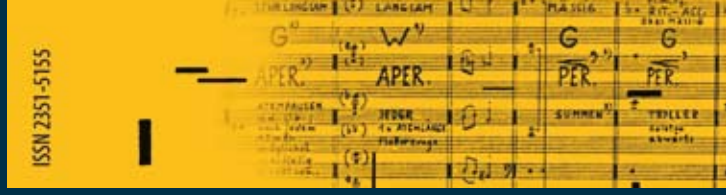

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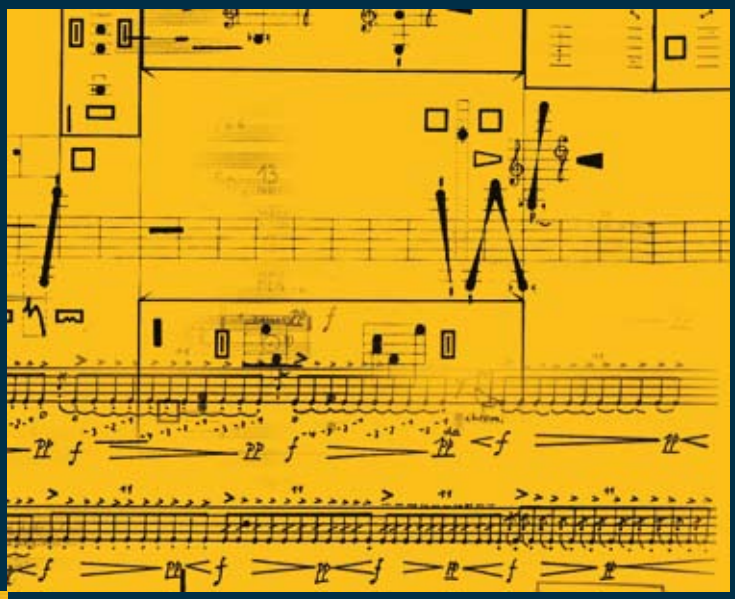
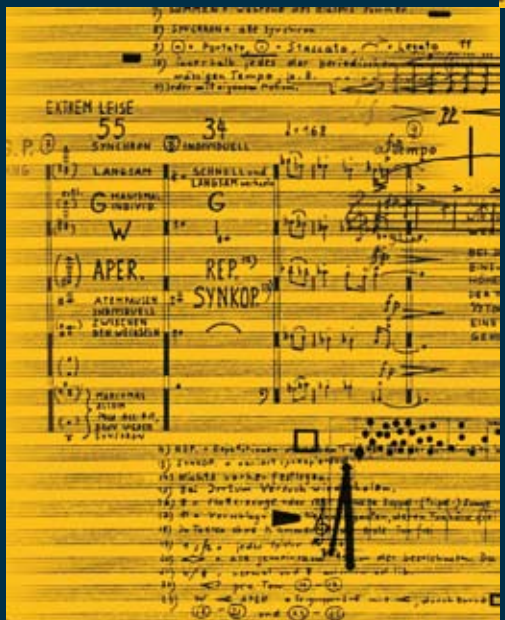
MUZIKOS KOMPONAVIMO PRINCIPAI: ritmo fenomenas

XIII

PRINCIPLES OF MUSIC COMPOSING: The Phenomenon of Rhythm





Lietuvos muzikos ir teatro akademija
Lietuvos kompozitorių sąjunga

Lithuanian Academy of Music and Theatre
Lithuanian Composers' Union

13-oji tarptautinė muzikos teorijos konferencija

Vilnius, 2013, spalio 16–18

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MUZIKOS KOMPONAVIMO PRINCIPAI:

ritmo fenomenas

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The Phenomenon of Rhythm

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Turinys / *Contents*

Pratarmė

Skaitytojui pateikiamas leidinys – mokslinių straipsnių rinktinė, sudaryta pranešimų, pristatytų XIII tarptautinėje muzikos teorijos konferencijoje „Muzikos komponavimo principai: ritmo fenomenas“, pagrindu. Konferencija vyko 2013 m. spalio 16–18 d. Vilniuje, pažymint 80-ąjį Lietuvos muzikos ir teatro akademijos Kompozicijos katedros jubiliejų; ją rengė Lietuvos muzikos ir teatro akademija ir Lietuvos kompozitorių sąjunga.

Konferencijoje savo mokslines idėjas pristatė beveik dvi dešimtys muzikologų ir kompozitorių iš įvairių šalių – Brazilijos, Lenkijos, Graikijos, Didžiosios Britanijos, Rusijos, Kanados, Portugalijos, Ukrainos, Prancūzijos, Egipto, Ispanijos ir Lietuvos. Šiame leidinyje spausdinami moksliniai straipsniai išdėstyti pagal keturias potemes.

I potemė – *Teoriniai ritmo aspektai*. Pasak muzikologės Justynos Humięckos-Jakubowskos, naujieji muzikos iššūkiai (laikas traktuojamas kaip momentų serija) inspiruoja naujos analitinės metodologijos būtinumą, o tai organiškai paremtų kompozicinę kūrybos proceso idėją moksliniais, tarpdisciplininiais muzikologiniais tyrimais. Damien Verron išskirtinį dėmesį teikia ritmui kaip laikinei bet kurio įvykio charakteristikai, antropologiškai susijusiai su muzikos skoniu. Svetlana Chashchina gilinasi į archajinę intonacinę ritmo prigimtį, kuri skiriasi nuo žinomo ritmo proporcijų ir kombinatorikos pojūčio. Intonacinio ritmo apraiškos atgimsta šiuolaikinės muzikos reiškiniuose. Markos Lekkas interpretuoja ritminį muzikinį laiką kaip užpildytą skambesio įvykių naratyvą. Pauxy Gentil-Nunes pritaiko matematinę metodiką nustatant ritminį dalumą implikuojantį muzikinės faktūros bei formos profilius.

II potemė – *Ritmas šiuolaikinėje muzikoje*. Autorių darbuose nuodugniau tyrinėjamos naujos ir ne tokios tradicinės ritmo apraiškos. Antai Katarzyna Bartos lygina folklorinių ritmo elementų traktuotę G. Bacewicz kūriniuose su W. Lutosławskio aleatoriškai išlaisvinta ritmika. *Mārtiņš Viļums* ritmo-laiko muzikos aspektą susieja su skambesio erdve ir šioje konjunkcijoje atranda savitas G. Scelsi Styginių kvarteto Nr. 4 artikuliavimo galimybes. Cibele Palopoli tyrinėja tradicinės notacijos reikšmes interpretuojant Luciano Berio kūrinio (*Sequenza I* fleitai solo) ritminį profilį. Mykolas Natalevičius analizuoja *drone* (gausmo) muzikos laiko aspektus, kur įprastos ritmo sąvokos nepritaikomos. Tad išsamiai operuojama makroproporcijų kategorijomis.

III potemė – *Ritmo santykis su tekstu, ritualu ir drama*. Stef Conner, tyrinėdama senąją anglosaksų poeziją, atranda šiandien nežinomas metrines struktūras ir akcentinius faktorius, leidžiančius atnaujinti muzikos medžiagą kur kas natūraliau nei matematinių formulių kombinatorika. Gabija Rimkutė ir Judita Žukienė pabrėžia variantinio ritminio kartojimo reikšmę sakralumo raiškai muzikoje; tai leidžia atskirti sakralinius epizodus nuo pasaulietinių tyrinėjant lietuvių kompozitoriaus A. Remesos kūrinius.

IV potemė – *Etniniai ir istoriniai ritmo aspektai*. Carlos de Lemos Almada tyrinėja braziliškojo *choro* ritminės struktūros aspektus – ritminių motyvų kombinatoriką, jų hierarchinį susisaistymą, pasiūlo formalizuotą matematinį modelį *choro* duomenų sisteminimui. Heidi Chan atskleidžia ritminių vienetų dalijimo ypatybes Pietų Indijos Karnataka muzikoje; autorė pagrindinį dėmesį sutelkia į *karnatic* ritminės sistemos branduolį *nadai* – praktinio muzikavimo sąvoką. Kalliopi Stiga išryškina dvilypę ritmo funkciją M. Theodorakio tetralogijoje *Cities*; čia ritmas pasireiškia kaip muzikos struktūrą organizuojantis elementas ir graikiškumą įženklinantis faktorius.

Tikimės, kad tryliktasis „Muzikos komponavimo principų“ tomas sulauks gausaus skaitytojų būrio ir bus naudingas kiekvienam besidominčiajam muzikinio ritmo fenomenu. Redakcinė kolegija tikisi skaitytojų dėmesio tiek Lietuvoje, tiek užsienyje. Būsime dėkingi už visas pastabas ir atsiliepimus apie leidinį. Organizatorių vardu dėkoju visiems prisidėjusiems prie šio leidinio rengimo ir leidybos.

Prof. dr. Rimantas Janeliauskas

Foreword

This publication is a collection of scientific articles compiled on the basis of the papers delivered at the 13th international conference "Principles of Music Composing: The Phenomenon of Rhythm". The conference was held in Vilnius on 16–18 October 2013 to mark the 80th anniversary of the Composition Department of the Lithuanian Academy of Music and Theatre; it was organised by the Academy and the Lithuanian Composers' Union.

About twenty musicologists and composers from Brazil, Poland, Greece, Great Britain, Russia, Canada, Portugal, Ukraine, France, Egypt, Spain and Lithuania participated in the conference. The articles in this collection are divided into four sub-themes.

Sub-theme I is *Theoretical Aspects of Rhythm*. According to musicologist Justyna Humięcka-Jakubowska, new musical challenges (time is treated as a series of moments) inspires the necessity of new analytical methodology that would support the idea of compositional creative process with scientific, interdisciplinary musicological research. Damien Verron pays exceptional attention to rhythm as a temporal characteristic of any event that is connected anthropologically principles with any musical taste. Svetlana Chashchina deals with the archaic intonational nature of rhythm that differs from the sensation of proportions and combinatorics of known rhythm. Manifestations of intonational rhythm are reborn in the phenomena of contemporary music. Markos Lekkas interprets rhythmic musical time as a narrative filled with sound events. Pauxy Gentil-Nunes applies mathematic methods in order to determine rhythmic divisibility implicating the profiles of musical texture and form.

Sub-theme II is *Rhythm in Contemporary Music*. In the papers new and less traditional rhythmic expressions are given more attention. Katarzyna Bartos compares the treatment of folklore rhythm elements in the compositions of Grażyna Bacewicz with Witold Lutosławski's aleatoric free rhythmics. Mārtiņš Viļums links the rhythm-temporal music aspect with sound space and in this conjunction discovers the original articulation possibilities in Giacinto Scelsi's String Quartet No. 4. Cibele Palopoli researches into traditional notation senses interpreting the rhythmic profile of Luciano Berio's composition *Sequenza I for solo flute*. Mykolas Natalevičius analyzes temporal aspects of *drone* music, where usual rhythmic concepts are not applicable and therefore macro-proportions categories are often used.

Sub-theme III is *The Relation of Rhythm with Text, Ritual and Drama*. Stef Conner, analyzing early Anglo-Saxon poetry discovers metric structures and accentual factors unknown today, which makes it possible to renew musical material in a more natural way than the combinatorics of mathematical formulas. Gabija Rimkutė and Judita Žukienė underline the importance of the variant rhythmic repetition to the expression of the sacral in music. This makes it possible to separate sacral episodes from secular in the works of the Lithuanian composer Alvidas Remesa.

Sub-theme IV is *Ethnical and Historical Aspects of Rhythm*. Carlos de Lemos Almada investigates the rhythmic structure aspects of the Brazilian *choro* – the combinatorics of rhythmic motifs and their hierarchical links and suggests a formalized mathematic model to systemise the data of *choro*. Heidi Chan demonstrates the peculiarities of the division of rhythmic units that exist in the Karnataka music of South India. The author focuses attention on the *karnatic* rhythmic system kernel *nadai*, which is a concept of practical music making. Kalliopi Stiga reveals the double function of music rhythm in Mikis Theodorakis' tetralogy *Cities*. On the one hand here rhythm manifests itself as an element that organizes music structure; on the other hand it is a factor that marks Greek identity.

We hope that Volume XIII of "Principles of Music Composing" will be popular with the readers and will attract all those who are interested in the phenomenon of music rhythm in this country and elsewhere. All comment and criticism are welcome. On the organizers' behalf I thank all who contributed to the preparation and publication of this volume.

Prof. Dr. Rimantas Janeliauskas

1

TEORINIAI RITMO ASPEKTAI | THEORETICAL ASPECTS OF RHYTHM

Justyna Humięcka-Jakubowska

The Theoretical Conception of Rhythmical Organization and its Practical Manifestation. Some Examples of 20th-century Avant-garde Composers

1. Introduction

The heritage of composers associated with the Darmstadt School served as a model for the development of new music. Concerning the general principle of composition, one can note that the composers realized their musical ideas in very different ways. However, all of them were taking great interest in the question of the perceiving of rhythmic structures and of the experiencing of musical time, which led them to a radical change of style, and to breaking with the common musical language. Their concepts led them further and further away from what their audiences were able to catch and understand. The density and complexity of musical structures meant that they were not designed to be grasped in such a way as they unfolded in real time during the performance. The composers found a new way of thinking and working on their music in organizing musical rhythm and time. A composer's idea is characterized either by an intuitive approach, or else by a scientistic approach, in which genuine knowledge about reality is acquired through scientific cognition, based on concrete results of research in particular scientific disciplines. In the works of modern composers, the coexistence and interaction of very different rhythmic structures illustrate some aspects of their new treatment of musical time and continuity.

As has been observed by Kramer, these new composers' strategies entailed new listening strategies, more flexible and creative (Kramer, 1998). Therefore one can note such modes of listening as (1) "deconstructing" by the listener of the musical presentation and reassembling the apparent musical events, (2) cumulative scanning of a series of self-contained "moments", (3) listening to the sensations of motion and continuity without comparison to familiar temporal patterns, and (4) perception of "vertical time" during virtual stasis in musical work. Music of this density and complexity demands to be heard repeatedly, or to be studied outside of performance time. In music – and that is the subject under discussion – the question is, how can musical context affect the listener's way of perceiving the passing of time, and how can musical time, whatever it is, continue to exist during the musical experience. To find the answer and the knowledge, one must know what kind of compositional ideas were born during the creative process.

2. The composers' strategies in their speeches and writings

Composers from the Darmstadt School have stereotypically been linked with serialism and/or strict formalism. However, their individual extensive theoretical writings and music indicate a wide range of different compositional strategies. These strategies include the main idea (or ideas) of creating a music structure, a set of concepts through which these ideas are defined and explained, and also the technical details of the creation process. What is interesting is that, on many occasions, it is the perception of rhythmic structure and time that is the main problem under consideration.

Of particular interest seems to be the approach of three composers: Karlheinz Stockhausen, György Ligeti and Gérard Grisey. Each of them represents a slightly eccentric and hard to conceive way of understanding and creating the temporal music dimension.

2.1. Karlheinz Stockhausen

Karlheinz Stockhausen is an example of an artist who never ceased to surprise us with his ideas and his musical works. At their centre was the quest for a new balance, based on an intimate connection between speculation and intuition. The role of intuition was limited to the selection of specific tools and procedures, and, after they had been used, the image of the musical structures would be formed.

On the other hand, his speculative manner of thinking and music creation was fully manifested in the crucial domain of his experiment – the musical time. In serial music, Stockhausen tried to control every different parameter by the same system of number-rows. The basis of his thesis as to "... *how time passes* ..." is to look at pitch and duration in exactly the same way (Stockhausen 1959). He explained all the musical parameters as *Zeitproportionen*: "Music consists of order-relationships in time; this presupposes that one has a conception

of such time. We hear alterations in an acoustic field: silence-sound-silence, or sound-sound; and between the alterations we can distinguish time-intervals of varying magnitude. These time-intervals may be called *phases* ... Our sense-perception divides acoustically-perceptible phases into two groups; we speak of *duration* and *pitches*" (Stockhausen 1959: 10).

His new morphology of musical time, reflected in the article, also introduced new terminology. However, it is worth mentioning that the new terminology was often criticized. It was pointed out that his technical language was his own invention, but the terms derived from acoustics did not possess their proper acoustic meanings (Backus 1964).

Stockhausen indicated that the difference between duration and pitch was not one of nature, but only of speed of vibration and of acoustic spectra. The length of the durations may be more or less than 1/16 sec, the threshold for perceiving pitch. From Stockhausen's point of view, the fact that, if the speed is increased, the impulses blend into one continuous sound that becomes a clearly recognizable pitch, confirms that duration and pitch are essentially related to each other. They only belong to two different "temporal realms" (*Zeitbereiche*). He also introduced the concept of "scale of duration" and proposed a system of equally-tempered "fundamental durations" (Stockhausen 1959: 12), analogous to the equal temperament of fundamental pitches. As a result of this, the term "subharmonic duration-scale" means that (transposed to the pitch area) the durations in the scale form a subharmonic spectrum, i.e. an inversed harmonic spectrum. Stockhausen noted that serial music which uses this type of duration-scale has an excess of long note values (Stockhausen 1959: 13), and therefore he also introduced a harmonic series of proportions, equal to the overtone series ("harmonic duration-scale"), and ultimately, he created the "chromatic duration-scale".

It seems characteristic that modern composers tend to shun exact periodicity and repetition in favor of continuing development of musical structures, whatever they are. Although Stockhausen did not create a scale for regular and irregular repetition, he concluded: "In order to compare one group of phases [= time-intervals] with another, we make a distinction between 'periodic' and 'aperiodic' phase-groups, and, between these extremes, we distinguish a greater or smaller number of transitional stages (as deviations from either periodicity or aperiodicity, depending on which predominates)" (Stockhausen 1959: 10).

In the above context, Stockhausen also noted that if one omits, or ties, duration in the different layers in the "duration-spectra" to too great an extent, one runs the risk of "[doing] away with periodicity, and thus with the 'harmonic' effect of the whole formant-spectrum; one composes the time counterpart of 'noise'" (Stockhausen 1959: 29).

Stockhausen's strategy of using the temporal dimension of music covered also a discussion on performance and the perception of time. He introduced the term "time-field" (Stockhausen, 1959: 30), meaning a field with precise durational value at the centre and also with a certain bandwidth of freedom to either side of the centre. This is the delimited area of possibility, in which the value of the note could be performed. As a result of this reasoning, there are two ways of notating duration, a "pointillistic", i.e. exact, duration, and a "statistical" one, i.e. duration within the time-fields, which is useful in the perception of the macrostructure in complex musical events. According to Stockhausen: "Such a switch, from 'pointillist' to 'statistical' perception of time has become a further occasion for the statistical composition of fields. But this means that the elements themselves are no longer presented as discrete degrees of some scale or other ... Rather, a field-size, in the sense described above, is substituted for each discrete value" (Stockhausen 1959: 32).

At this point it is worth noting that "the statistical composition" has been linked to the concept of "mass-structure", in which, if the individual events are separately perceptible, then the statistical quality falls away, because the statistical quality requires crowding in a short period of time. Stockhausen explained the "pointillistic" style, of precisely specifying all the parameters for each musical events, as merely a special case of the mass-structure in which all variability factors are zero. Therefore the musical event is fixed compositionally as a point rather than a field. He has also stressed, that: "A particular number of single field-sizes gives a group-field. Here the size of the group-fields depends on the number and size of the single fields. Similarly, it is possible to start from group-fields of various sizes, and form these to arrive at the magnitude-proportions of the single fields" (Stockhausen 1959: 35).

In this context Stockhausen described his attitude towards continuity in music: "If a series of field-sizes served to present a time-structure in which the composed fields mediated between the pointillist and statistical extremes, then we should really be dealing with a new musical time-continuum: time as a discontinuum and time as a continuum would then merge in a supra-ordered concept of serial field-time" (Stockhausen 1959: 34).

Concerning the time-interval between musical events, Stockhausen said: "We experience the passage of time in the intervals between alterations: when nothing alters at all, we lose our orientation of time. Thus even the repetition of an event is an alteration: something happens – then nothing happens – then again something happens. Even within a single process we experience alterations; it begins, it ends" (Stockhausen 1958: 64).

And inspired by information theory, he also noted in the context of perception: "An apparent paradox is immediately explained: the greater the temporal density of unexpected alterations – the information content – the more time we need to grasp events, and the less time we have for reflection, the quicker time passes; the lower the effective density of alteration (not reduced by recollection or the fact that the alterations coincide with our expectations), the less time the senses need to react, so that greater intervals of experiential time lie between the processes, and the slower time passes" (Stockhausen 1958: 64).

According to Stockhausen, the unity of musical time is a convention, which is dependent on the choice of method of composition and associated with a strongly individualized conception of existence. It seems significant that he remained convinced that "the place of time is not within space, but it is a space". Stockhausen took most seriously the problem of rhythmic and temporal relations in music in his writing. He also saw multi-dimensionality of time and composition. The choice of method of composition was, for him, the choice of extremes, between which there are many stages.

2.2. György Ligeti

Ligeti introduced – in a sense – a psychological approach to music creation. The content of his dreams was manifested by himself in a particular formal/technical aspect and also in the general character of the corresponding work (Ligeti 1993). Finally, his music creation derived its norms from psychological logic, from the psyche of his feelings and the physiology of his sensations. He was deeply aware of his unique creative attitude. Therefore he was an independent composer, despite the trends within the highly active avant-garde musical milieu centered around the Darmstadt School. "I'm basically doing all I do in the most amateur way, just trying to realize something that I imagine in my ear, in dreams. I use techniques, of course, but I forget them after writing and I have no overall scheme or permanent procedure. People of my generation truly believed that music could be explained and structured in a pseudo-mathematical way, but I never believed that" (Benjamin 2007).

Musical works conceived by Ligeti were based on his extraordinary imagination. From this point of view, the fact that he said many negative things about the elementary application of serial principles to music is hardly surprising. He believed that: "Serial music is doomed to the same fate as all previous sorts of music; at birth it already harbored the seeds of its own dissolution (Ligeti 1965: 14). Integral-serial composition was born under the sign of the totally static; ... 'Rigidity' and 'static' are not meant as negative categories at all ... This music is like hanging carpets of mighty oriental quietness, because the forces that drive on the flow of the form have been de-activated" (Ligeti 1965: 16).

The perception of music was a very important factor which he took into consideration while working on the musical pieces. He wanted to achieve a single basic order that would produce analogous structures on the various levels of perception and understanding. Ligeti claimed that a musical event derived from imagination can only become audible if it is based on consistent principles. The inaudible structure does not justify the audible music, but a structure itself is necessary to know what the music should sound like. Therefore Ligeti believed: "In working out a notional compositional structure the decisive factor is the extent to which it can make its effect directly on the sensory level of musical perception" (Ligeti 1983: 131).

This had an impact on his understanding of musical form and time in music. Ligeti was interested in musical forms which are "object-like", rather than "process-like", and he was also interested in the non-teleological nature of musical time. As a result of this, the musical form – for him – was a process of temporal transformation. In terms of form, Ligeti identified the "balanced, or static form"; the "dynamic, restless, fragmented forms" (also called "interlocked" or "split"); forms "like a precision mechanism"; and the "kaleidoscopic" type, made up of "separate and contrasted musical shapes" (Ligeti 1983: 134–135). As to the non-teleological nature of his musical time, Ligeti said: "It is music that gives the impression that it could stream on continuously, as if it had no beginning and no end; what we hear is actually a section of something that has eternally begun and that will continue to sound forever" (Ligeti 1983: 84).

Ligeti created his musical structures in such a way that the time sense exhibited by such type of music, is – as has been determined by Jonathan Kramer – a "nondirected linearity". On the occasion of the performance of *Piano Concerto* composed by Ligeti, he referred to his compositional goal: "I favor ... music as structure that,

despite its unfolding in the flux of time, is still synchronically conceivable, simultaneously present in all its moments. To hold on to time, to suspend its disappearance, to confine it in the present moment, this is my primary goal in composition" (Ligeti 1988: 13).

Ligeti used rhythm as one of the determining factors in the shaping of a musical structure. In the case of his music, one could speak of "progressive metamorphosis of rhythmic constellations". What one should understand from his interviews or conversations is that Ligeti's "granular" conception of musical event creation and the perceived rhythm is based on emerging patterns and is different from the articulated rhythm. For example, he said: "What you perceive as rhythm is not rhythm coming from the succession of notes your fingers play. The actual rhythm of the piece is a pulsation that emerges from the distribution of the notes, from the frequency of their repetitions ... the accelerando of the rhythm is therefore the result of an increased frequency of a note, it is realized through a modified note distribution" (Ligeti 1983: 61); "what attracts me is the idea of superimposing several levels, several different time-girds moving at different speeds, and so very subtly achieving rhythmical deviations" (Ligeti 1983: 108).

Characterizing the temporal dimension and organization of Ligeti's music, one should also stress that Ligeti wrote the various rhythms in different tempi as well as by different subdivisions. This strategy produces an extremely complex relationship between the instruments, with virtually no coinciding of attacks. In the *patterns-meccanico* compositions, for instance, the rhythmic activity is of several types. These types include the readily audible pulsing rhythmic patterns – the effect of entrances and exits of pitches through the process of pitch shifts – and also the subtle rhythmic shadings of pattern-beginning accents. One can hear the acceleration and deceleration pulses, which are dependent on the frequency of the appearance of a pitch. As a result, there are rhythmic patterns in the absence of durational diversity.

Despite that, a key feature of Ligeti's style was the use of extraordinarily dense polyphony, complexes of musical timbre and structures so rich and intense that they virtually dissolved the distinctions of melody, harmony and rhythm; in terms of rhythm – or, perhaps more fundamentally, the flow of time in his music – he was one of the most original of all 20th-century composers.

2.3. Gérard Grisey

Grisey's approach to musical material is very much like that of a scientist investigating the nature of the sound, the musical event and its unfolding in time. During the 1990s, Grisey was fascinated with the processuality of time and form. He understood time in music in a particular way, not identifying it with the use of long and short rhythmic values of sounds. Instead, he considered that time was stretched out in all directions. Consequently, it needed to be stated what stretched-out time was, and how one should compose in order to achieve stretched-out time in a work without employing structures like chromatic clusters (as in Ligeti's *Atmospheres*). Grisey was convinced that the answer to this question would be the true starting point for spectralism (Bündler 1996).

For Grisey, real musical time was only a place of exchange and accord among a multitude of times (Grisey 1987). In compositional tradition, the time occurring within musical structures is interpreted as a straight line, which can be divided according to the proportions fixed by the composer. The listener perceiving the music stands, as it were, in the middle of this line. According to Grisey, such an understanding of musical time is a pure abstraction, not reflected in real perception. In actual fact – so Grisey held – time perceived by the listener to music is observed from the level of another time, which is strictly linked to the rhythm of our lives. The exchange and accord among various layers of time – between them there occur crossings and open spaces, which can, for example, converge – result from this dynamic, which in turn is an effect of the interactions that arise between the psychophysiological time of hearing (the rhythm of one's heart and breathing and being increasingly fatigued by listening) and the mechanical time of the sound. Asking himself the question how to treat time in music, Grisey claimed that there was no notion in the world which could state unequivocally that something lasts too long or not long enough. Everything depends on the kind of information being transmitted.

During a certain period in his reflections on music, Grisey was influenced by Conlon Nancarrow, who created music in a condensed time – the kind of music written for or by insects or small creatures. Grisey tried to integrate such an extremely condensed time with time related to the tempo of spoken language and with stretched-out time (Bündler 1996). He considered that the creation of music ought to refer to the direct composing of musical time, which can be captured in the act of perception, and not to time measured beyond the actual impressions – to chronometric time. Between two successive sound events, there exists

a "density of the present", of variable dimensions (Grisey 1978). Three kinds of time can be distinguished, depending on the relationship that exists between two successive events. Small differences between the events produce a natural passage of time, as it were – time with a specific velocity, analogous to the tempo of language. The occurrence of an extremely different event after a previous event disrupts the linearity of the passage of time: time contracts. If the succession of events is not surprising, and is even predictable, for the listener, then the "density of the present" increases and time expands. Focussing the experience of music on some detail – on the internal structure of a sound – also expands time; in this case, everything occurs as if in slow motion. Grisey ascribed this contraction and expansion of time to the existence of "holes in time", in its linear passage (Grisey 1978). He was interested in the way time was perceived not only by people, but also by other living beings. The effect of this reflection is the definition of expanded, stretched-out time as the time of whales. Grisey indicated that in the world of birds and insects, everything happens more quickly, and so he called contracted time the time of birds or the time of insects. Grisey understood music and the forms in which it is expressed not as a configuration of musical structures construed of sounds, but as pure duration. "What a utopia his spatial and static version of time was ... What a spatial view of musical time – but also what anthropomorphism there is in this image of man at the center of time, a listener fixed at the very center of the work to which he is listening! One might say that a truly Copernican revolution remains to be fought in music" (Grisey 1987: 242–243).

In other words, Grisey distinguished three layers in music that interpret time. The first is *the skeleton of time*, which is the basis for the musical structure and it is the equivalent of the temporal division for the musical events, but not the sounds themselves. The second, *the flesh of time* refers to the sound material itself. Grisey demanded the qualitative approach to time with regard to this layer (but in regard to *the skeleton of time* he indicated the quantitative approach). Finally, the third is *the skin of time*. It is related to the psychological and sociological aspects of music, and as Grisey stressed, it is the: "place of communication between musical time and the listener's time" (Grisey 1987: 272).

As to the perception of musical time, Grisey said that listeners needed: "A kind of exceedingly simple cues that can be perceived and remembered. We hold on to two kinds: the rhythmical periodicity and the harmonic spectrum (another kind of periodicity)" (Grisey 1978: 74).

Moreover, he observed that periodicity and aperiodicity possess important signification in musical expression. "Periodicity is irreplaceable; it allows a pause in the music's unfolding, the suspension of time and, sometimes, a redundancy – helpful to our powers of comprehension. When the musical structure demands it, we use it for its intrinsic qualities, avoiding both rejection and obsession" (Grisey 1987: 247).

In this context, one must add that Grisey defined the so-called "scale of complexity". The task of this scale is to show the degree of regular repetition in the succession of time points in musical works. It is the degree of predictability in the basic rhythmic structure for the piece. As can be expected, the periodicity shows the maximum predictability and at the same time the most regular repetition. The average predictability in this scale is a feature of the so-called "continuous-dynamic". It can be either a continuous acceleration or a continuous deceleration, using either adding/subtracting a constant duration to the preceding duration, or multiplying/dividing the preceding duration by a constant. "Discontinuous-dynamic" is less predictable, it possesses slight predictability. There are such situations, when, if an accelerando has reached a certain speed, we could make a sudden jump to a more rapid event-frequency and then continue our accelerando from there, or when the continuous-dynamic sequence indicates some deviations. "Statistical" in Grisey's scale possesses zero predictability and shows the least regular repetition. In this case the length of the temporal division is determined at random. As Grisey stressed, this is when there is no logical succession for the durations, "like a veritable white noise of durations" (Grisey 1987: 256). Finally, it is worth quoting Grisey's ideas concerning the relation between time perception and musical events in his own words: "Our perception of time is sometimes the opposite of how we remember it: in a busy day time can seem to pass quickly as we experience it, but on recalling the day we say 'what an interminable day!' Similarly, to a quiet day corresponds the perception of time passing slowly and the memory of a day soon over" (Grisey 1987: 272–273).

Through this example, he wanted to explain the possibilities of listening to music. One can focus on either its macrostructure – the case in which time passes at high speed and the listener can only grasp the overall musical structure – or its microstructure – the case in which the degree of alteration is small and the listener can focus on the sound qualities of the musical events. These possibilities were referred to by Grisey as "depth in music", and to control the "play with the zoom lens back and forth" he created the so-called "scale of sound proximity".

3. The musical exemplifications of the composer's ideas

One can observe the specific relation between the score and hearing the composition, between music's written and audible level. Some composers tend to allow themselves many exceptions from their compositional strategies. In such situations, the composer's musical intention is different from his theoretical ideas. But some of them are consistent in the use of their theoretical system. One should remember that, in the perception of musical time, there are many factors beyond the composer's control. First of all, it is dependent on the listener, namely, on his/her capability of memorizing of music movement. Let us look at some examples.

3.1. Karlheinz Stockhausen

Stockhausen's new morphology of musical time is reflected, for instance, in his *Zietmasse* (1955–1956) for five woodwind, *Gruppen* (1955–1957) for three orchestras, *Klavierstück XI* (1956), *Zyklus* (1959) for solo percussionist, and *Carre* (1959–1960) for four orchestras and four choirs.

One should note that the musical works mentioned above were written, more or less, at the same time. Moreover, they were embedded in the context of serial thinking and composing – or, perhaps more fundamentally – organizing which grew up around 1950. Their common feature is the integration of real space into the creative process, and also the attempt at converting all the time units of human experience into music. Space and time are very important in Stockhausen's creative work – in musical work and as a subject of theoretical reflection. Therefore, each of the mentioned works may be – to some extent – an exemplification of the composer's theoretical considerations.

In *Klavierstück XI* – which is celebrated for its "open form" – the rhythms for the entire work were composed first. All of the nineteen fragments that constitute the work were composed in accordance with a matrix system of serial polyphony. The rhythm matrices were serially reordered by number matrices and combined together to form the separate columns of the final rhythm matrix. The pitch structure of *Klavierstück XI* was achieved by translating duration proportions between adjacent durations, occurring within the rhythmic structures derived from the final rhythm matrix, into pitch fluctuation. In *Zeitmasse*, in turn, Stockhausen used a two-dimensional surface. In this musical work, one can find – on the one hand – either tempo-conformity or tempo-diversity, and – on the other hand – either metrical regularity or rhythmic irregularity. These combinations cover, for instance, parts which may be synchronized metronomically but pointillistically scattered, or parts which may be metrically regular but independently accelerating, retarding or stable in tempo. In this work, the treatment of tempo relationships goes beyond synchronization to address individual perceptions and articulations of groups and extended phrases. Let us see what Stockhausen said of *Kontakte*: "This is what I do in music. I go into the deepest possible layer of the individual sound. ... In *Kontakte,* I composed every sound from individual pulses which I spliced on tape. I made loops of one rhythm with individual electric pulses that I recorded on tape with a duration of one second, for example, and sped the rhythms up a thousand times ... so that in the evening I had [a sound of] about 1000 cycles per second. And one cycle of the 1000 cycles per second was my original rhythm" (Cott 1973: 76).

And finally, in *Gruppen,* space and time are elements of an unbroken and palpable structural continuum of the piece. A synchronous realization of up to three different temporal layers, running at different speeds, is possible due to three nearly equally scored orchestras, which are placed around the audience. As Stockhausen explained: "Each sound-source is now in a position to let its own time-space be experienced, and the listener finds himself in the midst of several time-spaces which in turn create a new, common time-space" (Stockhausen 1964: 71).

Almost all the elements of the serial method of organization are in a coherent relationship to the time structure. Twelve-section duration series are characterized by the same properties as the twelve semitones of the chromatic scale. This is the starting point and the foundation of the entire serial process of organization. *Gruppen* consists of a groups of sounds, noises and sound-noises which are completely independent units and each of them moves within its temporal space. There are short, characteristic figures whose constant recurrence forms a bond between the musical passages. Because of the irregular rhythms and the lack of a stable basic tempo, one cannot indicate consistent pulse throughout the work. The spatial separation of the groups results from the superimposition of several time layers having different tempi. This distribution of the groups facilitates the great freedom in the way the groups interact with each other. Consequently, the groups can follow each other, overlap with each other, accumulate above each other. Stockhausen emphasized that they can absorb each other, play with or obliterate each other, repulse or cling to each other, or merge. The specific rhythm/tempo-related structure determines the tension, which, in turn, enhances the bond between the musical

passages. Tempo and counting value (i.e. the fundamental duration), rhythmic make-up, length, density, pitch range, and direction of movement are fixed for each individual group. The timbral species of the individual groups are organized according to four different criteria: mixed, mixed and long sustained tones, monochrome, and alternating monochrome. Finally, all the groups (174) are used by the composer in four large sections of the piece, which, in turn, are divided into thirteen subsections. In *Gruppen* there are also the three "inserts", which are independent of serial predetermination.

The great researcher of Stockhausen's creativity and thought, Robin Maconie, some time ago pointed out four objectives which – in his view – the composer wanted to accomplish in this work. These are: "1) to pursue and regulate the composition of multiple tempo-structures stimulated by *Piano Piece I*; 2) to invent a functional notation for time corresponding to the tempered scale of pitch; 3) to discover a means of injecting flexibility and continuity into serial music which did not infringe existing serial principles; and 4) to write a work of major length with unlimited possibilities of continuation. Out of this mixture of formal and personal incentives came the system of group composition, and out of the system a new delicacy of imagery, plasticity of movement, and the rediscovery of musical space" (Maconie 1976: 114).

3.2. György Ligeti

In Ligeti's *oeuvre*, one can identify the compositional techniques which have been involved in his structural music of the 1960s and 1970s. His music of this period does not provide sufficient contrast of the material. It tends to be driven by evolution of structure and motion. Also during that time, what he created in his music was the flow of time rather than the rhythms. In the period from the 1970s up to 1985, Ligeti's musical language and structural approach shifted from one which had been focused upon processes based on canon or micropolyphony, to one which demonstrated an openness to the influence of a wide range of musical trends.

Among the main types of his musical forms was the "kaleidoscopic" type, which is made up of "separate and contrasted musical shapes". One of the most striking general features of Ligeti's descriptions of his music is his frequent recourse to his conception of the form-creating interval signals and his net-structure micropolyphony. The term "mistiness", which he introduced in his reflections about music, usually means a contrapuntal structure, a micropolyphonic cobweb technique. The net-structures (underlying structure) can be based on chromatic fluctuation of microstructures, on the expansion and contraction of interval constellations, and also they can be generated by constant chromatic transformation of triadic units or built on complex overlapping rhythmic relationships. Harmonic, interval, and rhythmic metamorphoses, in musical works which were based on the net-structures, became the main structural function of the form-generating surface patterns.

For some examples, metrical rhythm was entrenched in the String Quartet No. 1: *Mètamorphoses nocturnes* (1953–1954) for string quartet. But in both *Apparitions* (1958–1959) for orchestra and *Atmosphères* (1961) for large orchestra, Ligeti removed metre and pulse. In *Apparitions* one can find clustered structures which have no regular pulse, but are scored for convenience mainly in 4/4. This method would serve for many more of his musical works. In the first movement of *Apparitions* Ligeti positioned the clusters, and they are interspersed with more volatile events in a sequence of changing time signature. Constant variation of metre occurs in the composer's other scores from the 1950s. The changing bar-lengths and subdivisions create a wonderful elasticity. There is extremely slow tempo of crotchets = 40. In this composition there is a different time signature in nearly every bar. Ligeti employed the concept of "scaling", which involved – in the first movement of *Apparitions* – a "'repertoire of durations' planned with serial precision, but from more logical standpoint. He created a 'system of apportionment [in which] the length of the shortest element, multiplited by the number of times it appears in the piece, matches the total length of the longest'" (Ligeti 1983: 132).

The method of "scaling" results in constantly changing bar-lengths and makes the music sound unpredictable. The same system had governed *Artikulation* (1958) for four-channel tape. The second movement of *Apparitions* is also rhythmically fluid, but the effects are achieved through simpler means. Ligeti used polymetre, micropolyphony, and a sequence of sonic blocks. In *Lontano* (1967) for large orchestra, as in *Lux aeterna* (1966) for unaccompanied sixteen-part mixed chorus, one can note the signature metre 4/4 throughout, but again only to assist synchronization, never to imply accentuation. There is no beat. The micropolyphonic rhythms are notated within regular bar-lengths without any loss of plasticity.

Finally let us look at the temporal elements of *Ramification* (1968–1969) for string orchestra or twelve solo strings. In this piece Ligeti created four active rhythmic layers and a fifth layer of sustained tones. The layers are made up of triplets, sixteenth notes, quintuplets, and sextuplets, respectively. There is no rhythmic regularity, because the irregular grouping of the pitches constitutes the fluctuating chromatic microstructures.

Ligeti has applied the *pattern-meccanico* technique and microcanon. Therefore the small and large scale structures result from the repetitive patterns. Moreover, rests of different values are irregularly placed within the melodic cells. This, in turn, further differentiates the layers, which are already moving at different speeds. The layers have also undergone a process of acceleration, either through the occasional introduction of smaller beat subdivisions, or a systematic motion through successions of progressively smaller subdivisions. This is the example, in which – along with harmonic motion – Ligeti uses rhythm as one of the determining factors in the shaping of a net-structure's surface. The sense of time there are exhibited by the type of "nondirected linearity" and the progressive metamorphosis of rhythmic constellations. In this musical work, the perceived rhythm is based on emerging patterns and is different from the articulated rhythm (the various rhythmic structures in different tempi as well as in different subdivisions), but the rhythmic activities rely on the readily audible pulsing rhythmic patterns and the subtle rhythmic shadings of pattern beginning accents. Finally, the result is the presence of the rhythmic patterns but the absence of durational diversity.

3.3. Gérard Grisey

Grisey has created music which is closely related to his theory. The fourth movement of his cycle *Les Espaces acoustiques* – *Modulations* (1976–1977) for orchestra – can be an example of practical incorporation of his "scale of complexity" into the organization of musical time. Periodicity and aperiodicity are here used as important musical expressions. At the rehearsal number 12, one can experience that the time unfolds at a different speed than at the beginning of the musical work. Thus the time-perception – in this fragment of *Modulations* – is a result of gradual changes. From the state of disturbance and the irregularity of events, the composition unfolds to the point of maximum disordering, and then it gradually reaches the state of regularity. This is equivalent to moving over the scale from this unpredictable state, through the "statistical" one, until the most predictable condition, periodicity. The impression of periodicity has been created owing to the fact that every event happened on the downbeat in each measure, and the only exception from perfect periodicity are the changes in the time-signature in certain measures. The impressions of – to begin with – discontinuous-dynamic order – and finally – "statistical" disorder are the result of entirely irregular time-intervals between two events and the deviations (the events sometimes come "too early", and sometimes "too late" in passages, and the overall process is an example of deceleration). Moreover, at rehearsal number 37 – for example – the only thing the score shows is when the phrase starts, which pitches the phrase consists of, and when the phrase should end. In this fragment of *Modulations*, the notation does not indicate how long each note within the phrase should be, but the performer should distribute the notes within the given limits.

The particular treatment of musical time is concretised in the composer's work. In *L'Iône paradoxale* (1992–1994) for soprano, mezzo-soprano and orchestra, divided into two ensembles, Grisey referred to the visual logic characteristic of Piero della Francesca's fresco *La Madonna del Parto*. This reference is manifest in the title of the composition, the distribution of the instrumental ensembles and the structure of the work. *L'Icône paradoxale* is a kind of tribute to Piero della Francesco (1420–1492), a symbolic figure of the Quattrocento, author of the treatise *De perspectiva pingendi*, in which he analyses the perspectives used in painting. Grisey did not commonly employ poetical texts in his music, as they demand a natural tempo of narration – the time of language. In this work, however, the composer made use of part of the treatise, written in a highly technical language. The soprano and mezzo-soprano are treated here instrumentally – long-held sounds, devoid of melodic character – and the vocal parts are grounded on an analysis of sonograms of the spoken text. The large instrumental ensemble is divided into two groups intoning sounds in a high and low register, whereas the small instrumental ensemble is divided into two symmetrical groups, flanking the two vocal parts.

An analysis of the form of *L'Icône paradoxale* allows one to note the presence of two contrasting evolutionary processes – analogous to two diagonals, for which the point of intersection is fixed in the middle of a visual composition – and the temporal material is divided into different levels. Grisey modelled his shaping of the temporal material on the proportions contained in the fresco: 3-5-8-12. As a result, there appear four kinds of time. Time I is extremely compressed; its duration is entrusted to the group of instruments of the large ensemble in a high register. This group intones for 16 seconds a "contracted" version of the beginning of the work. This is a musically-obtained perspective which viewers employ when looking at a picture from a great distance – they can follow the indistinct distribution of colours and forms. This reduction in format is perceived through fragmentary progressions and repetitions. Time II is an analogy of time as linguistically perceived. The vocal parts accompanied by the small instrumental group perform a slow evolution, beginning

with the intonation of vowels and leading to the intonation of consonants, from colour to the obtaining of sounds similar to noise, long sounds contrasted with rhythms.

Time III is the timbral opposite of time I (it is interpreted by the second group of the large ensemble in low registers), although it is also linked to time II, linguistic in character. We observe here a sort of decompression of time II, obtained through the articulation in a slow tempo of the "noise" of the vowels contained in various texts by Piero della Francesco (in Latin and in Italian). Finally, time IV undergoes extreme "decompression". The whole of the orchestra intones a slow spectral punctuation, which – from the beginning to the end of *L'Icône paradoxale*, as always in Grisey's music – defines the presence of various harmonic fields.

In his introductory note to *L'Icône paradoxale*, Grisey concluded: "When times I and III cross, at the point where the diagonals intersect, a constant and periodic rotation fills all the sound space available" [Lorsque les temps I et III se croisent, au point d'intersection des diagonales, une rotation continue et périodique envahit tout l'espace sonore disponible] (Grisey 1996). The composition ends with a three-part stratification (the accumulation of times I, II and IV), followed by a brief coda invoking the complete spectral material (Castanet 2000: 36–38).

The specific treatment of time also refers to the interpretation of cosmic time. Such an idea inspired Grisey in another of his compositions: *Le noir de l'Étoile* (1989–1990) for 6 percussionists placed around the auditorium, audio tape and a retransmission of astronomic signals. The composer's interest in the sounds of pulsars arose from his meeting with the astronomer and cosmologist Joe Silk, in 1985. In the programme to *Le noir de l'Étoile*, Grisey stated (Grisey 1991), that in spite of the awareness that – with or without our participation – *0359-54* and *Vela Pulsar* would be continuing their endless revolutions and reach interstellar spaces, thanks to a radio telescope we can integrate their electromagnetic waves into a sophisticated cultural event – a concert. The moment of the pulsars' crossing of the sky is specified by a precise date. In order to use the effects of the pulsars' rotation as musical material in a musical work, the composer must – according to Grisey – combine the concert itself (the performance of a work) with the cosmic rhythm. In this context, the pulsars will determine not only the different tempos and pulsations of *Le noir de l'Étoile*, but also the exact moment of the work's performance. Grisey integrated music created by the tempo of the rotation of two pulsars (the remains of a supernova) into a tonal discourse. The acoustic effects derived from *Vela Pulsar* were pre-recorded, whereas the effects of *0359-54* were captured during a performance of *Le noir de l'Étoile* thanks to a radio telescope. The sounds created by a neutron star are the result of an audible transcoding of electromagnetic waves, and they can be heard in spite of the fact that it takes at least 15,000 years for them to reach the earth (Castanet 2000: 34). As Grisey noted in his preface to *Le noir de l'Étoile*, this is "music with pulsar obbligato!"

4. The observations from the analysis

The goal of these interpretations is to identify the nature of the relationships between selected compositional strategies manifested in the speeches and writings of the composers and their creative exemplifications in some of their works, and finally, to refer these findings to the conditions of music perception.

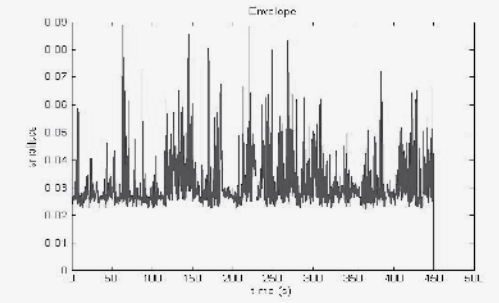
This review of theoretical writings and the music of Stockhausen, Ligeti and Grisey confirms the thesis that each of them pointed to a wide range of different compositional strategies. Their ideas and strategies largely relate to the problem of the temporal modalities and continuity of twentieth-century music. Although these composers – in certain pieces of music – tend to allow themselves many exceptions from their compositional strategies, their musical works – generally – demonstrate compliance with their theoretical ideas. On the example of their works, one can trace one of the main features of the shaping strategies of musical time and continuity. There is opposition between linearity and nonlinearity. Moreover, musical time is, indeed, not a single thing. One can observe a certain hierarchy of individual times with different rhythmic features. For this reason, there are many models of creation of musical time available for musical representation.

But not all the rhythmic structures, evident in a music score, can be related to perceptual goals. In the perception of rhythm and musical time there are many factors beyond the composer's control. First of all, it is dependent on the listener, namely, on his capability to memorize music movement. Listeners have to possess either the ability to engage in an intensely active involvement in the chain of realization of temporal modalities, or the ability to develop new modes of listening.

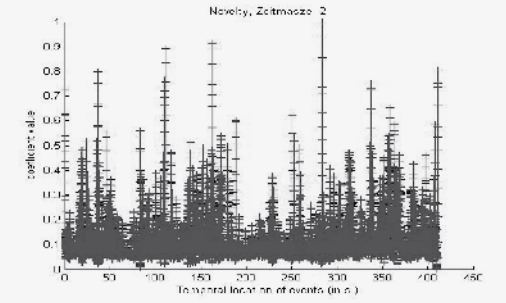
Cognitive musicology studies musical "habits of mind" such that musical processes are of greater interest to the researcher than musical content. A mental representation of a musical work is the result of the action of the nervous system, in particular the brain, of which the mind is a function. Music is a highly complex cognitive object, in which perception is possible thanks to the isolation and organizing of data provided by the sensory system.

Moreover, listener's expectation appears to shape many aspects of musical organization. If certain mental representations – preference rule systems, which are models of the perception of music (Temperley 2001: 292) – are present in the minds of listeners, it is likely that they are also present in the minds of composers. Not all the rhythmic structures evident in music can be related to, for instance, perceptual goals, especially in the avant-garde music. The mental mechanisms involved in musical expectations on the one hand are linked to biological adaptation (are innate), on the other hand are linked to culture context (are acquired, learned). The perceptual phenomenon in listening and certain constant relations have led to the formulation of many principles and concepts. The listeners' expectations are the result of a process of induction, in which generalizations are formed from a finite number of specific experiences. Listeners learn the contextual or contingent probabilities of neighboring or co-occuring rhythmic events. Contingent probabilities can be influenced by the number of prior rhythmic events that combine to influence a particular ensuing event. "Pointillistic" athematic serial music or, for example, *Gruppen* are not a perceptual problem for the listener. The contextual and contingent probabilities are being the foundations of perceptual organizations. In music such as *Ramifications* the sense of perceptual sound organization refers to recognitions of one or more independent streams, the perception of dynamic progressions and the transformation the seemingly amorphous "mechanical" sequences into a new structure. In music created by Griesey, there are the psychological mechanisms as the tendency to prefer stimuli to which listeners have been most frequently exposed (exposure effect), the music is designed to thwart the listener's ability to infer a regular meter (contrametric), and an event that follows after some preceding event generates consequent state. The habituation – the process of decreasing responsiveness to a recurring stimulus – appears also (Huron 2006: 409–422).

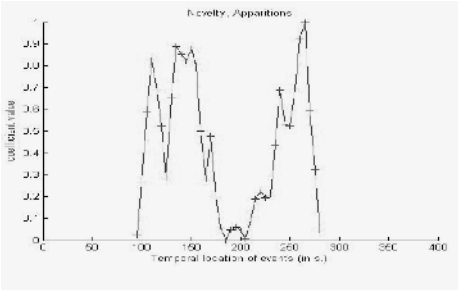
Computational models have contributed to understanding segmentation processes in music. The primary aim of Music Information Retrieval is to design methods to retrieve "musical information" from large databases using musical "content" rather than "meta-data". Audio files can be automatically segmented into a series of homogeneous sections, through the estimation of temporal discontinuities along diverse alternative features, such as timbre in particular. They decompose to frames and next stage in the analysis is to determine a novelty curvy that would indicate the temporal location of significant structural changes. The cited visualizations confirm the general observations from the musicological and the cognitive analysis. One can easily observe, for instance, the musical surface of the analyzed musical works from the envelope curve and some discontinuity of rhythmic events from the novelty curve.



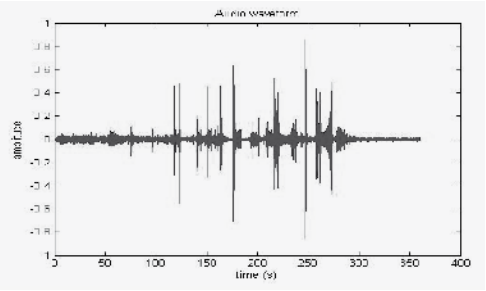
Example 1. Stockhausen, *Zeitmasse* –
the envelope of musical surface, from start to 450 sec.



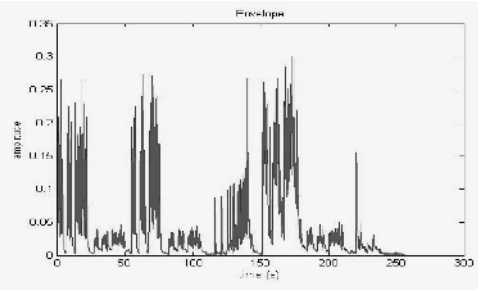
Example 2. Stockhausen, *Zeitmasse* –
the novelty curve, from start to 450 sec.



Example 3. Ligeti, *Apparitions* –
the novelty curve, from 100 to 280 sec.



Example 4. Ligeti, *Apparitions* –
the amplitude-time characteristic



Example 5. Grisey, *Modulations* –
the envelope of musical surface

5. Conclusion

In the context of the typology of musical time proposed by Kramer (1998), it seems reasonable to define the time created by Stockhausen's music as *moment time*. In this kind of time Kramer has emphasized the presence of a series of minimally connected sections that form a segment of an eternal continuum. Attention is also paid to the absence of beginnings and endings, and the self-containments of moments are perceived as entities. Finally, a coherent whole of such a composition is perceived by cumulative listening. In connection with the creative strategy adopted by Ligeti, musical time in his works has to be described as *nondirected linear time*. It is a result of the presence of a constant motion and the non-teleological nature of musical time. Listeners perceive this music as a *continuum* and they cannot predict where they are going in each phrase or section until they get there. As to Grisey's musical time, one can define it as *vertical time*. In his music there is the lack of phrases and temporal articulation. A single present stretched out into enormous duration, a potentially infinite "now", the total consistency – these are the main features of Grisey's strategy.

From the perspective of the traditional conception and creation of musical rhythm and time – before the activity of the Darmstadt School – it may seem that Karlheinz Stockhausen, György Ligeti and Gérard Grisey represented a somewhat eccentric and difficult to imagine way of understanding and creation of the rhythm and the temporal music dimension.

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Santrauka

Teorinė ritmo organizavimo koncepcija: kai kurie XX a. avangardo kompozitorių pavyzdžiai

Kompozitorių, susijusių su Darmštato mokykla (pvz., Stockhauseno, Ligeti, Grisey), kūrybiniam palikimui nagrinėti reikia naujų analizės metodų. Šiems kompozitoriams jų kūryboje ir teoriniuose darbuose įtaką darė mokslininkai, domėjęsi paslaptingų ir ritmiškai sudėtingų garsų pasaulių tyrimais ir atradimais. Ši kompozitorių grupė muziką suvokė specifiškai – kaip grynąjį judėjimą, susijusį su laiko, kaip momentų serijos, koncepcija; kiekvienas iš tų momentų yra tam tikros vertės, nepriklausomai nuo to, kas jį seka ar kuriuos momentus eiliškumas leidžia numatyti. Tokiems teoriniams ir muzikiniams darbams buvo būdingas dėmesys ritminėms struktūroms, įprastinės muzikos kalbos laužymas, naujas požiūris į ritmo ir muzikinio laiko organizavimą, itin skirtingų ritminių struktūrų koegzistencija ir interakcija – naujai buvo interpretuojamas muzikinis laikas ir tęstinumas. Prireikė ir naujos (lankstesnės bei kūrybiškesnės) komponavimo ir klausymosi strategijos, nes tokios tirštos ir sudėtingos muzikos dažnai teko klausytis pakartotinai ir ją analizuoti papildomai, ne vien atlikimo metu. Straipsnyje teigiama, kad taikant šiuos naujus muzikos analizės metodus būtina juos sieti su kitomis, nemuzikologinėmis, disciplinomis. Pradedant analizuoti pasirinktus kūrinius reikia perprasti pačių kompozitorių mąstymo būdą, susipažinti su jų požiūriu. Muzikos kūriniai, kuriuose kompozitorius atsisako melodijos kaip struktūrinio muzikos kūrinio vieneto ir kaip struktūrinio metrikos organizavimo dėmens, tampa puikia medžiaga tiriant pagal psichofizinę ir psichoakustinę arba kognityvinę analizę. Pritaikant kognityvines žinias ir kompiuterinę muzikologiją, tiriamuose muzikos kūriniuose tampa įmanoma nustatyti priežasties–pasekmės ryšius tarp kūrybinio proceso ir ritminių struktūrų formų bei muzikinio laiko organizavimo. Tokių tyrinėjimų tikslas – kompozicinių idėjų sąsaja su mokslu, muzikologiniu požiūriu ir tarpdalykine analize. Šitoks požiūris į ritmo organizavimą įvairiapusiškai praturtina analizuojamų kompozicijų suvokimą. Nagrinėjamą muziką galima pripažinti kaip opoziciją tarp linearišKumo ir nelinearišKumo, o muzikinis laikas yra išties nevienalytis. Galima pastebėti tam tikrą individualių laikų hierarchiją su įvairiais ritminiais bruožais, taip pat išskirti ir ne vieną muzikinio laiko kūrimo modelį.

Damien Verron

"Rhythm *inside*, Rhythm *around* ...": Considering Rhythm as a Fundamental Concept for Improving the Anthropological Analysis of the Question of "Musical Taste"

Introduction

It might appear ambitious, given the narrow space of a paper, to consider a reflection related to the complex – and often controversial – question of the scientific appreciation of the so-called judgment of "musical taste". Ambitious, if not unrealistic, if we also take care of our intention to deal with that problem not only under a specifically local scale, in this case, the scale of the traditional instrumental music of northwestern Ireland, but also through the more general spectrum of anthropology. What we would like to demonstrate something that will effectively assume the role of a conclusion that, although unconventionally, we will already announce, is the existence of a possible anthropological anchoring of taste, and, more precisely, of a number of parameters that could be defined as constituting the technical origin of any judgment of musical taste. In other words, it is a question of serving the hypothesis of a possible generalization to the human species, of a group of specific behaviors considered as having a decisive function in the technical exercising of taste. Before continuing with that question, the meaning granted to the expression 'technical exercising of taste' should be explained.

Though the identification, primarily ethnographic, secondly comparative, of technical evaluative criteria, that is, criteria participating in a more or less conscious form of 'expertise' linked to certain qualities of a given object, it could be possible to overcome some of the numerous barriers slowing down the scientific approach of taste. In fact, the practice of using a set of technical evaluative elements permits to provisionally cope with the problem engendered by the well-known opposition of the relativity of a subjective appreciation, and the objective basis of this same appreciation, considering that this appreciation necessarily originates – at least partially, if not entirely – from the interpretation of the immanent[1] properties of the effectively appreciated object.

Nevertheless, we are perfectly aware of the fact that such a positioning constitutes a certain kind of aesthetical reductionism. For example, in the context of the Irish music we are actually dealing with, restricting the evaluation process to several objective properties of instrumental execution only, such as the mastering of a melodic and rhythmic variation system, or such as the competences required in using correctly grace notes, accentual device and so on, could not be sufficient to render the overall complexity of an aesthetical experience that obviously overcomes the musical fact, strictly and only considered as sound.[2] It stands however totally clear that the parameter of technical evaluation remains a very possible, as well as a totally reliable departure point in order to consider the scientific restitution of certain processes involved in an evaluative appreciation participating in a judgment of musical taste.

This is what we will try to demonstrate, along this paper, through the analysis of technical criteria related to the musical parameter of rhythm.

1. Organization of the paper

After an introduction intended to define the overall frame of the actual research, we continue the argument by proposing some – brief – precisions related to the theoretical background that will be used, subsequently to an analytical stage, to attempt the anthropological enlargement of our conclusion. This part thus proposes a distinction between the ethnographical and the anthropological approaches, considered as being two stages of two different levels, sharing, despite those differences, a fundamentally common substance. Having done this, time comes to think about the ethnographical modalities revealed as necessary to effectuate the collection of categorical data linked to technical, endogenous references that constitute a great part of the origin of any judgment of musical taste. Considering the numerous data to take into account, a selection appears in fact unavoidable if we expect to limit the research to a smaller group of criteria that offers a viable material, that is, perfectly suitable from the point of view of the scientific demonstration. By describing an experience in the Leitrim county, northwestern Ireland, at the end of October 2012, we propose to illustrate what can

[1] "Immanent" in the sense of the semiotic tripartite model of the theory of symbolic forms by Jean Molino (2009: pp. 56–59).

[2] Interactions occurring between the music as sound and the social context where the performance takes effectively place are definitely linked to the actualization of a judgment of taste related to the music played (around this specific subject, cf. (Fairbairn, 1993) and (Verron, 2012).

be scientifically done with such a material. Criteria used can be situated from the standpoint of principles that command the rhythmical execution of two versions of a same tune, belonging to the musical category of bipartite *reels 'à reprises'*. Two of the six criteria grouped in table form are then used for illustration, in order to give examples of the highly fertile possibilities offered to the researcher by translating, in analytical terms, a presumably subjective – thus unverifiable, or hardly – aesthetically oriented criterion. At the very end, a conclusion is proposed in order to interrogate the anthropological applicability of such a work as the one actually presented in the obviously restrictive frame of the paper format.

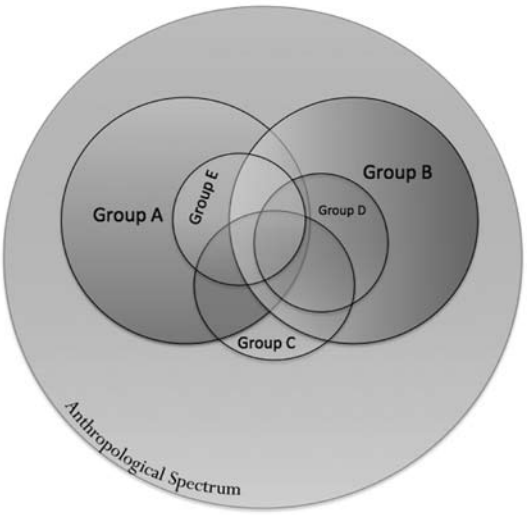
2. Theoretical adjustment

Before starting with the analysis as such, it stands necessary to refine the distinction that we make between the two domains of musical ethnography and anthropology of music, even if, owing to time constraints, the anthropological reflection will here be restrained to the conclusive part of the work only, as said above. More than anything, our position concerning the two prefixes *ethno* and *anthropo* is that they are not parts of a simple binary opposition. What belongs to ethnography is and has to stay, substantially, transposable to the scope of anthropology. When at the same time, what is or should presumably be considered anthropological, will anyway find its characteristics in the core of an ethnographical database.[3] All things considered, the anthropological project corresponds then to a generalization process, responds to the aim of exposing characteristics that are shared by our entire species. In other words, for such a generalization, anthropology cannot exist without drawing on resources of what belongs, in the first place, to the diversity of human practices, as revealed by ethnographies. 'Unity' and 'diversity' are not opposed to each other. Rather, the two terms fall under a dynamic process of co-determination.

And the extreme variety of musical facts does not permit to overwhelm this principle. It just conducts us to ask for what, in music, under the bark of the particular customs[4], results of an essentially similar human conception.[5]

It might be reproduced as in Graph 1.

Without in any way hidding what makes the specificity of each group, e.g. what discriminates, in the graph, group A from group B, or from group C, one essential function of anthropology is for us to understress the features that are shared, if not identically (but is that even possible), at least in an equivalent manner, by the groups concerned with comparison. Such a fact does not alter, at least seemingly, that one stand from anthropology of musical fact, or from, for instance, anthropology of the dance, or of ritual practice, among others. Ethnographic data, at the same time as they bring ethnographically distinct elements, equally offer, for comparison, the ability to stressing a Spectrum of common principles. It remains to know, then to choose, which of those.



Graph 1. Anthropological spectrum

The complexity of questions related to anthropology of musical taste forces us as a start to choose between the numerous variables that drive any qualitative judgment of value. In order to perform this choice, our positioning – ethnographic at that state, is as follows: to study the exercise of evaluating musical taste only from endogenous criteria designed as pertinent by the owners of the studied culture, on whom, besides, it is compulsory to possess a scientifically viable grip.[6]

[3] In this direction, although it is not exactly the same, the conception of the anthropology that we defend may partially be linked to some of the Universalist aspirations of anthropologists, observable as early as the XVIIth century (for valuable information, (Nattiez; Molino, 2007: pp. 339–341) notably).

[4] Our translation of the french "*derrière l'écorce des coutumes particulières*" (Molino, 1972: p. 253).

[5] Question already largely debated, as revealed by the existing scientific bibliography (for one example, Morin; Piattelli-Palmarini, 1974).

[6] Here again, the fertility of the technical criteria comes to mind if we consider their objective characteristics (in the sense of a relation between a semantic discourse and an object as object), as well as their adaptability to the approach of analytic ethnomusicology.

Several ground queries (2010–2013) have in that respect revealed to us that this scientific grip could be fully considered by working on music as sound fact. One experiment performed in the Drumkeeran village, Leitrim county, in October 2012 along with our informants Vicky Skelton and Michael O'Brien, allowed us too ascertain that for music, not only technical criteria linked to the standards of instrument mastering appear to be the most immediately recalled when the matter is to qualitatively evaluate a musical performance, but that in addition, there seems to be some salient criteria. In the case of the repertoire we study, rhythm, and more precisely competences related to the usual modalities of rhythmic enunciation, appeared as one of those criteria. That is the reason why, of course, we have chosen to work, for the present paper, on the basis of the parameter of rhythm, excluding, because of the space allowed, numerous other parameters. It is also important to acknowledge that rhythm has but little resistance to its anthropological enlargement, which is something very useful to our final intentions.[7]

From the standpoint of the instrumental dance music of northwestern Ireland, as we said, the question of rhythm quickly appeared as a salient criterion. Under the generic evaluative category of "Time", Michael O'Brien and Vicky Skelton[8] gave us, very precisely, some interesting opposition traits, traits that are needed, according to them, to evaluate any tune qualitatively, in other words, to be able to say if a tune is, or is not correctly performed, if it accords, or not, to their personal taste.[9] Next are the details, grouped in table form (Table 1).

Lovely tune	***Vs.***	**Bad tune**
clear	*vs.*	all over the place
neat	*vs.*	loose
rhythmical	*vs.*	not rhythmical
sense of speed adjustment	*vs.*	bad speed adjustment
strong beat	*vs.*	you miss the beat (can't tap your foot)
tight	*vs.*	the notes are not well tight together

Table 1. Evaluative criteria based on rhythm execution

The interest of the criteria presented in the table 1 principally resides in their capacities to offer, as a departure point, a coherent binary oppositions system.[10] This system is founded on, should we say, a logic of equilibration between what has to be mastered by a performer, and the specific weakness of each musician, weakness that, necessarily, also participate – at least potentially – to the instrumental execution. The inclusion or, reversely, the exclusion of several awaited criteria during the instrumental execution of a tune, criteria that are used during the evaluating process related to a taste-based judgment, confer to the opposition system its logic as an important qualifying stage: for the tune *n1* to be well executed and please me, the performer needs to fit several interpretational prerequisites (for instance, it is needed to master at least 3 of the 6 criteria of the table above). Obviously, the same can be said reversely: the tune *n1* does not please me because it contains too many elements that do not accord to the criteria of correctness (loose, all over the place, and so on). It is definitely a problem of balance.

Several observations quickly come to mind, among which: **1.** The cultural meaningfulness of criteria cannot be disputed, given that we obtained them in the context of field investigations, and owe them to expert musicians from northwestern Ireland. However, to what extent can this endogenous system of criteria be translated into precise analytical terms? In other words, is it possible to give account, objectively, of the criteria proposed in the table above? **2.** If there is obviously a problem of balance between the two opposite terms of

7 If it appears effectively possible to find some musical facts that do not posses any specific and distinctive scalar system, rhythm, as a mode of temporal discrimination seems to be a necessary condition for the constitution of any artifact based on an organized segmentation of the sound continuum.

8 Michael O'Brien and Vicky Skelton, interview realized on the October of 2012, Drumkeeran, county Leitrim, Ireland.

9 The protocol of the enquiry used for this interview was based on the comparison of different versions of several tunes. It could be two identical tunes, but from different interpretations, or two different tunes belonging to a same musical category (for instance, 2 reels, or 2 jigs).

10 One of the two tunes that permitted us to get a great number of criteria is called Three Young Ladies Drinkin' Whiskey Before Breakfast'. The versions used during the fieldwork are respectively interpreted by Weasel and Paddy O'Connor and Friends (*cf. Encarted CD, pl. n ; z*).

'good' or 'bad' execution, may the taste really be measured objectively? For instance, is the sensation of a positive balance, conducting to a favorable taste-based judgment, totally objectivable, or will we find some variations according to personal sensibilities? Our think is that an analyze focusing on the music as sound permits to accurately answer to such questions.

3. Case study

3.1. Analytical translation of the 'All over the place' criterion

When invited to provide us with a taste judgment on two different versions of the same tune entitled 'Three Young Ladies Drinkin'Whiskey Before Breakfast', advisers Vicky Skelton and Michael O'Brien shared with us an important remark concerning the relations maintained by the interprets and what can be described as 'accentual profile' specific of the musical class of 'reels'.[11] Let us make clear that between the two versions, one only was retained as beautiful, perfectly well performed, whereas the other one was immediately rejected because of its lack of rhythmical precision, primarily attributed to an accentual profile judged as 'all over the place'. One of the reasons for that negative appreciation, as mentioned by Michael O'Brien and Vicky Skelton, is related to the criterion 'sense of speed adjustment'. For reasons of pure competence, that do not require any further development here, musicians of group 2 were indeed designed as unable to adjust the execution speed of the tune with their individual abilities to play – limited.[12]

For the actual demonstration, we will use the sole criterion related to the accentual profile expected in that piece. Graphs 2 and 3 (see next page), allow to precisely realizing to what, at a musical level, evaluation criteria such as 'clarity', accentual precision, or its counterpart, dispersion ('all over the place') are referring.

We have to assume that those two graphs are dealing with the first part of the *reel*, AA', not with the entire execution that consists of two parts.[13]

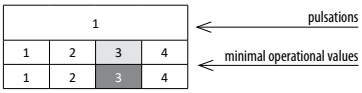
What participates at the elaboration of a specific accentual profile is, at variance with the parameter of variation (according to our interpretation of data, the endogenous 'rythmical' criterion), governed by the requirement of stability of some units, stability that, apparently, is not prone but to rare changes. The input of those units conversely contributes at the elaboration of a scheme that deserves to be recognized, so that variations must not have any real grip on it. In that way, the accentual profile is dependent on the structural melodic and rhythmic characteristics of the piece. We then reach another level than that of "motor rhythm", fundamental concept if any for every work on rhythm, discovered by Professor Micheál Ó Súilleabháin (1987: p. 41), as regards that tradition. Rhythmic variation as an inflective process acting at the level of a specific metric continuum (for instance, the isochronous succession of groups of four notes in the case of 'reels', or of three notes, in the category of 'jigs'), characteristic of the rhythm motor for Ó Súilleabháin, is in this way inhibited by the need to count, below several expected variation process also important for the evaluation, in an accentual profile that has to remain almost static.

The first step can thus be taken, in our view, towards the possibility of objectivable knowledge of criteria that govern a judgment of musical taste. If one indeed considers the graphical translations of the 'All over the place' criterion, the above graphs provide an opposable proof of what could, at first sight, look too subjective to be verified. Conversely, there is a clear display of the extent to which the regularity of the accentual profile of the piece judged as beautiful (profile marked by the red squares), is in contrast with the irregularity of a much more dispersed profile (blue squares), because of a bad execution. Blocks of red squares, related to the appropriate execution, are a strong illustration, if any, that makes a solid image of what expected musicians Vicky Skelton and Michael O'Brien in terms of accentual scheme. In contrast, the much worse regularity of the spatial restitution of blue squares in the bad execution is also there to evoke what, in the musical material itself, rejects us to the lack of adherence to a code of technical execution, known as critical for the process of taste-based evaluation. If, from that standpoint, respective qualities differ in theory, they do as well in real fact, what confers a major value to a work on these types of criteria.

[11] Transcriptions of the two tunes are available at the end of the paper. In order to save space, we have chosen to not include the entirety of the tunes.

[12] We are dealing with this criterion more precisely in the following part.

[13] The tune used here belongs to the class of bipartite reels "*à reprises*", the segmentation of which might be subsumed under the form: AA'BB' :II.



A A'

	1				2				3				4			
lovely tune	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
bad tune	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	5				6				7				8			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	9				10				11				12			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	13				14				15				16			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Graph 2. Accentual Scheme, Lovely tune vs Bad Tune, AA' part

bad tune (AA')

1				2				3				4			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
5				6				7				8			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9				10				11				12			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
13				14				15				16			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

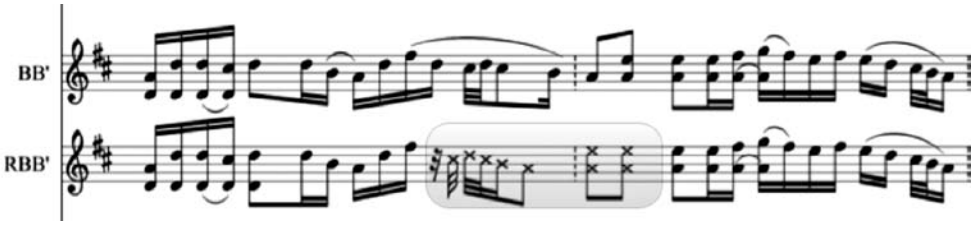
lovely tune (AA')

1				2				3				4			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
5				6				7				8			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9				10				11				12			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
13				14				15				16			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Graph 3. Accentual Scheme, separate representation, AA' part

3.2. Analytical translation of the 'Sense of Speed Adjustment' criterion

From our Reading, the 'sense of speed adjustment' criterion must be understood in two ways. The first way, which is the obvious one, effectively is the straight ability to choose in an appropriate fashion an execution speed according to the level of the technical competence of each player. The second way, similar though more complex, consists of the ability to choose, in a group context, a speed that can be adapted along the group, in order to make the collective improvisation process both possible and pleasant. As an example for this part, we select an illustration of negative consequences induced by insufficient competence (or lucidity?) with respect to 'sense of speed adjustment'. A short transcription, shown below, allows for a concrete representation of the consequences.



Example 1. Possible consequences of a bad sense of speed adjustment

Although we do not feel necessary to go further into the resort to transcription in order to characterize what can result from a poor adjustment of the speed of execution (enough, to get a glance, to carefully listen to the interpretation of 'Three Young Ladies Drinkin' Whiskey Before Breakfast' by the fiddler of the Weasel group), it nevertheless remains fundamental to ascertain it, as well as for the category illustrated above. This means, the question is not to minimize the impact that an excess of execution speed can have on the instrumental play of a poorly qualified performer.[14] It is direct evidence, almost a truism. However, it must be reminded that such a criterion is inasmuch at play as a technical inability of that order can just but influence, definitely, the quasi-spectrum of parameters linked to the competence profile that is expected from a player. Accordingly, listening to the record clearly reveals that the poorly precise play, because it is too fast for the interpret, engenders a negative appreciation from our advisers, that overcomes the simple criterion of speed. They allude to a 'loose' play, for the given version, a manifest metric instability ("you can't tap your foot", said Vicky Skelton), as well as a bad quality of the melodic flow ("notes are not well tight together").

Here we do not have the room to present many more transcriptions, nor, in addition, other graphical reductions of the same order as the one related to the accentual profile. It is thus impossible to bring as many formal proofs of what, along the criteria given by our advisers, led them to affirm that they did not like at all the interpretation of the piece by the Weasel, at variance with the magnificent version of Paddy O'Connor and Friends. What must however be noticed is the importance of the pathway that can be followed, to start from the criteria, and to go next to an empirical validation of them, as was illustrated by the two above examples.

Synthesis

Through this paper, we attempted to give an overview of the work that can be done with the question of the judgment of musical taste. Idea was to use ethnographical data under the form of technical criteria, and reinforcing them trough a process of empirical translation belonging to the scope of analytical ethnomusicology. After developing the general frame of the paper, some precision have been made related to the theoretical background of our project, especially around the distinction that we make between music ethnography, and music anthropology, if not anthropology in a broader sense. Another part deals with the specific case of the endogenous actualization of criteria concerned with the evaluation of interpretations of a tune, in terms of musical "time", and more precisely of rhythmic execution codes. Lastly, two parts then consisted in giving examples of how we can move from ethnographical data related to musical taste, to a more empirically oriented translation of those data (graphical reduction, music transcription, table).

[14] It is also important to assume that the examples used here come from professionally recorded music. According to usual the level of exigency supposed by any studio recording, no imprecision is supposed to stay on the final mix.

Conclusion

After this brief synthesis, time has come to conclude by dealing with musical anthropology. For that purpose, we have chosen to share an experience realized during the oral presentation that lays at the origin of the present paper. This experience was made during a communication delivered in the context of a colloquium focusing on the question of rhythm, in Vilnius, Lithuania.[15] In order to exemplify, in front of the members of the audience, the anthropological orientation of our work on rhythm perception, as well as to illustrate the links shared by this perception with the judgment of musical taste, more generally, we planned to realize the same experience that the one we previously made in Ireland, an that time, not with local and specialized musicians, but with the audience of the colloquium, presumably not expert in the domain of Irish traditional dance music. The general idea was to know if the results of comparative evaluation of the tunes already used in Ireland would be equivalent in another, totally different context, that is, the context of a musicological conference in Vilnius.

From our personal point of view, we definitely were convinced that every member of the audience would, without any difficulties, share a common appreciation with that previously expressed by our Irish informants Michael O'Brien and Vicky Skelton, especially concerning the two interpretations of *Three Young Ladies Drinkin' Whiskey Before Breakfast*. Interestingly, the fact that the domain of expertise of the subjects differed from the previous experiences made in Ireland could permit to see how the imprecise rhythmic performance of the version defined as bad in Ireland, would be interpreted by the audience of the colloquium.[16] A the very exception of one participant, who expressed her preference for the version of the group *Weasel*, compared to that of Paddy O'Connor and Friends, the rest of the audience honored with no hesitation the correct version, defined as lovely by our Irish informants.

Does it means that a judgment favoring the group *Weasel* is, in such a case, a wrong judgment? Can we conclude from such a positioning, that this participant has a bad musical taste? Not under any circumstances, obviously. It is anyway true that from the sole point of view of an Irish expert in traditional dance music, this participant has definitely made an erroneous appreciation. Nothing more. The fundamental function of such experimentation is not to establish sanctimonious thrusts. Conclusions of that nature are not significant. What needs attention, however, are the arguments given in order to express a musical preference of this type. The challenge, in this case, is to identify the criteria that lead, during the evaluative process, to such a judgment of musical taste.[17]

What about rhythm? We do think that, contrary to what might have eventually been found in the context of an equivalent experimentation, i.e. based on criteria not related to rhythm – for instance, experimentation based on the evaluation of gracing device, or of melodic variations – the interest of working on rhythm to begin a research concerned with anthropological invariants benefits from its dispersion as well as from its relative analytical accessibility – at least in the domain of Irish instrumental dance music. It seems to us that underlying a metrical instability, recognizing an erroneous accentual scheme – if there is but a scheme, is obviously easier than evaluating the quality of a tune through, for instance, numerous melodic micro-variations that, without a sufficient level of expertise, would definitely not be heard, even by a musically trained audience like the one in Vilnius.

Rhythm offers in that sense an insightful access key to further investigation. It permits to consider a viable approach of the regularities that might be observable by working on the subject of the judgment of musical taste, considered as a process. We are nevertheless aware that arguing is always easier than effectively and conclusively demonstrating. But, the experimentations outlined here around the process of rhythm perception in the constitution of a judgment of musical taste, take precedence, whether we consider those attentively prepared and made in Ireland, or that, maybe more anecdotal but by no means less significant, of the colloquium of Vilnius.

For an anthropologically oriented project, with such a generalist perspective as our own, it could be interesting to repeat experiences like those of Leitrim and Vilnius, to widen the scope of comparative musical evaluation to a larger sample of individuals, necessarily from different cultural backgrounds. From the point of view of rhythm, for instance, how much informative might be the confrontation of our Irish repertoire to

[15] Verron, Damien, *"Rhythm inside, rhythm around..."; Considering rhythm as a fundamental concept for improving the anthropological analysis of the question of "musical taste"*, communication, 13th International Music Theory Conference, Principles of Music Composing: The Phenomenon of Rhythm, Vilnius, Lithuania, 10/16/2013.

[16] We have to precise that all present members were musicologists, music composers or music student, which implies that they all were totally accustomed to musicological problems, and of course able to make analytic music listening.

[17] Moreover, in the experimentation of Vilnius, judgment had to be made in time-limited circumstances.

several human groups non-acclimated to that kind of music. Nathalie Fernando, in the context of an equivalent, yet more developed project under the Laboratory of Comparative Musicology and Anthropology of Music (University of Montreal, Canada), made some similar and successful experiences of trans-cultural music confrontation with ethnic groups from Central Africa.

According to the present paper, what rhythm offers to consider, even if it can only be taken as a starting point, is the possible existence of a lexicon, of a set of criteria used by mankind to explain, to conceptualize something primarily belonging to the domain of the sensible, in order to comment this aesthetical experience with the tools of a technical evaluation. The knowledge of this lexicon, which gives a culturally meaningful anchorage to the process of qualitative evaluation, is an unsurpassable constraint for any researcher interested in the improvement of the question of anthropology of musical taste. Through rhythm analysis (although it will not be sufficient), anthropology of musical taste is possible. What stands anthropological, if not universal, with the taste – and by saying that, we consider the risk of sharp controversy – is not its accuracy, or its delicateness – as David Hume would say, nor is it the result itself. It is the modalities of computation that lead to that result. What can be said anthropological, and probably universal, is the conceptually structured nature of the taste, its original conditions of possibilities.

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Santrauka

„Ritmas viduj, ritmas aplink": ritmas kaip esminė koncepcija tobulinant antropologinę „muzikinio skonio" analizę

Mokslinis požiūris į ritmą – sudėtingas, tačiau puikus tyrimų objektas kiekvienam mokslininkui, besidominčiam muzikinės antropologijos klausimais. Pagal esamą literatūrą bendrą ritmo supratimą galima apibrėžti dviem skirtingais, tačiau vienas kitą papildančiais būdais. Pirmasis, iliustruotinas Simha Arom darbų pavyzdžiais (1985; taip pat 2005), atskleidžia, kaip ritmas studijuojamas kaip vidinis muzikinio fakto parametras. Tokiu būdu ritmas iš esmės suvokiamas per jo struktūrines charakteristikas – metriką, periodinę segmentaciją, ritmines variacijas kūrinį atliekant. Antrajame būde (jį siūlytume vadinti *ekstramuzikiniu*, t. y. tiesiogiai nesusijusiu su muzikine struktūra) laikomasi pozicijos, kad ritmas yra bet kurio įvykio laikinė charakteristika, laikinumas, kuris gali būti, pavyzdžiui, sutelktas į ritmo psichologijos ir kitas sritis (pvz., Fraisse 1974).

Kai kurios problemos, susijusios su šiais objektais, priklauso „muzikinio skonio" antropologijos sričiai (Molino 1972, Nattiez 2007, Arbo 2010). Šioje srityje ritmą įdomiai galima aptarti dviem požiūriais: 1) etnografiniu, kai siekiama suprasti, kaip ritmas veikia muzikoje apskritai, čia traktuojamas kaip specifinės kultūros produktas (tai – vadinamosios techninės ir reprezentacinės koncepcijos, arba tai, ką siūlome vadinti „ritmu viduj" ir „ritmu aplink"); 2) antropologiniu, kai ritmo vaidmens studijos *intramuzikiniais* ir *ekstramuzikiniais* kriterijais padeda tirti tarpkultūrinius invariantus kuriai nors skonio sprendimų išraiškai, susijusiai su muzikos atlikimu.

Nagrinėti ritmą struktūriniu ir interpretaciniu požiūriu paskatino tyrimai, atlikti 2010–2013 m. Šiaurės vakarų Airijoje, artimai bendradarbiaujant su Slaigo ir Leitrimo regionų tradiciniais muzikantais. Straipsnyje tai atliekama dviem etapais. Pirmasis – tai diskusija apie etnografinius modalumus, kurie būtini renkant kategorinius duomenis (pastarieji susiję su techninėmis, endogeninėmis nuorodomis, kurios sudaro svarbią dalį sprendžiant apie muzikinį skonį). Aptardami patirtį, įgytą 2012 m. spalio mėn. Leitrimo regione, siūlome pailiustruoti, ką su tokia medžiaga galima moksliškai nuveikti. Tam naudojami kriterijai kyla iš principų, kurie valdo ritminį dviejų tos pačios melodijos variantų atlikimą, priklausantį muzikinei dvidalės struktūros *à reprises* kategorijai. Per pavyzdžius atsiskleidžia itin plačios galimybės, atsiveriančios mokslininkui perprantant, analitiniais terminais, tikėtinai subjektyvius (taigi nepatikrinamus arba menkai patikrinamus) estetinius kriterijus. Antras etapas, susitelkus ties labiau epistemologine kryptimi, mums kelia klausimus, specifiškiau susijusius su antropologinėmis „muzikinio skonio" studijomis, aptariant ritmą ne tik kaip etnografinį, muzikinį kriterijų vertinant atlikimo savybes, bet ir kaip parametrą, kuris veikiausiai egzistuoja kiekvienoje kultūroje, siekiant išreikšti kokybinį sprendimą, susijusį su muzikiniu faktu.

Svetlana Chashchina

Theory of Intonation Rhythm: The Ways of Development

Two fundamental types of rhythmical systems in modern musicology and prosody are traditionally distinguished: quantitative (or metric) systems and qualitative systems. The qualitative systems are divided into tonic, syllabo-tonic and syllabic sub-systems. But not all musical material fits into the frames of these types of systems, so the notion "free rhythm" was formed in musicology.

For the most musicologists this category is connected with the name of Curt Sachs and his fundamental work "Rhythm and Tempo" (1953). Beginning from the first pages of this research, Sachs underlined that all rhythmic development has moved between two poles – freedom and strictness. Sachs saw a manifestations of free rhythm in the most archaic stage of the development of music; he described free rhythm as "a precious heirloom from our animal ancestry" (Sachs 1953: 21). This applies to the music of the Far and the Middle East and the music of the Romantic era too. Such an approach is typical not only of Sachs: we can see such treatment of the category "free rhythm" in the works of Willi Apel (1953: 268), Paul Cooper (1973: 30) and others. The name of category may be varied – Gary S. Karpinski uses "ametric rhythm" (2000: 19), Judit Frigyesi uses "flowing rhythm" (1982; 1993; 2002; 2008). But the sense as a whole remains the same: free rhythm supposes the freedom from rules and from any systemacy. The consequence of such an approach is, initially, the renunciation of searching of methodology for the analysis of such types of rhythm.

In 1996, Martin R. L. Clayton tried to summarize research devoted to the phenomenon of free rhythm in Western ethnomusicology during the second half of the twentieth century. Having analyzed forty three works (not counting his own articles), the researcher made a disappointing but fair conclusion of "the lack of suitable analytical techniques" (1996: 331). Clayton outlined three key reasons for such a state of affairs: "... he lack of adaptable methodologies in related academic fields such as Western musicology; the lack of (or perhaps our lack of awareness of) generally applicable ideas in other cultures; and the difficulties inherent in graphically representing free rhythm" (1996: 331). But we suppose that another reason is crucial. Clayton (following Sachs, Apel and many others) is not cognizant that he tries to explore not even the phenomenon with the heterogeneous probabilistic structure, but a set of phenomena (the archaic system of musical organization, qualitative and even quantitative rhythmic systems) with different basic principles.

An eclectic object of research forces musicologists to use an eclectic methodology.

Meanwhile, Russian musicology has proposed a promising methodology for the analysis of free rhythm – the theory of intonation rhythm. This theory is almost unknown outside of Russia. The aim of this paper is to show a way how this theory was formed, and to outline further ways of developing it.

1. The shaping of the theory of intonation rhythm

The origins of this theory are connected with name of Aleksey Lvov (1799–1870), a Russian violinist, conductor and composer. Working as the maestro of the Imperial Chapel in St Petersburg in 1837–1861, he was the first to pay attention to the specificity of Russian medieval chant. This feature was reflected in the title of his small – but very important for the future – paper "On the free or asymmetric rhythm" (Львов 1858). According to Lvov, there are only two types of rhythm in music: the "regular" and "free" or "...so-called 'irregular', which is not measured symmetrically" (1858: 3).

Petr Sokalsky (1832–1887) took the next step in his work "Russian folk music ... in its melodic and rhythmic structure, and it's differences from bases of modern harmonic music" (Сокальский 1888). Sokalsky distinguished already three rhythmic epochs: the epoch of "...quantitative syllabic verse" (1), the age of metrical poetry of the ancient Greeks and Romans and their vocal music (2), and the epoch of "measured instrumental music" (3) (1888: 227–228).

Sokalsky identified the rhythm of Russian folk music as the rhythm of the first "syllabic" epoch. However, he actually changed the traditional understanding of the word *syllabic*: "Taking the ancient 'syllabic' verse as a basis for Russian song meter, ... we recall that this notion quite inaccurately represents the whole system or organization of song speech, in which not only the number of syllables plays a role, but also the grouping of them in accordance with a certain rhythmic plan" (1888: 245), which Sokalsky called "free meter".

In this system of temporal organization "...there was the rhythm, but there was not meter in the strictest sense, or the monotonously repeating correct unit. Grouping of parts generated only the large departments –

the strophes, which were divided into two verses, each of which were divided into two hemistichs as well, and no more. So the hemistich was the limit – an already indivisible group that could play the role of a meter or measure only if it had monotonous internal organization. But this did not happen. Therefore, the more ancient chants or poems there are, the less they possess features of metric structure and the more they possess only general order: rhythmic grouping of large parts" (1888: 231). Sokalsky found manifestations of "free meter" not only in the Russian folk music system, but also in biblical meter (1888: 237), Germanic alliterative verse (1888: 254), and other archaic forms. Sokalsky was the first person who supposed the thesis of parallelism as a form of organization of musical and poetic process in archaic *melos*: "...we propose to place parallelism among the rhythmic forms of expression that have no strict metrical structure, but nevertheless play the role of a "wave meter", or indivisible unit, underlying rhythmic groupings as a base" (1888: 238).

This set of important and still undervalued discoveries run through the fundamental work by Sokalsky. Although Elizabeth Tolbert did try to apply the term "free meter" in her paper, devoted to the Karelian lament tradition (1990), the methodology, proposed by Sokalsky, was not really understood and accepted by Western musicology.

The formation of the theory of intonation rhythm itself occurred in the second half of the twentieth century in the works of Miron Kharlap (1913–1994). The key work was his article "Russian folk music system and the problem of music's genesis" (Харлап 1972). Kharlap studied first of all authentic Russian folklore and folklore of other peoples. He used two interconnected terms – the "system of intonation-rhythmical parallelism" and the "system of intonation rhythm". In the first term, he relied not only on the Sokalsky's conception, but also, and in the first instance, on research in the realm of the history of poetry, particularly research into the phenomenon of parallelism.[1] But the most important term has become "a system of intonation rhythm", because it reflects the core, the backbone factor of this system – the category of *intonation*.[2]

An important feature of Kharlap's approach is the analysis of pitch (modal) organization and temporal organization in music, not sequentially, and therefore separately, but holistically, in interdependence. Kharlap displayed, in the material of Russian *bylinas*, that metric principles in the system of intonation rhythm are determined by neither accentuation nor syllabic length of the line. The principle organizing temporal unrolling of forms, is phrase intonation, with a characteristic rising in the middle of the line and descent at the end of it. Such lines, with unregulated numbers of syllables and accents, but with orderly intonation contours, Kharlap calls "intonation feet": "Every 'foot' in the folk verse ends with a fall, and measure is generated by the alternation of ascents and descents. Thus, in contrast to the literary systems of versification, folk measure regulates neither the stresses nor the duration of sounds, but their pitch" (1972: 233).

The second important point concerning the system of intonation rhythm (according to Kharlap) is its pre-modal character: "There are certain modal relationships in it, but there are no modes as crystallized formulas, and these relationships had not yet separated themselves from rhythmic ones" (1972: 259). Previously, Sergey Protopopov (Протопопов 1930: 162), developing ideas of Boleslav Yavorsky (Яворский 1908), noted that the stage of "modal fermentation", conjugated with the process of articulation and elaboration of pitch continuum, was preceded by the stage of stabilization (more or less) of modes.

The most important thing in this system is the continuity and harmonious unity of "pre-modal" and "pre-metrical" organization of temporal flow. In light of contemporary research we may suppose that this reflected a holistic form of thinking, embodying both musical and cultural practices.

Kharlap concluded therefore that intonation rhythm was primordial: "We meet it in "primary"[3] folklore, from the simplest forms (of such tribes as the Vedda, the Kubu and the Fuegians) to the most advanced, such as Russian lyrical song and early forms of church music, such as Gregorian chant and *Znamenny* chant" (Харлап 1982: 24). Thus, intonation rhythm was inscribed by Kharlap as the developmental stage in a historical system of rhythmics from the Archaic (at least before the era of tact meter) to our times. The system of intonation rhythm is treated by Kharlap as one of the earliest stages in the development of rhythmic feeling, which preceded the development of quantitative and qualitative systems. Subsequently, this theory has been used in

[1] Robert Lowth (1779) was the first to begin to study parallelism in ancient poetry, in the second half of eighteenth century. During the nineteenth and twentieth centuries, this phenomenon was studied by many scientists and it was recognized as one of the most important systems of the organization of poetic speech. The analysis of history of researching of parallelism in poetry was made by Roman Jakobson in his paper "*Grammatical Parallelism and its Russian Facet*" (1966).

[2] The first stage of the forming of the theory of intonation was connected with the works of Boris Asafiev (Асафьев 1965/1925; 1971/1930: 195–208).

[3] In Russian musicology there is accepted to divide folklore into primary folklore (associated with deeper and more archaic layers of culture) and secondary folklore (associated with the development of urban culture and its influence on the culture of the village).

dissertation "Conception of musical duration (on the example of instrumental works by Debussy)" (Чащина 2000), in which I show the presence of features of this system in Debussy's works, connected with archaic thematics (*Prélude à l'après-midi d'un faune*, *Syrinx* and *Six epigraphes antiques*); in Polina Pavlova's dissertation on the chant of *Kazan* old-believers (Павлова 2009); and in an article by Elena Smirnova (Смирнова 2010). It was supported by a number of Russian scientists, in particular by ethnomusicologist Lidia Muharinskaya (Мухаринская 1989). However, the existence of this stage of development of rhythmic thinking was not mentioned in such fundamental works, devoted to rhythm, as books by Valentina Kholopova (Холопова 1980; 2002), Mikhail Kondratiev (Кондратьев 1990) and the brilliant research "Musical culture of Siberia" by Yury Sheikin (Шейкин 2002).[4]

What is the reason for such neglect? Is it only the conservatism of Russian musicology and the difficult fate of Kharlap as scientist? Today, I consider that the main reason is the necessity to expand and develop the fundamentals of the theory of intonation rhythm.

2. Ways of further developing the theory of intonation rhythm

I see at least two important interrelated directions for the further development of this theory. The first one is connected with the category of sound. It seems productive to begin the analysis of any rhythmic system with an analysis of the concept of sound and its parameters. Kharlap and musicology as a whole have traditionally dealt with musical traditions, cultivating sound as an "atom" (Чащина 2010). This model is well represented in the grapheme of note in writing, as a kind of "point". The main acoustic feature of this model of sound is the certain pitch (or tendency towards it). Musical duration in this model is treated as a kind of length; and timbres tend to be considered as stable. So the "atomic" model of musical sound tends towards a certain homogeneity. But, both in the music of the twentieth century, and in deeply archaic musical cultures, an important role is played by the model of sound as process. In this model, all sound parameters are unstable: floating pitch; volume; spectral composition; timbre, and manner of articulation (both instrumental and, in particular, vocal). Therefore Kharlap's model of a syncretic unity of rhythm and (pre-)modal organization should be extended to a "trinity": unstable pitch, constantly changing timbre and unstable duration – a trinity comprising the complex phenomenon of intonation.

To discern a prevailing model of sound is not always easy, even with the assistance of computer-acoustic programs. A simpler approach is to analyze the concept of musical duration as it is used within particular cultures, because particularized conceptions of duration are the "raw materials" from which all rhythmic systems are built. Of course, the formative process of musical-temporal thinking was non-linear and extremely complex. However, a cross-cutting line of amplification processes of articulation is clearly visible in the evolution of ideas about the duration of the music. It can be presented roughly as follows: unconscious duration (1) proceeds to recognizable duration of a single sound (2), which in turn proceeds to division of this perceived duration into internal micro-processes (3) (Чащина 2000: 37–85; 2013).

Recognition of the duration of each sound, including pulsation, in particular regular pulsation, may apparently be regarded as a marker of the transition from a system of intonation rhythm to quantitative and qualitative types of rhythm. On the other hand, a clear predominance of irregular durations, demonstrating the impossibility of stacking them into certain temporal proportions, may be considered as a marker of intonation rhythm. Data of folklore studies confirm the existence of this type of "irrational" duration. For example, Igor Matsievsky noted, in analyzing his experience of field work in folk expeditions: "Metronoming ... is very difficult in pieces with so-called 'free rhythm' [in which] it is difficult to distinguish countable pulse ...", as a result the most accurate form of rhythmic transcription of folksong is the "measurement of each rhythmic unit with a stopwatch or other measuring device" (Мациевский 1976: 27).[5] Judit Frigyesi wrote later: "...our difficulty lies not only in the limitations of the underlying structure of our notation system but in the fact that we have little understanding of the underlying structure of free rhythm" (1989: 383). We suppose, that usage of the theory of intonation rhythm will help us to understand better this type of musical-temporal unfolding. But to transcribe these durations will be difficult in any case, because, from our point of view it is connected with the influence of bodily rhythms and with wider treatment of the category of "intonation", which is the second direction in which this theory can be developed.

[4] Kharlap's conception is practically unknown abroad, which is why only Russian rhythmological research is mentioned here.

[5] A survey of the different approaches in Western musicology and ethnomusicology to the issue of transcription and difficulties of this problem was made by Clayton in his paper (1996: 326–327).

We assume that "bodily intonation" played a major role in the system of intonation rhythm, especially in the archaic stage of its development. Every ethnomusicologist knows what an important role is played by context in the organization of a particular genre and, as a consequence, in the organization of musical regularity. The relationship between musical traditions and dance – bodily movements as a whole – has also long been known. Folklore ensembles seeking authenticity traditionally paid much attention to affixing appropriate movements to every type of musical performance. The exact bodily behavior of the artist, from our point of view, is another important source of musical-temporal unfolding in the system of intonation rhythm.

In the distant past, differentiation of dance and music into independent arts led to a long learning of music and dance practices separately. So it is a daunting task today to return to the research of bodily aspects of sound behaviour. However, we think it is absolutely necessary, if we want to investigate the phenomenon of rhythm in the fullness of causal factors, instead of accepting a reductive understanding of rhythm. The generating factor for rhythm in both dance and music is probably the biorhythms of the human body. Systems of rhythmic organization based on a more or less regular pulse demonstrate in their genesis a sufficiently close relationship to limb movements, as well as with the movement of the fingers. This is well illustrated by the development of instrumental music, in which the playing of drums and wind instruments involves primarily articulated finger movements. The system of intonation rhythm is focused on fundamentally more variable and complex internal rhythms – the rhythms of breathing[6], but probably also on biorhythms of internal body systems. For example, in strong psycho-emotional states (such as crying, emotional narrative, prayer, etc.) we can see that not only breath and timbre of voice are changed, but also bodily activity too, and this activity (epiphora, shudder etc.) is connected with the internal biorhythms of the body. If we carefully trace the genesis of musical genres in which free rhythm is actively used, we will see that they are very often connected with special psychological states. We assume that free rhythm has the propensity for irregularity precisely because it reflects the hidden polyrhythm of bodily biorhythms, which causes both rhythmically irregular body movements and irregular musical rhythm.

In this regard, the term "intonation rhythm" seems to us to be very successful. The etymology of the word "intonation" encompasses both the memory of the phenomenon of sound behavior and actually the root phenomenon of tonus, i.e. muscular tension. That is why not only pitch fluctuations and timbral variations should be researched within the intonation rhythm framework, but also "bodily intonation" – the alternation of tension and relaxation processes in the body of performer(-s). In our opinion, the close relationship between musical rhythm and the biorhythms of the body was one of the key factors that influenced the formation of a resurgence in demand for a system of intonation rhythm in some musical trends of the second half of the twentieth century. In our opinion, the turn towards the system of intonation rhythm was supported by at least two important factors. On the one hand, an important role has been played by the development of psychology as a modern scientific discipline and especially the intensive development of a variety of psychological practices, particularly in the second half of the twentieth century. On the other hand it was caused by the development of acoustic technologies during the twentieth century, that had a transformative impact on our conception of sound and the amplification of principles of micro-articulation within it.

Accordingly, when we talk about so-called "free" rhythm, we should recognize that this freedom is relative; it is rooted in listening to oneself – listening to the so-called "deep movements" of both the soul and body. That is why the first stage of development of the concept of duration (unconscious treatment of musical duration) may have something in common with the third stage – micro-articulation of sound process.

Another important trend is the investigation of continuity and discontinuity in the system of intonation rhythm. In researching this aspect, we should not only integrate the development of music into the development of culture, but also coordinate it with the achievements of the cognitive sciences.

In moving towards a global metatheory, we propose to place at its foundation neither category of rhythm as such, nor a temporal development, but the relationship between stages of the development of human thinking, which gradually intensified acts of distinction and more detailed articulation, on the one hand, and the development of sound culture, as a private manifestation of conscious (and unconscious) human activity, on the other.

Summarizing, we note that the system of intonation rhythm seems to be the most appropriate basis for developing a methodology for the analysis of many phenomena, both in archaic *melos* and in contemporary music practices. Under the proposed expansion of the conceptual framework, we can consider this system as

[6] This connection was noted by many scientists. Kharlap, for example, wrote: "Intonation feet in duration corresponds approximately to the periods of normal breathing (about 3–4 sec.), but this value is not stable. Breathing differs from another physiological rhythm – pulse, not only by the bigger value of periods, but also by the lack of strict regularity. The respiratory groups can stretch and shrink in speech, and the trend to longer breathing during singing offers a reason for the appearance of periods from two or more intonation feet. The relationship between intonation articulation and breath can be quite diverse in advanced forms of intonation verse, which are characteristic of Russian folklore" (Харлап 1986: 55).

providing an infinite variety of possibilities for different musical practices, and at the same time implying a certain methodology for the analysis.

The theory of intonation rhythm needs further development, testing by different musical materials and interaction with other disciplines. Thus, it seems to us that a lot of interesting discoveries await. It should help us to better understand not only the organization of musical development, but also to get closer to a volumetric understanding of human nature and, as result, a better understanding of ourselves.

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Santrauka

Intonacinio ritmo teorija: plėtotės būdai

Esama gerai žinomų ir ištyrinėtų kiekybinių (adityvinių) ir kokybinių (dalomųjų) ritmo sistemų. Ankstyvieji ritmo vystymosi etapai paprastai apibūdinami kaip „ikimetriniai“. XX a. šeštojo–devintojo dešimtmečio Rusijoje buvo plėtojama intonacinio ritmo teorija, beveik nežinoma užsienyje. Straipsnio tikslas – apibūdinti pagrindinius šios sistemos bruožus, atskleisti jos kilmę ir galimus plėtotės būdus.

Šios sistemos formavimasis prasidėjo nuo kelių veikalų – A. Lvovo „Apie laisvą ir asimetrinį ritmą“ (1858) ir P. Sokalskio „Rusų liaudies muzikos melodinė ir ritminė sandara, jos skirtumai nuo šiuolaikinės harmoninės muzikos pagrindų“ (1888). Tačiau pagrindinis mokslininkas, suformulavęs šios teorijos pagrindą, buvo M. Charlapas. Savo darbe „Rusų liaudies muzikos sistema ir muzikos kilmės klausimas“ (1972) jis, tyrinėdamas rusų bylinas, pagrindė trečiosios, istoriškai ankstesnės ritmo plėtotės fazės – intonacinio ritmo – egzistavimą. Mokslininkės S. Čaškina, P. Pavlova, E. Smirnova siūlė taikyti šią teoriją plačiau, analizuojant Debussy kompozicijas (kūrinius, susijusius su archajine tematika), ženklinį sentikių giedojimą, senąją prozodiją.

Šią teoriją būtina toliau plėtoti. Visi žinomi ritmo tipai (kiekybinis, kokybinis, Charlapo intonacinio ritmo interpretacija) priklauso nuo muzikinės praktikos, kuri garsą apibrėžia kaip tam tikro aukščio ir trukmės toną. Charlapas intonacinio ritmo esmę įžvelgia kaip „ikimodalinio“ ir „ikimetrinio“ (dar nereguliaraus) organizavimo vienovę, kur svarbų vaidmenį atlieka bangos principas (kylant frazės vidury ir leidžiantis pabaigoje). Toks organizavimas yra artimai susijęs su kvėpavimu ir prozodijos intonavimu; daugelyje šalių šis reiškinys vadinamas prozodiniu ritmu.

Mūsų nuomone, intonacinio ritmo principas visų pirma (nors ne tik) būdingas toms kultūroms, kurios taiko garso kaip tembrinės „dėmės“ (ar „lauko“) koncepciją. Tokia muzikinė sistema apibūdina kitokį laiko plėtotės supratimą – ne tokį pavienį, bet labiau nuolatinį ir veikiau sudėtingesnį, negu muzikoje, kurioje tono trukmė skaičiuojama nuo aiškios pradžios (atakos) ir daugiau ar mažiau apibrėžtos garso pabaigos. Intonacinį ritmą labiau lemia fiziologiniai ir psichologiniai veiksniai negu proporcijų pojūtis, sudėtinga kombinatorika ir t. t. Tai labiau susiję su vadinamuoju dešiniojo pusrutulio, negu su kairiojo (loginio), mąstymu. Straipsnyje daroma prielaida, kad toks intonacinio ritmo teorijos praplėtimas siejasi su garsų pasaulio artikuliacijos procesu ir žmogaus mąstymo vystymusi.

Tokio ritminio mąstymo pavyzdžių yra ne tik archajinėje muzikoje (pvz., J. Šeikino atlikti tyrinėjimai Sibire), bet ir įvairiose šiuolaikinės muzikos formose, ypač tose, kuriose esama improvizacijos: džiaze (ypač laisvajame), eksperimentinėje muzikoje (ir akademinėje, ir populiariame avangarde), atlikimo menuose ir t. t.

Markos Lekkas

Running (in and out of) Time

A matter of distance?

Time seems to have been perceived as a meaningless space, a never-ending empty line on which meaningful events are being attached, in the same manner already shaped elements hang one after the other on a bare – non architectural – cloth line. It is possible however that time is structured in such a way that the events assume their form not according to their individual characteristics but following the obligatory relation to other events, dictated by the particular structure of the temporal environment they live in. Unless time exists as such, there is no meaningful way to explain the architectural distance between events, which otherwise would seem to denote a vacuum, in which individual sensible moments occur unconnected to each other. Time can thus be defined as the functional plain upon which successive events form a larger whole, by being placed at a certain distance from each other.

In the next example it becomes apparent that meaning is not a matter of individual shape, but one of structural placement including distance.

Example 1. Shapes and structural placement

Since the events themselves constitute no layer of their own and, as a result, have no consciousness of the power linking them to one another, their distance can only be measured on the surface of time. In this respect, what they form depends and is depended largely upon the frame in which they exist. Events therefore after entering the frame of time become members of a society which is governed by structural boundaries dictating their social role and function, dictating what they actually are. In this respect, the event is not the signified, it is the signifier.

What then is the signified?

The syntax of time

Time as it has been expressed by Immanuel Kant (1770) is an intelligible concept, a plain upon which events are placed in order for their interrelation to be comprehended, as it is not possible for such relations to exist without the conceptual preexistence of time. In this respect, there exist periods of time, marked by instants showing their beginning and end, within which events occur at certain intervals.

Example 2a. Structural placement of sensible events upon the intelligible (non sensible) time

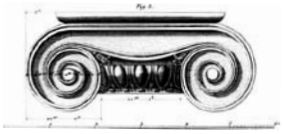
Time is therefore divisible and can then be fragmented into fractional units, each of which is possible to be further fragmented without being a separate entity itself, but instead a fraction of the whole, relating functionally to other fragments. As a result it can be deduced that time contains structure or that time is by default already structured.

Example 2b. Structure not as an event-(property) but as a time-property

In this respect, events exist and behave according to the structural properties of time, acquiring – by way of this relation – syntactical characteristics they did not possess before.

Looking for the rhythm

In music what actually defines the events in a composition is not the individual way they sound but the way they are being connected to each other, the way in other words they are placed (within the frame of time) regardless of whether they represent notes, motives or even phrases. In many ways they resemble the manner that ancient columns function within a larger structure, where they are able to denote (but unable to represent) rhythm on their own, for rhythm does not exist in the parts themselves, it is the result of the moulding of these parts as they form larger structural units.



Example 3a. Rhythm on the level of the event

As a column is by default part of a larger formation – each consequent column being only a repetition of the one before – its most important syntactical property is the distance from the one before and the one after. In this respect the different formation of the structures below, are far more characteristic of the structural rhythm than the type of column used, which ultimately becomes almost an incidental stylistic detail.

a

Semicircular formation

b

Straight formation

Example 3b. Rhythm as expressed in relation to the whole, expressing its immunity to the rhythmic properties of the event

Thus a column is only a structural indication of the whole, with no syntactical meaning in itself, without the ability to define the building or its use, as it only represents just a small aspect of style, which is perhaps structurally irrelevant, in the same manner a C sharp is largely irrelevant to the motivic structure.

The events then act as pins on a map, marking the map property without relating to it, outlining no shape of their own, in the same manner that a signpost indicates a place, by being geographically but not architecturally connected to it, in the same manner that street signs are being signifiers without being part of the actual structure.[1]

Time is not real and for that reason it is just an invention of the mind, outlining the fundamental geography upon which the events are placed in order for them to acquire relation to one another, not as constituents but as points of reference to the lines, which constitute the actual shape.

The space in between

Time could thus be defined as the apparatus which sets in order not the events themselves but the invisible distance between them, existing on its own intelligible (and for that reason invisible) body. In this respect, time does have a body and constitutes both structural and functional geography, the result of which is inferred by the visible events.

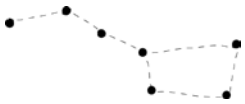
In the same manner, Ursa Major is what it is not because of the characteristics of the individual stars, comprising the constellation but because of the distance (and the direction) from each other; it is therefore not the stars that which defines its final total shape, but the empty space between them.

Example 4a. The constellation drawn using only the sensible events

[1] Such a signifier in music is the barline, a sensible sign, denoting the existence of pulses and measures, without being itself part of the structure.

Since there are no lines involved but a mere aggregation of points, showing only where the non visible lines are apparently passing through, the representation constitutes only a signifier of a supposed outline, which is formed in approximate terms, exclusively inside the brain.

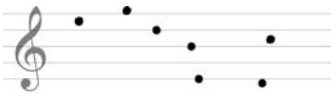
Here too, the structural factor is again the distance in between, the frame within which structure exists. In order to define the scheme, it is therefore necessary to draw the lines connecting the points, since the dots themselves are no more than footprints showing the covered distance.



Example 4b. The constellation using the intelligible lines connecting the sensible events

In the case of the musical score one sees the notes which represent the actual events, the sounds behind them; the sounds which need to be put at a certain distance within the frame of the non sensible intelligible time, in order to acquire meaning and structural narrative. In this respect what actually comprises a composition is not really the dots but the 'space behind', the invisible lines running from one dot to another connecting them, made up by the mind, not detected by the eye.

The dots seen by the eye are merely a notational cartographic shorthand approximation, showing where the invisible lines meet and how they travel, it is therefore a plain map of the (drawing) route, not of the actual geography.



Example 4c. The constellation drawn using only the sensible events projected upon a 5-line matrix, omitting the structural lines which constitute the route of the travelling sound, denoting not the actual trail but the marks the moving sound has left behind

Events (thus) are the visible parts of an invisible whole, in the manner that people are visible sensible units of an invisible intelligible whole, the family, inside which they function, unable to exist meaningfully on their own. Thus it is possible to sense people (representing events), through whom it becomes possible for the mind to invent the conceptual preexisting whole, the family, which is a representational product of the intellect, a concept, without which however people would be stripped of their relational links.

Shapes are made of (structured) lines, not of points.
Music is made of (structured) periods of time, not of events.

A placeholder for the slip of the tongue

Language strangely has not yet devised a term to define the function pertaining to the internal structure and dynamic relations within concepts. Thus terms such as *family,* although governed by organic relations, are often perceived as mere aggregate summations, betraying a rather loose and inexact perceptual status.[2] The reason is rooted in the habitual fact that language feels more content dealing with the sensible (events) rather than with the intelligible (functional frame) arriving often at the erroneous conclusion that the events (as a result of their visibility) are structural elements in themselves, instead of being the content, that people themselves constitute the structural family, that people *are* the family.

In the same manner in music, what is visible on paper seems to denote a corresponding element in the sound domain, a rather deceiving notion, as one cannot hear neither the omnipresent barline, which represents a mere point between actual time periods, nor can conceptualize the invisible pulse, being actual structured time, upon which the narrative obtains existence.[3]

In this respect the barline, as a result of its striking visibility, is perceived as a structural element while the pulse is perceived either as an applied mechanism for dividing the beat into two equal parts or as a mere placeholder, pertaining more towards a storage box of sounds, rather than a functional frame of relations, diminishing thus – even at times nullifying – its structural properties.

2 The closest term *placeholder*, denotes a non-functional container and cannot properly describe relational functions.

3 This resembles the way the (sensible) added odour, acting as signifier, is taken as the main property of the otherwise (intelligible) odourless gas, spreading the fear than one is bound to die from excessive intake of smell.

Structuring time

Pulse is an empty functional frame consisting of structured time, whose properties forge the laws events entering its boundaries are obliged to obey. The events themselves have no properties of their own in relevance to time and their other properties such as pitch, duration, color etc. are irrelevant to structure. A sound event in relation to time is thus a phenomenon with a sole structural feature, the moment of its attack, dictating in this way its geographical placement, illuminating its relation to other such events governed by the same laws. Pulse is thus a period of relations, the beginning and end of which are actually concepts and do not constitute part of its property, acting as plain indications of its size, two non-structural points at each end, in the same manner the heartbeat marks the structural period to the next heartbeat, containing no relations of any kind, since points are not made of time.

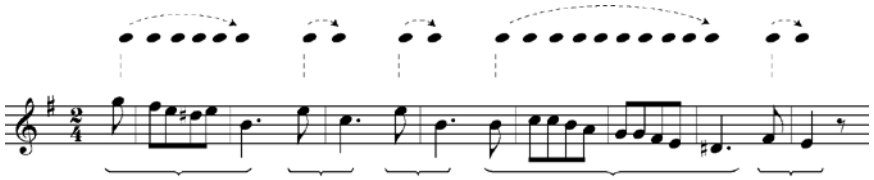
In music the role of the heartbeat is assumed by signposts at the beginning of periods, measures, pulses and pulse elements, of which the only one visible is the barline, a largely 17th century invention, acting as a structural barrier, breaking the narrative just for the fact that is visible, based on the premise that the mind is prone to deception, while everything else is either assumed or sometimes just ignored either by will or by habit.

According to the principle of proximity in Gestalt Theory, events having a close distance to each other are perceived as belonging to the same group. The final event of a group is therefore the one situated at a greater distance from the next one, which by default belongs to the following group.

Example 5a. Events according to the principle of Proximity leading to the final

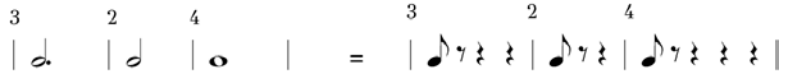
The final event of each group is perceived by the brain as having an agogic accent, based on the premise that each successive event leads to the next until they reach the final one, completing in this way the group.

Looking at the following example the end of the group seems to be determined by the duration of the last note, giving the false impression that duration itself is a structural element.



Example 5b. Duration and Proximity groups (Schumann, *Album für die Jugend* op. 68.16)

In reality duration in general is irrelevant to both structure and narrative, since events in time, relate to each other in terms of succession and their structural characteristic is their placement within the time period, their impact being only terminated by the presence of the next event, in the same manner a day ends when the next event (night) arrives. In this respect the duration of a certain event is not the property of the event itself, but a side effect caused by the beginning of the next one. Thus in the following example both versions are identical since their relation to time is determined by their attack and not by their duration.



Example 6. Structural irrelevance of duration

In this respect it can be said that an event has only beginning, its ending is irrelevant, since duration itself is not an evental property. Thus an event gradually disappears from memory, even in full presence, led to obscurity by the impact of the next events in order.

The invisible framing of the sensible

A functional frame is a frame whose function is to lend relational properties to its content, which did not exist before and would be lost as soon as the content exits the frame. Most of the time either the frame itself or its functional properties, belong to the realm of concepts. Thus the frame although itself at times sensible, its implementation of properties such as inertia or gravity to its content is neither sensible, not otherwise

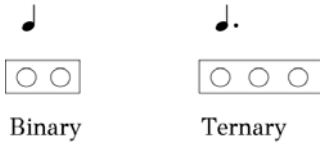
empirically understood, remaining exclusively a property of the intellect. In this manner, the relations developed inside the frame remain unavailable to the senses, causing as a result the habitual ignorance by choice, of their very existence, since a reminding sensible impact of their presence, is either not received or not processed by the brain.

This rather peculiar phenomenon has also penetrated language which has not felt the need to define the functional properties of frames, perceiving them instead as mostly aggregational containers, as holders of objects rather than agents of relations, supported by the use of terms such as the suffix *-hood* (as in manhood) which in the best of conditions would mean an aggregate summation and hardly a procedure of function and relations.

Following, however, the actual process, the frame would lend its function to its content, until the inhabitation within is terminated. By default then, these characteristics are the real-time property of the frame, forcing the events to behave accordingly. Transferring the procedure to music it can be deduced that it is not the events but time, which is structured and its structural characteristics are mirrored on the otherwise characterless events, which by being sensible, delude the mind to believe that they themselves and not the frame have organic structure. Hence, it is the Pulse which although can be neither seen nor heard, that actually determines the attitude of the visible and audible events which inhabit it.

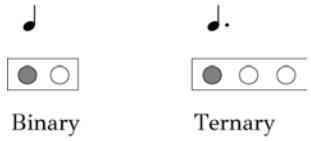
Inside the invisible pulse

Musical pulse could structurally be either binary or ternary, containing respectively two or three equal fractional fragments called pulsar elements.



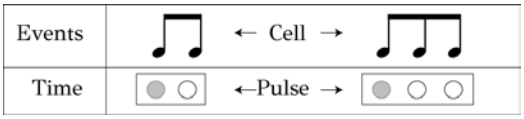
Example 7a. Binary and ternary pulse with their respective pulsar elements

The pulse is structured time, containing an accent at its start. This pulsar accent is a unique property of the pulse and is applied to the first event in order, regardless of its duration, since duration is not a structural element.



Example 7b. Pulsar accent

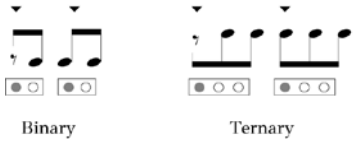
In this manner, structural time and groups of events, made of organized musical phthongs locked inside the pulse, run simultaneously, the former constituting functional relations and the latter forming the sensible part of their existence, the cell.



Example 7c. The (intelligible) pulse and the superimposed (sensible) cell made of organized phthongs

It is important to note that the pulse, due to its non-sensible character, remains largely undetected, its existence being only assumed by observing its impact on the sensible.

The accent at the beginning of each pulse causes the first event to be noticeable, more than the consequent ones, which have no such property. The accent is applied regardless of whether it is a note or a rest, since a rest is also an event taking up actual structural time, regardless of the fact that is not sensible to the ear. As far as structure is concerned, a note is identical to a rest, making the lingual rendering inadequate, for there is no rest anywhere in music. What is called a rest is an actual temporal event whose volume has been set to zero. In this respect a rest is a note.

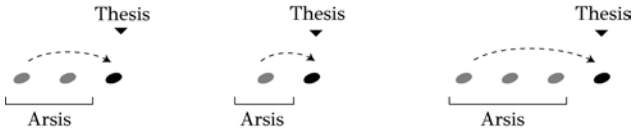


Example 7d. Application of the accent on the first event of the cell, whether a note or a rest

Forging the visible

Two of the most important functions of the pulse are the Thesis and the Arsis, both of which appear and operate on the evental level, occupying each an inversely proportional, non fixed, time interval. The main characteristic of their function is that the Thesis contains one single event while the Arsis as many more as the pulse can hold.

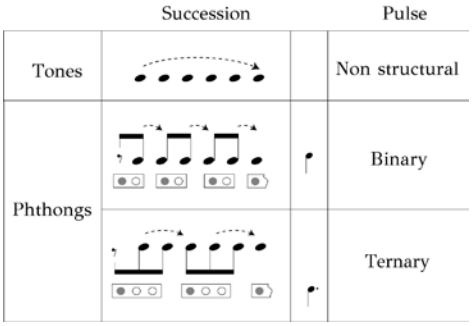
Traditionally the theory of music has accepted that the Thesis comes first and Arsis follows, which is inaccurate since the thesis occurs at the conclusion of a series and not at its beginning, containing one only event, after which, another Arsis begins repeating the process over again. In this respect, a series of tones has one final event at the end, at the place where the Thesis lies.



Example 8a. The preceding Arsis and the following Thesis

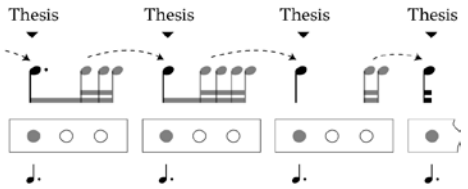
In this respect the organic accent at the beginning of the pulse (the Thesis) is perhaps the most characteristic pulsar function, serving to carry the structural meaning and give direction to the music, forging in this manner the structure into larger formations of narrative.

As it has already been stated, duration is not structural and for that reason the function of the thesis is not applied on the level of time but on the level of the event. Thus, when the tones enter the pulse are being transformed into phthongs, following one another, leading by default to the first pulsar element of each (next) pulse.[4]



Example 8b. Pulsar accent driving the narrative forward

In this manner the first event within the pulse concludes the previous event-group, functioning as a point of arrival, after which a new group would start, repeating the process, directed towards the next Pulse. The point of arrival then, lies not in the same but in the next Pulse.



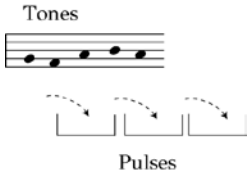
Example 8c. The reciprocal spatial relation between the Arsis and the Thesis

[4] In the case of the non-structural tones the last event is also perceived as the first of the next group.

As it can be seen, the more space taken by the Arsis the less space is left for the sole event of the Thesis, which only requires a minimum vicinity, efficient enough to render it sensible. In this manner this event could vary in agogic value from the smallest possible fraction to occupying the entire pulse, under the condition that the space is made available by the absence of events inside the following Arsis.

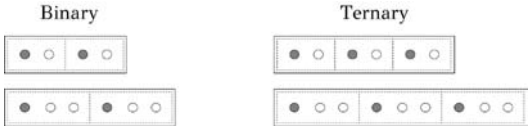
Towards language

When the almost characterless twelve tones of the tonic system enter the premises of the pulse, are forged to form organic cells, within which they are transformed into living structural elements, able to assume syntactical role towards the formation of lingual narrative.



Example 9a. Forging the tones into phthongs

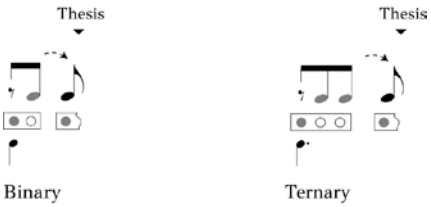
Entering the Pulse, tones acquire new characteristics being transformed into phthongs. Phthongs are organized tones on their way to constituting language, cellular formations which exist solely inside the pulse. The moment they no longer inhabit the pulse they become single tones again and belong back to the Tonic System since the function of the pulse is a real-time one. Pulses then are organized into larger fragmentary units, the measures, which by default could only be, either binary or ternary, following the Tempus and Prolatio principle of the Medieval Music.



Example 9b. Binary and ternary pulses inside binary and ternary measures

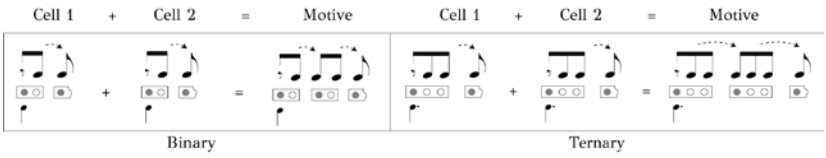
When such a succession of phthongs enters the pulse, acquires pulsar characteristics no longer pertaining to mere tones but instead, to factors of language, able to form cells and motives.

A cell therefore is comprised of phthongs inhabiting inside the Pulsar Elements. As soon as the pulse is filled, becomes functionally locked, containing a whole cell made of phthongs. In this respect a cell is correspondingly equal to a pulse, ending on the Thesis, being also either binary or ternary.



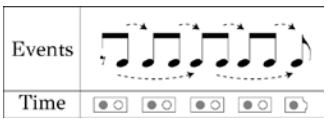
Example 10a. Direction and structural correspondence of the cell

In this manner, on the level of language the pulse represents a musical syllable, a functional frame containing a corresponding musical cell. When two or three pulses are joined together building thus larger structural units, the cells inside form also binary and ternary motives, which on the level of language represent the letter formation of the word, a functional frame containing syllables.



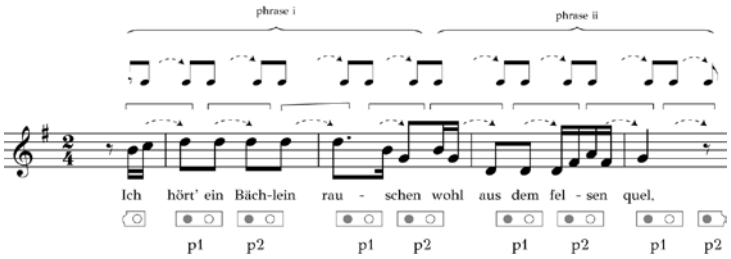
Example 10b. Forming the motive

As the pulses are put in succession one after the other forming binary and ternary measures, the events inside follow by default in simultaneous formations of cells and motives.

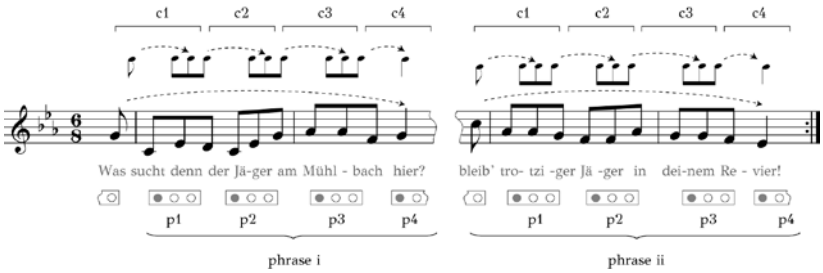


Example 10c. Moulding the (sensible) events inside the (intelligible) structured time

Two examples from the repertoire are shown below one binary and one ternary, following the notation of the sensible, superimposed on the intelligible pulse, which determines the formation of the sensible into cells and motives as well as its syntactical attitude.



Example 11a. Binary structure (Schubert, *Schöne Müllerin* D.795.02)

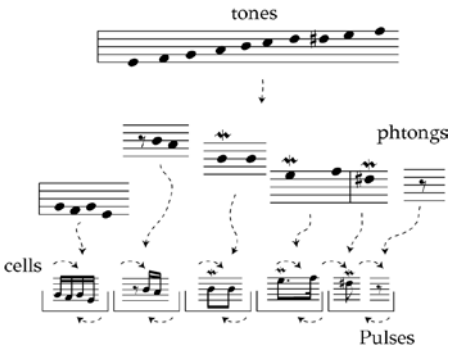


Example 11b. Ternary structure (Schubert, *Schöne Müllerin* D.795.14)

As a result of modern theory of the Rococo period and its preoccupation with the light and the elegant, there are almost only binary units of pulse measurement in music. Thus when the need comes for ternary, an alteration is necessary through the so-called dotted values. In this respect since a value of three eights does not exist one has to resort to altering a binary quarter value by placing a dot after it (altering incidentally its value to one-and-a-half) a device for which there is no corresponding fraction to denote it. Thus a 6/8 measure although it is just a common simple binary measure of 2/3 and the 9/8 just another simple ternary measure of 3/3, both are presented as compound measures pouring incoherence into basic practical musical procedures.

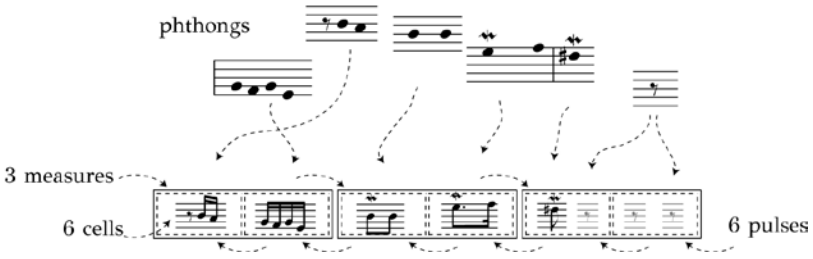
Invisible language

Thus the tones of the tonic system are grouped together according to their pitch relation, forming groups of phthongs which eventually, entering the pulse are transformed into cells locked functionally inside the pulse.



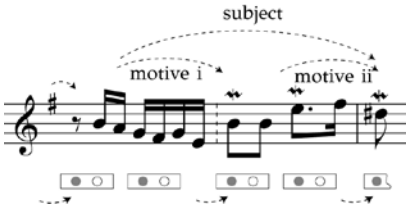
Example 12a. From the tones to the cells (Bach, *Invention 7*, BWV 778)

The next step involves the relational organization of the pulses themselves, their syntactical placement within a larger structural unit such as the measure, carrying with them their, already structured, cellular content.



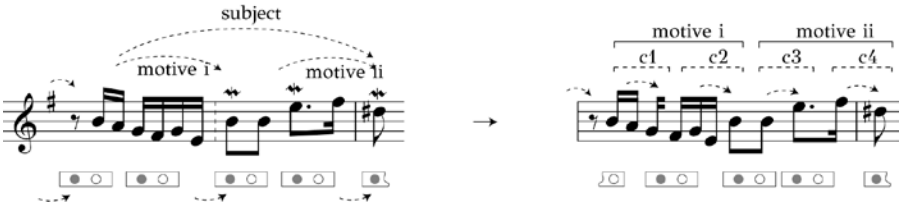
Example 12b. From pulses to measures (Bach, *Invention 7*, BWV 778)

Having already been shaped into musical syllables, following the laws of intervallic succession inherent in the tonic system, the cellular content is being moulded eventually into phthongs, forming consequently larger syntactical units in the shape of motives and phrases.



Example 13a. Formation of syntactical units towards narrative (Bach, *Invention 7*, BWV 778)

Following the structural organization, the subject of the example is formed within a binary frame, with each cell reaching the final phthong at the beginning of every pulse, completing ultimately a compound binary measure.

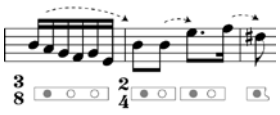


Example 13b. Cellular and motivic narrative direction towards the next syntactical unit (Bach, *Invention 7*, BWV 778)

Desensitizing music

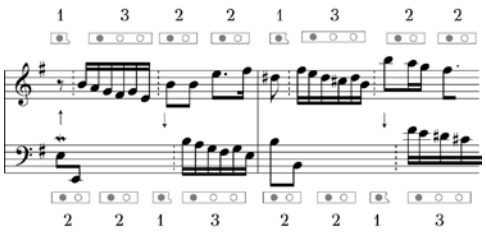
As a result of the fact that events are the only ones sensible, they inadvertently take precedence over the invisible structure of the pulse, giving the false impression that they themselves are the language of music.

Being deceived from following only what is sensible, performers then render the events according to the vertical distance from each other, placing a false accent inside the arsis, turning as a result the (binary) cell into ternary, placing an extra thesis where there isn't any, with consequence to disturb the narrative, resulting from the inherent habit of the mind to be deceived from events lying close to each other.



Example 14a.Ignoring the pulse, caused by visual deception (Bach, *Invention 7*, BWV 778)

As the other voice enters also on the Arsis, the repetition of the false execution of the motive as ternary, being placed against the binary of the other part, has as a consequence to make the structure incoherent, rendering a performance, which is both haphazard and illogical.



Example 14b. Haphazard execution (Bach, *Invention 7*, BWV 778)

Thus the language of music, following what is sensible, forms its narrative based on the shape of the dots, instead of on its structural principles towards a syntactical narrative.

Epilogue

Time could be expressed as consisting of periods of relations representing change; in music, however, it has often been used as a line upon which individual events take place, one after the other, regulated by the barline. As a result, the outcome often leads towards a mostly binary, repeated pulsar pattern, where the difference is expressed almost exclusively by vertical sonority, a reflected propensity of the Rococo environment. In this respect, the mensural possibilities are being reduced to a measuring mechanism of distance between fixed units, where the container dictates not the function but the shape of the content, superseding thus the gestalt properties of music, forcing the human mind to be concerned with measured blocks, which does magnificently, instead of the meaningful juxtaposition of notes forming cells, motives and phrases.

Time perhaps, could be thought as a preconceived long strip of silence upon which partial whole events could be unfolded, forming a complete whole. In this respect, time in music is the frame not of sounds but of narrative; narrative meaning.

Music happens in time. Its form and structure also happen in time. They run in the so-called real time, for no other time exists, everything else is a fictional metaphor. That which remains in memory afterward is not music, it is the recollection of an experience at a different, non-real time.

Thus, its basic structural unit – the invisible pulse – is also running, because this is what music is: structured time using notes to draw its footprints, in order for its trail to be understood and followed.

Santrauka

Laike ir už jo ribų

Laikas gali būti apibrėžiamas kaip besikeičiančių santykių periodų, o ne individualių momentų seka. Muzikoje vis dėlto jis dažnai suvokiamas kaip linija, greta kurios vienas po kito išsidėsto individualūs įvykiai, valdomi išradingos įprastos priemonės – takto brūkšnio. To rezultatas – daugiausia binarinis, pasikartojantis pulsinis modelis, kuriame skirtumai išryškėja beveik vien dėl vertikalaus sonoriškumo.

Taigi menzūrinės galimybės yra laikomos matavimo mechanizmu, apibrėžiančiu atstumą tarp individualių periodinių vienetų (tokių kaip taktai), nustatant principą, kaip jie užpildomi, kai talpa diktuoja turinio formą ir verčia žmogaus protą rūpintis vienetų matavimu, o ne siekti prasmingo natų išdėstymo formuojant ląsteles, motyvus ir frazes, taip išstumiant muzikos *geštaltines* savybes.

Laikas gali būti suvokiamas kaip išankstinė sąlyga, ilgas tylos tarpas, per kurį gali plėtotis visumą sudarantys įvykiai. Tokiu požiūriu laikas muzikoje yra ne garsų, bet naratyvo dalykas. Pagal naratyvo prasmę muzika yra struktūruotas laikas su kelią rodančiomis natomis.

Pauxy Gentil-Nunes

Partitional Analysis and Rhythmic Partitioning: Mediations between Rhythm and Texture

1. Introduction

Partitional analysis (henceforth *PA*) is an original theory with some new concepts and tools, aiming the application of abstractions derived from the mathematical theory of integer partitions to compositional practices and musical analysis. It has been developed since 2003 (Gentil-Nunes & Carvalho 2003) and has resulted in some published papers, thesis, compositions and analyses in Brazil (for a list of productions, see Gentil-Nunes 2009).

The fundamentals of PA are established in a first step through a mediation between Wallace Berry's textural analysis (1976: 184–199) and the mathematical theory of integer partitions (Andrews 1984; Andrews & Eriksson 2004).

Berry proposed the codification of textural progressions through comparison of distinct profiles of component parts of a musical discourse. The independence or interdependency between concurrent parts constitutes the so called "textural configurations", whose discursive motion delineates the textural progression and recession curves.

Mathematical theory of integer partitions works as an ideal model for developing such an exhaustive taxonomy of that kind of configurations, following criteria that may vary according to the analytical desired focus.

Partitional analysis is constructed by the detailed observation of the application by those very criteria, comparing concurrent parts by pairs. Binary comparison works through simple algorithms, defining collaboration or opposing relations between parts. The process results in two complementary indexes – *agglomeration* (***a***) and *dispersion* (***d***) – delineating a unique profile for each textural configuration. Each pair of indexes can be plotted in a phase space graphic that expresses the topology of the field of choices at disposal for the composer.

The successive decisions delineated by the composer in scores (for instance) form a trajectory. This field is called *partitiogram* and works as an inventory of all possible configurations relative to a given number of elements (for example, instruments, voices, sounds, lines). It also expresses the topology of the relations between the configurations, according to their metric distance in the graphic.

The plotting of both indexes through time generates the *indexogram*, where the interactions between the two resulting lines can be read as four basic progressions (resizing, revarying, transference and concurrence), each one with distinct functions.

Rhythmic partitioning is the computational application directly derived from Berry's work that uses the onset points and durations as inputs for graphic plotting.

Analyses of rhythmic partitioning were made with the software PARSEMAT (Gentil-Nunes 2013/2004), programmed by this author to streamline the task from MIDI files. Some concert music (from Bach, Beethoven, Schoenberg, Webern, Boulez, Ferneyhough, among others) has already been processed.

The results are very expressive and point out to an effective role of rhythmic partitioning as a subjacent organizing principle under the musical discourse, as well as an intimate implication of rhythmic concurrent profiles on texture and form.

Rhythmic partitioning is part of a broader research that observes the application of the abstractions derived from PA to various fields of musical composition (melodic structures, timbre, form) with regard to the vertical interaction between elements. In that sense, PA surpasses far beyond the range of Berry's proposal, thus possibly constituting a general theory of musical verticality. Furthermore, the possibility of a perfect homology between heterogeneous parameters and the mapping between them can also be a exciting possibility for composition and musical analysis.

2. Textural analysis

Musical texture is a theoretical field covered by Wallace Berry in his book *Structural Functions in Music* (1976). In the chapter about that subject (p. 184–199), Berry defines texture as a musical parameter *"... conditioned in part by the number of those components sounding in simultaneity or concurrence, its qualities determined by the interactions, interrelations, and relative projections and substances of component lines or other sounding factors."* (Ibid.: 184).

Berry's conception about texture is dualist. "Density" represents the quantitative aspect of the configurations (based on the number of concurrent sounding components – the "density-number") and the level of compression of components in a given intervallic range ("density-compression"). On the other side, the interactions and interrelations between components will constitute the quality of texture, departing from the variations on independence and interdependence between components.

From that duality, Berry establishes a differentiation between the raw "sounding component", taken alone as quantity, and the "real component", considered as a result of the interactions between sounding components:

> "*Two lines moving in parallel 3rds. may in an important sense be said to constitute a single real textural factor consisting of two components. At any point at which differentiation is established – in rhythm, in direction of motion, in the distance of motion, or in any other sense – a texture initially consisting of a single real factor (of two sounding components) becomes a texture of two real factors (or at least progresses in the direction of such differentiation).*" (Berry 1976: 186)

The movement of the sounding components, their sudden appearance or disappearance, and the coincidences and contrapositions of their articulations will form what Berry call "textural progressions and recessions".

As an example, Berry presents a musical excerpt of Milhaud (1934) where the independence and interdependence relations are represented by piles of numbers, referring to the thickness of each real component (Figure 1).

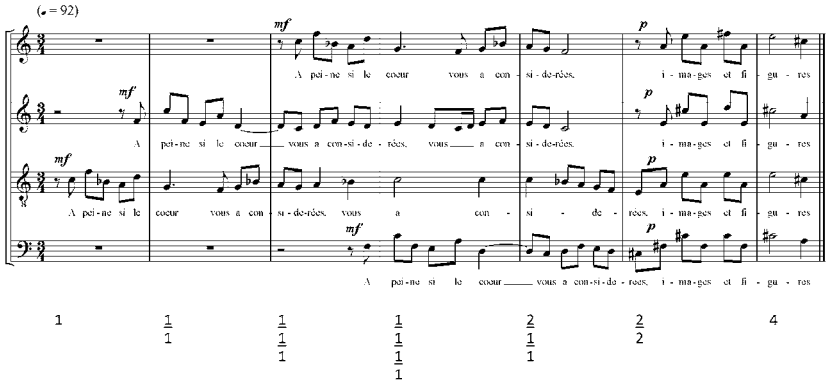


Figure 1. Milhaud (1934) – *A peine si le coeur vous a considerées, images et figures,* excerpt: real components (Berry 1976: 187–188)

According to Berry, "*In the example, there is progressive development of textural complexity toward m. 4 and recessive decline in that complexity (toward textural accord and simplicity) in approach to the cadence at m. 7*" (Ibid., p. 186). The author also draws attention to the fact that the density-number has its own curve, described by the vector <1 2 3 4 4 4 4> and independent of quality curves delineated by the progressions of configurations (Figure 2).

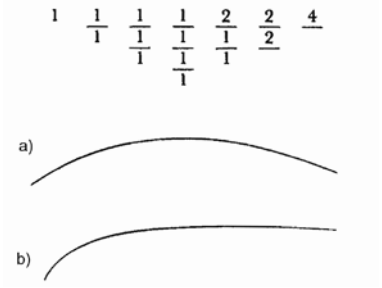


Figure 2. Qualitative textural progression and recession (a) and quantitative progression (b) in Milhaud 1934 (Berry 1976: 188)

Most of the value of Berry's analysis remains in the demonstration of viability of a systematization of textural thought in a more objective way comparing to the current compositional pedagogy. Nevertheless, the analysis itself has some drawbacks that were observed in a former paper from the present author, referring to the "observation window" and some motivic features that were left out by Berry (Gentil-Nunes 2006).

3. Theory of integer partitions

According to Andrews (1984: 149), "*The theory of partitions is an area of additive number theory, a subject concerning the representation of integers as sums of other integers*".

Following definition, number five, for example, has seven partitions – ways by which it can be represented by the sum of other integers (Figure 3).

5
4 + 1
3 + 2
3 + 1 + 1
2 + 2 + 1
2 + 1 + 1 + 1
1 + 1 + 1 + 1 + 1

Figure 3. Partitions of number five

Departing from that operation, Andrews defines the ***p*** function as the denotation of the number of partitions of ***n***. In the given example, p(5) = 7. For each integer there is a distinct number of partitions of it. The main goal of partition theory is quantifying and enumerating of partitions of a given integer, and enunciating the partitional identities. These identities are congruencies established between partitioning, accomplished by different pre-defined conditions. One example given by Euler (1748; the first author that suggests partitioning in that sense) can be expressed in this way: the number of partitions of an integer ***n*** in which all parts are odd is equal to the number of partitions of n which all parts are distinct. Andrews and Eriksson (2004: 3) mark that "*it is an intriguing fact that there are so many different and unexpected partition identities*".

Representation of partitions in the specialized literature has two basic forms:

a) Standard or lexicographic – the parts are grouped in vectors, in full and in lexicographic order (Zohgbi e Stojmenović, 1998: 320–321), For instance, the partitions of five are represented by <11111, 2111, 221, 311, 32, 41, 5>.
b) Representation by multiplicity or abbreviated – "*a more concise notation, where the number of each part is registered in an exponent, so that 7 + 7 + 5 + 1 + 1 + 1 + 1 is written* $7^2 5^1 1^4$" (Andrews e Eriksson 2004: 34). In this case, by convention, the parts are presented in decreasing order, inversely to the standard representation.

Beyond the numeric way, partitions can also be represented by graphic diagrams, which can be, according to Andrews (1984: 6), "*another effective elementary device for studying partitions ...*".

The most important graphic representation of partitions is Ferrers's diagram or Young's diagram (Figure 4). On both, parts are represented by dots or squares, respectively, distributed on the plane according to their size (horizontal dimension) and multiplicity (vertical dimension).

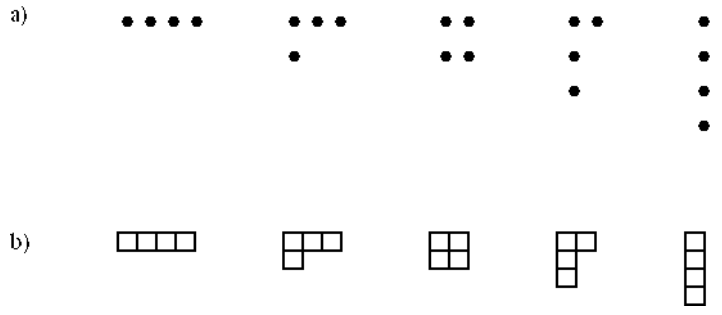


Figure 4. a) Ferrers's diagram and b) Young's diagram for partitions of number four (4, 31, 2^2, 21^2, 1^4)

Young's lattice is the representation of all Young's diagrams ordered by inclusion relations. In this kind of relation, each block precedes and connects to the one in which can be graphically included, with the left superior edge coincident (Figure 5).

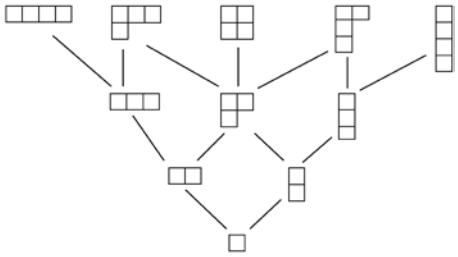


Figure 5. Young's lattice limited to partitions for n ≤ 4 (Andrews e Eriksson 2004: 108)

In the development of PA, a structure similar to Young's lattice emerged as relations between partitions were discovered and registered.

4. Binary relations

The mediation between textural analysis and theory of partitions is constructed departing from a basic and simple concept, called "binary relations". These relations play an important role on the very definition of the partitions, seeing from a musical point of view.

The concept can be better understood taking a glance on some traditional techniques of basic textural training, like exercises of Harmony and Counterpoint. Every time the teacher asks the students to find matches between parts – searching, for instance, for parallels fifths or octaves, they have to check the parts exhaustively by pairs. For a mixed choir (SATB), there are six pairs to check out – BT, BA, BS, TA, TS, AS (Figure 6). In other words, combinations of four – two by two.

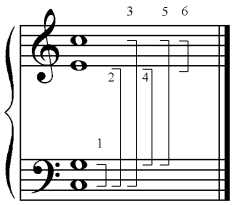


Figure 6. Binary relations, four parts (Gentil-Nunes 2009: 33)

The pertinent observation to be made is that Berry's textural configurations are defined by the same operations – the matching between parts, following some criteria. The filter – rhythmic congruence between points of attacks and durations – is the key to define what will be grouped or not. But the total number of binary relations remains the same for every density-number.

In successive textural configurations, the components will, at each moment, actualize their relations. In the same way that textural configurations form quantitative and qualitative curves, binary relations are renewed, creating an autonomous movement. The numbers of congruent and not congruent binary relations are accounted as two indexes, respectively called agglomeration (***a***) and dispersion (***d***) indexes. For each textural configuration, a pair (***a, d***) is assigned.

The progressive movement of binary relations and the pairs (***a, d***) in time is observed in a very simple example – an excerpt from Mozart (1877), where textural configurations are presented in an elementary way (Figure 7).

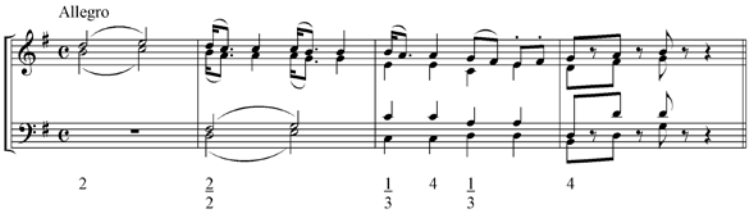


Figure 7. Mozart, *Eine Kleine Nachtmusik*, K. 5, excerpt: partitions (Gentil-Nunes & Carvalho 2003: 43)

The observation of the string quartet, with the focus on the congruence between points of attack, can show that, at the moment of articulation of each textural configuration, an exclusive disposition of binary relations is established (Figure 8, where the solid lines represent agglomeration and the dotted ones represent dispersion). In other words, to the partitions 2, 2^2, 13 e 4 correspond, respectively, the pairs ***(a, d)*** – (1,0), (2,4), (3,3), (6,0).

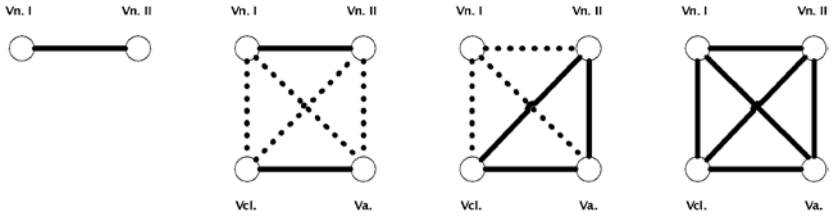


Figure 8. Binary relations in 2, 2^2, 13 e 4 (Gentil-Nunes, 2009: 36)

Berry, in his essay about texture, doesn't even propose the listing of all possibilities of partitioning of a given density-number. In fact, there's not yet, inside the music theory field, an exhaustive taxonomy of all the possibilities of partitioning of a given density-number, similar to, for instance, the taxonomy made by Allen Forte (1973), related to pitch classes. This is a necessary condition for contextualization of each fractioning (partitioning) inside a significant global system.

For that reason, there's not yet, too, a systematization or study of techniques of conscientious handling of these elements. We can assume here that all this relations and progressions are part of a limited repertoire constituted by compositional gestures, articulated automatically, and probably repetitiously, by generations of composers. This situation excludes the use of some others (probably new) combinatory possibilities, restricting also the knowledge about the ones that are already in use.

The agglomeration and dispersion indexes are the key to the construction of a graph that can represent that taxonomy – the *partitiogram*.

5. Partitiogram

Once the partitions are finite and known as mathematical entities, and once it's possible to attribute to each of it a pair of indexes that reflects its grade of internal agglomeration and dispersion, it is convenient to plot the partitions in a plane. The *partitiogram* works as a topology of the partitioning field (Figure 9, where n ≤ 9), an exhaustive taxonomy of the possibilities of ***n*** and constitute, too, a phase space, in the sense of *"set of elements conditioned by independent variables that evolve in time*" (Bergé, 1994: 91).

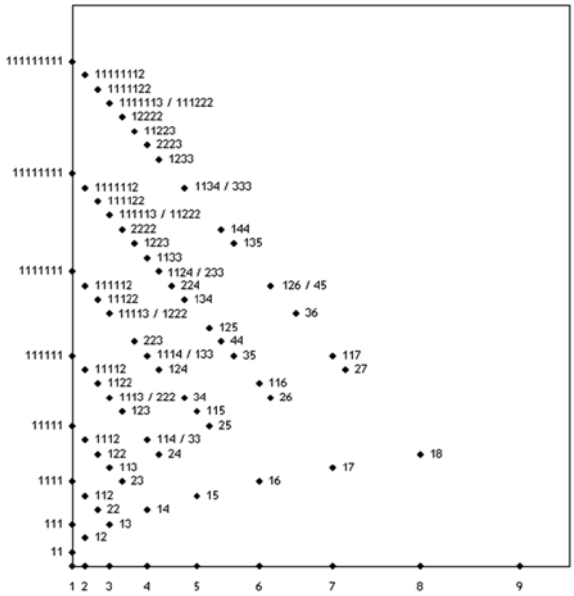


Figure 9. Partitiogram for *n* ≤ 9 (Gentil-Nunes and Carvalho 2003: 48). Graph generated by PARSEMAT (Gentil-Nunes 2004)

The partitiogram is also a representation of the lexical-set[1] of a given number. Namely, it presents the repertoire of all possible textural configurations for a density-number. In that sense, the concept of lexical-set is convenient for musical application, once the partitioning, in this case, is devised for compositional purposes. It represents too the possibilities of the medium (ensemble, instrument, computational resources).

We can think about the partitiogram as a kind of Young's lattice, positioned obliquely, with its right diagonal side parallel to the x-axis. However, some important differences are noted. Here, the partitions have a precise geographical organization. The distances between them are significant and quantized, which did not occur in Young's lattice. We can measure the difference about relational content between two partitions by the intervenient metric interval. For instance, there's a closer relation between the partitions [2 7] and [1 1 7] than the partitions [3 6] and [1 1 7], although there's a simple and symmetric neighborhood between the three in the Young's lattice.

The partitiogram inherits from the function $p(n)$ its fractal irregularity and isn't consistent graphically with exponential progressions, although it has some kind of predictability. Furthermore, the distribution of partitions is very unbalanced, with a remarkable predominance of more dispersed partitions near the y-axis.

In a broader view, it is observed that the x-axis increases toward massive, choral textures, while the y-axis increases toward more linear and polyphonic textures.

6. Partial orders inside partitiogram

As the partitiogram resembles the Young's lattice, which is a partially ordered set, it's possible to get a reading from partial orders embedded in the structure of partitiogram and set conjunctions and disjunctions in accordance with these orders. Another way to extract partial orders is through comparison between indexes themselves, using the internal organization of the partitions, represented by pairs (a, d) to find conjunctions and disjunctions.

In this paper, four partial orders between partitions and between indexes are presented. The partitional orders (items a, b, c, d) involve real elements (actors), while the order of reglomeration (item e) is established from the internal structure of the partitions. For each item is assigned a letter for further indication of the systems in abbreviated form.

Resizing (m) derives from the relationship of inclusion, which is the usual order of the Young's lattice. However, only refers to transactions where there is a change in the horizontal, or both horizontal and vertical dimensions. In terms of texture, this movement corresponds to a unilateral actor behavior: a single element becomes more or less dense.

Revariance (v) derives from the relationship of inclusion, such as the resizing operation, but only refers to transactions where there is change in the vertical dimension. This is an unilateral act, where a new element emerges or an existing unitary element disappears.

Transfer (t) defined as a combined and complementary modification of the horizontal and vertical dimensions. This means that there is a collaborative relationship between actors in order to maintain the constancy of the density-number. When a part becomes thin, others appear to compensate for the loss of density and vice versa. This is the relationship that prevails in traditional partitional discourse.

Concurrence (c) consists of a parallel movement of both dimensions – a simultaneous movement of the indexes a and d, in the same direction. The addiction of a new unitary part is accompanied by the densification of another, and vice versa. The concurrence causes higher contrasts and is prevalent in Darmstadt style.

Regglomeration (r) is defined when the dispersion index between partitions is fixed and only the index of agglomeration is articulated.

7. Indexogram

The *indexogram* is another way of representing the evolution of the agglomeration and dispersion indexes, plotted against a temporal axis. Once both indexes are positive, they were arranged in a mirrored representation, where the agglomeration is plotted negatively. Thus, the distance between the points defined by the contents also becomes a visual measure of the density-number (Figure 10).

[1] Lexical set is a concept of Partitional Analysis. Lexset (n) is the union of the sets formed by all the integer partitions of 1 to n.

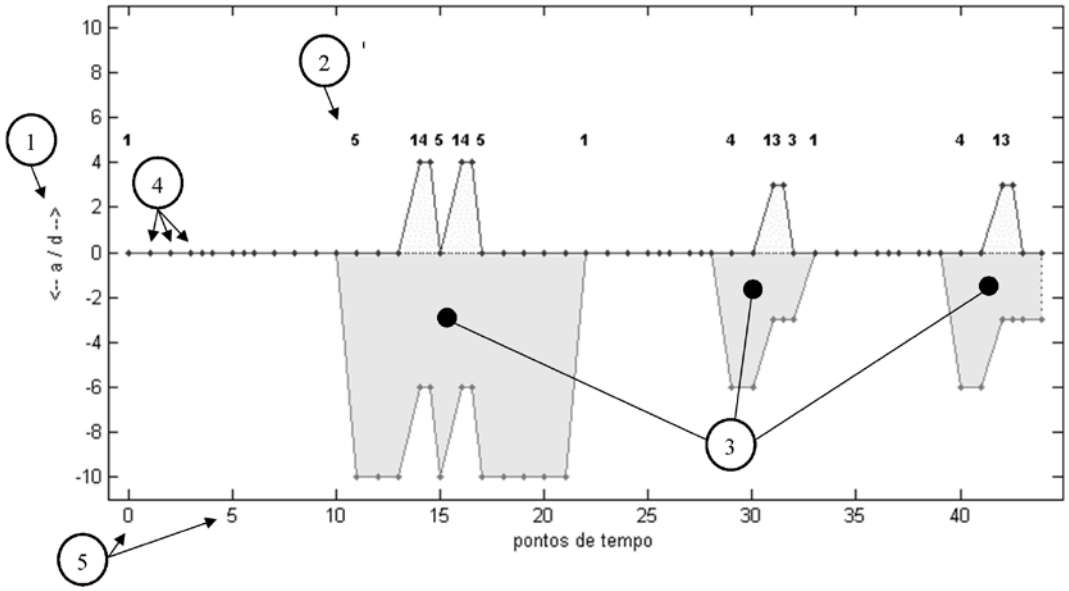


Figure 10. Indexogram elements: 1) abbreviated labels for agglomeration and dispersion indexes; 2) representation of the partitions; 3) "bubbles"; 4) indication of attack points; 5) time points (***beats***) (Gentil-Nunes 2009: 53). Graph generated by PARSEMAT (Gentil-Nunes 2004)

The purpose of indexogram is quite different from partitiogram. The indexogram highlights the movements of the indices over time and thus has a homology with the score, allowing the comparison with the musical text more directly. It brings new information about the partitions, which the partitiogram does not show at all – for instance, their durations.

The linear movements between the indexes (parallel, direct, contrary and oblique, similar to melodic counterpoint movements) have direct correspondence with the paths traced by the composer in partitiogram. The interaction between the indexogram and the partitiogram can also be used to read the behavior of partitions in time, enriching, mutually, the meaning of both tools, thus constituting an integrated system.

8. Conclusions

Partitional Analysis is under construction. For now, it could develop and explain partially the close relationship between concurrent rhythmic profiles and texture. At the moment, the research unfolds through various branches within the MusMat Research Group[2].

One of the directions is the application of PA to linear structure, aiming to objectify the melodic texture. The concept of line is derived from schenkerian theory and allows the homology with the rhythmic partitioning.

Other project developed at Federal University of Rio de Janeiro is dedicated to applying partitional analysis to orchestration of Debussy's works. Comparisons between rhythmic partitioning and orchestral indexograms allowed the visualization of essential characteristics of the orchestration of Debussy, such as the enclosure of textural elements within each orchestral group.

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[2] Musmat Research Group is based at the Federal University of Rio de Janeiro and focus on the research of mathematical modeling applied to composition and musical analysis (www.musmat.org).

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Santrauka

Partityvinė analizė ir ritmo dalijimas: ritmo ir faktūros sąveika

Partityvinė analizė – tai originali teorija su naujomis koncepcijomis ir įrankiais, skirtais abstrakcijų, kilusių iš matematinių sveikojo skaičiaus dalybos teorijos, taikymui kompozicinėje praktikoje ir muzikos analizėje. Ji plėtojama nuo 2003 m., ir šia tema Brazilijoje jau parengta mokslo tiriamųjų straipsnių, disertacijų, kompozicijų. Ji grindžiama Wallace'o Berry faktūrine analize (1976) ir matematine sveikųjų skaičių dalybos teorija. Berry siūlė koduoti faktūrines progresijas lyginant individualius muzikinio diskurso komponentų dalių profilius. Savarankiškumo ar tarpusavio priklausomybės ryšiai tarp dalių sudaro vadinamąsias „faktūrines konfigūracijas", kurių diskursyvus judėjimas apibrėžia faktūrinės progresijos ir recesijos kreives. Matematinė sveikųjų skaičių dalybos teorija – tai puikus modelis plėtojant išsamią tokių konfigūracijų taksonomiją pagal kriterijus, kurie gali įvairuoti priklausomai nuo pasirinktos analizės krypties. Partityvinė analizė konstruojama atidžiai stebint tokių kriterijų taikymą, lyginant sutampančias dalis poromis. Binarinis lyginimas veikia pasitelkus paprastus algoritmus, nustatančius bendrumus arba priešingumo ryšius tarp dalių. Šio proceso rezultatas – du vienas kitą papildantys rodikliai: aglomeracija (*a*) ir dispersija (*d*), kurie atspindi unikalų kiekvienos faktūrinės konfigūracijos profilį. Kiekviena rodiklių pora nubraižoma fazės grafike, kuris išreiškia pasirinkimų lauko topologiją kaip kompozitoriaus pasirinkimą. Nuoseklūs kompozitoriaus partitūrose brėžiami sprendimai suformuoja tam tikrą trajektoriją. Šis laukas vadinamas partitiograma – tai visų galimų konfigūracijų visuma, susijusi su nustatytu elementų (pvz., instrumentų, balsų, garsų, linijų) skaičiumi. Jis taip pat išreiškia santykių tarp konfigūracijų topologiją, atsižvelgiant į jų metrinį atstumą grafike. Abiejų indeksų nubrėžimas laike sukuria indeksogramą, kurioje santykis tarp dviejų linijų gali būti įvardijamas keturiomis bazinėmis progresijomis (dydžio keitimas, perkeitimas, perkėlimas ir sutapimas), o kiekviena iš jų turi savą funkciją. Ritmo dalijimas – tai kompiuterinė aplikacija, kilusi iš Berry darbų; ji naudoja pradžios taškus ir trukmes kaip įvesties duomenis grafikams braižyti. Ritmo dalijimo analizė buvo atlikta pasitelkus kompiuterinę programinę įrangą PARSEMAT, sukurtą šio darbo autoriaus siekiant racionalizuoti MIDI failų analizę. Šiuo metu jau yra išanalizuota dalis koncertinės muzikos (Bachas, Beethovenas, Schönbergas, Webernas, Boulezas, Ferneyhough ir kt.). Rezultatai yra labai išraiškingi ir atskleidžia, kad ritmo dalijimas kaip muzikinio diskurso organizavimo principas yra labai efektyvus ir parodo stiprią ritminių profilių įtaką kūrinio faktūrai ir formai.

2

RITMAS ŠIUOLAIKINĖJE MUZIKOJE | RHYTHM IN CONTEMPORARY MUSIC

Katarzyna Bartos

The two Extremes: Chosen Aspects of Rhythm in Grażyna Bacewicz's and Witold Lutosławski's Music

"Every musician, a composer, a performer or a theorist, will agree that at the beginning was rhythm. The power of rhythm and, speaking widely, the temporal organisation of music is indeed a condition sine qua non of art."[1]

This is what Grosvenor Cooper and Leonard B. Meyer write about rhythm in their publication "The rhythmic Structure of Music". While learning about particular elements of a musical piece, the importance of rhythm's role in building this piece is mentioned. Rhythm was always with human beings – widely understood, it organized the order of life. People determined seasons, days, rhythm of work, and duties. Finally rhythm helped them to communicate with gods, it helped them to go into a trance. It was the fundamental of the dance – some choreographic figures illustrate rhythmic ones. But what is rhythm?

There are lots of definitions.

In "Die Musik in Geschichte und Gegenwart" the author of the entry "rhythm", Wilhelm Seidel, claims that as long as harmony is an indication of an order of sounds, rhythm is an indication of an order of movement and time. Thus the author recalls Plato's definition of rhythm, in which he assumed that it is the order of movement.[2] In "The New Grove Dictionary of Music and Musicians" Walther Dürr and Walter Gerstenberg interprete this term as: "a subdivision of a span of time into sections perceivable by the senses; the grouping of musical sounds, principally by means of duration and stress."[3]

According to the authors of an entry, rhythm, together with harmony and melody, are linked inseparably.

However, the definition proposed by Witold Rudziński in "Nauka o rytmie" will help me in a special way with my considerations. According to the researcher, rhythm is: "a matter of movement, ordered movement; it is a group, synthesis. Generally speaking, rhythm is in fact synthesis: its objectives consists of taking away from every single sound its own individuality to lose them all in an uniform movement by the series of units larger and easier to capture, that they are enmeshing one in another and complete each other to come to a total unity."[4]

For my considerations about rhythm I chose pieces by two Polish composers from the 20th century – Grażyna Bacewicz and Witold Lutosławski. I would like to limit myself to show chosen aspects of rhythm in their output. In that way, I would like to show characteristics of both composers' features in this area. At the same time these features show the two extremes in the sounding of rhythmic structures in their works and show the common feature of these composers' workshop – control over musical material. In Grażyna Bacewicz's music, these features manifest in rhythmical density and in drawing inspiration from Polish folk music. In Witold Lutosławski's music, it is in his controlled aleatorism. At the same time, it is not said that Witold Lutosławski has never drawn inspiration from Polish folk music and Grażyna Bacewicz has never used "advanced" avant-garde techniques.

Grażyna Bacewicz was a composer and a violinist born to a Polish-Lithuanian family in 1909. She divided her music into three stylistic periods: "The first, adolescent, highly experimental, the second, mistakenly called neoclassical in our country and essentially tonal, and the third, to which I still stick. I have attained it in a way of development (not revolution)."[5]

And about her style of composing she wrote: "I have completely lost my cheerfulness. Even though everyone around me is happy – I just don't know how. At the most I force myself, so as not to spoil the atmosphere. Still I always put on a cheerful face. Besides this, there is still another thing that makes life a little difficult (although it is also helpful in a big way). Specifically, I have a completely different tempo of life than anyone else around me. That means, I do everything faster than anyone else, and all who are around constantly annoy me with their slowness. But this also has some good points, like for instance, I am able to write a major work

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1 Cooper, Grosvenor; Meyer, Lenonard B. (1960). *The Rhythmic Structure of Music*, Chicago. Quotation after: Dahlig-Turek, Ewa (2006). *"Rytmy polskie" w muzyce XVI–XIX wieku*, Warszawa: Instytut Sztuki PAN, p. 22.

2 Seidel Wilhelm (1998). [entry:] Rhythymus, Metrum, Takt [in:] *Die Musik in Geschichte und Gegenwart*, Sachteil 8 Quer-Swi, p. 258.

3 Dürr, Walther, Gerstenberg, Walter (2001). [entry:] Rhythm [in:] *The New Grove Dictionary of Music and Musicians*, p. 804–805.

4 Rudziński, Witold (1987). *Nauka o rytmie muzycznym*, Kraków: PWM, p. 146. Quotation after: Dahlig-Turek, E., op. cit., p. 22.

5 Bacewicz, Grażyna. A sketch of an answer to an unknown questionnaire, *Ruch Muzyczny* 1969, no. 7, p. 4.

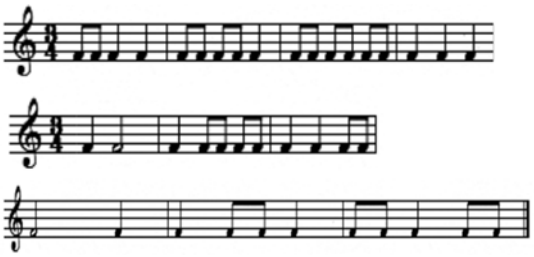
in two weeks. Sikorski knows this. Sometimes he asks me, when we meet: 'Well, how many symphonies have you written?' "[6]

By drawing from what Polish folk music offers, Bacewicz referred to traditions reaching at least the Romantic Era. At that time composers used to underline their national identity, folk dance rhythms or they stylized them. On the one hand, it was connected with the then in-fashion technique of using native folklore in music. On the other hand it was connected with the Polish political situation. Recalling the rhythm of Polish dances, it is worth exploring their origin.

Polish culture has a number of characteristic symbols. One of them is precisely connected with rhythm, as Ewa Dahlig-Turek wrote: "Among musical phenomenons that most trenchantly characterize as Polish music, firstly are rhythmic features, commonly connected with folk dance rhythms. However, it is impossible to find recent features that are really unique, some of its elements, especially these present on a ground of folk dance music and present in artistic tradition, come into the canon of symbols of Polish national culture and at the same time to the heritage of European music. Among these elements are rhythmic structures that in musicological works are called 'rytmy mazurkowe' (mazuka rhythms)."[7]

Dahlig-Turek dedicated her work entitled "Polish Rhythms" to the aforementioned rhythms. In this book she defines what are the title rhythms, what is their origin and appliance in works of native and foreign composers from the 16th to 19th centuries. The researcher, after Ludwig Bielawski[8], noticed the influence of medieval theories on the Eastern Slavic territory, on which the triple meter rhythms were widespread. The Western Slavic territory was characterized by duple meter rhythms and the South varied (e.g. seventh-meter from Nowosądecki Region). The ground of "Polish rhythms" was not only medieval modus perfectum, but also native speech and its syllabication. The analysis made by Zofia and Jan Stęszewski led to the conclusion that the origin of the Mazurka's rhythms are linked with Polish speech's accentation. In such regions as: Podhale or Kaszuby, where a different type of accentuation still exists, the mentioned rhythms practically do not appear.[9]

There are few characteristic rhythms of Polish dances:



Dahlig-Turek, after she studied the sources, came to the conclusion that the essence of Polishness are those bars that have more notes on the beginning of bar (two eights, two fourths or four eights, one fourth). She called those bars descendental. That is visible not only in historical Polish dances, but also subsequent national dances – the polonez and mazur. She noticed that the rhythmic density influences the inner variety of dances from the mentioned group. Because of that fact we can talk about chodzony, polonez, kujawiak, oberek or mazur.[10] The researcher discovered that the characteristic feature of Polish melodies – descending – is visible also in structures of duple meter melodies (in syncopation in Krakowiak too) and even in fifth-meter ones (Kurpie).

Let us concentrate on an analysis of chosen works of Grażyna Bacewicz. The first of them is "Oberek I", a composition for violin and piano. The title of the first composition itself suggests the influence of Polish musical tradition. Oberek is a national dance, whose name comes from the rotating dance movement. It is the fastest of the Polish mazurka-rhythm-based dances. Its other name is ober or obertas. Lightness and agility,

6 Bacewicz, Grażyna (1947). A letter to brother Witold from 30th of August 30. Quotation after: http://www.usc.edu/dept/polish_music/PMJ/issue/1.2.98/bacewicz_let.html#7, access: 6.08.2013.

7 Dahlig-Turek, E. op. cit., p. 7.

8 Bielawski, Ludwig (1999). *Tradycje ludowe w kulturze muzycznej*, Warszawa: Instytut Sztuki PAN, p. 148. Quotation after: Dahlig-Turek, E., op. cit., p. 61.

9 Stęszewscy, Zofia and Jan (1960), Do genezy i chronologii rytmów mazurkowych w Polsce, *Muzyka* V No. 3, p. 14. Quotation after: Dahlig-Turek, E., op. cit., p. 65.

10 Dahlig-Turek, E., op. cit., p. 59.

repetitions of melodic and rhythmic figures, a majority of tiny rhythmic values and figurations are characteristic of it. Its metre is 3⁄4 or 3/8. Bacewicz's stylization preserves the essential features of this dance, such as characteristic irregular accents on the second measure, triple meter the movement of eights in the melody that illustrates rotating movements of the dancers.

Fragments of oberek-like character are present also in "Kaprys polski" ("Polish caprice"). It is a piece for violin solo, "written by a virtuoso for a virtuoso". Between the schematic narration in 2/4, the composer entangles fragments in 3⁄4 (bars: 45–48, 69–70, 72, 75–78). The rhythmic repetitiveness and the usage of minor rhythmic values decide its oberek-like character.

Many inspirations of Polish folk music are visible in the rhythmic structure of the "4th violin concerto", especially in the third movement. Yet the first theme shows pertness of the mazur – accents on the weak part of a bar are underlined not only by the melody, but also by the articulation (*staccato*). The rhythm of the mazur is visible also by the usage of "descendental" and "equal" bars. The fragment in the third movement shows the inspiration of the kujawiak. The composer used in its construction a rhythmic scheme that consists of the juxtaposition of equal and so called "descendental" bars.

We can find inspiration in the second theme of the third movement in a stylization of Polish national dance from Krakow's region. It is called krakowiak. The characteristic feature of this impulsive dance is that the rhythm is in 2/4 and there are lots of syncopations which brings the accent to the weaker parts of bars.

The second Polish composer – Witold Lutosławski, hit on the idea to engage the element of chance to his compositions after hearing a live broadcast of "Concerto for Piano and Orchestra" by John Cage in 1958. That composition was a source of inspiration for Lutosławski, a ground for his own artistic research. It bore fruit in 1961 with the piece "Jeux venitiens". Lutosławski's conception exposes a mostly rhythmic structure to the influence of chance, controlling pitch at the same time. Besides the strictly determinate sections in the composition, blocks of ad libitum appear. They are in frames, and are not conducted. On that level, Lutosławski's conception seems to by similar to Cage's. But what is specific in the Polish composers's idea? Let us concentrate on his "String Quartet".

The piece is the only string quartet written by Lutosławski. It was composed in 1964 for Swedish Radio commission. Lutosławski wrote on the occasion of the 10th anniversary of the concert cycle "Nutida Musik". The first performance was by the La Salle Quartet.

In the piece there are no common time divisions that will be compulsory for every performer in a music section. Every player plays it as his own solo. The rhythmic structure is a sum of every rhythmic structure in parts. It creates a phenomenon that is more complex than any other polyrhythmic structure – there are non-simultaneous accelerandos and ralletandos. Thanks to the usage of controlled aleatorism, his compositions have an "unstable" structure and rhythmic "slenderness". At the same time, Lutosławski do not relinquish his role of composer to the chance or improvisation in instrumental parts. He said: "I do not count on the creative skills of the performers. That is why I do not foresee in my pieces any, even the smallest ones, improvisated parts. I do support a clear division of roles between the composer and the performer and I do not wish, even partially, to resign from authorship of music written by me."[11]

The piece, in fact, consists of four separate parts, and at the beginning there was no score. Members of La Salle Quartett asked the composer to send them a score, but it was made later by the composer's wife Danuta.

Lutosławski in a correspondence to the first violinist of the La Salle Quartet, Walter Levine, wrote about his "String Quartet": "The composer undertook appropriate means to avoid unwelcome effects of ... freedom. If the performers precisely fallow the instructions written in their parts, no occurrences will take place that the composer has not foreseen. All of the possible cuts of sections' time in parts cannot influence the final result decisively."[12]

In that moment I would like to recall the definition of rhythm written by Witold Rudziński, that I quoted at the beginning of my paper: "Generally speaking, rhythm is in fact synthesis: its objectives consist of taking away from every single sound its own individuality to lose them all in a uniform movement by a series of units larger and easier to capture, that they are enmeshing one in another and complete each other to come to a total unity."[13]

11 Lutosławski, Witold. O roli elementu przypadku w technice komponowania, *Res Facta* 1967, No. 1, p. 38.

12 Lutosławski, W. (1968). Fragments of a corespondence with Walter Levine from the score of "String Quartet", Kraków: PWM.

13 Rudziński, W. (1987). *Nauka o rytmie muzycznym*, Kraków, p. 146. Quotation after: Dahlig-Turek, E., op. cit., p. 22.

The pieces by Grażyna Bacewicz and Witold Lutosławski that I have chosen, trenchantly show the justification of this definition. Rhythm is an orderly movement of rhythmic values. The effect of the overlap of the parts becomes a unity. Every value sinks in the mass of sounds in way predicted by the composer. It is an artistic decision if the unity movement is completely ordered (like in Grażyna Bacewicz's music) or seemingly unordered (like in Witold Lutosławski's pieces).

The examples from the paper show only two approaches to the rhythm problems in these Polish composers' output. I chose these artists because their approach to the music was inspiring for other ones. The presented works were meant to picture the two extreme approaches to rhythm (but characteristic for those composers) – full accuracy (Bacewicz) and controlled aleatorism (Lutosławski). Both composers took the full responsibility of their works' sound. The aim of my paper was to outline the rhythmic issues in pieces by the mentioned composers. I hope it will spark your interest in Grażyna Bacewicz's and Witold Lutosławski's music regarding the aspect of rhythm.

Santrauka

Du kraštutinumai: kai kurie ritmo aspektai Grażynos Bacewicz ir Witoldo Lutosławskio muzikoje

Ilgą laiką ritmas buvo išskirtinis lenkų muzikos elementas. Daugelio šios šalies regionų muzika skyrėsi dėl tam regionui būdingų ritmų. Susiformavo lenkų nacionaliniai šokiai: krakoviakas, mazurekas, oberekas, kujaviakas ir polonezas.

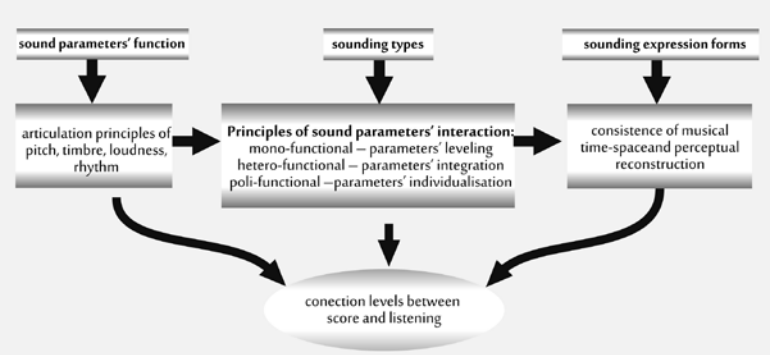
Pirmiausia liaudiškais ritmais grįsta muzika plėtojosi romantizmo laikotarpiu. Tais laikais lenkų liaudies šokius stilizavo ne tik žymūs lenkų kompozitoriai (Fryderykas Chopinas, Stanisławas Moniuszka ar Henrykas Wieniawskis), bet juos naudojo ir kūrėjai iš kitų šalių, pvz., polonezas skamba P. Čaikovskio operoje „Eugenijus Oneginas".

Nieko keista, kad ir XX a. lenkų kompozitoriams ritmas išliko svarbus, jų kūryboje vis dar buvo ryški romantizmo tendencija – naudoti tautinių šokių ritmą. Liaudiškų kompozicijų galime rasti kompozitorės ir smuikininkės (gimusios lenkų ir lietuvių šeimoje) Grażynos Bacewicz kūryboje. Jos muzikoje (pvz., kūrinyje „Oberek I" ar Ketvirtojo koncerto smuikui fragmentuose) dažnai girdimas obereko ir krakoviako ritmas. Witoldas Lutosławskis – lenkų kompozitorius, kuris taip pat domėjosi ritminiais aspektais. Jis atrado originalią kontroliuojamos aleatorikos techniką. Ji pagrįsta ritmine laisve, bet turi ir harmoninių sąskambių atlikėjų partijose. Straipsnyje parodoma, kaip ritmą traktavo Grażyna Bacewicz (kūrinyje „Oberek I") ir Witoldas Lutosławskis (Styginių kvartete).

Mārtiņš Viļums

Energy and Condition as Forms of Musical Timespace Articulation in Giacinto Scelsi's *String Quartet No. 4* (1964)

The dimensions of time and space are the fundamental categories of existence which affect the perception of music processing in its own way. The Time-space articulation principles and unfold levels of mental recognition forms in Giacinto Scelsi's String Quartet No. 4 are the focus of this paper. Purpose of the discourse is to explore the principles of time-space articulation in the way they are realized throughout the smallest patterns and structures of form, which derives from the specific of research issues and the principles of time-space analysis crated by the author of the report.[1]



Scheme No. 1. Strategy and hierarchic levels of basic principles of analysis

The analysis of Scelsi's String Quartet No. 4 musical time-space is actualized through the several hierarchical levels of investigational tasks:

- times-pace articulation principles and functional significance of sound parameters (pitch, timbre loudness) for form building strategies;
- with reference to aspects of functional correlation and connections between sound parameters the compositional type is defined;
- recognition of the musical piece as kind of phenomenological (based on *Gestalt*[2] principles) *expression forms*.

Graphical (notational) and sounding (perceptual) aspects of time-space could be integrated into the process of musical analysis (it means, compositional structures and time-space dimensions should be collate with recognition possibilities in the way of comparative approach).

One of the most important Scelsi's compositional aesthetics-related features and innovations are described by the attention focused on the sound internal vibration and timbre (Siqueira 2006: 33–50). An exposure of one tone to various **instruments** provides the possibility to microstructure the core of sound and rearrange the sound timbre. Such timbre is rearticulated by referring to a natural synthesis of instruments (Murail 2005: 178). In this way multi-articulation is created. Scelsi's String Quartet No. 4 (1964) is a striking pattern of music of "one sound". In the composition the string instruments are tuned by *scordatura* in seeking to articulate one tone through all instrument strings. Every string, like a different instrument, is marked as a separate stave in a score. This quartet represents "one gesture", grounded by a continuous stream of sounds and by the processes of consistent and slow development.

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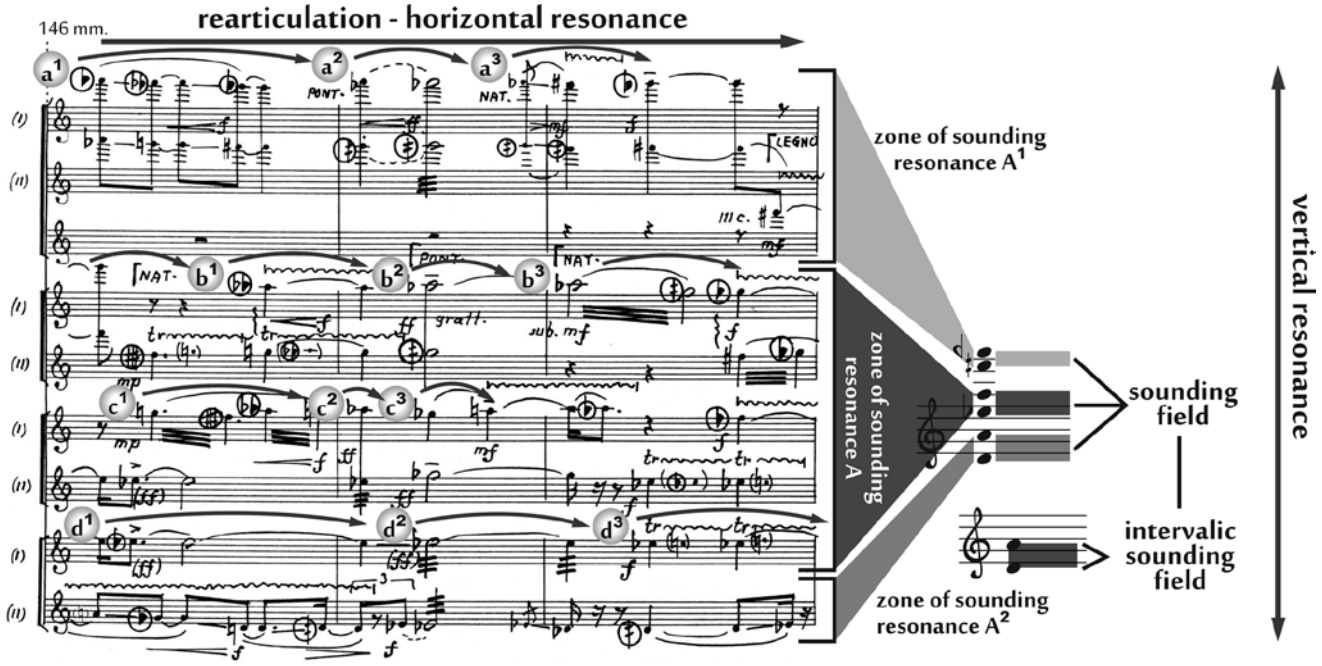
1 The analytical tools are interdisciplinary developed from physical (J. W. Solomon (2007), M. Trochimczyk (2001), etc.), psychophysical (J. Smythies, E. Zeidel (1992) etc.), cognitive and psychoacoustic (A. D. Lyons (2003), D. J. Levitin (2002), R. Shepard (2001), J. M. Chowning (2000) etc.) investigations in the context of music as well as compositional and psychological interpretations of musical dimensions as categories of time (D. Temperley (2001), B. Snyder (2000), J. D. Kramer (1999), G. Grisey (1987), L. B. Meyer (1961) etc.).

2 In *Gestalt* psychology one of the most important criteria of perception explanation is to understand the form as a unity (Ehrenfels formulated this concept as "Gestaltqualitate"). Totality of elements as a mental combination is more significant than the number of its separate parts (Fuchs, Milar 2003: 17; Coren 2003: 105–106; Schirillo 2010: 469). Thus the totality of elements in the aspect of its multisensory perception, according to the author of the paper, can be characterized as the *expression form* of these elements.

Sound parameters articulation in Scelsi's String Quartet No. 4

All the compositional principles are articulated throughout continuous sonoric processes in Scelsi's String Quartet No. 4. The parameter of pitch is not implemented as melodic structures nor harmonic. Contrarily, the processes of pitches are spatially compressed into layers of fused sounding densities, grounded by gliding microtones and small micro-articulations of sonoric qualities. Those layers, as processes of extending and thickened vibrations of unison, are related to non-typical compositional strategies. Therefore, articulation principles, in the way they are realized throughout the unique compositional solutions, should be described.

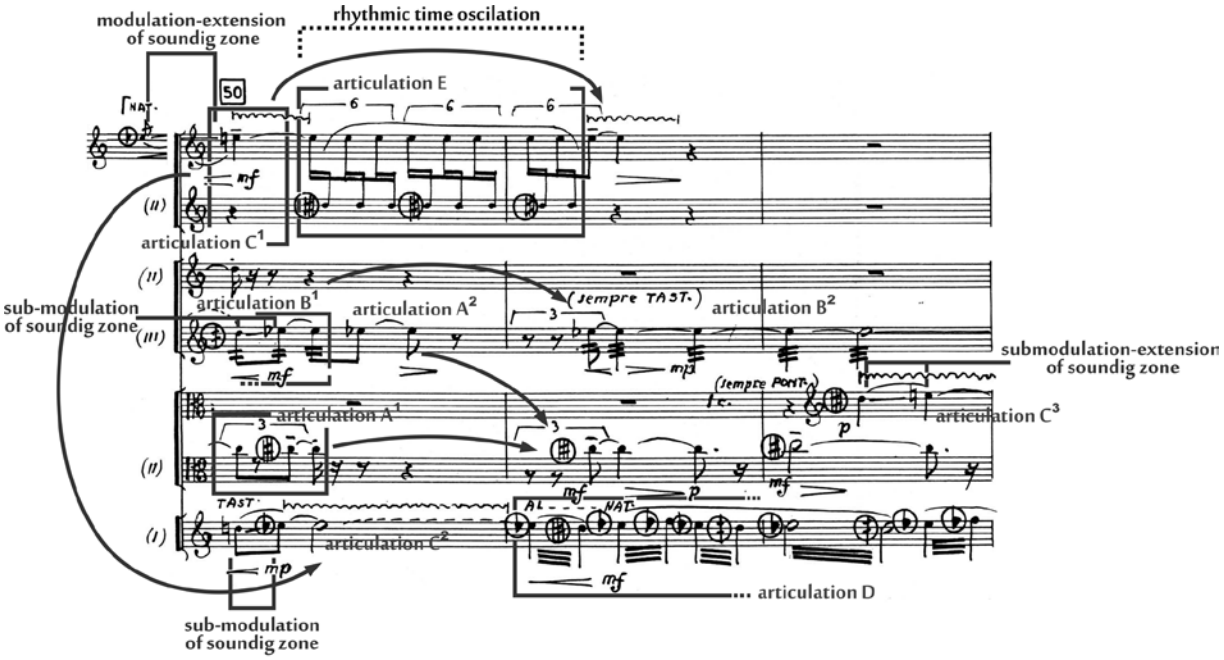
1. The completion of the field of sounding manifests itself in sound exploitation in a certain interval sphere – in a zone (from prime to octave). Resonance is characterized by two aspects of articulating the sounding field – *horizontal* (timbre) and *vertical* (time) *resonance*.



Example No. 1. The aspects of horizontal and vertical resonance in G. Scelsi's String Quartet No. 4

Horizontal resonance is identified as a timbre-related, micro-intonational or instrumental variation – rearticulation of the sounding field in time, while *vertical resonance* – representation of the sounding zone in other registers. Example No. 1 shows how the intervallic region of fused tones (*d–a*) are varied by the different lines of staves – strings. The locations of pitch highs are rearticulated through the alteration of micro-intervals as well as specifics of strokes manipulation (see Example No. 1: a^1, a^2, a^3...; b^1, b^2, b^3..., etc.). *Vertical resonance* is shown as differentiated zones of registers, where the higher are the registers the narrower they are presented (respectively – zones *d–a*; *es–a*; [*f*+]–[*a*-]). Total amount of vertical intervallic distributions through all the registers (intervallic sum of all the resonance zones) is named as *sounding field*. It should be noted, that the term *resonance* have to be interpreted solely from a compositional aspect (not acoustical). Therefore, the intervallic sounding zones could be understood as time-space continuum in which this intervallic area (zone) of pitches is reflected in time (rearticulated) and space (placed in registers) dimensions. Peculiarities of resonant field reveal the unevenness of horizontal and vertical variations – hereby sounding field unfolds as an energetic structure, wherein different kinds of sounding elements and parameters can interact and resonate.

2. Micro-articulation of the structural processes of **pitches** is realized by applying gradual *glissando*, trills of various tempos (from microtones and semitones). Sounding oscillations in the range of microtone's rhythmic repetitions allow us to interpret these articulation types as slowed down *vibrato*, getting the processes of inside musical time compressed or extended:



Example No. 2. Rearticulation principles in Scelsi's String Quartet No. 4

Example No. 2 shows how different articulation types are implemented in order to organize sounding processes in the way of re-layering and alternating condition of sounding zone *d–e*. Amount of all the articulations forms an integral streaming expression of fluctuating energetic mass. The voices heterophonically complement each other and signify the articulation quality (by the *tremolo*, *trill*, *vibrato*, *glissando*, micro-interval's fluctuation etc.). Inasmuch as the processes concerning variation of sound pitches are interpreted by micro-dimensional levels – the relations of **compressed time** (rapid *vibrato* variations of trill nature) and **space** (micro-interval changeability and sound layers), their functional meaning is integrated into the sound *energy* reinforcing expression. In Example No. 2 the two basic articulation functions could be defined:

- gradual *glissando* as modulation of sounding field, which is extended (intervallically) or submodulated within local place of sounding zone (without extending sounding field);
- micro-articulation processes, which could be interpreted as a kind of oscillating conditions, rearticulation of sounding field.

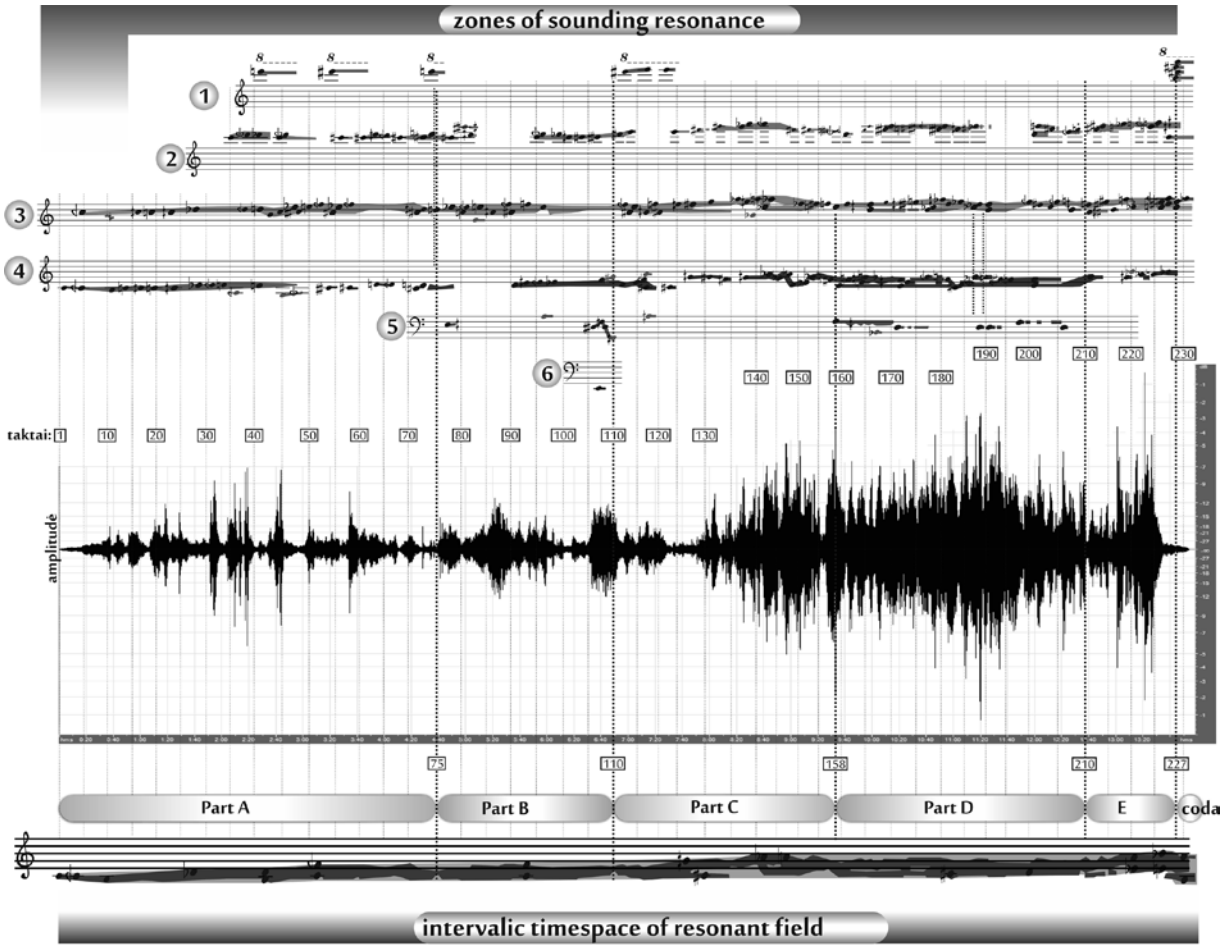
3. Articulation of pitch could be described as extending and ascending intervallic field in the range of *c-* to *hes* as well as gradually extending width of sounding field from *c-* to *e–hes* in the aspect of form building (see Scheme No. 2).

In Scheme No. 2 six resonance zones are shown. The more these zones are in the opposite sides of registers, the weaker they reflect the width of resonance field. In the lowest layer of scheme the progression of resonance field is shown: the brightest background indicates the frame of conceptual sounding field, whereas the darkest background – the real field completion in the process of musical form.[3] The notes located in layers of sounding field indicate **focal tones** – the center of sounding density. Waving, pulsating, vibrating sounds stream indicate the basic (albeit fairly relative) parts of energetic conditions behavior in the larger processes of piece.[4]

Part A (see Scheme No. 2, mm. 0–75) is exposed by gradually extending then narrowing sounding field ([*c-*]→[*c–f*]→[*d*]). Along the extending sounding zone the inside modifications of focal tones appear

[3] The logic of consistently ascending, fulfilling intervallic sphere of sounding processes and subsequent articular variation within bounds (area) of that interval confirms the concept of sounding field.

[4] All the form is realized as continuous, integral uninterrupted process, like a stream of cosmic substance. Wherefore, the end of one part is the beginning of next one.



Scheme No. 2. Time-space articulation throug the zones of sounding resonance in Scelsi's String Quartet No. 4

(which forms a quasi-harmonic structures[5]). Around these focal tones, like the centres of gravity (*cis*, *dis* come from centre *c* and modulate to centre *d*) the elements and substance of sounding field rotate.

Part B (mm. 75–110) consists of waveform sounding field *d*→[*c*–*f*]→*e* wherein the centres of density (focal tones) reiterate the similarity of extending and narrowing waveform by modulation *d*→[*cis*–*e*]→*e*. The end of Part B indicates wide glissando (mm. 105–110), that is performed by viola and violoncello *solo* ([*dis*→*f*+], [*d*→*g*+]) and grows out of bounds of sounding field. That movement out of sounding field creates another parallel dimension, which has the range of seventh – intervallic similarity to all the field of piece (*c*–*ais*).

In Part C (mm. 110–158) the sounding field is extended to the maximum of intervallic field from *e* to [*cis*–*g*+]→[*es*–*a* (f. t.[6] es–as)] and is narrowed to [*e*- –*f*], followed by the sub-part with focal tones *es*–*ges.* Forasmuch as beginning of this sub-part is realized by simultaneous entry of voices as well as by inherent third interval from Part D, the preparative compositional function for this one should be approved.

Part D (mm. 158–210) is based on the most immutable texture with stable intervallic and field focal tones *d*–*f* (*d*–*as*).

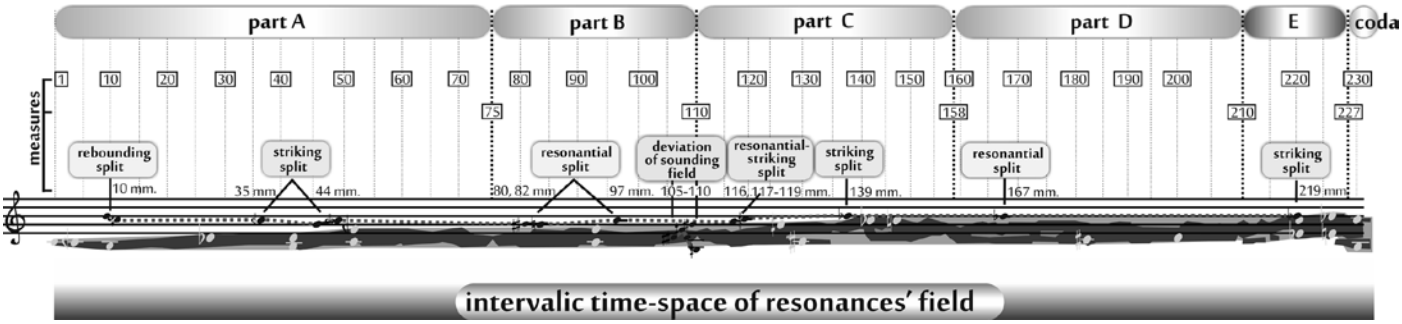
Through the modulation of sounding field [*c*–*g*]→[*e*–*ais*] the width of resonance field of all piece is realized in Part E (mm. 210–227). The articulation of all compositional implementation tendencies is realized through this shortest part of piece: to overcame a space and substance of sounding field, to embrace minor seventh interval in scale of time and tritone–fifth in scale of space. Therefore all time-space potencies of piece are compressed and realized through Part E.

[5] Forasmuch as pitches are involved in continuously alternating and unstable sounding characteristics, the verticality cannot be identified definitely as alternating harmonic processes.

[6] f. t. – abbreviation for *focal tones*.

The last five bars in the piece can have a twofold interpretations. On one hand, it can be fading out phase of foregoing culmination (of Part E), that seems to be as reflecting and piped down spectrum of previous massive sounding wave. On the other hand, these bars could be interpreted as *coda*, wherein time-space form of the piece is structuralized to the stable pitches, harmony.

The noteheads in gray (Scheme No. 2) indicate short-term sounds, which exist outside of formal sounding field. These sounds cannot be explained as equal functional interpretation. However, compositional meaning of them could be described as ***splitting*** sounding trajectories, splitting sounds.[7]



Scheme No. 3. Splitting sounds in Scelsi's String Quartet No. 4

There are several types of splitting sounds (see Scheme No. 3):

- ***rebounding*** split could be characterized as sound stream trajectory (10 mm., *c*-) rebounding on invisible barrier. That aspect is illustrated by downward *pizzicato* and *glissando* strokes;
- ***striking*** split is realized by *Bartok pizzicato*, accents, synchronic *tutti* entry of all instruments (mm. 35–36; 44–46; 139; 219). It gives an allusion of exceeded amount of energy, disbalance after which sounds of non-resonant field appear;
- ***resonance*** split occurs as quasi overtones splitting in the high (*gis*+; 80 mm.) or low (mm. 82; 97; 167) register. That aspect of refraction could be interpreted as reflection of particular part of resonance field having supplemental function;
- ***resonance-striking*** split (mm. 116; 117–119);
- ***deviation*** into alternative sounding field, "parallel universe" that consists of other time (the conception of all the parallel sounding field in the section of only several bars is employed by the figure of fast *glissando*) and space (intervallic wide of sounding field [*f*+]–[*g*+]) dimensions. Articulation of *deviation* is realized by spacious *glissando* for alto and violoncello (mm. 105–110).

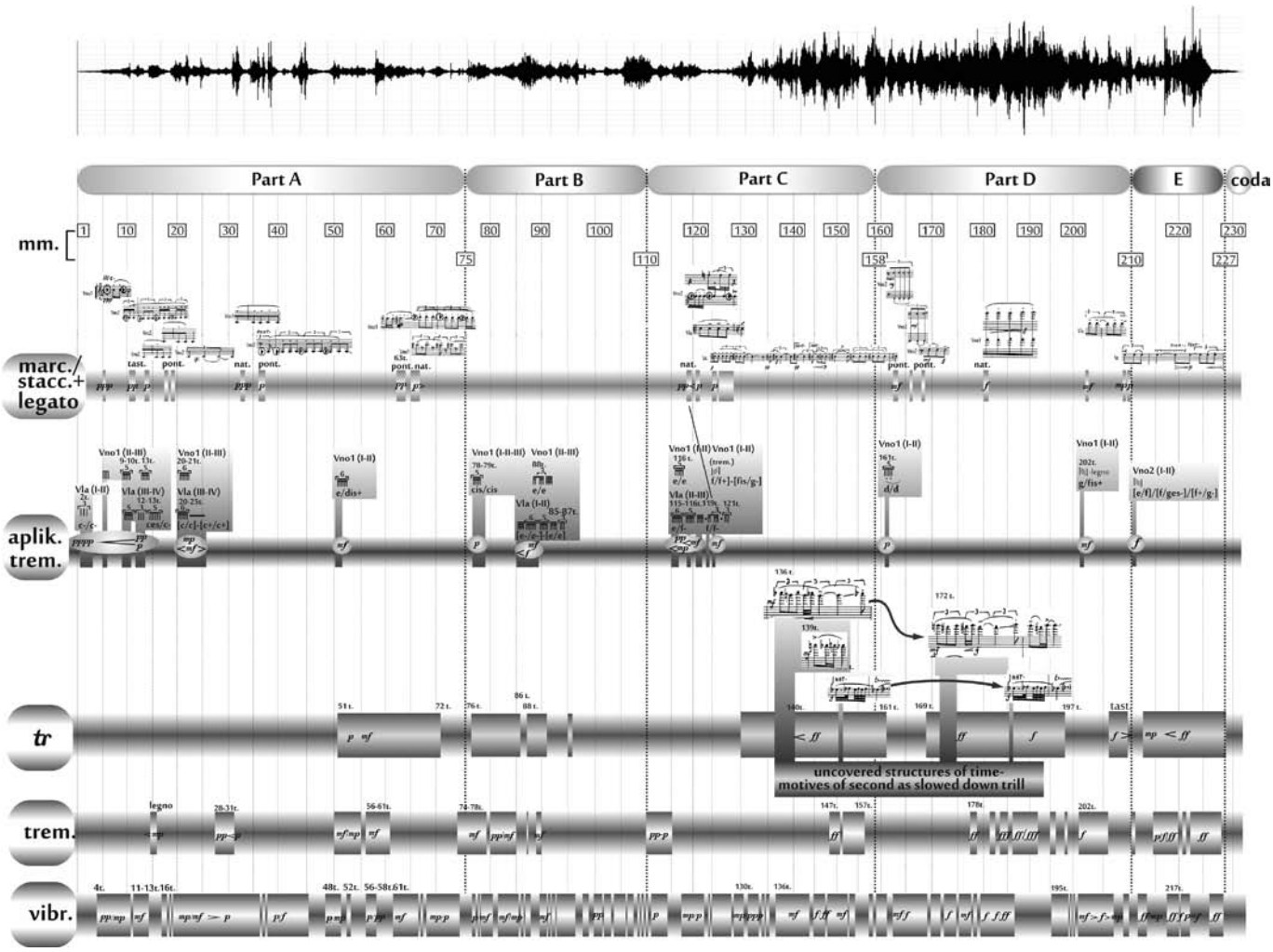
All of these constitute an underground, alternative sporadic time-space concept of sounding form. The alternative time-space is based on two aspects: a) the short-term sounds that are proportionally located throughout the piece (takes a *third* interval *g–h*); b) compressed implementation of alternative time-space in the center ([*f*+]–[*g*+]) of the whole form (see Scheme No. 3).

To describe the basic articulation principles of pitch, the compositional functional logic has to be discovered:

- the macro-structural processes of pitch highs are realized through the contours of gliding up and widening sounding field;
- the aspect of sounding field have to be characterized as sounding resonance field, whereof the stream of energy reflects between all registers of sounding zones;
- micro-structural time-space of pitches is compressed and compositionally could be interpreted as timbral articulation, as aspect of condition;
- pulsating and waving shapes of sounding field (and zones wherein the field is reflected) complement the loudness kinesis aspect. Hereby all dynamic scale of the piece arises from the smallest waves to the growing amplification.

The compressed time-space related articulation of tones allows interpreting this parameter as the aspect of *energy-loudness* **complementation** and *energy-timbre* **alternative**.

[7] T. Murail that compositional aspect, inherent for Scelsi's music, named as *harmonic refractions*. *Harmonic refractions* should be interpreted as splitting unison into new sounds, harmonic or sub-harmonic tones (Murail 2005: 178).



Scheme No. 4. Micro-textural articulation in Scelsi's String Quartet No. 4

Forasmuch as musical realisation processes of Scelsi's String Quartet No. 4 is actualized by potentiality of instruments, their variety of strokes, the articulation is determined by differentiation into particular categories of quality, wherein timbre could be understood as sounding ***condition***. The **timbre**-related qualitative gradation elements have to be classified into two main aspects according to their compositional purpose: the types of ***timbre-color*** and ***micro-textural*** articulation types.

Micro-textural type of timbre articulation form a micro-structural layers of sounding field. These *micro-textural* articulations could be interpreted as main compositional principle for continuity of sounding processes. In the case of pitch parameter that aspect have to be conceptually understood as extremely compressed time-space dimension (when quantity of pitches becomes sounding quality). There are functionally different types of micro-textural articulation for form-creation strategy (see Scheme No. 4).

In Scheme No. 4 the basic strokes of micro-textural articulation are illustrated. Each of them uncovers a peculiar form distributing strategy and relation to other strokes. For instance, the variable ricochet-type stroke *staccato/staccato–legato* (the first one in the scheme) slows down the rhythmical processes; through the various frequencies of repeating *attacca* (one tone *tremolo* between different strings) the similarity of *tremolo* could be realized (the second one in the scheme) – wherefore localization of these two types of articulation is exposed as heterophonic relations throughout the form building strategy.

Fingering *tremolo* (microtones' coloration of one tone between different strings) uncovers the slowing down processes as inertial oscillation variants in time. Therefore, the first two articulation types seen in Scheme No. 4 are articulated in quieter dynamical scale – these oscillations could be understood as passive energetic stream in the most resistance medium and are in the opposite function to those active articulations as *trills* (*tr.*), *tremolo* (*trem.*), *vibrato* (*vibr.*). However since the second half of the piece's form (from 125 mm.) rhythmic

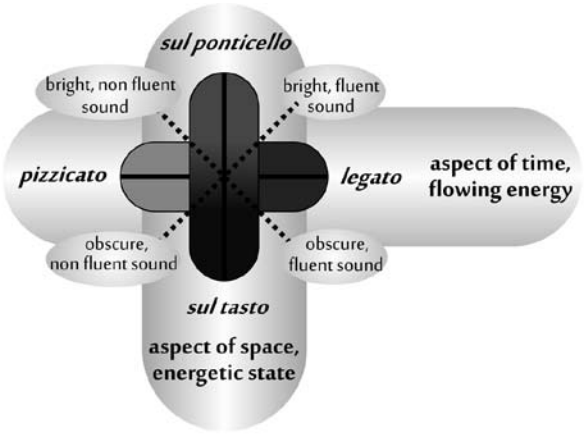
oscillation figures are compositionally transformed to *trem*. strokes. In this way these figures are brought to the articulations of *tr*. and *trem*. and are subordinated in order to realise the processes of culmination.

Tr. articulation stroke is used to realize the active (*tr+f*) and passive (as kind of granulated and amplified *vibrato*) processes. Because of these two aspects the *tr.* articulation have to be interpreted as having inconstant function during the sounding transmutations of the piece's form. Furthermore, *tr.* slowed to the intonation of seconds uncovers structural relations of time-space that compositionally links parts C and D.

All the culminated dynamic sounding processes are realized by invoking *Trem.* This micro-textural element has an inverse position to the *marcato/staccato-legato* types of strokes in the time scale: e.g. slowed down *trem*. can be understood as repeated tone. Otherwise fast *attacca* repeating becomes *tremolo*.

Vibrato stroke (as well as *ordinario*) connects to all the sounding vibration processes, continually weave and rearticulate the microtextural/timbral formation.

Timbre-color type could be defined as a kind of color articulation. Various bowing and *pizzicato* techniques provide opportunities to articulate sound in different characteristics of brightness as well as sounding fluency and timbral intensity.



Scheme No. 5. Timbre-color time-space articulation principles in Scelsi's String Quartet No. 4

In the Scheme No. 5 the system of different color producing is illustrated: 1) the aspect of space – timbral brightness as condition of energy, and 2) time – as energetic fluency. The mutations of spectral space have a possibilities to be done through the gradation of *sul tasto* ↔ *sul ponticello* scale (the aspect of verticality) that is understood as aspect of brightness, as coloration of inside space of sound. The articulation possibilities of musical time are implemented by gradation of *pizz.* ↔ *legato* strokes – herein the dynamic of *attacca's* and durations are expressed. Those articulation types correlate with *microtextural* expression principles of time (e.g., *ritardando* or *accelerando*), especial role these ones take for the elements accentuation of dynamical processes, the aspects of loudness time-space. By the elements of *pizzicato*, albeit they are assigned to the aspect of colorization, the *sudden loudness kinesis* is expressed.

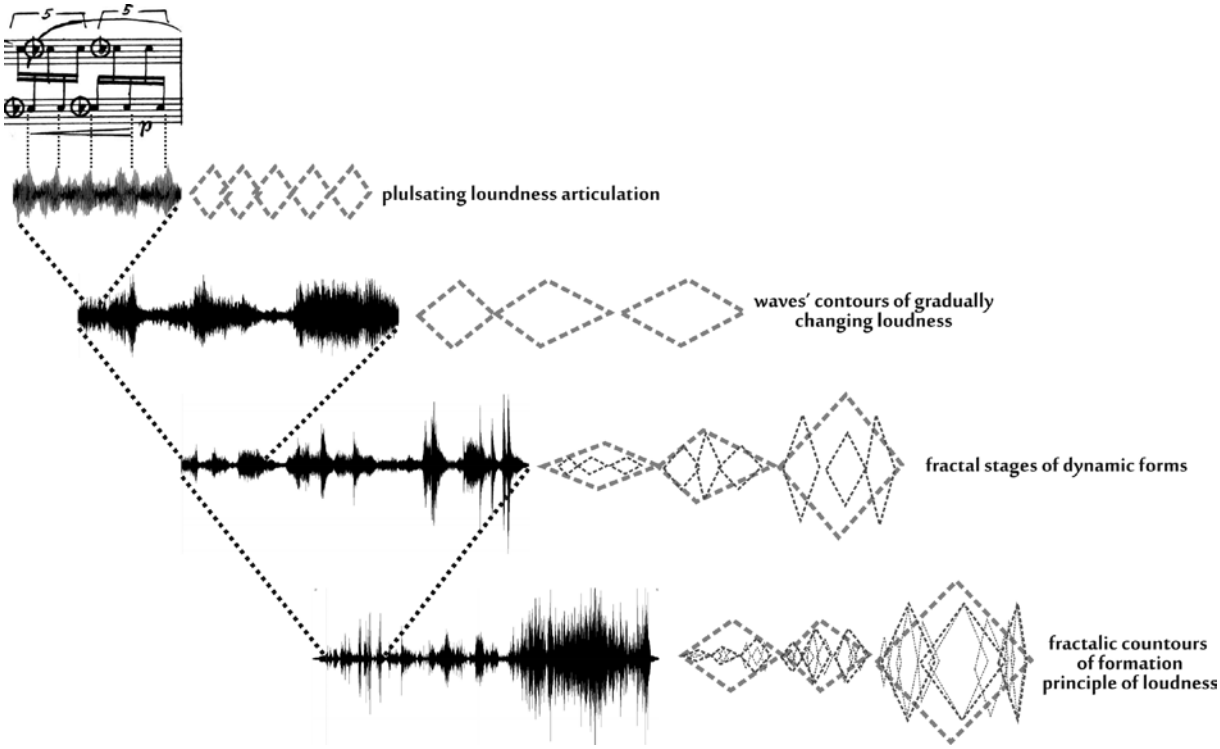
All the multifaceted articulation aspects form a sounding field, that can be interpreted as extended, condensed unison, synthesised by multi-articulation elements in verticality (space), and fluctuations of these – in horizontality (time). Hereby that fluctuating aspect of energetic *condition* could be described by term of ***super-timbre***.

The fundamental functions of timbre articulation have to be defined as complementary properties of *condition* – ***super-timbre*** and **dynamical** processes of piece:

- ***super-timbre*** as the sum of time-space characterizing environment, condition of energetic flow, where fluidity of elements in time is reflected;
- timbral articulation occurs as peculiarity, species (type) of energy, existing in correlation between space – brightness and time – fluidity;
- by the aspect of functionality timbre have to be discerned to the categories of *micro-textural* and *color* articulation. Micro-textural type is implemented as vibration, dynamic aspect of time, while aspect of color reflects coloristic, brightness quality of spatial dimension;
- function of timbre is integrated into processes of energetic expression and complements a time-space parameter of loudness.

It is considered that the sounds presented in the compositional conception of Scelsi's String Quartet No. 4 are interpreted as a mediator of an energetic stream. The main feature of expression of this *energy* reinforcement is the dynamic processes of **loudness**. The compositional principles of loudness and functional meaning are interpreted as the aspects of expressing the time-space of the sounding **energetic** level.

It would be mentioned, that three types of dynamic articulation can be found in Scelsi's String Quartet: **pulsating** (micro-articular bowing technique), **gradual** (it means dynamic transition from fade-in to fade-out) and **sudden** (***sf***).[8] Articulation of *pulsating loudness kinesis* is realized as aspect of energetic fluency and signifies the slowed down tempo using micro-textural strokes. Therefore that property is integrated into dimension of sounding condition. However the micro-structural level of pulsating loudness kinesis can be considered as archetypical unit (as well as smallest perceivable element) through the fractal compositional solution and becomes rearticulated by the *gradual loudness kinesis* in the higher – macro-structural level of form. Consequently, basic forming principles of dynamic waves could be perceived as the shapes of fractal expression:



Example No. 3. Fractal loudness articulation principles in Scelsi's String Quartet No. 4

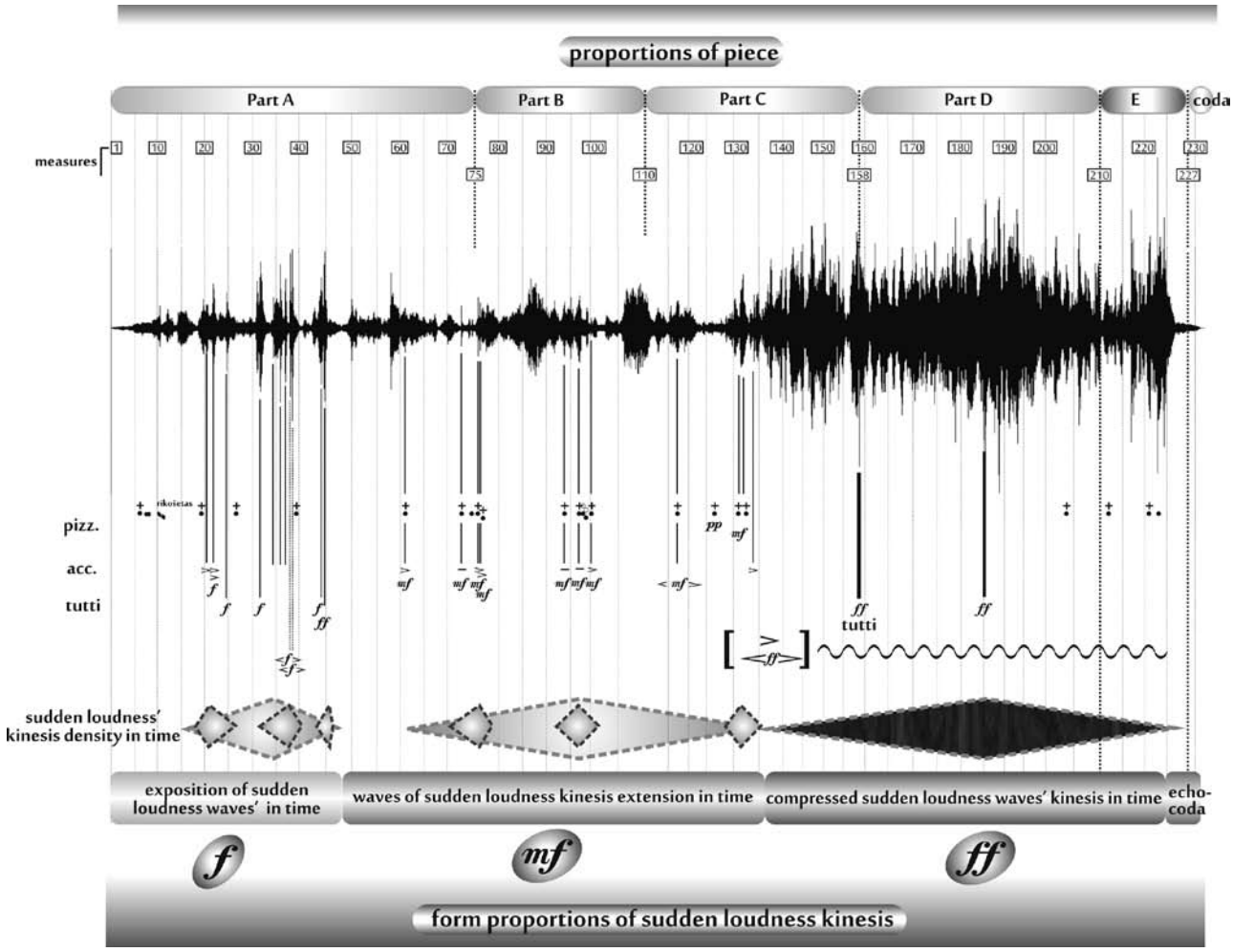
Example No. 3 shows three-part waves kinesis that are permeating all levels of form creating processes. In the aspect of space dimension these waveforms are related to spatial perspective – give us perceptual illusion of approaching and receding sounding processes.[9]

Sudden dynamical leaps, which are shown in the shapes of waves in Example No. 3 indicate an aspect of *sudden loudness kinesis*. However, accents of sudden kinesis do not break the compositional principles of loudness. Contrary – they reinforce the main forming tendencies of loudness.

There are several hierarchic levels for the articulation of dynamic accents: a) *pizzicato*, b) accent, c) mixed accent, d) *tutti* entry. Density of these accents creates a parallel loudness form, which is in heterophonic relation to the *gradual loudness kinesis*:

[8] These loudness aspects of articulation are postulated and described by the author of this paper in dissertation "The Compositional Principles of Articulation of the Musical Timespace (the aspects of spatialization of sound parameters in music in the second half of the 20th century and at the beginning of the 21st century)" (Viļums 2011: 103–114).

[9] Human perceptual abilities to connect loudness to spatial perspective are described by the author of this paper in dissertation "The Compositional Principles of Articulation of the Musical Timespace (the aspects of spatialization of sound parameters in music in the second half of the 20th century and at the beginning of the 21st century)" (Viļums 2011: 103–107).



Example No. 4. Loudness kinesis in Scelsi's String Quartet No. 4

In Example No. 4 three piece's parts of *dynamic strokes* are shown: a) exposition of the three density's centers in the time scale; b) part of three rarified density's *centers of dynamic* strokes; c) part of condensed dynamical kinesis and *coda* – echo. The logic of form confirms three parts' determination principle of loudness kinesis in the piece, which is shown as graduated through the levels: *f–mf–ff.* In the third part the waves of *gradual* and *sudden kinesis* are condensed, pressured. Because of pressured musical time, the dynamic expression could be interpreted as relative to articulation of *pulsating loudness kinesis*. Nevertheless, irregularity of kinesis as well as vacillation between different waves of *microtextural* and loudness kinesis impart the extremely expressed time-space dynamic.

Dynamic strokes split's type of resonance field coincide with sounding accents of piece. Consequently, these articulation aspects complement each other. Outstanding feature of the composition should be characterized by the different parameter aspects of form structuration – the form of loudness (consisting of three parts) do not match fife sections of sounding field (parameter of pitch).

Compositional principles and functional significance of loudness have to be interpreted as the **energetic level** aspects of time-space kinesis:

- *pulsating loudness kinesis* evolves through the condensed time-space structures. Therefore that articulation type supplements the sounding condition aspect of *micro-textural* specific, *super-timbre*;
- *gradual loudness kinesis* could be interpreted as approaching and receding sounding waves. Proportions and compositional logic of that type can be seen in principles of fractal time-space dimensions (the aspect of verticality and horizontality of sounding processes) which are realized throughout the all form of piece;
- *sudden loudness kinesis* breaks a sounding substance by *stroking* dynamical split. The density of accents location in time scale employs a parallel dynamic form that have a *heterophonic* relation to *gradual* kinesis of loudness. Compositional principle of *striking* dynamic interacts with split of sounding resonance field

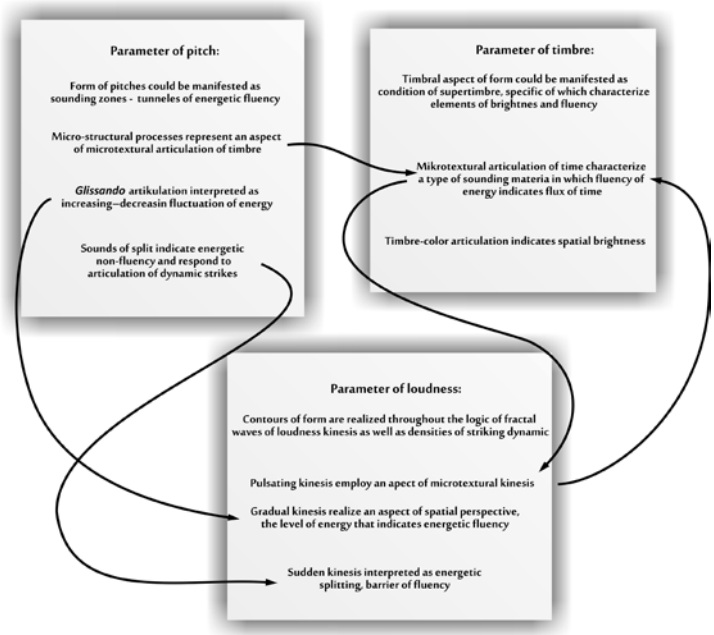
and could be interpreted as obstruction of energetic fluency. As a consequence of those obstructions, rebounding energy, dynamical accents appear.

The third part of the piece consists of fusion of all dynamical types and has a synthesized, strong energy condition, wherein huge amount of energy, articular elements and obstructions correlate with each other.

Compositional principles and functional meaning of loudness could be defined in the terms of energetic level of time-space kinesis.

Relations of sound parameters and sounding expression forms Scelsi's String Quartet No. 4

The strategy dealing with articulations of all sound parameters submits the piece's general idea – to interpret music processing as *substance – medium* which is evoked by *energy* and through which the energetic flows rush. Sounding is an expression of this *energy* fluidity. Without *energy* this *substance* would be "invisible", music – unheard. Considering it, the main parameter of actualizing expression form of piece should be expounded through the intensity of musical processes – loudness. In Scheme No. 6 basic functional aspects of sound parameters is illustrated.

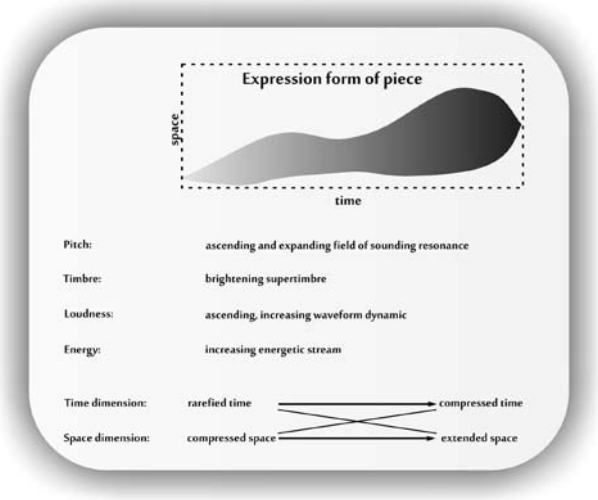


Scheme No. 6. Correlation between sounding parameters in Scelsi's String Quartet No. 4

In Scheme No. 6 correlation between sounding parameters are illustrated. For instance, microstructural processes of pitch are integrated into timbral articulation, meanwhile microtextural articulation correlate with aspect of *pulsating* timbre. Therefore, micro-textural articulation integrates articulation aspects of all sound parameters in itself and is distinguished by **oscillation** of energy frictions. In essence, any connection of a sound parameter with the *energy*-related strategy of sounding formation is inextricably entwined with the context of *loudness*-related parameter. Therefore, we can name this piece as a ***hetero-functional*** composition of sound parameters among which ***loudness*** is the dominant factor (there are *heterofunctional*, *polifunctional* and *monofunctional* aspects of compositional solutions, which are found and developed by the author of the paper[10] (Viļums 2011: 129–131)).

[10] Depending on the strategy of articulation of sounding, the relationship of sound parameters can be characterized as a *monofunctional*, *heterofunctional* or *polyfunctional* compositional structure. We describe the concept of *monofunctionality* as a purified conception of composition in which other aspects of sound presentation are levelled in the name of dominance of one of parameters. A *heterofunctional* composition is interpreted as a versatile but homogeneous/monocentric conception of sounding. For making a musical idea meaningful the sound parameters should submit to the essential hierarchical purpose of articulation (when the sound parameters are not levelled but assume an important meaning-related function and interconnectedness – they are integrated into the main conception realization). The features of such conception can be described by dominance (sound pitch, timbre and intensity) of one of the sound parameters in that case if other aspects of parameters are compositionally active and highlight the specifics of realizing the main parameter. Music *polyfunctionality* is described as differentiation of sound parameters when the structure of a work is composed by referring to generativity of various parameters. Specific or differently hierarchically organized functions are ascribed to sound parameters (Viļums 2011: 129–131).

The multi-typed elements of this piece's sounding are hardly reconstructed into certain *expression forms*. However, all sound parameters complement each other and their articulation displays a pronounced direction of a sounding substance (see Scheme No. 7):



Scheme No. 7. Expression form of Scelsi's String Quartet No. 4

An increasing *energy* flow evokes a gradually increasing expression/dynamics of all sounding aspects. The dimensions of *time* and *space* unfold dual logic of the musical time-space and exhibit an oppositional symmetry of the piece's form. In the quartet, universality of *time* and *space* articulation inherent to Scelsi's music, reveals the musical time-space that is presented as an infinite range: it can be interpreted as if immensely compressed or extended.

In Scelsi's String Quartet No. 4 composition can observe the aspects of a constant interaction of time and space that create the piece's *energetic* form (from micro to macro dynamical waves). However, the aspect of intensity/timbre creates an internal time-space of music which, in this case, is a manifestation of energy *condition*; a conceptual peculiarity of this composition is explained by totality of time levels of the processes of sounding (in the aspect of perceptually intangible micro↔macro dimensions) – the meta-dimension of a *cosmic energy*. Still, the *expression form* of Scelsi's piece is identified as a dynamic *form* of *expression* of variable *conditions* of an increasing energy.

The principles pertaining to articulation of the expression forms of sounding processes we name as a "*key*" to decode music; it allows our *intuition* to recognize an essential ***code*** that forms music. The *code* of *recognition* enables one to investigate musical processes as the higher level, existing beyond time combinations of the principle of idea and perception. The mental processes of perception integrate a cognitive life experience and therefore the perception of music, its more profound elucidation, is inextricably entwined with subjective tendencies of decoding. As a musical work is not a score, not sound processing, not a self-expressive abstraction But it is a personal sounding realm of a creator and a perceiver that is recreated every time anew.

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Santrauka

Energija ir būsena kaip G. Scelsi Styginių kvarteto Nr. 4 muzikinio erdvėlaikio artikuliacijos forma

Šio straipsnio tikslas – apibrėžti G. Scelsi Styginių kvarteto Nr. 4 muzikinio erdvėlaikio artikuliacijos principus ir mentalinės muzikinės išraiškos atpažinimo formas. Straipsnio autoriaus suformuoti muzikinio erdvėlaikio analizės principai leidžia nagrinėti kompoziciją kaip daugiaplanę, muzikinių parametrų sąveikoje besiformuojančią išraiškos formą.

G. Scelsi kūrinio formodaros procesas čia interpretuojamas **skambesio lauko** užpildymo ir jo **rezonanso** principu. Skambesio lauko užpildymas pasireiškia garsų eksploatavimu tam tikroje intervalinėje srityje – zonoje (nuo primos iki oktavos). Rezonansas pasižymi dviem skambesio lauko artikuliacijos aspektais: *horizontaliuoju* (tembro) ir *vertikaliuoju* (laiko) *rezonavimu*. *Horizontalusis rezonansas* identifikuojamas kaip skambesio lauko tembrinis, mikrointonacinis, valdomas štrichais ar instrumentinis varijavimas – reartikuliavimas laike, o *vertikalusis rezonansas* – skambesio zonos eksponavimas kituose registruose.

Visų garso parametrų artikuliacijų strategija paklūsta bendrai kūrinio kompozicinei idėjai – interpretuoti muzikos procesus kaip *materiją–terpę*, kuri pažadinama *energijos* ir per kurią plūsta energetiniai srautai. Skambesys yra šios *energijos* takumo išraiška. Be *energijos* ši *materija* būtų „nematoma“, o muzika – negirdima. Iš esmės bet kuri garso parametro sąsaja su *energetine* skambesio formodaros strategija yra neatsiejama nuo *garsumo* parametro konteksto. Todėl šį kūrinį galima įvardyti kaip *heterofunkcinę* garsų parametrų kompoziciją, kurios parametrų dominantė yra *garsumas*.

Kvarteto skambesio elementų daugiarūšiai įvykiai yra sunkiai rekonstruojami į tam tikras percepcines *išraiškos formas*. Tačiau visi garsų parametrai papildo vienas kitą, o jų artikuliacija parodo ryškų skambančios materijos artikuliacijos kryptingumą. Stiprėjantis *energijos* srautas suaktyvina visus skambesio aspektus. *Laiko* ir *erdvės* dimensijos atskleidžia dualinę muzikinio erdvėlaikio logiką ir parodo kūrinio formos opozicinę simetriją. Kvartete atsiveria G. Scelsi muzikai būdingas *laiko* ir *erdvės* artikuliacijos universalumas, muzikinis erdvėlaikis pateikiamas percepciškai neaprėpiamu diapazonu: jis gali būti interpretuojamas kaip tarsi be galo suspaustas arba išplėstas.

G. Scelsi Styginių kvarteto Nr. 4 kompozicijoje nuolat sąveikauja erdvės ir laiko aspektai, kurie formuoja *energetinę* (mikro- / makrodinaminiais pulsais / bangomis) kūrinio formą. Garsumo / tembro aspektas formuoja vidinį muzikos erdvėlaikį, kuris šiuo atveju yra energijos *būsenos* apraiška; šios kompozicijos konceptualusis ypatumas, paaiškinamas skambesio procesų laiko lygmenų totalumu (percepciškai neaprėpiamu mikro- / makrodimensijų spektru), yra „kosminės“ energijos metadimensija.

Cibele Palopoli

Comparative Rhythmic Study between Editions of *Sequenza I* for Solo Flute by Luciano Berio

1. Introduction

Luciano Berio (1925–2003) composed between 1958 and 2002 a series of fourteen pieces for solo instruments entitled *Sequenze*. The title refers to a sequence of harmonic fields that served as the starting point to the compositions. The solo flute *Sequenza* is the first piece of the series, which was originally composed in 1958, and dedicated to the Italian flautist Severino Gazzelloni (1919–1992).

One of the reasons that made *Sequenza I* (1958 ed.) a widely known piece was its non-traditional rhythmic notation, that uses proportional notation. Also called spatial notation, time-space notation, or proportionate notation, in this type of writing the durations of the notes and rests are determined by the spatial distribution of the pitches on the score rather than assigned by traditional rhythmic figures such as crotchets, quavers, etc. In this work I will adopt the term proportional notation. (It is worth emphasising that such terminology does not establish any relationship with that used in ancient music.)

Proportional notation was pioneered by American composers such as John Cage in *Music of Changes* (1951), and Earle Brown in *Folio* (1952–1953) and in *Music for Cello and Piano* (1954–1955).[1] Several theorists and musicologists consider this type of writing as being less accurate, but easier to be performed. Kurt Stone contrasts proportional notation with complex traditional rhythmic notation adopted by composers such as Pierre Boulez and Luigi Nono:

> "Simultaneous with the tendency of toward ever greater complexity, a trend has developed in the opposite direction: less notational precision and ever greater interpretative freedom. … Measures (if any) represent units of time (usually one or more seconds or a certain number of metronome clicks), but no meters" (Stone 1980: 96).

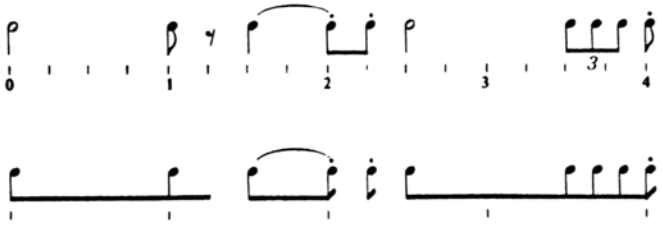

Figure 1. Rhythmic lengths in proportional notation (Stone 1980: 136)

In *Sequenza I* (1958 ed.) Luciano Berio used proportional notation to write rhythms, conserving traditional notation in other musical parameters, such as pitches, articulations and dynamics. All pitches were written either by noteheads with stems and beams (the majority) or by noteheads without stems (usually under fermatas). Although the appearance of the noteheads with stems suggests quavers, here they do not follow any metric hierarchy once their durations are associated with the distances between each note. In the leaflet accompanying the Suvini Zerboni Edition there are the following instructions:

> "The performing time and the durational relations are suggested: by reference to a constant amount of space that corresponds to a metronomic constant beat; from the distribution of notes in relation to the constant amount of space ..." (*Sequenza's* leaflet, 1958, my own translation).[2]

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1 Formed by a series of pieces without defined instrumentation, *Folio* is considered by its composer as a "sequential search for a new notation" (Brown *apud* Alden 2007: 315), and *December 1952* is one of the most famous works of this cycle. Brown defines proportional notation as "durations extended in *space* relative to *time*, rather than expressed in metric symbols as in traditional notation" (Brown *apud* Alden 2007: 331).

2 "Il tempo di esecuzione e i rapporti di durata vengono suggeriti: dal riferimento ad una constante quantità di spazio che corrisponde ad una costante pulsazione di metronomo; dalla distribuzione delle note in rapporto a quella quantità costante di spazio ..." (*Sequenza's* leaflet, 1958).

The constant amount of space mentioned by the leaflet refers to segments (or temporal fields) of approximately 3 cm, divided by small lines that cross the fifth line of the staff (Figure 2). The metronomic constant beat is indicated by Berio as 70 measure mesures (MM) from the first staff to the beginning of staff 42, where there is another indication of length equal to 60 MM. In staff 44 there is the designation of 72 MM until the end of *Sequenza I*. In other words, each segment between small lines corresponds initially to a 70 MM metronome beat, which is equivalent to about 0.8 seconds.

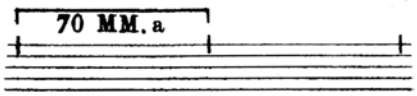

Figure 2. Spacings which lengths correspond to about 70 MM (*Sequenza's* leaflet, 1958)

Having established the relationship between space and time, *Sequenza's* leaflet indicates that notes with separated beams should be performed *non-legato* and that notes with extended beams should have their values extended until the subsequent note (Figure 3). Thus, the writing of the beams refers to the articulation parameter – linked naturally to the durational one, since the sound produced by the performance of the notes is shorter in the first type, with the temporal space between two notes filled by silence (as in traditional notation).[3] The leaflet also recommends that *appoggiaturas* should be performed as fast as possible and that the fermatas' value is *ad libitum*.

Figure 3. Notes with separated beams (type 1) and notes with extended beams (type 2) (*Sequenza's* leaflet, 1958)

The excerpt taken from the first staff of *Sequenza I* (1958 ed.) exemplifies a possible rhythmic interpretation of proportional notation. The first temporal field suggests a binary division, whereas the second, a ternary one.

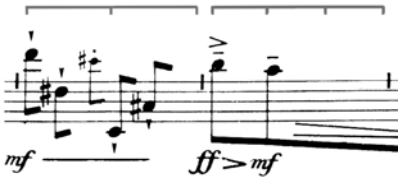

Figure 4. Temporal fields suggesting binary and ternary divisions (staff 1)[4]

The distinctive rhythmic notation became a peculiar characteristic of *Sequenza I* and it made the piece one of the most mentioned examples of proportional notation in contemporary music. Reginald Brindle, author of *The New Music: the Avant-Garde since 1945* (1987), mentions *Sequenza I* in the chapter about *Indeterminacy, Chance and Aleatory Music*, and considers proportional notation too precise depending on the context in which it is applied:

> "For example, the proportional notation used in Berio's *Sequenza* (1958) for solo flute has been used (with various modifications) ever since. It is easy to play and represents the composer's requirements precisely (perhaps too precisely where real time indeterminacy is aimed at) ..." (Brindle 1987: 63–64).

[3] It is also possible to find extended noteheads in other compositions that use proportional notation from the XX century. In this case, noteheads are both responsible to determine the pitches and to show the durations, although such writing is less clear, especially in chordal or poliphonic textures.

[4] Due to the absence of barlines and in order to facilitate understanding, the staves are enumerated from 1 to 46 according to the score edited by Suvini Zerboni Editions (1958). Thus, in this paper the musical examples drawn from the score are identified by the stave's number in the edited version. Since the original score omits the clef, I kept this omission emphasising, however, that all examples refer to the treble clef.

Stefan Kostka in *Materials and Techniques of Twentieth-Century Music* (2006) emphasises the ametria aspect on the flute *Sequenza* (1958 ed.):

> "Luciano Berio's *Sequenza I* (1958) uses a short barline, and the 'measure' itself is assigned a specific tempo – M.M. 70 at the beginning. This composition is definitely ametric, however, because the actual durations are specified only by the placement of the notes within the measure. ... Notational of this sort is sometimes called *proportional notation*. ..." (Kostka 2006: 125).

It is really possible to consider *Sequenza I* (1958 ed.) as an ametric piece due to the absence of a pulse that would determinate strong and weak beats, *anacruses*, and on and off-beats that would generate metric groupings. Despite the ametria, the proportional relationship in the spacing between notes should be respected. Thereby, the great innovation of proportional notation was allowing the performers to adapt certain rhythmically dense passages according to their abilities. According to Berio:

> "... Notation of *Sequenza I* is according to the principle of a 'visual metronome' that gives very important benchmarks for performance. This principle allows adapting the piece to the personal virtuosity of each musician. But the difficulty that naturally grows in rhythmic imprecision makes me think of a re-write of *Sequenza I* in rhythmic notation. Someday, when I have time ..." (Berio[5] *apud* Stoianova 1985: 400, my own translation).[6]

Over the years the rhythm in *Sequenza I* was increasingly mischaracterised from that that once idealised by the composer. In 1966, when the French flautist Aurèle Nicolet was going to record *Sequenza I*, Berio answered to a letter from Nicolet explaining that, to him, the absolute time was not as important as the maintenance and consistency of rhythmic proportions. In addition, the composer rewrote the first staff of the work, using traditional notation and scoring it in 2/8 (Folio; Brinkman. In: Halfyard 2007: 13–14).

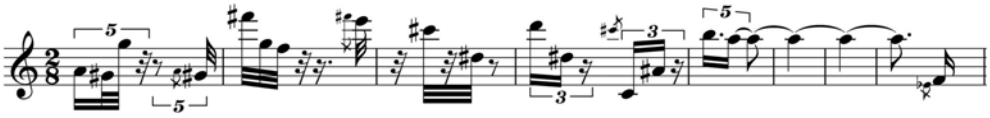

Figure 5. First staff of *Sequenza I* rewritten by Berio in letter to Nicolet (Folio; Brinkman. In: Halfyard 2007: 17)

Below there is one among numerous reports in which Berio expresses his dissatisfaction with the excessive freedom adopted by performers in *Sequenza I* (1958 ed.):

> "At the time I wrote *Sequenza I*, in 1958, I considered the piece so difficult for the instrument that I didn't want to impose on the player specific rhythmical patterns. I wanted the player to wear the music as a dress, not as a straitjacket. But as a result, even good performers were taking liberties that didn't make any sense, taking the spacial notation almost as a pretext for improvisation" (Berio. In: Muller 1997: 19).

Referring back to the initial composition of *Sequenza I*, it is surprising that proportional notation was not the first choice in the conception of the work by Berio. According to Nicholas Hopkins, Berio's former musical assistant, 'he originally wrote it in exceptionally fine detail (almost like Ferneyhough in the original form), but Gazzelloni could not handle it, so Berio decided to use proportional notation' (Hopkins[7] *apud* Weisser 1998: 38).

According to Paul Roberts, another assistant of the composer, who worked with Berio from 1989 until the composer's death, in 2003:

> "The truth is that Berio originally composed the flute *Sequenza* in standard notation back in 1958. It was written using very strict serial rhythms, and was barred in 2/8 from start to end. The notation was very similar to his other works published by Suvini Zerboni, for example the *Quartetto* (1956), or *Serenata I* (1957). ... Unfortunately, over the years,

5 Berio, Luciano. *Interview with Ivanka Stoianova*. Paris: 23 Oct. 1979.

6 "[...] La notation de *Sequenza I* est conforme au principe d'un 'metronome visuel' qui donne des points de repère très importants pour l'exécution. Ce principe permet d'adapter la pièce à la virtuosité personnelle de chaque instrumentiste. Mais la difficulté qui pousse naturellement à l'imprécision rythmique, me fait penser à une ré-écriture de *Sequenza I* en notation rythmique. Une fois, quand j'aurai le temps..." (Berio *apud* Stoianova 1985: 400).

7 Hopkins, Nicholas. *Letter to Benedict Weisser.*

he became increasingly disappointed with how flute players approached this notation which is by no means as free as it seems. (This was the case, in effect, with all his proportionally notated pieces) ... The Suvini Zerboni publication is in reality a renotated version of the original" (Roberts[8]. In: Folio; Brinkman. In: Halfyard 2007: 15–16).

From these statements and contrary to what one might assume, the notation of the flute *Sequenza* was not a major issue during the compositional process by Berio. It emerged as a solution to a problem: excessive rhythmic complexity alongside the great exploration of other compositional parameters such as dynamic, pitch and morphological.[9] It is worth noting that *Sequenza I* in its original conception had a quite complex rhythmic notation compared to the solo flute repertoire until the late 1950s. It was about ten years later that other rhythmically elaborated pieces proliferated, such as *Cassandra's Dream Song* (1970), and *Unity Capsule* (1975–1976), by Brian Ferneyhough.

2. Comparative rhythmic study between editions of *Sequenza I*

Thirty-four years after the first edition, Berio published by Universal Edition, in 1992, a new version of the flute *Sequenza*, replacing proportional notation with traditional notation, although without using barlines.[10] The 1992 edition was actually drawn from the original manuscript of *Sequenza I*, referring to the late 1950s, before Berio had readjusted the piece in proportional notation and had it published by Suvini Zerboni Editions. This rereading featured a simplification of the more complex rhythms in traditional rhythmic notation. (Weisser 1998: 49). According to Heinz Stolba, from Universal Edition, the new version of *Sequenza I* was actually made by Berio's assistant, Paul Roberts (Folio; Brinkman. In: Halfyard 2007: 15).

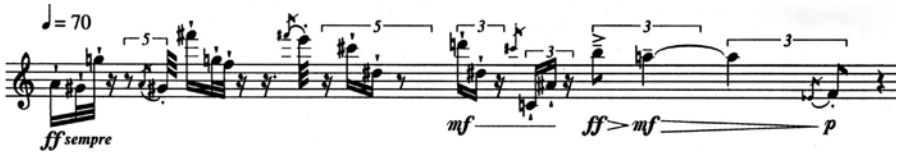

Figure 6. First staff of *Sequenza I*, 1992 edition

In the beginning of the 1992 edition there is a metronomic indication equaling a crotchet to 70 MM (Figure 6). In this new score, fermatas have their durations specified in seconds and the shape of a triangle with no base (Figure 7).

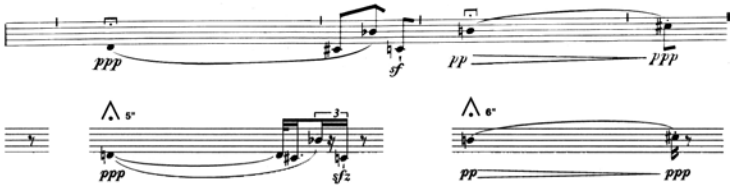

Figure 7. Utilisation of fermatas in the 1958 and 1992 editions (staves 8 and 7)[11]

The 1958 edition was taken as a basis to accomplish this rhythmic comparative study between editions of *Sequenza I*. Given that the dimensions in proportional notation can not be changed, I have adapted the layout of the 1992 edition to fit under the 1958 edition in order to emphasise the visual equivalence between temporal fields and crotchets. The example below (Figure 8a) shows that blanks in proportional notation correspond to rests in traditional notation. The figure also reveals that the division into temporal fields is in many cases emphasised by ties in traditional rhythmic notation. In another situation (Figure 8b), the adaptation between proportional and traditional notation made use of an *appoggiatura* to approach the rhythmic values.

8 Roberts, Paul. *Email message to Cynthia Folio*. 12 Dec. 2005.

9 As presented by Berio in describing the compositional process of *Sequenza I* (Berio 1985: 97–99).

10 Although it is traditionally known that the version published by Universal Edition is from 1992, it is curious that this date is not included in the score (which only refers to the year of *Sequenza I*'s composition), nor in Luciano Berio's catalogue at Universal Edition (Marinitsch 2008: n/p). The information that Universal Edition's version is a new edition from 1992 was only found on their website (<http://www.universaledition.com/sheet-music-and-more/Sequenza-I-fuer-Floete-Berio-Luciano-UE19957>). The fact that Sophie Cherrier (Brindeau 1998: n/p) mentions the new edition as being from 1997, while Umberto Eco (2012: 14) refers to 1998, contributes further to this mystery.

11 The musical examples drawn from Universal Edition's score (1992) were numbered according to the staves' order, from 1 to 38.

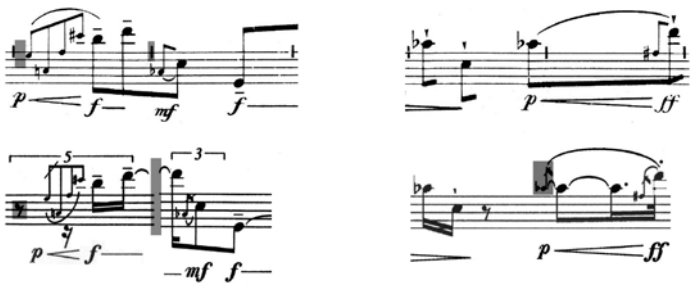

Figure 8. a) Equivalence between temporal fields and crotchets (staves 5 and 4–5);
b) Utilisation of an *appoggiatura* to transform proportional notation into traditional notation (staves 7 and 6)

The 1992 edition has no barlines and it avoids, to some extent, a regular beat. Nevertheless, abstracting completely any kind of grouping is a very difficult task. Below (Figure 9a), a situation is shown in which groups of triplets in traditional notation suggests an off-beat. This off-beat is not implied according to the proportional notation version of the same excerpt. In the same passage, the rest is not functioning equally to a blank space in proportional notation due to the presence of an *appoggiatura*. The leaflet of the 1958 edition indicates that *appoggiaturas* should be performed as fast as possible, but it was only in the 1992 edition that *appoggiaturas* were transformed into brief *appoggiaturas* (*acciaccaturas*), and therefore have no rhythm value within the length of the bar. Another situation making use of *appoggiaturas* is shown below (Figure 9b). In this case, a quaver rest in traditional notation would be incoherent if there were no *appoggiaturas*.

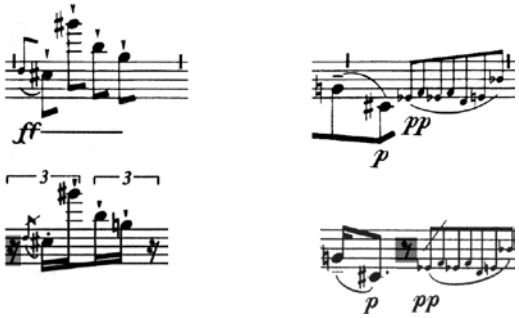

Figure 9. a) Implication of an off-beat in traditional rhythmic notation (staves 5 and 4);
b) Apparently inconsistent rest in traditional notation (staves 10 and 9)

There are three situations in which *appoggiaturas* of the 1958 edition were transformed into real notes – demisemiquavers – in the 1992 edition:

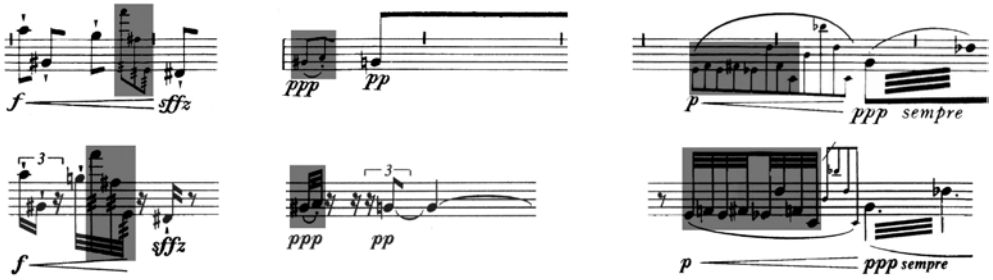

Figure 10. *Appoggiaturas* transformed into demisemiquavers (staves 7 and 7; 20 and 16; and 30 and 24)

According to Cynthia Folio and Alexander Brinkman, authors of *Rhythm and Timing in the Two Versions of Berio's Sequenza I for Flute Solo: Psychological and Musical Differences in Performance* (In: Halfyard 2007: 29), although there are no barlines in the 1992 edition, its time signature is deductively 2/8, with constant metric changes due to the addition and subtraction of rhythmic values. Early in the beginning of the piece there is

indeed the addition of semiquavers in the transformation of temporal fields into crotchets (Figure 11). According to Folio and Brinkman, this addition makes the 70 MM pulse slows down by a fifth, thus being equivalent to 56 MM (Folio; Brinkman. In: Halfyard 2007: 16).

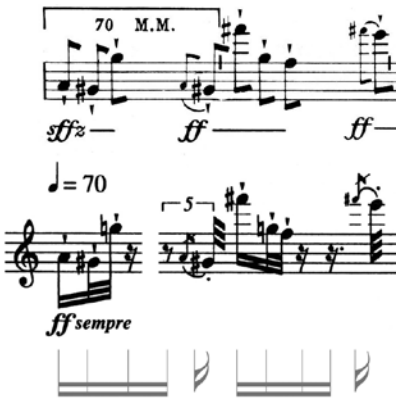

Figure 11. Addition of rhythmic values in the transformation of temporal fields into crotchets (staves 1 and 1)

Further on in equivalent parts, there is the addition of a quaver (Figure 12a); a rest exceeding its value in a quaver (Figure 12b); or even the omission of a rhythmic value corresponding to a semiquaver (Figure 12c).

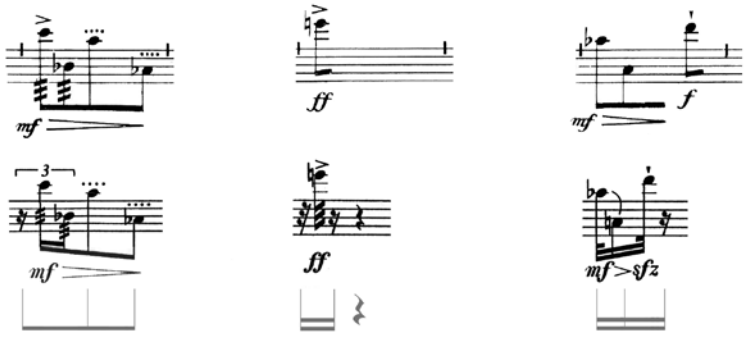

Figure 12. Addition and subtraction of rhythmic values in the transformation of temporal fields into crotchets (staves 5 and 4; 6 and 5; and 13 and 11)

In the excerpt below (Figure 13), the subtraction of rhythmic values occurs in a passage formed by the use in maximum degree of tension of morphological and temporal dimensions. Due to the omission of rhythmic values corresponding to semiquavers, there is the presence of asymmetric rhythms in combination with the use of key clicks (whose first occurrence is not displayed on the 1958 edition). This asymmetry highlights the use of such extended technique.

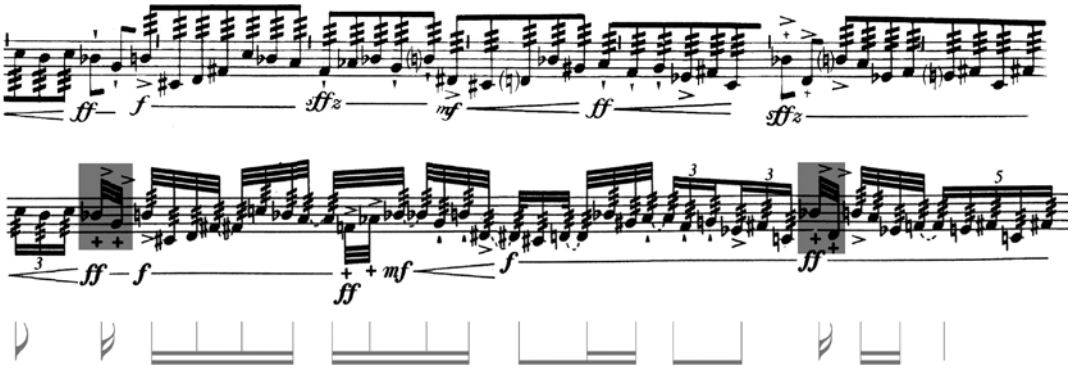

Figure 13. Subtraction of rhythmic values in the transformation of temporal fields into crotchets (staves 33 and 27–28)

It is remarkable that traditional notation is often more intricate visually, requiring the performer to read attentively. Below (Figure 14), there is a syncopation formed by a succession of demisemiquaver, semiquaver and demisemiquaver concomitantly with *frullatos*. These rhythms resemble a group of three semiquavers in a careless reading.

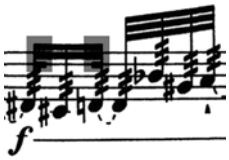

Figure 14. Syncopation in traditional notation resembling to a group of three semiquavers in a careless reading (staff 28)

Among divergent interpretations promoted by proportional notation in comparison to traditional one, there is below a gradual acceleration written in traditional notation that does not match its equivalent in proportional notation (Figure 15). The spacing between notes in the 1958 edition suggests homogeneous durations, mainly in the last three notes.

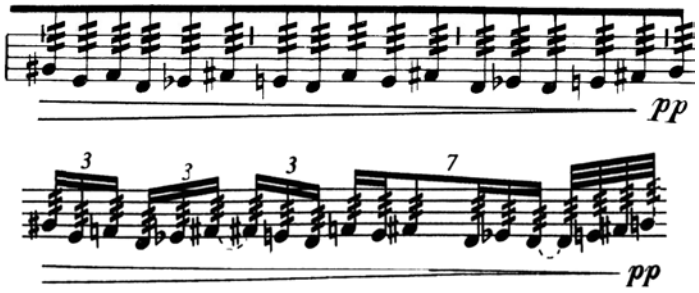

Figure 15. Homogeneity in proportional notation versus gradual acceleration in traditional notation (staves 34 and 28)

At the end of the piece there is an extra *B* in the 1992 edition, and immediately after, a rest whose spacing in proportional notation does not correspond to its duration in traditional notation (Figure 16).

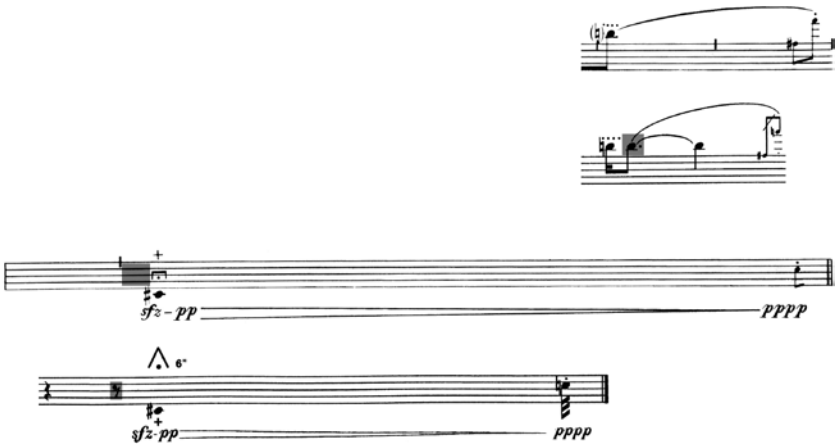

Figure 16. Extra *B* in traditional notation and non-equivalence between blank and quaver rest (staves 45–46 and 38)

Despite the rhythmic differences between the 1958 and 1992 editions so far presented, there are some passages in which the correspondence between temporal fields and crotchets is quite accurate and there are no additions or subtractions of rhythmic values. This is presented below (Figure 17), although a subdivision of the traditional notation version was necessary to clarify this equivalence.

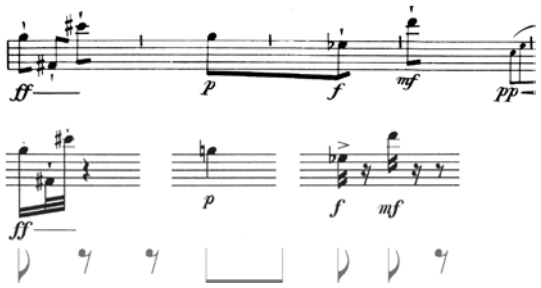

Figure 17. Accuracy in the transformation of proportional notation into traditional notation (staves 19 and 16)

Concerning aspects of proportionality, Folio and Brinkman observe that the transformation of temporal fields into crotchets is far from precise. 'In many instances, the proportional spacing of 1958 is translated into rhythms that exaggerate the proportional distances between notes or even contradict them' (Folio; Brinkman. In: Halfyard 2007: 16). The authors demonstrate that, in traditional notation, the first note of the piece is twice as long as the following two. The spacing between these three notes in proportional notation, however, does not represent the same proportionality, and an optical illusion is created by the direction of the stems (Folio; Brinkman. In: Halfyard 2007: 33).

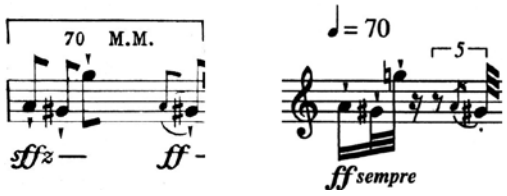

Figure 18. Spacing and proportionality between the first three notes of *Sequenza I,* 1958 and 1992 editions (staves 1 and 1)

Regarding performance issues of both editions of *Sequenza I*, Folio and Brinkman have assumed that the two versions might suggest radically different interpretations. Therefore, they did a computer analysis of eleven professional recordings. Among them, seven flautists used the 1958 edition; three aggregated information of 1992 edition, while still using the first edition; and only one used the 1992 edition.[12] The hypothesis that the 1958 and 1992 editions of *Sequenza I* would present significant differences in performances has not been confirmed and, according to the authors, it is difficult to determine which edition is used from timing information alone (Folio; Brinkman. In: Halfyard 2007).

3. Final considerations

The controversy surrounding the rhythmic notation in *Sequenza I* gave notoriety to the piece, having great verbal and literary impact. The horizontal spacing in proportional notation is correlated to tapes, and the length of the piece is equivalent to the tape rotation. Thus, it is plausible that Berio was inspired by his work with electroacoustic music, especially on RAI's *Studio di Fonologia Musicale,* since 1955. Another possibility is based on Berio's contact with new explorations within rhythmic notation through American composers in 1952 – a period when the first compositions using proportional notation flourished, and when Berio went to the United States to participate in the *Berkshire Music Festival*, in Tanglewood. Berio also had a deep contact with John Cage, one of the pioneers in using proportional notation, during the residency of Cage at the RAI studio, in 1958 – the same year that *Sequenza I* was composed.

[12] The recordings are from Sharon Bezaly (2000–2001), Sophie Cherrier (1998), Robert Dick (1990), Roberto Fabbriciani (1994), Anna Garzuly (1996), Severino Gazzelloni (1961), Erich Graf (1991), Peter-Lukas Graf (1989), Aurèle Nicolet (1991), Harvey Sollberger (1975), and Karlheinz Zöller (2003). Although Sophie Cherrier is on Folio and Brinkman's list as the only performer to use the 1992 edition, there is a statement from 1998 (the same year of her recording), where the flautist says that she makes use of the 1958 edition: "... I studied the new version, but only for the small, detailed elements; because my previous study sufficiently prepared me, I work only with the original notation" (Cherrier. In: Brindeau 1998: n/p).

The 1992 edition is closer to the original conception of the piece by Berio, as he originally conceived it in traditional notation. Thereby, proportional notation emerged as a facilitator, as a viable option to the complex rhythms in traditional notation. The interpretation of proportional notation, however, had a different effect and promoted misinterpretations of the work according to Berio. However, I would argue that the differences between the two editions of *Sequenza I*, illuminated in this comparative study, create the possibility for distinct, multiple interpretations of the same work in an open, rather than closed, way.

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Santrauka

Luciano Berio *Sequenza I* fleitai solo redakcijų lyginamoji ritmo studija

Straipsnyje pristatoma lyginamoji dviejų Luciano Berio (1925–2003) *Sequenza I* fleitai solo redakcijų ritmo studija. Pirmojoje redakcijoje (*Suvini Zerboni Editions,* 1958) naudojama proporcinė notacija. Antrąją redakciją (*Universal Edition,* 1992) kompozitorius pertvarkė – joje pritaikė tradicinę notaciją.

Sequenza I (dedikuota italų fleitininkui Severino Gazzelloni) yra pirmas kūrinys iš keturiolikos kompozicijų serijos *Sequenze* solo instrumentams. Sukurtos per 44 metus, *Sequenze* tapo gerai žinomais XX ir XXI a. solinio repertuaro kūriniais, kurie išgarsėjo visapusiškai techniška ir rafinuota muzikine kalba bei aukšto lygio virtuoziškumu. Didžiausias iššūkis, kurį kelia *Sequenza I*, yra ritminio pobūdžio – tinkamai dešifruoti notaciją, nepriklausomai nuo to, ar ji proporcinė (*Suvini Zerboni Editions*, 1958) – dėl užrašymo neįprastumo, ar tradicinė (*Universal Edition,* 1992) – dėl sudėtingų ritmų.

Proporcine notacija *Sequenza I* Berio užrašė ne iš karto – pirmiausia ją pateikė tradicine ritmine notacija. Vis dėlto sudėtingos ritminės sekos, išplėstinių technikų naudojimas, pasikartojantys platūs melodiniai intervalai, artikuliacijos įvairovė ir ekstremali dinamika taip komplikavo pjesę, kad Berio tada pasirinko proporcinę notaciją, siekdamas palengvinti kūrinio atlikimą. Taigi šio kūrinio 1958 m. redakcijos ritmines trukmes lemia natų tarpusavio atstumas penklinėje.

Po kelerių metų kompozitoriui ėmė nepatikti atlikimai bei įrašai pagal pirmąją redakciją. Anot Berio, absoliutus laikas proporcinėje notacijoje buvo ne toks svarbus kaip siekis nuosekliai išlaikyti ritmines proporcijas. Per didelė atlikėjų laisvė (jie proporcinę notaciją interpretavo vos ne kaip pretekstą improvizacijai) paskatino kompozitorių po 34 metų perrašyti savo kūrinį ir pakeisti proporcinę notaciją į tradicinę ritminę notaciją.

Remiantis šia perspektyva, straipsnyje aptariamos idėjos, išdėstytos Folio ir Brinkmano straipsnyje „Ritmas ir laikas dviejose Berio *Sequenza I* fleitai solo versijose: psichologiniai ir muzikiniai atlikimo skirtumai“, taip pat kai kurie kūrinio struktūriniai ir techniniai aspektai. Aptariami ir kai kurie abiejų redakcijų skirtumai ir panašumai.

Mykolas Natalevičius

Time Aspects of Drone Music

Drone is one of the most radical experimental music styles, which is characterized by extreme reduction of musical parameters.[1] Rhythm is not an exception; sounds in such works last for a very long time. A single sound may last several minutes or more and the changes are best revealed in timbre modulation. Conventional talk about rhythm becomes impossible since there are no usual rhythmical or metrical patterns. There are very few written works about drone music, especially its compositional aspects. Problems exist even in the definition of the style. One of originators of that style composer La Monte Young defined drone music as "the sustained tone branch of minimalism". Yet musicologist Joanna Demers[2] states that it can be also defined as maximal music style. There also exist definitions where drone and ambient music are mixed together. However, in this research La Monte Young's definition is used that defines drone as a minimalist music branch and the paper is concentrated on compositional solutions connected with rhythm and organisation of time.

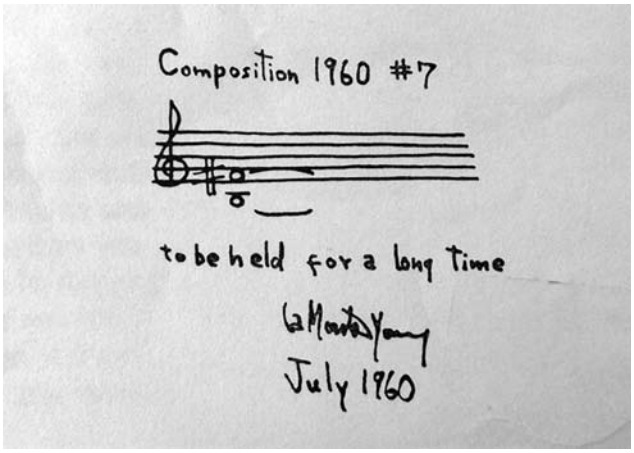
It is problematic because drone style compositions are usually electronic or electro-acoustic and they often have no written scores. Another problem is that variations of the sound in drones can be very slight and difficult to describe. Therefore spectral analysis is used to help to explore the sound changes further and reveal the characteristic patterns of the style. Sonic Visualiser software was used to analyse drone music and spectrograms were made with it.

From the previous research it is known that drone style could be characterized as a style which has those characteristics:

1. Long duration;
2. Sustained sounds;
3. Display of one sound;
4. Lack of salient contrast.

However, it's about overall characteristics of the style. Rhythm in these pieces is often somewhat hidden or used in a non-conventional manner. Analysing drones one can find only one sustained pitch, absolute lack of rests, slight modulations of timbre and sometimes some dynamic changes. Usually changes are so slight that they cause impression of timelessness. In some pieces rhythm seems inaudible in a general sense, but some interesting things do occur.

Let's look at the most extreme example of drone music – La Monte Young's "Composition No. 7" (1960) (Example 1). Young was one of the most famous precursors of drone music. This piece is one of the most radical musical pieces and could be compared to John Cage's 4'33. There are only two sounds – *b* and *f sharp* – natural fifth, which should be "held for a long time". Living in Manhattan he had association with the FLUXUS[3] group[4]: George Maciunas[5], Nam June Paik, Yoko Ono, George Brecht, and Jackson Mac Low. This piece was played for the first time in 1961 in the George Maciunas Gallery where it was performed for three hours on bowed violas. This piece had a great influence on other artists. It was performed later at various



Example 1. La Monte Young. "Composition No. 7"

1 Drone music is defined as a branch of minimalism that emphasizes the use of sustained tones, cluster, or repeated notes.

2 Demers, Joanna, *Listening through the Noise*: The Aesthetics of Experimental Electronic Music. Oxford University Press, 2010.

3 Fluxus is an international network of artists, composers and designers noted for blending different artistic media and disciplines in the 1960s. They were active in Neo-Dada noise music and visual art as well as literature, urban planning, architecture, and design. Fluxus is sometimes described as intermedia.

4 His name was written in George Maciunas' list of Fluxus associates.

5 George Maciunas was a Lithuanian-born American artist. He was a founding member and the central coordinator of Fluxus, an international community of artists, architects, composers, and designers. Other leading members brought together by this movement included Ay-O, Joseph Beuys, George Brecht, Dick Higgins, Yoko Ono, Nam June Paik, and Wolf Vostell. He is most famous for organising and performing early happenings and for assembling a series of highly influential artists' multiples.

venues. One of them was a performance in Fluxus Festspiele where it was performed with "Trio" for strings.[6] The concert was attended by famous avant-garde artists John Cage, Andy Warhol, and Jonas Mekas. Mekas stated that this piece inspired Andy Warhol to create his static film "Sleep, Haircut, Eat, Kiss and Empire".

As Wim Mertens states, this piece belongs to the second period of La Monte Young's compositional style. The first period pieces made the background for the second period pieces and were mixed with the serialism technique and called "sustenance."[7] An example of that period is the famous "Trio" for strings written in 1958. It is a static piece with duration of fifty-eight minutes. This piece was influenced by his studies in Berkeley where he worked with serialism and this piece was made from twelve note series. It consists of long sustained notes mixed with long rests. This and similar pieces created the background for later pieces and "Composition No. 7".

Although the last piece was created more like conceptual art it has the main aspects which are found in drone music: one sustained sound, no salient contrast and long duration. However, they were taken to the extreme and there could be no change at all. It has conception of timelessness taken very seriously and was very important not only as an inspiration for various artists, but also for music history.

Timelessness and vertical time[8] (term by J. D. Kramer) are characteristic of drone music. Kramer says that listening to music where timelessness is expressed is like approaching a sculpture. Similar pieces like those have no clear beginning or end. Each listener has his personal time and can start or finish the listening process when he wants.[9]

According to Gilles Deleuze[10] and Felix Guattari[11] there are two ways to conceive the time: *chronos* – the time that "situates things and persons, develops a form and determines the subject."[12] Another sort is *aeon* – the indefinite time of event that is at the same time not-yet-here and a simultaneous too-late and too-early. Both of those concepts find the meaning in drone music, which isn't teleological in its nature and sounds like an extended present. The concept of an extended present is also found in the vertical time description of Kramer.

Bob Snyder in his book "Music and Memory" mentioned very low informational strategies for pieces consisting of very few events. The first is sustained notes with long rests (it suits describing such pieces as Young's "Trio" for strings) and the second is music, which is as one extended events where the events are too subtle to distinguish them as separate. These suit especially drone music so we can see that there is lots of theoretical background where drone music is described as music without change; thus we can find some very slight changes what we can group in such categories.

We find four types of rhythmic compositional means in drone music:

1. **Macrorhythm**. It is periodical sound changes which are too slow to call it rhythm (for example periodical changes whose duration is more than 30 seconds). In conventional non-experimental music proportions of this kind fall into formal categories. If we compress composition of this kind this rhythm will sound as a conventional rhythm. It is characteristic of Charlemagne Palestine[13] and some of Eliane Radigues[14] works. Paul Stretch[15] software is an example of creating music of this type.
2. **Resultative rhythm** is the direct result of acoustical phenomena for example beating. Acoustical beats create rhythmical patterns, which can be heard in compositions with strong microtone content. It is

6 Trio for strings is La Monte Young's early piece.

7 Poter, Keith "Four Music Minimalists" p. 22

8 Vertical time is time where past and present are denied in favour of an extended present.

9 Kramer Donald Jonathan (1942–2004) was an American composer and music theorist. Kramer published primarily on theories of musical time and postmodernism.

10 Gilles Deleuze (1925–1995) was a French philosopher who, from the early 1960s until his death, wrote influentially on philosophy, literature, film, and fine art. His most popular works were the two volumes of Capitalism and Schizophrenia: Anti-Oedipus (1972) and A Thousand Plateaus (1980), both co-written with Félix Guattari.

11 Pierre-Félix Guattari (1930–1992) was a French militant, an institutional psychotherapist, philosopher, and semiologist; he founded both schizoanalysis and ecosophy. Guattari is best known for his intellectual collaborations with Gilles Deleuze, most notably Anti-Oedipus (1972) and A Thousand Plateaus (1980), the two volumes of Capitalism and Schizophrenia.

12 Gilles Deleuze and Félix Guattari, A Thousand Plateaus: Capitalism and Schizophrenia, trans. B. Massumi, Minneapolis: University of Minnesota Press, 1987, p. 262.

13 Charlemagne Palestine (b. 1945 in New York) is an American minimalist composer, performer, and visual artist mostly associated with drone music. His music has a strong sense of ritualism.

14 Eliane Radigue (b. 1932) is a French electronic music composer. She started her work in the 1950s; her first creations were presented in the late 1960s. Until 2000 her work was almost exclusively created on a single synthesizer, the ARP 2500 modular system, and tape. Since 2001 she has composed mostly for acoustic instruments.

15 Software for extreme time stretching of sounds.

very typical of Phill Niblock's[16] music[17]. Charlemagne Palestine uses this tool in his compositions too. We can also find it in some pieces of Lithuanian composer Rytis Mažulis[18] (e.g. "Ajapajapam"[19]).

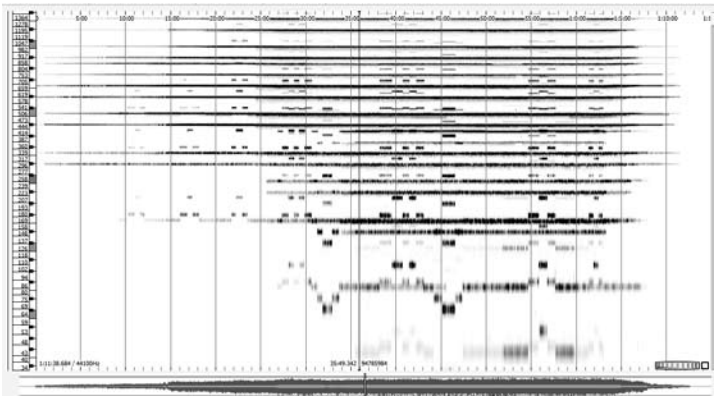
3. **Use of conventional rhythmic passages.** We can find some rhythmical passages in drone music, which sometimes break the stasis and add some accidental rhythm. We can find this means used in Eliane Radigue's "Kyema".
4. **Absence of any audible change**. It's more than a means; it is a concept of radical avoidance of any possible change. This type is hypothetical since there are very few examples of this music. It's perhaps most radical type of music comparable to John Cage 4'33". La Monte Young's "Composition No. 7" is an example of this type. Also some Niblock's music in a certain sense can be taken as an example.

All these tools except the last can be used together. They can be combined in different ways to create artistic impression.

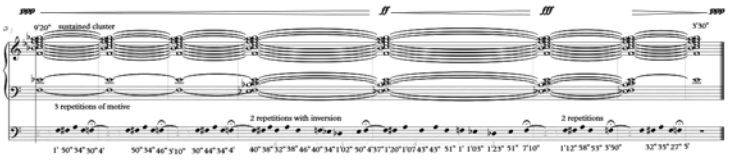
Another important thing dealing with time is proportions. As Demers states drone music is very diverse. She notes about different compositional, formal means. It is necessary to add that all these changes can be grouped into three distinct formal organisational categories:

1. **Episodic or fragmental form** (E. Radigue "Kyema", "Islas Resonantes"). It is characterised by quite sudden changes to this kind of form. Macrorhythm often can be found in this kind of pieces.
2. **Linear development** (characteristic of Palestine's works). A very gradual evolution of sound can be found. It is characteristic of most of Niblock's music.
3. **Stasis** (La Monte Young "Composition No. 7" (1960), Eliane Radigue's "Transmorem Transmortem" (1967)). It's the complete absence of change. This kind of music directly causes effect of timelessness.

Charlemagne Palestine's work "Schlingen-Blängen" (Examples 2, 2a) is an improvised 72 minutes long piece for pipe organ. Palestine's drone works are as rituals especially when he performs it live using plenty of stuffed animals, drinking whisky or wine, or smoking special cigarettes. He claims that he wants to create his own ritual which has nothing similar with traditional religious rituals.



Example 2. Charlemagne Palestine. "Schlingen-Blängen"



Example 2a. Palestine. "Schlingen-Blängen" (reduction)

16 Phill Niblock (b. 1933) is a composer, filmmaker, and videographer.

17 Glover Richard, *Phill Niblock: Identity through instability* Phill Niblock: Working Title. Dijon: Les presses du réel, 2013. Website: http://eprints.hud.ac.uk/16271/3/GloverPhillIdentity.pdf

18 Rytis Mažulis (b. 1961) is one of the most distinctive Lithuanian composers, representing the super-minimalist trend in Lithuanian music, always taking into account the same repetitive principles, supplemented with new ideas close to various avant-garde techniques.

19 *Ajapajapam* is a piece for 12 voices, string quartet, and tape by Lithuanian composer Rytis Mažulis.

The first tool used in this composition is **macrorhythm**. The pitch material of this composition is radically minimal. We see only one sustained cluster and one motive in organ pedals which is later extended using its inversion. However, it is interesting that moving pedal part notes are from 30 to 90 seconds long and it moves in a quasi-periodical manner.

Another type of rhythm used here is **resultative rhythm.** Charlemagne Palestine in his interview with Daniel Varela claimed that beating was used in his pipe organ pieces. It is heard while he improvises with organ stops not fully pulling the stop though making microtones and **resultative rhythm** which is a direct result of acoustical phenomena.

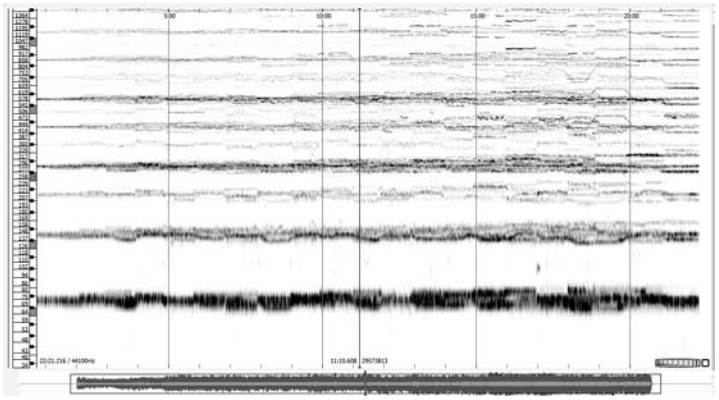
The whole piece is of a linear form beginning from very soft sound, going to organ *tutti* and fading out. The keyboard has a long evolving cluster and most movements in pitch are in the pedal part. Here we can find seven sections where first three sections repeat the motif, fourth and fifth sections are extended with the inversion of the motif and the last two sections come back to the original motif. The piece has a very big dynamic range and has characteristics of a linear form.

A1	A2	A3	A4	A5	A6	A7
Original (O)	O	O	O+Inversion (I)	O+I	O	O

Table No 1. Scheme of motive development Palestines "Schlingen-Blängen"

Phill Niblock is one of most important drone composers. Steady in his compositional style, he composed lots of acoustic and electroacoustic music. His drones are static and he uses acoustic sounds (real instruments and samples as well). Layering of sounds is a common composition method. In electronic music he records the sounds of the instruments and then layers them one on another and makes changes varying the pitch of each layer. Often this music is performed very loudly, which helps to hear and feel the microtonal beating.

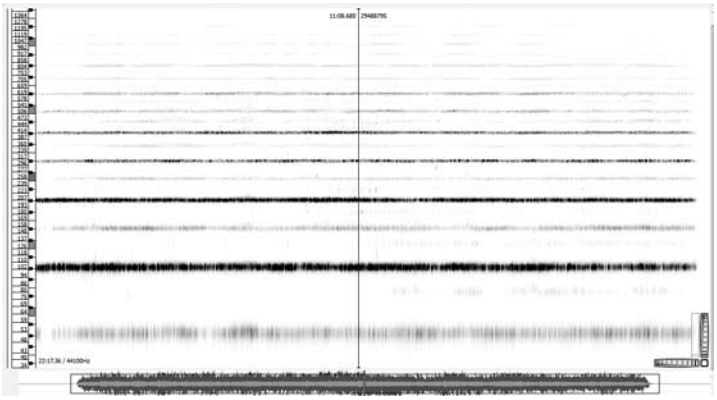
Niblock in his composition for symphonic orchestra "Disseminate Ostrava" (Example 3) uses stasis as a formal construction concept and mostly resultative rhythm, which arises from expanded and narrowed orchestral *tutti*. The use of microtones is essential for this piece since the main element of composition is very slight changes in instrument pitches. Contrary to Palestine's piece there is no timbre or dynamical growth so we consider it a static form. Orchestration also seems to be stable as we see in the spectrogram. Only very slight changes we see in the golden ratio section of the piece where texture looks bit more tense and complex. Composer didn't use any of narrative and linear time tools or the contrast. It's even more radical in the sense of time than Palestine's piece since there are no clues to define the details of the form; it's just raw sound which makes the listener dip into the trance. The piece begins with unison and ends with small second.



Example 3. Phill Niblock. "Disseminate Ostrava"

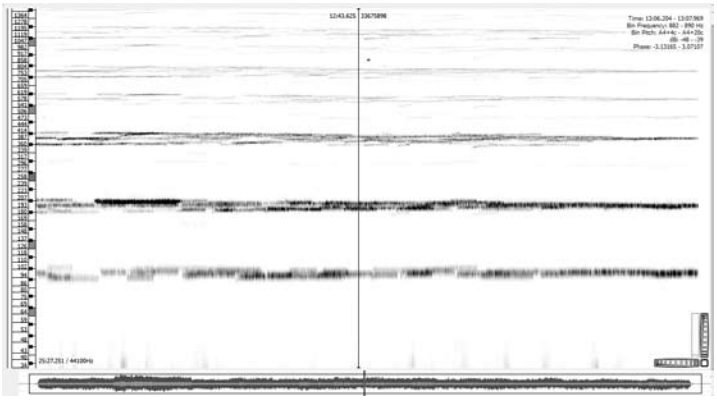
Niblock's "Kontradikcionares" (Example 4) is a static piece where we hear acute overtone. We hear lots of resultative rhythm, but the piece looks static. In the example spectrogram we can see constant spectrum, which doesn't change in time so here we can state that has the true static form. The differences are found only in

slight changes of dynamic of overtones. Predominant octave interval (g sharp) enhances the feel of one sound. There is no development to another interval like from unison to minor second in "Disseminate Ostrava".



Example 4. Niblock. "Kontradikcionares"

In "Five More String Quartets" (Example 5) resultative rhythm is used. In the spectrum we can see one main tone g sharp and the microtonal variations of it. There are plenty of them. Instrumentation is homogenous and it clearly articulates the changes of microtones. Since there is no teleology and clear direction we define this piece as static.



Example 5. Niblock. "Five More String Quartets"

"Early Winter" is a lengthy piece (44 minutes). Various instrumental timbres are taken and it has dense timbral structure. However, this piece is quite different from other Niblock's pieces because fragmental form here is used. We can conditionally call it binary since it has the first section consisting of one tone (e) and in the second section (from 20:11) a new sound (d) arrives and makes fluctuating second. Plenty of resultative rhythm as in the other pieces is heard here.

Conclusions

As we see there are some characteristic uses of rhythm in drone style. We find four distinct types of rhythmical means – resultative rhythm, macrorhythm, the use of conventional passages and lack of the change. Also there are three formal organisation concepts: fragmental form, linear development and stasis. These distinctions could help explore drone music further and dig deeper into the world of "timeless" minimal music which was not systematically analysed. The compositional means and principals are also bypassed in the literature so this research can lead to more systematic classification and could be the inspiration for analysis method for drone music.

Drone music is an evolving genre of experimental music and needs systematic and conceptual approach to its analysis. Since it doesn't have lots of conventional musical structures it becomes even more important.

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Santrauka

Laiko aspektai *drone* muzikoje

Drone yra vienas iš radikaliausių eksperimentinės muzikos stilių. Jam būdinga kraštutinė muzikinių parametrų redukcija. Garsų trukmė tokiuose kūriniuose yra labai didelė: vienas garsas gali tęstis kelias minutes ir ilgiau, o įvykių kaita yra matoma daugiausia tembre. Konvencionaliai kalbėti apie ritmą tampa neįmanoma, kadangi garsai yra beveik neartikuliuoti.

Problemų kyla ir dėl to, kad *drone* stiliaus kūriniai dažniausiai yra elektroniniai arba elektroakustiniai ir nėra užrašyti natomis. Išsamiau patyrinėti garsų kaitą ir atskleisti charakteringas stiliaus struktūras čia gali padėti spektrinė analizė.

Vienas įdomiausių *drone* aspektų yra laiko organizacija, kuri netelpa į įprastas ritmo koncepcijas. Straipsnyje kalbama apie šiam stiliui būdingas makroritmines ir proporcijomis grįstas struktūras pagal spektrinę Phillo Niblocko ir Charlemagne Palestine'o kūrinių analizę.

Pateikiame keturias ritmines priemones, randamas *drone* muzikoje:

1. Makroritmas. Tai periodinė garsų kaita, kuri yra per lėta, kad ją būtų galima vadinti ritmu (pvz., periodiška garsų, kurių trukmė yra ilgesnė nei 30 sekundžių, kaita).
2. Rezultatyvusis ritmas yra akustinių reiškinių (pvz., samplaikų) rezultatas. Samplaikos sukuria ritmines struktūras, kurios gali būti girdimos kompozicijose su mikrotonais.
3. Konvencionalių ritminių struktūrų naudojimas yra pastebimas kai kuriuose kūriniuose.
4. Girdimų kontrastų trūkumas. Tai ne tik priemonė, bet ir koncepcija. Šis tipas yra hipotetinis ir randamas labai nedaugelyje kūrinių.

Kadangi dauguma ritminių *drone* stiliaus priemonių yra labai ištęstos, todėl čia apžvelgiame ir formos klausimą. Kaip teigia Joanna Demers, *drone* muzika yra labai įvairi. Ji išskiria įvairias kompozicines ir formos organizavimo priemones. Šios priemonės gali būti sugrupuotos į tokias kategorijas:

1. Epizodinė arba fragmentinė forma. Jai būdingos kontrastingos padalos. Dažnai tokios struktūros kūriniuose esama makroritmo.
2. Linearus plėtojimas. Čia randame nuoseklią garso evoliuciją. Ši priemonė itin būdinga P. Niblocko kūriniams.
3. Statika. Tai visiškas kontrasto ir pokyčio nebuvimas. Ši priemonė sukelia belaikiškumo efektą.

3

RITMO SANTYKIS SU TEKSTU, RITUALU, DRAMA

THE RELATION OF RHYTHM WITH TEXT, RITUAL, DRAMA

Stef Conner

Early Words to Late Music: The Value of Practice-led Research in Composition as a Companion to the Analysis of Old English Poetic Metre

hludne in healle; þær was hearpan sweg,
swutol sang scopes.

"loud in the hall; there was music of the harp,
the clear song of the bard."

(Beowulf, ll. 89–90a)

1. Introduction

In the introduction to his String Quartet No. 3, Geoffrey Poole wrote that the viola "Incantation" at the beginning of the piece "echoed the melodic declamation of an Anglo-Saxon bard" (Poole, 1999) and this subjective yet tantalisingly vivid description left me wondering exactly what he meant – we do not know how Anglo-Saxon bardic melodies would have sounded, so what was it in Poole's compositional process and/or output that led him to refer to them? The small number of things that can be conjectured about this ancient unattested music derive from the analysis of surviving written Anglo-Saxon (Old English) poetry, and the reconstruction of lyres discovered by archaeologists. A lively discourse surrounds the way in which the lost oral tradition relates to its written relative and, although it will probably never be possible to reach a consensus, a wide range of hypotheses have been proposed. Was Geoff Poole aware of these issues when he wrote his piece? Did he have an imagined bardic song in his mind, or did he use a systematic process derived from the Old English language to create one? After attempting to satisfy my curiosity by discussing these questions with the composer, I found myself reflecting on a number of wider issues, which ultimately provoked the writing of this paper:

- What are the ways in which today's English composers absorb elements of a distant musicolinguistic heritage into their own idiom? And, what motivates them (or rather *us*) to do so?
- Could the study of contemporary compositions based on the Old English language possibly form a useful contribution to discourse surrounding the proposed oral ancestor of written Old English poetry – bardic singing?

In the nineteenth and early twentieth centuries, evoking an ancient or geographically distant culture in music was likely to involve an imaginative flight of fancy and the use of culturally and historically referential tropes, of questionable authenticity; nowadays greater depth of understanding is expected from creative practitioners whose work draws on remote traditions. Artists interested in engaging with temporally remote or extinct traditions, which offer no opportunity for cultural immersion, depend on the work of researchers to inform their ideas. With the emergence of practice-led research in music composition and an increasing number of contemporary composers working in academic institutions, there is a great deal of exchange and overlap between scholarly research and creative practice. In many cases the idea of engaging with a source of inspiration means more for composers than just allowing the subject to stimulate the imagination; critical engagement and a certain level of insight are common, even expected. Although there is a fundamental difference of purpose that will surely always distinguish between the scholar and the artist – Geoffrey Poole can say whatever he likes about his own music and the subjective process behind it, but if an expert in Anglo-Saxon language and culture describes something as a "bardic melody", we can reasonably expect to hear a historically informed reconstruction – I believe there is much to be gained from investigating the products of interpenetration between scholarly and creative processes.

This paper will outline some of the ways in which paying critical attention to composers' decisions can open up new avenues for exploration in the study of OE poetry. Beginning with a brief summary of issues under discussion in OE poetics, it will offer examples of ways in which the study of particular contemporary compositions can potentially throw a little light on them.[1] The discussion will necessarily be confined to metre and rhythm, since almost nothing is known about OE pitch intonation.

[1] The present study is concerned with idiomatically free settings of Old English by contemporary composers; it does not address reconstructions or pastiches drawn from historical idioms by performer-researchers. It is my intention to build on this research in a future publication, by considering the latter category in relation to the former.

2. Controversies Surrounding the Reading of Old English Poetry

There is not a consensus among experts on the details of how OE poetry would have sounded and renderings according to the different schools of thought produce significantly different results. In OE metre, a line consists of two verses, or half-lines, which are divided by a caesura.[2] In 1885, Eduard Sievers demonstrated that the OE half-line (almost) always contains at least four syllables, with two stressed syllables and at least two unstressed syllables. The stresses do not always come at regular intervals and the number of unstressed syllables is quite variable. Rather than rhyming, the poems alliterate and alliterations coincide with primary stresses. In the first half-line (on-verse) of a line, both stressed syllables alliterate; in the second half-line (off-verse), the first stressed syllable alliterates with the on-verse and the second does not.[3] Sievers identified a set of categories, known as "Sievers' Types", which illustrate the different varieties of verse found in the OE poetic corpus (see Table 1).[4]

Table 1. Sievers' Types, named by letter, in descending order of frequency

Type	Stress Pattern	Modern English illustration*
A	/x(xxxx)/x	Anna angry/ Anna(bel is a bit) angry
B	(xxxx)x/x(x)/	And Birhtnoth bold/ And (so you'll find that) Birhtnoth (is) bold
C	(xxxxx)x//x	In keen conflict / (And I see that he's) in keen conflict
D	/(xxx)/\x	Drive Don *back*wards / Driv(ing mr) Don *back*wards
E	/\x(x)/	Each *one* with edge / Each *one* with(out) edge

*I have added additional Modern English words (in parentheses) to illustrate how extra unstressed syllables might be realized. Stressed syllables are underlined and secondary stressed syllables are shown in italics.

KEY: / denotes a primary stress
\ denotes a secondary stress
x denotes an unaccented syllable.
Each of the six types may comprise additional unstressed syllables, up-to and including the number shown in parentheses.
SOURCE: Mitchell and Robinson, 2001: 161

By far the most commonly occurring pattern across all the literature is the A-type verse, a four-syllable half-line, with primary stresses on the first and third syllables: *Anna angry*. As a result, substantial portions of almost all OE poems can be read easily and comfortably in a duple metre.

The major controversy, which still divides OE metrical theorists into two opposing schools of thought, concerns rhythmic realization of metrically disruptive additional unstressed syllables and verse-types that cannot be read in duple metre without the addition of initial or final rests and/or anacruses. One theory is that OE poetry would have been read isochronously, with syllables divided into even feet (or bars).[5] When poems are read in this manner, additional unstressed syllables become problematic, resulting in awkward-to-execute, unnatural-sounding rushed moments and extreme variability of syllable duration. B-, C-, D- and E-type verses are also problematic because their stress patterns do not coincide with strong beats in duple metre, unless rests and/or anacruses are added. John C. Pope claimed to have solved this problem by introducing rests into his metric analyses, which he suggested would have been filled by lyre strokes (Pope, 1966). He produced a rhythmic transcription of *Beowulf* in which rests evened out irregularities in the syllabic rhythm by replacing strong beats when verses began on weak beats and balancing the number of feet in each verse. The entire poem was thus transcribed in duple metre, without any requirement for complex beat subdivision. There are references to harp playing in OE literature that seem to support the idea of lyre accompaniment for bardic performance, although there is no historical evidence that written poetry would have been read in this way.[6] Pope's theory has been further developed by others, including Robert P. Creed, who concluded from his own computer-aided analysis of *Beowulf* that "a simple, two-part rhythm beginning with a down-beat, ... controls

[2] The use of this form of lineation in modern editions is based on metrical analyses of the poems. However, in the original manuscripts the poems were laid out continuously, as in prose texts.

[3] In references, on- and off-verses are "a" and "b" respectively.

[4] Bessinger and Kahrl (ed. and trans.) (1968: 267–288).

[5] Although the isochronous theory of OE metrics was originally proposed in opposition to Sievers' system (Heusler, 1925), later scholars attempted to unify the two approaches (e.g. Pope, 1966; Russom, 1998; Creed, 1990). In this paper, I have followed the convention of recent commentaries and adopted Sievers' Types as the starting point for metrical analysis (see Bliss, 1992; Fulk, 2001; Mitchell and Robinson, 2001; Bredehoft, 2005; Dance, 2010).

[6] E.g. Bede's *Ecclesiastical History*, IV. 24, *Widsith*, ll. 103–8, *Beowulf*, ll. 86–90a, 1063–68 and 1159b–60a.

the distribution of every syllable in the poem" (Creed, 1990: 205).[7] Creed also commented, on the basis of his own practical experience, that isochronous realization felt intuitive and natural in performance: "it is possible to *perform* the poem effectively according to this rhythm" (Creed, 1990: 205). Creed's published recording of isochronous readings of OE poems (Creed/Raffel, 2009) is rather metronomic and this is an aspect of the isochronous approach that has been criticised, notably by Alan J. Bliss, as over-dependent on modern musical inclinations and thus unsuited to the reading of Anglo-Saxon poetry (Bliss, 1967).[8]

The opposing theory is that OE poetry would have been read nonisochronously, with half-lines of varying duration and irregular stresses. Thomas M. Cable, for example, argued that it should be considered anachronistic to read OE poetry in divisive musical metres, on the basis that Gregorian chant, the only contemporaneous form of music preserved in manuscripts, was unmetred (Cable, 1974: 15–16).[9] The distinctive, original element of Cable's own theory of metrical analysis is the notion that melodic formulas were the dominant formal characteristic of OE poetic prosody, presiding over any temporal accentual and rhythmic rules. He posited four different metrical "positions" for each verse, determined not by placement in time or rhythmic pattern, but by pitch, relative to preceding and successive lexical stresses – i.e. a syllable with primary stress produces a descending pitch contour, so a successive unstressed syllable will occupy a relatively lower pitch. Cable summarized his position thus: "the main correlate of metrical ictus was relative pitch, and not simply the pitch of ordinary discourse, but a heightened and stylized pattern. ... The metrical basis of Old English poetry was the melodic formula ... to which words were fitted according to strict rules" (Cable, 1974: 95–96). The three-line staff that Cable used to illustrate his model of relative-pitch-based analysis has parallels in some contemporary approaches to musical notation, as well as in modern linguistics. Although this theory was, like others, conceived as applicable to spoken performance of OE poetry, it could also be interpreted as a movement towards considering OE poetry in terms of sung performance.[10]

Might a new song-based approach to OE poetics be called for?[11] Very few OE literary theorists have actually tried to *sing* the poetry (or have seriously considered the singing of it, by themselves or others) and this strikes me as regrettable. Nonetheless, OE poetry continues to inspire a healthy number of performances, compositions and re-enactments, and however much or little those responsible know about the texts, it must be acknowledged that many of them know (or at least intuit) a great deal about dramatic style, storytelling and musical communication – elements that have, in my view, been overlooked in the discourse so far. Relatively informed musical reconstructions of Anglo-Saxon bardic performance, using written texts, have become more common in recent years. Perhaps the most notable example is Benjamin Bagby's recorded performance of Beowulf (Bagby, 2006) – a practical application of the rhythmic theories of Pope and Creed, in which theoretically-determined elements are combined with intuitively chosen elements, drawn from his considerable expertise in medieval performance practice.[12] Because so little is known about Anglo-Saxon music, such performances are primarily comprised of speculation-dependent, subjective material, which is perhaps why they have thus far impacted little on OE poetics. However, it is my view that detailed analysis of these types of performances, as well as the creation and analysis of many more, could be very informative. There are indeed precedents for this type of study, defined by Dennis Tedlock as *ethnopaleography*: "Taking a text back to the descendants of those who produced it in order to draw analogies with contemporary spoken arts and obtain commentaries from contemporary readers" (Tedlock, 1983: 16). This applies as much to the analysis

7 See also Bessinger (1958) and Wrenn (1960).

8 While Bliss blamed this metronomic rigidity on scholars taking too musical an approach, I would argue that such problems arise from an approach that is not nearly musical enough! Also, I do not think that metrical reading and rigidity of tempo should be thought of as interdependent in poetry, since they are certainly not so in music.

9 Apart from the obvious fact that the existence of a particular characteristic in one distinct musical tradition does not automatically prove the existence of the same characteristic in all contemporaneous forms, I find the proposed link between human bipedalism and duple metre in music and dance to be a much more convincing indicator of whether or not isochrony was likely to have existed in ancient music (see Mithen, 2005: 150–154).

10 It is irresistible to mention that there is a striking similarity between this approach to reading Old English poetry and typical readings of Classical Chinese poetry (since both languages are said to be stress-timed, comparison between the two forms of poetry could be beneficial). Since Mandarin Chinese is a tonal language, relative pitch and contour are of paramount importance and tend to be exaggerated in a stylized manner when poetry is read aloud. This *sprechstimme*-like exaggeration also forms also the basis of some Chinese traditional musics, including Beijing Opera.

11 Although it is generally agreed that written OE poetry is related to an earlier oral, probably musical, tradition, the nature of this relationship remains unknown. See Treitler (1981: 471–475) for an excellent description of how texts evolve though interwoven processes of oral and literate transmission, which are virtually impossible for scholars to unpick. On music of the period see Rankin (1999) and Jeffery (1992). On the "oral-formulaic" theory of composition (Lord, 1960), as applied to OE poetry, see Acker (1998), Foley (1985), Magennis (2011: 36–54; 73–76), Magoun (1953), Niles (1981), O'Brien O'Keeffe (1987) and Orchard (1997).

12 See also: Macklin (2007), Ewing (2011), Rowan (2012).

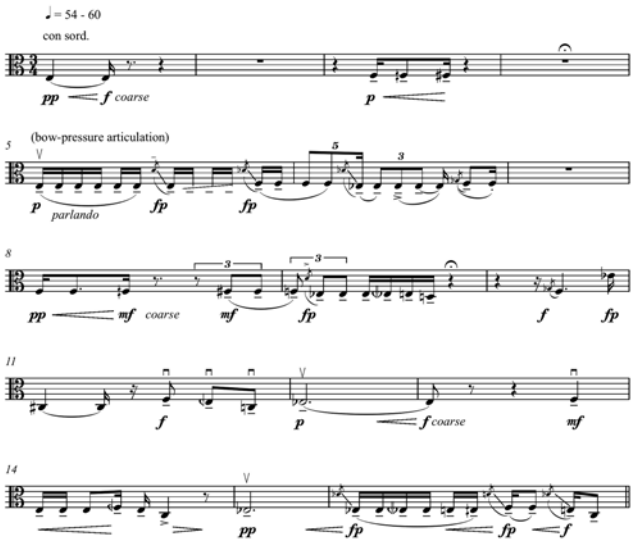
of spoken as well as sung realizations of texts. As Miriam Youngerman Miller observed, in her comparison of OE poetry readings by Creed and Cable, "[since] the *scops* have left no direct lineal heirs, we must conduct our own version of ethnopaleography by consulting the only heirs they have left: native speakers of Modern English, particularly those knowledgeable in Anglo-Saxon poetics" (Youngerman Miller, 1993: 347). This paper will identify ways in which even the stylistically unrestrained creative practice of contemporary English composers working within their own idiom, and drawing on varying degrees of familiarity with OE poetics, has the potential to raise important new possibilities for theorists to consider.[13]

3. Observations on the Work of Contemporary Composers

3.1. 'Concealed Verbalisation' in Geoff Poole's 'Anglo-Saxon Soundworld'

For whatever reason, be it pure imagination or something deeper that we do not fully understand, many English composers who set Old English texts experience the process as a portal through which to connect with their own distant heritage. Geoffrey Poole wanted his String Quartet No. 3 to "inhabit an Anglo-Saxon sound-world" (Poole, email: 19/07/13); he described the piece as "...something of a homecoming to my Anglian seafaring ancestry, in its very North-European feel for rich, gutsy sonorities of the low range of the instruments" (Poole, 1999: 2). Poole is not an Old English specialist, but he feels an affinity with Anglo-Saxon culture and language. The opening section of the quartet is a viola solo, labelled "Incantation" (Ex. 1), which exemplifies an approach he calls "concealed verbalisation", meaning that the instrumental gestures evoke and emulate words and/or speech sounds. Although he also used this technique in other compositions, String Quartet No. 3 contains the only example of musical material drawn from Old English. During the composition process, Poole read various OE words to the Lindsay Quartet violist Robin Ireland, asking him to imitate their contours and timbres instrumentally, whilst also importing a musical impression of their meaning into the resulting gestures. Although he did not retain a complete list of the words used, he did remember the following Modern English translations: sword (*sweord*), blood (*blod*), birch (*beorc*), river (*wæterstream*), skin (*scinn*), knife (*cnif*).[14]

In response to my excitement at the prospect of word-hunting through his score, Poole cautioned: "I doubt you'll find specific words now, even if I thought them at the time of sketching" (Poole, email: 5/10/13). For him, Anglo-Saxon words provided an impression of timbre, rhythm and contour which he abstracted and absorbed, before abandoning specific references and composing intuitively. The "bardic" viola Incantation thus conveys a vague and abstracted, but perhaps still recognizable impression of Old English.



Example 1. Geoffrey Poole, String Quartet No. 3, I "Ofanverthnott": bb. 1–16, vla.

[13] It is practical to constrain the current discussion to the work of English composers, but this should definitely not be interpreted as a comment on the relative usefulness of work by musicians of other nationalities. Some excellent research has been conducted in USA, for example, and I believe strongly that wide-ranging studies of music from many different cultures could greatly enhance the study of Anglo-Saxon music.

[14] I have added speculative Old English translations, since Geoff Poole was only able to remember the Modern English words. There are numerous possible translations of each word; those above are selected because Poole said he had chosen to use OE words that would recognizable to ModE speakers.

Regardless of whether or not it is perceptibly "Anglo-Saxon", the Incantation is certainly very speech-like, in the irregularity of its rhythms and phrase lengths and the breath-like durational variability and unsystematic placement of its rests, as well as in its erratic dynamic changes, spiky articulations and fricative-like timbral effects. For me, the implied speech prosody of this passage also conveys a sense of animated emotion – perhaps Robin Ireland's musicalization of Poole's chosen words was derived from imagining the varying speeds, emphasized consonants, lengthened vowels and heightened dynamic contrasts of dramatically charged speech. I would also propose that certain rhythmic features of the Incantation actually do evoke the specific sound of Old English. Firstly, the musical line is divided into phrases of unequal duration, the first elements of which are frequently accented or emphasized by acciaccaturas and/or descending pitch contours; this emulates OE lexical stress, which occurs on the first syllables of words, except in the case of verbs beginning with prefixes.[15] Secondly, acciaccaturas in the Incantation seem to resemble OE unstressed prefixes like "ge". However, none of Poole's remembered words contain prefixes, which makes me wonder if the acciaccaturas in fact resulted from mispronunciations of OE diphthongs in words like "*beorc*" and "*sweord*" (correct pronunciation: [eo̯]; common mispronunciation: [e'o]). Such mispronunciations are actually very common among Old English scholars as well as non-specialists.[16] The Old English word "*beadoweorca*" provides a useful illustration – this word is particularly difficult for ModE speakers to pronounce because it contains two unfamiliar diphthongs: 'ea' [æɑ] and 'eo' [eo]. The first component of both of these diphthongs should be emphasized: ['bæɑ̯do ˌweo̯ᵕka], but ModE speakers intuitively pronounce them as two separate syllables, with stresses on the second components: [be'ɑˌdowe'joᵕka]. This characteristic is a particularly distinctive feature of the Incantation that, however inaccurate it might be, does imbue the passage with a sense of archaic, speech-like otherness.

It is confusing that the source words Geoff Poole remembers using are primarily one- or two-syllable words, while the rhythmic gestures in the Incantation are much more indicative of longer words, compounds and whole phrases. Although he only used individual OE words as source material, what Poole eventually composed sounds more like a complete syntactical utterance – a sentence, phrase, paragraph or perhaps even a poem. With the exception of the two points above, most of the features marking the Incantation as more speech-like than melodic are applicable to speech in almost any language. However, considering different styles of speaking that transcend language differences does raise a point that is well worth considering in relation to OE poetry.[17] A theatrical style of delivery would surely be appropriate for the story-telling bard and would suitably complement the poems' evocative content. Many of the elements that characterize emotive speech – durational variability of pauses, accelerating and decelerating phrases, sudden, emphatic changes in speed etc. – would impact considerably on the isochronicity of an OE poetry reading. Cable noted that most metrical studies of OE poetry "deal with an abstract, idealized" system, without taking into account "the accidental features and idiosyncrasies of an individual performance" (Cable, 1974: 13). It is my view that these extra-systematic features are actually fundamental, not just accidental or idiosyncratic – without them, no storyteller from any epoch could truly move his or her audience. To my ears, Creed and Raffel's uniformly isochronous recordings of various OE poems exemplify this (Creed/Raffel, 1964). They lack nuance and sensitivity because they apply Creed's theory too rigorously, without making allowances for the flexibility, freedom, and tension and release of truly emotive expression. Reading an OE poem in this way is like playing a Chopin Nocturne without *rubato* or dynamic changes. I suspect that I might not be alone in hearing more bardic character in Geoff Poole's Incantation – however poor the viola's "accent" might be – than in the Creed/Raffel recordings. I wonder if an audience of Anglo-Saxons would prefer to listen to a metrically consistent *scop* with an impeccable accent, or a dramatically engaging one with a few linguistic idiosyncrasies?

3.2. Alternative Routes to Isochrony: Polyphony, Slowness and Sustain in Stef Conner's *Hord Songs*

In view of the above, I find it unsatisfying that tempo – something so crucial to affect in speech and song – is mentioned very infrequently in analyses of OE poems. It is also a factor that affects speech-intelligibility and would thus vary according to the context in which a text was delivered. A *scop* singing to a crowded mead-hall would probably need to speak or sing unusually slowly to make himself heard over a rowdy drunken audience, while a scholarly monk reciting a poem to a colleague need not speak any faster or slower than normal. Also,

[15] See Lass (1996: 46).

[16] For an example of diphthongs pronounced in this way by an expert, see Lee (2006: 1:00–1:23), "*wealstan*" and "*geweorc*". Pronunciation is not necessarily a priority for all scholars of historical English literature.

[17] It is of course subjective that I perceive the Incantation as evocative, dramatic and emotionally affecting, but I suspect that further research would probably support the universality of this perception.

different OE poems create different atmospheres through contrasting evocative imagery; a poem about battle would probably be recited faster than a poem about prayer. There are tempo variations between the Creed/Raffel recordings, which may have been entirely intuitive, that are consistent with what one would expect to hear in relation to the atmosphere of the texts: *The Ruin*, for example, is a poem about reflecting woefully on the transience of existence and it is read more slowly than Riddle No. 1, a fierce poem about inclement weather. Contrasts in tempo are of course fundamental to the character of musical settings, in which they are often heightened. Comparing two of the movements in my 2012 composition *Hord Songs* reveals a thematically-appropriate extreme contrast between tempi: "The Marks of War-Blades" (Table 2; Ex. 2) is a setting of a reflective, mournful poem (Riddle No. 5),[18] with a suitably moribund slow tempo, while "Of Fire and File" is a setting of a dramatic, colourful poem about the shock and awe of conflict (Riddle No. 71), with a lively tempo and sense of motion (Table 3; Ex. 3).[19] One would expect two atmospherically different musical settings to display a greater contrast in tempo than two spoken recitations, in part because extreme tempi and long held notes, like those in my setting of Riddle No. 5, would be difficult and uncomfortable to execute in speech. Anyone who has sung in a choir and tried to practice tricky rhythms by speaking instead of singing will know how awkward and utterly unnatural it feels to speak long held notes. In my experience, singers in these circumstances usually resort to using *sprechstimme* with exaggerated prosodic contours and indeterminate pitch, since it is more comfortable to slide up and down than to sustain a single pitch in a speaking voice.

If the possibilities of both held notes and a wide-ranging, flexible tempi are introduced into the process of scanning OE poems, it becomes quite a lot easier to achieve natural-sounding isochrony. Scansions that begin with a four-syllable A-type verse in medium tempo, for example, become very uncomfortable when verses with lots of extra unstressed syllables appear, as the speaker is forced to cram up to nine syllables into a segment of time previously occupied comfortably by just four. If the tempo is elastic, or uniformly slow, sudden syllabic onslaughts are less problematic. Held notes also expand the stock of potential rhythmic realizations of any given verse, providing lots of different options for dealing with odd numbers of syllables and non-duple stress placements.

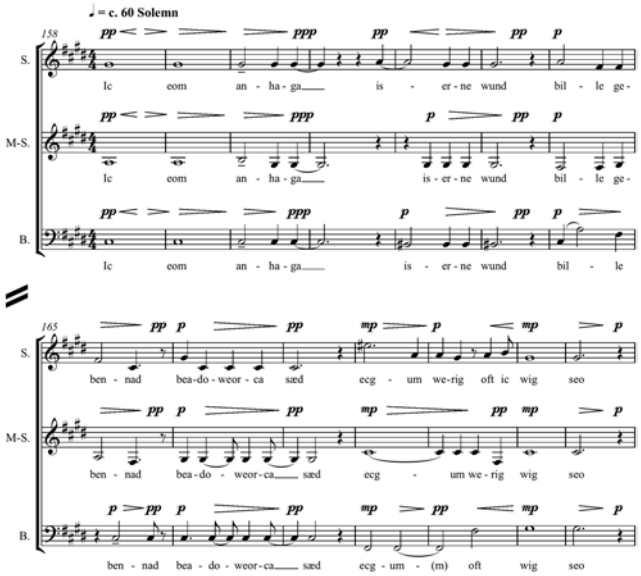
Accordingly, the rhythm of my setting of Riddle No. 5 (Ex. 2) basically represents a slowed-down isochronous reading of the poem; if the note-values were halved, it would look a little like Pope's rhythmic transcription of *Beowulf*. Stressed syllables in the poem are set to strong beats and the E-Type verses "*iserne wund*" and "*beadoweorca sæd*" are displaced by rests and held notes, so that their final stressed syllables land on strong beats (Ex. 2, bb. 165–166 and 169–170). Although it has been acknowledged that stressed syllables in OE poetry were likely to have had longer durations than unstressed syllables, no metrists have considered including long held notes in their scansions, presumably because it is counter-intuitive to speak them. In view of the fact that written OE poems and their oral ancestors may well have been sung, I think that this possibility should be introduced into metrical theories, in addition to Pope and Creed's suggested rests and lyre interjections.

Table 2. Scansion: Riddle No. 5, *The Exeter Book*: ll. 1–2

	Sievers' Verse- Types	On-verse	Off-verse	ModE Translation
1.1	AE	/ x / x x Ic eom anhaga	/\ x / iserne wund	I am a lonely wanderer, wounded with iron,
1.2	AE	/ x x / x bille gebennad	/ x \ x / beadoweorca sæd	smitten by war-blades, sated with strife...

[18] All of the OE riddles cited in this paper are in the *Exeter Book* manuscript (Exeter Cathedral Library MS 3501); quotations are taken from Baum (ed. and trans.), 1963; numbering system from Krapp and Dobbie (eds.), 1936.

[19] Taken at face value, the tempo markings for these two pieces – 60 and 70 – are not that different, but the quaver beat-subdivisions of "Of Fire and File" create the impression that it is much faster than "The Marks of War Blades".



Example 2. Stef Conner, *Hord Songs*, VI "The Marks of War-Blades": bb. 161–174

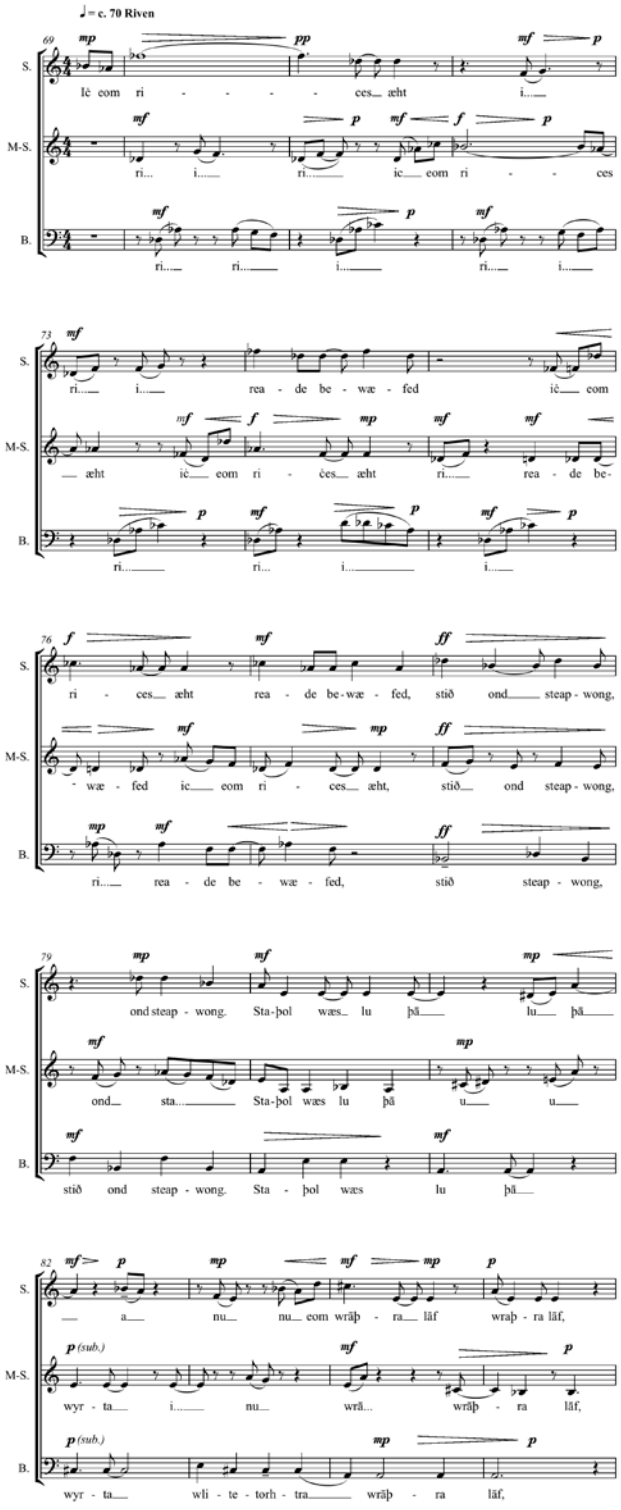
In "Of Fire and File", my setting of Riddle No. 71, the sense of forward momentum and dense activity is partly due to polyphony, something that – like rests, lyre strokes and held notes – can be used to displace stressed syllables to strong beats and unstressed syllables to weak ones, maintaining the metre when syllable counts and accentual patterns are metrically disruptive. Throughout this movement, voices are used *instrumentally*, in that non-semantic segments derived from the text (e.g. "ri" and "i", Ex. 3) provide background, polyphonic accompaniment to foreground isochronous, mainly syllabic settings of semantic units. In particular, phonemes from stressed syllables are treated polyphonically to enhance their prominence. In some instances polyphony takes the form of an echoed word or phrase (e.g. "*reade bewæfed*", Ex. 3, b. 74, repeated bb. 75–77), and in others it is formed from the anticipation of a phoneme that is about to be heard in the text (e.g. "i" and "nu", Ex. 3, bb. 82–83).

However delightful I find the image of multiple scopas duelling polyphonically across the mead-hall, I cannot claim that there is any evidence to indicate the possibility of polyphonic realization of OE poetry by medieval performers. Nonetheless, polyphony in the vocal lines of this piece is reminiscent of polyphonic instrumental accompaniment, something which may well be worth considering in relation to OE poetic performance. Clive Tolley has remarked on the Anglo-Saxon fondness for "punning and riddling, making things appear other than they are, or hiding their nature, and showing how things in the world are interlaced and complex"; by way of example he observed, "in the great epic Beowulf the lead-up to the final battle of the hero against a dragon is interwoven with legendary tales from Swedish history, and reflections on the meaning of life" (Tolley, 2012: 4). Although it is probably not practical or idiomatic to play a six-string lyre polyphonically whilst singing, the possibility of creating a polyphonic interplay between voice and lyre could be an attractive musical interpretation of the idea of interlacing forms and themes in Anglo-Saxon art.[20] Also, the possibility of using the lyre to anticipate, repeat and reinforce melodic ideas that are connected to stressed syllables and formulas in the text is very interesting.

Table 3. Scansion: Riddle No. 71, *The Exeter Book*: ll. 1–2

	Verse-Types	On-verse	Off-verse	Translation
1. 1	(BA)	x x / x / Ic eom rices æht,	/ x x / x reade bewæfed,	I am the property of a powerful man, clothed in red,
1. 2	(AA)	/ x / x stið ond steapwong.	/ x x / x Staþol wæs iu þa	Hard and steep-cheeked, my place was once ...

[20] To comment further on this idea is outside the scope of this paper; on the subject of self-accompanied singing with Anglo-Saxon lyre, see Pope (1966), Bessinger (1958), Bagby (2000) and Macklin (2003).



Example 3. Stef Conner, *Hord Songs*, II "Of Fire and File": bb. 69–85

3.3. Melisma and Formula in Text Settings by Edmund Hunt

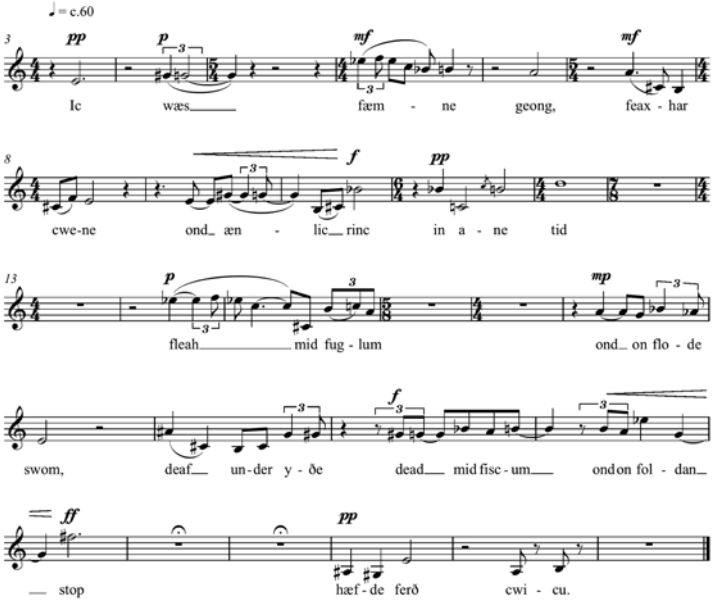
Analysis of Edmund Hunt's work yields yet another possible addition to the technical inventory of OE poetics – *melisma*. Like long notes and slow tempi, this is an overlooked feature, peculiar to sung performance, that could facilitate greater flexibility in scanning complex verses. Practically speaking, as is the case in many narrative-driven folk songs where intelligibility is paramount, melismas in OE bardic singing would probably have been relatively short – short enough to ensure that listeners would not lose track of meaning.

In English folksong collections, it is clear that, while syllabic text-setting dominates, short melismas are common; typically, they emphasize stressed syllables and repeated phrases and/or heighten the forward momentum of up-beats.[21]

Edmund Hunt's use of melisma in his compositions is constrained enough not to inhibit listener comprehension. It is also methodically connected to the accentual patterns of the poetry he sets. Melismatic musical phrases reinforce stressed, alliterating syllables, with the longest melismas occurring on the first stressed syllables of on-verses. His short composition *I Had A Living Spirit* (Ex. 4) – a setting of Riddle No. 74 (Table 4) – illustrates this very neatly.

Table 4. Scansion: Riddle No. 74, *The Exeter Book*

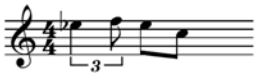
	Verse-types	On-verse	Off-verse	Translation	Alliterating phoneme
1. 1	BA	x x / x / Ic wæs fæmne geong,	/ x / x feax har cwene	was a young woman, a fair-haired lady,	f
1. 2	BA	x / x / ond ænlic rinc	x / x / on ane tid	and at the same time a peerless warrior;	vocalic alliteration
1. 3	AB	/ x / x Fleah mid fuglum	x x / x / ond on flode swom	I flew with the birds and swam in the sea,	f
1. 4	AA	/ x x / x deaf under yðe,	/ x / x dead mid fiscum	dove under the wave, and was dead among fishes,	d
1. 5	BC	x x / x / ond on foldan stop.	x x / / x Hæfde ferhð cwicu	and I walked on the ground. I had a living spirit.	f



Example 4. Edmund Hunt, *I Had a Living Spirit*: bb. 3–25, mezzo-soprano

The alliterative structure of this poem yields a satisfying ABACA form (Table 4), which is highlighted by Hunt's composition. His setting of each line that alliterates on the consonant "f" begins with a relatively long melisma on the first stressed syllable of the on-verse. This not only emphasizes the accented position of these syllables in the poem's metrical structure, but also reinforces the prominence of the phoneme [f] in the overall form. On-verses (such as Ex. 4, bb. 3–7; bb. 10–11; bb. 16–17; b. 22; bb. 24–25) are given more noticeably melismatic treatment than off-verses, which are mostly set syllabically. The two longest f-alliteration melismas (Ex. 4, b. 6; bb. 16–17) are distinctively marked by the leitmotif figure they incorporate (Ex. 5).

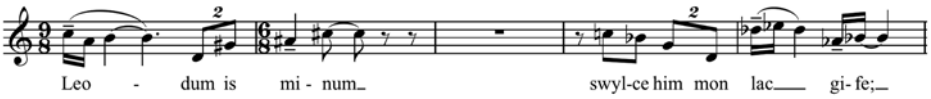
[21] For example, see Roud and Bishop (2012).



Example 5. Leitmotif figure used to set on-verse f-alliterations in Hunt's *I Had a Living Spirit*

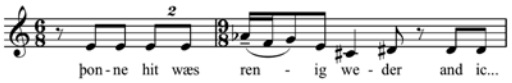
Alliterating syllables are similarly marked in Hunt's *We Are Apart*; *Our Song Together*, a setting of the notoriously difficult to interpret poem *Wulf and Eadwacer*. In this piece, the first alliterating stressed syllables of the poem – "leo" and "lac", from the line "[a] *Leodum is minum* [b] *swylce him mon lac gife*" "It is to my people as if someone would give them a gift" (l. 1, stressed syllables underlined)[22] – are treated with the same rhythmic motive, here referred to as the "*leodum* motive" (Ex. 6; illustration Ex. 7).

Example 6. "Leodum motive" in Edmund Hunt's *We Are Apart*; *Our Song Together*

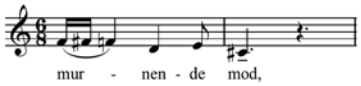


Example 7. Edmund Hunt, *We Are Apart*; *Our Song Together*: bb. 18–27, mezzo-sop.

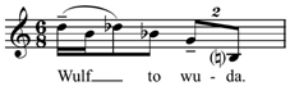
This motive is the most distinctive gesture in the piece, used as it is in the opening phrase, and to set various stressed syllables of other on-verses, including "ren" (from "*renig*", ex. 8), "mur" (from "*murnende*", Ex. 9) and "*Wulf*" (Ex. 10). These melismas are particularly noticeable because of Hunt's syllabic treatment of the proximate non-alliterating syllables.



Example 8. Edmund Hunt, *We Are Apart*; *Our Song Together*, bb. 60–2, m-s.

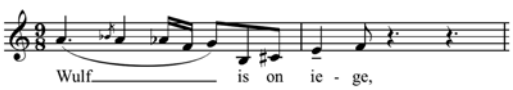


Example 9. Edmund Hunt, *We Are Apart*; *Our Song Together*, bb. 109–110, m-s.



Example 10. Edmund Hunt, *We Are Apart*; *Our Song Together*, b. 120, m-s.

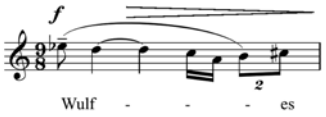
"*Wulf*" is apparently the name of the person to whom the poet's lament is directed. When the word forms the first stressed syllable of a typical line,[23] Hunt sets it with a relatively long melisma, incorporating a version of the *leodum* motive into the middle of the gesture (Ex. 11–12). This is another use of distinctively long melisma to mark the most prominent phoneme (and in this case word) of a poem, like those in *I Had a Living Spirit*. The last time the name Wulf is heard, it is set to the original *leodum* motive, which could be perceived as a recapitulation of the original theme, further reinforcing the prominence of the word.



Example 11. Edmund Hunt, *We Are Apart*; *Our Song Together*, bb. 33–34

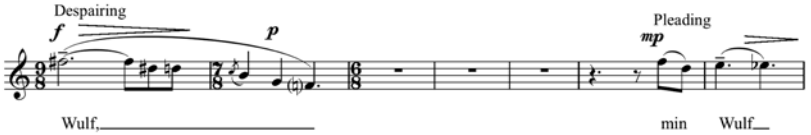
[22] All translations of this poem from Treharne, 2010: 77.

[23] By "typical" I mean a line comprising an on- and off-verse, with at least 4 syllables in each.



Example 12. Edmund Hunt, *We Are Apart*; *Our Song Together*, b. 53

There are some interesting atypical lines in the poem, to which Hunt affords appropriate prominence. Line 13, for example, seems to be a sorrowful cry from the speaker to the absent Wulf: "*Wulf min Wulf!*" "Wulf, my Wulf!" This half-line defies categorization according to Siever's types, because it only has three syllables, while OE verses typically require four. However, it seems quite appropriate that the line is somewhat anomalous and metrically disruptive given that it represents an unusually subjective, emotive piece of expression; it is a climactic moment, dividing the text into near-golden-ratio-proportions. Bruce Mitchell and Fred C. Robinson interpret it thus: "The verse as it stands is very effective in context. We conclude that this poet is willing to violate the strict rules of OE prosody in order to achieve bold effects" (Mitchell and Robinson, 2007: 311). Hunt complements the anguished, jarring character of the verse by setting the first "Wulf" (Ex. 13, bb. 89–90) with an unusually long, descending melisma and the second (Ex. 13, bb. 94–95) with a short echo. Long rests occur in between and either side of these gestures. It is the only instance in the piece in which a long rest (a bar or more) interrupts a half-line. The remainder of the piece preserves the structure one would expect, with short to medium rests emulating caesuras between half-lines and longer rests (bars/multiple bars) occurring between whole lines. This treatment of the line seems to truly celebrate its arresting abnormality; it is a reminder that in OE poetry, as in music, "rules" are often skilfully broken, to superb effect.



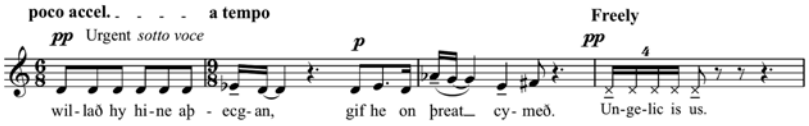
Example 13. Edmund Hunt, *We Are Apart*; *Our Song Together*, bb. 89–95

Lines 2–3 and 7–8 of the poem are also somewhat anomalous: "[a] *willað hy hine aþecgan gif he on þreat cymeð* [b] *Ungelic(e) is us*." "They will consume him if he comes into their troop. It is different with us." The fact that the lines are repeated "like a refrain" is very unusual in the OE corpus (Mitchell and Robinson, 2007: 311). They are also metrically disruptive, containing a large number of stressed syllables and, like line 13, missing the off-verses of lines 3 and 8 (see Table 5). Hunt sets the phrase to the virtually same rhythm both times, with widened melodic contour imbuing the second repetition with the character of emphatic speech (Ex. 14–15). He also embraces its prose-like quality by setting "*Ungelice is us*" as indeterminately pitched speech. Like line 13, this portion of text, and Hunt's treatment of it, offers a reminder that rhythm and theme are meaningfully connected in OE poems. Even if poems are read isochronously, the fact that some phrases are clearly designed to disrupt metric flow should be embraced, because they are so designed in order to effectively express disruptive, shocking or especially affecting ideas![24]

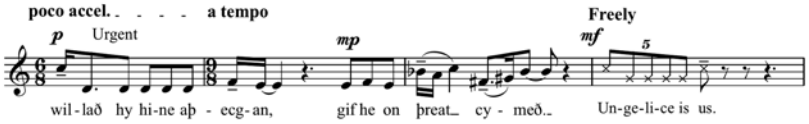
Table 5. Scansion: *Wulf and Eadwacer*, ll. 2–3a (repeated ll. 7–8a)

	Verse-type	On-verse	Off-verse	Translation
1. 2	AC	/ x x x x x / x willað hy hine aþecgan	x x x / / x gif he on þreat cymeð.	They will consume him if he comes into their troop.
1. 3	E	/ x \ (x) x / Ungelic(e) is us.	[empty]	It is different with us.

[24] Accordingly, Creed's metrically regular reading of the poem (Creed/Raffel, 2009) is much less emotionally engaging than Hunt's setting.



Example 14. Edmund Hunt, *We Are Apart*; *Our Song Together*, bb. 26–29



Example 15. Edmund Hunt, *We Are Apart*; *Our Song Together*, bb. 47–50

In addition tot he possible use of melisma, this analysis of Hunt's work raises two important things to consider. Firstly, his settings display a similar sense of freedom to Poole's viola Incantation, with rests or pauses of varying duration heightening the dramatic affect of particular phrases, and note-durations and phrase-lengths changing according to the mood of the lines they set. Characteristics of the poetry such as stresses, alliterations and caesuras are preserved carefully, owing to his careful study of the texts, but they are treated with a degree of freedom – each phrase is given the time it needs to realize its full affective potential. And, metrical anomalies in the poems are celebrated and enhanced in Hunt's settings. Again, this highlights the importance of musical sensitivity, which I believe transcends any distinction between isochronicity and nonisochronicity in the reconstruction of OE poetry. In a sense, musicalizing the argument renders the duality somewhat obsolete anyway; there is no universal rulebook prohibiting metred music from metrically modulating and changing speed, or un-metred music from implying a pulse. When words and music are brought together, in storytelling and affective communication, the priority must surely be to combine the two, naturally and sensitively, in such a way that they can fulfil their emotive purpose. No actor would barrel metronomically through a Shakespeare sonnet, without pausing to allow listeners to fully inhabit the emotionality of each moment, so why would we read OE poetry in this way?

Secondly, Hunt's stylish use of leitmotif figures to mark repetition and stress is a very logical musical extension of what is already present in the text, which testifies to his considerable knowledge of Old English language and poetry.[25] Indeed, the musical leitmotif is strikingly analogous to the poetic formula: "A group of words ... regularly employed under the same metrical conditions to express a given essential idea" (Lord, 1960: 3). The fact that recurring melodic and rhythmic motives are used so effectively in these settings presents us with an appealing musical reinterpretation of Cable's theory of the centrality of the melodic formula in OE metrics (Cable, 1974). In fact, Tolley has already made some tentative steps in this direction by creating a syllabic setting of *The Wanderer*, in which poetic formulas are translated into melodic motives and stressed syllables are marked with lyre chords (Tolley, 2012).[26] To develop these ideas further, collaboration between musicians and OE scholars is essential, because it will not be possible to understand how the formula functions in an oral musical tradition without absorbing performers' direct experiences of musical memory, extemporization and the process of cultivating and drawing on a stock of melodic and rhythmic building blocks – the improviser's "bag of tricks".[27] It would be useful to know, for example, how memorable rhythmic motives are, in comparison to melodic ones, when singers try to summon up appropriate musical partners for particular words and phrases in real-time performance. I would also like to investigate ways in which certain musical features – such as melismas, held notes and ornaments – can facilitate useful thinking time for extemporisers. These, and doubtless innumerable other, crucial new OE research questions are raised when critical attention is paid to the dynamic, creative and intuitive processes of musicians who work with the language.

25 As an undergraduate, Hunt studied insular medieval languages at the University of Cambridge.

26 I eagerly await publication of this research, which is still in its early stages.

27 Fascinating research in this area is already underway. See, for example, Erik Pihel's commentary on oral-formulaic extemporization in rap (Pihel, 1996).

4. Conclusion

This article has demonstrated that studying musical realizations of OE poems by contemporary composers has the potential to raise many previously unconsidered possibilities. The point of considering contemporary concert music is not that this genre is especially revealing in itself, but that its idiomatic remoteness from early medieval music just goes to show how incredibly important it is to pay attention to musical settings in *all* styles, provided of course that they are supported by a reasonable level of familiarity with the literature. The compositions discussed in this paper represent quite different approaches to OE text-setting, but they do share a sense of freedom and flexibility, which is fundamentally important. The discussion has raised the important point that even when poems are scanned metrically, metre can be freely and frequently disrupted to great effect; it has also introduced the idea of incorporating elastic tempi, long notes and melisma into scansions of OE poems, also highlighting how all of these elements can be used to complement the tone of the text; furthermore, it has raised the possibility of polyphonic interplay between voice and lyre, and offered several new ways in which the idea of melodic and rhythmic formulas, in both vocal line and lyre accompaniment, could be further developed through collaboration with performers and with reference to research in performance psychology.

The study of OE poetry could benefit very much from the input of creative artists. It is valuable, even essential, to bring poetry written in dead languages to life by performing it, in spoken, intoned or sung form. In a sense, every performance of an OE poem is a new composition – existing theories provide an incomplete impression of how a poem could sound and performers are left to fill in the blanks with intuitive or speculative decisions. I concur with Dennis Tedlock, who has argued that ancient poetry "must be judged not on the basis of its acceptability as silent written literature, but on the basis of how it sounds when read aloud..." (Tedlock, 1977: 516). New creative interpretations not only enliven the poems themselves, but also the discourse surrounding them; "oral poetry begins with the voice and an oral poetics returns to the voice" (Tedlock, 1977: 517). Finally, it must be remembered that exchange between creative practitioners and OE scholars has the potential to enhance artworks at least as much as discourse. Old English poetry is, after all, beautiful, atmospheric, rich and sophisticated, yielding innumerable organic yet novel materials for music composition.

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Santrauka

Nuo senųjų žodžių iki vėlyvosios muzikos: kai kompozicijos praktika praverčia analizuojant senosios anglų poezijos metriką

Straipsnyje teigiama, kad bendradarbiavimas tarp tyrėjų ir kūrybingų muzikų gali sudaryti sąlygas kilti naujoms teorijoms interpretuojant senąją anglų poeziją, kuri, kaip manoma, kilo iš oralinės, veikiausiai muzikinės, tradicijos. Straipsnio pradžioje apibendrinami dalykai, susiję su senosios anglų poetikos diskursu, sutelkiant dėmesį į metrą ir ritmą. Aptarus du oponuojančius senosios anglų poetikos deklamavimo požiūrius – izochroninį ir neizochroninį – pateikiama nuomonė, kad šioms abiem teorijoms labai praverstų muzikologinis žvilgsnis. Gana efektyvu analizuoti metrikos teorijas klausantis poezijos skaitymo; kaip vertingos iliustracijos pateikiami keli jos atlikimo pavyzdžiai (ypač Benjamino Bagby). Čia tiktų senąją anglų poeziją analizuoti kaip dainą.

Straipsnyje taip pat analizuojami trys senosios anglų poezijos paveikti šiuolaikinių kompozitorių – Geoffrey Poole'o, Edmundo Hunto ir šio straipsnio autorės – kūriniai. Aptariama Geoffrey Poole'o Styginių kvarteto Nr. 3 pirmoji dalis, pažymint pusiausvyrą komponavimo procese tarp intuityvaus ir sisteminio požiūrio, kuris apima senosios anglų kalbos elementų absorbavimą ir atsaką į juos. Daroma išvada, kad nors ir neįmanoma susieti specifinių kompozicijos ypatybių su konkrečiais senosios anglų kalbos elementais, jos kilmė iš panlingvistinės kalbėsenos primena, jog tematinis poezijos turinys turėtų veikti deklamaciją, kadangi emocinis tonas keičia ritminį kalbėsenos pobūdį.

Aptariamos dvi straipsnio autorės kūrinio *Hord Songs* dalys ir pažymima, kad lėti tempai ir ilgai tęsiamos natos nelemia deklamacijos, nes tai yra dainavimo, o ne kalbėsenos bruožai. Analizė taip pat pabrėžia tempo lankstumo svarbą deklamuojant poeziją – tai dažnokai pamirštama. Vienoje iš dalių naudojama polifonija yra lyginama su anglosaksų dainų lyros akompanimentu, čia trumpai apibrėžiama polifoninė sąveika tarp balso ir lyros.

Edmundo Hunto kompozicijų *I had a Living Spirit and We Are Apart* ir *Our Song Together* analizė suteikia du naujus techninius elementus senosios anglų poetikos apžvalgai – tai yra melizma ir leitmotyvas (pastarasis traktuojamas kaip muzikinis senosios anglų poetinių formulių praplėtimas). Pastebima, kad Hunto jautrus metrinių nereguliarumų traktavimas poemose iliustruoja kalbos ritmo sąsajas su jo emociniu kontekstu. Straipsnis baigiamas išvada, kad, plėtodami savo tyrimus, senosios anglų poetikos tyrėjai turėtų atkreipti dėmesį ir į muzikines įžvalgas, atsižvelgti į atlikimo psichologijos tyrimus ir skirti daugiau dėmesio kalbėsenos ritmo ir emocinio afekto ryšiui.

Gabija Rimkutė, Judita Žukienė

Rhythm as a Means to Express Sacredness in the Piano Works of Alvidas Remesa

While analysing various music works on a religious topic, rhythm can be noticed to be one of the basic means to express sacredness. This element of music is being used by the sacred music composers for the formation of specific musical time associated with the perception of sacredness. This attitude is also reflected in composers' and musicologist's statements. For example, according to the composer Ernst Křenek, "The main element, which determines sacredness, is the organisation of music in time".[1] In Bohdan Pociej's opinion, "we feel sacredness in music through the way it fills time by itself".[2] Also, Olivier Messiaen called music "the geometry of time" and compared the structure of sacred music to a circle.[3]

Theologians state that there are two kinds of time. According to the religion historian and philosopher Mircea Eliade, it is "the historical present" and "the holy time". As Eliade observes, a religious man contrary to a nonreligious man, "lives in two kinds of time, of which the holy time is more important". According to the author, it is "a constantly repeating ... sort of eternal, mythical present time into which a man periodically merges during the rituals".[4] The "holy time" relates to the sacred space, while "the historical present" to the profane one.

Analogically in music the composers creating the image of sacredness use the antithesis of musical flow with the aim to separate the *sacrum* and *profanum* origins. Setting the sounds in time in a specific manner, they seek to form a "sacred time" which can be experienced when listening to music. The perception of this unusual flow of time "takes" the listener's thoughts and senses to the "sacred space" where he experiences something absolutely opposite to the usual everyday flow of time. The division between the sacred and profane is thus being emphasized. From the standpoint of rhythmical organisation, in music it is expressed through "irregular rhythm" or, in other words "timelessness" and "regular rhythm".

Such a tendency is often noticed in Olivier Messiaen's music. According to the musicologist and researcher of Messiaen's works Sliglinda Bruhn, Messiaen defines himself "first and foremost as a rhythmicist".[5] No doubt, the rhythmical expression of music was one of the most important things to him in his creative process. Rhythm in Messiaen's music is often being used to emphasize the difference between the concepts of "time" and "eternity". According to Messiaen, "time by no means is a portion of an eternity that encloses and exceeds it. Time and eternity are two absolutely different ways of measuring duration. Time is the measure of all that is created, eternity – is God Himself".[6] Based on this quotation we can say that "time" refers to the profane sphere while eternity to the sacred. The spiritual state of the listener when he experiences "eternity" the composer called "the breakthrough towards the beyond".[7]

In Catherin Pickstok's estimation, in Messiaen's music "the repetition of non identical motives" is associated with the eternity and conveys the vision of God, whereas the identical repetition is characteristic of the temporary world of people".[8] The variability of motives is also used to create an image of the greatest God's creation – nature in which, according to the composer, contrarily to man's everyday life nothing repeats identically. In his music Messiaen achieved this variability by reconstructing primitive rhythms, prolonging, or shortening the motives by notes of small value. For the creation of the image of *sacrum* sphere Messiaen also used "rhythmical palindromes", which he associated with the symbolism of eternity.

The contrast between time and eternity, conveyed by rhythmical organisation, is one of the elements of dramaturgy in the piano cycle "Twenty Gazes on the Infant Jesus" (1944). The appropriate example of this contrast is the 13th part of the cycle "Christmas". It is written in rondo form with the regularly accented rhythm in the refrain. As the composer's subheading comment shows, the refrain imitates the chime of

1 E. Křenek, "Vom Geiste der geistlichen music", in: "Musica sacra in the context of contemporary studies". Kalavinskaitė D., *Lithuanian Musicology*, Vol. X, 2009, p. 95.

2 B. Pociej, "Religious inspiration in music", *Krantai*, 1990, Nr. 7–8, p. 33.

3 C. Pickstock. "God and meaning in Music: Messiaen, Deleuze, and the Musico-Theological Critique of Modernism and Postmodernism", *Sacred Music*, Winter 2007, Vol. 134, No. 4, p. 44, 50.

4 M. Eliade. *The Sacred and the Profan*e, 1957, p. 49.

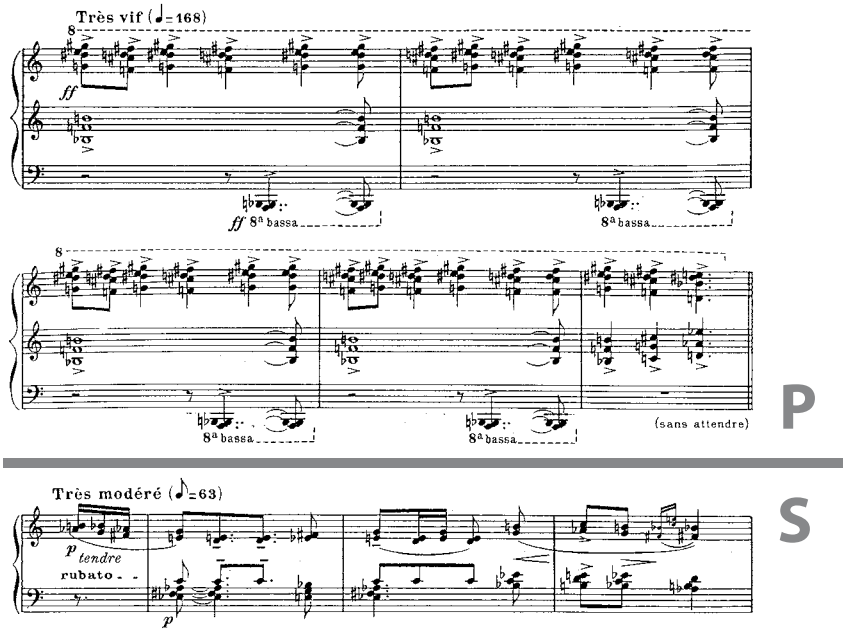
5 S. Bruhn. *Messiaen's Contemplations of Covenant and Incarnation*, 2007, p. 56.

6 Ibid., p. 66.

7 S. Mass. *The Reinvention of Religious music*, 2009, p. 37–61, 126–158.

8 C. Pickstock. "God and meaning in Music: Messiaen, Deleuze, and the Musico-Theological Critique of Modernism and Postmodernism", *Sacred Music*, Winter 2007, Vol. 134, No. 4, p. 59.

Christmas bells. According to Siglinda Bruhn's observation, the refrain conveys an "untroubled expression of joyful festivity".[9] As a contrast to the refrain, which creates the image of the *profanum* sphere, another episode is presented. This episode is different in some musical parameters – tempo, textural arrangement, as well as rhythm, based on "rhythmical palindromes". All these together create a "timeless" mystical mood that contrasts with the refrain. Thus the organisation of the rhythm in different ways reveals the antithesis of *sacrum* and *profanum* spheres (Ex. 1).



Example 1. The contras of the "profane" (P) and the "sacred"(S) rhythm in O. Messiaen's piano cycle "Twenty Gazes on the Infant Jesus", 13th part "Cristmas", bars 21–29

When analysing the piano music of the Lithuanian composer Alvidas Remesa, we find the direct analogies to the Messiaen's music and a familiar approach to rhythm as a means to express sacredness in music. The composer himself does not deny the direct influence of Messiaen's music on the creation of his piano cycles, especially to "Stigmata" (1987). Remesa recalls that before he created "Stigmata" he had to hear, for the first time, the cycle "Twenty Gazes on the Infant Jesus" performed live. "This experience of hearing made an indescribable impression on me", said the composer. "Until then I was sure it was impossible to express sacredness with the help of contemporary means. Messiaen changed my viewpoint completely. I just could not believe that one can convey such a spiritual message by using the piano".[10] Therefore, inspired by Messiaen's music, Remesa created his first religious opus "Stigmata" in 1989. This creative work was included on the list of the International M. K. Čiurlionis Piano and Organ Competition. Since then "Stigmata" has been one of the most often performed Lithuanian piano music works distinguished from others by its suggestively revealed artistic idea and specific emotional-spiritual impact on the listeners. Nine years later Remesa created another piano cycle called "Sacramentals". Both of them, "Stigmata" and "Sacramentals" (1998) are united by the religious idea, as well as structural similarities (both cycles consist of five miniatures). The dramaturgy of the cycles is based on the principle of contrast, which is being created not only by tempo, dynamics and texture, but also by a different rhythm.

As the composer stated himself, "when creating he thinks in images". This process is being also revealed in both piano cycles. Remesa has not given a detailed programme plot of the cycle "Stigmata". Therefore we cannot define concrete images associated with its semantics. However the title of the cycle "Stigmata" acts as an assumption for certain interpretations of the images. According to the composer, the five miniatures are the five wounds of Christ. "Just as Messiaen gazes at the Infant Jesus from different angles in 'Stigmata' I too wanted to look at the stigmas from an entirely different aspect", the composer said during the interview. It was written in the annotation published with the score of the work that the contrasting parts of the cycle are

9 S. Bruhn. *Messiaen's Contemplations of Covenant and Incarnation*, 2007, p. 208.

10 Quoted from an interview with composer Alvidas Remesa (October 2012).

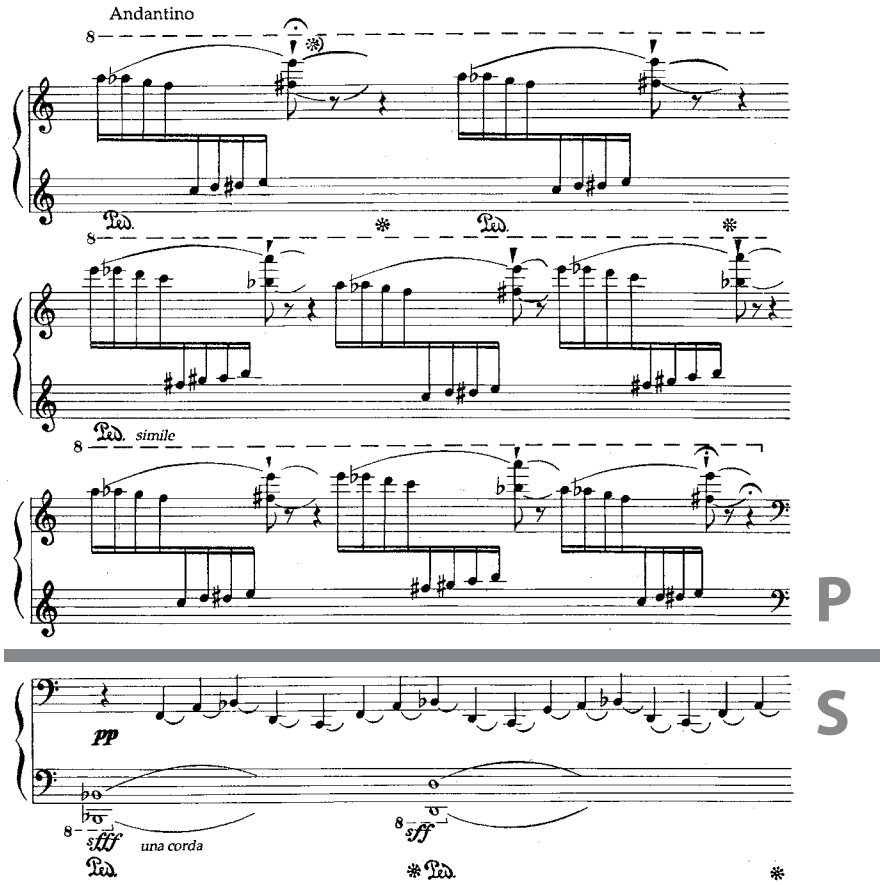
"united by the liturgical idea, reveal the picture of the suffering noble personality". Referring to it we can come to the conclusion that the semantics of the work is associated with Christ's Crucifixion. The cycle structure based on contrasts can be interpreted as the composer's aspiration to reveal the antithesis between the worldly (or bodily) impermanence (the image of *profanum* sphere) and divine eternity (the image of *sacrum* sphere).

When analysing "Stygmatas" two kinds of images stand out: 1) those of a mystical colour, associated with the sacredness; 2) the realistic ones, conveying worldly impermanence. The images of the first group are created with the help of irregular rhythm or "timelessness", whereas the images of the second group are created using the regularly accented rhythmical formations or "regular rhythm" (Ex. 2).

	Sacrum	*Profanum*
The types of images	The images of mystical colour associated with the sacredness	The realistic images conveying worldly impermanence
Their rhythmical expression	Irregular rhythm ("timelessness")	Regularly accented rhythmical formations ("regular rhythm")

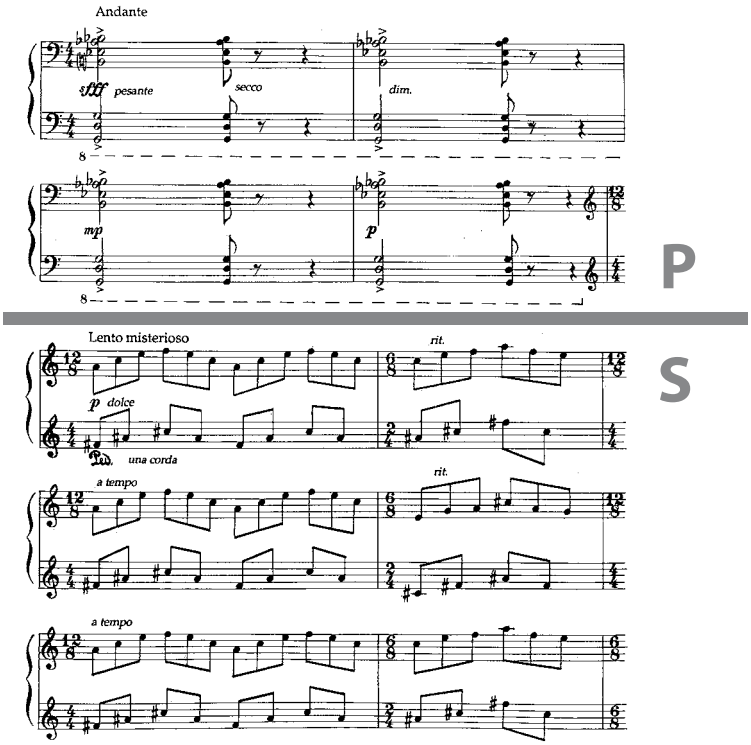
Example 2. The scheme of contrasting images in Remesa's piano cycle "Stygmatas"

The whole cycle begins precisely by such a contrasting display of musical images (Ex. 3). When analysing the rhythmical organisation, we notice clearly the regularly repeating accents in the beginning of the first movement. Then, the following episode forms a contrast: with the abandoning the regular rhythmical pulsation, the limits of time are being deleted.



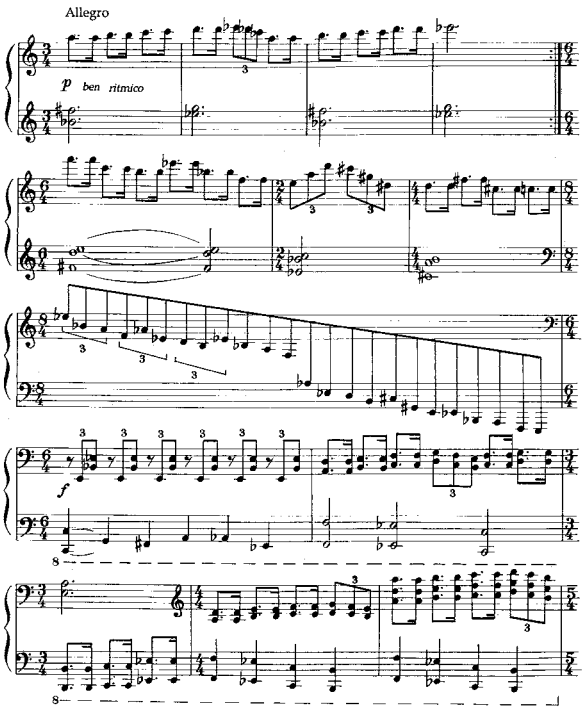
Example 3. The contrasting episodes of the "profane" (P) and the "sacred" (S) rhythm in the first movement of Remesa's piano cycle "Stygmatas"

Similarly the contrastic episodes are placed together in the second piece of the cycle (Ex. 4). In it after the especially distinct rhythmical episode begins an indefinite in time movement episode of a meditative kind.



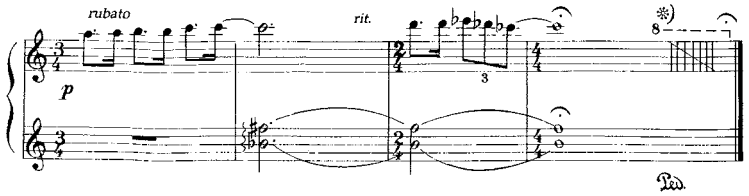
Example 4. The contrasting episodes with the "profane" (P) and the "sacred"(S) rhythm in the second movement of Remesa's piano cycle "Stigmatas", bars 1–10

In the cycle "Stigmata" the juxtaposition of sacred and worldly spheres takes place not only inside of the parts, but also when opposing one to the other. The third part of the cycle is especially contrasting to the sacred flow of musical time. The entire piece is based on an unbroken and rhythmically regular movement. The importance of the rhythm is also stressed by the composer's note in the first bar *ben ritmico* (i.e. "well rhythmically"). As compared to the other parts of the cycle its rhythmical structure is marked by clarity, in some places even by primitiveness. Referring to the assumptions given before, this part may be interpreted as an image of the exclusively worldly *profanum* sphere (Ex. 5).

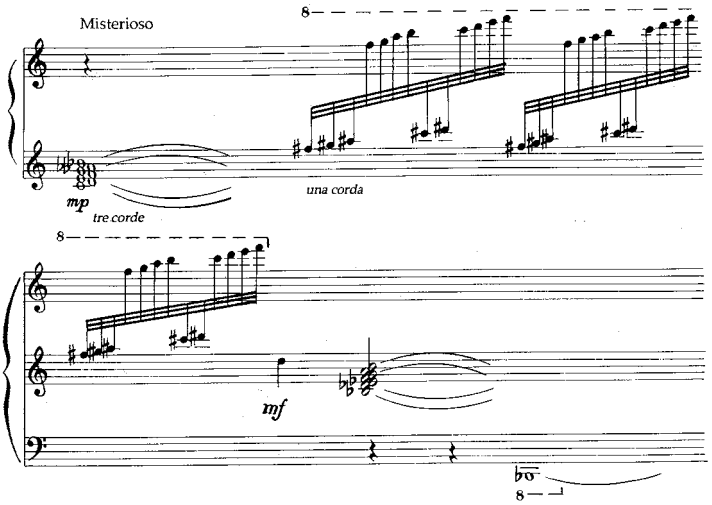


Example 5. The "pronane" rhythm in the third movement of Remesa's piano cycle "Stygmatas", bars 1–13

The last four bars of the third part is sort of a bridge between the worldly and sacred spheres (Ex. 6). The composer's note *rubato* stops the strict metrical pulsation, the regular rhythmic movement is substituted by "the flow of sacred time", which gets established in the fourth and fifth parts of the cycle (Ex. 7, 8, 9).

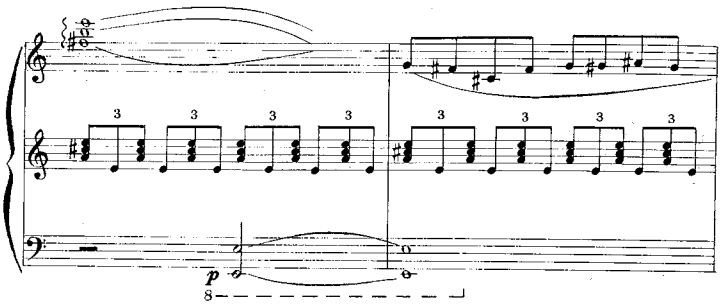


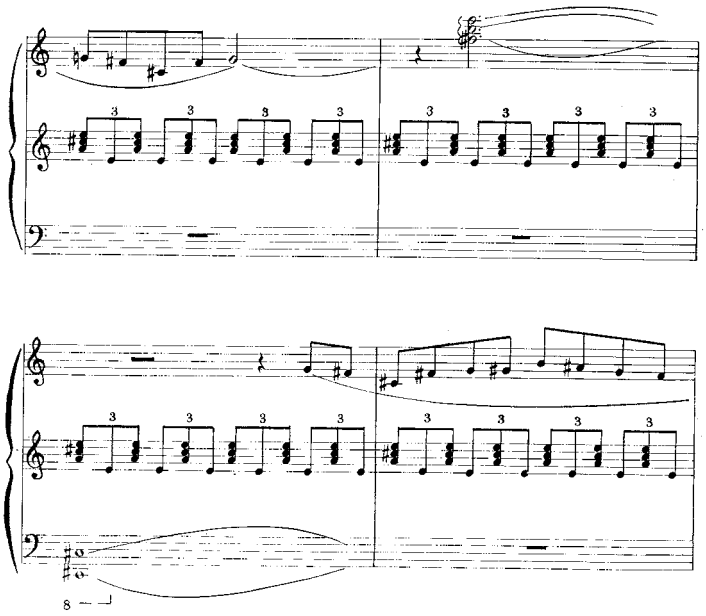
Example 6. Remesa's piano cycle " third movement, bars 33–36



Example 7. The "sacred" rhythm in the fourth movement of Remesa's piano cycle "Stygmatas"

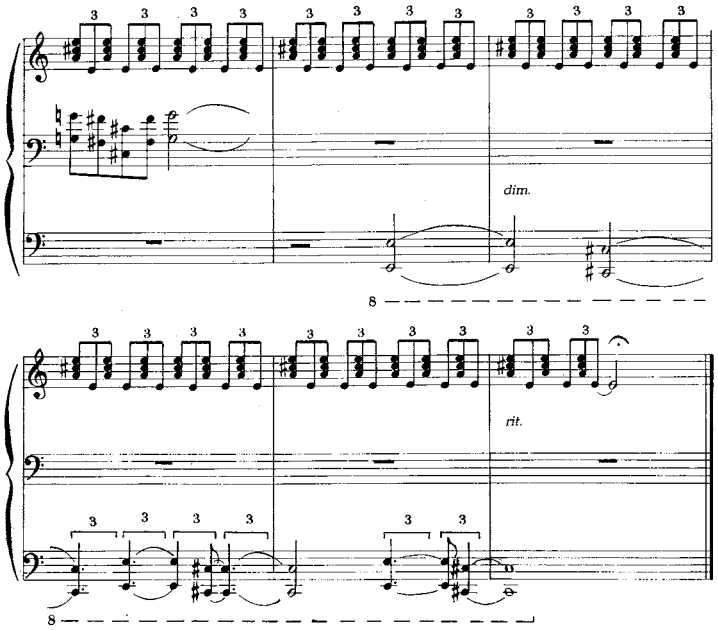
From the semantic point of view the fifth movement of the cycle can be interpreted as a spiritual transformation. The apparent disappearance of the tension in the end of the work, heard during the whole piece naturally brings an association with Christ's Resurrection. The composer said that this movement is like "the wound of the heart", but explained that one should not interpret this association in a narrow way: "I perceive the heart here in the spiritual level, as a form of acceptance, based on spiritual resignation, not as the organ of human body. The fifth piece is sort of spiritual meditation, when one feels an even beat of the heart in a peaceful state", said the composer. The disappearance of tension first of all is expressed with the help of harmony: during the entire movement sounds a clear second inversion of A major triad. The sacred mood of the piece is also created with the help of rhythm. Metrical order, observed at the first glance, is just an illusion. The composer gives a clear metrical note – 4/4. However, the rhythmical *ostinato* of triplets creates a feeling that really music pulsates in 6/8 (six eights) metre. It is difficult to feel the metrical accents for one more reason because the melody starts every time in another part of a beat. As for the metrical accents, the octaves of the left hand also are introduced irregularly (Ex. 8).





Example 8. The "sacred" rhythm in the fifth movement of Remesa's piano cycle "Stygmatas", bars 3–8

The indefiniteness if time is especially felt at the end of the piece. The melody is coming to an end and the notes of the first and the third texture layers one by one are being played in the weak parts of the beat thus creating the impression of something unconsummated (Ex. 9).



Example 9. The "sacred" rhythm in the fifth movement of Remesa's piano cycle "Stygmatas", bars 29–34

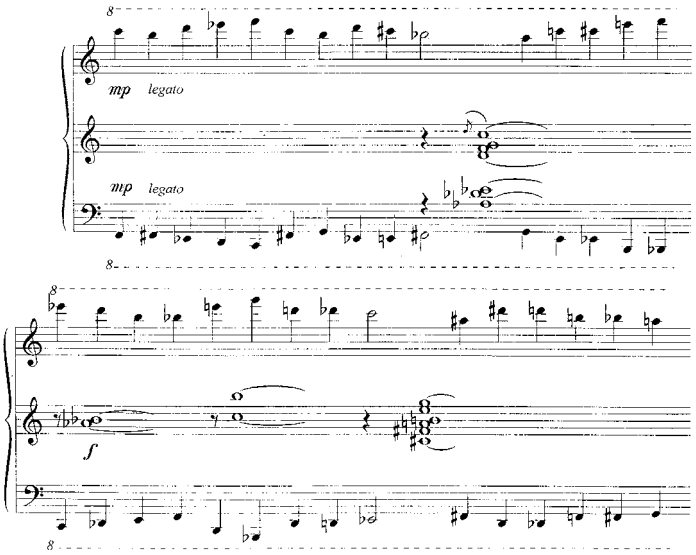
The following scheme (Ex. 10) reveals the alternation of profane and sacred time flow and the evident establishment of the latter at the end of the work. As we can see, in the first two parts the *sacrum* and *profanum* spheres are juxtaposed but neither of them takes a dominant position. The third – central – part of the cycle creates only the image of *profanum* sphere. The flow of the sacred time, after coming back and finally establishing itself in the fourth part of the cycle from the semantic point of view, marks the ascent to a higher spiritual level. Semantically this can be also interpreted as Christ's Resurrection. On the grounds of this scheme we can come to the conclusion, that the rhythmical organisation in this cycle is one of the basic means, helping to reveal the semantics of the work.

Profanum–Sacrum										
Part I		Part II					Part III		Part IV	Part V
P	**S**	**P**	**S**	**I**	**P**	**S**	**P**	**I**	**S**	**S**
0'–20''	20''–1'55''	1'55''	2'10''		2'35''	2'50''	3'30''–4'30''		4'45''–6'30''	6'30''–9'20''

Example 10. Remesa's piano cycle "Stygmatas". The "profane" and "sacred" time flow alternation scheme[11]

The antithesis of the "sacred" rhythm to the "profane" one is not so distinct in another Remesa's cycle called "Sacramentals" (1998) as it was in "Stigmata". From the point of view of dramaturgy this cycle is not integral. Its parts are not much interrelated with one another. According to the composer, they are separate pictures of "something sanctified". Musical images in the cycle are also not very contrasting. From the point of view of rhythmical organisation, "timelessness" is distinctly dominant in this work.

As for musical composition, the most striking example of sacredness interpreted as "timelessness" is the second piece of the cycle (Ex. 11). Indefinite arrangement of the sounds in time is being noticed in several layers of the texture: in the melody heard in marginal registers and the line of middle texture layer chords. Though the melodic movement is based on the even pulsation of crotchets, the metre is not indicated, there are no bar lines. The melody is notably joined to the phrases, but the number of crotchets in every one of them is different (the first phrase – 11, the second – 15, the third – 12, the fourth – 13 crotchets). The appearance of the chords is also absolutely unpredictable and defying any symmetrical order. They appear either in the end of the phrase and do not destroy the even rhythmical pulsation or in their middle where they occur as syncope after the rests of eights. The absence of metre, the movement of independent melodies in different time, the juxtaposition of marginal registers – all these things create the mood of mystical experience.



Example 11. The "sacred" rhythm in the second movement of Remesa's piano cycle "Sacramentals"

Conclusions

1. The rhythmical analysis of the piano cycles "Stigmata" and "Sacramentals" confirmed the assumption that rhythm is a suitable means for the creating and separating images of *sacrum* and *profanum.*

2. While analysing the cycle "Stigmata" it was noticed that the alternation of these images caused all the dramaturgy of the cycle. By this way the rhythm was established as a basic means helping to reveal the religious semantics of the work.

3. The detected analogies while analysing the creative works on the religious topic, belonging to composers from different countries (as Messiaen and Remesa) confirmed that the subjection of the rhythm to the expression of sacredness is not a random phenomenon, but an objectively existing tendency of composing.

[11] In the scheme the letter ***P*** marks the epizodes semantically related to the *profanum* sphere, the letter ***S*** to *sacrum*. The letter ***I*** marks kind of intermediate epizodes in which an irregular rhythm changes to a regular one or the opposite.

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Santrauka

Ritmas kaip sakralumo raiškos priemonė A. Remesos kūriniuose fortepijonui

Remiantis XX a. kompozitorių – Ernsto Křeneko, Olivier Messiaeno, Arvo Pärto ir kt. – mintimis apie sakralumo išraišką muzikoje, galima teigti, kad lemiamas šio proceso veiksnys yra specifinis laiko tėkmės organizavimas. Kaip religijos istorikas ir filosofas Mircea Eliade rašė apie religingo žmogaus gyvenime egzistuojantį dviejų rūšių laiką – „istorinę dabartį" ir „šventąjį laiką", taip kompozitoriai analogišką požiūrį perteikia atitinkamai planuodami muziką laike.

Analizuojant vieno ryškiausių XX a. sakralinės muzikos kūrėjų O. Messiaeno kūrinius pastebėta, kad specifinės „šventojo laiko" tėkmės procese svarbiausias elementas yra ritmas. Šis muzikos elementas dažnai tampa priemone atskleisti priešpriešą tarp *sacrum* ir *profanum* sferų. Tyrinėdama Messiaeno kūrybą, teologė Catherine Pickstock atkreipė dėmesį, kad „neidentiškų motyvų kartojimas" („neritmiškumas") šio kompozitoriaus muzikoje „susijęs su amžinybe ir perteikia Dievo vaizdinį", o laikinajam, žmogiškajam pasauliui būdingas „identiškas kartojimasis". Tendencijos pasitelkti ritmą kaip priemonę sakralumo raiškai akivaizdžios ir kitų XX–XXI a. sakralinės muzikos kompozitorių kūryboje. Skirtingų autorių kompozicijas vienija siekis per ritmą niveliuoti laiko ribas, sakralumą interpretuojant ir perteikiant kaip „belaikiškumą".

Straipsnyje siekiama pateikti ritmo, kaip vienos efektyviausių sakralumo raiškos priemonių, teorines prielaidas bei jas pagrįsti nagrinėjant lietuvių kompozitoriaus Alvido Remesos kūrinius fortepijonui „Stigmos" (1989) ir „Sakramentalijos" (1998). Nustatyta, kad, analogiškai O. Messiaeno kūrybai (kuri inspiravo šių kūrinių atsiradimą), A. Remesos kompozicijose atskirties tarp dieviškosios ir žemiškosios sferų išryškinimui pasitelkiamas „sakralinis" ir „profaninis" ritmas.

4

ETNINIAI IR ISTORINIAI RITMO ASPEKTAI | ETHNICAL AND HISTORICAL ASPECTS OF RHYTHM

Carlos de Lemos Almada

The Hierarchical and Combinatorial Nature of the Rhythmic Structure of Brazilian *Choro*

1. Introduction

This paper integrates a broad research project whose central objective is to elaborate analytical and compositional systematic approaches based on the principles of developing variation and *Grundgestalt*, both created by Arnold Schoenberg. The research has yielded several studies distributed over some distinct branches.[1] The present paper is associated to the most recent of them, which is essentially concerned to investigate the processes of variation in the *choro*, a typical Brazilian musical popular genre.[2]

Emerged in the second half of the 19th century in Rio de Janeiro – then, the capital of the Brazilian Empire – the *choro* owes its origins to some stylized European dances (especially the polka) that became very popular in the city at that epoch. The name of the incipient genre was associated to the typical instrumental groups (formed by flute, two guitars and *cavaquinho*,[3] and also called "*choro*") that used to perform those pieces with a special native swing. Soon, Brazilian composers were stimulated to write original polkas (and mazurkas, schottischs, waltzes, habaneras, etc.), which finished to be generically labeled as *choros*, at the first decades of 20th century.[4] Since then one of the most remarkable characteristic of *choro* has been the fact that its performers (commonly named "*chorões*") use to substitute improvisations (or, more accurately, melodic variations) for literal part repetitions.

The principal motivation for this new line of research is precisely to study the process of creation of idiomatic variations in *choros*, and to investigate if they can be systematically reproduced (and, maybe, taught and learned).

For this purpose, it will be created a computer program for algorithmic composition of *choro* idiomatic variations, able to operate according to a set of rules for music construction, formalized from a modeled abstraction of a *choro*. Such a model is currently being constructed with the data obtained from a detailed statistical analysis of 78 selected pieces[5] written by Alfredo "Pixinguinha" Viana Filho (1887–1973), notoriously the greatest *choro* composer of all times.[6]

The statistical analysis has covered four main structural aspects: form, harmony, melody, and rhythm. It is of special importance the fact that not only all of these elements present separately hierarchical, and stratified organization, but they also are strongly, and mutually connected. For this reason, in spite the *choro*'s rhythmic structure is in the focus of this paper, its adequate understanding depends on a brief exam of the correlate elements, as it is presented in the following sections.

2. Form

The lowest formal level (encompassing the complete *choro*) corresponds to a simple rondo form: AA-BB-A-CC-A. The second level displays the isolated parts (A, B, C). Each one of them has an extension of 16 bars (in binary metric, usually, 2/4) and, in general, a configuration similar to the practice form of the *period*, subdivided into two segments: the antecedent (mm. 1–8) and the consequent (mm. 9–16), concluding with, respectively, dominant and authentic cadences.[7] In the third layer (that can be properly named as "sentence level"), both segments are also subdivided, resulting in a structure formed by four 4-bar phrases, with clearly defined functions, as following (the three-levels formal structure is summarized in Figure 1):

1 See, for instance, Almada (2011; 2012; 2013a; 2013b; 2013c).

2 For initial studies on this subject, see Almada (2012b) and Almada (in press).

3 A small four-string instrument (tunning: D-B-G-D) very similar to the Hawaiian ukulele (both instruments are originated in Portugal).

4 More precisely, the process of transformation of the polka (or *polca*, in its nationalized version) into the *choro* was intermediated by two quite fashioned genres: the *maxixe* and the so-called *Brazilian tango*, popularized by composers like Ernesto Nazareth and Chiquinha Gonzaga, as about at the last decades of 19th century. These genres have already most of the principal structural characteristics present in the modern *choro*, and can be considered its more near and legitimate ascendants.

5 This number represents the total of parts of *choros* (counted as separate pieces). Since a standard *choro* has normally three parts, that total corresponds to 26 *choros*. The selected scores were extracted from Pixinguinha (1997).

6 The first stage of the statistical investigation, recently concluded, was realized with the help of two of my students: Alexandre Avellar and Pedro Zisels.

7 For more information about the period practice form, see Schoenberg (1967: 25–31).

- Phrase 1 (mm. 1–4): presents the thematic/motivic enunciation with the principal "genetic" melodic material of the current part.
- Phrase 2 (mm. 5–8): functions as a providential contrast to Phrase 1, from both motivic and harmonic perspectives.
- Phrase 3 (mm. 9–12): in the most of the cases, it recapitulates the material of Phrase 1 (in general, only its initial two bars, with a different continuation, both melodically and harmonically).
- Phrase 4 (mm. 13–16): concludes the "narrative" of the part, what is reinforced not only by an authentic cadence, but also by a proper rhythmic intensification.

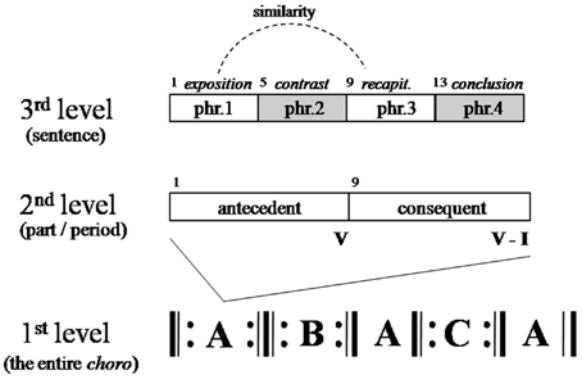

Figure 1. The tree levels of formal structure of the *choro* model

It is still worth to mention that the three parts are established in distinct, close keys. In practice, there are only a few recurrent patterns of tonal configurations in Pixinguinian *choros*: in the major mode (considering the sequence of parts A-B-C): **T**-**sm**-**D** or **T**-**D**-**SD**; and just one in the minor mode: **t**-**M**-**T**.[8] In addition, some tonalities (C, F, G, Dm, Am, etc.) are much more frequent than others, which can be due to their adequacy to the string instruments that usually form the modern *choro* groups (besides guitar and *cavaquinho*, mandolin and 7-string guitar).

3. Harmony

As above mentioned, the harmonic structure of the abstract model is also hierarchically organized in three layers. In the basic one, we can consider a kind of idiomatic harmonic vocabulary that orients the choice of chords. For instance, it is normative in Pixinguinian *choros* the use of triads (with the exception of the employment of sevenths in secondary dominants and diminished chords), not only in the diatonic set, but also in the borrowing chords (IVm, bVI and bII in the major mode, and bII in the minor mode). The second level is represented by the harmonic progressions. The analysis revealed that there are some patterns more recurrent than others, what suggests the existence of specific syntactic rules for the harmonic construction in *choros*.[9] The highest level covers the complete part, with its four harmonic phrases (i.e., the sentence). As can be observed in Figure 2 (that presents the harmonic structure of a hypothetical *choro* in major mode), there is a consistent correspondence between the functions of the formal (cf. Figure 1) and harmonic phrases.

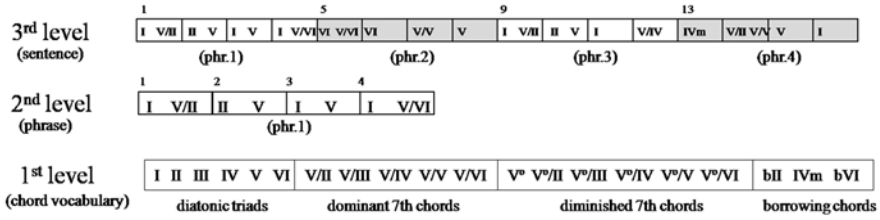

Figure 2. The three levels of harmonic structure of the *choro* model

[8] The symbols for tonal regions here adopted were created by Schoenberg (1969: 19–29), with capitals referring to major regions, and the small letters to the minor ones: **T**/**t** (for tonic), **D** (dominant), **SD** (subdominant), **sm** (submediant, or minor relative), and **M** (mediant, or major relative). For example: F-Dm-Bb; and Am-C-A, for *choros* in, respectively, major and minor modes.

[9] The discovering of these rules (and, as will be mentioned, especially those related to the rhythmic construction) is one of the most important tasks of the present research.

4. Melody

The melodic construction can be also viewed as an abstract stratified structure (Figure 3a). The lower level is essentially represented by a sequence of arppegios, derived evidently from the harmonic progressions. In second level, passing notes are added to the line and the interval directions are alternate in order to correspond to characteristic *choro* melodic contours, with its typical up-down topographic configurations (exemplified in Figure 3b). In addition, the chord changing points are generally made by smooth melodic connections (with notes chosen by their proximity). The surface level supports the application of the so-called *melodic inflection formulas*, a set of idiomatic schemata that maybe represents the most salient aspect of melodic construction in *choros*.[10]

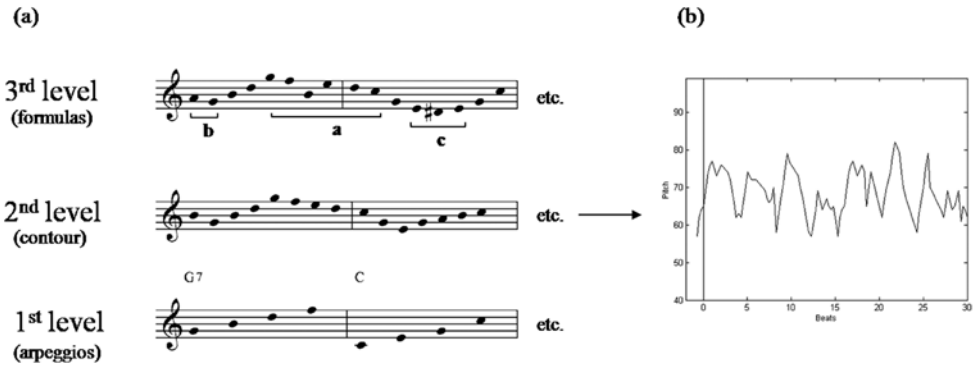

Figure 3. The three levels of melodic structure of a hypothetical *choro* (a); Melodic contour of first part of *Abraçando Jacaré* (Pixinguinha)

5. Rhythm

In the abstracted model, the rhythmic structure is also hierarchical and interacts with the other domains. According to the analysis results, it is possible to consider four levels of rhythmic organization, each one corresponding to different time spans: (1) beat level (unity: quarter note), (2) bar level (minim), (3) phrase level (4 bars), and (4) part level (16 bars).[11] From a metaphorical perspective, we can associate each one of these structures to corresponding terms of linguistics: *letter* for level one, *syllable* for level two, *word* for level three, and *sentence* for level four. This analogy is in several aspects very useful for the research's purposes, but perhaps the principal reason for its employment is that it reveals the combinatory nature of the *choro* rhythm, in a considerably similar manner as happens in the words and sentences formation process in an ordinary language.[12] The four levels of rhythmic organization are examined in the detail in the following subsections.

5.1. Letter level

It corresponds to the presentation of the typical *choro* rhythmic cells. However, rather than durations patterns (as normally happens), the *choro* rhythmic cells are treated in our model as unities of *inter-onsets intervals* (or IOI's, according to David Temperley's terminology).[13] They consist of abstract rhythmic categories (or classes), which "normal forms" can represent several concrete possibilities, as we can observe in Figure 4.

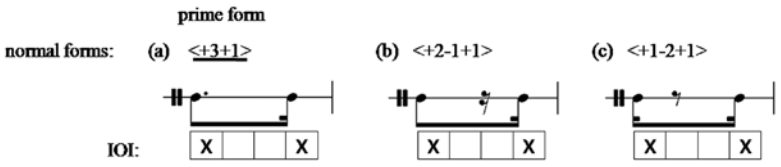

Figure 4. Possible descriptions for a given IOI

[10] According to a previous study (Almada, 2006), the melodic inflections formulas are in number of six, each one with specific features. Three instances of the formulas (labeled as **a**, **b**, and **c**) are presented in Figure 3a. A detailed study of this topic is beyond the scope of the paper.

[11] Of course, we could still extended the structure to a higher level – of the complete *choro*, encompassing its three parts – but that is not necessary, in accordance to the study objectives.

[12] For a detaied discussion about the combinatory linguistic processes, see Pinker (2000).

[13] Temperley (2001: 27–28).

In this case, the three alternatives correspond to just one class of letter, since all of them are but different manners to express a same IOI pattern: an one-bar rhythmic configuration with its first and fourth 16th notes articulated. In our terminology, the signs "+" and "–" represent, respectively, presence and absence of onsets points. The selected letter description (or the configuration's "prime form") must be that which corresponds to the most economic, compact form, by combining numbers and signs (therefore, the alternative "a" in Figure 4).

The statistical analysis has found 19 characteristic letters in Pixinguianian *choros*, forming which is named the *alphabet* of the model (Figure 5). The two last positions ("y" and "z") are reserved for important rhythmic building blocks in *choros* that describe, respectively, the unique onset in the down beat and the full rest.

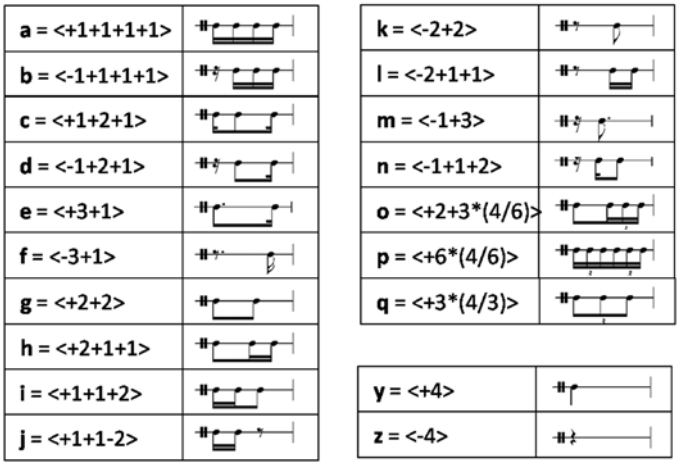

Figure 5. The rhythmic alphabet of the *choro* model

It is worth to add that the order of the letters in the alphabet correspond approximately to their frequency of occurrence in Pixinguinian *choros* (with some exceptions, especially, letter *y*), as displayed in Figure 6.

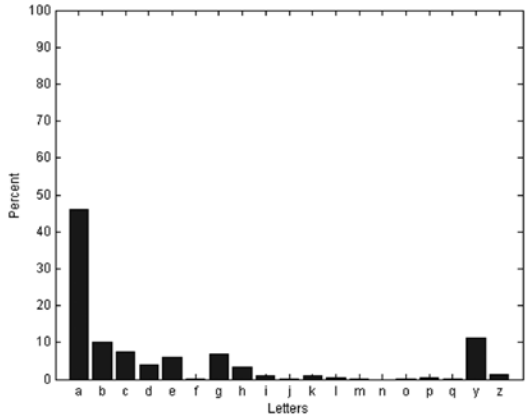

Figure 6. Statistical graph of the occurrence of letters in Pixinguinian *choros*

5.2. Syllable level

In this layer, two letters are combined to form a syllable. The events in this level correspond to the motivic dimension in *choros*, as can be observe in the following examples, extracted from the analyzed pieces (Figure 7). As another result of the statistical analysis, it is remarkable that some syllables are very recurrent (as, for instance, <**ab**>, <**cc**>, <**fg**>, etc.), while some possible combinations (<**mf**> or <**qa**>, among several others) never occur.

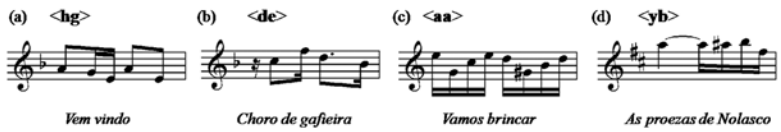

Figure 7. Initial syllabes in four Pixinguinian parts of *choros*

5.3. Word level

The concatenation of four syllables (or eigth letters) yields a word. In a similar manner as conventional words (in English, for instance) are not merely resulted from free permutation of letters, well-formed *choro* rhythmic words are in very small number, if confronted to the total possible combinations.[14] As with the syllables case, some of the words collected in the analyzed *choros* are relatively quite recurrent. The statistics has revealed that the words with the highest frequency of occurrence are the following (considering the data shown in Figure 6, the prominence of letter *a* in all of them is hardly surprising):

(1) <**aaaaaaay**> (approximately 4,2 % of the occurrences);
(2) <**aaaaaaaa**> (2,6 %);
(3) <**hahahaaa**> and <**aayyaayy**> (1,3 %).

The formation of a word is normally done in interaction with the formal and harmonic domains (in both cases, considering the second level – cf. Figures 1 and 2). Besides, it was found in the analysis that the internal configuration of a word depends strongly on the pre-established functions. Generally, a word associated with phrases 1, 2 or 3 presents a symmetrical structure that approximately replicates in small scale the similarity-contrast relationships present in the period practice form (especially, the duality antecedent/consequent). In the case of a word associated to phrase 4 (whose primordial function is to conclude the part), in general there is no internal symmetry, but rather rhythmic homogeneity, corresponding to an intended harmonic-melodic intensification. According to these characteristics, it is possible to elaborate modeled configurations for both words 1–3, and 4, as exemplified in Figure 8.

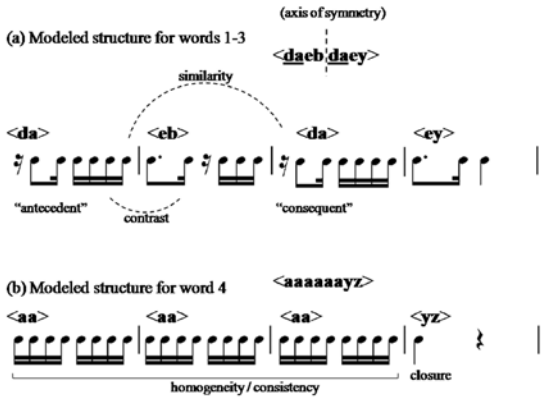

Figure 8. Modeled internal structure of words 1–3 (a) and 4 (b)

Figure 9 displays some words extracted from Pixinguinian *choros* that present the configurations of the abstracted patterns shown in Figure 8. It must be observed in each case as harmony and melodic contours reinforce the rhythmic structure, according to the intended functions.

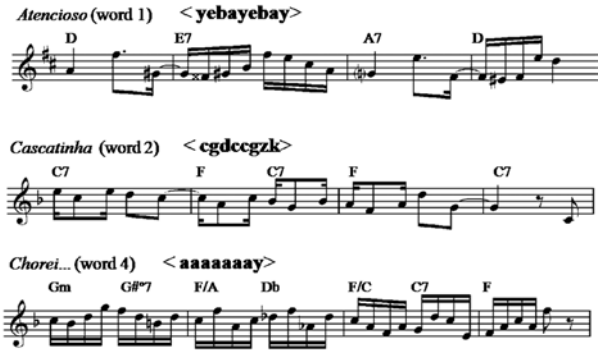

Figure 9. Examples of words in Pixinguinian parts of *choros*

[14] More precisely, the number of possible words in *choros* is equal to 16,983,563,041 (or 19^8).

5.4. Sentence level

In this level, the junction of four words forms a sentence. As the previous cases, this concatenation is not fortuitous. On the contrary, in the archetypal *choro* of our abstracted model the primordial functions of formal and harmonic phrases orient the choice of words in favor of, so to speak, the narrative. This is the same as saying that in this level form, harmony, melody, and, especially, rhythm, interact to produce the global meaning of a given *choro*'s part.

Therefore, by considering the abstracted model, the structural relationships established in the third level of the formal and harmonic grids (cf. Figures 1 and 2) serve as an important reference for the construction of a rhythmic sentence, even influencing the selection of the words to be used. Figure 10 presents an example of formation of a rhythmic sentence from Word 1 shown in Figure 8. The pre-established phrases functions, acting as shaping forces, condition the elaboration of possible solutions (of course, among several other appropriate alternatives) for words 2 (that must express contrast), 3 (similarity), and 4 (closure).

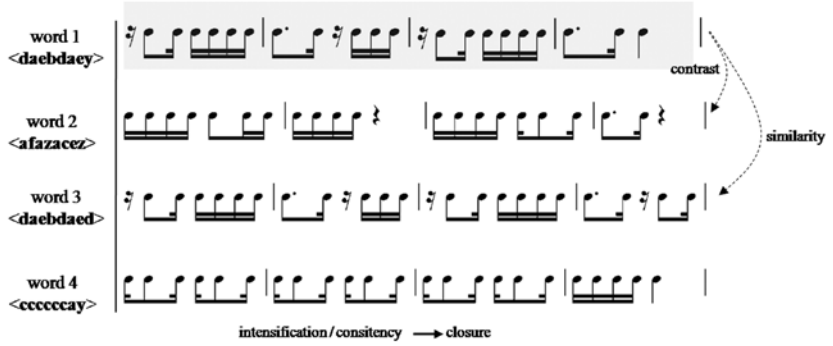

Figure 10. Example of construction of a sentence from a given word

Even acknowledging the existence of some alternative procedures in real *choros* (like that composed by Pixinguinha), the above presented sentence pattern is statistically very recurrent (see an example in Figure 11), what makes it perfectly adequate as one of the model's building strategies, according to the research's objectives.

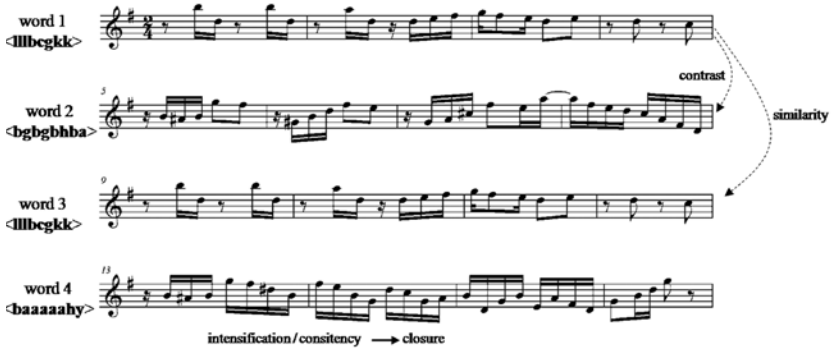

Figure 11. Sentence (part A) in *Os Oito Batutas* (Pixinguinha & Benedito Lacerda)

6. Conclusions

Although the present branch of the main research is still at an early stage, the results until now obtained by the statistical analysis of Pixinguinian pieces are quite promising, considering the processes of construction of the *choro* model, and the formalization of a set of syntactic rules, which will consist the basis for the future program for idiomatic composition of *choro* variations.

Three conclusions of this study are especially meaningful and deserve to be summarized: (1) formal, harmonic, melodic, and rhythmic structures in *choros* present multilayered, hierarchical organization, as well strong correlations; (2) among these structural domains, the rhythm seems to be the most complex, and decisive factor

for the stylistic characterization. This may be due to its combinatorial nature, what raises two important questions: how does a *choro*'s composer (or improviser) makes his or her adequate choices of letters and syllables? Why are few syllables or words so recurrent while many and many other possible combinations never occur? The search for the answers of both questions is of central importance for the continuation of this research, especially taking into account the issue of *choro* idiomatics; (3) by addressing the rhythmic levels in isolation, it is possible to affirm: (a) the peculiar frequency of distribution of the basic construction unities – the letters – in the *choro* alphabet can be considered a kind of idiomatic filter, since it prevents the propagation of ill-formed (i.e., non-characteristic) structures to the higher levels; (b) while the syllables correspond to a kind of semantic component in *choros* (since they are linked to the motivic characterization in the phrases),[15] the words (and, by extension, the sentences) act rather as syntactic forces, in close conjunction with the formal and harmonic structures, in favor of the musical narrative organization.

All of these facts suggest that the creative processes for (conventional or improvised) composition of idiomatic variations in *choros* evolve – intuitively, of course – through intense interaction of the several levels of those structures. The deep understanding of these processes is the key for their systematical reproduction.

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Santrauka

Braziliškojo *Choro* ritminės struktūros hierarchinė ir kombinacinė prigimtis

Straipsnio tikslas – pristatyti kai kuriuos rezultatus iš didžiulio tyrimų projekto, skirto sisteminėms studijoms apie Schoenbergo varijavimo principus ir pagrindinę formą (*Grundgestalt*) iš analitinės ir kompozicinės perspektyvos. Šis požiūris yra taikomas tyrinėjant variacijų technikas *choro* muzikoje (dažniausiai improvizuojamos prityrusių atlikėjų) – brazilų populiariosios muzikos žanre, kuris atsirado Rio de Žaneire XIX a. II pusėje. Pagrindinis darbo tikslas – idiomatinių variacijų kūrimo proceso analizė *choro* žanre. Šiuo tikslu bus kuriama kompiuterinė *choro* variacijų algoritminės kompozicijos programa, kuri veiks pagal muzikinės konstrukcijos taisyklių rinkinį, sukurtą pagal modeliuotą *choro* abstrakciją. Šis modelis konstruojamas remiantis duomenimis, gautais iš statistinės Alfredo Viana Filho (Pixinguinha) 78 kūrinių analizės, apimančios keturis glaudžiai susijusius struktūrinius aspektus (formą, harmoniją, melodiją ir ritmą), kurie suformuoja daugiasluoksnę hierarchinę sąrangą.

Trumpai panagrinėjus pagrindinius *choro* modelio formos, harmonijos ir melodijos bruožus, susitelkiama ties ritmine struktūra. Būdama sudėtingesnė už kitas sritis, ji apima keturis organizavimo lygmenis, atitinkančius skirtingus laiko matmenis: 1) metro lygmuo (ketvirtinė nata); 2) takto lygmuo (*minim*); 3) frazės lygmuo (4 taktai); 4) partijos lygmuo (16 taktų). Šiems keturiems lygmenims buvo sukurta speciali iš lingvistikos pasiskolinta analitinė terminologija (raidė, skiemuo, žodis ir sakinys), ji remiasi kombinacine *choro* muzikos ritmo sudėtimi ir yra panaši į žodžių formavimo procesus kalboje. Pirmas lygmuo yra siejamas su būdingomis *choro* ritmo ląstelėmis. Šiame modelyje ritmo ląstele laikoma ne tiek paprasčiausia trukmių seka, kiek tarp atakų susidarančių intervalų struktūra (Temperley, 2001); tada kompaktiškiausias tokios struktūros apibūdinimas yra raidė. Statistinė analizė rado 19 tokių raidžių Pixinguinha atliekamoje *choro* muzikoje, kurios suformuoja modelio ritminę abėcėlę.

[15] As a recent refinement for the model, it is being considered the possibility of creation of a new rhythmic element – the morpheme – intermediate level between syllable and word. In contrast with the other types, the morpheme would not be associated to a fixed time span, functioning as kind of meaning unity. This issue will be properly treated in future studies.

Antrame lygmenyje dviejų raidžių sujungimas suformuoja skiemenį. Įvykiai šiame lygmenyje atitinka motyvinę *choro* dimensiją. Trečiame lygmenyje iš keturių skiemenų junginio gaunamas žodis. Pastebėtina, kad skiemenų ir žodžių formavimo procesas nėra savavališkas, nes ne visos įmanomos kombinacijos idiomatiškai yra teisingos, – tiksliau, neteisingos yra dauguma galimybių (kaip ir kalbos žodžiai nėra laisvo raidžių perstatymo rezultatas). Ketvirtame lygmenyje keturi žodžiai sujungiami į sakinį, kurio išdėstymas priklauso nuo atitinkamų formos ir harmoninių frazių funkcijų. Vienas iš pagrindinių šio tyrimo tikslų – nustatyti idiomatiniu požiūriu teisingus skiemenų, žodžių ir sakinių kombinacijų pasirinkimo kriterijus bei numanomas sintaksės taisykles, numatančias ritmo konstrukciją.

Heidi Chan

Exploring *Nadai* – The Concept of Beat Subdivision in South Indian Music

Introduction

This paper aims to explore a rarely-discussed element in Karnatic percussion performance, namely, the concept of beat subdivision, referred to in the Tamil language as *nadai* (*gati* in Sanskrit). One reason for this oversight may be the fact that within the Karnatic tradition, *nadai* is considered a practical and performance element, and as a result little has been written about it in a theoretical or academic context. As a student of the South Indian frame drum, the *kanjira,* the concept of *nadai* is fascinating in its aesthetic and cosmological implications, and, as a performer, the result of practical training in changes in beat subdivision (*nadai bedam*) through various kinds of rhythmic exercises, has brought about a palpable enhancement and improvement in the author's musicianship and rhythmic sensitivity across multiple styles of music. It is hoped that this paper can make a modest contribution to the study of this elusive but significant aspect of South Indian music.

1. Brief Overview of South Indian Classical (Karnatic) Music

Karnatic music, the classical tradition of South India, is generally regarded to have emerged out of the bifurcation of India into the North and South in the 13th century. While music in Northern India was transformed through the permeation of Islamic culture and evolved into the Hindustani tradition, music in the Southern provinces of Karnataka, Andhra Pradesh, Tamil Nadu, and Kerala developed, relatively undisturbed by external influences, into the classical tradition known today as Karnatic music. Although the repertoire, instruments, and aesthetic of Hindustani and Karnatic differ greatly, both traditions are rooted in two grand musical systems, the melodic framework of the *raga* and the rhythmic framework of *tala*. The word *raga,* derived from the Sankrit *Ranj* meaning "to color," is a system of modes which provides structural and aesthetic form to the tradition's melodic realmof musical performance: "In the language of music the arrangement of notes which color or affect certain emotion of the mind is called *Raga*" (Kanhere 1926: 109). The term *tala,* while denoting the rhythmic system as a whole, also refers specifically to rhythmic cycles of various lengths by which compositions are temporally structured.

As the music of both North and South India originated from the sacred and highly ritualized Vedic chants, Karnatic music is essentially devotional in nature. Temporal and melodic units of music are conceived to reflect the order of the cosmos and the ideals of Hindu deities; songs are composed and performed in the worship and adulation of gods. In addition, the symbolism and significance of certain numbers figure prominently across Indian music, religion, and visual art, such as traidic (3), quadratic (4) and pendatic (5) structures. The origin of music itself is mythologized as an emanation from the acts of the most powerful of Hindu deities and their offspring and incarnations: Siva and his consort Parvati, Krishna and Rama, incarnations of Vishnu, and many others (Sankaran 1994: 3–4). The act of making music is considered not only as a form of entertainment, but as one of the legitimate paths towards spiritual salvation and union with the Absolute.

Among the pioneers of Karnatic music, four should be noted here: Purandaradasa (1484–1564), considered the "grandfather of Karnatic music," and the Karnatic Trinity of the 18th century, Thyagaraja, Muthuswami Dikshitar, and Syama Sastri, who ushered in a new era in the tradition through their prolific output of compositions and establishment of new musical and aesthetic conventions (Sankaran 1994: 10).

2. *Laya* and *Tala*

As mentioned above, the musical lineage of India can be traced back to the ritualistic music-making associated with the ancient Vedas, and many of the concepts that form the bedrock of Karnatic music today can be found to derive their significance from the earliest times in India's musical history. Two overarching concepts pertinent to the discussion of Karnatic rhythm are *tala* and *laya*, and warrant a closer examination before delving into the concept of *nadai*. They are also essential terms for the understanding of Karnatic rhythmic theory as a whole.

Tala is a term that encompasses both general and specific definitions in the Indian rhythmic system. In a general sense, *tala* refers to all aspects related to rhythm. Sarngadeva, author of the 13th-century music treatise *Sangitaratnakara,* expresses the idea that *tala* is at the root of all forms of Indian music, including

vocal, instrumental, and dance (Sankaran 1994: 14). In Bharata's *Natya Sastra* (c. 200 BCE – 200 AD), the definitive Indian treatise on the performing arts, one whole chapter is devoted to the concept of *tala,* and in the earliest commentary of the *Natya Sastra,* the *Abhinababharati* by Abhinavagupta, the meaning of *tala* is further articulated as a principle of equilibrium in both musical and cosmological contexts:

> *[T]ala,* of all the musical dimensions, has been assigned the major responsibility for coordinating, integrating, and maintaining control over all aspects of the performance. The correct performance of ritual is obviously no small matter, and the benefits of *tala* were intended to go far beyond the admitted pleasures of musical rhythm. And similarly, the equilibrium that Abhinavagupta praises, visualized in the form of Siva's celebrated pose as Lord of the Dance (Nataraja), is something more than a state of simple physical balance or repose; it is the state of cosmic equilibrium precariously maintained in the midst of the continuous creation, preservation, and destruction of the world, its forms, and its creatures (Rowell 1992: 188–189).

On a more specific structural level, the term *tala* refers to a cycle of traditionally determined rhythmic units. The *talas* in use today include a system called the Suladi Sapta Talas first recorded in the 16th century; *Chapu talas,* originating from historic folk traditions, and *talas* of specific metric schemes, such as those from the Tiruppugazh devotional hymns of the 15th century (Sankaran 1994: 16).

The *tala* is the rhythmic framework over which solos are played. It functions simultaneously as time-keeper, marking the equidistant pulses of the cycle, and as time-marker, by stressing particular beats of the cycle through specific hand gestures. The following transcription excerpt from Trichy Sankaran's *Rhythmic Principles and Practice of South Indian Drumming* (Lalith Publishers, 1994) illustrates, through Western notation, the relationship between the common 8-beat *adi tala* and a composed percussion solo known as a *koraippu.* The gestures and time-markings of the *tala* are indicated by the symbols "X," "I," and "O" above the notated solo, where "X" represents a hand clap, "I" represents finger counts, and "O" represents a wave of the hand.

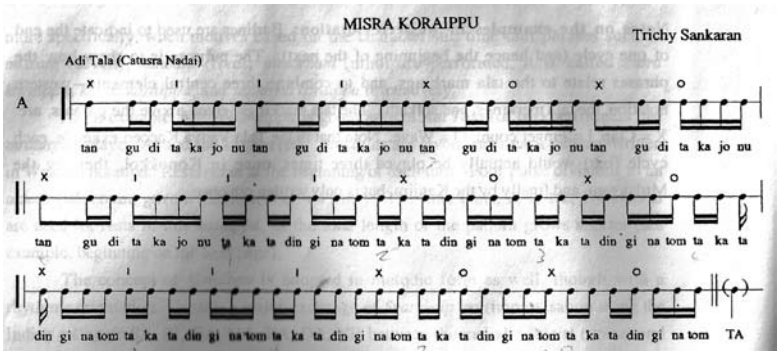

Figure 1. "*Misra Koraippu*" excerpt. From Sankaran, Trichy (1994). *The Principles and Practice of South Indian Drumming.* Toronto: Lalith Publishers, p. 150

Laya, as mentioned, is another important concept in the discussion of *nadai.* It denotes the tempo or speed of a composition, temporal space, and the overall concept of the flow of time. *Laya* also implies degrees and relations of tempi. One common scheme used in Karnatic music is the slow-medium-fast speeds expressed in the ratio of 4:2:1 (*trikalam*). Playing in *trikalam* is used as a training tool for developing a performer's sense of rhythmic flow and temporal relationships, and as an embodiment of the principle of doubling which is used often in composition and improvisation.

On practical level, *laya* also implies keeping and performing at a steady tempo, and this is an important point to remember in the discussion of *nadai* to which the discussion will continually refer – keeping a steady tempo, and maintaining a steady *tala,* is what provides the rhythmic context for changes in beat subdivisions. And she who performs *nadai* changes is also one who must master her internal sense of tempo, sense of *laya.*

In ancient times, the technicalities of chant recitation and its proper performance had religious implications. While today's repertoire is generally detached from ritualistic repercussions (although much of it is still devotional in nature), mastery of *laya* is still a highly regarded skill among all musicians, and one who is considered such a master is known as a *laya vidwan.* Other terms used in Indian music nomenclature include *laya-suddam* (accuracy of tempo), and *layajnanam* (knowledge of time) (Sankaran 2010: 27).

Laya is also one of the ten theoretical principles that comprise the *Tala Dasa Pranas,* the Ten Vital Elements of Tala, which form the theoretical basis of modern Karnatic music. The ten principles are listed below with a brief description:

Kala – the division of time into units; a conceptual unit of time
Marga – measure of the density of musical events; rhythmic construction or poetic setting of a melody
Kriya – method (i.e. gesture) of indicating beats of a *tala* – distinguished as sounded (*sasshabda*, e.g. hand clap) or unsounded (*nisshabda*, e.g. hand wave)
Anga – traditionally describe divisions of a *tala akshara* (1 beat), *drutam* (O - 2 aksharas; clap + wave) *anudrutam* (U - 1 akshara; clap) *laghu* (I - variable aksharas; clap + finger counts);
e.g. Adi Tala = Chatusra Triputa Tala (I4 O O) = 8 beats
Jati – "classification"; basic lengths of rhythmic units:
Chatusra (4) – "ta ka di mi"
Tisra (3) – "ta ki ta"
Khanda (5) – "ta ka ta ki ta"; "ta din gi na tom"; etc.
Misra (7) – "ta ki ta ta ka di mi"; "ta - din - gi na tom"
Sankirna (9) – "ta ka di mi ta ka ta ki ta"; "ta - din - gi - na - tom"; etc.
Graha – position of the beginning of a composition
Kalai – method of stretching a tala cycle exponentially, e.g., 2x, 4x, 8x; related to slower tempo
Laya – the concept of time, tempol the inwardly flow of rhythm; the term under which nadai is found
Yati – geometric shapes that give form to various arrangement of rhythmic patterns; can be applied to text, melody, rhythmic patterns, etc.
Prastara – "to spread out"; method for dealing with logical and mathematical process of permutations and combinations of rhythmic factors, e.g., 9 = 4+5 or 3+6 or 2+2+2+3, etc.

While it must be acknowledged that all these concepts are interrelated and should be viewed as a whole to form a comprehensive understanding of Karnatic rhythmic theory, for the purposes of this discussion, we shall focus on two principles that relate most intimately to *nadai*. We have covered concept of *laya* above, and shall presently take a more in-depth look at *jati*.

The *Jati* classification is an important one, for it is applicable to various levels of the musical structure. These units can be applied to the *tala* itself, by defining the lengths of and expanding the number of *talas* that can be used. The application of five *jati* combined with seven combinations of *anga*s results in the 35 Sapta Talas.

The 35 Talas of the Sapta (Seven) Tala System

Seven Talas	Jathis	Anga Structure	Aksharas
Dhruva Tala	Chatusra	I^4 O I^4 I^4	14
	Tisra	I^3 O I^3 I^3	11
	Misra	I^7 O I^7 I^7	23
	Khanda	I^5 O I^5 I^5	17
	Sankirna	I^9 O I^9 I^9	29
Matya Tala	Chatusra	I^4 O I^4	10
	Tisra	I^3 O I^3	8
	Misra	I^7 O I^7	16
	Khanda	I^5 O I^5	12
	Sankirna	I^9 O I^9	20
Rupaka Tala	Chatusra	O I^4	6
	Tisra	O I^3	5
	Misra	O I^7	9
	Khanda	O I^5	7
	Sankirna	O I^9	11
Triputa Tala	Chatusra	I^4 O O	8
	Tisra	I^3 O O	7
	Misra	I^7 O O	11
	Khanda	I^5 O O	9
	Sankirna	I^9 O O	13
Jhampa Tala	Chatusra	I^4 U O	7
	Tisra	I^3 U O	6
	Misra	I^7 U O	10
	Khanda	I^5 U O	8
	Sankirna	I^9 U O	12
Ata Tala	Chatusra	I^4 I^4 O O	12
	Tisra	I^3 I^3 O O	10
	Misra	I^7 I^7 O O	18
	Khanda	I^5 I^5 O O	14
	Sankirna	I^9 I^9 O O	22
Eka Tala	Chatusra	I^4	4
	Tisra	I^3	3
	Misra	I^7	7
	Khanda	I^5	5
	Sankirna	I^9	9

Figure 2. The Sapta Tala System. From Sankaran, Trichy (2010).
The Art of Konnokol: The Spoken Rhythms of South Indian Music. Toronto: Lalith Publishers, p. 37

Jati groupings also apply directly to *nadai*, providing the five traditionally determined beat subdivisions that are in use today. The five *nadai* on their own can be illustrated below in more familiar Western notation, accompanied by traditional syllabic patterns used to denote each *nadai*:

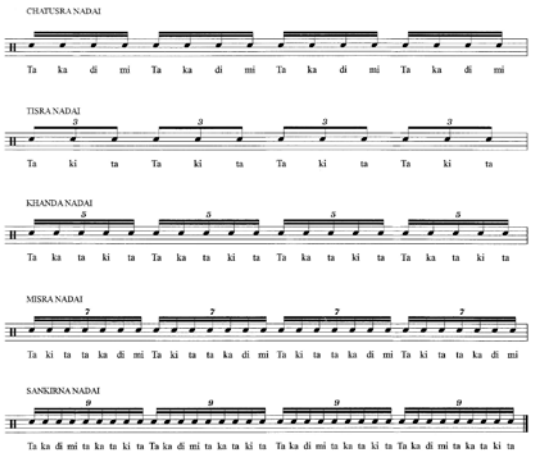

Figure 3. *Nadai* in Western notation

3. The Concept of *Nadai*

The concept of *nadai* essentially refers to the subdivision of a beat into a specific number of isometric pulses. It has been defined as "the number and the rate at which the inner pulse divisions move within the tala beats" (Sankran 2010: 28), where an *akshara* refers to a beat, e.g., *adi tala* has 8 *aksharas.*

Angas	I *laghu*				I *drutam*		I *drutam*	
Aksharas	1	2	3	4	5	6	7	8
Counting	clap	(2)	(3)	(4)	clap	wave	clap	wave

Figure 4. The structure of a *tala*

More pertinent to the Karnatic performance tradition is the act and skill of *changing* beat subdivisions in performance, known as *nadai bedam* (*darja laya* in the Hindustani tradition) and the aesthetic value of using specific *nadai*s during improvisation. Instances of the use of tradition-specific *nadai*s include those found in the Tiruppugazh tradition (Sankaran 1989) and in the temple drumming of Kerala (Groesbeck 2003).

Nadai appears as an extension of the concept of *laya* in the *Tala Dasa Pranas*, where it underscores the significance in Karnatic music of maintaining a sense of steady tempo in performance. Maestro Trichy Sankaran offers further insight into the relationship between *nadai* and the mastery of *laya:* "Perfect sense of *laya,* mathematical precision, and articulation are fully in demand for a command over intricate *nadai* changes... [and m]aintaining a steady tempo for the tala throughout a musical composition is one of the stipulated principles of South Indian performance practice" (Sankaran 1994: 25).

The concept and practice of beat subdivision or pulse modulation is, of course, not unique to Karnatic music. Jazz, popular progressive and fusion styles, and many classical and contemporary works employ changes in beat subdivisions as a display of rhytmic virtuosity. But what is unique is the cultural context in which such practices are found. As Lewis Rowell expresses eloquently in his article for the Music Academy of Madras:

> There is no doubt that most rhythmic phenomena submit readily to precise measurement... I do not dispute the accuracy of the results – I simply fail to find the interesting beyond a point. What I do find deeply, absorbingly interesting are the experiential qualities of rhythm and the conceptual structures man has devised with which to organize his intuitions of the temporal phenomena in music. Some of these concepts may indeed arise from a certain broad class of universal experiences, but it is the cultural interpretation we place upon them, the way in which they embody and express our preferences and values, that gives them meaning (Rowell, 1986: 84).

The five *jati* classifications also not arbitrarily assigned numbers, and evidence of the relationship between numbers and their representation of cosmic principles is abundant, well-documented, and oft-quoted in literature on Indian music. David M. Knipe's highly informative article of the use of numbers in Vedic symbols (1972), in particular the relationships between the numbers three, four, and five (as well as the principle of x plus 1),

offers numerous additional references in the ancient texts, and Lewis Rowell's seminal study of ancient Indian musical thought makes note of similar number symbolisms (1992: 61–64; 218–219). Sankaran (1994: 27) mentions possible mythological/cosmological origins of the *nadai*s, including the origin of the particular order in which the they appear today, i.e., 4, 3, 7, 5, 9, through references to the dances of Lord Shiva as told in the *Bharatarnava of Nandikeshvara,* a compilation of rare texts pertaining to dance and music, and *The Ocean of Rhythm*, a 17th-century work on *tala* by Vanapada Chudamani. Of particular interest here is that *chatusra nadai* (4) is used by Lord Shiva before *tisra nadai* (3), and *misra* (7) being a combination of the first two, appears before *khanda* (5), which literally means "split," being the sum of 3 and half of 4, and *sankirna* literally means "composite" and is believed to encompass several mixed *nadais* until it evolved into referring specifically to 9 in modern usage. This idea of combination and permutation of numbers appears across all levels of Indian musical thinking, especially in the systematization of rhythmic principles, as evident in the *Tala Dasa Pranas,* and also in practical exercises which will be presently discussed.

Let us summarize the features of *nadai* before looking at some examples of its use in exercises and cadential compositions. First, *nadai* is considered a practical, performance aspect. This was explained once in a conversation between the author and Professor Trichy Sankaran, where the latter explained that if one was to only hear a *tala* being played without any additional pattern, there would be no way of discerning the *nadai* of the piece. The conception of *nadai* as a performative aspect also underscores the directness and transience of the musical experience in oral traditions, where music is perceived aurally and orally first and foremost.

Secondly, from the author's experiences as a student of the *kanjira,* training in *nadai bedham* becomes a profound training tool for musicianship and rhythmic stability and versatility. In Karnatic percussion lessons, *nadai* is used as a transposition tool, where one exercise can be modulated to be performed at different beat subdivisions. Transposing an exercise into different *nadai*s also helps reveal varying rhythmic relationships between certain patterns and the underlying *tala.*

As mentioned above, the other essential element in understanding *nadai* and *nadai bedham* is the steady tempo that must be maintained. In other words, modulations in beat subdivision is only possible through the steadiness of the *tala;* modulation in the inner division of a pulse or beat can only be effectively realized when the beats or pulses themselves progress at a steady rate. This one practical aspect of *nadai,* in a way, embodies and conveys many of the aesthetic values of Karnatic rhythm – the musical and ideological implication of keeping steady *laya,* the derivation of musical variety and demonstration of rhythmic virtuosity through rhythmic transposition, and the inseparability of musical methods and ideas from their cosmological and philosophical origins.

4. Examples of *Nadai* – Exercises

The remainder of this discussion focuses on illustrating the practical use of *nadai* through a presentation of rhythmic exercises. The following examples and descriptions are drawn from the author's own training in the *kanjira* with *mrdangam* master Trichy Sankaran, and from Sankaran's own examples in his textbooks. Most of the examples used are short compositions called *korvais,* which literally means "strung together," and is a common cadential form consisting of various phrase structures arranged in sequential order following traditionally used *yati,* or geometric shapes representing the principles of reduction and expansion. The *korvai* is an ingenious musical invention of the Karnatic tradition, which allows almost infinite potential in rhythmic creativity that can be developed within strict formal rules.

Despite the complexity and comprehensiveness of the Karnatic rhythmic system, the beat subdivision by a factor of 4, *chatusra nadai,* is still the most common *nadai* used today, analogous to the Western idea of subdividing a beat into sixteenth notes. This is followed by *tisra nadai,* a subdivision of the beat into 3 or factors of 3, i.e., triplet subdivision. The next two, *khanda* (5) and *misra* (7) *nadai,* is less commonly used as a basic subdivision for entire pieces, and more often as a pulse modulation within improvised or extended percussion solos, as can be found in performance and instructional recordings of Trichy Sankaran (Sankaran 1989, 2006, 2010). On the other hand, the Tirrupugazh tradition mentioned earlier in the discussion has been known to use *khanda nadai* as an essential beat subdivision within its repertoire (Sankaran 1989), and it should be noted that *sankirna* nadai is essentially an extension of *tisra* nadai in that it is also based on the factor of 3.

The following simple *korvai,* realized in the rhythmic context of the 8-beat *adi tala,* illustrates the commonly used *chatusra nadai,* as well as the principle of reduction that is the essence of the *korvai* form, which is traditionally symbolized by the *gopuccha yati*, or the shape of an upside-down triangle. The syllables used here are known as *solkattu* or *konnokol,* the system of spoken rhythms used in Karnatic music as a pedagogical

tool for percussion instruction, where each syllable corresponds to a particular drum stroke on the *mrdangam* or *kanjira*. Having said that, *solkattu* can also be used outside of drumming instruction, as a performance art form in itself, and at times, a musician who strictly performs *solkattu* can be found among a Karnatic percussion ensemble known as a *talavadya kacceri.* The study and art of *solkattu* is a vast subject in itself and many of its features and usage are beyond the scope of this discussion, but suffice to say that it is one of the most distinctive and accomplished rhythm pedagogies of any oral musical tradition. In written form, *solkattu* acts as a effective tool for the delineation of rhythmic patterns and phrases as seen in the following example, in combination with and in relation to the indication of the *tala* notated above the *korvai*. Other elements to note is the starting point of the *korvai.* In the Karnatic tradition, the ending point of any musical structure, whether a cadence or an entire composition, is always *sam,* or the first beat of the *tala.* Therefore, it is essential for the student to know where the *korvai* must start in order for it to end on *sam.* This is essentially a mathematical skill that is developed through such exercises, but, as seen through virtuosic performances of performers such as Sankaran, this skill goes far for percussionists who can calculate the number of beats within which complex *korvais during* an improvisation such that their solos will still end on *sam.* In the case of our small example, the *korvai* begins on beat 5 of the *adi tala* cycle.

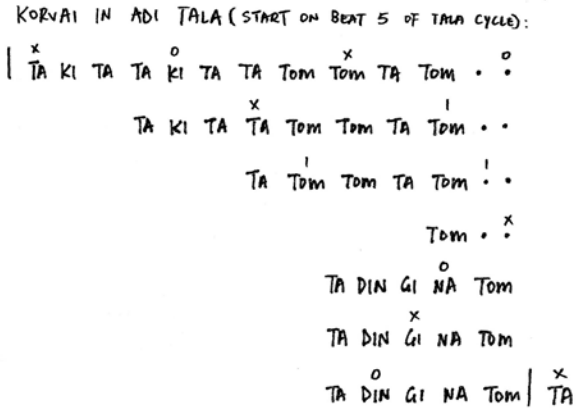

Figure 5. *Korvai* in *adi tala, chatusra nadai*

The next example is a *korvai* similar to the one above in terms of the phrases and method of reduction used, but one quarter-beat rest is added between each of the phrases (represented by a dot), an additional "ta din gi na tom" at half speed is inserted before the the final isometric threefold repetition of the phrase "ta din gi na tom" (a smaller structure known as a *mora*) is performed in *tisra nadai.* Note that these small changes – an additional quarter-beat between phrases, the addition of a single short phrase, and the *nadai bedham* at the end, results in the *korvai* starting on beat 1 instead of beat 5 of the same *tala.* Thus, learning and practicing these two *korvais* enables the student to understand and process how patterns and phrases are shifted within the *tala* as a result of small variations, and the precise starting and ending points within the *tala*, which are extremely important in the culture-specific context.

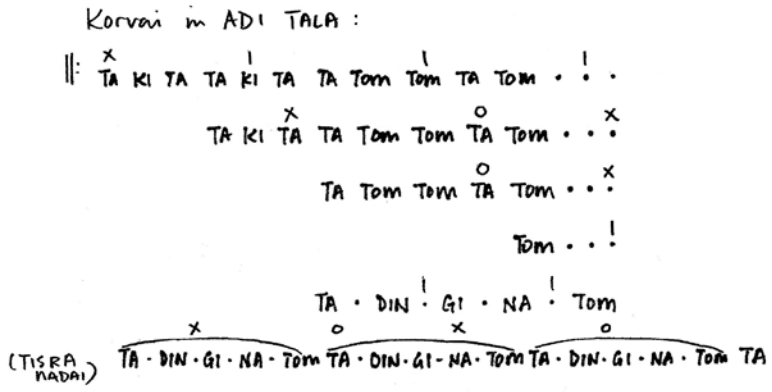

Figure 6. *Korvai* in *adi tala, chatusra nadai*, with end *mora* in *tisra nadai*

Below is a simple and short *korvai*, referred to as the "9-7-5-3" exercise, that can be performed as an exercise in both *chatusra* and *tisra nadai,* and, as indicated in the note above each exercise, in different tempos, i.e., half speed and double speed. Again, the reductive principle is used here on the phrase "tom - ta - tom - ta ki ta". In fact, any exercise can and is encouraged to be practiced in different tempos, as well as from one *nadai* to another as a way to develop one's sense of *laya.*

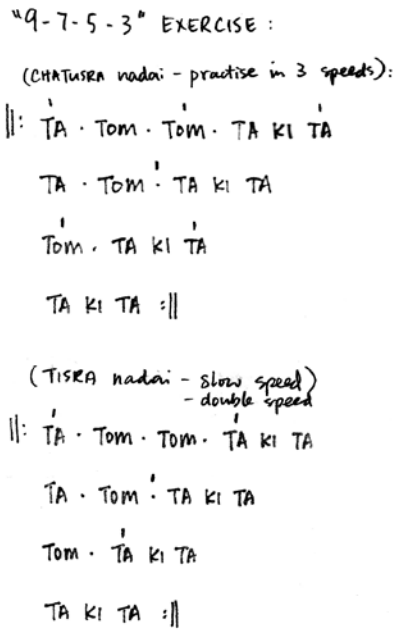

Figure 7. "9-7-5-3" exercise, in *chatusra nadai* and *tisra nadai*

The next example is a *korvai* that has been adapted to a number of lessons in the author's study of the *kanjira*. It was first used as an exercise in playing in the *khanda chapu tala,* a 5-beat folk *tala,* as well as for practicing *nadai* changes between *chatusra* and *tisra*. It was also used for familiarization with the commonly used phrase "ta din gi na tom," which could be replaced in the exercise with variations such as "ta ki ta kita tom" or "kitataka tom taka tom." The exercise in *chatusra* and *tisra* nadai is indicated in Figure 8.

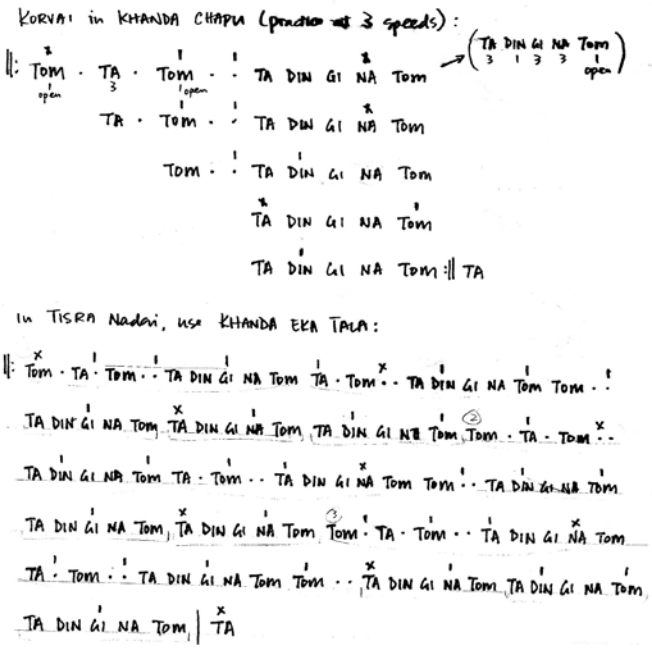

Figure 8. "Tom Ta Tom" *korvai* in *chatusra nadai* and *tisra nadai*

This same *korvai* was later transposed to *khanda nadai*, in which case it fits within one cycle of *adi tala.* The phrase "ta din gi na tom" was then expanded to a 7- and 9-unit phrase, by systematically adding two and four quintuplet beats respectively, resulting in the 7-unit phrase "ta . ta din gi na tom" and 9-unit phrase "ta . di . ta din gi na tom." These expansions were inserted into the exercise, so that the original *korvai* was repeated three times in succession within 4 cycles of *adi tala*, as shown in Figure 9.

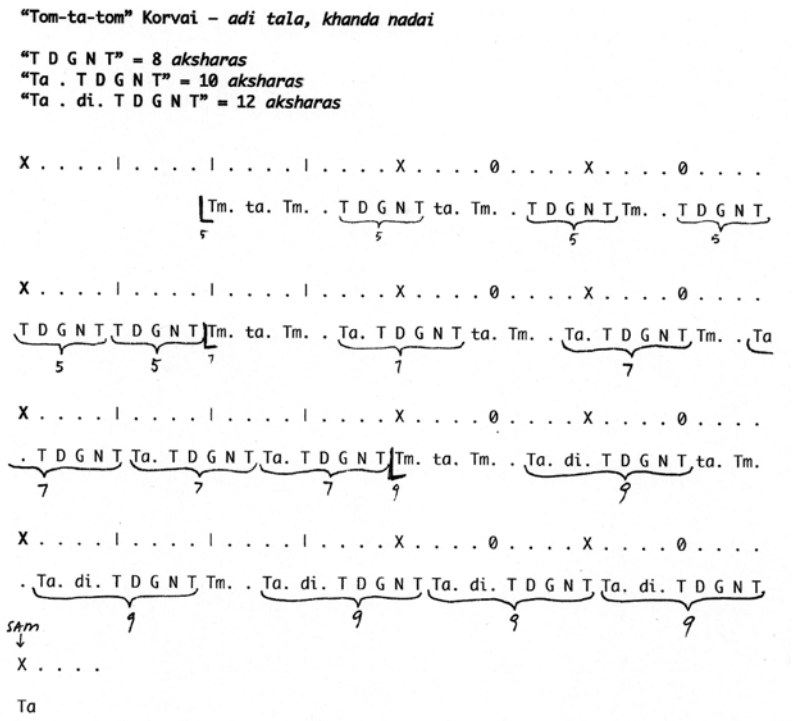

Figure 9. "Tom Ta Tom" *korvai* repeated 3 times in succession,
with expansion of the phrase "ta din gi na tom," in *adi tala, khanda nadai*

Finally, Sankaran offers some simple exercises in the other two *nadai*s, *misra* and *sankirna*, rendered in Western notation in his textbook on *solkattu* (Lalith Publishers 2010) (Figure 10).

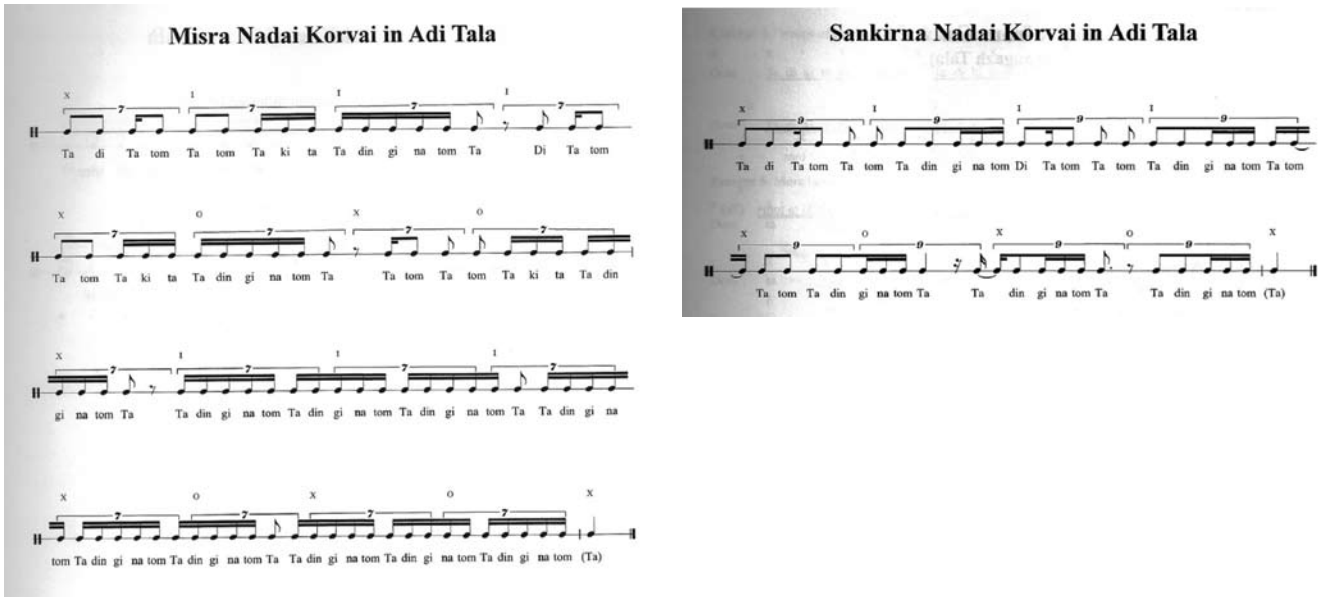

Figure 10. Exercises in *misra* and *sankirna nadai.* From Sankaran, Trichy (2010).
The Art of Konnokol: The Spoken Rhythms of South Indian Music. Toronto: Lalith Publishers, p. 83 & 85

These exercises presented above hopes to demonstrate, if only in an introductory way, the power of applying the concept of *nadai* within the Karnatic context to transform simple phrases, patterns, or sequence of patterns into more complex compositions and rhythmic counterpoint, by integrating the concept of beat subdivision with other transformational principles such as expansion and reduction. Sankaran and many other percussion masters in the Karnatic tradition, the true *laya vidwan*s, have demonstrated in numerous performances their virtuosic command of *laya* and creative use of *nadai* in traditional repertoire, percussion solos, and rhythmic exchanges in *talavadya kacceri* ensembles.

Conclusion

The principle of *nadai* in Karnatic music is firmly rooted in the concepts of *laya* and *tala* within the South Indian rhythmic system. Rhythm and the more general concept of the flow of time in the musical traditions of India have always occupied great cosmological and philosophical significance, for the Indian world view has always engaged in the interplay of diversity in unity, and the juxtaposition of variation with constancy. These dichotomies are represented through the genius of Indian music throughout its history, and the concept of beat subdivision and its modulation within the context of a steady, consistent *tala* is as good a manifestation of this philosophical outlook as one can find in the musical system of South India. *Nadai,* although traditionally regarded as a performative aspect, nevertheless embodies certain aesthetic values and ideals associated with Indian mythologies, through its connection to the concept of *laya* and the challenge of executing the time-keeping function of the *tala* with mastery and consistency. Although the Karnatic rhythmic system is a complex framework of formal principles and structural concepts, an overview of some of the more important ones, namely, *tala, laya,* and *jati,* was helpful in grasping a better understanding of how the concept of *nadai* functions in a culture-specific context. Through examples of rhythmic exercises from the author's own training on the *kanjira, nadai* in fact functions as a versatile transpositional tool for rhythms and enable a performer to create immensely complex rhythmic counterpoint against the all-pervasive *tala.*

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Santrauka

Tyrinėjant *nadai* – ritmo subdivizijų koncepcija Pietų Indijos muzikoje

Tamilų terminas *nadai* (arba sanskrito kalba *gati*) randamas Pietų Indijos (Karnatakos regiono) ritminėje sistemoje, apibūdinant muzikinio pulso ritmines subdivizijas. Tai yra ir *laya* koncepcijos komponentas, vienas iš dešimties Pietų Indijos ritmo teorijos principų, *Tala Dasa Pranas*. Pagal platesnę *laya* sampratą (ji pažymi tempo pojūtį ir tvarkingą laiko tėkmę) *nadai* rodo „greičio ar judėjimo tempą" arba „skaičių ir tempą, pagal kurį vidinės pulso divizijos tampa žinomos kiekvienam *ashkara* (metro daliai) ar *tala* (ritminiam ciklui)" (Sankaran 1994: 25). *Nadai* gali būti laikomas Vakarų muzikos metro ir poliritmijos koncepcijų atitikmeniu.

Vis dėlto jeigu muzikinio metro principai Vakaruose tapo daugelio kompozicijų, teorinių diskusijų ir ritmo analizės studijų objektu (Cooper ir Meyer 1960; Magadini 1968; Schillinger 1966), *nadai* koncepcija Karnatakoje nebuvo dažnai nagrinėjama akademinėse ar teorinėse diskusijose. Tai susiję su tuo, kad *nadai bhedam* – vidinio pulso dalijimo kaita – Karnatakoje laikoma labiau praktiniu ir taikomuoju įgūdžiu, o ne teorine koncepcija. Nors moduliavimo tarp metrinės kaitos teorija ir praktika nėra būdinga vien tik Karnatakos tradicijai, šiame straipsnyje siekiama nušviesti estetines ir muzikines *nadai* vertybes Pietų Indijos

muzikos kontekste – jį sudaro muzikos kaip visumos ryšys su kosmologiniais principais ir tam tikrų skaičių svarba išreiškiant tokius idealus.

Straipsnyje siekiama išaiškinti *nadai* koncepciją Karnatakos ritmo sistemos kontekste, ypatingą dėmesį skiriant pamatiniams Karnatakos muzikos klausimams – *tala* ir *laya*, kurie yra neišvengiami aptariant *nadai*. Apžvelgus Karnatakos muziką, susitelkiama į *nadai* kaip performatyvią ir praktinę koncepciją. Ji iliustruojama pavyzdžiais, kuriuos autorė išmoko *kanjira* (Pietų Indijos rėminis būgnas) studijų metu pas Trichy Sankaran, garsų *mrdangam* meistrą, Toronto Yorko universiteto Pietų Indijos muzikos profesorių, novatoriškų knygų apie Karnatakos būgnijimą ir tradicinę kalbamųjų ritminių skiemenų sistemą *solkattu* autorių.

Kalliopi Stiga

Rhythm and Greekness in the *Cities* of Mikis Theodorakis

Four notes and a rhythm, the *syrtaki* rhythm, were identified with Mikis Theodorakis and Greek music.

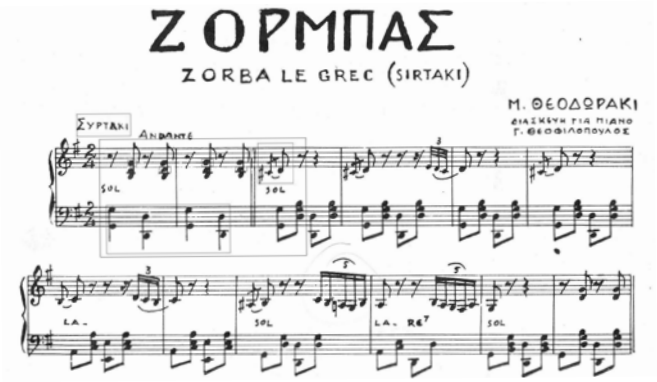

Figure 1. *Zorba's dance*

It is the melodic-rhythmic theme of Zorba's dance, which was immortalized in the homonym film *"Zorba the Greek"* (1964) by the prominent Cypriot filmmaker Michael Cacoyannis. This dance is rooted in traditional Greek music. Namely, the *syrtaki* dance – a modern and cheerful dance inspired by Theodorakis – emerges from the combination of two Greek folk dances, the *hasapiko* dance[1] and the *hasaposerviko* dance[2].

The use of traditional and popular Greek music rhythms is frequent in Theodorakis' work. The composer was initiated into Greek traditional music during his childhood while he was acquainted with Greek popular music later on, in 1947 during his exile in Ikaria Island, where he heard for the first time the most famous rebetiko song "Captain Andreas Zepos" *(Καπετάν Ανδρέα Ζέπο)* by Yannis Papaioannou written in *syrtos*[3] rhythm (2/4).

Theodorakis was particularly sensitized early on to the concept of the rhythm. During his adolescence, in the early 1940s, he studied thoroughly and he is deeply influenced by the texts of an important Modern Greek poet Costis Palamas[4] (1859–1943). He agreed with the poet's belief that "the rhythm in poetry – the rhythmic walking – symbolizes the rhythm that governs the Universe" (Theodorakis, 1986, vol. 1: 140–141) and moreover, Theodorakis adds the concept of *Harmony*. "That is, the rhythmic Harmony, which one realizes through the motion of the stars when gazing into the celestial vault." (Theodorakis, 1986, vol. 1: 141)

As Theodorakis believes that: "…the Music, diffused as light, forms the acoustical expression of Universal Harmony ... and may lead us to the Law of Objective Truth that governs our journey into the Timeless Time. ... It can unite us with the Centre of Universal Harmony thus helping us climb the highest rung of human happiness, serenity, and perfection" (Theodorakis, 1999, vol. 3: 162), he creates his own "Music Galaxy", consisting of songs, cycles of songs, flow-songs, popular oratorios, chamber music works, symphonic music, music for the theater and the cinema, oratorios and operas.

His main source of inspiration for the creation of this multifarious work is Poetry, which Mikis Theodorakis consults regularly from an early age and he unites it with the *Melos* – melody – and with the Rhythms which contain elements of traditional Greek music – Byzantine music and *demotic* Greek music – as well as of *rebetik* popular music and of classical Western music.

The study of the tetralogy of the *Cities – City A', B', C', D' (Πολιτείες Α', Β', Γ', Δ')* will shed light on the aforementioned.

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1 *Hasapiko* dance: a slow dance from Asia Minor: ♩♩ | ♩♩ or ♫♫ | ♫♫

2 *Hasaposerviko* dance: a fast dance from Macedonia: ♫♫♫♩, ♩♪𝅘𝅥𝅯 or ♫♫♫♩, 𝅘𝅥𝅯♩♪

3 *Syrtos* dance: one of the most popular traditional dances throughout Greece. Its rhythmic pattern can be in 2/2, 2/4, 4/4.

4 Costis Palamas (1859–1943): he has dominated Modern Greek poetry for at least three decades, from 1890. Influenced by the French literary movement of Parnassianism, he adopted the rigorous perfection of the form. Even though he never stated that he belonged to the group of symbolists, the influence of symbolism is obvious in his poetry. He was also influenced by Nietzsche's philosophy and socialism.

It is about four cycles of songs. The first two cycles of songs were composed during the 1960s while the other two during the 1990s, i.e. 30 years later. The comparative study of these four cycles of songs enables us to observe the evolution of the composer's musical language during the thirty years separating the periods of composition of the first two song cycles from the next two. However, it goes without saying that neither the poetic options nor the composer's musical language do not alter between the cycles of songs of the same period, namely between the *Cities A' / B'* and the *Cities C' / D'*. Moreover, the composer himself states that:

"The City B', on a level of music and lyrics, is the natural extension of the City A'." (Flessas, 1994: 20)

More precisely:

The *City A'* was composed in 1960–1961, in Paris. It consists of nine songs:

1. «*Καημός*» (Kaimos) = *Sea of Bitterness*
2. «*Βράχο-βράχο*» (Vracho-vracho) = *Rock of Rocks*
3. «*Το παράπονο*» (To parapono) = *Lonely man's plaint*
4. «*Μετανάστης*» (Metanastis) = *Emigrant*
5. «*Μάνα μου και Παναγιά*» (Mana mou kai Panagia) = *Madonna Mother*
6. «*Έχω μια αγάπη*» (Echo mia agapi) = *My mistress dawn*
7. «*Δραπετσώνα*» (Drapetsona) = *Drapetsona*
8. «*Σαββατόβραδο*» (Savvatovrado) = *Let every night be Saturday*
9. «*Βρέχει στη φτωχογειτονιά*» (Vrechei sti ftochogeitonia) = *Rainfall in my ghetto heart*

on poetry by Dimitris Christodoulou, Tasos Livaditis and Costas Virvos. The work was recorded in the same period, in Athens, by Grigoris Bithikotsis, Stelios Kazantzidis and Marinella, who were accompanied by a popular orchestra under the baton of the composer.

The *City B'* was composed in 1964, in Paris and in Athens. It consists of six songs:

1. «*Στράτα τη στράτα*» (Strata ti strata) = *Youth leaves lightning-swift*
2. «*Είναι μακρύς ο δρόμος σου*» (Einai makrys o dromos sou) = *So far away, be patient*
3. «*Βραδιάζει*» (Vradiazei) = *Evening deep in your eyes*
4. «*Γωνιά-γωνιά*» (Gonia-gonia) = *I search each corner for you*
5. «*Οι μοιραίοι*» (Oi moiraioi) = *Down in the old taverna*
6. «*Η μπαλάντα του Αντρίκου*» (I balanta tou Antrikou) = *Andrew's Ballad*

on poetry by Dimitris Christodoulou, Costas Varnalis, Nikos Gatsos and Panos Kokkinopoulos. The work was recorded in the same year, in Athens, by Grigoris Bithikotsis, who was also accompanied by a popular orchestra under the baton of the composer.

The *City C'* was composed in 1994, in Athens. It consists of ten songs:

1. «*Εκείνα που είχα να σου πω*» (Ekeina pou eicha na sou po) = *All that I had to tell you*
2. «*Έστω κι από λύπη μίλησέ μου*» (Esto ki apo lypi milise mou) = *Talk to me even if it's out of pity*
3. «*Ήσουν μπαξές*» (Isoun baxes) = *You were a garden*
4. «*Ποιοι είμαστε εμείς?*» (Poioi eimaste emeis?) = *Who are we?*
5. «*Η ελπίδα που έλεγες*» (I elpida pou eleges) = *You were talking about hope*
6. «*Ξένος στη στράτα κι ορφανός*» (Xenos sti strata ki orfanos) = *Foreigner and orphan in the street*
7. «*Δεν έχει ο δρόμος γυρισμό*» (Den echei o dromos gurismo) = *There is no way back*
8. «*Το πάθος που διώκεται*» (To pathos pou dioketai) = *Persecuted passion*
9. «*Μιλάω παλιά*» (Milao palia) = *I'm talking old*
10. «*Αχ! Έλα κι άναψε το φως*» (Ach! Ela ki anapse to fos) = *Ah! Come and turn the light on*

on poetry by Manos Eleftheriou, Dimitris Kesisoglou and Lina Nikolakopoulou. The work was presented for the first time and recorded in the same year, in Athens, by Manolis Mitsias.

The *City D'* was composed in 1994–1995, in Athens. It consists of ten songs:

1. «*Ας τους να μας κοροϊδεύουν*» (As tous na mas koroïdevoun) = *Let them fool us*
2. «*Αρχόντισσα μου σιωπηλή*» (Archontissa mou siopili) = *You, my silent Lady*
3. «*Κορίτσι του Οκτώβρη*» (Koritsi tou Oktovri) = *October girl*
4. «*Δεν φταις εσύ που ταξιδεύω*» (Den ftais esy poy taxidevo) = *It's not your fault that I travel*
5. «*Τώρα που φεύγεις*» (Tora pou fevgeis) = *Now that you're leaving far away*
6. «*Χρόνια Φτηνά*» (Chronia Ftina) = *Cheap years*
7. «*Νύχτες φωτογράφοι*» (Nychtes fotografoi) = *Nights photographers*
8. «*Περίμενέ με*» (Perimene me) = *Wait for me*
9. «*Με τις χαμένες τις ψυχές*» (Me tis chamenes tis psyches) = *With the lost souls*
10. «*Σε ποια πατρίδα θες να πας?*» (Se poia patrida thes na pas?) = *In which homeland do you want to go?*

on poetry by Manos Eleftheriou and Spiros Toupoyannis. The work was presented for the first time and recorded in 1996, in Athens, by Petros Gaitanos.

From the **poetic analysis** of the four cycles of songs results:

a. Themes:

– The main themes of the songs of the *Cities A'* and *B'* are:
• the sorrow of exile and emigration; expressed, for example, in the songs *Rock of Rocks*:

Βράχο-βράχο τον καϋμό μου,
τον μετράω και πονώ,
κι είναι το παράπονό μου,
πότε μάνα θα σε δώ.
* * *
Rock of rocks my sorrow,
I count it and I suffer pain,
And my grievance is,
When will I see you again mother.

and *Emigrant*:

Με δέρναν όλοι οι καιροί μου πάγωναν τα μάτια,
μου κάναν πέτρα το ψωμί,
μου κάναν βούρκο το νερό
και την καρδιά κομμάτια.
* * *
I was beaten up by every storm, my eyes were frozen,
they made my bread taste like stone,
they made my water taste like bog
and they broke my heart into pieces.

• the poverty; expressed, for example, in the song *Drapetsona*:

'Ενα κρεββάτι και μια κούνια στη γωνιά
στην τρύπια στέγη του άστρα και πουλιά.
Κάθε του πόρτα ιδρώτας κι αναστεναγμός
κάθε παράθυρό του κι ουρανός.
* * *
A room with a bed and a child's cradle,
the stars decorated the leaky roof.
On each door was sweat and sigh,
on each window was the sky.

• the sad life; expressed, for example, in the song *Evening deep in your eyes*.

Βοριάς χτυπά την πόρτα μου
και στην ψυχή μου αγιάζι
και στα πικρά τα μάτια μου
στιγμή στιγμή βραδιάζει.
* * *
The north wind knocks on my door
and my soul is frozen
and in my bitter eyes
it's getting dark
moment by moment.

These topics directly reflect the historic and social reality of Greece at the time of creating these cycles of songs and they fully express the spirit of the poets: Gatsos, Livaditis and mainly Varnalis, who had participated in the Resistance (1940–1944), in the Greek Civil War (1945–1949) and in general in all the struggles for Freedom, Democracy and Social Justice.

– Unlike the *Cities A'* and *B'*, the themes of the songs of the *Cities C'* and *D'* are characterized by an intense lyricism, entirely personal; they express the innermost concerns of the poets Eleftheriou, Toupoyannis and Nikolakopoulou, by reflecting their soul. More precisely, the songs of the *City C'*, which Theodorakis called *"small wildflowers"* (Tilerama Magazine, 1994, October 29: Untitled Article) and the songs of the *"bittersweet" City D'* (*Ethnos* Newspaper, 1996, October 16: Concerning the *City D'*) refer both to:

• the cruelty of our time; expressed, for example, in the song *All that I had to tell you:*

Εγώ'χα μόνο ένα κορμί
να σου χαρίσω μια στιγμή
και να γελάς.
Μα τις ανθρώπινες ψυχές
τις έβλεπες σα μετοχές
που τις πουλάς.

* * *

I only had a body
to share with you a little moment
and make you laugh.
But you saw the human souls
as shares
to be sold on the stock market.

• the lack of true human relationships; expressed, for example, in the song *Talk to me even if it's out of pity:*

Έστω κι από λύπη μίλησέ μου
έχω ξεπεράσει τις ντροπές
σαν ελεημοσύνη μίλησέ μου
τέλος πάντων πες μου ότι θες.

* * *

Talk to me even if it's out of pity
I get over all my shyness.
Talk to me even if it's out of charity
in short, tell me anything you want.

• the despair caused by loneliness; expressed, for example, in the song *You were talking about hope:*

Μοναχός περπάτησα
κι άδειασε η ψυχή μου
σαν ένα ποτήρι με νερό
σαν ποτήρι που έσπασε
δίπλα στη ζωή μου
κι ούτε στάλα πρόφτασα να πιω.

* * *

I walked all alone
and my soul was empty
like a glass of water
like a broken glass of water
next to my life
and I didn't even have the time to drink a drop.

• the beauty of love; expressed, for example, in the song *You, my silent Lady:*

Ξέρω δε θα'ρθεις να μου στάξεις
λίγη στα χείλη μου δροσιά
γιατί φοβάσαι μη μου τάξεις
τον ήλιο και την ξαστεριά

* * *

I know that you won't come and drip
some dew drops on my lips
because you're afraid to promise me
the sun and the clear sky.

• the pain of separation; expressed, for example, in the song *Now that you're leaving far away:*

Τώρα που φεύγεις μακριά
πάρε μαζί σου τη ζωή μου
ένα ποτάμι σιωπηλό
κι ένα τραγούδι της ψυχής μου.

* * *

Now that you're leaving far away
take with you my life
a silent river
and a song of my soul.

• the eternal hope of a new meeting which will eliminate loneliness; expressed, for example, in the song *Ah! Come and turn the light on:*

Αχ! έλα κι άναψε το φως
τα χρόνια να μοιράσω
και μείνε στο παράθυρο
να διώχνεις τα παλιά.
Έλα και τράβα τη σκεπή
να φύγω να πετάξω.

* * *

Ah! Come and turn the light on
to dispense my years
and stay in the window
to chase away the old times.
Come and pull the roof down
to fly away.

• the hope that arises from the faith to God to whom we 'address' in every difficulty; expressed, for example, in the song *Persecuted passion:*

Το πάθος που διώκεται
δεν πάει να επιδιώκεται
εσείς θα βγείτε λάθος.
Στο βάθος το ζηλεύουμε
αυτό που ρεζιλεύουμε
και μάρτυράς μου ο Άθως.

* * *

Persecuted passion
even if it is desired afresh
you will prove wrong.
Deep down we envy
what we deride
and Athos is my witness.

b. Poetic structure:

– The three-verse poems dominate and their rate peaks at 68.75 % in the *Cities A'* and *B'* and 55 % in the *Cities C'* and *D'*. These are four-line verses at a percentage of 53.3 % in the *Cities A'* and *B'* and 45 % in the *Cities C'* and *D'*. Moreover, in the *Cities C'* and *D'* there are six-line verses in a percentage of 30 %.

– Among the four *Cities*, only three poems *Rock of Rocks* and *Rainfall in my ghetto heart* from the *City A'* and *Let them fool us* from the *City D'* have isometric verses – i.e. 8.57 % – while the rest of the poems have heterometric verses.

c. Lyrics:

As far as the meter of the verses is concerned, the *iambic* and *trochaic* verses[5] predominate, as in the *demotic* Greek music and the *rebetika* songs. However, the *iambic* verses and especially the *iambic fifteen-syllable* – the so-called "national Greek verse" – prevail in all four *Cities.* It appears both as "inseparable" verse – lines of 15 syllables (for example, the song *Rock of Rocks* from the *City A'*) and as "separated" verse – 8 syllables/line + 7 syllables/line (for example, the song *So far away, be patient* from the *City B'*).

From the **musical analysis** of the four cycles of songs results:

The **form** that prevails is verse with refrain, which was established during the 'labour phase' (1940–1953) of the *rebetiko song* with the songs by Vassilis Tsitsanis. It is based on several short melodic themes, which correspond to each line (a theme/line). The reiteration of the themes and the refrain highlight the poetic text and intensify the emotions emanating there from.

The **melodic line** is simple and is characterized by the step to step movement. The melodic line varies and extends from the interval of 6th to the interval of 12th in the *Cities A'* and *B'* and from the interval of 7th to the interval of 11th interval in the *Cities C'* and *D'*.

The **harmonic structure** is tonal with melodic modal turns and it is based on the main chords of basic tonality, thus it is *"able to describe simple and direct feelings"* (Scott: Greek Music Library 'Lilian Voudouri). In the *Cities A'* and *B'* there is frequent use of the tonalities: *Sol M, Re M, Fa M, la m, mi m, re m*, while in the *Cities C'* and *D'* the prevailing tonalities are: *Re M*, *Si♭ M*, *la m*, *mi m*, *re m.* The modulations are rare, instant and appear in relative or homonymous tonalities. The shifts in the modes of the ancient Greek and Byzantine music demonstrate the composer's influence by the Greek musical tradition. The frequent use of the *aeolian* and the *dorian* modes (West, 1999: 247–257) in the *Cities A'* and *B'* gives them a tone of pride and virility, thereby attributing the 'epic' vibe that characterizes these *Cities.* On the contrary, the frequent use of the *lydian* and the *mixolydian* modes (West, 1999: 247–257) combined with the minor tonalities in the *Cities C'* and *D'* reveal a passionate and plaintive lyricism.

It is of particular interest to study the **rhythms** of the songs of the four *Cities*. The impact of the demotic and the rebetik music is obvious on the composer's work. More specifically:

- The rhythm of *ballos*[6] dance is used in the following song: *Emigrant* (Figure 2)

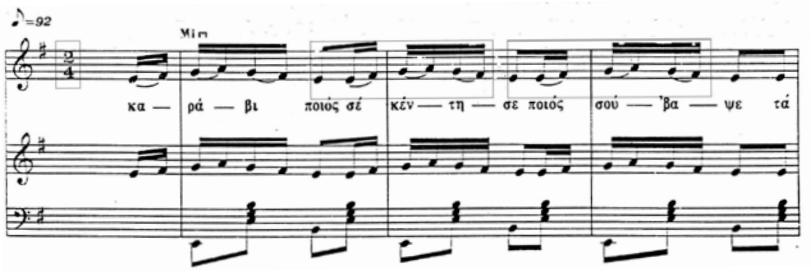

Figure 2. *Emigrant*

[5] *Iambic Verse:* as the Greek meter is basically built on the alternation of long and short syllables, the iambic verse is composed of a weak syllable followed by a strong syllable (∪ –)
Trochaic Verse: as the Greek meter is basically built on the alternation of long and short syllables, the iambic verse is composed of a strong syllable followed by a weak syllable (– ∪)

[6] *Ballos (μπάλλος)*: a Greek traditional dance of maritime Greece. It is mostly danced in the islands of the East Aegean Sea – Chios island, Ikaria island, Samos island – and in the islands of the Thracian Sea – Thasos island, Samothrace island, as well as in the Cyclades, in the Sporades and in the island of Euboea. Its rhythm is binary: (♩.♫ | ♩.♫ or ♩.♬ or ♫.♩).Characteristic is the ballos dance of the Ionian island of Lefkada, which has been influenced by the music of Epirus and it can start in 2/4 or 4/8 and finish in 7/8.

- The rhythm of *hasapiko* dance is used in the following songs:
  Youth leaves lightning-swift, *Evening deep in your eyes*, *Down in the old taverna*, *Andrew's Ballad*, *You were a garden*, *You were talking about hope*, *Ah! Come and turn the light on*, *Now that you're leaving*, *Wait for me*, *With the lost souls*, *In which homeland do you want to go?* (Figure 3)

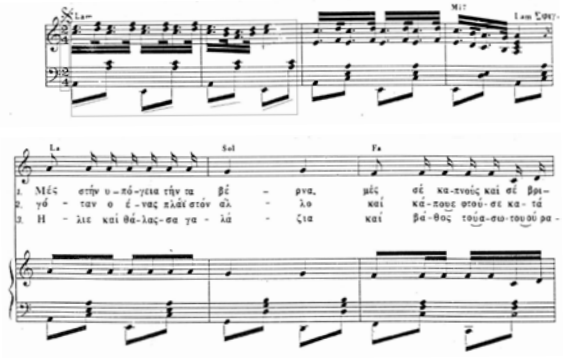

Figure 3. *Down in the old taverna*

- The rhythm of *zeibekikon*[7] dance is used in the following songs:
  Drapetsona, *Let every night be Saturday*, *Rainfall in my ghetto heart*, *I search each corner for you, You were a garden*, *Let them fool us*, *It's not your fault that I travel* (Figure 4)

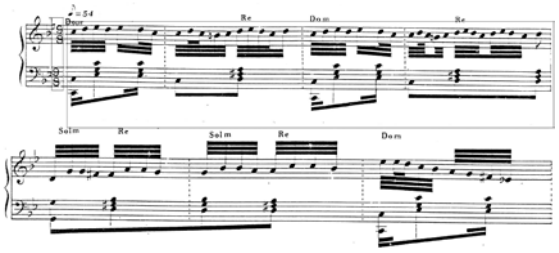

Figure 4. *Drapetsona*

- The rhythm of the Thessalian dance *tai-tai*[8] is used in the following song: *Rock of Rocks* (Figure 5)

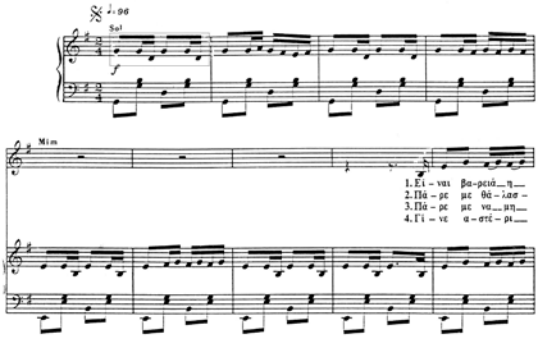

Figure 5. *Rock of Rocks*

[7] *Zeibekikon:* a Greek popular dance in 9/4 or 9/8. The origin of zeibekikon dance cannot be really defined. Nevertheless, we believe that it was a war dance performed in the 18th century, by a tribe of nomadic warriors, called the zeibekides. These warriors constituted a police force assistant to the Turkish sultans in the Ottoman Empire and before the latter exterminate the former, fearing that the zeibekides would slip from their control. The zeibekikon dance of the rebetes is danced indoors, usually in a tavern and never before sunset, unlike the original one, which was held outdoors. This dance evokes the vagaries of a hard life and the revolt which may cause. Who performs a zeibekikon dance, enjoys a great freedom of movements. These gestures combine the tension and the relaxation time, and express, in line with the rebetikon, the melancholy mood, the restrained violence, the accumulated problems and suffering… The zeibekikon dance does not have established characters. Usually danced by men solo, the zeibekikon dance has a female version in Cyprus.

[8] *Tai-tai:* a brisk traditional dance of the area of Thessaly: ♫♫.

- The rhythm of the Epirotic dances "in triple tempo" in the following song: *Cheap years* (Figure 6)

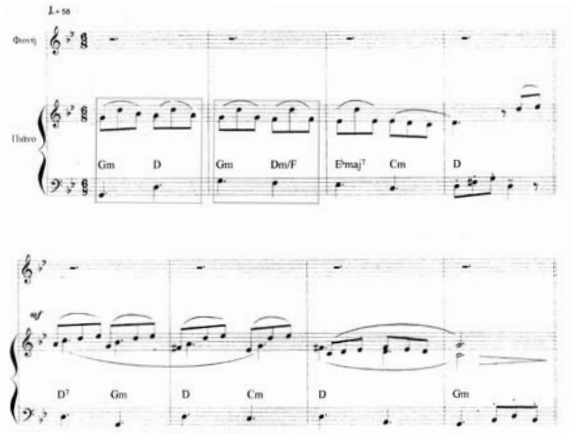

Figure 6. *Cheap years*

- The rhythm of the *Syrtaki* dance is used in the following song: *You, my silent Lady* (Figure 7)

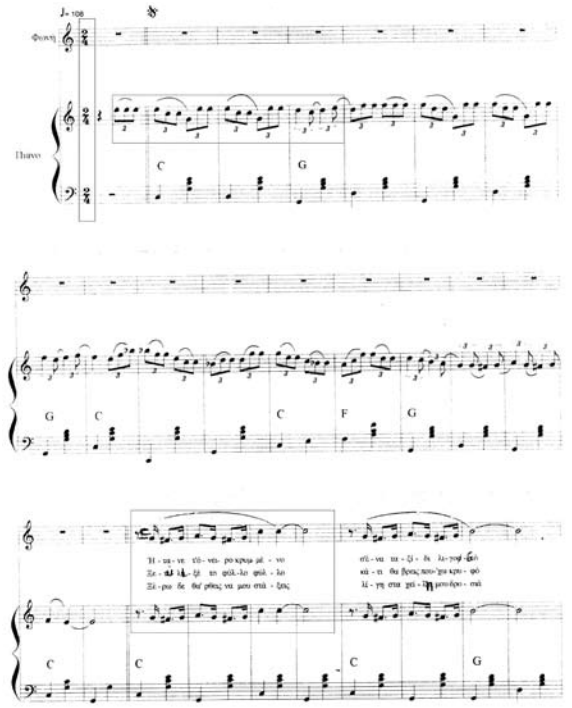

Figure 7. *You, my silent Lady*

As the rhythm constitutes a key element of Theodorakis' works, in his attempt to create a "Single Musical Sound Lyric Stochastic Universe" (Theodorakis, 1999, vol. 3: 167), the composer uses small rhythmic cells as a cohesive element both between songs of the same cycle and between songs of different cycles. For example:

- The rhythmic cell ♫ ♫ can be found both in the songs: *Sea of Bitterness*, *Lonely man's plaint*, *Madonna Mother*, *Rainfall in my ghetto heart* of the *City A'* and in the song *So far away, be patient* of the *City* B' by amalgamating both the songs of the same cycle together and the two different song cycles together.
- Likewise, the rhythmic patterns of triplets ♫ ♫ and dotted ♫ ♫ appear in the songs of the *Cities C'* and *D'*, as in the songs: *Talk to me even if it's out of pity* and *You, my silent Lady* and they constitute a cohesive element of the two cycles of songs.

Finally, as far as the **orchestration** of these song cycles is concerned, it should be mentioned that the composer mainly uses the musical instruments of the Greek popular orchestra: bouzouki and occasionally baglamas, guitar and percussions to which he adds instruments of the symphonic orchestra, such as the oboe, the cello, the harp or the bass.

While Theodorakis was setting to music the songs of the *Cities A', B', C'* and *D',* he was mainly inspired by the Greek traditional music with which he was raised. Ancient Greek and Byzantine modes, traditional musical instruments and traditional dance rhythms attribute an undeniable Greek character to the songs of the *Cities*' tetralogy.

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Santrauka

Mikio Theodorakio *Cities*: ritmas ir graikiškumas

Savo autobiografiniame veikale „Archangelo keliai" žymus graikų kompozitorius Mikis Theodorakis (g. 1925) užsimena: „C. Palamas tikėjo, kad ritmas poezijoje – ritminis ėjimas – simbolizuoja ritmą, kuris valdo Visatą. Aš pats, būdamas muzikas, dar pridėčiau ir Harmoniją. Kiekvienas, pakėlęs žvilgsnį į žvaigždėtą dangų ir pamatęs ritminę žvaigždžių judėjimą lemiančią harmoniją, iš karto su tuo sutiktų" (Theodorakis, 1986, t. 1: 140–141).

Mikis Theodorakis regi „galaktikos žvaigždes" kaip savo įvairiapusiškos kūrybos visumą, kuri apima dainų ciklus, kamerinės muzikos kūrinius, muziką teatrui ir kinui, simfoninę muziką, oratorijas ir operas. Jo išskirtinė muzikos kalba kilo ir iš tradicinės bei populiariosios graikų muzikos, ir iš Vakarų Europos muzikos tradicijos.

Straipsnyje atskleidžiamas ritmo, kaip pagrindinio struktūrinio elemento, vaidmuo Mikio Theodorakio muzikos kalboje. Tai atliekama analizuojant jo tetralogiją *Cities* (*City A'* / 1959–1960, *City B'* / 1964, *City C'* / 1994, *City D'* / 1996). Taip pat aptariamas ryšys tarp ritmo ir graikiškumo Theodorakio kūryboje.

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