and recapitulated in the last movement.

**Fig. 8:** The Three-Note Ascent: Openings to H1–7 and T and Final Quotation

H1 *Nahāwand*

H2 *Nahāwand*

H3 *Rast*

H4 *Nahāwand*

H5 *Hidjāz-Kār*

H6 *Nakrīz*

H7 *Pandjgāh*

H1

T

Mov. 4, “*Tšahār-Mezrab*”

434

Iranian Nawā

<sup>20</sup> In accordance with *Hijāz-Kār*’s descending *seyir*, H5 starts from the upper D (*Kardan*).

## CONCLUSIONS

*Spiritual Journey* follows a historic tendency of the *Peşrev* in which modulation, “subordinated to the expression of the melodic progression” (Feldman 1996: 335), abounds. Although consistent with the 17<sup>th</sup> century’s maqām compendium (*Küll-i Külliyyāt*, op.cit.: 294), its freedom relies, however, on a periodic cell structure, extending Weiss’s theory into the *seyir*. This brickwork allowed the composer to combine artistic and scientific approach, opening a transcultural perspective from within the tradition—a rare effort beyond Westernization in a time shaped by war and revisionism .

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## APPENDIX

2 *Spiritual Journey - Sinfonia Sacra*

Julien Bernard Jalâl Ed-Dine Weiss  
[transcr.: ██████████, 2011-14]  
- excerpt -

26 *Hane I*

The mountains of Pindus occupy the central part of continental Greece. The musical system found there, plays a fundamental role in the musical dialects found in the surrounding areas. Extensive field-research in the area and the reductive approach of the researcher has revealed interrelated musical cultural areas that when combined form a wider musical language which presents different levels of musical structures. These structures create pentatonic (anhemitonic, hemitonic or mixed) micro-scales which reveal an evolutionary process based on the functionality of the minor third and the perfect fourth two intervals ideal for the voice. While the melodies are based on this kind of micro-scales, their texture is based on melodic formulas that describe the word-accent melodically. These melodic formulas develop in time so that their durations serve the hidden meters which are created by short and long durations. Many times these meters are not apparent but obscure inside the texture of the songs due to a *rubato* performance. They are also not accentual or rhythmic, but present strong similarities with what is known as “additive” rhythm (Mantle Hood *The Ethnomusicologist* 1982:35). In a cross-cultural historical perspective they present a concept similar to that of the ancient Greek meter with short and long durations. The difference with what happened in antiquity is that these durations are now independent of their strong relationship with the durations of the syllables (no longer created by them) and combined with the modern accentual rhythm of the syllables of the words. Now the important factor for the composition of the musical texture is the “building blocks” (with reference to Bruno Nettl) of combined long and short durations which form the aesthetic references of this musical culture, no matter if they coincide with any syllable duration or not, and their dialogue with the upper level of the composition which is the melodic formulas that describe the word-accent.

So there are three levels in these songs-compositions: The melodic formulas created by the word-accent, the hidden meters as pre-existing aesthetic models (building blocks) and the “medium” that combines these two levels, which is the rhythmic formulas that describe the stress of the modern poetic verse, in an accentual rhythm.

The basic melodic-rhythmic formula that describes the word-accent develops in a way that “covers” the space of time created by the structures of the durations of the hidden meters below the melody. Many other factors (quality of voice, gender, functionality of the song etc.) together with the internal musical creativity, result in a great number of variations of this formula which hides its initial form, meaning and functionality from the outsider though it is apparent to the insider, the people of this musical culture. On the other hand it “hides” the existence of the inner musical meter which is responsible for the creation of these variations under this musical variability.

The two levels of composition (melodic formulas describing the word-accent and hidden meters) cannot join each other because of the accentual rhythm of the language: although the accent of the word is described melodically, its stress and rhythmic character contradict the concept of the durations found in the under flow of the musical meter. This “contradiction” seeks the third level in the musical composition described above namely the rhythmic formulas which will join the two contradicting factors. The small rhythmic formulas found in this tradition describe (like the melodic ones) the stress of the word –accent in a rhythmic way while enabling the possibility of expanding in time in order to fill the durations of the meter below the melody. In this way they create in their turn an immense number of different rhythmic formulas making a third level of composition that becomes the

vehicle of the dialogue between duration, melody and word- accent in language. These rhythmic formulas have become formal in the respective traditions of the surrounding areas or other formal expressions in dance songs and formal variations of traditional melodies. So although they “look like” “rhythm” in a western sense, and have been interpreted in this way by several authors (based on a European method of transcription and interpretation of these traditions) they are not rhythms (7/8, or 8/8 etc) but formal expressions of the divisions of the longer durations using rhythmic- verbal formulas.

## Bhatkhande, Schenker, Humboldt: An Eternal *Rāgamālā*

### Introduction

The term “*rāga*” is often defined structurally, as a “melodic type” (e.g. in Powers 1980). However, given its origins in the Sanskrit word for color (“*ranja*,” or more colloquially “*ranga*”), it is clear that “*rāga*” is an expressive term in Indian music theory, which signifies the deeper connection between structure and expression in Indian music. This is seen more vividly in the related term “*rāgamālā*,” which literally means “garland” or “braid” of *rāgas*, but which is also a metaphor for the deeper connection between *rāgas*, and artistic expression and creativity in India – and as has been represented for centuries in the eponymous *rāgamālā* paintings of Indian art (see Example 1). Therefore, any theory of musicality in India is essentially a *rāgamālā* theory, and this paper explores arguably the most important modern example of such, viz. the one proposed by Vishnu Narayan Bhatkhande. Bhatkhande wrote little in English though (a rare exception being Bhatkhande 1930), so attention is usually given only to his classification of North Indian *rāgas* into 10 modes or “*thāṭis*” (Example 2). Hence I will focus in particular on his less-discussed, yet crucial, statements about musical cognition and creativity in his 4-volume *magnum opus* (Bhatkhande 1909-32). I argue furthermore that these statements suggest a different kind of “*mālā*” – viz. a hitherto-neglected ‘golden braid’ between him and the two other individuals in my paper’s title. This has implications not only for a newer, cross-cultural history of music theory, but also, significantly, for the enduring interest in *music-language* connections.

### Analysis

I begin, therefore, by reviewing a linguistic thesis, according to which our creative use of language is said to result from our minds’ ability to *generate* novel, recursively-organized sentences. This thesis, developed by Noam Chomsky and others, originates in Wilhelm von Humboldt (1836), and was influenced, in turn, by the organicism of Humboldt’s mentor Goethe (as stated explicitly in Chomsky 1966). But such a generative, psychological thesis about creativity, influenced by Goethian organicism, is inherent in Heinrich Schenker’s proposals too, about how composers create novel, recursively-organized, *musical* surfaces from deeper *Ursätze* (as claimed by Keiler 1983-84, 1989; Pastille 1990 etc.) – which implies that Schenker’s (1906-35) masterwork was an essentially Humboldtian theory of music. This ‘musicolinguistic’ fact has been all but forgotten in musical scholarship.

However, it is what connects Schenker and Humboldt to Bhatkhande as well. As Schenker did in Europe, Bhatkhande rejected the speculative proposals of medieval ‘mode’ theorists (such as the mathematically-derived, *melakartā* system of South India), and spent much of his career collecting and analyzing countless compositions by actual musicians (documented in Bhatkhande 1913-37). This reveals the psychological attitude inherent in both theorists – they were both interested in explaining how people actually make and experience music, contrary to the abstract speculations of the medieval theorists. However, this psychological orientation did not extend to a concern for the *external*, extramusical aspects of musical experience. Schenker was well known for his rejection of the extramusical, and for his belief, based on the ideas of Eduard Hanslick, that musical meaning lies entirely within the formal structures of music. And

Bhatkhande – even though he had an early interest in relating his aforementioned theory of *thāṭs* to the extramusical *rasas* (“tastes”) described in traditional Indian aesthetic theory (see Examples 3a-b) – ultimately rejected this connection as well (Example 4). In other words, both theorists’ psychological attitude amounted really to an interest in the mind-*internal* aspects of musical creation – that is, the knowledge possessed by musicians that allows them to create actual, expressive musical structures, and the psychological procedures through which such structures are created.

And this is where a direct connection between Bhatkhande and Schenker, and also Humboldt, can be seen. Bhatkhande’s above *internalism* made him theorize Indian music, as Schenker did with Western music and Humboldt did with language, in terms of how humans generate recursively-organized surfaces. By analyzing hundreds of *rāga* compositions, Bhatkhande concluded that *rāgas* have hierarchical structures, which allows musicians’ minds to generate their phrases recursively, with some pitches elaborating others at each level of generation. This explains, for example, his classification of *rāga* Bihāg into the Ionian Bilāval *thāṭ* (Example 5), despite its having a Lydian #4̂, because #4̂ is used as a “dissonant pitch in the appropriate places” (Bhatkhande 1909-32, I: 182) to elaborate 5̂, to generate the essentially Ionian surface syntactic structure of phrases in this *rāga*. Such an internalist, generative approach to phrase structure is of course one of the cornerstones of Schenker’s proposals too, about how surface tonal phrases are generated recursively from hierarchically-superior deep structures, through similar music-internal procedures of elaboration (cf. Example 6 and 7).

## Conclusion

As I conclude, all of the above is relevant for at least two reasons: first, many have tried to analyze even Indian music from a prolongational, grammatical perspective (e.g. Powers 1959, Cooper 1977, Larson 2010, Morris 2011, Schachter 2015, Widdess 2016, Clarke 2017), but these projects have focused mainly on the methodological challenges of applying Western ideas about hierarchy, structural levels, etc. to the non-Western music of India. However, seeing these projects in a wider philosophical context – including their ‘emic’ justification in light of the links between Bhatkhande, Schenker, and Humboldt – might give us a better reason to continue them, especially when the importance of an internalist and generative orientation in such projects becomes clear (as opposed to a more reductive one, influenced more by, say, Lerdahl and Jackendoff (1983) instead of Schenkerian theory).

Secondly, and perhaps more importantly, the above discussion reveals a significant cross-cultural and historical justification for the resilient interest in music-language connections. On the language side of things, linguists influenced by Humboldt’s ideas have developed his ideas into significant new paradigms in generative-linguistic scholarship. In the latest phase of generative linguistics, known as the Minimalist Program (Chomsky 1995, 2002; Uriagereka 1998; Lasnik 2002; Boeckx 2006), the above recursive generation of grammatical structures is argued to be a unique ability of the human mind, not seen anywhere else in nature. However, *all* humans have this ability. This suggests that not only all language but perhaps all music is generated by this same mental generative grammar too, if the music-language connections defended by this paper hold true. The study of this ‘musicolinguistic’ system then promises to be an exciting new psychological science for the future.

The possibility of such a recursion-based psychological science has already been broached, famously by Hofstadter (1979), in his discussion of the ‘eternal golden braid’ between Kurt Gödel, M. C. Escher, and J. S. Bach, and the recursive basis for their masterworks. Hofstadter did not, however, reference Bhatkhande, Schenker, or Humboldt in his text, leaving his musical and linguistic discussions fraught with various weaknesses. So, my paper’s title is not accidental: updating Hofstadter’s project, by weaving a “golden braid” between Bhatkhande, Schenker, and Humboldt, might provide a more interdisciplinary framework for the study of Indian music. But it might also provide a deeper, cross-cultural and historical, explanation for the abiding relationship – the eternal *rāgamālā* – of music *and* language.

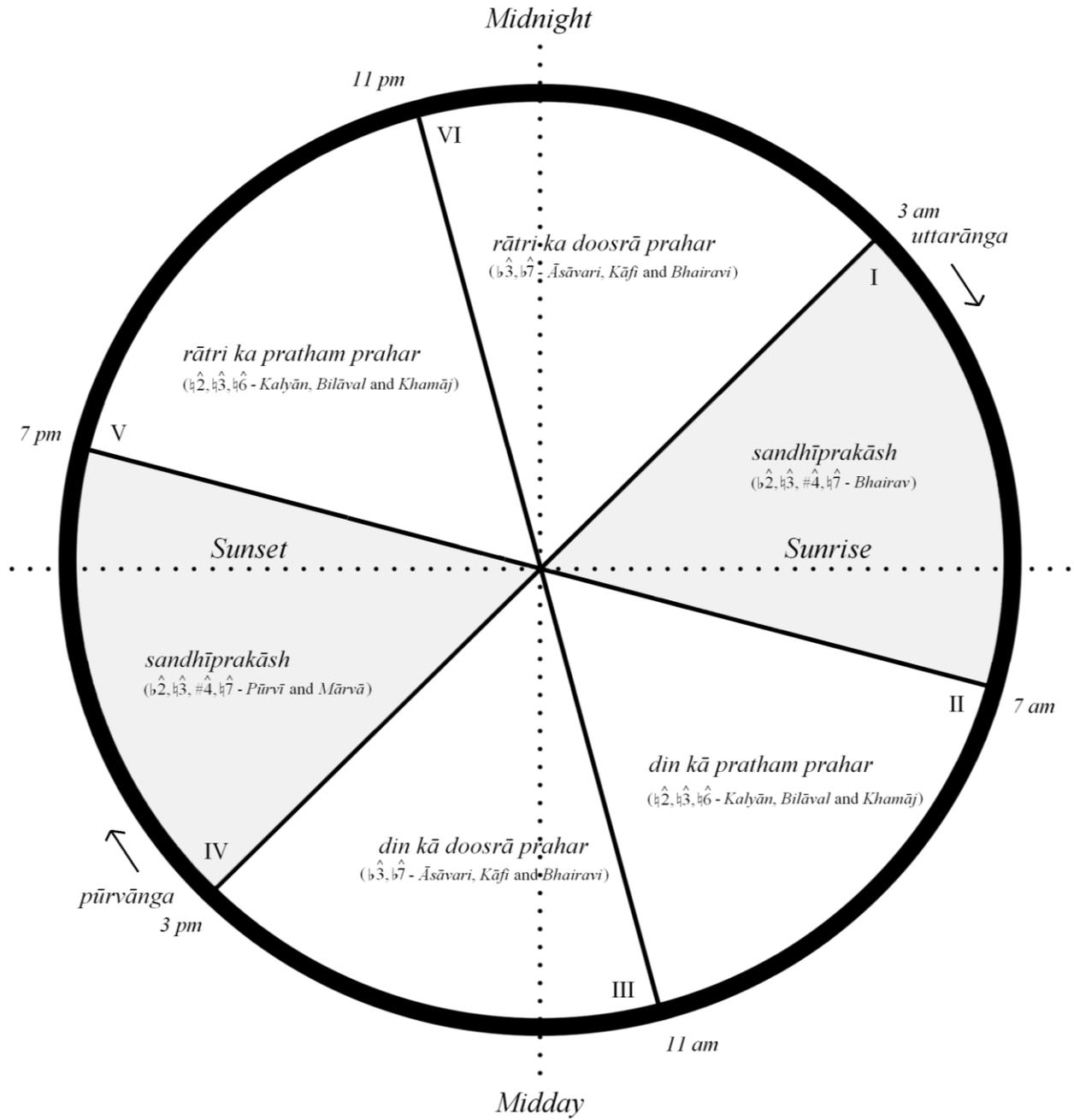
Example 1. A *rāgamālā* painting depicting *rāga* Bilāval (c. 1680), housed at the Met in New York



**Example 2. Bhatkhande's list of ten *thātīs*, from his *Hindustānī Sangīta Paddhatī* (1909-32)**

<i>Thāt</i>	Scale structure (centered on C)	Western equivalent
<i>Pūrvī</i>	C D $\flat$ E F $\sharp$ G A $\flat$ B C	
<i>Mārvā</i>	C D $\flat$ E F $\sharp$ G A B C	
<i>Kalyān</i>	C D E F $\sharp$ G A B C	<i>Lydian</i>
<i>Bilāval</i>	C D E F G A B C	<i>Major, or Ionian</i>
<i>Khamāj</i>	C D E F G A B $\flat$ C	<i>Mixolydian</i>
<i>Kāfi</i>	C D E $\flat$ F G A B $\flat$ C	<i>Dorian</i>
<i>Āsāvārī</i>	C D E $\flat$ F G A $\flat$ B $\flat$ C	<i>Natural minor, or Aeolian</i>
<i>Bhairavī</i>	C D $\flat$ E $\flat$ F G A $\flat$ B $\flat$ C	<i>Phrygian</i>
<i>Bhairav</i>	C D $\flat$ E F G A $\flat$ B C	
<i>Tōḍī</i>	C D $\flat$ E $\flat$ F $\sharp$ G A $\flat$ B C	

**Example 3a. Bhatkhande's correlation of *thāṭhs* with *rasas* in his time theory**



**Example 3b. Bhatkhande's correlation of *thāṭ*s with *rasas* in his time theory**

<i>Thāṭ</i>	Relevant pitch	<i>Rasa</i>	<i>Prahar</i>
<i>Kalyān, Bilāval, Khamāj</i>	ḍ̂, ḍ̃, and ḍ̄	<i>Śringāra</i>	<i>Pratham</i> (“first”) <i>prahar</i> of <i>din</i> (“day”) and <i>rātri</i> (“night”)
<i>Āsāvāri, Kāfi, Bhairavi</i>	ḍ̃ and ḍ̄	<i>Vīra</i>	<i>Doosrā</i> (“second”) <i>prahar</i> of <i>din</i> (“day”) and <i>rātri</i> (“night”)
<i>Bhairav, Pūrvī, Mārvā</i>	ḍ̂, ḍ̃, and ḍ̄	<i>Karuṇā</i>	<i>Sandhiprakāsh</i> (“transitional”)

**Example 4. Bhatkhande on *rāga* and *rasa* in the *Hindustānī Sangīta Paddhātī***

यह जो नवरस हमारे पंडितों ने माने हैं, इनमें भी मुख्य रस तीन ही हैं—शृङ्गार, वीर व करुण । बाकी के रस इन तीन रसों में अन्तर्भूत होजाते हैं । हमारे हिन्दुस्थानी सङ्गीत पद्धति के सब रागों के स्थूल वर्ग, स्वरों के अनुसार हम तीन ही करते हैं, इसलिये मैं सोचता हूँ कि इन तीन स्थूल वर्गों का सम्बन्ध उक्त तीन रसों से जोड़ा जाय और वह सर्व मान्य होजाय, तो इससे हमारी पद्धति का गौरव ही बढ़ेगा ...

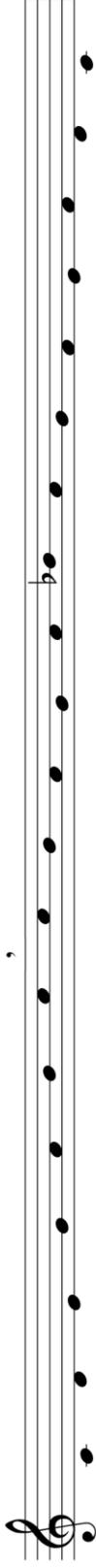
... विचार करने पर प्रतीत होता है कि राग का रस से प्रत्यक्ष सम्बन्ध स्थापित करना अत्यन्त दुष्कर है । राग एक सुगन्धित पुष्प के समान होता है । फूल की सुगन्ध से रस की निष्पत्ति नहीं होती, परन्तु उससे मन को एक अवर्णनीय आनन्द अवश्य प्राप्त होता है । इसी प्रकार राग के मनमोहक गायन अथवा वादन का भी मन पर परिणाम होता है, परन्तु वह परिणाम एक विशेष रस ही है, यह नहीं कहा जा सकता । उस प्रभाव का वर्णन करना सम्भव नहीं । ज्यादा से ज्यादा उसको 'नाद-मोह' कहा जा सकता है । यह 'नाद-मोह' अन्य मनोविकारों से भिन्न है, ऐसा भी कुछ लोग मानते हैं । फिर भी फिलहाल प्रत्यक्ष प्रयोगों के अभाव में राग तथा रस के सम्बन्ध में निश्चि रूप से कुछ भी नहीं कहा जा सकता ।

[My translation: "... of the nine *rasas* accepted by our teachers, only three are primary: the beautiful [*śringāra*], the heroic [*vīra*], and the poignant [*karuṇā*]. The remaining *rasas* can be incorporated into these three. I have categorized the *rāgas* in my *Hindustānī Sangīta Paddhātī* into three basic categories [cf. Example 3b], according to their pitches, therefore I think that if these three categories can be correlated with the three aforementioned *rasas*, and if this is widely accepted, then this will add to the prestige of my theory...

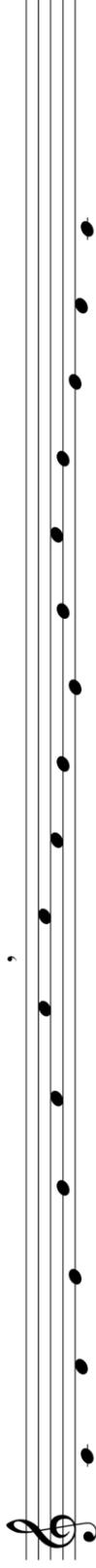
...But on consideration it seems that establishing a clear connection between *rāga* and *rasa* is very difficult. A *rāga* is like a fragrant flower. A flower's fragrance cannot determine its *rasa* conclusively, but it does bring an indescribable joy to the mind. Similarly, the pleasant performance of a *rāga* also has an effect on the mind, but it cannot be said that this effect amounts to a specific *rasa*. It is impossible to describe this effect. At most this can be described as "sound-beauty" [*nāda-mōha*]. Some say this "sound-beauty" is different from other psychological states. Even then, in the absence of clear experiments, nothing decisive can be said for the time being about the relationship between *rāga* and *rasa*."]

**Example 5. Ascending and descending scale structures of some *rāgas* from the Bilāval *thāt***

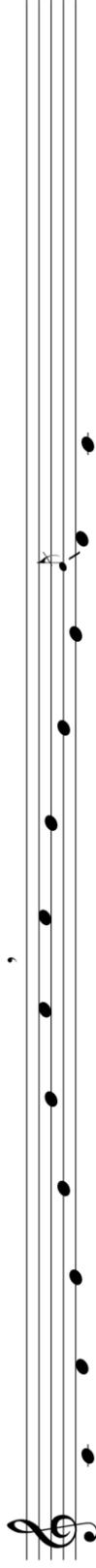
Rāga Alhaiya Bilāval



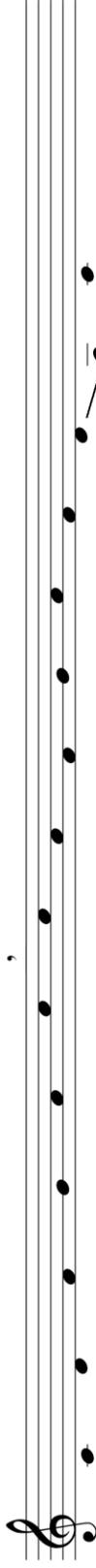
Rāga Deshkar



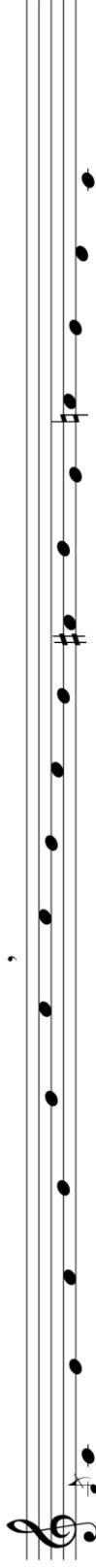
Rāga Hamsadhvani



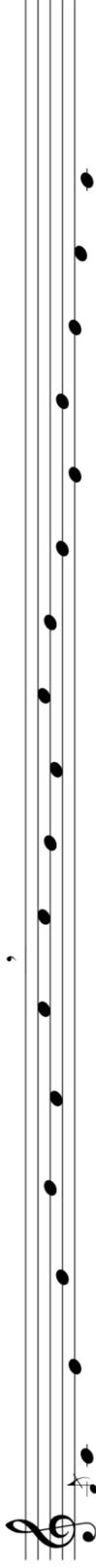
Rāga Durgā



Rāga Bihāg



Rāga Shankara



Example 6. The generation of a phrase in *rāga* Bihāg

The image displays six stages (A-F) of a musical phrase in *rāga* Bihāg, each on a five-line staff with a treble clef. The notes are represented by circles, and ornaments are indicated by numbers 1, 2, and 3 with a caret (^) above them. Brackets below the staves indicate the scope of the phrase being developed in each stage.

- A:** Shows the initial notes: a whole note with ornament 3, followed by two whole notes with ornaments 2 and 1.
- B:** Shows the first note with ornament 3, followed by a bracketed phrase of two eighth notes, then the final two notes with ornaments 2 and 1.
- C:** Shows the first note with ornament 3, followed by a bracketed phrase of a quarter note and a half note, then the final two notes with ornaments 2 and 1.
- D:** Shows the first note with ornament 3, followed by a bracketed phrase of a quarter note and a half note with ornament 3, then the final two notes with ornaments 2 and 1.
- E:** Shows the first note with ornament 3, followed by a bracketed phrase of a quarter note, an eighth note, and a half note with ornament 3, then the final two notes with ornaments 2 and 1.
- F:** Shows the first note with ornament 3, followed by a bracketed phrase of a quarter note, an eighth note, a quarter note, an eighth note, and a half note with ornament 3, then the final two notes with ornaments 2 and 1.

**Example 7. The Schenkerian generation of a tonal phrase from Bellini's "Casta diva" aria**

The image displays a musical score for Example 7, illustrating the Schenkerian generation of a tonal phrase from Bellini's "Casta diva" aria. The score is organized into five systems, labeled A through D, and includes a vocal line for Norma and an orchestral accompaniment.

**System A:** Shows the initial harmonic structure. The upper staff contains three chords with Roman numerals  $\overset{\wedge}{3}$ ,  $\overset{\wedge}{2}$ , and  $\overset{\wedge}{1}$  above them. The lower staff contains three whole notes corresponding to these chords, with Roman numerals **I**, **V**, and **I** below them.

**System B:** Shows the first level of elaboration. The upper staff contains a melodic line with a slur over the first three notes and a slur over the last two notes. The lower staff contains three whole notes. Fingerings are indicated below the notes: 6 - 5, 9 - 8.

**System C:** Shows the second level of elaboration. The upper staff contains a melodic line with a slur over the first three notes and a slur over the last two notes. The lower staff contains three whole notes. Fingerings are indicated below the notes: 6 - 5, 9 - 8, 4 - 3.

**System D:** Shows the third level of elaboration. The upper staff contains a melodic line with a slur over the first three notes and a slur over the last two notes. The lower staff contains three whole notes.

**System Norma/Orchestra:** Shows the vocal line for Norma and the orchestral accompaniment. The vocal line is in 12/8 time and includes the lyrics "Ca - - - sta Di - va, etc.". The orchestral accompaniment is in 12/8 time and features a rhythmic pattern of eighth notes.

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FULL PROPOSAL

*INTRODUCTION*

*Bertsolaritza* is the art of singing improvised verses in Basque. Singing style (*kantaera*) is vital to this musical practice. The way a *bertsolari* (improviser) sings a *bertso*, that is, *how* the *bertsolari* approaches the melody in improvisation and how this connects to words, determines its communicative success. However, academic literature has not yet addressed **transformations in *kantaera* in relation to social and historical changes**, such as formalisation and institutionalisation of the *bertso*, the use of microphones in venues, the presence of *bertsolaritza* in the media, and the growing importance of national *bertso* singing competitions.

To explore the above, I will propose a definition of *kantaera*, outlining the parameters that form it, namely intonation, accentuation, articulation, ornamentation, tempo, rhythm, dynamics and timbre. I will analyse sound recordings of six *bertsolaris*, from the same village but belonging to different generations, attending to the outlined parameters. Lastly, I will outline the relationship between musical practice, and social and historical aspects to understand transformations in *bertsolaris'* singing style.

*ANALYSIS*

Analyses show that **intonation** leans towards equal temperament over time. However, the two oldest *bertsolaris*, Jose Joakin Mitxelena (born in 1924) and Lexoti (born in 1925), step away from equal tempered singing, especially in two airs, showing 3rd and 6th Degrees that do not fit into Western equal tempered tonal system. In contrast, these particular airs are sung in a plain tempered minor mode nowadays. This change could mainly be due to the advent of radio and recorded music, which has brought about changes in the *bertsolaris'* aesthetics. Plus, learning *bertso* melodies through other musical idioms (versions with musical accompaniment, songwriters, choir arrangements...), as well as from MIDI files and scores from the official Melody Database, has only enhanced equal temperament.

[1962 Mitxelena. Intonation.wav](#)

(Joxe Joakin Mitxelena, 1924)

[2006 Xamoa. Intonation.wav](#)

(Arkaitz Oiartzabal "Xamoa", 1985)

Concerning **accentuation**, the use of pauses or breaks (*etena* or *arnasaldia*) increases over time, particularly in the case of Koxme Lizaso (1937) and Alaia Martin (1987). This could be related to the current propensity towards longer verses and a general decline in tempo as well. All three issues could be affected by the growing importance of Championships as singing contexts, and the need of *bertsolaris* to “gain time” and complete mistake-free bertsos, responding to complex themes which require a high grade of reflection and argumentation.

In addition, decrease in the use of **vibrato** is remarkable amongst the two youngest improvisers (Arkaitz Oiartzabal “Xamoa” born 1985, and Alaia Martin, born 1987), which might be also related to present aesthetics, as well as to the loss of its acoustical function (making one’s voice audible before the arrival of microphones in venues). **Ornamentation** such as *gruppettos* and *glissandi* are also rare in the case of the two youngest singers, which reveals changes in performance.

[1962 Mitxelena. Ornamentation.wav](#)

(Jose Joakin Mitxelena, 1924)

[1962 Lexoti. Ornamentation.wav](#)

(Jose Luis Lekuona “Lexoti”, 1925)

[1962 Koxme. Ornamentation.wav](#)

(Koxme Lizaso, 1937)

[2006 Xamoa. Ornamentation.wav](#)

(Arkaitz Oiartzabal “Xamoa”, 1985)

[2007 Alaia. Ornamentation.wav](#)

(Alaia Martin, 1987)

The lower average **tempo** in which two of the subjects improvise (Koxme Lizaso born 1937, and Alaia Martin born 1987) relates to the increasing weight of competitions and the *bertsolaris*’ awareness that their performance is judged. Bertso schools (which the two youngest improvisers have attended) also have established learning methods which primarily give importance to the written command of metrics, which could have also caused a decrease in singing speed.

**Dynamics** such as the acceleration of the verse’s last line, which is present in the whole corpus, relates to the process of producing a *bertso*, which is always built backwards (*bertsolaris* first compose the last line, and accordingly rhyme the rest). With regard to **rhythm**, Lexoti (1925) uses rhythm so as to disguise metrical inaccuracies (extra or missing syllables in a line). According to literature, this was common formerly, but is currently rare, as it is penalised in Championships. Aesthetics have therefore changed regarding metrics as well.

**Articulation** remains legato all along the corpus and hasn't been subjected to significant changes. **Timbre** instead has undergone important transformations, which are linked to microphones and vocal technique that was formerly needed in order to be heard. My preparation and consequent analysis have fallen short on this point: I merely pointed out that a change in timbre is perceivable. Future analysis of timbre will require special methods and tools, such as spectra analysis.

[1962 Zepai & Koxme. Timbre.wav](#)

(Akilino Izagirre "Zepai" born 1906, and Koxme Lizaso born 1937)

Last but not least, the founding of the Association of Friends of Bertsolaritza<sup>1</sup>, and the online setting of their melody database<sup>2</sup>, which is frequently consulted as main tool for learning melodies, sets a canon, contributing to the **fixation** of airs and a less variations. Related to this, the number of airs in which my informants sing has also increased over time, as current participation in competitions requires command of a greater amount of melodies.

## CONCLUSION

This work addresses transformations in *kantaera* ethnographically and analytically. It aims at pointing out the relationship between musical practice and social and historical changes, approaching the study of *bertsolaritza* from a new perspective by outlining its transformation.

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<sup>1</sup> [https://www.bertsozale.eus/en?set\\_language=en](https://www.bertsozale.eus/en?set_language=en). Consulted 10/12/2017.

<sup>2</sup> <http://bdb.bertsozale.eus/en/web/doinutegia/bilaketa/>. Consulted 10/12/2017.

# AAWM conference 2018. Full proposal

## Basque *txalaparta*: meter, rhythm and performance

### Introduction

This paper presents the main guidelines of an analytical approach to *txalaparta*: a struck idiophone from the Basque Country consisting on several wooden planks which are hit collectively (usually by two people) following interlocking patterns. *Txalaparta* is clearly an invented tradition: originally a rhythmic practice (not a musical instrument) linked to rural tasks and celebrations, it was adopted and given new meanings by a young generation of cultural activists in the 1960s, being since then conceived and treated as an idiosyncratic Basque musical instrument and becoming a powerful cultural symbol. After having completed a thorough doctoral study on the organological, social, cultural and historical dimensions of *txalaparta*, I aim to outline and analyse its formal features, closely related to the aforementioned aspects.

### Analysis

With no tradition, fixed theory or established formal repertory to refer to, *txalaparta* spectacularly diversified through practice and improvisation in the last decades, many of its new or modern developments being the result of a clear process of westernization. On the organological side, more planks and new materials were added to the traditional sole beam made of local wood, and these planks are now often tuned. More importantly, on the performative side, the old improvised rhythmic interlocking game between the *ttakun* (onomatopoeic name referring to the role of one of the performers, continuously playing a repetitive two-stroke pattern) and the *herren* (“lame”; the role of the other performer, who challenges and breaks the balance of *ttakun* through rhythmic variations)<sup>1</sup> was taken as a foundation for many other developments, most of which tend towards a fixed pulse, a clear subdivision and the use of regular rhythms<sup>2</sup>. However, improvised *txalaparta* performance obstinately resists fitting rigid categories; it often shows a significant ambiguity both in terms of tuning and meter, making it a liminal phenomenon with a rather uncomfortable position within the Basque musical panorama.

Drawing on diverse research techniques (ethnographic fieldwork, phonographic study, performance) and making use of graphic representation for analytical purposes, I intend to examine some of the most salient formal and performative features of *txalaparta*. Collective and alternating performance becomes a capital analytical factor in this respect. Almost the sole clear rule in *txalaparta* performance, alternation has a core generating function for improvisation, and it adopts different interacting logics between performers, creating a continuum that ranges from tight interlocking to a clear division of time-spaces, from dialectical and mutually dependent to complementary and more autonomous roles.

I particularly focus on the analysis of meter, conceived (following London) as a perceptual form of entrainment for both performers and listeners. Collective interlocking performance spawns

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<sup>1</sup> See AV sample 1.

<sup>2</sup> See AV sample 2.

different perceptions of pulse and subdivision, as well as a great degree of metric malleability and ambiguity (or even the rendering of non-metric performances)<sup>3</sup>. The simple *ttakun* pattern is the best example of such malleability and ambiguity, being often difficult to discern which of its two strokes marks the beat in a performance. Based on these perceptions, I suggest that physical alternation and bodily movement become metric principles in themselves for *txalaparta* performers, metric perception being often more difficult for listeners lacking visual reference.

The paper also explores different strategies for rhythmic construction (such as the contrast between strokes and silence, or the use of rhythmic accents over a “bed” of regular strokes), the wider improvisatory units and cycles used in performance, and the ways in which performers conceive and develop collective and alternating action. We can consequently identify different stylistic impulses (rather than styles in themselves) within current *txalaparta* performance.

## Conclusion

This analysis not only aims to provide tools for a better understanding of *txalaparta* performance, but also tries to shed light on a rather complex and unstructured musical, theoretical and educational panorama. The once vital cultural and mystical approaches to *txalaparta* that contributed to its adoption and growth have become a burden to its musical development, and can no longer replace formal theory.

Far from incompatible, the various unique characteristics of *txalaparta* performance make it suitable for multiple uses and versatile types of performance, as well as for several ways of interaction with the Western musical paradigm. The right understanding of *txalaparta* performance makes it possible to unleash its great potential and versatility, providing particular skills that challenge and benefit Western musicianship.

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## Supporting materials

- AV sample 1: Old *txalaparta* performance. Jose & Jose Mari Zabalegi. Scene from *Basker*, 1963.
- AV sample 2: Regular-rhythm *txalaparta* street performance. Ugarte Anaiak perform in Ghent, 2011.
- AV sample 3: Non-metric and metrically ambiguous *txalaparta* performance. Zukut play in Urretxu, 2012.

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<sup>3</sup> See AV sample 3.

## Archaic Fusion: An Analysis of Norwegian *Munnharpe* Style and Repertoire

### Introduction

The Norwegian *munharpe* (jew's harp) tradition features an idiomatic playing technique and repertoire that capitalize on its physical and acoustic idiosyncrasies. In this paper, I show how the *munharpe*'s hallmark sound is a triternity combining the glottal closing technique related to the *seljefløyte* (willow whistle), the melodic accents and ornamentation patterns related to the *hardingfele* (Hardanger fiddle), and the foot stomping rhythms related to regional folk dance choreography (Setesdal *gangar*). Though fiddle music has thus far received more analytical attention than the other Norwegian folk instruments, my analysis shows significant overlap between the *hardingfele* and *munharpe* traditions and suggest it is a rich area for further research.

### Keywords

Norway, *munharpe*, jew's harp, folk music, playing technique, repertoire, harmonic series, *hardingfele*, Hardanger fiddle, *seljefløyte*, willow whistle, overtone flute, folk dance, Setesdal

### Methodology

Live instrument demonstration, diagrams, Time Unit Box notation, staff notation, Transcribe!, ethnographic fieldwork, literature review.

### Analysis

#### **Part I - Scale: *Munnharpe* and *Seljefløyte***

The melodic range of the *munharpe* extends roughly from harmonics six to sixteen in the harmonic series. Using the glottal technique, the even numbered harmonics are played with an open glottis, and the odd numbered harmonics are played with a closed glottis. I will show how a player must create two different resonating chambers within the mouth cavity and switch between them to generate two different series of harmonic overtones. This expands the tonal range of the *munharpe* and allows for the approximation of a diatonic scale by alternating between two slightly offset harmonic series rows. In other words, this technique compensates for the uneven intervallic distances in the harmonic series, using one series to fill in the gaps of the other, and vice versa.

Closing the glottis on alternating pitches also disrupts the airflow in the mouth cavity, creating a strong timbral distinction between the notes in the series and generating an idiomatic *munharpe* scale. Using live demonstrations on a *munharpe* and a *seljefløyte* (willow overtone whistle without fingerholes), I will illustrate and support Anon Egeland's hypothesis that the glottal closing technique was derived from the method of manipulating the harmonic series found on the *seljefløyte* (Egeland 1999a). In order to move up and down the harmonic series, a

*seljefløyte* player must alternate between open and closed pitches in a process nearly identical to that used on the *munnharpe*.

## **Part II - Rhythm: *Munnharpe* and *Hardingfele***

Having established the core theory and technique of the *munnharpe* scale, I will then analyze how the *munnharpe* shares important musical facets with the *hardingfele* (Hardanger fiddle), focusing on the pattern of accented notes in the melody line. On the *munnharpe*, these accents are created by the player's striking of the instrument's tongue; on the Hardanger fiddle, they are created by the player's bowing. I will analyze a tune shared by both the Hardanger fiddle and *munnharpe* repertoire, demonstrating how the patterns of melodic accentuation are preserved despite the technical and ergonomic differences between the two instruments. Focusing on the regional *gangar* dance repertoire from Setesdal valley (Western Norway), I will use two archival recordings of "*Bestelanden*", both played by Anders Rysstad in 1952, to analyze how a single musician translates these accents across both instruments. Finally, I will analyze the relationship between the bowing patterns on the *hardingfele* and the striking patterns on the *munnharpe*, revealing through Time Unit Box notation how these create a polyrhythmic texture with the rhythm of the accompanying dance steps. I conclude with a video of contemporary *munnharpe* player Sigbjørn Høidalen performing his version of "*Bestelanden*", demonstrating the three-way fusion of *seljefløyte*, *hardingfele*, and *munnharpe* techniques that together are considered to prove mastery of the *munnharpe* tradition.

## **Conclusion**

I conclude that this research shows promise for further analysis of the shared *munnharpe/hardingfele* repertoire and technique, and discuss plans for combining ethnography and transcription to probe deeper into the musical relationship between *munnharpe* and fiddle versions of the same tune. How do *munnharpe* players go about adapting *hardingfele* tunes, and how do fiddlers transpose *munnharpe* tunes? This presentation paves the way for further study of this complex two-way conversation between instruments with wildly different constructions and tunings.

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## **Transformation of tone systems of yodeling in the Muotatal Valley, Central Switzerland: A multi-generational longitudinal study**

### **Abstract**

This study examines the transformation of tonal systems of the in Central Switzerland village of Muotathal, which has been in the focus of ethnomusicologists for harboring and conserving a unique style of yodel, called *Jüüzli*. The longitudinal study compares three samples of field recordings, collected by Sichardt (sample 1, 1936), Zemp (sample 2, 1977/78) and Wey (sample 3, 2016/17).

Pitch data is retrieved for the three samples, each of which consisting of 8–10 yodeling pieces totaling >600 single intervals per sample. Consequently, the distribution of pitch is analyzed both in terms of neighboring intervals (modality) and in relation to a tonic (tonality) to induce a tone system. The three samples are compared in order to explicate transformations the tone systems underwent in the time intervals of roughly 40 years.

The key findings demonstrate that the organization of the tonal system is modal (horizontal) rather than tonal (vertical). While characteristic neutral intervals (seconds, thirds, sixths, sevenths) prevail in sample 1, they are replaced by ‘natural’ and equal-tempered intervals in samples 2 and 3. The findings support the hypothesis that institutionalization of music pedagogy and four-part choir singing triggered the demise of traditional tonal aesthetics in alpine valleys.

### **1. Introduction**

Research into tonal systems as a topic in ethnomusicology has recently been propelled by improvements in digital sound analysis. Ambrazevičius and Wiśniewska (2009) presented a detailed analysis of dispersions of pitch and of tonal scales in Lithuanian song. Documentation of a historical tonal system was undertaken by Utegalieva (2016: 146) by analyzing the pitch of historical Kazakh lutes. Pfordresher and Brown (2017) recently attempted to find the origin of tonal scales by analyzing pitch among “poor-pitch” singers. Zemp (2015) provides the first study on intonation in the alpine region, and I hereby attempt to start off with and extend upon Zemp’s findings.

Changes in tonal systems are inherently difficult to observe, as they progress slowly, over generations and require audio recordings confined to a specific cultural area. Probably, for this reason, there are no comparative studies into the longtime development of tonal systems. The dataset used in this study nonetheless promises to overcome these difficulties and

enable highly relevant findings for mainly two reasons: On one hand, the recordings are made in the same small community, which is harboring a distinct style of alpine yodeling. On the other hand, they span multiple generations and the three samples were taken at intervals of roughly 40 years each.

## 2. Analysis

Three samples of pitch data are compared:

Sample 1 (1936)	Fieldwork recordings by Wolfgang Sichert: 9 pieces of solo yodel, n=696 intervals
Sample 2 (1977–1978)	Fieldwork recordings by Hugo Zemp: 8 pieces of solo yodel, n=663 intervals
Sample 3 (2016–2017)	Fieldwork by the author: 10 pieces of solo yodel, n=678 intervals

The samples are restricted to monophonic performances to improve the accuracy of pitch measurements. Pitch data is retrieved from a spectrum.<sup>1</sup> Pitch measurements are classified into degrees by ordering intervals by size and manually identifying gaps the row of intervals. Once those degrees are established, the descriptive statistics are used to describe the tonal scale and its deviations from equal-tempered, neutral and just intonation. Distributions of the pitch data of the three samples are compared in order to find changes in the tonal scale and in the intonation of specific degrees of those scales.

## 3. Conclusions

### 3.1 Summary

In all three samples the organization of tone relations is rather modal (horizontal relations) than tonal (vertical relations). This fact has so far been neglected when analyzing intonation in the alpine yodel but has been confirmed in discussions with active yodelers from

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<sup>1</sup> Pointed out as early as 1964 by Graf, yodel distinguishes itself from most singing styles through an emphasis on certain overtones; therefore, frequency extraction by means of autocorrelation may lead to musically invalid results (e.g. the complementary intervals instead of the actual interval). Zemp (2015:62) chose to manually “check the fundamental frequency and the second harmonic” in real time spectrograms. We attempted to improve the accuracy by manually placing a grid over a stable spectrum in the middle of the note and measuring overtones above 2000Hz.

Muotathal (Betschart 2017, Büeler 2018, personal communication). For this reason, neighboring intervals (vertical relations) are evaluated rather than intervals in relation to an arbitrary tonic (horizontal relation).

The use of neutral intervals (seconds, thirds, sixths, sevenths) is dominant in the first wave of recordings (1936) and disappears in the second (1977/78) and third (2016/17) wave. In sample 2, there is still no distinction between minor and major seconds and thirds, yet the median value of those intervals is closer to just intonation than neutral intonation. In sample 3, chromatic, equal-tempered intervals show up. The performance of augmented fourths, suggested in prior publications, is not supported by any of the samples.

### 3.2 Interpretation

Agawu (2009), in his paper *tonality as a colonizing force in African music*, demonstrated how on a large scale, western ideals of intonation and tonal organization superseded local and regional tone systems. Similar processes of transformation can be traced on a small scale in alpine valleys during the spread of music education and choir singing in the 19<sup>th</sup> and early 20<sup>th</sup> century. While yodel in Muotatal valley is transmitted orally and thereby not directly compromised by written normalizations, the tone system is nonetheless affected by adaptations to the predominant tonal aesthetics of its environment and forgoes its characteristic intervals and modality. The drift towards just intonation hints at the connotation of wordless yodel as “natural” and related to the natural tone scale in the discourse on yodeling in Switzerland in the late 20th century.

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## Current Research by Members of the British Forum for Ethnomusicology: Papers on Aesthetics, Timbre, and Transcription

Technical requirements: computer, projector and speakers for slide presentations with audio

### 1. The Social Aesthetic in North Indian Classical Music

Dr. Chloë Alaghband-Zadeh, Loughborough University

#### Introduction

In 2015, Christiana Olcese and Mike Savage identified an “emerging ‘aesthetic turn’” in sociology, describing a current interdisciplinary move to develop what has been called “social aesthetics” (e.g. Born, Lewis and Straw 2017; Martin and Merriman 2015; Miyahara 2014; Varriale 2016). In contrast with traditional aesthetics, where the aesthetic domain is construed as removed from everyday socialities, work in this new area has drawn attention to the interpenetration of social and aesthetic registers. For scholars of music, this research issues a powerful invitation to consider the sociality of the aesthetic principles that shape performances, as well as the sociality of aesthetic experience.

In this paper, I use North Indian classical music as a case study to consider what music analysis can reveal about social aesthetics. To show how sociality and aesthetics are intertwined, I put analysis into dialogue with ethnography, including a series of interviews and listening sessions I held with musicians and expert listeners in India. Based on this, I demonstrate the social grounding of key musical principles in this tradition. Moreover, I argue that listeners’ aesthetic experience mediates between small-scale details of musical sound and large-scale social processes, including the reproduction of class in contemporary India.

#### Analysis

In order to consider in detail the ways in which aesthetics and sociality are intertwined, this paper zooms in on one key feature of the North Indian semi-classical genre *thumrī*: temporary departures from the main *rāg* of the composition. This feature is characteristic of semi-classical genres (such as *thumrī*) and it distinguishes performances of these genres from the fully classical *khyāl* and *dhrupad*. During periods of departure, musicians introduce notes from outside the tonal vocabulary of the main *rāg*; they may either introduce single foreign notes or else depart entirely from the main *rāg* to sing whole passages in a different *rāg*. These moments of departure are highly valued by audiences, especially audiences of expert listeners.

Figure 1 shows a typical instance of this. This is an extract from a *thumrī* performance by renowned vocalist Sunanda Sharma. A video of this extract can be heard at <https://vimeo.com/253749933> (password: AAWM2018). The main *rāg* here is *khamaj*. This extract comes from near the end of the performance, once the tonal material of the *rāg* has been well established. During the extract, Sharma introduces two notes which are not in the *rāg*: *komal Ga* (transcribed here as E flat) and then *komal Dha* (transcribed here as A flat).

Figure 1

In this paper, I analyse this short extract of music in conjunction with ethnography and interviews with musicians (including Sharma herself), showing how *rāg* departures such as this one encode sociality at three key levels.

1. Departures from the main *rāg* in semi-classical performances are tied to ideas about classicality and seriousness. Some musicians (including Sharma) strategically handle these departures so as to emphasize their classical credentials, providing a path to greater prestige. Different ways of using this musical device are therefore fully intertwined with social hierarchies in the music world.
2. Departures from the main *rāg* are central to the gendered economy of *thumrī*; they are means through which particular models of femininity are reproduced and negotiated.
3. Finally, *rāg* departures provide expert listeners with resources to engage in particular affective and embodied listening practices, associated with the connoisseurship of North Indian classical music. These listening practices reproduce hierarchies within the music world as well as broader class distinctions in twenty-first-century India.

### Conclusions

Overall, this paper emphasizes the mutual mediation of sociality and music aesthetics; moreover, the social aesthetic extends to the kinds of musical patterns and affordances that are accessible through music analysis. I argue that analysis is an invaluable tool for social research on music, and, conversely, that social questions should be central to the ways that scholars make sense of both musical sound and aesthetic experience.

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## 2. Timbral Consonance and Musical “Flavour”: Spectral Density, Timbre Spaces, and the Cultivation of Listeners in the World of *Jiangnan Sizhu*

Dr. Ruard W Absaroka, SOAS, University of London

### Introduction

Timbre, in the world of the sophisticated folk-chamber genre of *jiangnan sizhu* that is native to a central portion of China’s eastern sea-board, has an aesthetic primacy that provides an intriguing instrumental case-study to trouble any residual “timbral amnesia” present in overly-WEIRD (the acronym stands for “western, educated, industrialized, rich and democratic,” see Henrich, Heine and Norenzayan 2010) music analysis. Players explicitly value the interactive give and take of timbral subtlety, and a “harmonious” and collectively achieved timbral density, all of which provides the essential “flavour” (*weidao*) of the music. Meanwhile, the study of timbre continues to progress, especially among MIR engineers and in psychoacoustics (Nusbaum and Silvia 2010, Hsu 2010, Proutskova 2013). Timbre, operating at the level of pre-attentive perception, is sometimes credited with much of the affective power of music, but scholarly interest remains strangely disproportionate to timbre’s acknowledged significance to cognition and the perception of music and there has been little turn to more diverse musical traditions and to qualitative ethnographic data.

### Analysis

The paper draws on analysis of field-recordings, as well as investigations of insider explanatory theory, from both (i) the *jiangnan sizhu* “clubs” of Shanghai and (ii) a long-standing university-based Chinese ensemble in London. It considers, first, the distinct timbral contributions of the different instruments that make up a full *sizhu* ensemble. The “coupled systems” of distinct primary vibrators and instrumental amplifiers are a starting-place. To understand the unique aesthetics of the genre, however, one must focus on the blending and fusing of constituent sound sources in the informal and flexible ad-hoc orchestration of the music. In understanding the combining of instruments (plucked strings, bowed strings, hammered strings, flutes, and percussion), the rubric of Sandell’s (1995-6) three perceptual goals provides a useful foil: (i) *timbral heterogeneity* (the degree to which instruments are perceptually distinct); (ii) *timbral augmentation* (how some instruments embellish others that are perceptually more dominant); and (iii) *timbral emergence* (how entirely new sounds result from collective praxis).

Meanwhile, techniques of “*timbral juxtaposition*” are shown to exist at the level of individual instruments (the *dimo* membrane provides the clearer harmonics of the *dizi* flute with a complex formant background buzz), but are also apparent in the mixture of “impulsive sounds” and “sustained sounds” in ensemble. Not to be neglected is the importance of the “formant characteristics” of the (new) physical spaces of musical performance: swiftly changing urban environments also have a timbral impact on the genre. In attempting to classify all of the above, I look at the applicability of timbre-space representation and the calculation of timbre intervals, but go beyond concerns with dissimilarity ratings and distance models. Source separation by purely computational methods (and hence statistical classification) remains extremely difficult. Methodologies afforded by recent computational approaches (employing a combination of Sonic Visualizer, Tony, and TarsosDSP) nevertheless suggest new paths of investigation. A particularly intriguing line of approach riffs off Sethares’s (2005) claims about the relation of tuning and consonance to timbre. Might his concept of “sensory consonance/dissonance” and indeed “consonance based music analysis” provide insight into the distinctive 4<sup>th</sup> and 7<sup>th</sup> scale degrees of the traditional *sizhu* instrumentarium?

Finally, I look at timbral auditory training and the cultivation of listening practices and audience. I argue that a collective variant of Ted Levin's "timbral listening" is a skill that is fundamental to belonging to the genre's "epistemic community" (Harrison 2012). The harmonious textural blending of the aesthetically ideal performance points to a collusion between audience, performers and instruments. But how do such conceptions map on to practitioner aesthetic preferences and heuristics? In orally transmitted music, the importance of oral notational markers of timbre should not be discounted (cf. also the oral mnemonic devices of *shōga* for *nōkan* and *satsumabiwa* in Japan, or of various percussion traditions) (Gunji 1986). Many considerations mentioned here also find some articulation in the *operative* (Baily 1988) but also *representational* "folk" music analysis of practitioners themselves: an indigenous conceptual bricolage that provides a complex self-styled music-analytic armoury or "metapragmatic repertoire" (Stokes 2003).

## Conclusion

It can be claimed that timbre is "the psychoacoustician's multidimensional waste-basket category for everything that cannot be labelled pitch or loudness" (McAdams and Bregman 1979: 34), but much of the interest in *jiangnan sizhu* derives from what can only be called timbral subtleties. This suggests a host of additional questions to take timbre studies forward: How can one improve analysis and description of micro-structural aspects of timbral surface, of expressive "micro-timbrality" and even "timbral variation"? Can one identify such a thing as "timbral participatory discrepancies" (PTs)? To what extent is timbral modulation an adjunct of micro-rhythmic groove? To what extent might there be a "timbral groove" (something that musicians certainly seem to hint at when they suggest that one session "sits right" and another doesn't)? What techniques of explicit/tacit timbre manipulation are responsible?

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### 3. “Easy” Automatic Melody Line Transcriptions: A Comparison Of Two Open-Source Software Programs

Dr. Morgan Davies, SOAS, University of London

#### Introduction

Since the pioneering work of Metfessel’s Phonophotography (1928) and Seeger’s Melograph (1949-1953), researchers have been using line transcriptions as a means of analysing the nuances of melodic performance. Related methodologies are often employed in the analysis of Indian music (e.g. Widdess and Sanyal 2004, Pearson 2013, and the ongoing “Music In Motion” project by Wim van der Meer and Suvarnalata Rao). However, the processes involved can be both complex and time-intensive. This paper will give a contextual overview of the selected works cited above, outlining various ways in which the authors have used automated melody line transcriptions as a means of augmenting their musical analyses, then commenting upon issues of practicality and representation.

The subsequent section will examine some of the related problems encountered when generating “easy” automatic melody line transcriptions, by comparing the functionality of two open-source software applications: the MATCH Vamp plug-in (designed to function with music analysis software Sonic Visualizer), and the Tony melody transcription program. Examples from recent fieldwork in South Asia will be used to demonstrate the processes involved, and to highlight some of the ways in which these representations can enrich our ethnographic understanding of the musical traditions in question.

#### Analysis

This section utilizes fieldwork data from two recent studies. One data set comprises transcriptions and analyses of field recordings by ethnomusicologist William Tallotte, recently published in his paper “Improvisation, Creativity, and Agency in South Indian Temple *Rāga* Performance” (Tallotte 2017). It was whilst working with Dr Tallotte as research consultant on this project that I was first tasked with finding ways of producing “easy” automatic melody line transcriptions for recorded *rāga* performances of *nāgasvaram* (double reed oboe) players.

It was also at this time that the Tony software was first released; and the resultant images (see Figure 1 below) demonstrate how the software was used to generate detailed, context-sensitive representations. I will argue that, despite having some limitations, the Tony software is effective in generating automatic transcriptions both quickly and with some accuracy. These representations can then be customized to reflect more phonemic distinctions, such as the *sargam* designations added to the y-axis below.

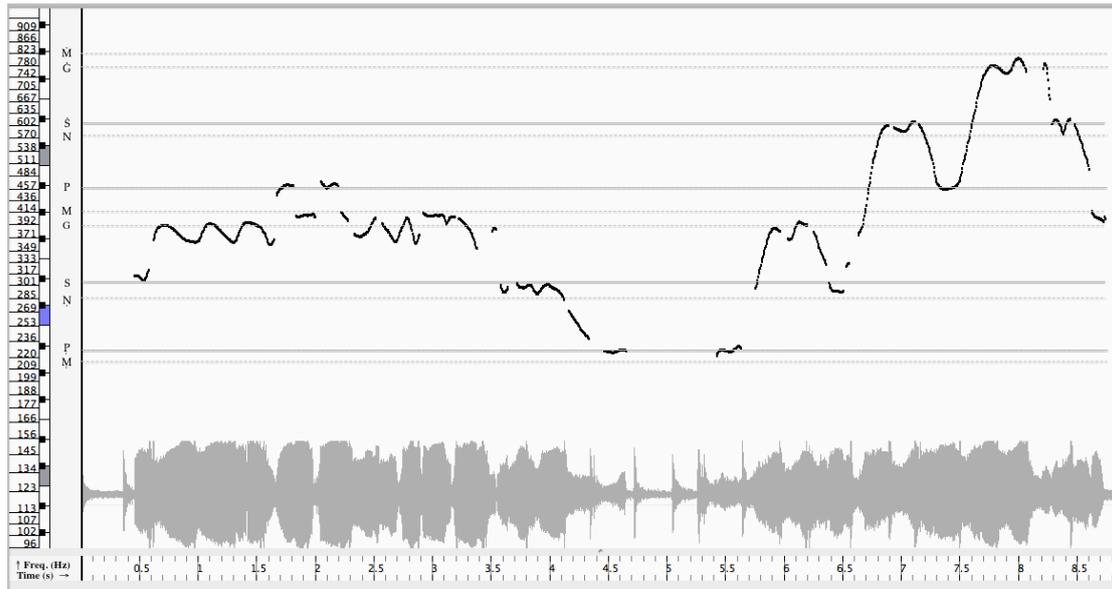


Figure 1: Tony representation of *Ālāpana* phrase in *rāga gambhīra-nāṭa* (Tallotte 2017: 47)

The second data set consists of recorded examples from my own recent doctoral fieldwork in North India, where the primary objects of analysis were renditions of folk *rāg* melodies performed on bowed lutes by *Laṅgā* and *Māṅgaṇiyār* professional hereditary musicians from Western Rajasthan. In the case of the *Laṅgās* and *Māṅgaṇiyārs* – whose performance tradition has no written or recorded canon, and is passed on largely via total immersion in the tradition from birth rather than by any formal verbal tutelage – informed objective analysis of the recorded sonic objects is the most practical way of understanding performance structure.

Figure 2 compares two conspicuously similar descending phrases from performances of *Laṅgā rāg Toḍī*, here played on two separate occasions by the same musician. This comparison (drawn from the author’s unpublished PhD thesis, 2016: 195–196) examines not only the musical material [audio files attached], but also two distinct, complementary ways of representing the material.

Here, the analytical objective was to explore the degree of variation in performance of what the folk musician himself called *rāg Toḍī*, thereby using North Indian classical terminology to describe a quasi-modal format that is typically considered to be more or less improvisatory. In the full version of this paper, I will discuss how the MATCH Vamp plug-in was able to give an instantly apprehensible representation of the similarity in these phrases, whilst also providing further levels of detail (such as qualities of vibrato and subtle inflections) along with precise pitch and duration measurements.

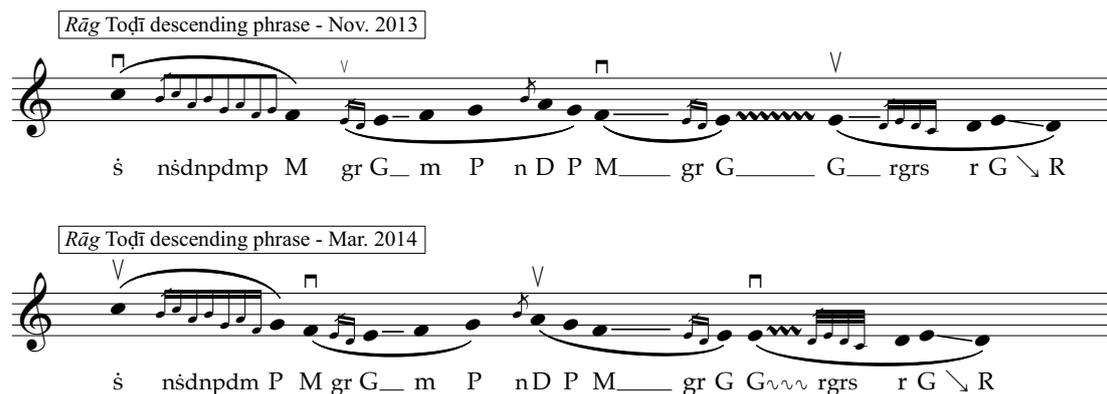


Figure 2a: Comparison of descending phrase contours in *rāg Toḍī* (transcription)

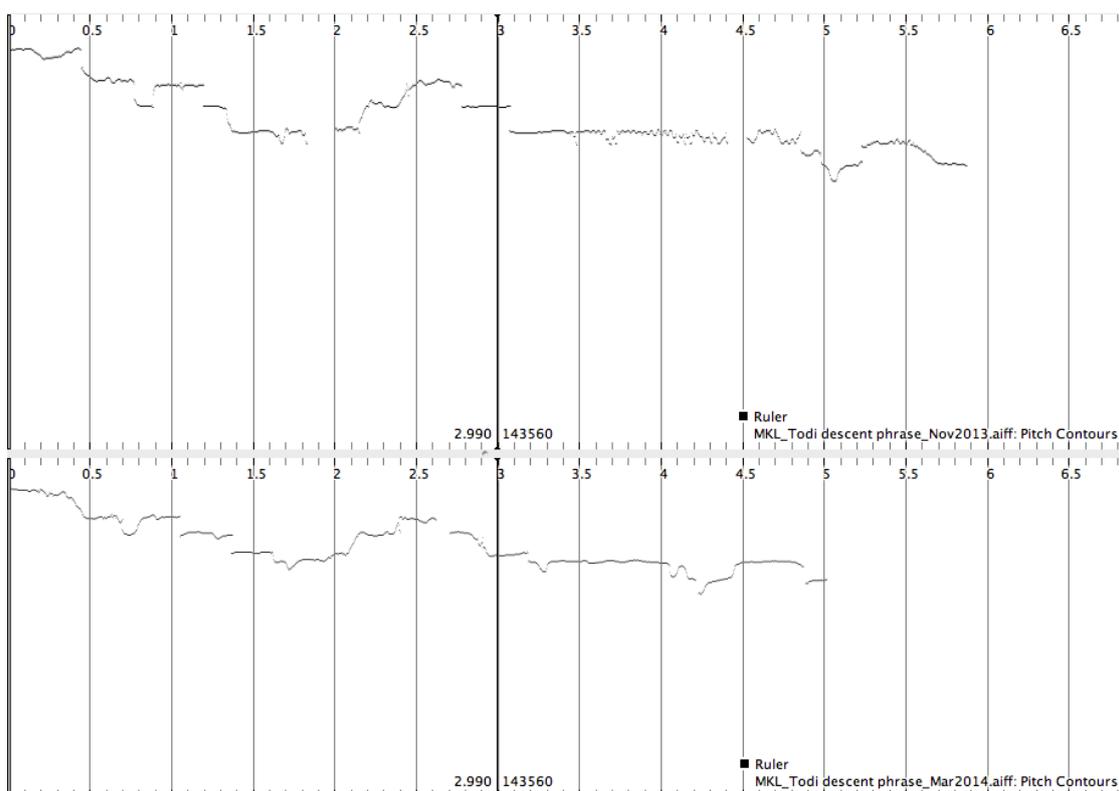


Figure 2b: Comparison of descending phrase contours in *rāg Toḍī* (SV/MATCH)

## Conclusions

Having given a final brief overview regarding the functionality of both software programs, the paper will conclude with a discussion of how automatic melody line transcriptions have been used to enrich ethnographic understanding in these particular examples. Some of the limitations of the current software (such as its reliance on carefully balanced monophonic sound sources) will also be highlighted.

The approach advocated in this paper seeks to strike a balance between ethnography and analysis. Increasingly, ethnomusicologists tend to advocate a strong emphasis on “music as culture,” juxtaposing this human-centred approach to music studies with what might be viewed as more “musicological” structural analyses of the music sonic-object itself. In both studies discussed here, analysis is used to augment ethnographic methodologies (in particular, participant-observation and testimony from the musicians in question) with the end-goal of producing more dynamic and realistic accounts of musical agency.

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#### **4. Cross-Cultural Analysis through Cross-Cultural Notation: The Laban Solution Revisited**

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##### **Introduction**

The twenty-first century resurgence of interest in cross-cultural and comparative music analysis does not yet appear to have produced a fundamental rethinking of the problem of notation. Recent analytical studies, if they use notation at all, mostly continue to use what Mantle Hood long since called “the chronic solution, ‘doctored’ Western notation” (1982: 62). Yet the objections to that solution raised by Hood and others remain hard to answer: it either misrepresents non-Western music as conforming to the limited range of pitch and time distinctions that Western notation assumes, or makes it look abnormal by adding unconventional symbols; it struggles to capture aspects of sound organisation that are vital in many non-Western styles, such as pitch inflection; and it restricts technical discussion of the world’s music to those trained in one particular tradition.

Of the various solutions to this problem envisaged by Hood, the most promising and yet the least explored seems to me to be the “Laban Solution”: the ideal of a new symbolic notation that could represent any form of musical sound as accurately as Labanotation can represent dance movement. This paper proposes that our current resources of technology, data and theory have made a Laban Solution far more achievable, and offers some concrete suggestions as to what form it might take.

##### **Proposals**

No notation can or should capture all of the information that is present in the sound: if it did, it would be so cluttered with detail as to be unreadable. Instead, notation might be seen as a means of *specifying* certain things about a set of sounds. Existing notation systems have built-in tendencies to specify some things and not others: for example, staff notation is designed to specify absolute pitch, semitone-based intervals and proportional rhythmic values, and indeed makes it difficult not to do so. A cross-cultural notation, in contrast, should be able to specify just what is wanted while excluding irrelevant or inapplicable information.

The features to be specified should be selected on the basis of both the characteristics of the music and the purposes of the notation. In no case should the notation specify things which don’t actually exist in the music, as often happens for instance when pulseless music is transcribed into the pulse-based rhythmic values of staff notation. But even features that do exist in the music need not be specified if they are not relevant to the purposes of the notation. A notation that is only intended to support a rhythmic analysis, for example, need not specify pitch intervals.

Thus, the proposed notation starts by asking, not “How should a given type of sound be represented?” but rather, “How should a given feature of a sound be specified (or left unspecified)?” The one feature that is assumed to be always worth specifying is *when* the sounds happen, or more precisely, when they *begin*—that is, their “onset timing”. The notation accepts the convention of representing time as flowing from left to right, as in staff notation and the most

widespread language-writing systems, since this will be intuitive for the largest number of potential users. Time is measured along one or more continuous horizontal lines, each representing an element that is conceptually continuous if not continuously present in sound, such as an individual musician’s “part” or a pitch that is sounded repeatedly. Symbols representing sounds are placed in relation to these lines: on the line if pitch is to be specified, or immediately above it if not (Figure 1). The left-hand edge of any symbol specifies the moment of onset, but duration can be left unspecified, as may be appropriate for drum or xylophone strokes that have no meaningful duration. If duration is to be specified, the symbol can be extended horizontally in proportion to duration, and if pitch is also specified, the extended symbol can be “bent” up or down to specify changes of pitch, whether scale-wise or microtonal.

	unspecified duration	specified duration
unspecified pitch		
specified pitch		

Figure 1: Core symbols for a proposed cross-cultural notation.

### Conclusion

I propose that a cross-cultural notation system along the above lines would have an advantage over “doctored” Western notation in allowing the notator of any kind of music to work *with* the notation rather than against it. In the presentation I will try to demonstrate the potential of such a system by showing how it could specify various other features of musical sound organisation and applying it to a range of musical styles and analytical agendas. I will also introduce a new and evolving resource intended to formulate the system in greater detail and make it widely available: an online Manual of Global Music Notation.

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## Analyzing the epirotic vocal and instrumental *Moirologi* (lament) and its reflection in Theodore Antoniou's laments for solo instruments

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### Background

The Greek lament (*moirologi*), the song for the dead, has an impressively long tradition, going back to ancient Greece and coming to modern (post-1821) Greece through Byzantium. In ancient Greece (Chianis & Brandl, GMO), the lament had two versions, the *epikedeion* (over the dead body, improvised) and the *thrēnos* (in memory of the dead, composed). In modern Greece, five types are encountered (Saunier, 1998): free/non-metric, incidental, in rhyming verses, with standard texts, and long narrative laments (*paraloges*). Poetically and musically it relies to a great extent on improvisation on common melodic patterns, while it can also take the form of a virtuosic instrumental improvisation with mourning character (Spyridakis & Peristeris, 1962).

However, the *moirologi*, being a profound element in the fabric of neohellenic life and ethos, is a frequent inspirational source for Greek composers of the art-music genre (Chardas, 2016), and is encountered among many of the composers of the modernist and post-modernist periods. Theodore Antoniou (b. 1935), a prominent Greek composer who has worked extensively on dramatic/stage compositions and incidental music, has composed a series of short solo pieces under the general title "Lament for ...", dedicated to the memory of close friends or colleagues of his who had unexpectedly or tragically passed away. According to the composer's published notes, the pieces were composed quasi-improvisationally and with minimal or no pre-compositional stage, as spontaneous creative reactions to his grief and inspired by mourning feelings and the personalities of his departed friends. Almost all of the pieces are based on a phrase of a folk lament (*moirologi*) from Epirus, which functions as a common melodic and structural starting point.

### Analysis

The present paper initially presents: a) the key musical features of the epirotic *moirologi* through the transcription and analysis of selected excerpts from one vocal and two instrumental (for *flogera* and *clarinet*) *moirologia*, and b) the motivic and modal features of the epirotic lament (*Pou pas asēmi na chatheis*) quoted by Antoniou.

The above disclosed features form the basis for the analyses of three of Antoniou's solo pieces: the *Lament for Michelle* (1988, for flute, written in the memory of Michelle Sahn), the *Lament for Manos* (1995, for clarinet, written in the memory of Manos Hadjidakis) and the *Lament for John* (2003, for horn, written in the memory of John Daverio). The analyses focus on how the modal pitch structure stemming from the folk *moirologi* provides the pitch material of the solo pieces through transformation, transposition, fragmentation and liquidation, as well as on the creation of musical form through the flow of musical gestures, climaxes and dramatic closures utilized through idiomatic use of the instruments. Associational motivic analysis, pc set theory segmentation and modal/pitch center classification are employed for this task. The analyses also include reductional and quasi-schenkerian prolongational diagrams, disclosing the deeper pitch structure and registral/expressive design of the pieces (see

figures below), illuminating the affinities between Antoniou's works and their distant folk origin.

The musical score for 'Reduction of Lament for Michelle' is presented on a single staff. It begins with a *ppp* dynamic. The first section, marked 'b.1-11', features a melodic line that rises to a peak labeled 'climax 1'. This is followed by a section marked 'b.12-18' which reaches a higher peak labeled 'climax 2'. The dynamics in this section are marked *ff*, *p*, and *fff*. A bracket labeled '[Golden Mean]' spans from the start of the first section to the end of the second. The final section, marked 'b.19-30', shows a melodic line that descends and then levels off, labeled 'relaxation'. The dynamics here are *pp* and *pppp*.

Reduction of *Lament for Michelle*

The musical score for 'Reduction of the ending of Lament for Manos' is presented on a single staff. It begins with a *ppp* dynamic. The first section, marked 'b.35-50', rises to a peak labeled 'climax 1'. This is followed by a section marked 'b.51-58' which reaches a higher peak labeled 'climax 2'. The dynamics in this section are marked *fff*, *pp*, and *pppp*. The final section, marked 'b.59-61', shows a melodic line that descends and then levels off, labeled 'relaxation'.

Reduction of the ending of *Lament for Manos*

## Conclusions

The analyses show that the core of the compositional process is not the actual melody of the epirotic moirologi (which is flexible and semi-improvisational), but the modal pitch structure itself, together with the fragments and melodic/rhythmic figures of the musical surface in continuous transformation, all with the purpose of creating an effective dramatic narrative.

Moreover, Antoniou does not borrow the traditional material per se, but rather the way of thinking and working, the essence of being a mourner. For Antoniou, and other composers of his generation, Greekness is not expressed only in the domain of musical character or language, but also in the domain of rituality and dramatic association. In this context, the most important borrowed element is the lamentation expressive gesture, disclosed in the present analysis, embedded in the music as a deep structural schema, a common topos of communication between the ancient, the folk and the modern lamenter: the culmination of grief and threnos and the redemptive feeling of letting go. Thus, the lament is elevated as an act of katharsis, a diachronic and profound element of Greekness from antiquity to the present.

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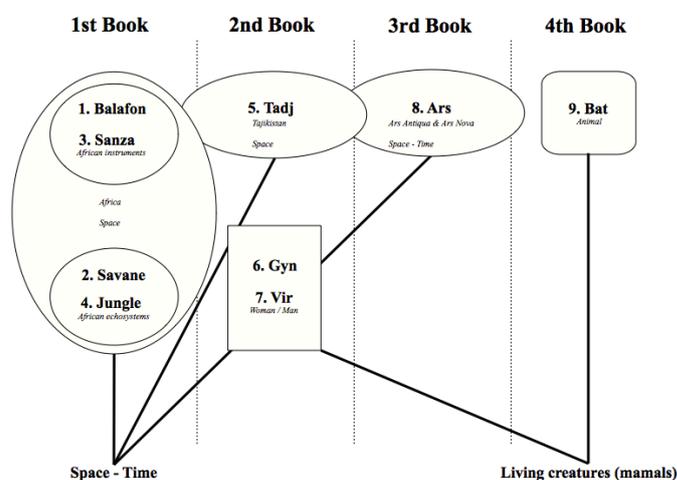
## African & European Influences in Christian Lauba's Saxophone Compositions (“Nine Etudes for Saxophones” – 1<sup>st</sup> Book)

### Introduction

Christian Lauba is a French eclectic composer and pianist born in Sfax (Tunisia, Africa) in 1952.<sup>1</sup> He is well known among the saxophone community for expanding this instrument's repertoire with a number of increasingly demanding (artistically and educationally) concert-studies, combining thus both the soloistic (concert) and pedagogic (study) approach.<sup>2,3</sup> The 1<sup>st</sup> Book of his “Nine Etudes for Saxophones”, published in 1996 by “Alphonse Leduc”,<sup>4</sup> encompasses four compositions (*Balafon*, *Savane*, *Sanza* and *Jungle*), which will serve here as analytical case studies. This paper aims to demonstrate the ways and processes of mixing-up African and European influences together in Lauba's compositional style.

### Analysis

The apparent correlation between these two continents, specifically in Lauba's etudes, is sustained by two obvious factors. The first one is depicted in the composer's “birthplace – nationality” circumstances. The second is based on the thought that a 19<sup>th</sup> European instrument (saxophone), through a 19<sup>th</sup> European idiom (concert-study), performs a number of compositions, the titles of which fall under two basic categories: a. African archetypical instruments (1. *Balafon*, 3. *Sanza*) and b. typical African ecosystems (2. *Savane*, 4. *Jungle*).



Example 1: Christian Lauba's "Nine Etudes for Saxophones" in 4 Books and the way they are archetypically organized. The 1<sup>st</sup> Book stands out as a reference to Africa.

<sup>1</sup> "Christian Lauba (1952)," Centre de la Documentation de la Musique Contemporaine (Cdmc), accessed February 10, 2018, (<http://www.cdmc.asso.fr/en/ressources/compositeurs/biographies/lauba-christian-1952>).

<sup>2</sup> Nikolaos Diminakis and Costas Tsougras, "Timbral and Textural Evolution as Determinant Factors of Auditory Streaming Segregation in Christian Lauba's *Stan*," in *Proceedings of the 12<sup>th</sup> ICMPC & 8<sup>th</sup> ESCOM joint conference*, ed. Emiliou Cambouropoulos et al. (Thessaloniki, School of Music Studies, A.U.TH., 2012), 254-262. ([http://icmpc-escom2012.web.auth.gr/files/papers/254\\_Proc.pdf](http://icmpc-escom2012.web.auth.gr/files/papers/254_Proc.pdf)).

<sup>3</sup> Nikolaos Diminakis, "The Bipolarity of Commandment/Observation as a Codified Manifestation of the Imperative Mood in the Composer/Performer relation through the analysis of the concert-studies *Nine Etudes for Saxophones in 4 Books* by Christian Lauba," [in Greek] in *Proceedings of the 7<sup>th</sup> Interdepartmental Musicological Conference*, ed. Ioannis Foulis et al. (Corfu, Hellenic Musicological Society, 2015), 248-265.

(<http://musicology.mus.auth.gr/wp-content/uploads/2016/11/ConfProc2015.pdf>).

<sup>4</sup> Lauba, Christian. *Nine Etudes for Saxophones in 4 Books*. Paris: Alphonse Leduc, 1996.

Consequently, one would try to examine further if there are more inherent procedures, hidden and/or unknown, concerning the above intercontinental relations along with their possible structural extent. Hence, a clarification is required in order to grasp what the term “African music” refers to. After all, Lomax has excluded the ethnographical region of circum-Mediterranean areas, such as Tunisia, from the concept of “African music”,<sup>5</sup> whereas similar approaches are also expressed in Locke<sup>6</sup> and Nketia.<sup>7</sup> Despite the research held all these decades from (ethno)-musicologists in different parts or tribes of the continent,<sup>8</sup> it would still be quite challenging to truly define the term since the space-time window of interest is vast and falls in our expanding and ever-revealing state of understanding about African music and its socio-cultural characteristics in general. It would still be interesting though to present a number of general attributes that could constitute the umbrella term of what African music could stand for. This would include certain types of prevailing melodic scales, intense interest in rhythmic parameters, types of improvisational techniques, pattern repetition philosophy, antiphonic, polyphonic and a great number of diverse textures, polyrhythmic formations, timbral features and the use of noise in general, structural formulas, etc. Finally, studies depicting differentiations/similarities between African and European music should also be taken into account.<sup>9</sup>

Further analytical investigation shows that in a deeper level one can eventually trace four main microstructural qualities manifesting the connection to Africa but presented at the same time throughout a European compositional perspective. Listing them would involve:

1. The use of pentatonic scale<sup>10</sup> (pc set 5–35) and the correlation with other transpositions of this set and/or the complementary one (i.e. 7–35) in order to form 12-note chromatic aggregates, as a methodological process of organizing the melodic material.<sup>11</sup>
2. The ecstatic use of minimal-like mechanical repetitions of “out of time” (several melodic formations such as pentatonic scale, trichords, tetrachords, etc.) and “inside time” (rhythmic patterns) structures through several

<sup>5</sup> Alan Lomax, *Folk Song, Style and Culture* (U.S.A.: Transaction Publishers, 2009), 80.

<sup>6</sup> David Locke, “Improvisation in West African Musics,” *Music Educator’s Journal* 66/5 (1980): 125.

<sup>7</sup> J. H. Kwabena Nketia, *The Music of Africa* (New York: W. W. Norton & Company, 1974).

<sup>8</sup> A number of seminal studies would involve among others:

- Gilbert Rouget, *Music and Trance: A Theory of the Relations between Music and Possession* (U.S.A.: University of Chicago Press, 1980).
- Simha Arom, *African Polyphony and Polyrhythm: Musical Structure and Methodology* (Great Britain: Cambridge University Press, 1991).
- John M. Chernoff, “The Rhythmic Medium in African Music,” *New Literary History* 22/4 (1991): 1093-1102.
- Kofi Agawu, “Representing African Music,” *Critical Inquiry* 18/2 (1992): 245-266.
- Kofi Agawu, “African Music as Text,” *Research in African Literatures* 32/2 (2001): 8-16.

<sup>9</sup> A number of studies would also include:

- Nketia, *The Music of Africa*.
- David Temperley, “Meter and Grouping in African Music: A View from Music Theory,” *Ethnomusicology* 44/1 (2000): 65-96.

<sup>10</sup> As Kubik points out: “Most of the inhabitants of the northern third of Africa originally spoke Afroasiatic languages such as Berber and ancient Egyptian. Berber populations are autochthonous in the area known as the Maghrib, covering Morocco and much of Algeria, Tunisia and Libya. Their pentatonic tonal system dates back far and possibly represents an ancient cultural stratum”. Gerhard Kubik, “Africa,” *Grove Music Online*, ed. Deane Root, accessed March 03, 2018, <http://www.oxfordmusiconline.com/>

<sup>11</sup> J. Kent Williams, *Theories and Analyses of Twentieth-Century Music* (U.S.A.: Harcourt Brace & Company, 1997), 93-94, 183 & 338.

techniques concerning the saxophone (digital agility, fast tonguing, slap-tonguing, etc.).

3. The timbral quoting of two archetypically African instruments, such as the balafon<sup>12, 13</sup> and the sanza,<sup>14, 15</sup> in two of the aforementioned concert-studies and the way their inherent idiomatic sonority (along with parameters such as the possible existence of “noise”, lack of specific tuning, etc.) transcends throughout precise saxophone’s sound productions techniques (circular breathing, key clicks as subtle percussion-like effects, slap-tonguing, multiphonics blurring the tuning, etc.) and turns into being a structural feature for the whole composition.
4. Improvisation-like timing parameters concerning specific note durations due to the use of proportional notation in certain parts of the compositions. This comes in contrast with the previously presented mechanical features, creating thus two basic textures/sonorities that are combined by the composer in several and diverse levels throughout the corpus.

The analysis of the above four etudes required a blending of methodologies in order to convey the true nature of every concert-study. The basic analytical tools consist of formalistic approaches (pc set analysis) along with a mixture of quasi-reductional and neutral level analysis. Texture and timbre analysis is also involved here for structural and pedagogical reasons.

## Conclusions

This paper suggests the existence of two easily perceived levels of interrelation between Christian Lauba’s 1<sup>st</sup> Book of “*Nine Etudes for Saxophones*” and African/European influences (1. composer’s birthplace vs. nationality and 2. titles vs. instrument & genre). Furthermore, it incorporates four deeper structurally intercontinental connections (i.e. melodic formations, rhythmic patterns in a mechanical/repetitional style, quoting of archetypical instrumental timbres and use of noise, improvisational properties and differentiated textures) in order to reinforce the initial suggestion, throughout a mixture of formalistic, quasi-reductional and neutral level analysis features. Further research in Lauba’s remaining three Books of concert-studies would need to prolong methodologically this connection between apparent/profound areas of interest, bringing together such concepts as the initially presented “archetype”, its musical surface equivalent and the way all these function in a deeper analytical level.

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<sup>12</sup> K.A. Gourlay and Lucy Durán, “Balo,” *Grove Music Online*, ed. Deane Root, accessed December 10, 2017, <http://www.oxfordmusiconline.com>.

<sup>13</sup> Hugo Zemp and Sikaman Soro, “Talking Balafons,” *Journal of the International Library of African Music* 8/4 (2010): 6-23.

<sup>14</sup> Gerhard Kubik and Peter Cooke, “Lamellaphone,” *Grove Music Online* ed. Deane Root, accessed December 10, 2017, <http://www.oxfordmusiconline.com>.

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**Moving Beyond Cultural Appropriation: Reconciliation in the Finale of Christos Hatzis' *Going Home Star* (2014)**

Reconciliation with Indigenous peoples has become a priority for the Canadian government and many Canadian citizens, including Indigenous peoples, over the past decade. In 2013, The Royal Winnipeg Ballet commissioned Toronto-based, Greek-Canadian composer Christos Hatzis, who worked in collaboration with Canadian Indigenous musicians Tanya Tagaq, Steve Wood, and the Northern Cree Singers, to compose a ballet that tells the story of residential schools in Canada, the survivors of the violence perpetrated there, and the path toward reconciliation between Indigenous Canadians and non-Indigenous Canadians. This paper presents an analytic narrative of how reconciliation—a utopian idea where disparate cultures find common ground and attain a relationship built on mutual respect and understanding—is expressed in the finale of *Going Home Star* and how the creators attempted to avoid cultural appropriation.

According to the Truth and Reconciliation Commission (TRC)—a group made up of mostly Indigenous Canadians that was established in 2008 to inform all Canadians about Indian Residential Schools and suggest ways toward reconciliation—what is hoped for in the process of reconciliation is not a return to past friendly relations (since they never truly existed in the first place), but a move toward a new relationship that is “based on a commitment to mutual respect” (TRC 2015, vi). The finale of *Going Home Star* embodies this definition of reconciliation in two ways: 1) through incorporation of Aboriginal music, not as a form of exoticism, but as a fully equal partner to the Western art music composed by Hatzis; and 2) through the use of musical palindromes, which simultaneously evoke a sense of return and of journey to a new place.

Hatzis draws on musical elements from his collaborators' pre-recorded melodies—

ones which were created specifically for this project—for many of the other melodies in the finale. Example 1 shows the high degree of similarity between a melody performed by Steve Wood and one composed by Hatzis. By incorporating characteristics found in the Indigenous singers' melodies into other melodies, Hatzis makes certain to give equal priority to each culture, beginning the journey toward reconciliation in the finale.

Reconciliation also manifests itself in the frequent use of partial and loose palindromes. Often, a section of the music seems to be returning to where it began—a false friendly relation of the past—but the journey back to the beginning of the palindrome is altered, either 1) through a new set of harmonies or pitches that are unrelated to the palindrome (Example 2); or 2) through a new path, using the same transformations in a different way (Example 3). These deviations from the expected palindrome suggest a journey in which past wrongs are fully acknowledged, but also a way of moving past them to something new.

After finally seeming to fully achieve reconciliation with a hopeful B major section in which Steve Wood's "Morning Song" takes center stage and the Western instruments accompany, Hatzis ends the piece with a B-F# dyad (Example 4), leaving the ending open to interpretation. It could signal a final reconciliation between the Indigenous singers who perform an F#-B harmonic fourth and the Western instruments that join them, or it could be a nod to the fact that "reconciliation will take some time" (TRC 2015, vi). By not including the third of the harmony in this final measure, the listener is left wondering: will we ever fully achieve reconciliation?

For many critics, the power of the story seems to have out-weighed any concerns about cultural appropriation. In her review of *Going Home Star*, Anna Hoefnagels (2016: 57) praises the ballet for "creating a space for dialogue and understanding," adding that it received

a standing ovation from both Indigenous and non-Indigenous audience members alike. When questioned about issues of cultural appropriation, Tina Keeper, an assistant producer who is also Cree, justified the choice of art form by emphasizing that reconciliation is about the joining of two cultures in harmony. Through the above analytical narrative, this paper shows how these two cultures have been joined together in harmony in the musical composition. While I have taken the stance that this ballet is not cultural appropriation in the strictest sense, we must never stop asking: did it go far enough?

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[http://nctr.ca/assets/reports/Final%20Reports/Executive\\_Summary\\_English\\_Web.pdf](http://nctr.ca/assets/reports/Final%20Reports/Executive_Summary_English_Web.pdf)

Example 1: A trichordal pc-set comparison of “Morning Song” by Steve Wood and a melody composed by Christos Hatzis. Blue boxes highlight the prominence of pc-set (025). Red boxes indicate all other trichordal pc-sets found in the melodies.

- a) 1<sup>st</sup> stanza of “Morning Song” from Act 2, scene 4 (8:55), performed by Steve Wood, transcribed by Christos Hatzis.

Vocals

151 (025) (025)

157 (024) (025) (05)

ey-a-ho ey-a ey-a ho

[B, C $\sharp$ , D $\sharp$ , F $\sharp$ , G $\sharp$ ]  
B major pentatonic

- b) A piccolo melody composed by Hatzis that is found at the beginning of Act 2, scene 4 in mm. 8–9 (0:20).

Piccolo

8 (025) (025)

(025) (037)

[C, D, E, G, A]  
C major pentatonic





Example 4: The final harmony of the piece—a B/F# dyad—that ends the piece in a calm state but also leaves the future uncertain (approx. 10:20 of Act 2, scene 4).

237

Vocals

ey - a - ho

237

Harp, Cello, Contrabass

## **Musical Synthesis and Collaborations in Canadian Compositions using Chinese and Western Instruments**

Canadian contemporary music (especially that of the last three decades) is a relatively understudied scholarly field, both with respect to music analysis and ethnography. Aside from the usual phenomenon of being overshadowed by activities south of the 49th parallel, the diversity of compositional approaches and multivocality of creative intentions presents a challenge to the researcher. As other scholars have pointed out (Roeder, 379), avant-garde music "embodies the tensions between the individual and the community." Canadian avant-garde music is not different from its international counterparts in this respect, although it could be argued that its expression of individualism and community are altogether unique.

As a subset of Canadian contemporary music, intercultural contemporary compositions have in recent years grown in visibility and scope. It is not only the case that non-Western composers have embraced Western modernism as their home turf or that Western composers find the use of non-Western materials invigorating, but that non-Western and Western composers, as well as musicians of various backgrounds work within a relatively egalitarian setting to compose works of varied influences.<sup>1</sup> As examples: an Iranian-Canadian composer writes a concerto for the Chinese sheng and intercultural chamber orchestra (Samandari); a Taiwanese-Canadian composer and erhu player composes and performs a piece which fuses a Chinese pop song with Indian fusion pop elements (Tung). The multidirectionality of the musical exchanges has the effect of opening up a space for dialogue and creativity in ways that challenge the usual critique of Orientalist discourse (Lau, 38).

While aesthetic ideals remain highly individualized, composers and performers frequently dialogue about the "nuts and bolts" of composing for instruments of mixed origin—that is how to navigate practical challenges that attend to the acoustical differences between instruments, the handling of temperament, tonality, timbre and range. This paper focuses on analysis of excerpts from a number of Canadian chamber works using Western and Chinese instruments. Guided by consultation with composers and performers, my analysis employs varied approaches, including spectral analysis and colour-coded schema to examine a piece's overarching structure and interchange between groupings of instruments and musical textures. The analyses focus on compositional features that the composers themselves perceive to be at the core of their creative process.

The purpose is to present an overview of how some pieces are conceptualized and to examine common concerns among composers and performers in bringing together musical material and instruments of mixed cultural origin. As an example, composers and performers speak honestly about the tonal limitations of certain Chinese instruments as well as their narrow range

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<sup>1</sup> Tenzer has written about how José Maceda, a Filipino musician, freely adopted musical modernism to his own ends in bringing together Southeast Asian musical elements within avant-garde music (108). Likewise, Lau has written on Chinese American composers and their use of Chinese elements as cultural markers that aided them in their success in a transnational new music scene (38). Lau also offers critique of early forays into non-Western music by avant-garde composers such as Harry Partch, Henry Cowell, Colin McPhee, and John Cage (25).

relative to their Western counterparts. A prevailing concern is how to compose for instruments that have been developed for centuries with contrasting aesthetic ideals—that is, Western instruments, having been developed to blend well together within an harmonic system, while Chinese instruments, having taken an entirely different path toward highly individualized timbres. From the perspective of Western avant-garde music, non-Western instruments are a boon to enriching the timbral palette of a piece. However, composers are presented with the challenge of how to pair and contrast Western and non-Western instruments in ways that satisfy their aesthetic goals. One composer, Mark Armanini, speaks of how to "make instruments equal" in performance, giving Western and Chinese instruments equal voicing in a musical dialogue. My analysis examines how several composers have confronted these common challenges in the process of developing their own compositional style.

Intercultural music is a fairly porous subset of the Canadian contemporary music scene, with composers active in composing for both conventional Western ensembles as well as intercultural ensembles. Yet, within Western Canada, there has been an active and close-knit community of musicians commissioning and performing intercultural works in the avant-garde genre since the early 1990s. This growing body of music literature is deserving of further analysis and scholarly attention, having significance for understanding Canadian contemporary music at-large and the ever-expanding world of intercultural music.

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Track 1, *Primo* by Rui-Shi Zhuo. *Bamboo Shoots in Spring*. Vancouver: BC Chinese Music Association, p2013.

**But We're Not in Zombie Mode:**

**Meter and Selected Attention in Greek Orthodox Movement and Music**

*Proposal*

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*Introduction*

“I don’t place myself in zombie mode,” said Greek Orthodox priest, Father “Theodoros,” in discussing how he simultaneously pays attention and *does not* pay attention to the music around him when conducting a service (Interview, February 2017). This priest was trying to explain the specific mental, spiritual, and fully embodied state he enters when leading the Liturgy. This paper explores metrical aspects of embodied musical worship that arise when Greek Orthodox clergy are conducting a service in this mode (which is *not* “zombie mode”).

Greek Orthodox worship includes chanted, unaccompanied music that may be understood as *semi-metered* (music that allows for varying levels of attention and entrainment to meter on the part of the listener and/or performer).<sup>1</sup> When such semi-metered chanting is considered alongside the prescribed ritual movements of the priest, an asynchronous relationship is unveiled between body and voice.<sup>2</sup> Such asynchronies also arise from the layering of multiple concurrent sonic events, as often happens during the censuring of the church with the percussive incense censer, or the tolling of the bells during the chanting of the Doxology. Given existing studies on trance and ecstatic rituals which show metricity and synchronization to be powerful ways of

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<sup>1</sup> I use the term “semi-metered” to indicate that the same musical event may be understood as more or less metered depending on the person listening to or performing the music. Where one listener might hear the music as quite metered, another (perhaps a novice listener to a given style) may not interpret a metrical scheme, thereby understanding the music as metrically ambiguous or even unmetered. For further discussion of semi-meteredness, see Abrahams 2017.

<sup>2</sup> Asynchrony is understood as a state where one is not actively attending to synchronization or lack of synchronization (definition developed from Warren-Crow 2011).

directing attention towards spiritual experience (e.g., Becker 2004; Csordas 1997; Goodman 1988), one might expect that the prevalence of asynchronous metrical interactions in these worship settings would prove detrimental to the worshipper's spiritual practice. However, through interviews with Greek Orthodox priests in the Chicago area, these moments of complex metricity are shown to be understandable using procedural memory and selective attention (concepts drawn from the psychology literature: Lavie et. al. 2004; Sutton and Williamson 2014). Further, field observations of these priests found them using sound and movement in purposeful manners in order to conduct the Liturgy in the "right" way (Engelhardt 2015). By combining ethnography and embodied analysis, I invite my participants' voices to inform my music-theoretical outlook, affording a deeper understanding of embodied musical moments that are non-ecstatic, asynchronous, and semi-metered in daily Greek Orthodox worship.

### *Analysis*

I explore these manners of understanding and performing the Greek Orthodox liturgies through the analysis of three instances of physical/sonic selective attention. The first, drawn from the Great Entrance during the Divine Liturgy, shows multiple layers of meter occurring throughout the voice, censing arm, censing sound, foot movements, and crossing motions of the congregants, wherein metrical layers are attended to in hierarchical streams.

The second example, drawn from the censing of the church, examines the modulation of asynchronous alignment and misalignment of sonic layers. Figure 1 shows the censer strikes laid alongside the Cherubic hymn. Within themselves, these groupings are metrically consistent, but when combined with the hymn melody, the censer strikes frequently occur slightly before or after the melodic attacks. However, as the priest begins to cense the congregation the censer

strikes align with the chant. This fleeting alignment was observed at multiple parishes. Here, I adapt Hasty's (1997) method of projective analysis, assigning physical moments of emphasis as event beginnings rather than sonic ones (as shown in Figure 2 and Sound Example 1).

The third example is examined from my own point of view, providing an auto-ethnographic take on the sonic asynchrony of the bell ringing during the chanting of the Doxology (shown in Sound Example 2).

### *Conclusions*

All three analyses are informed by ethnography and embodied analysis, and aim to uncover the complexities arising from the use of selective attention in sonic and physical metricity during Greek Orthodox Worship. This paper sheds light on daily and weekly practice of Greek Orthodox clergy, whose extensive training in conducting worship in a specific way allows them to develop distinctive types of attention and focus practices, changing their experience of sound, movement, and meter during worship. Furthermore, my own experiences as an ethnographer and analyst in the worship setting indicate that using analysis, ethnography, and auto-ethnography to examine these complex sonic and embodied moments affords a deeper understanding of the experience of meter in Greek Orthodox music and worship.

### Figures

**Figure 1.** Censer strikes laid alongside the Cherubic hymn. Brackets denote the groupings of three that are used during the censuring of the icons and holy objects, while the congregation is censured without groupings. Note that the common denominator for the pulse in my notation was based on the choir's pulse.

**Figure 2.** Cherubic hymn showing alignment of melody with censer strikes and sign-of-the-cross (in green and blue arrow formation). Also see Sound Example 1.

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## **Participation and Presentation in Chinese Cross Talk: Using ELAN for Studying Responses to Music and Speech**

### **Introduction**

Cross's recent experiments on conversational "bouts" between same-sex speakers (2016) build on the distinction between participation and presentation explained by Turino (2008). While Cross's emphasis on the participatory (over the presentational) makes sense in the context of conversational dialogue, we suggest that the differences between the participatory and presentational aspects of performances are not so easily drawn. *Xiangsheng* (XS), a comic dialogue popular in north China, is an example of a participatory genre that involves cooperative co-construction between the two performers similar to the conversational dialogues studied by Cross and his associates. However, the participatory exchange is also presentational; audience members buy tickets to witness the way two actors perform their dialogue on stage. To complicate the issue, the performed dialogue is also punctuated by laughter and other affiliative vocal sounds from members of the audience, ultimately creating a metalogue between the audience and the two actors. While many musicologists would agree that presentational modes may involve active and creative participation among audience members, audience participation is difficult to analyze and, therefore, rarely measured. The purpose of the current project is to use ELAN, a video programming software, to record and analyze the participatory exchanges (1) between the two actors and (2) between audience members and the actors after their presentational segments.

### **Analysis**

One of the most successful XS performers in recent years has been Guo Degang (Cai 2016). A youtube recording of his New Year's performance in 2016, published on February 15, is a short, 14-minute clip that epitomizes Guo's brash and irreverent style with Yu Qian, his longtime collaborator, as his "straight man" (Guo and Yu 2016). While Guo is definitely the dominant speaker/actor, Yu is nevertheless often quick to respond to Guo, creating a kind of co-narration similar to the exchanges described by Cross (2016). We used ELAN to analyze a recording of Guo and Yu's February 2016 XS performance with the hope of learning about the kind of participatory relationship between the two Chinese actors, as well as the audience's participatory response to the actors' presentational performances.

FIGURE 1: Screenshot of Guo and Yu's XS performance in ELAN

### **Bout one**

We selected two bouts in the recording. The first is a spoken bout with no singing (from minute 1:00 to minute 2:14), featuring Guo's musings about his future as a 140-year-old performer with Yu. Guo goads Yu, as his subordinate, and the audience responds to Guo by both preceding and following Yu's reactions to Guo with applause and/or laughter, clearly demonstrated by graphs generated from the ELAN program. The spoken bout features what we might call the speech-backchannel mode between main performer and foil, demonstrating a basic 3-5 second temporal pattern referred to as "the psychological present of human consciousness" (Tervarthen 2005).

FIGURE 2: Guo and Yu's backchannel mode (Guo-red; Yu-blue)

FIGURE 3: Yu's emotional response to Guo and audience reaction (audience-green)

### **Bout 2—battle of pitches**

For the most amusing and animated part of the performance, Guo proposes that the two actors sing part of a difficult opera aria. The audience is quiet during the presentational part of the performance as Yu sings in a high falsetto, followed by Guo singing in an even higher falsetto, with enthusiastic, loud applause following both presentations. The cooperative co-construction between actors and audience members in this XS also supports a claim made by Mazokopaki and Kugiumutzakis when discussing the interaction between mothers and infants: “by anticipating change, each partner contributes to the improvisation and development of the interaction in a way that leads to coordinated enjoyment of a common social experience” (2009: 202).

FIGURE 4: Audience response after Yu’s “presentational” performance

### **Conclusion**

Presentational and participatory performances are not mutually exclusive, but are scalable phenomena that ebb and flow during the course of performance in XS.

Moreover, the audience response to the two actors in XS also illustrates a kind of participation that contributes to the energy and success of the presentational parts of the performance, demonstrating more general phenomena involving anticipation and improvisation discussed by Mazokopaki and Kugiumutzakis (2009) and Trevarthen (2005).

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**Figures 1-4** (in order) attached below

ELAN 5.0.0-beta - xiangsheng\_project.saf

File Edit Annotation Tier Type Search View Options Window Help

Subtitle: 郭德纲讲话

Subtitle: 于谦老师讲话

Subtitle: Guo Deqiang - English

Subtitle: Yu Qian - English

郭德纲讲话

于谦老师讲话

Guo Deqiang - English

Yu Qian - English

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Selection Mode  Loop Mode

Navigation icons: Home, Previous, Play/Pause, Next, Stop, Full Screen, Repeat, Shuffle, Mute, Volume

Timeline: 00:00:58.000 to 00:01:02.000

Waveform visualization

Timeline: 00:01:06.000 to 00:01:20.000

Waveform visualization

default (0)

郭德纲讲话 [259]

于谦老师讲话 [259]

Audio [113]

Yu Qian - English [255]

Guo Deqiang - English [277]

字幕时间轴

郭德纲讲话 [259]

于谦老师讲话 [259]

Audio [113]

Yu Qian - English [255]

Guo Deqiang - English [277]

字幕时间轴

郭德纲讲话 [259]

于谦老师讲话 [259]

Audio [113]

Yu Qian - English [255]

Guo Deqiang - English [277]

字幕时间轴

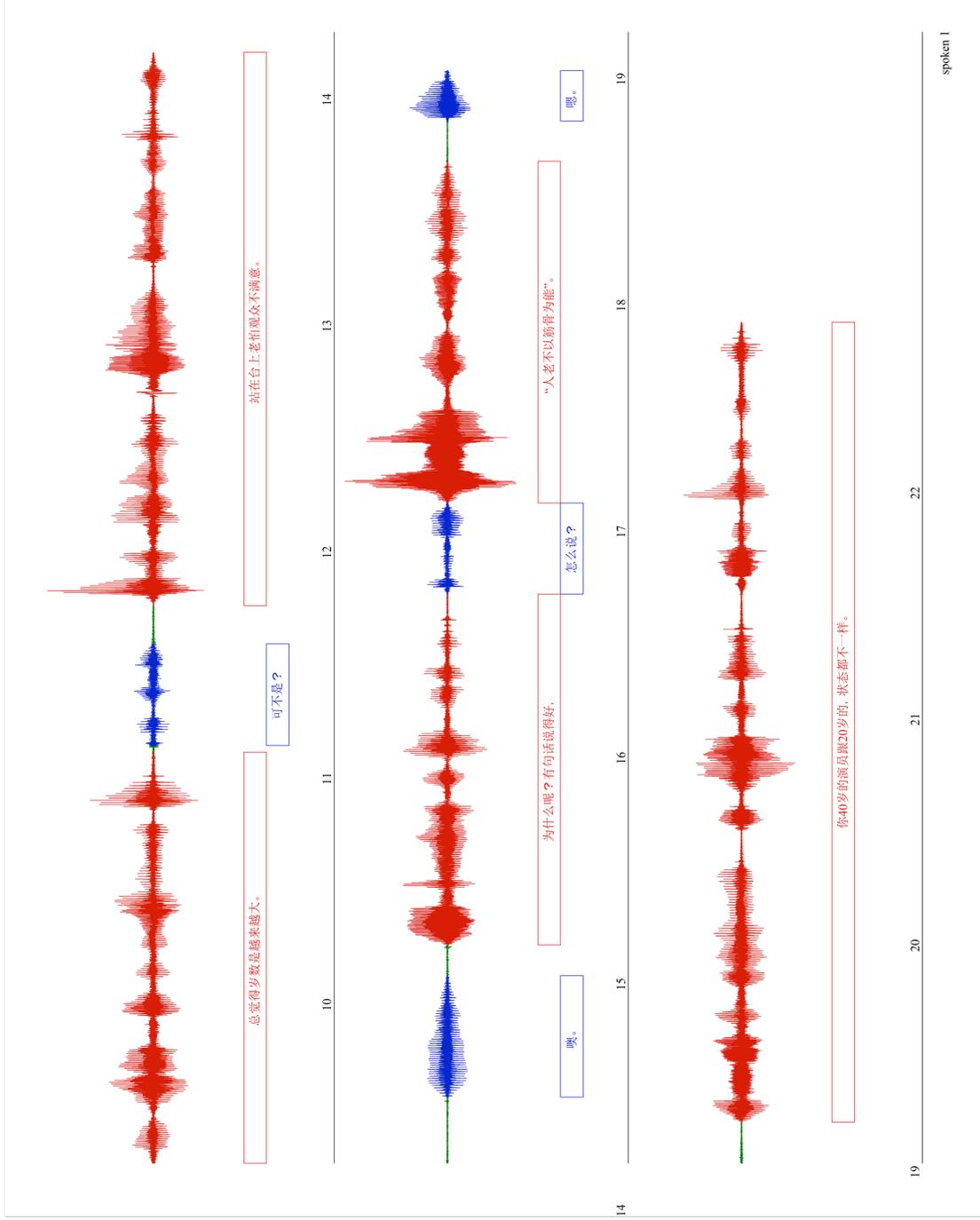
郭德纲讲话 [259]

于谦老师讲话 [259]

Audio [113]

Yu Qian - English [255]

Guo Deqiang - English [277]

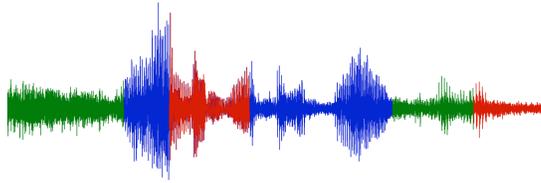




我活到140岁了。 噢 好家伙。

Laughter

35 36 37 38

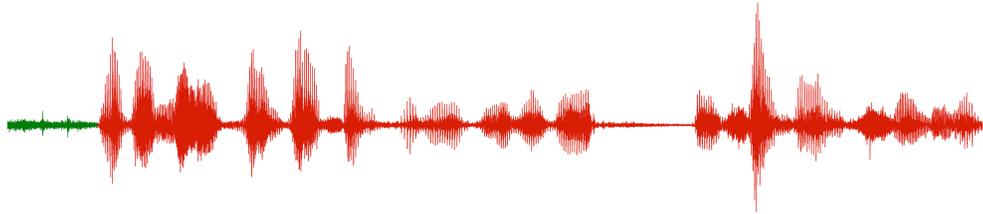


啊 是吗？

您倒真不少活。

Laughter Light Applause

38 39 40



要到那天再上场, 我估计就比现在要吃力了。

Light Applause

0 41 42 43



## Imagery and Movement in North Indian Monsoon Rāgs

Laura Leante

### *Background*

In this paper I discuss Hindustani (North Indian) rāgs performed in the Monsoon, the imagery and feelings contemporary musicians associate with them, and the implications of this for musical embodiment.

The monsoon season has strong emotional and figurative connotations and therefore music associated with this time is connected to a much more fixed stock of shared imagery than other rāgs. The challenge is thus to understand how predefined images and emotions are articulated in relation to specific musical features, and how their analysis can contribute to a better understanding of wider processes of signification in North Indian classical music.

### *Analysis*

My approach draws on ethnographic enquiries carried out among North Indian classical music performers and connoisseurs, concentrating on two Monsoon rāgs, Rāg Megh and Rāg Mīyān Malhār. These accounts are analysed in relation to their wider cultural context and through musicological, semiological and gestural analysis. I offer an original perspective on how musical elements featuring in Monsoon rāgs can be understood as sonic and/or kinetic anaphones (i.e. renditions, within music, of extra-musical sound and movement respectively)<sup>1</sup>, and how images and moods elicited by these rāgs are related to processes of embodiment of these musical features.

My analysis will be structured in two parts, which reflect two parallel and concomitant ways through which Monsoon imagery is explored in and meaning attributed to Monsoon rāgs. First, I will discuss the melodic characteristics of the rāgs and the units of musical meaning (“musemes”) which feature more prominently in musicians’ discourse (see Figure 1); I will then and discuss how images and emotions associated with these musemes can relate to processes of embodiment of the music (see Figure 2). Secondly, I will investigate the role that the overall structure of the performance and non rāg-specific features such as tempo, melodic range or playing techniques have on the potential to convey different nuances of the Monsoon imagery and to contribute to processes of meaning construction offering an over-arching narrative within which the specific musemes can be framed and understood.

### *Conclusion*

Monsoon emotions and imagery are highly prescriptive and the study presented here evidences how, for musicians and other informants discussing Rāg Megh and Rāg Mīyān Malhār, these images do not leave much margin for flexible

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<sup>1</sup> For a discussion of sonic and kinetic anaphones see Tagg 2005 and for an application of kinetic anaphone to the study of imagery in Hindustani classical music see Leante 2009.

individual elaboration. Shedding light on how meaning is attributed to these rāgs lies not so much in understanding “how processes of embodiment of musical features are expressed through imagery”, but more “how a set of predefined images and meanings are expressed and embodied through musical features” and “how these fit Monsoon rāgs in particular”.

This study complements and advances extant research into gesture and meaning in Indian music performance<sup>2</sup> by presenting new analysis of an established corpus of images and by providing a nuanced understanding of the relationship between embodiment and imagery in music.

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<sup>2</sup> See for example Clayton 2005 and 2009; Fatone et al. 2011; Leante 2009; Rahaim 2012.

## Sounds of the Cosmos: A Transformational Approach to Gesture in *Shō* Performance

While scholars of *gagaku* have written extensively on the historical junctures between Japanese and Chinese theories of mode (Hayashi 1969; Garfias 1975; Terauchi 2011) few studies have explored the ways in which theories of mode interact with contemporary performance practice. This paper incorporates the physical gestures of performing the *shō*, a free-reed mouth organ, into an analysis of its *aitake*—five- to six-note pitch clusters played by the *shō* in *tōgaku* repertoire—to explore the relationship between instrumental gestures (Montague 2012) and modal theory in *tōgaku*. I demonstrate that the idiosyncratic arrangement of the pipes on the *shō* (Figures 1a and 1b) is closely related to the pitch structures and functions of the *aitake*.

My analysis synthesizes two approaches. First, I adopt David Lewin's transformational attitude (1987) to conceptualize the *aitake* not as static musical objects but as processes of motion enacted by *te-utsuri*: standardized finger movements for shifting between two *aitake*.<sup>1</sup> Second, following the approaches of Cusick (1994), Rockwell (2009), and De Souza (2017), I treat the *aitake* as sonic byproducts of a performer's instrumental gestures. My analysis of *shō* performance not only extends the scope of transformational theory beyond the domain of pitch and the repertoire of Western art music, but also demonstrates how pitch structures and bodily gestures are intertwined in *gagaku*.

My paper argues that relatedness between *aitake* is determined by the parsimony (Cohn 2012) of the *te-utsuri*. Because the rules of *te-utsuri* dictate that each finger always moves to the

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<sup>1</sup> Unlike fingerings on the piano, there is no flexibility for individual discretion; a performer must follow the exact fingering procedures dictated by the *te-utsuri*.

nearest hole (and not necessarily the nearest note), I suggest that *te-utsuri* allows for a parsimonious movement of the fingers when shifting between *aitake*. I illustrate the *te-utsuri* between pitch clusters *kotsu* and *ichi* in Figure 2. Since *bō* (D5) and *ichi* (B4) are adjacently located to *kotsu* (A4) and *hachi* (E6) respectively, the fingers take the shortest paths possible. I quantify motions of *te-utsuri* by calculating the number of finger holes that each finger must traverse to get from one *aitake* to another. Numbering each of the finger holes from 0 to 16 (Figure 1b), I represent each *aitakē* as a permutation of four fingers pressing down on the pipes, as shown below: *A* expresses each *aitake* as a set  $(a,b,c,d)$  in which *a* is the right index finger, *b* is the right thumb, *c* is the left thumb, and *d* is the left ring finger.

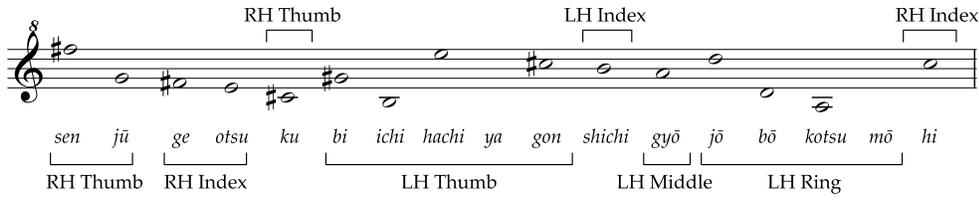
$$A = \{(a, b, c, d) : a \in \{0,3,4\}, b \in \{1,2,5\}, c \in \{6,7,8,10\}, d \in \{13,14,15\}\}$$

*Te-utsuri* from *aitake kotsu* to *ichi* can therefore be expressed as the following:

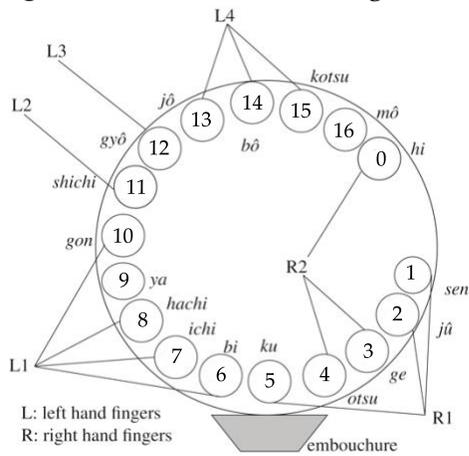
$$\begin{aligned} kotsu(a, b, c, d) &= (1, 4, 8, 15) \\ ichi (a, b, c, d) &= (1, 4, 7, 14) \\ \text{Difference:} & \quad (0, 0, -1, -1) \\ Te_{(0, 0, -1, -1)}(kotsu) &= (ichi) \end{aligned}$$

An examination of all possible *te-utsuri* combinations reveals that the most parsimonious movements can be enacted between four *aitake*: *bō*, *kotsu*, *ichi* and *otsu* (Figure 3). These *aitake* correspond to the clusters built on the fundamental degrees of five of the six modes—*Ichikotsu-chō* (D), *Hyōjō* (E), *Taishiki-chō* (E), *Ōshiki-chō* (A) and *Banshiki-chō* (B). The *aitake* requiring the fewest number of finger hole traversals coincide with the *aitake* accompanying the fundamental tones of each mode. These findings demonstrate that the pipes of the *shō*, while seemingly arranged in no discernable order, are in fact constructed to facilitate parsimonious *te-utsuri* between the *aitake* accompanying the fundamental modal degrees. The *shō* presents a striking correlation between gestural parsimony and tonal function.

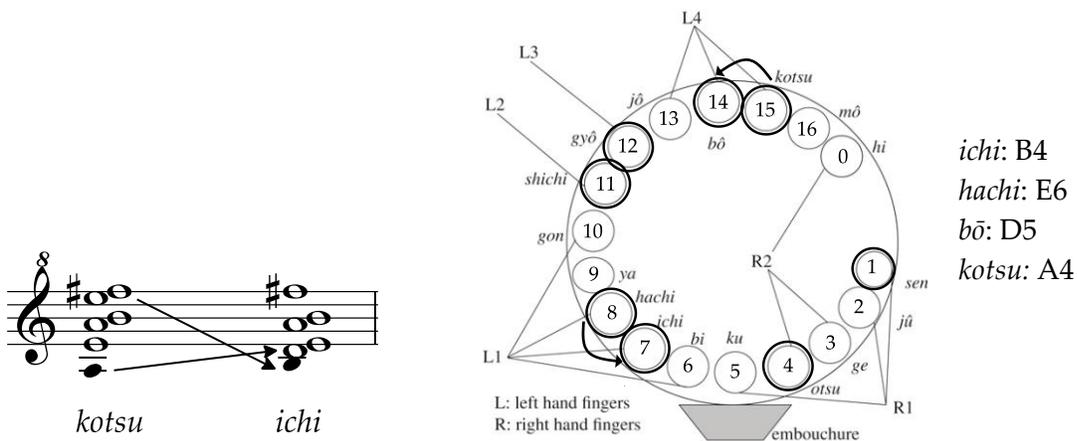
**Figure 1a:** Distribution of finger holes across the left and right hands (Western notation).



**Figure 1b:** Distribution of finger holes across the left and right hands.<sup>2</sup>



**Figure 2:** *Te-utsuri* from *aitake kotsu* to *ichi*.

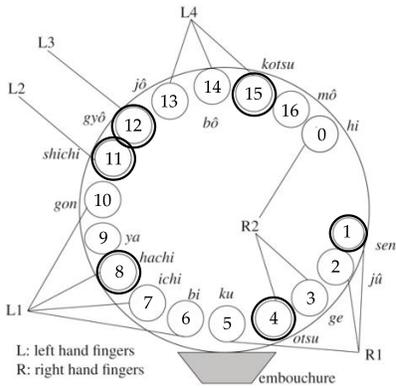


<sup>2</sup> Original diagram used in Terauchi 2011, 25.

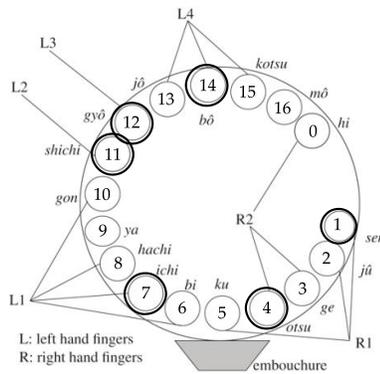
Figure 3: *Aitake bō, kotsu, ichi* and *otsu*.



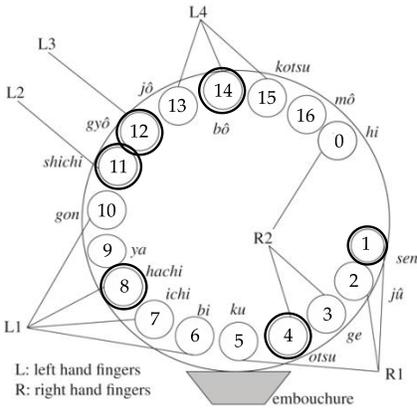
*Kotsu:*



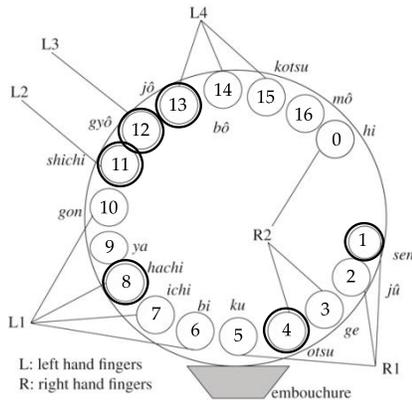
*Ichi:*



*Bō:*



*Otsu:*



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## Value, Proverbs, and Musical Time: Exploring Generative Processes in the *Seperewa* Music of Osei Korankye

### Introduction

This paper explores aspects of “simultaneous multidimensionality” in the music of *seperewa* master Osei Korankye with the goal of elucidating generative processes in Ghanaian highlife music and contributing to qualitative interpretations of West African bell patterns.<sup>1</sup> Korankye is recognized as the primary proponent of the *seperewa* or Akan harp-lute, which shares common ancestry with harp traditions of the Sahel and Sahara and has shaped highlife music in Ghana and throughout West Africa. This research began as a collaborative effort with Korankye to further develop his pedagogical method for the *seperewa*.

In addition to experiences working closely with Korankye in recording, performance, and educational contexts, the author draws from studies of West African proverbs and grapples with the extensive literature on African bell patterns as points of inquiry into the musical processes of Korankye’s recorded *seperewa* performances. For the listener/performer not acculturated to West African music, bell patterns are an economical means to experience West African musical processes. The succinctness of bell patterns makes them both relatively easy to internalize qualitatively and analyze quantitatively, though their accessibility can also belie their varied applicability and role in creative processes. Similarly, the creative and expressive power of proverbs can also be made elusive by their pithiness.

For a hermeneutic reading of Korankye’s virtuosic melo-rhythmic processes, I look to anthropologist Jean-Louis Siran’s tripartite model of West African proverb analysis.<sup>2</sup> Siran argues that a proverb’s message exists in three distinct though interrelated realms: “signification” or the direct translation; “meaning” or the cultural knowledge needed to interpret the translation; and “value” or the meaningful application of the proverb in a real life situation. I connect the bell pattern’s basic structure to Siran’s concept of “signification,” where as “meaning” arises from the cultural knowledge that enables musical interpretation of the bell pattern. I attribute “value,” possibly equatable with Akan expressions of wisdom, to Korankye’s ability to innovate within the confines of cultural expectations. In his performance, the bell pattern becomes a potential space in which multiple melo-rhythmic interpretations arise and from which inspired ideas, often unexpected, emerge. The “value” of Korankye’s *seperewa* melo-rhythmic language derives from his ability to manipulate the potential space of the bell pattern rather than submit to the bell pattern’s supposed authority over the song’s rhythmic structure. In moments of inspiration, Korankye engages with the music’s multidimensionality, what Ruth Stone calls “inner time,” in which virtuosity and inspiration intersect.<sup>3</sup>

### Analysis

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<sup>1</sup> David Locke (2011) defines “simultaneous multidimensionality” as a primary aesthetic goal in African music that functions to enable multiple perspectives of a single music event. Locke’s article contributes to the study of generative processes in African music, which Agawu (2006) describes as moving beyond “a ruling surface” to codify the genre’s structures as well as innovative interpretation by individuals.

<sup>2</sup> Jean-Louis Siran (1993).

<sup>3</sup> Ruth M. Stone, “In Search of Time in African Music,” *Music Theory Spectrum* 7 (April 1, 1985): 146.

This paper focuses on transcriptions of Korankye's vocal, *seperewa*, and bell parts in the song "3mm3 Nyina Ns3" to explore how he strategically challenges the bell pattern's primacy as a time keeper.<sup>4</sup> Descriptive transcription and detailed recording analysis provide the basis for bridging structural and cultural perspectives of the bell pattern as well as examining the bell pattern's relationship to Korankye's processes of composition and improvisation.

In Example 1, we hear Korankye's full realization of the song "3mm3 Nyina Ns3" from his 2016 album *Seperewa of Ghana*. This studio recording presents advantages for the analysis of micro occurrences in groove and melo-rhythmic structure as well as macro structures in the song's form.<sup>5</sup> A close analysis of these aspects of the song provides insight into the dialogic relationship of sung and played melodies, which is a defining characteristic in *seperewa* music. I look at the interaction of vocal and *seperewa* parts in relationship to the primary bell pattern to examine how Korankye rhythmically and melodically constructs phrases to both support the imagined conversation between the listener and vocalist, the vocalist and *seperewa*, and the musical content and bell pattern.

To illustrate this dialogic relationship, Example 2 consists of a transcription of the bell pattern, *seperewa*, vocal melody, and lyrics for the first verse of this song (00:18-00:56 of *Ex. 1*). Some of the generative processes evident in Example 2 include Korankye's rapid shifting between various levels of subdivisions within what David Locke calls the "metric matrix." This has the effect of subverting the listener's orientation within the bell cycle and exemplifies the masterful creation of phrases within the bell pattern continuum. The transcription reveals a technique of what I call "suspending time" in which Korankye plays a short phrase on *seperewa* that begins and ends on bell strikes though implies an alternative underlying pulse to the bell timeline. As shown in measure three of Example 2, Korankye plays five notes that begin on the first bell strike and end on the fourth bell strike, which arguably positions the *seperewa* as the primary time keeper.<sup>6</sup>

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<sup>4</sup> "3mm3 Nyina Ns3" (Akwaaba Music, 2016) can be accessed online through Akwaaba's website: <http://www.akwaabamusic.com/osei-korankye-emmere-nhyina-nse/>

<sup>5</sup> The recording studio is a familiar context of performance for traditional musicians living and working in cosmopolitan cities and provides an important environment for the consideration of generative processes and collectivity in music making. Having individually recorded tracks also provides the ability to examine in detail the relationship of bell strikes and sung and played phrases.

<sup>6</sup> This "suspension" may be akin to what Locke calls "Equivocal Phrase Shape" (2011, p. 59).

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Quoted by Agawu: All patterns found may be derived from a few basic patterns through rules of transformation: cyclic permutation; element fission or fusion; complementation, or figure-ground reversal maximally similar analogue approximation

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## Discography

Osei Korankye. *Seperewa of Ghana: 3mmer3 Nyina Ns3* (Akwaaba Music, 2016). Accessed online: <http://www.akwaabamusic.com/osei-korankye-emmere-nhyina-nse/>

## How to Listen to the Response Drum Part in Agbadza (Ewe, Ghana/Togo): Form, Accentuation, and Reciprocity

The drumming music of Agbadza, a type of performance art of the Ewe-speaking people of West Africa (Ghana/Togo), centers on the interplay of lead and response drums. Timbral/rhythmic patterns from the response drum part move in their own temporal line while simultaneously contributing to the thick ensemble texture of Agbadza. This paper will examine the design of musical form and the patterning of accentuation in response drum themes. Reciprocity will be highlighted as a way of listening to the response drum part; that is, the mutual impact between the response drum part and other components of an Agbadza performance (dance, time parts, lead drum part, song). Information for the analysis comes from a recorded performance of twenty-five Agbadza songs by Gideon Foli Alorwoyie and the Afrikania Cultural Troupe of Anlo-Afiadenyigba, Ghana.

## Measuring Rhythmic Complexity in the West African Standard Pattern: An Empirical Approach

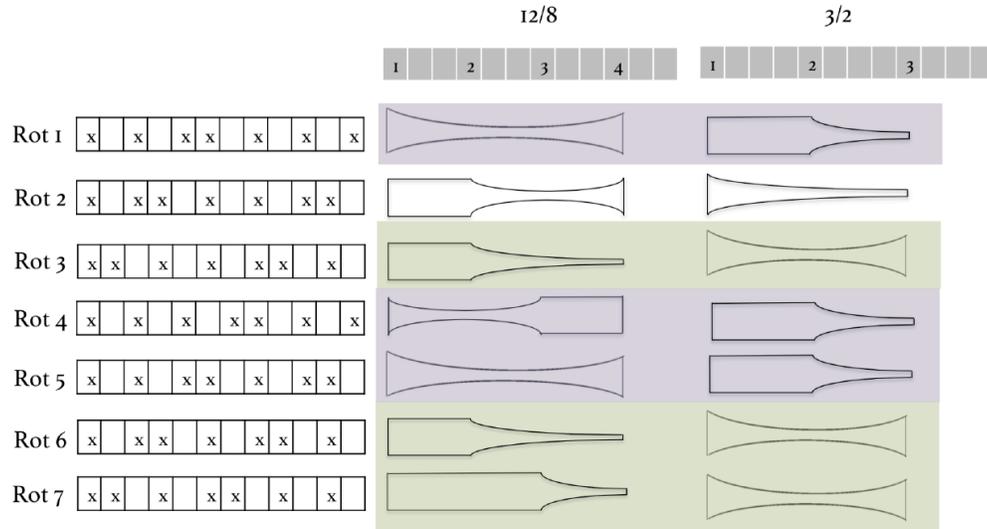
### Introduction

Much of the groove-based music found in West Africa, Central Africa, West-Central Africa, and their Atlantic diaspora (aka the Black Atlantic) is temporally organized around short asymmetric ostinati called timelines. The so-called West African standard pattern <2212221> is one of them. This paper focuses on one interesting property of this pattern; its rotational possibilities. That is, the potential of other points in the pattern's time cycle to be perceived as reference points (i.e. downbeats). This rotational potential is realized in specific traditional contexts (e.g. Nigerian Yoruba drumming <2212212>; *Candomblé* drumming <2221221>) and in experimental Afro-diasporic musics (e.g. "Das Arabias," [Orkestra Rumpilezz, 2016] <1222122>). In a recent publication, Diaz (2017) argued that some Brazilian jazz musicians deliberately aim to increase rhythmic complexity by using various types of rotations of the standard pattern. In examining this rhythmic complexity, the author considers four parameters: metric strength, syncopation, familiarity, and ambiguity.

The paper is guided by the following question: How do musicians who are familiar with the standard pattern in its version <2212221> react when the point of reference is shifted in time? More specifically, how these shifts affect rhythmic complexity? I engage this question from an empirical standpoint with three psychological experiments on rhythm realized Ghana, one of the locations where this pattern is widely used.

### Goals and Hypothesis

In his study, Diaz proposed that the seven rotations of the standard pattern resulting from using each onset as a downbeat can be classified in two groups or families: a family of rotations that is *close* to the standard pattern and another one that is *distant*. He based this classification on Chris Stover's (2009) waves of metric strength, which represent each rotation with a shape that is wide when a metric beat is articulated or narrow otherwise (see Figure 1).



**Figure 1.** Waves of metric strength for the seven rotations of the standard pattern (12/8 and 3/2 readings). Close family marked in purple; distant family in green and white. [After Diaz (2017:14)]

The main goal of this paper is to test empirically this analytically based grouping of the standard pattern rotations. A broader goal is to examine the rhythmic complexity of each of the twelve possible rotations of the standard pattern. The hypothesis is that familiarity with the basic shape of the standard pattern <2212221> affects the perceived rhythmic complexity of its rotations, and perhaps other measures of rhythmic complexity as well.

## Methods

The experiments examine three measures of rhythmic complexity: *perceptual* (how complex a person thinks a rhythm is); *metric* (how difficult it is to reproduce the underlying beat of a rhythm), and *performative* (how difficult it is to reproduce a rhythm). The sample of rhythms used for these experiments consists of the 12 possible rotations of the standard pattern in three contexts: the rhythm alone, and in conjunction with a 12/8 and a 3/2 pulse (emically, these are the two most important metric contexts of the standard pattern in the Black Atlantic, particularly the former). The subjects are nineteen Ghanaian music students and lecturers who are familiar with the standard pattern in its basic rotation <2212221>. In order to isolate the variable of

familiarity, thirty-three music students at King’s College London who are unfamiliar with the standard pattern were used as control subjects.

## Findings

The results for each of the three experiments are expressed in a 1-5 scale where 1 represents the lowest and 5 the highest value of complexity. For analytical purposes, the average values of these results are presented in the form of tables and histograms. Figures 2 and 3, for instance, respectively summarize the results of the experiments on perceptual and performative complexity with 19 Ghanaian subjects.

<b>Rotation \ Context</b>	<b>Only rhythm</b>	<b>Rhythm + 12/8 beat</b>	<b>Rhythm + 3/2 beat</b>
R1 <x.x.xx.x.x.x>	1.11	1.89	3.11
R2 <.x.xx.x.x.xx>		2.84	3.44
R3 <x.xx.x.x.xx.>	1.37	2.32	3.50
R4 <.xx.x.x.xx.x>		2.37	3.28
R5 <xx.x.x.xx.x.>	1.89	3.00	3.22
R6 <x.x.x.xx.x.x>	1.47	2.37	3.33
R7 <.x.x.xx.x.xx>		2.21	3.22
R8 <x.x.xx.x.xx.>	2.00	2.47	3.11
R9 <.x.xx.x.xx.x>		2.84	3.11
R10 <x.xx.x.xx.x.>	1.95	2.37	3.06
R11 <.xx.x.xx.x.x>		2.84	3.44
R12 <xx.x.xx.x.x.>	1.68	2.47	3.39
<b>Average</b>	<b>1.64</b>	<b>2.50</b>	<b>3.27</b>
<b>Average close family</b>	<b>1.53</b>	<b>2.25</b>	<b>3.19</b>
<b>Average distant family</b>	<b>1.72</b>	<b>2.54</b>	<b>3.29</b>
<b>Average articulated beg.</b>	<b>1.64</b>	<b>2.41</b>	<b>3.25</b>
<b>Average syncopated beg.</b>		<b>2.62</b>	<b>3.30</b>

**Figure 2.** Average values of perceptual complexity for 19 Ghanaian subjects

<b>Rotation</b> \ <b>Context</b>	<b>Only rhythm</b>	<b>Rhythm + 12/8 beat</b>	<b>Rhythm + 3/2 beat</b>
R1 <x.x.xx.x.x.x>	2.06	1.06	2.65
R2 <.x.xx.x.x.xx>		2.78	3.59
R3 <x.xx.x.x.xx.>	2.06	1.67	2.76
R4 <.xx.x.x.xx.x>		2.89	2.88
R5 <xx.x.x.xx.x.>	2.28	2.11	2.71
R6 <x.x.x.xx.x.x>	2.44	1.61	2.47
R7 <.x.x.xx.x.xx>		2.78	3.47
R8 <x.x.xx.x.xx.>	1.61	1.67	1.65
R9 <.x.xx.x.xx.x>		2.72	3.71
R10 <x.xx.x.xx.x.>	2.06	2.17	3.53
R11 <.xx.x.xx.x.x>		4.78	4.00
R12 <xx.x.xx.x.x.>	2.06	1.72	2.71
<b>Average</b>	<b>2.08</b>	<b>2.33</b>	<b>3.01</b>
<b>Average close family</b>	<b>2.04</b>	<b>1.44</b>	<b>2.25</b>
<b>Average distant family</b>	<b>2.11</b>	<b>1.92</b>	<b>2.93</b>
<b>Average articulated beg.</b>	<b>2.08</b>	<b>1.71</b>	<b>2.64</b>
<b>Average syncopated beg.</b>		<b>3.17</b>	<b>3.53</b>

**Figure 3.** Average values of performative complexity for 19 Ghanaian subjects

## Discussion

The results in Figures 2 and 3 show that, in average, rotations with unarticulated beginnings have higher values of complexity, confirming other authors' findings that syncopation is a reliable predictor of rhythmic complexity (Fitch & Rosenfeld 2007, Keller & Schubert 2011). But there are some individual cases when syncopated rotations are perceived as less complex than rotations with articulated beginnings (e.g. R7 and R8 in Figure 2).

Figures 2 and 3 also show that, in average, rotations of the close family (R1, R6, R8) register lower values of complexity than those of the distant family (R3, R5, R10, R12). And this is true for the rhythm in combination with 12/8 and 3/2 beats. This supports Diaz's grouping of family rotations of the standard pattern. However, when examined individually, some rotations do not conform to this grouping. For instance, in the perceptual experiment Rotation 10 (belonging to the distant family) has lower values than Rotations 6 and 8 (from the close family). Why do Ghanaian subjects tend to *perceive* a distant rotation as less complex than a close rotation? Why is this perception not matched in the performative experiment? What measure of complexity is more reliable? What kinds of syncopations affect rhythmic complexity the most and why? And more generally, how do we reconcile empirical results with those coming from

close musical analysis (e.g. metric strength, syncopation, etc.)? The closing discussion revolves around these questions.

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Title: “Getting the Groove: Variation, Expectation and Affective Responses Across Cultures”

Author: Maisie Sum, University of Waterloo

## INTRODUCTION

In his landmark study, *Emotion and Meaning in Music*, Leonard Meyer wrote: “emotional response to music does take place, [but the evidence] tells us almost nothing about the nature of the response or about the causal connection between the musical stimulus and the affective response it evokes in listeners” (1956: 6). Nearly half a century later, technological advances have enabled researchers to directly measure neural, physiological, and chemical responses when listening to music (e.g., Becker 2004; Hallam et al. 2008; Juslin and Sloboda 2010). Studies in music and emotion suggest that listening to self-selected or preferred music potentiates strong affective responses. The current study investigates the affective responses evoked in listeners unfamiliar with music used in therapeutic practices worldwide, and changes to their physiological responses upon repeated exposure—that is, as the music becomes more familiar. I posit that the increasing familiarity with initially unfamiliar music leads to a heightened affective response when the music possesses key temporal features (such as polyrhythms and regular periodicity) and repetition is nuanced (with variations), and conversely, a reduced affective response when repetition is exact (with no variations). In particular, I suggest that temporal features and nuanced repetition can create moments of expectation and surprise that potentiate affective responses strong enough to induce therapeutic benefits, despite having no understanding of the musical context and meaning. The null hypothesis (H<sub>0</sub>) suggests that the increasing familiarity with initially unfamiliar music does not change the affective response evoked in listeners who do not understand the musical context and meaning. This study aims to contribute to the growing studies concerned with listener response to unfamiliar music and to cross-cultural studies in this area.

## METHOD

**Musical Stimuli:** The music for this study is selected from repertoire belonging to a cultural group whose followers may experience heightened affective responses (e.g., moved to tears, chills) when listening to these sounds, in particular the music of the Moroccan *Gnawa* people. The rationale for the use of this particular kind of music is two-fold: 1) There have been reports that listeners unfamiliar with this music have experienced heightened responses leading to therapeutic benefits (e.g., improvement in mobility); and 2) the music is a variation form—that is, performance of an individual piece of music comprises one to three motives that are varied with nearly every repetition and supported by a regularly articulated pulse.

**Participants:** Sixty undergraduate students in psychology are recruited from the University of Waterloo in Canada and randomly divided into three groups of twenty: Group V, Group X, and Group O. Group V listens to the instrumental portion of the original recording of a musical performance which consists of varied repetition; Group X listens to a manipulated version of the same recording in which motives are not varied but exactly repeated (exact repetition); Group O listens to the complete version of the original recording. For each condition, the instrumental portion of another (unaltered) piece (Stimulus P) is selected to prime the participants—that is, to familiarize them with the sounds of *Gnawa* music. In this between-subjects design, each group will listen to the musical stimuli in the following order: Group V listens to Stimulus P then Stimulus V; Group X to Stimulus P then Stimulus X; and Group O to Stimulus P then Stimulus O.

**Procedure:** Each participant in the study listens to one of the three sets of musical stimuli described above using headphones. During the listening session, non-invasive physiological measurements, specifically heart rate variability (HRV) and skin conductance response (SCR) are recorded in real-time using electrodes attached to the torso and hands. The listening session begins with a two-minute interval of silence in order to take a baseline measurement of the participant’s arousal level, after which the first musical stimulus begins. Between each musical stimulus, the participant is given: 1) a

quiet resting period of 60 seconds immediately after the music ends, 2) the SAM (Self-Assessment Manikin) to complete, and 3) a quiet resting period of 80 seconds before the next musical stimulus begins. After the final auditory stimulus, the interval of silence is five minutes long, followed by completion of the SAM scale. Upon completion of the listening session, the measuring devices are removed and the participant completes the following questionnaires on Qualtrics: 1) About the musical stimulus, 2) About the listening session, 3) three personality inventories (PANAS, TIPI, and Eysenck 12-Item Extraversion Scale, and 4) one music inventory (MSI).

## POTENTIAL RESULTS

Comparative analysis of the data—physiological measurements (i.e., heart rate and skin conductance response) and cognitive responses (SAM and post-listening interviews)—is expected to suggest consistency with the research hypothesis; that is, repeated exposure to initially unfamiliar music changes the affective response evoked in listeners. Mapping the physiological data and cognitive responses to the specific musical events of the stimuli may suggest that peaks and dips in arousal are correlated with specific rhythmic features, variations, tempo, and the degree of variability within each of these. In other words, variations of repeating motives potentially play with expectation, which induce emotions via neurochemical responses and may generate feelings of surprise, reward, and extreme joy manifested by chills (Meyer 1956) while the regular pulse and periodicity of the repeating motives render the auditory stimulus accessible, thereby producing a priming effect that arouses motor neurons. Conversely, it is expected that repeated exposure to unvarying stimuli would potentially lead to habituation and lower arousal. In order to shed light on the dynamic interactions that take place during a given listening experience, the ways in which individual listeners process music will be considered with regard to the demographics and personality of participants (Eysenck and Eysenck 1964, Gosling et al. 2003, Watson et al. 1988) and their musical sophistication (Mullensiefen et al. 2014).

## CONCLUSIONS

The collaborative interdisciplinary study sheds light on the centrality of rhythm and nuanced repetition for evoking heightened affective responses among listeners unfamiliar with the selected music. The study aims to contribute to the growing studies in music and health, particularly with regard to therapeutic musical practices in cultures worldwide, and to better understand the effectiveness, appeal, and potential impact of these practices across cultures. Future studies hope to investigate the impact of musics belonging to other therapeutic traditions worldwide on unfamiliar listeners.

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An analytical study of musical segmentation in South Korean shaman ritual music

In the East Coast region of South Korea, the rituals performed by hereditary shaman troupes tend to be large-scale affairs. Over the course of several days, the troupe performs for the whole community, guiding them through a long series of propitiatory and therapeutic actions and performing a great many narrative myths, sung prayers, dances, and non-religious popular favourites. Music is performed almost continuously, with the officiating female shamans singing, dancing and conducting ritual activities while their male relatives provide accompaniment – a drummer leading the ensemble on *changgo*, a player of the large gong (*ching*) demarcating the music's main metric subdivisions, and multiple players of the hand-gong (*kkwaenggwari*) joining in for episodes without song. To guide the community through a wide range of emotions and provide fulfilling experiences, the troupe performs an extensive array of musical structures with diverse tempi and patterning.

While previous studies of this tradition have focused on the most commonly-played rhythmic cycles to elucidate typical musical characteristics (for example, Pang Seunghwan 2010, Mills 2011), this study extends the frame to consider also the ritualists' more seldom-played repertoire – specifically to expose the full range of their approaches to musical segmentation. This is an essential area of enquiry: over the course of ritual, the ritualists make some rather abrupt switches of approach regarding how they divide up the musical flow, and it is apparent that these switches correspond to dramatic changes in mood and ritual purpose. The current study identifies and probes three contrasting approaches to segmentation:

1) Certain cycle-based musical structures are markedly and unambiguously segmented in nature, with all parties working in unison to divide up the cycle's duration into well-defined sub-sections; each cycle rendition features the same clear-cut in-built changes of tempo, patterning and instrumentation. Typically, this kind of segmentation occurs at critical points in the ritual when everyone must work closely together to address spiritual concerns. In such cases, any listener would be in agreement regarding the boundaries of segmentation, be they shaman musician, well-accustomed listener or relative newcomer; there are none of the types of discrepancy explored in Mungan et al. 2017.

2) In most other cycle-based structures, the drummer employs his improvisatory skills to divide up the cycle's duration into a succession of phrase segments. Typically, he varies the phrases' lengths and details in successive cycle renditions – sometimes regulating accenting, body-movement and note-durations to strongly demarcate phrase boundaries and, at other times, intentionally making the boundaries more ambiguous. Meanwhile, each hand-gong player creates his own independent layer of patterning over the top, typically aiming to create segment boundaries that fall at different times from those marked by his fellow hand-gong players and by the drummer. So, while all listeners would perceive the segmentation provided by the big gong as especially salient (consistently marking the metrically strong beats of the cycle), the overall texture is characterised by polyrhythm or, one might say, 'polysegmentation'. This approach is a key strategy for 'bamboozling' the listeners' minds and evoking a sense of divine presence, and also for musically representing the cathartic benefits of breaking free from constraints.

3) In certain rare episodes, a few shaman musicians play together at impressively rapid tempo, each stringing together smaller patterns of differing lengths to create music that is both polymetric and heterometric – occurring entirely outside of the confines of cycle. Although their playing is synchronised at the level of very fast pulse, the explicit aim is for there to be no synchronised segmentation, and so they each switch and change frequently between patterns. Inevitably, however, there are brief moments when their patterns happen to start and end at the same time before immediately diverging again – and these are, of course, perceived as segment boundaries. This approach is reserved for critical moments when a spirit's ties to this world are to be severed.

To explore these three distinct approaches to musical segmentation, this paper presents a series of detailed musical analyses. It considers how each approach relates to ritual objectives, and argues that switching between them constitutes an especially powerful means for ensuring a rich and fulfilling experience.

Simon Mills

## **Gesture, segmentation, and meaning in South Indian raga performance**

### **Introduction**

Vocalists from North and South Indian art music traditions typically produce elaborate hand gestures while singing. These gestures are spontaneous and uncodified, although similarities can be seen between the gestures of different performers (Rahaim 2012). In this paper I explore the ways in which vocalists' gestures act to segment and punctuate the flow of melody in the South Indian, Karnatak style: an inquiry that forms part of a wider examination of structure and meaning in raga performance. In particular, I look at relationships between hand gesture strokes and melodic segments, examining the way in which gestures index smaller chunks within phrases, and asking what such gesturing can tell us about how performers conceptualise small-scale melodic structure. My analysis draws on research on co-speech gestures where it has been found that hand gestures can contain information that either matches or is additional to the speech they are accompanying (Goldin-Meadow and Alibali 2013). If co-singing gestures similarly hold information regarding vocalists' conceptualisation of the music being performed, then insight into this can be gained through an analysis of observed relationships between gesture and music. Therefore, in this study I explore whether and how co-singing gestures coincide with musical segments at various structural levels.

### **Analysis**

Gestural indexing of musical segmentation was examined through an analysis of audiovisual recordings of Karnatak vocal performances. Using *ELAN* video annotation software (Lausberg and Sloetjes 2009), performances of Karnatak raga *ālāpana* (raga improvisation) were annotated for segmentation at the following structural levels: individual *svaras* (notes), coarticulated chunks (*svaras* fused through ornaments), points of vocal articulation, and gestural units (hand gesture strokes). Coarticulation is the phenomenon whereby the performance of individual units, in this case *svaras*, is influenced by surrounding units (Hardcastle and Hewlett 1999; Godøy 2011). Karnatak music has a strongly coarticulated quality due to its pervasive ornamentation that often subsumes individual *svaras*, fusing them into longer chunks of sound (Pearson 2016).

Following the annotation stage of the analysis, the segmentations of the various music structural levels were compared to the annotations of hand gesture strokes in order to discern the extent to which they coincide.

### **Results**

Gestures were found to index all of the music structural levels examined, but not on every occasion. New hand gesture strokes frequently coincide with the start of coarticulated chunks of *svaras*. Individual *svaras* are sometimes indexed, but rarely so if they are part of a coarticulated melodic chunk. Points of vocal articulation are often indexed by a new gesture stroke, particularly when the articulation coincides with the start of a coarticulated chunk. In addition, some gestural strokes were observed to coincide with other musical features, such as points of emphasis within coarticulated chunks.

### **Conclusions**

Although gestures often index melodic units that may be defined by segmental categories such as *svaras*, coarticulated chunks, and articulatory units, such segments are not always indexed. Furthermore, some gesture strokes do not coincide with the borders of the two longer structural units examined here. In this discussion, I suggest that the tendency for gestures to segment phrases into meaningful chunks is a consequence of a more fundamental aspect of gesture production. Observation of Karnatak vocalists' gestures reveals that they are not purely abstract strokes but rather are often actions, sometimes

involving the manipulation of imaginary objects: for example, stretching, throwing, flicking, rebounding, tracing, and pushing motions can be seen. Such action-like qualities attest to the connection between co-singing gestures and the types of physical actions that produce sound. In addition, they are related to the movement of 'virtual sources' that can be conveyed through music (Clarke 2001; Bregman 1994). Hostetter and Alibali (2008) have noted and theorised a similar tendency in co-speech gestures, outlined in their 'gesture as simulated action' framework, in which gestures are viewed as emerging from mental processes involving the reenactment of actions. From such a perspective, co-singing gestures can be understood as arising from connections in our lived experience between physical actions and the production of sound, as well as experience of the way sound changes when emanating from a moving object. Thus the spontaneous segmentation of music through gestures in this context can be viewed as a product of our accumulated bodily experience of being in the world and producing sound in that world. Furthermore, the qualities of such gestures express the motion aesthetics that are part of musical experience.

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## Analysis in real time? An Indian music segmentation study

The degree to which even unfamiliar music appears to “make sense” to listeners indicates that listeners are cognitively able to perceive inherent structural features of music, at least implicitly, in real time while the music proceeds. One aspect to which they may be sensitive is segmentation, that is, the grouping of musical events and the boundaries between such groups. Is such perception dependent on musical enculturation, or does it occur cross-culturally or even universally? How far is it based on “deep structure” or on surface clues? Do musically trained and untrained listeners show different degrees of awareness of segmentation in music?

A number of studies based on Western music (summarised in Mungan et al. 2017) suggest that both musically trained and untrained listeners rely mainly on surface features, such as durational separation, as markers of segment boundaries. So far there have been few segmentation studies based on non-Western music, but these indicate that unacculturated Western listeners, both musicians and non-musicians, have some awareness of segment boundaries in unfamiliar Arabic and Turkish music, although less than acculturated musicians (Ayari & McAdams, 2003; Lartillot & Ayari, 2009, 2011; Mungan et al. 2017).

The present study arises from a study of implicit learning of rāga grammar in Indian music by Western subjects, in which participants were set a segmentation task while listening to the training material (recorded sitār ālāp). 65 subjects, having no prior experience of Indian music, and including musicians and non-musicians in the approximate proportion 2:1, were asked to press a key whenever they heard a phrase end. They were left to decide for themselves what constitutes a phrase in this music. Since this was not the main purpose of the implicit learning study, but merely a device to ensure they paid close attention to the music, subjects were given little training in advance of the task (they heard a short example of ālāp in a different rāga), and no opportunity for revision. Each subject listened to a 5-minute ālāp in one of two rāgas, twice in immediate succession; their first segmentation was not visible to them during the second listening. We believe that the results represent intuitive, spontaneous responses to the task.

The keypress data for one of the two rāgas is shown in fig. 1. For both rāgas, there is a high degree of convergence between subjects’ responses: key-presses cluster at certain points while other areas are underpopulated by comparison. This distribution agrees closely with a structural analysis of the music, undertaken in consultation with the performer before the keypress data became available. A distinction is made between “major” and “minor” boundaries, the former marking the end of longer sections of the piece defined by melodic returns to the system-tonic. “Minor” boundaries mark shorter groupings of pitches within a section, which nevertheless lack a sense of closure. Small articulations within a “minor” grouping were ignored for this purpose.

The participants’ responses reproduce this hierarchy of boundaries. In fig. 2, the duration of the performance is divided into slots of 1 second each, and the number of keypresses is shown for every slot. Those coinciding with major boundaries are shown in blue, those coinciding with minor boundaries in red. For this purpose, the “boundary” between two phrases *x* and *y* is defined as the time interval between the onsets of the last melodic pitch of phrase *x*, and the

first of phrase  $y$ . Interstitial keypresses not coinciding with a major or minor boundary region (but possibly reflecting smaller articulations) are shown in white. Fig. 3 shows that on average, more keypresses coincide with major than minor boundaries, and more with minor boundaries than interstitial regions.

The data supports the conclusion that the unacculturated subjects were largely aware of the hierarchical grouping structure of the music, with no prior experience or training. The paper will consider how far this awareness was based on surface features or on underlying structure; whether the underlying structure is in fact articulated by the performer through surface features such as gaps; and whether a subject's rapidity of response to boundaries indicates their degree of structural awareness or reliance on surface clues.

Fig. 1

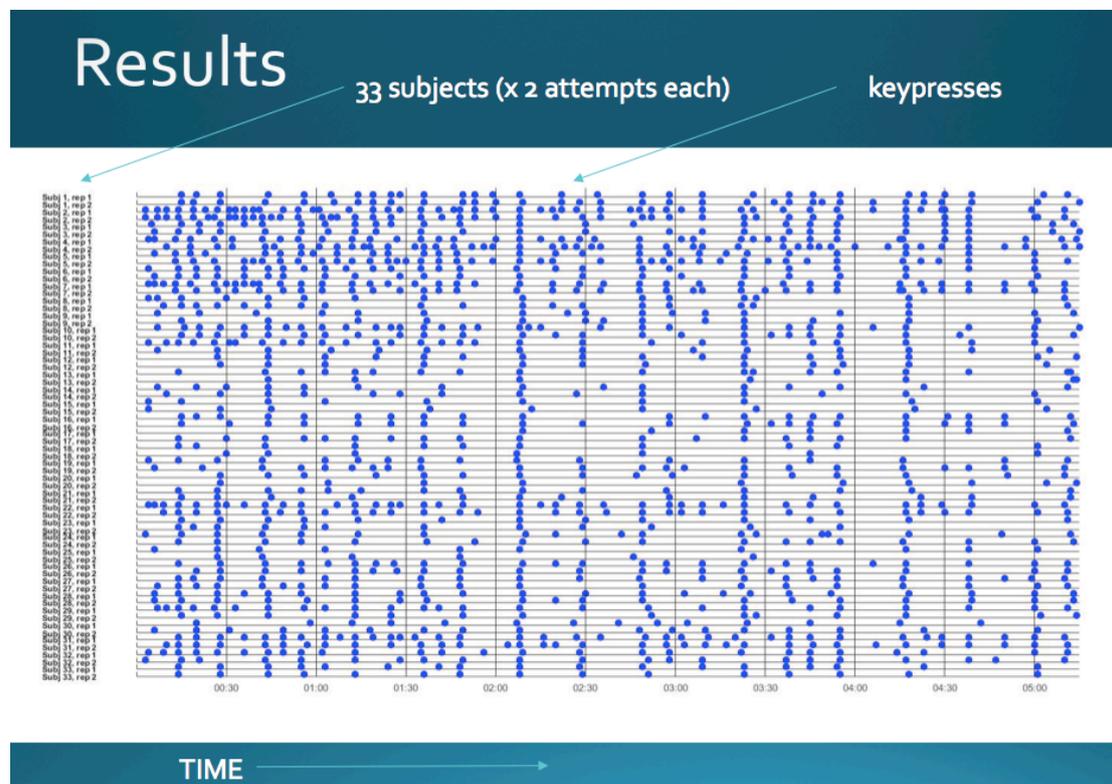


Fig. 2

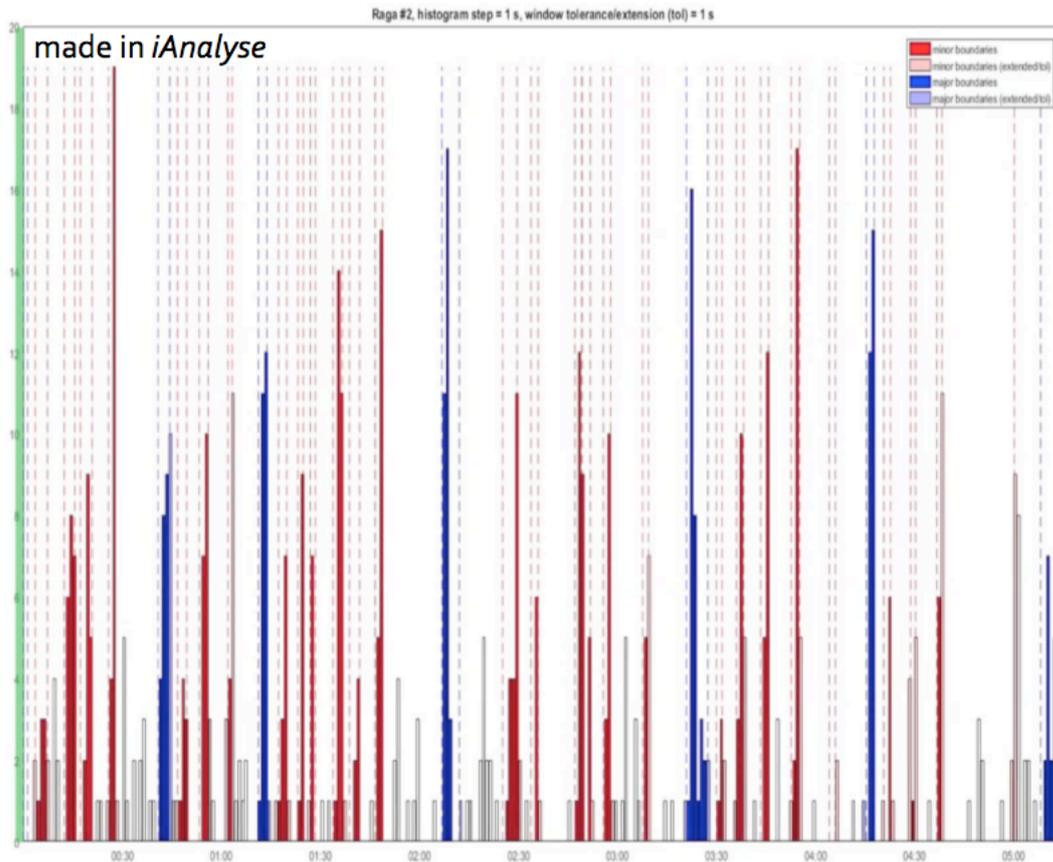
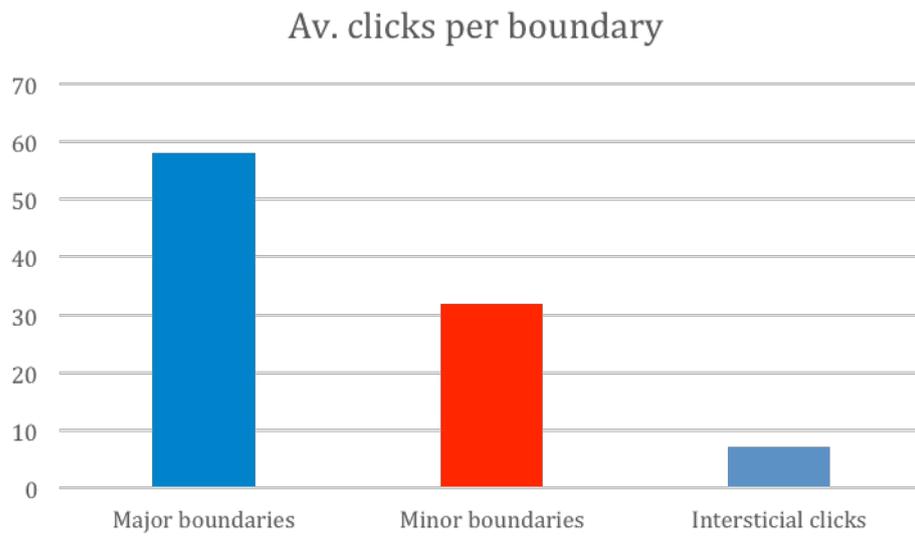


Fig. 3



## **Interpersonal entrainment in music ensembles: Cross-cultural perspectives**

### Background

Interpersonal entrainment is a key process in the organisation and coordination of music ensembles, and one that may involve a number of processes, under various degrees of conscious control. In many cases this depends on sensorimotor synchronisation effected by individual participants on the basis of perceived event timing asynchronies. Coordination also usually involves appropriate alignment of metrical cycles and phrase hierarchies, while in many kinds of music structural transitions and tempo changes have to be managed, with or without reference to notation. Much remains to be discovered, however, about the dynamics of temporal coordination in actual musical performances, including whether these dynamics may vary between cultures. To what extent are these processes universal human abilities, and to what extent do they depend on choices that may be culture- or genre-specific?

### Aims

This paper outlines a new model of entrainment in musical ensembles, taking into account both sensorimotor synchronisation and higher-level coordination requiring shared knowledge. Based on analysis of multiple examples from different geographical regions, we discuss how these phenomena may vary between cultures or genres, and outline some of the factors that predict this variation.

### Main contribution

This paper will (a) propose a model of ensemble coordination integrating different timescales (from beat subdivisions up to sections and whole pieces) and the modalities (primarily auditory and visual-kinaesthetic) through which this is achieved, and (b) briefly outline some of the ways that coordination may vary cross-culturally, and some of the factors that predict this variability. We summarise empirical analyses of entrainment in a variety of musical ensembles, the dynamics of synchronisation, its accuracy and variability. At higher levels, coordination involves a shared understanding of how different sounds and patterns should fit together (for example, how different ostinato patterns combine to form coherent drum ensemble textures). Auditory alignment of events is supplemented in performance by phenomena such as shared body sway, foot-tapping, or eye contact, which effectively communicate a shared understanding of appropriate ensemble coordination and motivate its continuation. Musical ensembles around the world display an enormous variety in terms of their size, makeup, the way individuals communicate with each other and the knowledge that needs to be shared to facilitate effective coordination. Factors such as tempo and event density, rhythmic complexity and the type of sound sources used influence the dynamics of temporal coordination. Rather than manipulating bottom-up synchronisation processes directly, temporal dynamics can be influenced indirectly by means of musical choices. Other aspects of cultural difference may have little or no influence on low-level synchronisation processes however: they have a greater influence on higher-level coordination, which requires a more qualitative approach.

### Implications

This model suggests amongst other things that more attention should be given to higher-level knowledge representations in accounts of ensemble coordination. It also raises questions about the reported effects of entrainment on group bonding and prosocial behaviour, and the historical and evolutionary importance of these processes: to what extent are these effects dependent on sensorimotor

synchronisation, and to what extent on higher-level representations? In what ways do cultural representations impinge on coordination?

## **The Art of Putting Creativity in Boxes, or Can We Analyze Improvisation Cross-Culturally?**

### Introduction

Humans improvise. It is an impulse that crosses styles, genres, and continents, used to varying degrees in almost every music culture. From Hindustani rag to jazz, Baroque preludes and cadenzas to Balinese *arja* drumming, improvisation's near ubiquity suggests rich potential for cross-cultural analysis. Yet, as Gabriel Solis notes, "there are very few comparative studies of improvised music traditions" (Solis 2012: 2), and even fewer specifically focused on music analysis. Is it useful, practical, or appropriate to engage in a comparative musical analysis of improvisation? Research on human creativity suggests broadly applicable concepts pertinent to a discussion of musical improvisation; yet even at the highest level of abstraction, terminology surrounding such practices is diffuse and unstandardized. And studies of individual genres (e.g. Brinner 1995; Monson 1996) have revealed vastly different concepts and approaches necessary for the analysis of each. Vital to an understanding of specific practices, the usefulness of these concepts lessens if we want to look comparatively at diverse practices within a single culture; even more so if we seek to compare improvisatory processes across music cultures. To engage in a comparative analysis of improvised practice, then, we need terminology and categories comprehensive enough to be cross-culturally relevant and flexible enough to embrace the specificities of each genre and practice.

### Methods and Analysis

In this presentation, I propose a unified, cross-genre framework for the musical analysis of improvised practices. I begin by examining the generally agreed-upon idea of improvisation as a balancing act between freedom and constraint: a spontaneous performance based on a pre-existing "model" (Nettl 1974). Borrowing concepts from experimental psychology and neuroscience, I survey the different types of creativity needed for improvisation, with particular focus on combinatorial and exploratory creativity, while also elucidating the cognitive processes that drive them: analogic thinking and conceptual elaboration (Sawyer 2007; Boden 2013). These concepts then become the backdrop for a discussion on techniques of improvisation.

Each researcher employs her own collection of terms to discuss improvisatory methods. Berliner (1994) outlines various "levels of intensity" in the improvised realizations of jazz tunes, from "interpretation" and "embellishment" to "variation" and "improvisation," while Turino (2009) juxtaposes "formulaic variation" with "improvisation"; Berkowitz (2010) discusses "varied realizations" and "recombination" while Widdess (2013) explores "cognitive schemas" and "expansion," among other things. I unpack this overlapping array of terminology, distinguishing those terms that describe specific improvisatory methods from those more simply differentiating degrees of improvisatory freedom. This discussion then leads to a bifurcation of the "model"

concept into two flexible categories: specific models for formulaic variation and broad schemas for exploration.

From here, I turn to an ethnographically-informed analysis of two contrasting improvised passages based in opposing model types, as a way to establish a typology of common improvisatory methods. Through analysis of a Balinese *arja* drumming excerpt, I elucidate diverse techniques of “interpretation” and “recombination”; with an excerpt of a Hindustani *alap*, I add “embellishment” and “expansion.” Each of these four categories is considered not as a single improvisatory technique but rather a cluster of possibilities, inherently flexible and useful across diverse music cultures. Thus, finally, I demonstrate the elasticity of each category, examining how they are differently combined in various improvised practices worldwide, and how local music theory principles are needed to fully elucidate their use.

### Conclusions

This presentation seeks to champion a comparative analytic approach to musical improvisation, presenting a framework for its implementation. Shifting between the micro and macro views – the ethnographically-informed analysis of individual improvised excerpts and the broadly applicable concepts of human creativity and improvisatory methods and techniques – I aim to provide a springboard for analyzing improvised forms in a more unified way, thus cultivating a space for comparative and cross-cultural research.

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**Testing boundaries: empirical and hermeneutic symbiosis  
in the cross-cultural study of musical endings**

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University of Bristol**

**Introduction**

The judgement of musical endings as 'proper' or 'not-proper' (appropriate or not) is found in musical communities around the globe. Both unspoken and explicit understandings about them underlie rules regarding their construction and execution, expectations of how they should be experienced, and perspectives in academic literature. So what underlies these widely held understandings and their local interpretations? The answer lies in gaining a global view of the terrain of endings, and this is where arguably the most exciting potential of cross-cultural study lies - in its ability to challenge the ingrained perspectives and worldviews that usually inform our questioning and show our presumptions of musical practice, and our methods for studying them, in a fresh light. Yet large-scale ethnomusicological comparison, too, has faltered severely since the late 1960s, perched uncomfortably and seemingly irreconcilably between the methods of scientific empiricism and hermeneutic interpretation based on fieldwork (Schneider 2006). Recent years have produced a sprinkling of landmark studies (e.g. Tenzer and Roeder 2011; Savage et. al 2012), but the potential of comparative approaches to understand important questions of musical practice, ideas and concepts remains largely untapped.

**Aim**

Drawing on a broad range of examples that includes Saami and Bahraini music cultures, this paper considers the value of a structured mixed-method approach to the comparative study of multiple musical communities, and demonstrates how a study in a cross-cultural range of ontologies can illuminate (not obfuscate) the phenomena of diversity and change in musical endings.

**Method and results**

The analysis is constructed around a neutral, flexible structure that every musical ending shares, comprising the moment considered the last of human agency, the *lixí*, however arbitrary it may seem; the receptive context, the *telos*, often the performers themselves; and the conceptual *liminal space* between them. It treats all endings as *intentions* (Ricoeur 1981; Latour 2005), considering what they *do* rather than what they *are*, without medianisation. The method uses multiple perspectives to examine how these elements are contextualised within the ending's musical and other structures, turning it and its relationships through musics, contexts and layers of analysis to consider points of contact, idiosyncrasies, and change and variation, with the different analytical perspectives informing and cross-checking each other. These are:

- Ethnographic (contexts, factors provoking change, what musicians intend to do, achieve or connect with)
- Musical analysis (exploring how performer intentions manifest in the musical elements of ending)
- Fieldwork to answer specific questions arising from ethnographic and musical analysis, but which have broader ramifications for the project as a whole
- Change and variation over 66 years, in conjunction with the other analyses
- Contextualisations of the lixi and telos, exploring the relationship between them, including musically (such as the play between lixi and pitch reference), socially (such as performance context), and politically (including laxis structured to achieve specific political aims)
- Statistical visualisation (of coded characteristics of the lixi, telos and liminal space). Visualisations of elements not otherwise examined in the analysis were run as a final test of the method and its new hypothesis concerning endings

I demonstrate that the structures that create and surround musical endings allow them to perform two main acts beyond simply stopping the music. Firstly, they enact the sociomusical interactions of ending between music/ian and receptive framework, and those enactions should be appropriate to their context; explored in analyses of transformations of the Saami *joik* ending and the fade applied to Bahraini *fidjiri*, as well as larger-scale statistical visualisation of lixi elaborations against telos. Secondly, building on this communicative, interactive role, laxis use intramusical reference points of pitch and time to create metaphors of ending: existential metaphors such as death, and spatial ones too, such as home and away, arrival and departure, and explorations of 'other', demonstrated across musical cultures worldwide.

## **Conclusions**

This paper proposes both a vital new addition to the toolkit of comparative methods for ethnomusicology, and a new theoretical framework for understanding musical endings on a cross-cultural basis. Combining in-depth qualitative and quantitative analysis with the insights from a modest yet maximally diverse cultural sample offers extraordinarily revealing perspectives on musical activity which have implications for all ethnomusicological methodologies, whilst allowing us to demonstrate aspects of musical practice that are not readily identifiable any other way.

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## Theories of World Music

In a 2017 essay Kofi Agawu took clear and careful aim at the idea of ethnotheories, arguing that the notion is at best ill-defined and at worst a patronizing gesture made by Western musicologists toward the musical practices of subaltern Others (Agawu 2017). Although Agawu's arguments are compelling, what is less clear is the status of "theory" within his account. On the one hand, Agawu recognizes that the theories developed for Western music are every bit as culturally constrained as those that might be developed for the musical practices of non-Western populations. On the other hand, Agawu sets the bar for what counts as a theory uncomfortably high: although he is far from explicit on this point, it appears that for thinking about music to count as a theory it has to be fully articulated, internally consistent, and comprehensive. Because much of the knowledge that guides the practice of the world's musics is not organized in this fashion, one is left with two alternatives: either there are no indigenous theoretical bases for most of the world's music, or our ideas about music theory are inadequate for the actual practice of music.

In this paper I set out an alternative conception of theory that builds on long-established research in cognitive science focused on the knowledge structures through which humans organize their understanding of the world. These knowledge structures have been called schemas (Bartlett 1932), cultural models (D'Andrade 1995; Shore 1996), mental models (Johnson-Laird 1983), and idealized cognitive models (Lakoff 1987). As they are typically construed, such structures are of relatively limited extent, and represent abstractions from experience. On the account I offer, theories combine such local knowledge structures to create more comprehensive guides for reasoning and inference. A theory of music, then, may be at least partially implicit rather than completely explicit, may be inconsistent with respect to matters that are not thought of as essential to musical expression, and may account for only a portion rather than the whole of musical practice.

The advantages of this approach are two. First, the knowledge that guides musical practice becomes linked with a broad range of implicit yet systematic knowledge of the sort that has been shown to be important for human development (Gopnik and Meltzoff 1997; 1999). As such, theories do not have to be fully articulated to serve as an important resource for guiding action and inference. Second, this approach more easily accommodates embodied knowledge, which has been shown to be of central importance to musical understanding (Cox 2016; De Souza 2017). Indeed, if one adopts the perspective provided by recent work on extended cognition (Clark 2008; 2016), the musically-trained body can be seen to be an essential repository for the knowledge through which musical practice is regulated and sustained.

Conceiving of theories of music as comprised of knowledge structures that may be in part implicit and that are informed by embodied experience makes it possible to do away with the distinction between "ethnotheory" and "theory" that so troubled Agawu. Perhaps more importantly, this approach also opens up new possibilities for the analysis of world music. I will demonstrate this potential in two ways. First, I will reconsider some of the accounts of musical organization that have been characterized as "ethnotheories," including those by Steven Feld (1981), Ruth M. Stone (1982), and Hugo Zemp (1979), exploring the mix of implicit, explicit and embodied knowledge evident in the several musical practices described. Second, I shall explore accounts of "non-theoretical" aspects of musical practice that can nonetheless be seen to reflect the way musicians shape their musical utterances. For instance, recent work on the role of musical gesture in South Asian music (Clayton 2005; Leante 2009; Rahaim 2012) can be used as evidence for musicians' conception of musical organization; of particular significance are not only correlations between expressive gestures and ideas about pitch space but also the dynamic character of sequences of musical sounds revealed by such gestures (Zbikowski 2017). As

will emerge, the notion that there are theories of world music, rather than simply “music theory,” is enormously productive for developing analytical models that better reflect the unique expressive resources offered by musical utterances.

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## **Analysis in context: contemporary Lanna repertory in the *piphat* ensembles of modern society in Phayao, Thailand**

The three pieces I analyse here – *Mon Chiang San* (referring to the Mon ethnic group of Chiang San region), *Mon Lampang* (referring to the Mon ethnic group of Lampang Province), and *Prasat Wai* (Rattling funeral tower) – are prominent examples of contemporary Lanna repertory as currently performed by *piphat* ensembles in Phayao Province, in Northern Thailand. Following a trend identified elsewhere also (for example, Nettl, 1985: 39; 2005: 58), here, the traditional flavour is enhanced by the incorporation of Western harmony and instruments. In this paper, I examine these pieces to highlight modern adaptations regarding formal structure, the adoption of tertian harmony, and changes to instrumental techniques.

It has long been acknowledged that Thai classical tuning derives from the division of an octave into seven equally-spaced tones, and this is known as ‘the 7-tet scale’ (Morton, 1976: 24; Miller and Chonpairot, 1994: 137; Swangviboonpong, 2003: 24; Sethares, 2004: 318; Schneider, 2006: 245; Gamer and Nilson, 2010: 150), and is often viewed as being incompatible with functional tertial harmony (Sethares, 2004: 306; Hughes, 1991: 331).<sup>1</sup> However, John Garzoli disputes the validity of this understanding, suggesting that, in the present-day, there are a significant number of cases where the tuning deviates more widely away from exact equal-spacing. He states that Thai traditional instruments are tuned in association with individual preference (2015: 2).

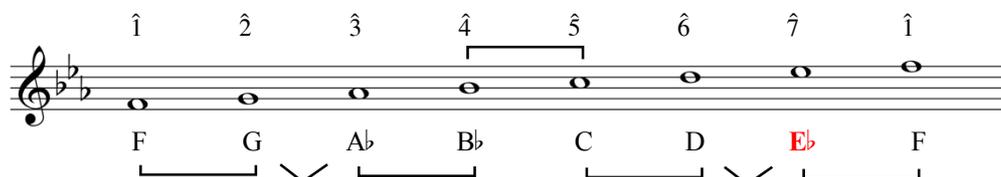
The *piphat* musicians in Phayao have been tuning their traditional instruments in accordance with the Western system since the early 1970s. Re-tuning the *piphat* instruments in the diatonic major scale has been an inseparable counterpart to the adoption of Western musical instruments and *lukthung* repertory since the 1970s (see also Mitchell, 2015: 45-46, 48). Thus, their traditional non-triadic forms have been moulded into the structures of tertian harmony, and they now also use Western time signatures, modes, and ways of formal organisation. These three Lanna pieces share the same mode, F Dorian. One of the salient characteristics of the Dorian mode is its use of the subtonic (flattened seventh degree) (coloured in red below) instead of an upward-pointing leading

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<sup>1</sup> <https://www.youtube.com/watch?v=HFg1-5lqgcI>

tone – and this is surely perceived as a major defining characteristic of Lanna traditional tonality.

**Example 1** A typical Lanna scale in Dorian mode, characterised by the use of the subtonic



Tenzer argues that “we need to know structure in order to grasp and admire the accomplishments of musicians as designers...” (2006: 9). *Mon Chiang San*, *Mon Lampang*, and *Prasat Wai* have through-composed forms comprising a succession of small-scale sections. They are always played as a suite, with each separate piece being repeated until the lead musician signals to other members that it is time to proceed to the next. Here, I present the overall formal structures of these three pieces.

(Media File 1 <https://www.youtube.com/watch?v=mQXfbStssvg>)

**Table 1** The structures of the Lanna pieces, *Mon Chiang San*, *Mon Lampang*, and *Prasat* – played as a suite

Time Duration	Repertoire	Form		Measure	Bars
		Section	Period		
0:01	<i>Mon Chiang San</i>	1	A	1-8	8
0:13			A1	9-16	8
0:26		2	A2	17-24	8
0:38			A3	25-31	7
0:48	<i>Mon Lampang</i>	1	A	32-41	10
1:03		2	B	42-49	8
1:15			B1	50-59	10
1:29	<i>Prasat Wai</i>	Keyboard solo		60-75	16
1:52		1	Intro	76-79	4
1:58			A	80-83	4
2:04		2	B	84-87	4
2:09			C	88-91	4
2:15			Ending		92-96

My analysis of the motivic relations within *Mon Chiang San* draws from Dowling’s proposed approach for studying modal systems – specifically, by identifying the specific pitches in the music that clearly serve as tonal centres, and which also play essential roles in determining the overlaid harmonic framework (1982: 25). I also draw

from Cook's observation that the elucidation of motivic relations depends on the successful isolation of instances of pattern-repetition – both melodic and rhythmic -, particularly in the case of pieces with small-scale structures (1994: 80, 208). Thus, my analytic transcription (see Diagram 1 overleaf) here reveals four basic motifs, around which the piece is constructed and which clarify a clear hierarchy of pitch degrees, specifically seeing the tonic ( $\hat{1}$ ), subdominant ( $\hat{4}$ ), and dominant ( $\hat{5}$ ) as the most important notes; every motif in the piece begins and ends with one of these scale degrees. The motifs are closely interrelated in a variety of ways and each of the piece's four periods begins and ends with an articulation of one of them, thereby ensuring a strong sense of organic coherence: the motif at end of period A repeats at the beginning of period A2 and at the end of period A3 (see red boxes); the motif beginning period A1 reappears at the end of period A2 (see purple boxes). Furthermore, it seems that the beginning of period A bears resemblance to the beginning of period A3 (see black boxes). One of the four motifs enclosed in a green box overleaf is particularly closely related to the first motif in the black box, sharing the same final notes. In this way, *Mon Chiang San* is permeated by a sense of melodic and harmonic unity.

(Media File 2 <https://www.youtube.com/watch?v=rulfl7ncSs>)

**Diagram 1** A diagrammatic analysis highlighting the motivic relations within *Mon Chiang San*

# Mon Chiang San

Keyboard

Wat Phrachao Tonluang

The score is written in F Dorian mode (F major with a flat second degree) in 2/4 time. It consists of four staves of music, each with a corresponding scale diagram below it. The scale diagrams use numbers 1-7 and a flat symbol (b) to represent notes, with some notes circled in red or blue to indicate specific melodic lines.

**Staff 1 (Measures 1-7):** Chords: Fm, Cm, Eb, Fm, Eb, Ab, Cm, Fm. Scale diagram:  $\hat{1}$   $\hat{3}$   $\hat{4}$   $\hat{5}$  (circled in red)  $\hat{7}$   $\hat{1}$  (circled in red). A red box highlights measures 1-2, and another red box highlights measures 6-7.

**Staff 2 (Measures 8-15):** Chords: Ab, Bbm, Bbm7, Fm, Fm6, Bb, Bb7, Cm. Scale diagram:  $\hat{7}$   $\hat{1}$   $\hat{3}$   $\hat{4}$  (circled in red)  $\hat{1}$   $\hat{6}$   $\hat{4}$   $\hat{5}$  (circled in red). A blue box highlights measures 8-9, and a green box highlights measures 14-15.

**Staff 3 (Measures 16-23):** Chords: Cm7, Fm, Ab, Ab, Fm, Bbm. Scale diagram:  $\hat{4}$   $\hat{5}$   $\hat{7}$   $\hat{1}$  (circled in red)  $\hat{7}$   $\hat{1}$   $\hat{3}$   $\hat{4}$  (circled in red). A red box highlights measures 16-17, and a blue box highlights measures 22-23.

**Staff 4 (Measures 24-31):** Chords: Bbm7, Ab, Fm, Bbm, Bbm7, Cm, Eb, Fm. Scale diagram:  $\hat{5}$   $\hat{7}$   $\hat{3}$   $\hat{4}$   $\hat{5}$  (circled in red)  $\hat{4}$   $\hat{5}$   $\hat{7}$   $\hat{1}$  (circled in red). A red box highlights measures 24-25, and another red box highlights measures 30-31.

Arrows indicate melodic connections between the circled notes in the scale diagrams and the notes in the musical staves. Dashed lines connect the scale diagrams to the corresponding measure ranges.

With these traditional-style melodic motifs actively engaging with scale degrees, the music takes on harmonic implications and, in the contemporary milieu, chord progressions are added (see Example 2 below). For instance, period A1, begins with a subdominant chord (B♭m), moving towards B♭m7 (with the seventh ‘As’ boxed in red) establishing a plagal cadence to the tonic chord (Fm) at bar 11. The following bar changes to the chord of Fm<sup>6</sup> (with the sixth ‘Ds’ boxed in blue), which creates a strong harmonic approach towards B♭ and then onto the half cadence dominant minor chord (Cm) in bar 15.

**Example 2 An analysis highlighting harmonic implications, and chordal accompaniment.**

The musical score consists of five staves. The top staff is labeled 'Ranad Ek' and features a box labeled 'A1' above it. The second staff is 'Khong Wong', with red boxes around notes in bars 5 and 6, and blue boxes around notes in bars 11, 12, and 13. The third staff is 'Ranad Thum', with blue boxes around notes in bars 11, 12, and 13. The fourth staff is 'Nae', with a blue box around notes in bar 11. The bottom staff is 'Keyboard', showing a chord progression: Bbm, Bbm7, Fm, Fm<sup>6</sup>, Bb, Bb<sup>7</sup>, Cm. A red box highlights the note 'A' in bar 6, and a blue box highlights the note 'D' in bar 11. The score includes various musical notations such as glissandos, trills, and fermatas.

To demonstrate how traditional instrumental techniques are being both preserved and developed in contemporary *piphat* performance, analysis then turns to a particular passage of *Mon Chiang San* wherein the interval of a minor third appears three times (between bars 5 and 7, see red boxes below). It is highly unusual for this interval to be played so frequently by the Thai instruments in traditional-style performance – in this case on the *khong wong* gong circle – since it does not conform with the traditional tuning system. Accordingly, to easily reproduce the Western intervals that they now find aesthetically pleasing, the musicians must re-tune their instruments to the diatonic major scale, typically by calibrating and carefully chiselling both ends of each bar. Interestingly, the two minor thirds in bar 6 serve different functions; the first provides harmony for the

melody note  $c^1$ , while the second provides a supporting  $c$  beneath the melody's  $e^{\flat 1}$  (see blue boxes below). In this way, the repeated minor third interval serves to emphasise the music's modern-sounding tonality.

**Example 3**

The musical score for Example 3 consists of four staves. The top staff, labeled 'Ranad Ek', shows measures 5, 6, and 7. The second staff, 'Khong Wong', features three red boxes highlighting notes in measures 5, 6, and 7. The third staff, 'Ranad Thum', has two blue boxes highlighting notes in measures 6 and 7. The bottom staff, 'Keyboard', provides a bass line. The key signature is two flats and the time signature is 2/4.

To conclude, the analysis of the three chosen Lanna *piphat* pieces shows how contemporary musicians are adopting innovative approaches to their artistry as a means to meet the demands of current times – balancing older traditional elements with others drawn from beyond *piphat*'s traditional frame.

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## Chanting rhythms: Exploring the Tahitian *pehe*

### Introduction.

For Tahitian writer Flora Devatine (2012), the meanings associated to Tahitian words *pehe* and *reo* demonstrate the strong connection between music and language in the Tahitian semantics. The term *pehe* refers to the song or the act of singing, while *pehepehe* refers to the poem or the act of celebrating through a poem or a song. Similarly, *te reo* is usually used to designate the voice, the language, but also the sound of an instrument. Corroborating this relation, Tahitian musicians also name *pehe* the rhythmic sequences performed in the percussion ensemble accompanying traditional dances. Often identified with specific names, these *pehe* represent a fundamental component of Tahitian polyrhythms (see example 1, showing a variation of the *pehe* Otamu by dance ensemble Manahau). However, to date little has been done to explore the structure of these rhythmic sequences, their architecture, and the compositional processes governing their creation.

In the last decades, Tahitian culture bearers have undertaken a process of categorization the most common *pehe*, in order to facilitate their transmission. These transcriptions—which can be either visual mnemonic or descriptive, according to the context—constitute a significant dataset that can be analyzed. Even though these simplified versions are not generally played as such in danced performances (compare the visual-mnemonic notation of base *pehe* Otamu as it is taught at the Conservatoire Artistique [example 2] with its realization in example 1), they represent the core of the Tahitian rhythmic system, which is validated by indigenous cultural representatives. Following Arom (1991, p. 68), this process of simplification permits the outlining of the contours of the musical system. In this paper, I analyze an ensemble of base versions of thirty-four *pehe* collected in the field, in order to explore the syntax governing the composition of these rhythmic patterns, to identify their relevant properties, and to clarify how these *pehe* function in polyrhythm.

### Analysis

The aim of the analysis is to identify significant aspects of periodicity in Tahitian drumming, which is, according to Tenzer, “music’s ultimate organizer on many levels” (Tenzer, 2006, p. 25). The study undertakes a paradigmatic analysis relying on Arom’s structuralist approach to musical systems (Arom & Fernando, 2007). The notation system used in the transcriptions draws on the visual mnemonic grouping system that Tahitian teachers have adopted for the transmission of the *pehe* (see example 2). The study makes the assumption that minimal rhythmic cells can be identified within the studied rhythm phrases as semiotic units, and that they can be processed similarly to Vida Chenoweth’s approach to melodic intervals in her method for analyzing oral tradition melodies (Chenoweth, 2001). After having identified a series of basic rhythmic cells, I elaborate a set of diagrams of co-occurrence frequency for the various rhythm cells identified in the analyzed *pehe*, and I investigate their interrelations. Subsequently, I explain how these elements participate in the rhythmic macrostructures and shape significant properties regarding temporality, timbre, and meter. Ultimately, I highlight the role of language in compositional processes, and I explore the poietic processes in operation in the *pehe* construction.

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**Conclusions**

The research brings out elements governing timbre, form, temporality, multidimensionality, and significance within the studied *pehe* repertoire, and characterizes their combinatorial and sequential nature. Moreover, it highlights important features regarding sonic aesthetics, and suggests that these characteristics resonate in other local music making contexts such as *'ukulele*<sup>1</sup> strumming techniques and traditional singing. Ultimately, this study opens the path for further research within the performed repertoire, and for comparison with other drumming repertoire in the area and beyond.

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<sup>1</sup> The Tahitian *'ukulele* is a small string instrument made of one piece of wood, featuring four double-course strings. Central strings C and E are tuned one octave higher than they are on the Hawaiian *'ukulele*

## ***Do Ko Gyi Kyaw*: music structures, interaction processes, and performance context of a Burmese *nat-chin***

### **INTRODUCTION**

In Burma (Myanmar), *hsaing waing* music is essential to the celebration of *nat pwes* – private ceremonies held to pay homage to the official Pantheon of the Thirty-seven Nats, the Burmese spirit Lords (B. Brac 1989). Each spirit is called in the ritual space by specific spirit songs (*nat-chins*): alongside the ritual offerings and the dance of a professional spirit mediums (*nat kadaw*), *hsaing waing* music makes the *nats* come into presence (Lambek 2010). Sematic<sup>1</sup> musical elements are – dynamically and fluidly – associated with each spirit’s identity: when performed, they make the spirit’s presence actual and real.

A *nat pwe* is a joyful occasion: the devotees celebrate the *nats* by giving them offerings and by offering themselves as vessels for the spirits. Possession in Burma is regarded as positive, and it is manifested through dances (B. Brac 2011) that usually take place in pre-arranged moments of the ceremony: the devotees actively join the celebration, getting possessed by the *nats* and dancing in the ritual space. When this happens, the musicians are in charge of controlling the spirit possession, as no professional mediums are involved in the dances. For this reason, these are privileged moments to understand the role of *hsaing waing* music in *nat pwe* rituals.

Based on the performance of the *hsaing saya* (*hsaing* master) Kyi Lin Bo’s ensemble from Yangon, this paper examines the spirit song *Do Ko Gyi Kyaw*, “Our Ko Gyi Kyaw” – a powerful drunkard spirit, considered the Prince of *nat pwe* ceremonies. With the support of video-audio examples, the analysis wants to highlight how the musicians are easily allowed to operate changes in the song’s melodic and colotomic structure<sup>2</sup>, as well as in speed and dynamics, responding to and supporting the dance of a group of possessed devotees, thus making the spirit present.

### **ANALYSIS**

I consider the *hsaing waing* ensemble (Garfias 1985; Khin Zaw 1981) as constituted of two sections – elaboration-melodic (*hnay*, shawm; *kyi-waing*, gong-circle), and core-rhythmic (*pat-waing*, drum-circle; *pat ma*, hanged drum; *linkwin*, cymbals; *si-daw*, kettledrums), plus an essential colotomic section (*si*, bell; *wa*, clapper).

I recognise two phases constituting the song formal-structure (Tenzer 2006). In phase (I), preparatory, the instrumental elaboration is not fully developed: the melodic instruments back up the singer, who plays a predominant role outlining the main melody; the rhythmic section constrains its energies, remaining in the background. A *cadential-phrase* ends phase (I), and introduces phase (II), resolute, where the drums’ energy bursts out: the rhythmic section becomes the protagonist of the

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<sup>1</sup> Following C. Peirce’s categories of signs (Turino 1999), I consider these music elements sematic (i.e. indexical) signs, in the sense that they dynamically convey an aggregation of meanings that make a spirit’s identity manifest. See Rouget’s (1985) and Kartomi’s (1973) “mottos”; Friedson’s (1996) “rhythmic mode”; Wong’s (2001) “action music”; Becker’s (2004) “leitmotiv”; Norton’s (2009) “songscape”; Jankowsky’s (2010) “hyerophony”; Schweitzer’s (2013) “toques”.

<sup>2</sup> Colotomic structures can be defined as «all hierarchical, binary, unsyncopated, cyclical, 8- or 16-beat phrase units marked by gongs, cymbals, hand cymbals, and clappers in Southeast Asian music.» (Becker 1968: 177) The last beat is perceived as the main one.

performance, playing lively interlocking patterns; the melodic instruments perform an elaborated version of the main melody.

In phase (II) the dancers' dance becomes more energetic, and spirit possession more evident: unexperienced dancers lose control over their body, and start to shake their joined hands, overwhelmed by the power of the spirit. The same *cadential-phrase* concludes phase (II) and announces the returning to phase (I), when another song begins.

### 1. Phase (I)

Following the prosody, the melodic material outlined by the singers can be schematised and simplified as follow:<sup>3</sup>

a	.351
b	$\dot{2}\dot{7}\dot{2}\dot{1}$
c (cx+cy)	$\dot{2}\dot{1}75$ 7543
d (dx+dy)	$\dot{1}\dot{3}7.\dot{1}\dot{2}.\dot{2}\dot{1}\dot{7}\dot{1}\dot{7}6.\dot{5}7.$ .573.45.543432.13.
e	.534.4.12124..
f	4.5.6.7.
g	$\dot{1}\dot{2}\dot{1}7$ 6545 3
<i>cadential-phrase</i>	1.3.4.5. 1

The red colour indicates those segments whose melody is built on scale degree 1 (Sol); green indicates the scale degree 4 (Do) as another melodic pole.<sup>4</sup> The alternation between 1 and 4 is evident in the central segments: the two halves of segment [d] – [dx, dy] – can be considered as a development of [cx, cy] respectively; segments [b] and [e] provide the main frame for this alternation. Segment [f] mediates the transition to 1 ascending from 4; [g] also present the same double melodic nature, but the final sound 3 (Si) doesn't resolve on any of the two poles. After being presented by the singer, the fulcrum of the melodic material, segment [a], remains active in the background, performed cyclically by the colotomic (*si, bell*, and **wa, clapper**; beats: 1-2-3-4) and rhythmic sections:

<sup>3</sup> I identify segments and formulas (Becker 1969; Zadeh 2012) by comparing different renditions of the song.

<sup>4</sup> See Garfias (1975) for considerations about the Burmese scales and modal categories.

si (bell)  
wa (clapper)

pat waing  
drum circle

linkwin  
cymbals

pat ma  
hanged drum

sidaw  
kettledrums

Fig.1 colotomic and rhythmic sections

In the course of performance, the melodic segments are sung in alternation by two singers with the support of the melodic instruments: some segments are repeated more than once, prolonging the normal duration of the song, with variations:<sup>5</sup>

*A*<sub>1</sub> *A*<sub>1</sub> *A*<sub>1</sub> / *a*<sub>2</sub>  
*B*<sub>1</sub> / *b*<sub>1</sub> / *B*<sub>1</sub> / *b*<sub>1</sub>  
*C*<sub>1</sub> *B*<sub>1</sub> / *c*<sub>1</sub> *b*<sub>1</sub> / *C*<sub>2</sub> *B*<sub>2</sub> / *c*<sub>1</sub> *b*<sub>1</sub>  
*D*<sub>1</sub> / *d*<sub>2</sub>  
*E*<sub>1</sub>  
*F*<sub>1</sub>  
*G*<sub>1</sub>  
*B*<sub>3</sub> / *B*<sub>3</sub> / *B*<sub>4</sub>  
*cadential-phrase*  
 [end of phase I]

## 2. Phase (II)

After the *cadential-phrase*, [00'55''–00'59''] the singer pushes ahead on the beat, dragging with her the rest of the ensemble, which increases speed and dynamics:

<sup>5</sup> Caps and lower case indicate the first and second singer; subscript numbers indicate considerable variations; italics indicates instrumental.

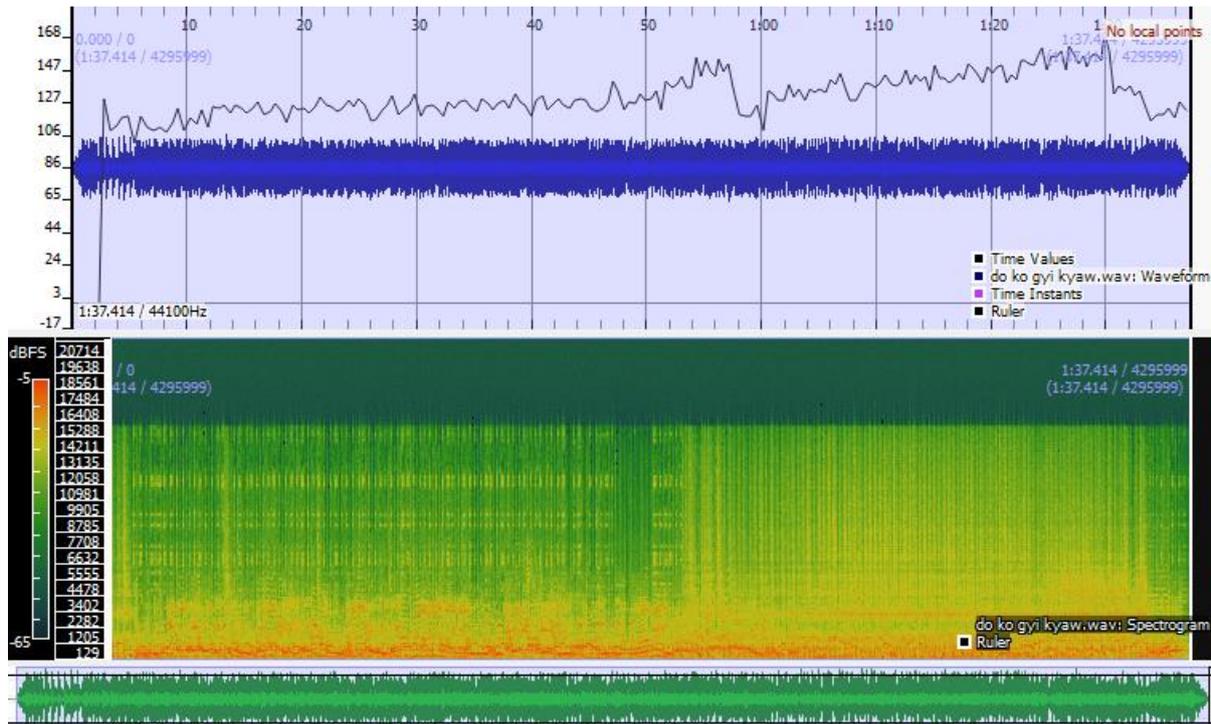


Fig. 2: spectrogram, speed and dynamics

While the melodic sequence remains the same as in phase (I), the colotomic and rhythmic sections exchange their previous roles: the drums carry a solid, lively interlocking pattern, filling-in the off-beats of a more rarefied colotomic structure (only the *wa* is present; beats: 1-2-3-4-5-6-7-8):

<i>si</i> (bell)	(♦)	×	(♦)	×
<i>wa</i> (clapper)				
<i>pat waing</i> drum circle				
<i>linkwin</i> cymbals				
<i>pat ma</i> hanged drum				
<i>sidaw</i> kettledrums				

Fig. 3: expanded colotomic structure, rhythmic section's filling-in

The expansion of the colotomic structure (Becker 1980) represents an adaptation dictated by the presence of the dancers: without them, the colotomic instruments would just keep the same structure of the phase (I). In fact, the beats of the bell *si* and clapper *wa* correspond respectively to the dancers' raising and lowering of their feet – the bell raising the tension, and the clapper releasing it – a basic feature of Burmese dance. The rarefying of the main beats allows the dancers to perform this pace on a much larger pattern – while the upper part of their body is free to move following the drums, which perform the filling-in with increased dynamism. While the released energy of the rhythmic section

triggers a more evident possession, compelling the dancers to move faster and with more intensity, the colotomic instruments control the possession, restraining and synchronizing the dance movements (Clayton 2001).

## CONCLUSIONS

The performance practice of *nat hsaing* is characterised by fluidity and interaction (Brinner 1995): in the two phases, the leading role is continuously shifted between the singers and the drummers, who collaboratively flex the framed structure of the song (Sutton and Vetter 2006) to second the dancers' spirit possession.

In phase (I) the melodic section and the singer delineate Ko Gyi Kyaw's identity through melodic patterns and lyrics, thus preparing the dancers to a deeper level of trance. In phase (II), the identity of the spirit Prince is still framed by the melodic section, that re-elaborates the main melody (Hood 1975), maintaining the link with the lyrics previously outlined; the rhythmic section intervenes on the up-beats left "empty" by the expansion of the colotomic structure, unleashing its sonic power and making the spirit come into presence into the body of the trancers. The expansion of the colotomic structure might be seen as a passage toward an "opening" of the trancers, immediately "filled up" with the powerful presence of the drunkard spirit, represented by the intense filling-in of the drums. All the elements of the performance – lyrics, melody, rhythm, colotomic structure, speed and dynamics – function as sematic elements, and contribute to trigger, support and control the spirit possession.

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## **Cyclical Structures in Central Javanese Skeletal Melodies**

For the skeletal melodies of 131 64-beat pélog mérongs compiled by Barry Drummond,  $131 \times 64 = 8384$  ciphers for pitches and dots for rests were entered into a spreadsheet. Summing the pitch and rest entries for each of the 64 beats in the mérongs resulted in the distribution graphed in **Figure 1**. As Figure 1 shows, the proportion of pitch entries increases toward the end of each of the four 16-beat phrases and abruptly declines, replaced by an increase in rests, during the next phrase's first measure. In classic behavioral terms, this pattern of increased activity followed by a sudden decline is consistent with a fixed-interval schedule of reinforcement (Ferster & Skinner, 1957), where the 16<sup>th</sup> beat's kenong tone would be a reinforcer.

Similarly, the tendency for the rate of the otherwise very rare subdivided beats to increase towards the 64<sup>th</sup> beat (**Figure 2**) is consistent with this beat's function as a reinforcer of the activity that has produced the entire mérong, for the 64<sup>th</sup> beat concludes immediate repetitions of the mérong, and on its first instance the 64<sup>th</sup> beat concludes a precise repetition of the introductory buka's conclusion, as noted in an interview with Pak Cokro by Hardja Susilo (Hood (1988, 74-75) and confirmed for pélog mérongs by Rahn (2017).

**Table 1** summarizes the kinds of rhythm that occur immediately before and after the rests synopsized in Figure 1. Most frequent are 'commetric' rhythms (Rahn 1978). Of these, by far the most frequent are those in which pitch onsets occur at what European-derived theory would identify as the 1st and 3rd beats of a measure with a hiatus on the 2<sup>nd</sup> (**Figure 3.a**).

Less frequent are 'dotted' rhythms that comprise pitch onsets on the 1<sup>st</sup> and 4<sup>th</sup> beats, with a hiatus on the 2<sup>nd</sup> and 3<sup>rd</sup> beats, or pitch onsets on the 1<sup>st</sup> beat and the next measure's 2<sup>nd</sup> beat with an intervening hiatus (**Figure 3.b**). In contrast to commetric rhythms with a 2<sup>nd</sup>-beat hiatus, such rhythms suppress the mérongs' otherwise continual 2-beat pulsation or both its 2- and 4-beat pulsations.

Similarly infrequent are syncopated rhythms (**Figure 3.c**). Among these, those that suppress the 1<sup>st</sup> beat are much more frequent than the others. Among all the syncopated rhythms, the most frequent are those that occur at the 1<sup>st</sup> beat of the 2<sup>nd</sup> and 4<sup>th</sup> measure of each 16-beat/4-measure span (**Figure 4**). Coinciding with kethuk strokes, these are the only contrametric beats of the 64-beat colotomic cycle. At these beats the most frequent syncopations occur at the 2<sup>nd</sup> measures' 1<sup>st</sup> beat, which otherwise would realize a 4-beat pulsation before and after each 16<sup>th</sup>-beat kenong stroke. Such syncopations can be considered to increase cognitive 'arousal' (Keller & Schubert 2011; Yang & Homer, 2011), and their tendency to increase in frequency toward the beginning of the 4<sup>th</sup> 16-beat phrase parallels the general tendency of hiatuses to decrease in frequency throughout entire mérongs.

Turning to the actual pitches employed in the skeletal melodies, one finds that the most extended instances of continual repetition tend to occur in immediately successive 16-beat phrases. **Figure 5.a** illustrates such continual repetitions, and **Figure 5.b** illustrates relations between the longest continual and intermittent repetitions.

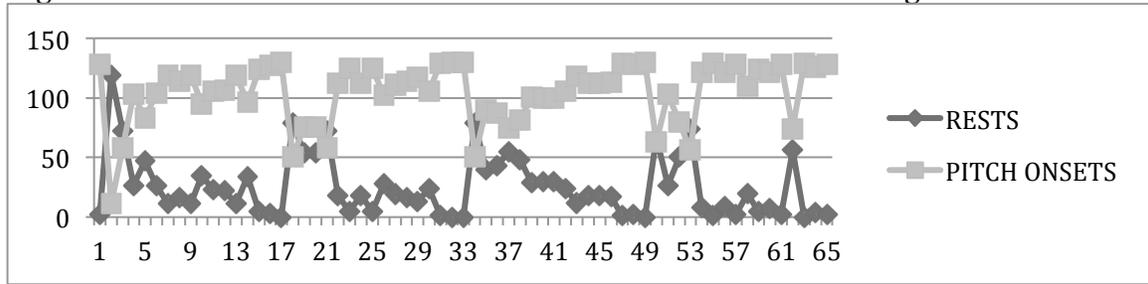
As **Table 2.b** shows, all 131 mérongs comprise repetitive pairs of phrases. Of these, pairs of immediately successive phrases are by far the most frequent, especially those that involve the 1<sup>st</sup> or 4<sup>th</sup> phrase. In this regard, the introductory buka's 'telegraphing' of the 4<sup>th</sup> phrase's conclusion can be understood also as an anticipation of the 4<sup>th</sup> phrase's continual cyclical return to the mérong's 1<sup>st</sup> phrase.

Whereas most of the longest repetitions conclude at the end of a phrase, a substantial minority (10%) does not reach such a tone, and even more (23%) 'overshoot the mark,' as it were (**Figure 6**). That is, although the mérongs uniformly feature repetition of pitches and rests at analogous times within phrases, the precise times at which such repetitions occur vary considerably from piece to piece. That such a tendency, such 'predictable unpredictability,' characterizes all the mérongs' cycles, from 4 to 64 beats, shows that colotomic cycling does not result in rigid, stereotyped melodic structuring; instead, the mérongs' skeletal melodies draw on colotomic cycling as a rhythmic resource.

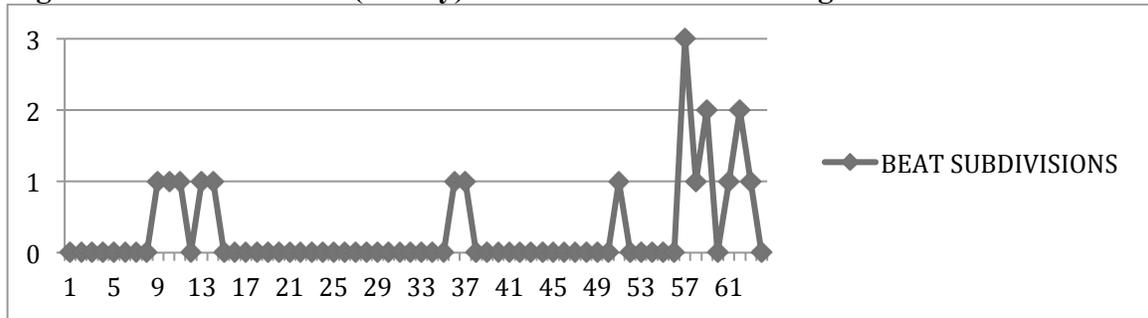
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**Figure 1. Pitch Onsets and Rests at Successive Beats in 131 Mérongs.**



**Figure 2. Beats That Are (Rarely) Subdivided in 131 Mérongs.**



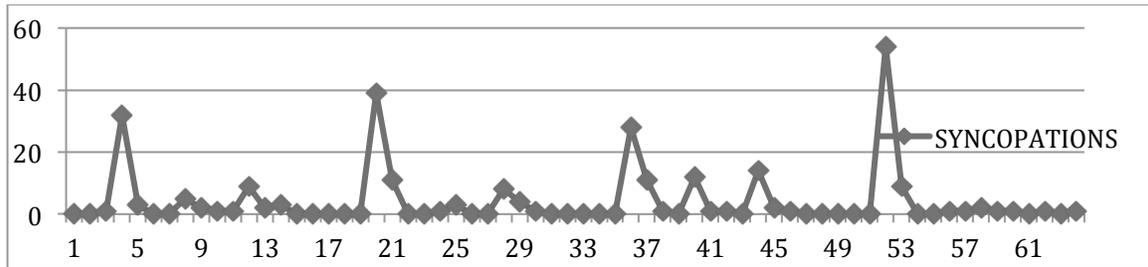
**Figure 3. Most Frequent Rhythms That Result from 'Missing' Beats, i.e., 'Rests,' in 131 Mérongs.**



**Table 1. Rhythms Resulting from Beats That Are 'Missing' from 4-Beat Measures in 131 Mérongs.**

Rhythm	'Missing' Beats	Pathet:				Totals
		Lima	Nem	Barang	All	
'Commetric'	2 <sup>nd</sup>	90	113	179	382 (77%)	499 (60%)
	4 <sup>th</sup>	18	36	51	105	
	2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup>	6	4	2	12	
'Dotted'	2 <sup>nd</sup> , 3 <sup>rd</sup>	31	75	14	120 (73%)	165 (20%)
	2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> , 1 <sup>st</sup>	17	21	7	45	
Syncopated	4 <sup>th</sup> , 1 <sup>st</sup>	29	49	11	89 (51%)	173 (21%)
	1 <sup>st</sup>	27	30	9	66 (38%)	
	1 <sup>st</sup> , 2 <sup>nd</sup>	4	1	2	7	
	2 <sup>nd</sup>	0	3	1	4	
	4 <sup>th</sup> , 1 <sup>st</sup> , 2 <sup>nd</sup>	0	1	0	1	
	1.5 <sup>th</sup> , 2 <sup>nd</sup>	2	0	0	2	
	3.5 <sup>th</sup> , 4 <sup>th</sup> , 1 <sup>st</sup>	2	0	0	2	
4.5 <sup>th</sup> , 1 <sup>st</sup>	2	0	0	2		

**Figure 4. Beats at Which Syncopations Occur in 131 Mérongs.**



**Figure 5. Examples of Longest Repetitions in Individual Mérongs, Relative to Kenong Strokes.**

**a. Continuous Repetitions**

**i.** Begins on kenong stroke, ends between kenong strokes: Saryuda.

.	.	.	6	.	2	.	6	.	2	.	6	.	1	2	3
.	5	3	.	6	5	2	1	6	1	2	3	5	6	5	3
.	5	3	.	6	5	2	1	6	1	2	.	3	2	6	5
3	3	.	6	3	5	6	1	2	.	4	4	2	1	2	6

**ii.** Begins on kenong stroke, ends on kenong stroke: Andhong-Andhong (overlap on initial and final kenong strokes indicated in green).

3	3	.	.	6	5	3	2	.	1	6	5	1	2	1	6
5	5	.	.	5	5	3	5	6	6	5	3	2	3	6	5
.	.	.	.	5	5	3	5	6	6	5	4	2	1	2	6
3	3	.	.	6	5	3	2	.	1	6	5	1	2	1	6

**iii.** Begins between kenong strokes, ends between kenong strokes: Humiring (overlap before and after kenong strokes).

.	1	2	.	2	1	2	3	6	5	3	5	3	2	1	2
.	1	2	.	2	1	2	3	6	5	3	5	3	2	1	2
.	1	2	6	.	.	6	.	2	3	2	1	6	5	3	5
1	1	.	.	3	2	1	6	3	5	6	5	3	2	1	2

**iv.** Begins between kenong strokes, ends between kenong strokes: Sangupati.

.	.	6	5	.	3	5	6	.	.	6	5	3	5	6	7
.	.	.	.	7	7	6	5	3	5	6	5	3	2	7	2
5	6	5	3	2	7	5	6	3	5	6	7	6	5	2	3
5	5	.	.	5	5	.	.	5	5	6	3	.	7	.	6

**Figure 5 (concl'd.)**

v. Begins between kenong strokes, ends between kenong strokes: Rara Ngangsu.

.	2	1	.	2	1	6	5	2	2	.	4	5	.	6	5
.	6	5	4	2	1	2	1	.	2	3	3	.	1	2	1
.	2	1	.	2	1	6	5	.	.	5	6	4	5	6	5
.	4	4	5	x	4	4	5	.	1	1	2	3	2	1	.

**b. Intermittent Repetitions**

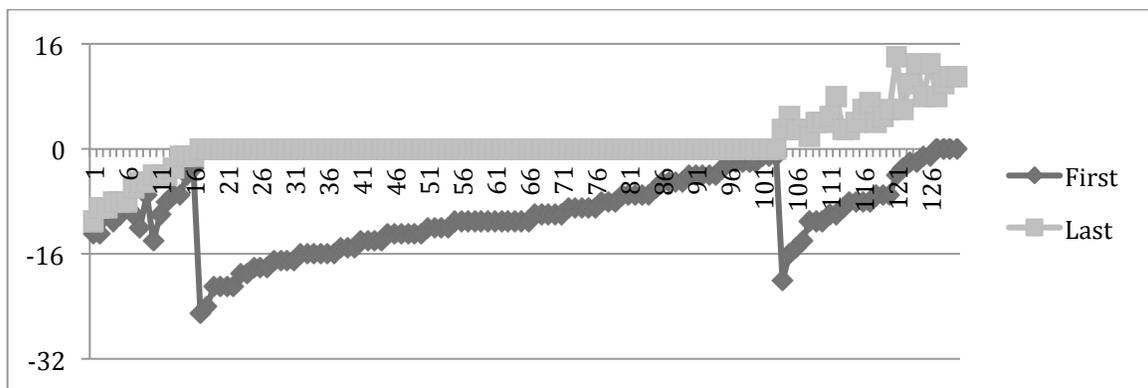
i. Begins between kenong strokes, ends between kenong strokes: Sangupati (cf. a.iv, above).

.	.	6	5	.	3	5	6	.	.	6	5	3	5	6	7
.	.	.	.	7	7	6	5	3	5	6	5	3	2	7	2
5	6	5	3	2	7	5	6	3	5	6	7	6	5	2	3
5	5	.	.	5	5	.	.	5	5	6	3	.	7	.	6

ii. Begins between kenong strokes, ends on kenong stroke: Rara Ngangsu (cf. a.v, above).

.	2	1	.	2	1	6	5	2	2	.	4	5	.	6	5
.	6	5	4	2	1	2	1	.	2	3	3	.	1	2	1
.	2	1	.	2	1	6	5	.	.	5	6	4	5	6	5
.	4	4	5	x	4	4	5	.	1	1	2	3	2	1	.

**Figure 6. First and Last Tones of Repeated Passages Relative to Kenong Strokes in 131 Mérongs.**



**Table 2. Pairs of Phrases in Which Longest Repetitions Occur in 131 Mérongs.**

a. Pairs of Phrases	Pathet:			All
	Lima	Nem	Barang	
1 <sup>st</sup> & 2 <sup>nd</sup>	5	23	29	<u>57</u> (44%: cf. 17%)
2 <sup>nd</sup> & 3 <sup>rd</sup>	5	7	5	17
3 <sup>rd</sup> & 4 <sup>th</sup>	0	0	1	1
4 <sup>th</sup> & 1 <sup>st</sup>	13	11	17	<u>41</u> (31%)
1 <sup>st</sup> & 3 <sup>rd</sup>	2	3	4	9
2 <sup>nd</sup> & 4 <sup>th</sup>	0	1	5	6
<b>b. Adjacent/Non-Adjacent Pairs</b>				
	Pathet:			All
	Lima	Nem	Barang	
<b>Adjacent Pairs</b>				
1 <sup>st</sup> & 2 <sup>nd</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> , 3 <sup>rd</sup> & 4 <sup>th</sup> , 4 <sup>th</sup> & 1 <sup>st</sup>	23	41	52	<u>116</u> (89%: cf. 67%)
<b>Non-Adjacent Pairs</b>				
1 <sup>st</sup> & 3 <sup>rd</sup> , 2 <sup>nd</sup> & 4 <sup>th</sup>	2	4	9	15
<b>c. Pairs that Include...</b>				
	Pathet:			All
	Lima	Nem	Barang	
1 <sup>st</sup> phrase	20	37	50	<u>107</u> (41%: cf. 33%)
2 <sup>nd</sup> phrase	10	31	39	51
3 <sup>rd</sup> phrase	7	10	10	22
4 <sup>th</sup> phrase	13	12	23	47

## What's in a Tune? Construction of Cape Breton Fiddle Tunes

Cape Breton, Nova Scotia, Canada is known for its distinctive fiddling style and its Gaelic culture, which have become emblematic of the Scottish heritage of this island. After the 1972 documentary “The Vanishing Cape Breton Fiddler”, the Cape Breton Fiddlers Association was formed to preserve their musical heritage perceived as facing extinction, in part because of the exodus of workers (and fiddlers) from Cape Breton and the aging of traditionally-trained fiddlers. The Cape Breton Fiddlers Association maintains, teaches, and performs a repertoire of commonly-played tunes that fiddlers in this style are expected to know, including jigs and reels, marches, slow airs, and strathspeys. Cape Breton fiddling also has a foothold in the Canadian national capital with the founding of the Ottawa Cape Breton Session, which has clear ties to the Cape Breton Fiddlers Association, but whose repertoire diverges in some interesting ways.

In this corpus study, I examine approximately 250 fiddle tunes within the standard repertoire of the Cape Breton Fiddlers Association and the Ottawa Cape Breton Session, two leading performance- and teaching-based organizations preserving Cape Breton fiddle culture. Some of these tunes came to Cape Breton in Scottish tune collections published in the nineteenth and very early twentieth centuries (though many of the tunes are much older), while others were composed by Cape Breton fiddlers over the last two hundred years, with some quite recent; for many the composer name is provided, though some are traditional tunes. Though the melodies are typically accompanied by piano or guitar in performance contexts such as *ceilidhs* (house parties), dances, and concerts, the accompaniment is improvised, and will vary substantially in harmonic choices, rhythm, and voicing depending on who is playing. The melodies may also be embellished by “cuts” or “graces”, which follow traditional patterns but are also improvised; these are not be evaluated in this study, which employs score notation as representing the melodic aspects consistent across performances.

My analytical method began with hands-on examination of the tunes to become familiar with how the pitches, intervals, and rhythmic figures of these melodies lie on the instrument, and the finger motion and bowing used to perform them. I examined melodies related by genres (jigs, reels, marches, slow airs, strathspeys) as each genre has characteristic meter, tempo, and rhythmic patterns associated with the tune's function, and by sets. Melodies are normally combined into sets in the same key (though the mode may differ) with tunes performed one after another in a specific order; common groupings are sets made entirely of jigs (shown in Example 1), entirely of reels, or with melody types ordered by increasing tempo, beginning with either a slow air or march (or both, in that order), followed by one or more strathspeys, then several reels (shown in Example 2). I also considered groupings across genre by key (e.g. D, A, E) and mode (major, minor, Aeolian, Dorian, Mixolydian), determining the key and mode from the notated key signature, melodic opening and closing figures, and placement of accidentals (if any). These melodies do not typically change keys, though some outline or imply secondary dominant-function harmonies. Analytical questions addressed include: Do melodic figures comprising the tune differ based on the type of tune (jig, reel), key (D, A, E), or mode (major, minor, Aeolian, Mixolydian)? What are typical opening and cadential figures? What are the types of melodic and rhythmic figures employed in the first and second reprise sections of these binary form compositions? Where in the form are choral arpeggiation or scale-based figures likely to appear in the tunes, and does that usage differ by genre? What strategies are employed in combining

tunes into sets (other than the common key)? Do sets share particular melodic or characteristics beyond those typical of the tunes' genres?

This pilot study provides groundwork for a larger computer-assisted digital humanities research project with a corpus of several thousand Cape Breton fiddle tunes, including large groupings of melodies by specific composers. In that expanded context, I hope to consider additional questions regarding composers' stylistic characteristics, and to compare melodies composed on Cape Breton Island with those from the Scottish score books.

## Interdependent Roles of Dancers and Musicians in Structuring Transylvanian Village Music

### Introduction

Transylvanian village socializing consists of dance, music, and song, each often analyzed independently. However, their relationship within dance cycles is affected by factors beyond these arts. Village dancers as a collective hire musicians in a service capacity to provide them with music. This economic relationship is further heightened by ethnic and class difference--most of the musicians are Roma. Their role is to help the dancers have fun and look good among themselves. Content is directed in large part by dancers--musicians know songs and rhythms preferred in a particular village and what individual dancers like, often from long-year relationships. The primás (band leader) must create a musical structure with contrasting tempo areas and acceleration, changing when needed by dancers, and responding to dancers' immediate demands. Thus, village dance origins as service music are the key to its development of an extremely flexible form, which, on the fly, incorporates many tempos, any amount of length, and a large variety of melodic material.

With passage of this material into an urban context, primarily through the táncház revival movement, musicians have developed methods of playing for concert performance without dancers. Forms are tightened up with fewer repetitions, less interlude, and set melodic material, resulting in interpretations in musical rather than dance terms. Sometimes singers are added to bring back the words of songs used instrumentally in the village.

Urban bands tend to be Hungarian--class distinctions become simulated, and musicians are often more knowledgeable than dancers. Bands initiate music for dancing with dancers not necessarily knowing they should direct. Here, musicians generally make all of the content choices, hoping to provide the dancers with the right amount of dance and songs they like. Primás Gergő Koncz: "if someone comes up we play to them, otherwise we play for ourselves."

This has led some musicians to call for more appropriate dance instruction (Levente Major), and others (László Kürti) note the necessity of forming dance communities, so musicians can get to know dancers and their preferences.

### Analysis

This paper introduces concepts of musical organization, including sectioning by tempo area, use of songs and variation on repetition, and interludes (játék) at ends of songs, between repetitions, and as resting places.

From this point, the analysis diverges to explore how each of the three options above generate varying ways of conceptualizing the dance and how these in turn influence the improvisatory choices affecting shape. This will include fundamentally different ways of

being inside the piece affecting the experience of time and continuity, particularly between musicians and dancers.

I discuss how couples structure their own dance, methods of direct and indirect communication with the band and when they occur, what sorts of “help” dancers want at what points in their dance, and the needs of dancers as a group as opposed to individuals. Film clips show what it looks like when dancers lead. Strengthening the idea of a dichotomy of concept between dancer and musician is the functional and service nature of the music in a rural context.

I will then offer musical performance without dancers, to demonstrate how the same material is structured as music only. The model for such a performance is the urban folk concert, representing the musician as performer rather than enabler.

Finally, I will give some examples of musicians playing for less-interactive dancers, how they develop structure, and how this changes when dancers approach them. This third option is also a product of the urban context, where participants bring their experience of dancing to other types of bands who are playing their own set songs.

This activity is graphed on a musical timeline, noting specific melodic material and variation, placement and lengths of *játék*, and general aspects of dancer/musician interaction, as well as direct interaction when it occurs.

## Conclusion

In its original context, leading by dancers means material is often episodic, with dancers in front of the band controlling expression, melody, and speed. This results in more repetitions and unexpected juxtapositions, but interest is maintained by attention to dancers.

Music-only performances tend to be much shorter, with measured number of song repetitions and different proportions within tempo areas, reflecting structuring in musical terms. Roma bands on tour figure out how to play like this in part by watching urban colleagues.

Urban dance practice tends toward music-oriented organization, but music is played for a much longer time. Musicians may quote other musicians and add segments based on recordings, and there is time for real musical development. With experienced dancers there can be interaction of the rural type.

Music using the same building blocks and basic forms in three contexts may be easily compared. However, the differences found, specifically in terms of length, content, and the use of interludes, as well as who is participating in which roles, suggest a qualitatively different experience with different goals, and that differing aesthetic and analytical values should be used for evaluating them. Additional methodology may be warranted and is discussed here, for example dance and interactional analysis to account for direction by

dancers and the introduction of concepts like flow to explain length. Context and class play a role and cannot be ignored.

## The Big Bang Theory of music: A tool towards the understanding of modality in eastern Mediterranean music cultures

The interpretation and comprehension of modality in eastern Mediterranean musical traditions (*Makam* or *Echos*) has always been a challenging task for tutors, students and professional musicians as well. The great number of modes mentioned alongside their complex rules of melodic development and the variety of musical intervals leads to a hard to approach musical universe. In this paper the basic idea of the Big Bang Theory in the creation of the universe is adopted in order to formulate a theory about the creation of modal music. By following its gradual expansion from monotony to a complex but systematic melodic organisation we could approach and describe the phenomenon of modality in its totality, a task that can serve as an additional pedagogical tool towards the understanding of the fundamental rules and, eventually, the logical development and simplicity of the universe of the modal systems of eastern Mediterranean.

## Analytical methods and approaches to Byzantine Music: Retrospectives and perspectives

Byzantine chant, one of the major cultural and spiritual heritages of the Eastern Roman Empire, which survived and developed dynamically until today in connection with the Byzantine rite in South-Eastern Europe, Asia Minor and in many countries over the world, represents also a highly interesting domain for music analysis. This paper presentation aims at: 1. giving a historical overview about analytical methods and approaches encountered from the 10th cent until the present time in theoretical treatises and practical sources of Byzantine chant; 2. exploring the various analytical approaches proposed by musicologists during the 20th-21st century, like time immanent, descriptive, motivic, modal, syntactic, functional, structural, polyprismatic, generative, interarts, fractal, interpretative and under the angle of vocal technique, a.o. analyses conducted on different layers of repertory and musical textures (syllabic, syllabo-melismatic, moderately and highly melismatic); 3. hinting at some bridges with Western music analysis, in collaboration with Costas Tsougras. The musical examples and some of the analysis types will be presented by members of the Study Group for Palaeography of Byzantine Music from the Department of Music Studies of the A.U.Th., and Nathanael Evans.

## Understanding Temporal Structure of *Gagok* Performance: A Study of Periodicity in Ujo Chosudaeyeop

In pursuit of finding a comparative tool for cross-cultural music analysis, this paper explores *periodicity* (a regular recurrence of sound) of Korean traditional vocal music, *gagok*. It analyzes the seemingly arbitrary tempo changes in the first song of the *gagok* repertoire called “Ujo Chosudaeyeop,” creating a visual representation of the phenomenon. This paper also introduces the concept of *hanbae*, a Korean musical term for tempo, to explain the findings as structural.

As a popular music genre active throughout the Joseon Dynasty (1392-1897), *gagok* is a collection of vocal music sung by a professional singer with an instrumental ensemble of 5-6 players. Its lyrics originate from *sijosi*, a three-part poem, and lyrical syllables are stretched out in highly melismatic melodies, requiring singers to perform various delicate vocal techniques. According to historical sources, there were three *gagok* repertoires, but the slower two gradually disappeared, and today’s *gagok* songs originate from the fastest of three, “Sakdaeyeop”. *Gagok* performances require a certain order of songs to be performed. “Ujo Chosudaeyeop” is a representational *gagok* song, being the first song performed by a male or mixed gender. As a standard piece in contemporary Korean music education, it is also performed as a chamber or solo instrumental piece. One of the slowest songs in the repertoire, “Ujo Chosudaeyeop” characteristically uses the traditional 16-beat rhythmic pattern [Example 1], rather than the 10-beat rhythmic pattern employed by faster songs. It features a strict five-movement structure, as well as a prelude (*daeyeoum*) between songs and an interlude (*jungyeoum*) between the 3<sup>rd</sup> and 4<sup>th</sup> movement.

The primary subject of analysis is an audio recording of “Ujo Chosudaeyeop” performed by a *gagok* master, Kim Hoseong (1941-) and produced by the National Gugak Center in the 90s. More recent recording by another master, Lee Dongkyu (1947-) is also analyzed for comparison. The noticeable tempo changes in the fixed 16-beat rhythmic patterns have never been systematically studied. I have mapped temporal occurrences of each beat as they are articulated by *janggo* strokes or *geomungo* notes. Harnessing the visual advantage of the Korean traditional *jeonggan* notation system that is better suited to display the overall structure, I have created a tempo map with a hybrid score system, using both *jeonggan* and western notations [Example 2]. While presenting a more intuitive overview of “Ujo Chosudaeyeop,” this new hybrid system also contains key information such as 1) the organization of 16-beat rhythmic pattern, 2) visualized tempo changes and 3) vocal melody in the western notation.

My temporal analysis of “Ujo Chosudaeyeop” has exposed several notable points regarding its tempo. 1) The tempo accelerates when the singer performs long sustained notes and decelerates when the vocal melody becomes elaborate, requiring various vocal techniques and precision. 2) Also, the tempo changes happen spontaneously with other instruments, suggesting they are thoroughly planned and rehearsed. 3) In the 5<sup>th</sup> movement, however, the tempo rarely changes maintaining the similar tempo the song begins with. 4) The instrumental interlude is also played without significant tempo changes, although performed with an overall faster pace. Both recordings are consistent in these findings albeit minor stylistic differences. The deliberate tempo changes seen in each rhythmic pattern may seem arbitrary, but this performative gesture illuminates the right timings, with its own internal logic, independent from the idea of fixed

tempo. These changes are extremely significant and effective in adding different colors to the vocal melody, yet it does so with intuitive seamlessness that the listeners are undisturbed by these changes.

Despite these arbitrary changes within the rhythmic patterns, the total length of each rhythmic pattern remains surprisingly consistent. In Kim's recording, all ten rhythmic patterns with the vocal melody are performed within 34~36 seconds. The 7<sup>th</sup> pattern which comes during the faster interlude is the only exception (32s). This consistency builds a firm ground for constructing my argument that the concept of *hanbae*, often interpreted as a duration of rhythmic patterns or melodic phrases rather than that of beats, effectively explains its temporal structure. Thus, in "Ujo Chosudaeyeop," the variable beats do not correspond to the western idea of fixed time, but rather the rhythmic patterns become the ultimate timekeeper. These findings support the *jeonggan* notational system as a highly intuitive visual representation of the dualistic temporal structure, which is the inherent characteristic of "Ujo Chosudaeyeop."

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♩ = 20 – 55

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
 deong derururu kung duk kiduk kung duk deong derururu kung duk



Example 1. The structure of the 16-beat *gagok* rhythmic pattern played by janggo

Rhythmic Pattern	⊙	⋮	○	•	i	○	•	⊙	⋮	○	•					
1	90							82			70					
	1 Dong Cha ang		Yi		hi	Ba al Ga										
2	70		70	128	80	123	72	90	80							
	at Neu		Nya													
3	70		106	106	82	90	78	78	97	60						
	2 No wu Go oh wu e		hi Ji		yi	Li	Wu hu Ji									
4	72		84	92	92	114	82	82								
	Ji hi yin		Da ah		3 So Chi		Neu n									
5	73		73	105		90	79	73								
	Ah Hu yi		hi No		m	Eu n	Sa ah ang Geu Yi		hi							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Example 2. Tempo-map of Ujo Chosudaeyeop

Rhythmic Pattern	⊕		⋮	○		•	i		○		•	⊕		⋮	○		•	
6	79						92		92			78	85		97			
7 (Piri)	90																	90
8	72			78	105	99			99			71	92	72	64			
9	78	96		84		75	84		93			62	96	65		84		
10	80																	
11	80																	
12	88			102														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		

Example 2. Tempo-map of Ujo Chosudaeyeop (cont.)

## **Īqā‘; a Canon to Respect or Break?: Dichotomy between Rhythm Making Strategies in Composition and Improvisation in Classical Music of the Arab Mashriq**

### **Introduction**

In the musical cultures generally referred to as “maqām” music traditions, Īqā‘ or Uṣūl (metric cycle) serves as a persistent ostinato embodied in the designation of percussion strokes (Marcus 2002: 117). Metric cycle provides melody with its rhythmic division in composition. It also leads performers to proceed while improvising or/and rendering a pre-composed piece. Although the art-urban tradition in the Mediterranean Eastern Arab region (Mashriq) in the modern era is by no means the only musical culture attaching a key importance to improvisation as a creative motor in music making, among its counterparts in the maqām realm, it is the only musical culture that defines a crucial role for the metric improvisation. Metric improvisation can be heard both as purely instrumental pieces (taqṣīm muwaqqa‘a and tahmila)<sup>1</sup> or vocal genres such as metric rendition of qaṣīda (a high-status poetic form in both Sufi and profane genres) and dawr, a half-improvised piece in art music. Yet, the status of composition, though not as privileged as what used to be in the pre-modern era, is significant so that a noticeable amount of time may be devoted to pre-composed pieces in a waṣla (the suite of instrumental and vocal pieces including both pre-composed and improvised ones) (Racy 1983).

### **Composition vs. Improvisation; rhythmic flexibility in art music of the Mashriq**

As far as the dichotomy between composition and improvisation is concerned, one may speak of a continuum indicating the degree to which the rhythm of melody respects the rhythmic framework provided by metric ground. This may range from a close imitating the rhythmic schema of cycle in melody to the radical deviation from it. In fact, the more one goes toward the extreme of improvisation, the more rhythmic liberty exists.

The dichotomy in question is most discernable when it comes to a number of metric cycles in the given tradition that have been broadly employed both for improvisation and composition. Interestingly, the functions that metric cycles fulfill in these two procedures of music making are completely different. While they mostly provide pre-composed muwashshahāt with their melodic mapping (internal division-articulation of melody), the art of improviser is breaking the rhythmic framework given by the metric cycle and returning to it in the final cadence (qafl); the game of tension and release. In the word of some Arab musicians (e.g. Hayaf Yassine and Mustafa Said personal communication), it is a “must” for an improviser to be able to create his/her own rhythmic schema against the one provided by metric cycle. This quality of “playing off of time”, as it is the case in Jazz improvisation (Berliner 1994: 147-159), may result in a multilayers metrical structure or, in the most adventurous cases, the formation of melodic phrases that, regardless of the drum strokes, hardly seems to be measured as if an unmeasured improvisation (taqṣīm mursala) is being performed. A metric improvisation may start with respecting the tactic rules and strategies of composition, and then goes beyond the rhythmic frame of metric cycle so that both musicians and audiences experience moments of rhythmic

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<sup>1</sup> . Instrumental metric improvisation is usually an inseparable part of a program in the tradition in question. It, in fact, serves as a sort of break/fun for musicians.

tension. This tension, however, may change to a quality of release through a clever return to the rhythmic framework given by cycle.

## **Method**

Adopting an analytical approach informed by ethnographic information gained through my fieldwork in Lebanon in 2016-17, the paper aims to propose a descriptive theory regarding how differently metric cycles may be treated in the courses of composition and improvisation in the given tradition. To investigate the relation between melody and cycle in every moment of music flow, the synoptic method of transcription will be adopted (as can be seen in an example below). The example seeks to indicate how the cycle may have “a particular control over the way the melody is manifested by channeling it towards a proffered set of rhythmic patterns”(Wright 200: 389) in composition. Furthermore, engaging in both composing and improvising on a number of metric cycles, I - as a musician coming from a very close music aesthetics - have attempted to experience the given dichotomy through practice- based observing, resulting in the realization of potential cognitive and artistic challenges that one may face. Basing on a number of existing fundamental theories (e.g. Tenzer 2011; Clayton 1996; London 2004 & 2001; Lerdahl, and R. Jackendof 1983) and case studies (e.g. Clyton 2000; Lambert 2014) in the field of ethnomusicology, this paper aims to throw some light on how musicians respond to aforementioned challenges, especially with respect the matter of periodicity and the role of tempo and rhythmic density to address the issues.

The pieces are chosen from well-known recordings of the first half of the 20<sup>th</sup> century as well as those of contemporary musicians (including my recordings of some revivalist musicians in the Mashriq). The paper also seeks to provide a case study of how music analysis, participant observation and dialogical interaction with informants may empower each other as different methodological strands in ethno/musicology.

**Key words:** Rhythm, Meter, Composition, Improvisation, Īqā‘(metric cycle), Classical Arab music

# Samā'ī Ḥusaynī

By Tatyos Efendi

1858-1913

The first system of musical notation consists of two staves. The upper staff is a vocal line with a treble clef and a key signature of one flat (B-flat). It features a series of eighth and sixteenth notes with various rests. Above the staff, there are rhythmic groupings: a triplet of eighth notes, a group of two eighth notes followed by a quarter note, another group of two eighth notes followed by a quarter note, a triplet of eighth notes, another triplet of eighth notes, a group of two eighth notes followed by a quarter note, another group of two eighth notes followed by a quarter note, and finally a triplet of eighth notes. The lower staff is a piano accompaniment in the same key signature, featuring a steady eighth-note accompaniment.

The second system of musical notation consists of two staves. The upper staff is a vocal line with a treble clef and a key signature of one flat. It continues the melodic line from the first system. The lower staff is a piano accompaniment in the same key signature, continuing the eighth-note accompaniment.

The third system of musical notation consists of two staves. The upper staff is a vocal line with a treble clef and a key signature of one flat. It continues the melodic line. The lower staff is a piano accompaniment in the same key signature, continuing the eighth-note accompaniment.

The fourth system of musical notation consists of two staves. The upper staff is a vocal line with a treble clef and a key signature of one flat. It concludes the melodic line. The lower staff is a piano accompaniment in the same key signature, concluding the eighth-note accompaniment.

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# Improvisation techniques of the *repique* drum in Uruguayan Candombe drumming

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## 1 Introduction

### 1.1 Candombe drumming

With its deep African roots, the Candombe tradition is widely acknowledged as one of the most defining features of Uruguayan popular culture. It has long been adopted by the larger society, but remains a symbol of the identity of communities of African descent in Montevideo [1].

Candombe drumming is the essential component of this tradition, and its most characteristic manifestation is the *llamada de tambores*, a drum-call parade taking place specially on weekends and public holidays. On these occasions, groups of drummers meet at specific points of the city to play the drums marching on the street. These groups, called *cuerva de tambores*, typically comprise between approximately 20 and 60 players, but during the Carnival parades they may include even more. Historically, this practice was mostly restricted to certain neighbourhoods or *barrios* in Montevideo, each with a distinctive and recognizable style of performing the rhythm. The three most important styles are Cuareim, Ansina and Gaboto, so named after the central streets of their respective neighborhoods [2, 3].

### 1.2 The drums and their rhythmic patterns

Candombe drumming shares many traits with other drumming styles in the African and Afro-Atlantic music tradition, and its cyclic, *clave*-based rhythm results from the interplay between the patterns of three drums of different size and pitch, called *chico*, *repique* and *piano*. An additional timeline pattern, called *madera* or *clave*, is played by all the drums as an introduction to and preparation for the *llamada* rhythm, establishing the tempo and serving as a mean of temporal organization and synchronization. During the *llamada*, the repiques may also play the *madera* pattern, alternating it with the characteristic *repique* phrases.

Each type of drum has a specific function in the rhythm. The small, high-pitched *chico* drum is the timekeeper, and repeats a simple one-beat pattern throughout the

whole performance, establishing the lower levels of the metrical structure: pulse and beat. The bigger, deep-sounding *piano* drum lays the foundation of the rhythm, delineating the timeline with more complex one-cycle patterns that admit countless variations and ornamentations. The *piano* is also an important stylistic marker, being the drum that more clearly reveals the distinct characteristics of the style of each *barrio*.

The *repique*, the drum with the greatest degree of freedom, introduces an element of syncopation and complexity through a great variety of rhythmic figurations. Although it has a primary pattern or *repique básico*, this drum is essentially an improviser and its repertoire of patterns is difficult to classify. Outstanding *repique* players have easily recognizable personal styles, characterized not only by their particular choice of rhythmic patterns, but also by their sound and the way they “swing” the *repique* pattern[4, 6], two very important stylistic markers that are lost in the transcription.

Figure 1 shows, in a very simplified form, the main patterns of the three drums and the basic *clave* or *madera* pattern, as well as the three levels of the metrical structure: pulse, beat and cycle.



Figure 1: Candombe patterns in simplified form.

## 2 Analysis of the *repique* drum

It has been proposed that the *repique básico* not only may constitute a significant portion of the performance of a *repique* during the *llamada*, but also that, applying a few simple transformational rules, many of the most characteristic *repique* phrases may be derived from it [4, 5].

During this research, several *repique* solos by notable players were transcribed and analysed, representing the two most important traditional styles, Cuareim and Ansina. The database includes field recordings of large *cuerdas de tambores* playing on the street, as well as studio recordings of smaller groups of three to five drummers [7, 8]. Several aspects of the performance of the *repique* drum were of interest: the proportion of cycles of *madera* pattern in the performance, the importance of the primary *repique* pattern

and its derived forms during the improvisation, and the identification of patterns not directly related to the *repique básico*.

All these aspects vary with each player's personal style, which in turn is conditioned by both the neighborhood and the generation they belong to. But the same performer may also develop a solo with different characteristics when playing in a large *cuerda* than in the context of a small group.

Figure 2 shows the transcription of a solo by Pedro "Perico" Gularte, one of the most outstanding *repique* players of the older generation of the Ansina style, while the solo in figure 3 was performed by Wilson Martirena, a player belonging to the following generation of the Cuareim style. These two players have distinct and recognisable personal styles, and their solos reveal very different approaches to all the elements mentioned above. Both examples are excerpts transcribed from field recordings of *llamadas de tambores* performed by the Ansina and Cuareim groups respectively.

Gularte plays two shorter *repique* phrases (9 and 13 cycles long, respectively), with an interposed section of approximately the same length of *madera* pattern. The *repicado básico* also plays a fundamental role in this solo: the first phrase consists of two ornamented expansions of the primary pattern, while the second phrase is based on closely related patterns that can be explained applying a few transformational rules to the *repicado básico* [5, 4].

$\text{♩} = 136$

repique

4

7

10

13

17

21



Figure 2: Transcription of a *repique* solo by Pedro Gularte.

Martirena, on the other hand, plays a longer phrase (22 cycles) without interruption. The primary *repique* pattern also plays more limited role in his solo: it is played for no more than two or three cycles at the beginning, the middle (cycles 11 to 13) and at the end. In the rest of the solo, Martirena plays several patterns not so directly related with the *repicado básico*, including a personal pattern characteristic of his playing (cf. cycles 7 and following).

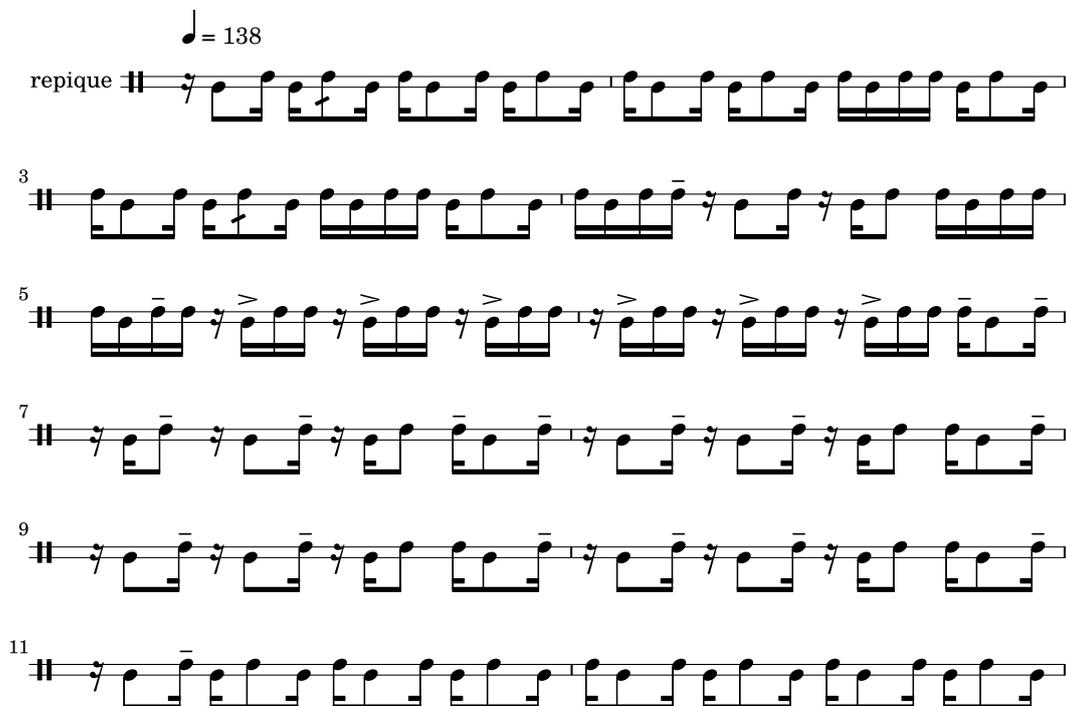




Figure 3: Transcription of a *repique* solo by Wilson Martirena.

Comparing these two examples, it can be seen that the older player relies mostly in the more traditional elements of the *repique* (the *madera* pattern and the *repicado básico* with its direct derivatives), while the younger player departs more from these elements.

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**Specifically Generic Accompaniments:  
Clump Vectors in Guinean Malinke Dance Drumming**

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**Fifth International Conference on  
Analytical Approaches to World Music  
June 2018**

**Introduction**

Guinean Malinke dance drumming incorporates three types of musical parts within a polyrhythmic fabric of four to ten simultaneous patterns: a background of multi-use supporting accompaniments, a middleground of melo-rhythmic themes specific to each piece, and a foreground of licks and improvised passages in dialog with the dancers and unique to each performance. All parts are contextualized by multiple temporal layers, including a steady tactus embodied in the dancers' feet, at least one layer of tactus subdivisions, and a (usually asymmetrical) timeline. This analysis examines the ways in which stock background accompaniments played on bells, *kenkenis* (small stick drums), and djembes shape the musical landscape by providing a context of specific musical relationships.

This analysis is based on two fundamental ideas regarding this genre: that its rhythmic motives have quantifiable shape and direction relative to the multiple temporal layers that contextualize them, and that this momentum often simultaneously inhabits different envelopes relative to different layers. First separating pieces by their use of ternary or quaternary beat subdivisions ("T-3" and "T-4" types), my analytical method focuses on "clumps;" pairs of attacks moving at the fastest increments of the texture in background-layer accompaniments. Clumped attacks have a specific relationship to the time points that contextualize them, which I

code as their “clump vectors:” they move *to* or *from* salient points in time, or are *neutral* if both fall between time points. Vectors are three-digit numbers that reflect the relative “to-ness,” “from-ness,” and “neutral-ness” of each clumped pair of attacks within a particular musical context, with the three digits totaling the overall number of layers in use. My use of these three relationship types is similar to Hasty’s “beginning,” “continuation,” and “anacrusis” in that we both seek to express the momentum that connects temporal events. However, whereas Hasty uses the principle of “projection” to analyze the rhythmic qualities of meter as pieces progress, my vectors provide a profile of the overlapping directions within a repeating cyclic polyrhythmic groove.

## **Analysis**

Thirteen standard accompaniments – seven in T-3 and six in T-4 – are analyzed using clump vectors in two ways. First, vectors are created for the accompaniments compared to all context layers, creating a “potential vector profile.” The results for T-3 pieces, with ten context layer-types, are shown in Example 1 and summarized in Table 1; results for T-4 pieces, which only utilize two context layer-types, are shown in Example 2. Every instance of multiple types of directionality – to/from/neutral – for the same clump reflects the way that it is able to participate in polyrhythmic textures in different ways.

Next, the vectors of accompaniments in specific orchestrations are tabulated using only the applicable context layers. Two of these, “Mendiani” and “Soli,” with orchestrations by *djembefola* Mamady Keita, are shown in Examples 3 and 4. Here, each clump is shown in an actual musical setting, where its vector reflects the multiple directional relationships it embodies. The vectors allow polyrhythmic textures to be compared to one another, and provide a

background basis for an analysis of variations and improvisation in other parts of the musical texture.

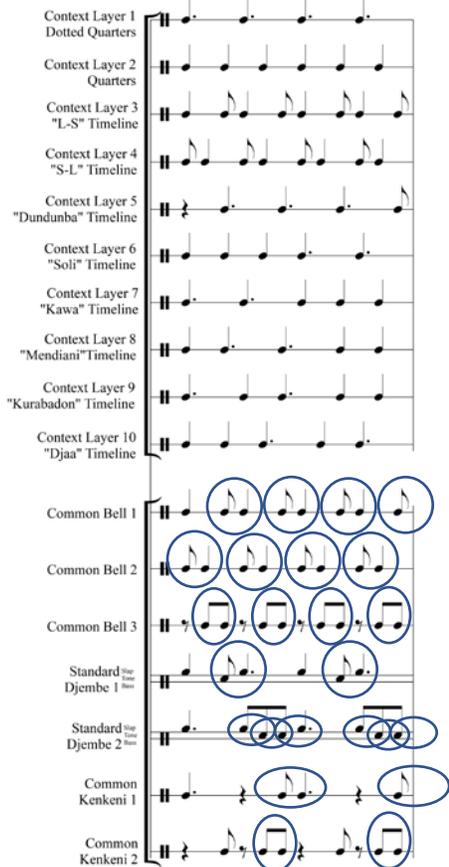
## **Conclusions**

The tools developed and applied in this analysis allow polyrhythmic pieces to be understood and categorized via simultaneous overlapping momentum vectors. Accompaniment patterns interacting in different ways with the multiple temporal layers that contextualize Malinke polyrhythm give this music a depth and flexibility that drummers and dancers utilize in many ways. This is one specific manifestation of what Agawu speaks of when he says “the vibrant life of African rhythm derives precisely from [an] incredible awareness of the aural and choreographic potentialities of its constituent patterns.” (2016, p. 187)

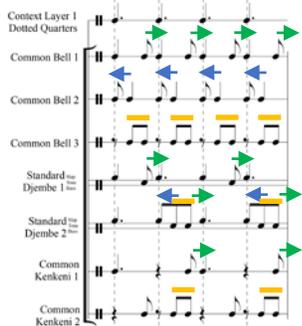
**Example 1: Potential Clump Vectors of Standard T-3 (ternary tactus) Accompaniments**

Vector labels above pairs: TO → FROM ← NEUTRAL —

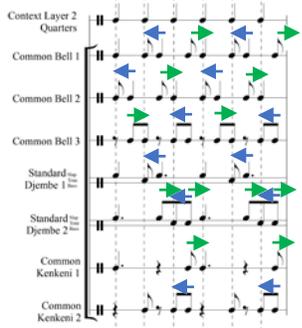
1A. All context layers, all standard accompaniments with clumps circled



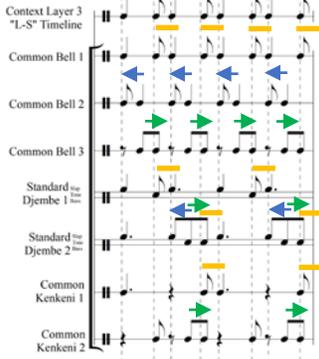
1B. All standard accompaniments relative to context 1, vectors labeled



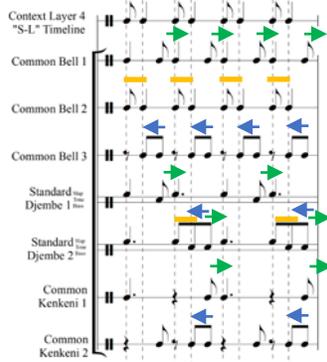
1C. All standard accompaniments relative to context 2, vectors labeled



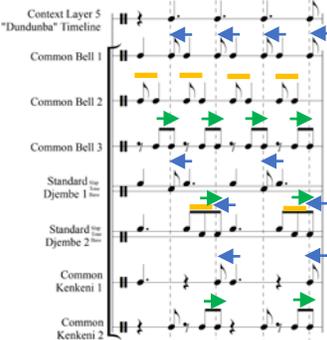
1D. All standard accompaniments relative to context 3, vectors labeled



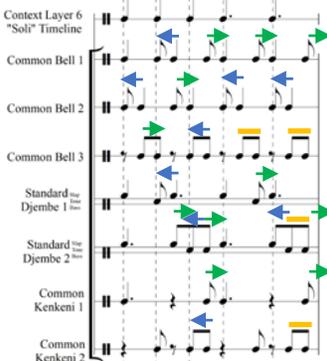
1E. All standard accompaniments relative to context 4, vectors labeled



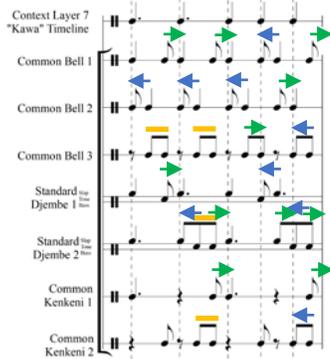
1F. All standard accompaniments relative to context 5, vectors labeled



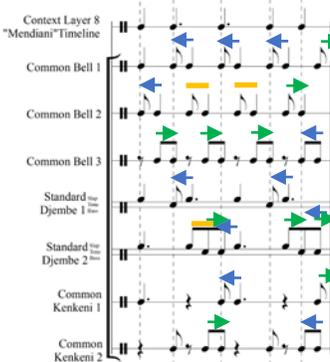
1G. All standard accompaniments relative to context 6, vectors labeled



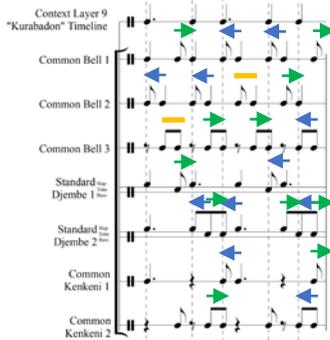
1H. All standard accompaniments relative to context 7, vectors labeled



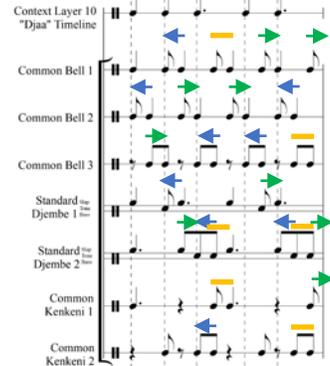
1I. All standard accompaniments relative to context 8, vectors labeled



1J. All standard accompaniments relative to context 9, vectors labeled

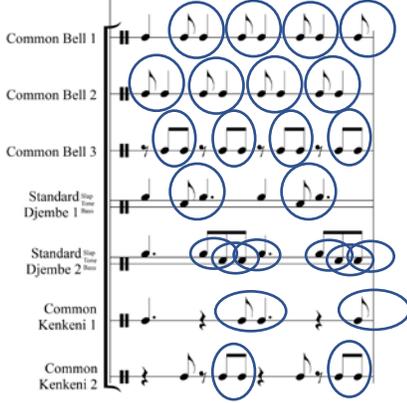


1K. All standard accompaniments relative to context 10, vectors labeled



**Table 1: Summary of Potential Clump Vectors of Standard T-3 (ternary tactus) Accompaniments**

All standard accompaniments with clumps circled



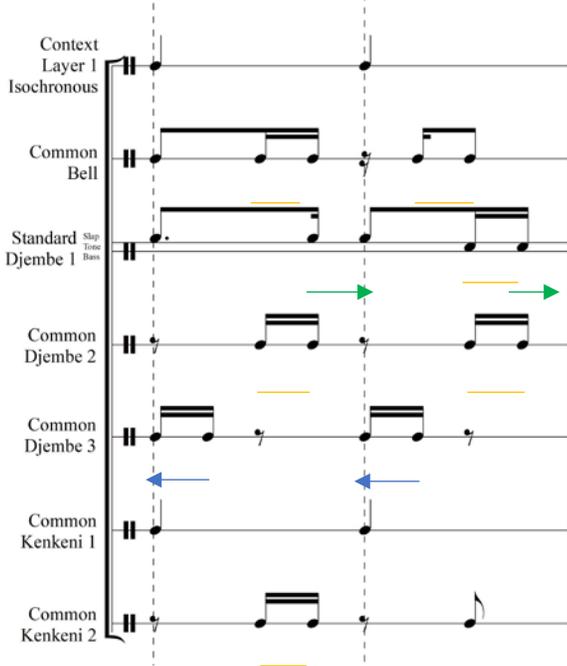
Potential Clump Vectors ( T F N ) for all 10 contexts

Instrument	Clump 1	Clump 2	Clump 3	Clump 4	Clump 5	Clump 6
Common Bell 1	451	532	451	811		
Common Bell 2	082	343	154	442		
Common Bell 3	613	442	622	253		
Standard Djembe 1	451	451				
Standard Djembe 2	343	442	532	442	253	811
Common Kenkeni 1	532	811				
Common Kenkeni 2	442	253				

Example 2: Potential Clump Vectors of Standard T-4 (quaternary tactus) Accompaniments

Vectors: TO → FROM ← NEUTRAL —

2A. Clump Vectors to Context Layer 1 (steady time)



2B. Clump Vectors to Context Layer 2 (timeline)

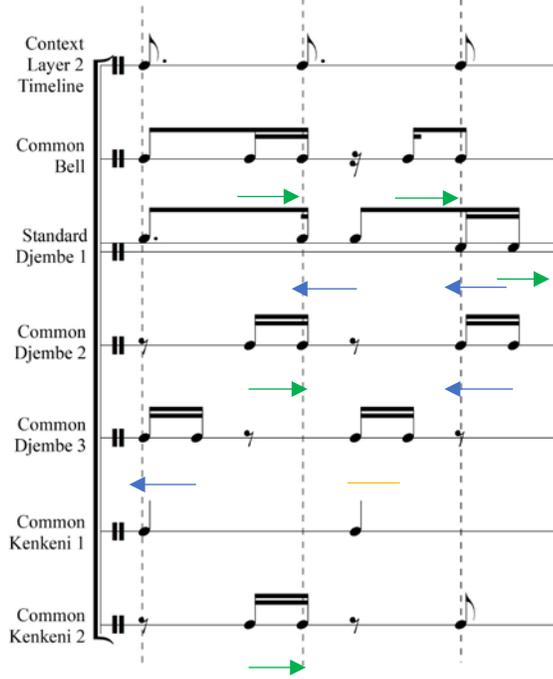


Table 2: Potential T-4 Clump Vectors (TFN):

Bell	NT	NT	
	101	101	
Djembe 1	TF	NF	TT
	110	011	200
Djembe 2	NT	NF	
	101	011	
Djembe 3	FF	FN	
	020	011	
Kenkeni 1	/		
Kenkeni 2	NT		
	101		

Example 3: Sample Orchestration by Mamady Keita with Actual Context Layers and Clump Vectors  
 Vectors: TO → FROM ← NEUTRAL —

“Mendiani”

Musical score for "Mendiani" showing Context 1, Context 2, Timeline, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Blue circles highlight specific notes in Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3.

Inst	1	2	3	4	5	6
Dj 1	TFF 120	TTT 300				
Dj 2	TFN 111	NFT 111	TTF 210	FTT 210	NFF 021	TTT 300
Kenkeni	TTF 210	TTT 300				
Bell 1	TFF 120	TTF 210	TFF 120	TTT 300		
Bell 2	TFF 120	TTF 210				
Bell 3	NTT 201	NFT 111	NTT 201	NFF 021		

Musical score for "Mendiani" showing Context 1, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Green arrows point right from notes in Dj 1, Kenkeni, Bell 1, Bell 2, and Bell 3. Blue arrows point left from notes in Dj 1.

Musical score for "Mendiani" showing Context 2, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Green arrows point right from notes in Dj 1, Kenkeni, Bell 1, Bell 2, and Bell 3. Blue arrows point left from notes in Dj 1, Kenkeni, and Bell 1.

Musical score for "Mendiani" showing Timeline, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Green arrows point right from notes in Dj 1, Kenkeni, Bell 1, Bell 2, and Bell 3. Blue arrows point left from notes in Dj 1, Kenkeni, and Bell 1. A yellow arrow points right from a note in Dj 1.

Example 4: Sample Orchestration by Mamady Keita with Actual Context Layers and Clump Vectors  
 Vectors: TO → FROM ← NEUTRAL —

“Soli”

Musical score for 'Soli' showing Context 1, Context 2, Timeline, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Blue circles highlight specific notes in Dj 1, Dj 2, and the three Bell parts.

Inst	1	2	3	4	5	6
Dj 1	TFF 120	TFT 210				
Dj 2	FTT 210	NFF 021	TTT 300	FTF 120	NFN 012	TTT 300
Kenkeni	NFF 021	NFN 012				
Bell 1	NTT 201	NFF 021	NTN 102	NFN 012		
Bell 2	TFT 210	TTT 300				
Bell 3	TFF 120	TTT 300	TFT 210	TTT 300		

Musical score for 'Soli' showing Context 1, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Green arrows point right from notes in Dj 1, Bell 1, Bell 2, and Bell 3. Blue arrows point left from notes in Dj 1 and Bell 1. Yellow bars are above notes in Kenkeni.

Musical score for 'Soli' showing Context 2, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Green arrows point right from notes in Dj 1, Bell 1, Bell 2, and Bell 3. Blue arrows point left from notes in Dj 1, Dj 2, and Bell 1.

Musical score for 'Soli' showing Timeline, Dj 1, Dj 2, Kenkeni, Bell 1, Bell 2, and Bell 3. Green arrows point right from notes in Dj 1, Bell 1, Bell 2, and Bell 3. Blue arrows point left from notes in Dj 1, Dj 2, and Bell 1. Yellow bars are above notes in Kenkeni.

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“Old, Weird America”: Metric Flexibility in  
Harry Smith’s *Anthology of American Folk Music*

The 1952 release of Harry Smith’s *Anthology of American Folk Music* is often credited with influencing the 1950s and 60s American folk revival. In the liner notes of the 1997 CD release, Griel Marcus describes the music as a point of access to the “Old, Weird America,” and establishes the *Anthology* as a “founding document” of the folk revival.<sup>1</sup> The general influence on mid-century songwriting has been established, but we can also more specifically position it as a precedent for the kinds of metric irregularities found in folk-influenced 1960s singer-songwriter music, particularly Bob Dylan’s early songs.

The eighty-four tracks on the three-volume *Anthology* include “old” songs from folk, blues, old-time, country, Cajun, and gospel genres that were originally released between 1927 and 1932. In this study I investigate how metric irregularities found in the three *Anthology* volumes (“Ballads,” “Social Music,” and “Songs”) result from preferences in grouping guitar strumming, changes of harmony, and accentual-melodic cues at various levels of metric hierarchy.

Many of these tracks feature “Carter-Family style” accompaniment in which a low register bass note sounds on a beat followed by the upper strings on the offbeat.<sup>2</sup> The low bass note helps articulate tactus beats of a given meter (usually duple, 2/4 or 4/4). The grouping of these beats depends on accents created by the performer: seemingly spontaneous decisions about changes of harmony, melodic contour, and vocal emphasis. Any irregular groupings of measures and hypermeasures can be seen as manifestations of the “weird” metric rhetoric of these recordings that influenced mid-century songwriting.<sup>3</sup>

The introduction to “Stackalee” by Frank Hutchinson (Figure 1) is an example of one type of metric irregularity found on the *Anthology*: the influence of harmonic progression on hypermetric reinterpretation. With four-bar units established as a hypermetric norm, irregular unit lengths result from an increase of measures of a particular harmony (for example, a fifth measure of C major in m. 5), fewer measures of a harmony than expected (as with the omitted measure of F major in Figure 1), or added tactus beats within a particular harmonic-hypermetric unit (an example of which occurs in m. 10 on the G major harmony). In another example, this time from the “Social Music” volume, Rev. Moses Mason’s sermon-like song “John the Baptist” features an extended passage of tonic harmony that defies harmonic grouping. The song prolongs tonic harmony through the 33 bars of the first verse, changing harmony for the first time in the song to subdominant in m. 47. In later refrains, Mason cycles through a four-bar I-IV-V-I progression, establishing hypermetric units based on regular harmonic grouping.

We can find similar hypermetric irregularities in Bob Dylan’s “I Shall Be Free, No. 10” from *Another Side of Bob Dylan* (1964), in which Dylan increasingly extends the

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<sup>1</sup> Griel Marcus, “The Old, Weird America,” in *Anthology of American Folk Music* (Smithsonian Folkways Recordings, 1997), 5.

<sup>2</sup> Steven Rings, “A Foreign Sound to Your Ear: Bob Dylan Performs ‘It’s Alright, Ma (I’m Only Bleeding)’,” *Music Theory Online* 19, no. 4 (2013): [18].

<sup>3</sup> Beat-level irregularities of this kind are referred to as “crooked” tunes; see Joti Rockwell, “Time on the Crooked Road: Isochrony, Meter, and Disruption in Old-Time Country and Bluegrass Music,” *Ethnomusicology* 55, no. 1 (2011): 55–76.

dominant harmony by adding extra measures. Figure 2 comprises an extreme example of this, in which the D major dominant begins in m. 37 and extends to m. 55, where it finally resolves to the G major tonic. The lyrics in this section humorously proceed through different types of counting that delay resolution to the tonic, exemplifying Dylan's manipulation of meter for text expression, that came to be a feature of 1960s and 70s singer-songwriter music.<sup>4</sup> The "weird" meter found in Smith's *Anthology* situates these early twentieth-century recordings as precedents for the similar use of meter in folk-influenced songwriting of the later half of the century.

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<sup>4</sup> Nancy Murphy, "'The Times They Are-A Changin': Flexible Meter and Text Expression in 1960s and 70s Singer-Songwriter Music" (The University of British Columbia, 2016).

**FIGURES:**

**Figure 1: Frank Hutchinson, "Stackalee," mm. 1-13**

Figure 1 shows two systems of musical notation for guitar. The first system, measures 1-7, features a C major chord (C4-E4-G4) and an F major chord (F4-A4-C5). The second system, measures 8-13, features a G major chord (G4-B4-D5) and a C major chord (C4-E4-G4). Fingerings are indicated by dots on the strings, and arrows show the movement of the fingers between chords.

**Figure 2: Bob Dylan, "I Shall Be Free, No. 10," mm. 20-57**

2

Figure 2 is a musical score for Bob Dylan's "I Shall Be Free, No. 10". It consists of four systems of music. The first system (measures 20-31) includes a vocal line with lyrics: "I was shad-ow- box-ing ear-ly in the day I fig-ured I was rea-dy for Cass - ius Clay" and a guitar accompaniment. The second system (measures 32-39) includes lyrics: "I said, 'Fee, fie, fo, fum, Cass-ius Clay, here I come Twen-ty six, twen-ty sev-en twen-ty eight twen-ty nine, I'm gon-na make your" and guitar accompaniment. The third system (measures 40-47) includes lyrics: "face look just like mine Five, four, three, two, one, Cass-ius Clay you'd bett-er run Nine-ty nine a hund-red a hund-red and one a hund-red and two, your ma won't" and guitar accompaniment. The fourth system (measures 48-57) includes a vocal line with lyrics: "ev-en re-cog nize you four-teen, fif-teen, six-teen seven-teen eight-teen nine-teen, gon-na knock him clean right out of his spleen" and a guitar accompaniment. A "Harmonica" section is indicated above the vocal line in the fourth system.

Figure 3: Rev. Moses Mason, "John the Baptist," mm. 13-47

13

In cul-cat-ing John The Bap-tist, Preach-ing in the wild-er ness All the child-ren came from east Came from east. For the king-dom

21

of heav-en— it ain't for— this is he That was spok-en by the pro-phe cy,— yeah (vocalizing)—— Came the voice

30

of the one— Cry-ing in the wild-er-ness so bad - ly Stayed a way. All day Lord it made his— bed with Sat-an, in- sane—

39

John had his rai-ment of cam-el hide and a leath-er gird-le, not his own John done saw thatum ber in the mid-dle of the air John

## **Dynamic Grouping Complexes in John Lee Hooker's Blues: a Case Study in 'Metric Particularity'**

Keywords: Blues; Meter; Harmonic Rhythm; Grouping; Phrase Structure

Some definitions of musical meter presume the existence of a hierarchic anticipatory scheme, or metric grid, against which the rhythmic events of the musical surface are interpreted. Hasty (1997) critiques the fundamental premise of this view of meter, arguing instead that the rhythms of a given piece create and express its "metric particularity." Metric theories of Berry (1987 [1976]) and Benjamin (1984) anticipate this aspect of Hasty's critique, defining meter as a special condition of certain grouping interactions. In the proposed paper, I present a case study in metric particularity using John Lee Hooker's blues recordings from the mid-twentieth-century as primary examples. In two excerpts I consider how harmonic, melodic, and accentual elements of the music each propose distinct grouping possibilities, and argue for a conception of metric phase structure based on dynamic interaction among these groups: that is, meter as dynamic grouping complex rather than as grid.

Hooker's music, like most blues, references widely shared harmonic/phrase-structural schemas (e.g. 12-bar blues), stock motives, and lyric formulas (Evans 2007, Stoia 2013, Taft 2006). These stock materials are strongly associated with conventional metric templates, but a blues musician's idiosyncratic combination of stock gestures and schemes often brings about rhythmic irregularity at local and phrase-structural levels. This is especially true in solo performance, where a single performer need not co-ordinate changes and phrase entrances with other band members (Murphy 2015). In my first example I describe Hooker's *Roll 'n Roll* (recorded between 1948 and 1954) as consisting of two basic gestures, each of which is strongly associated with a conventional harmonic rhythm although they are here performed as solo, unaccompanied melodies on voice and guitar. I annotate my own transcription of an excerpt using Hasty's symbols of projective meter to show an emerging metric phrase structure based on the harmonic underpinning commonly associated with the stock gestures of the piece; then, I consider how other groupings based on melodic phrasing or partitioning by accent propose structures that differ considerably from the structure of the implied harmonic rhythm.

The co-presence of and interaction amongst discrete groupings is what affords "metric particularity" in this music. I show that Hooker's idiosyncratic deployment of stock gestures configures them into an interesting dialogic relationship, and that their various combinations and successions create phrase-structural tension both within the opening section of *Roll 'n Roll*, and in the first stanza of *Serves you right to suffer* (1965). With this approach, I avoid casting rhythmic irregularities as obfuscations of, or deviations from, a presumed underlying isochronous metric structure, instead describing dynamic interaction among several discrete groupings as accruing metric particularity, and positively contributing to the creation of the unique 'time-sense' of a given phrase, section, or piece.

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