

MUSICA NOVA VII

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MUSICA NOVA VII

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MUSICA NOVA VII

JANÁČKOVA AKADEMIE
MÚZICKÝCH UMĚNÍ V BRNĚ

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INTRODUCTION

Contemporary music is a very wide and rich field of interwoven streams, trajectories and tendencies which are rather complicated, even for a relatively well informed observer. Unlike the view of traditional music history, which deals mainly with certain selected fragments of a relatively forgotten whole of former musical production and is restricted as to territory and social function, nowadays we are confronted with an overwhelming tide of information and music experience coming to us from all over the world. Since we are in the midst of this whirl of enormously increasing music making, it is almost impossible to see a clear picture of our era. Therefore we want to contribute to general knowledge with our mapping of the current situation.

The international MUSICA NOVA conference is our attempt at this mapping: its participants are distinctive musical personalities and their gathering provides a certain picture of at least some current tendencies in contemporary music.

On the one hand there are voices referring to contemporary musical practice: composers, improvisers, performers – and their common denominator perhaps is blurring the distinction between these roles which are very often connected in one person.

On the other hand there are the theoreticians with their comments on various phenomena in contemporary music. They try to classify, examine, and explain features which are new and distinctive.

The increasing importance of computers in contemporary music is documented by a considerable number of contributors dealing with a variety of problems concerning this topic.

The very first day of the conference also gave an opportunity to doctorate students to present their own research in a wide range of different interests.

Our proceedings represent this year's issue of an ongoing series of conferences, workshops, and meetings organized by our school. It also represents our permanent efforts to keep our academy open to new ideas, streams, movements, and new forms of contemporary music.

Jaroslav Šťastný

PWGL: An introduction to the program and some practical applications

Dimitris Andrikopoulos

Historical introduction

Computer Assisted Composition, later known as Computer-Aided Composition (CAC) has been part of common composition practice for more than 50 years.

The first steps were taken in this area as early as the 1950s by composers including Iannis Xenakis and Gottfried Michael Koenig. The introduction of computers gave composers a new tool for exploration, formalization, control and experimentation with the different structures and possibilities of musical language.

In the 1980s and more specifically at Ircam in Paris, we had the development of various programming platforms used for CAC such as Formes, the Crime environment and later the PatchWork environment by M. Laurson, J. Duthen, and C. Rueda (Laurson 1996).

Patchwork, the program directly linked to PWGL, was written in Common Lisp and provided a graphical interface to the Lisp language.

The program contained various pre-defined objects that could be used. It also made possible the use of external libraries of a more specialized character to meet different compositional needs and objectives. Together with simplicity at the programming level and a friendly user interface, this gave many composers – e.g., Brian Ferneyhough, Gerard Grisey, Magnus Lindberg, Tristan Murail and Kaija Saariaho – the opportunity to work and experiment with the program.

PWGL is based on concepts similar to those of Patchwork. PWGL was developed in 2002 at the Sibelius Academy in Helsinki by a research team consisting of Mikael Laurson, Mika Kuuskankare, Vesa Norilo and Kilian Spote. PWG is a multi-windows based application and every window, called a patch, contains boxes and connections. When evaluating a box it reads first its inputs and then calls the Lisp function associated to it and gives back a result.

Objective

For the purposes of the present paper, the methodology behind the creation of a 5-voice texture for String Quintet will be demonstrated.

Rhythmic development

As a basic structure for rhythmic construction a rhythmic cell combining values from crotchet to semiquaver was used.

The values are organized in various combinations, giving the rhythmic series represented in Fig. 1.

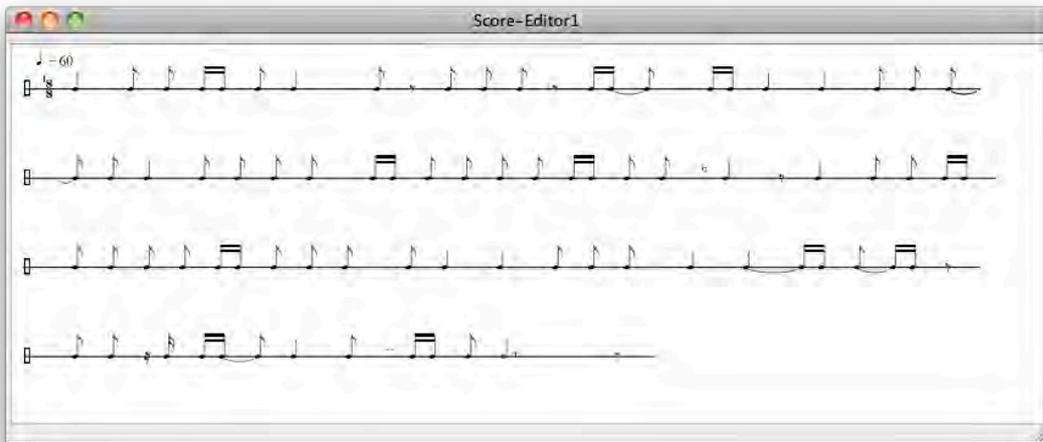


Fig. 1: Starting rhythmical structure

The Grhythm library is a versatile library inside PWGL related to rhythmical generation and manipulation. Grhythm is a revised version of M. Linberg's library from the 1980s and is part of PWGL's main libraries.

Grhythm stands for Gestural Rhythm and allows the combining, manipulation and transformation of rhythmical data. Related to the notation, 1 is equivalent to a crotchet, 1/2 to a quaver, 1/4 to a semiquaver, etc.

The rhythmical series in Grhythm notation above is transcribed thus:

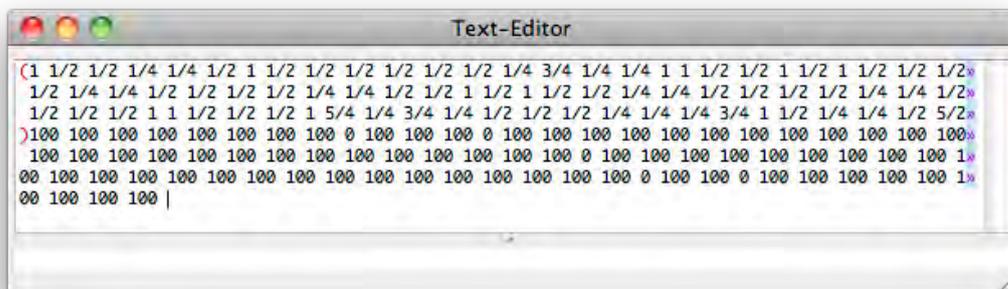


Fig. 2: Grhythm notation

For the texture a rhythmical structure more variable than the original was needed. One way to obtain this was by manipulating the series by subtracting 1/3 of the value of the first note and as a result shifting the rhythmical shape as a whole by 1/3 of a crotchet. This happened by removing the first element on the list with the gnthcdr function and then substituting it by the insertion at the beginning of the list of the new value 2/3 with the Ginsert function.

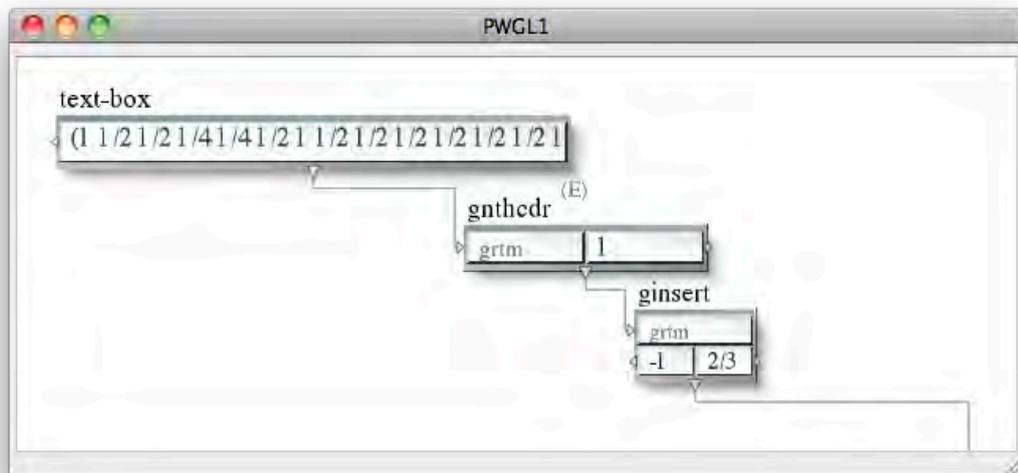


Fig. 3: Substitution patch of first rhythmic value

After this first transformation the rhythmical series resulted in:

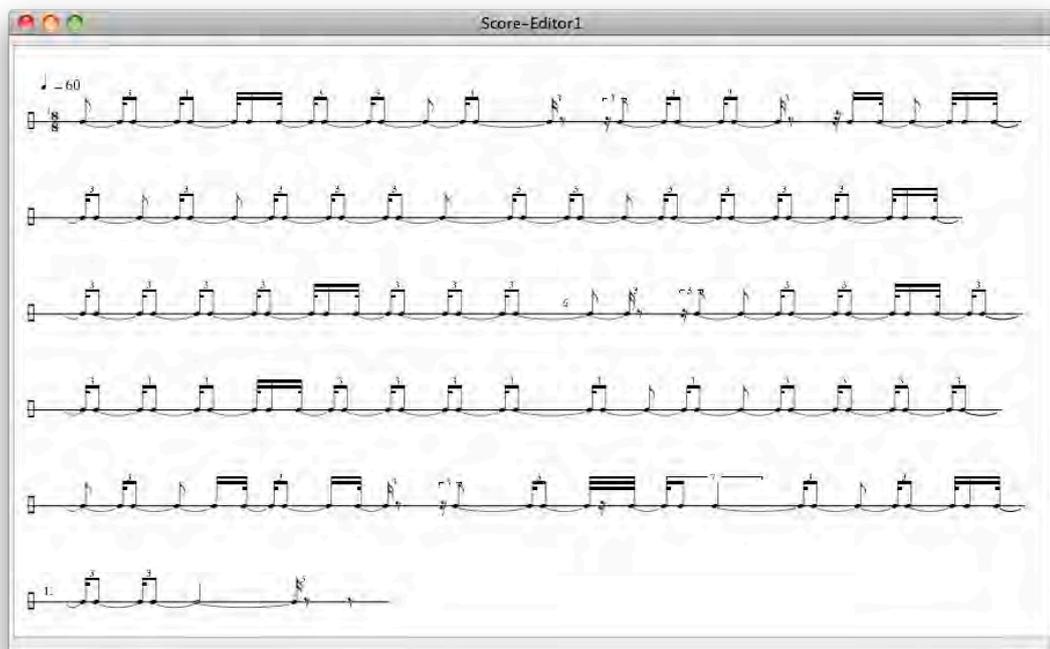


Fig. 4: Resulting rhythmical series

Another rhythmic transformation was achieved by superimposing the two rhythmical structures above and then uniting them. The Gunion box was used. The two lists are entered and the different points of rhythmical action are united in a new list. In order to visualize any result in normal musical notation, the results have to pass through the Grtms input of the Gquantify box.

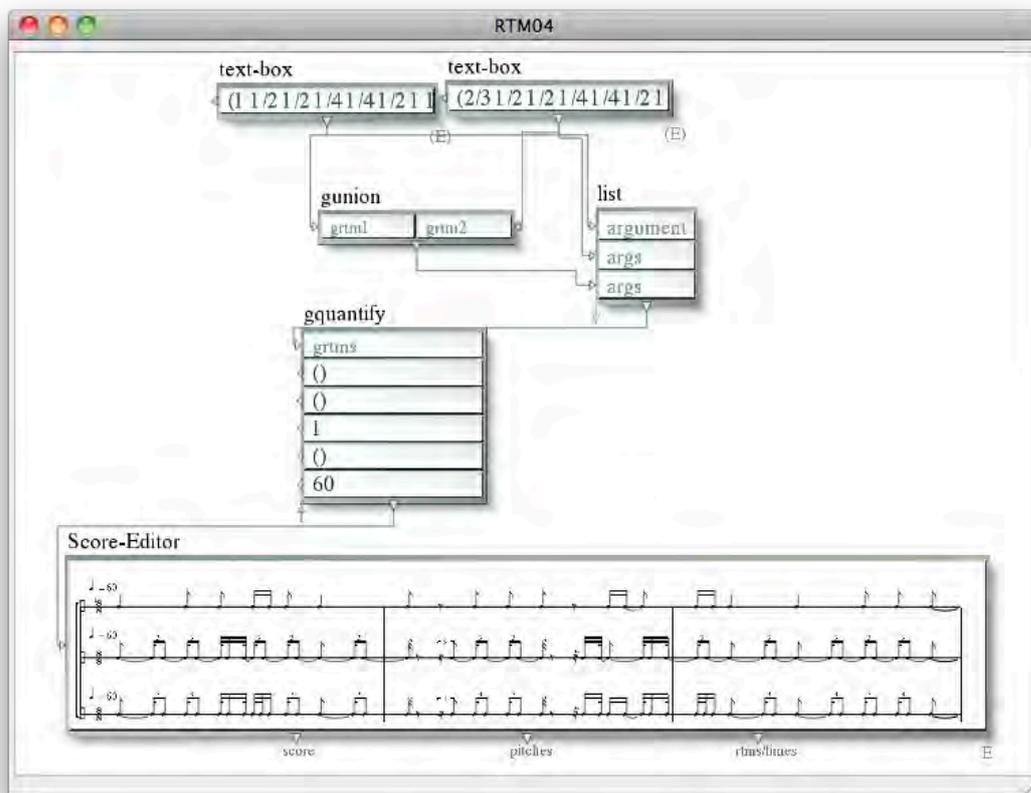


Fig. 5: Gunion patch

The last rhythmical transformation resulted in the rhythmical structure below:

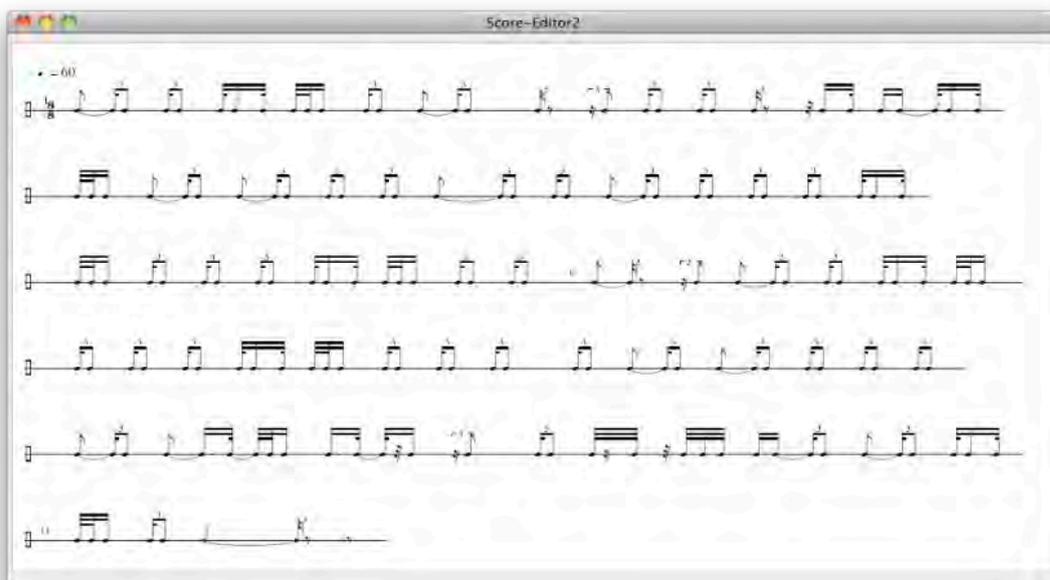


Fig. 6: Resulting rhythm

In order to create the 5-voice rhythmical texture further transformation of the line was needed. The line was reversed in order to start with a longer value. Further transformations were made by changing the individual lengths of each of the 5 lines by stretching or compressing them using the Gpercentage box.

Gpercentage is the compressing or expanding of the durations of Grtm in relation to the percentage notated in the percentage area of the box. The values 120, 90, 133 and 105 percent were chosen for the transformation. Because different percentages were applied to the different voices, the final length of every voice was different. In order to resolve this problem the value of 200% was selected as the final value of the texture. This resulted in the adding to every line of the remaining amount in order to arrive at 200 (80% was added to 120%, 67% to 133%, etc.)

The different lines were grouped with the Group box and the 5 groups were inputted in a list box in order to create a list of various lists (voices). The list was inputted in the Gquantify box for quantification in order to display the data in the Score-editor box.

The bar structure of the passage was added by inputting a pre-decided bar sequence:



Fig. 7: Bar Sequence

It was then doubled to cover the total duration of the texture and further inputted in the Barsls input of the Gquantify box.

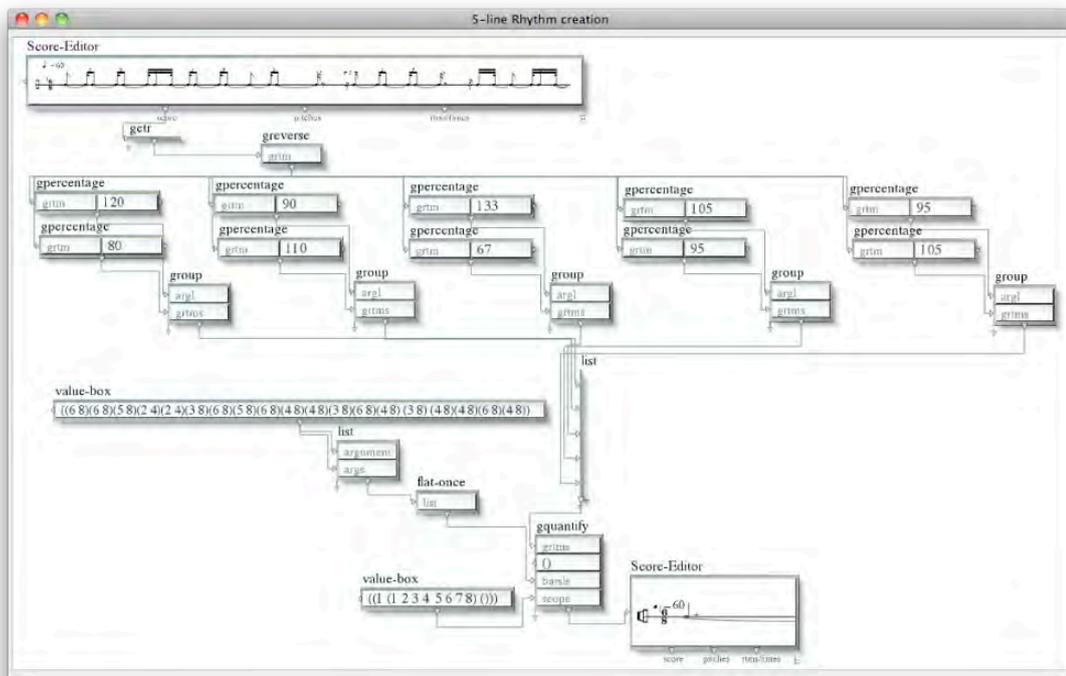


Fig. 8: 5-line rhythmical texture creation patch

The first 3 bars of the 5-voice rhythmical structure look like this:

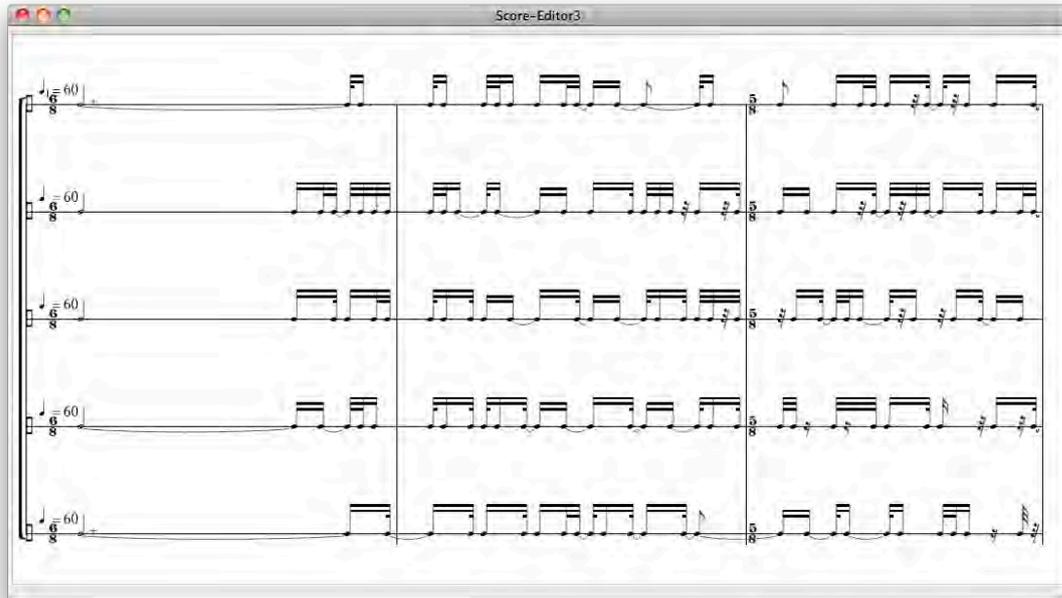


Fig. 9: First 3 bars of the 5-voice rhythmical structure

Melodic and Harmonic Development

Constraints

An important part of PWGL that is incorporated into the heart of the program is the application PWGL Constraints. PWGL Constraints is written in Common Lisp and CLOS language and can be thought of as a descriptive language.

A small set of rules was chosen for the search: a limited pitch area, a melodic profile rule for every voice, a not-allowed melodic interval rule, a rule related to repetition of events, a rule limiting the smallest possible melodic interval and, finally, various rules about harmony allowed in every given measure of the fragment.

For the constraining part the JBS-Constraints user library created by Jacobo Baboni Schilingi was used.

JBS-Constraints is a library that can be described as a “user friendly” visualization of the constraints application of PWGL. It includes various boxes that contain melodic, harmonic, rhythmic and structural rules covering a vast range of search possibilities. The boxes can be linked and create complete sets of rules which can then be inputted in PWGL’s search machine.

1st set of rules: Melodic profile rules

For the melodic profile rule the s-pmc-mk-profile-rule box was used in combination with a 2D-editor.

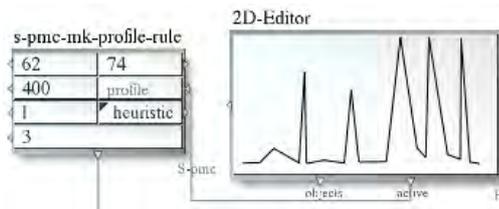


Fig. 10: Individual voice profile rule

The s-pmc-mk-profile-rule box presents various interesting possibilities for input, such as defining the minimum and maximum curve, in this case 62 and 72, corresponding to midi values representing our search space, the number of steps that the profile has to be divided into, in this case 50, as well the mode to which the rule has to be applied.

There are two modes to which the rules can be applied. In the first place, rules can be true/false or heuristic. For the profile rule the heuristic mode was chosen because we were looking for the best possible solution inside the search area corresponding to the 2D-editor curve. The total set of individual profiles looks like this:

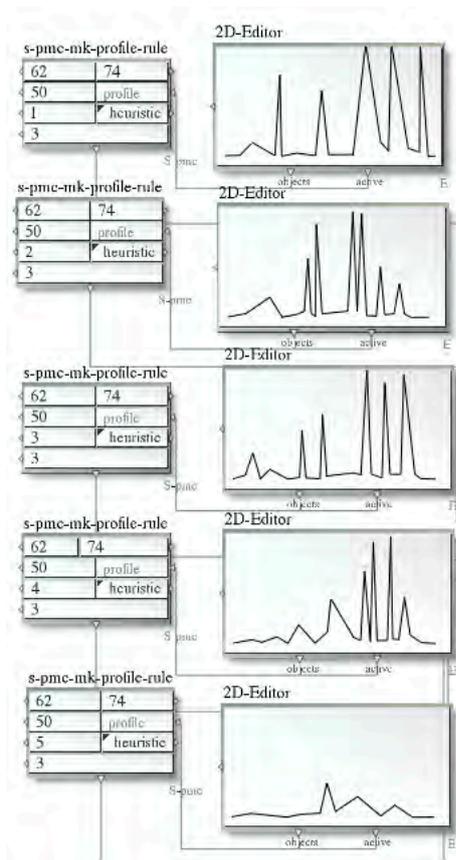


Fig. 11: 5-voice profile rule

Another rule used for the definition of melodic character is the s-pmc-not-allowed-interval-rule. This rule excludes from the melodic movement the interval or intervals inputted at the top left of the box. The interval excluded is a 5th notated as 7 in pitch class notation. The mode used

was true/false and the :all function, in order that the rule could be applied to all 5 voices of the texture.

s-pmc-not-allowed-interval-rule	
(7)	<input checked="" type="checkbox"/> :absolute
:all	<input checked="" type="checkbox"/> :true/false
1	

Fig. 12: The not-allowed melodic interval rule

Another rule used for melodic constraining is the s-pmc-smaller-interval-rule, a rule that defines the smallest possible interval allowed melodically. In this case an augmented fourth was set as the smallest possible interval and the mode was set to heuristic. As in the above rule, the parts input was set to :all so the rule was applied to all the parts.

s-pmc-interval-smaller-rule	
6	:all
<input checked="" type="checkbox"/> :heuristic	1

Fig. 13: Smallest possible interval rule

As a last rule for melodic movement the no-spaced repetition rule, a rule that determines the space that is allowed for the repetition of an element, was chosen. In the present example the rule was set to (1 4), meaning that after a maximum of 4 repetitions the element has to be different. Because of the pitch collection used for this fragment as well as the idea of a texture starting from unison, the mode was set to heuristic.

no-spaced-repetition-rule	
(1 4)	<input checked="" type="checkbox"/> heuristic
1	

Fig 14: No-spaced repetition rule

2nd set of rules: Harmonic profile rules

Related to the harmonic and melodic development of the fragment, a simple collection of notes was chosen.

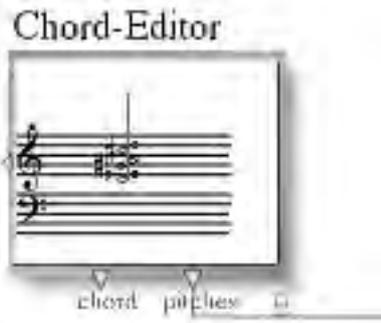


Fig. 15: Pitch collection

The organization of the harmonic distribution throughout the 38 bars of the texture was realized by using the s-pmc-allowed-harmony-in-given-measure box. The function is exactly as the name of the box describes it; it makes possible the inputting in the top left input of the notes of the harmony allowed and in the top right input the measure number related to the pitch collection allowed. The mode chosen for this function was true/false.

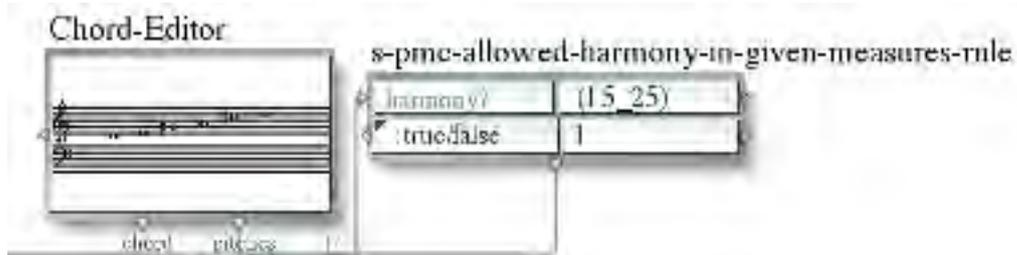


Fig. 16: Harmony allowed between bars 15 and 25

The choice of harmonic development during the fragment was not formalized. The total patcher of the rules looks like this:

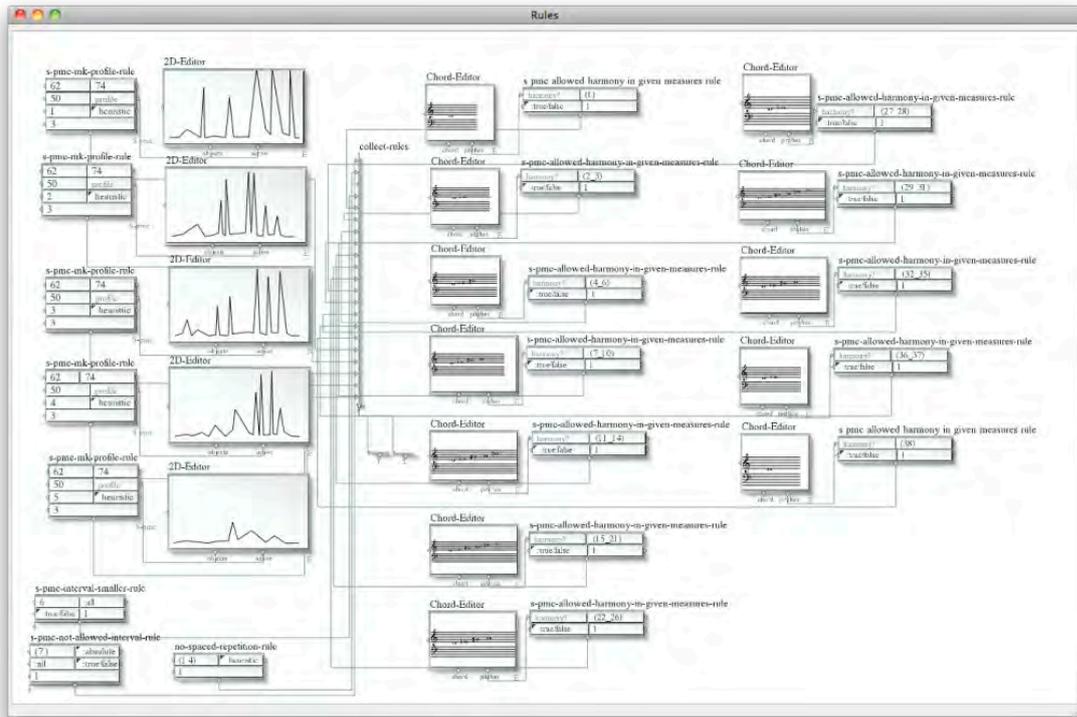


Fig. 17: Rules Abstraction

The output of all rules was inputted in the collect-rules box. The collect-rules box collects rules as well as separating them into true/false and heuristic. Using the two outputs of the box the rules were further inputted in the pmc-engine. For visual reasons and to avoid a patcher full of boxes and connections, the rules were placed inside an abstraction box.

The two abstraction-outputs were connected to the true/false and heuristic rule inputs of the Multi-Score-PMC box as required.

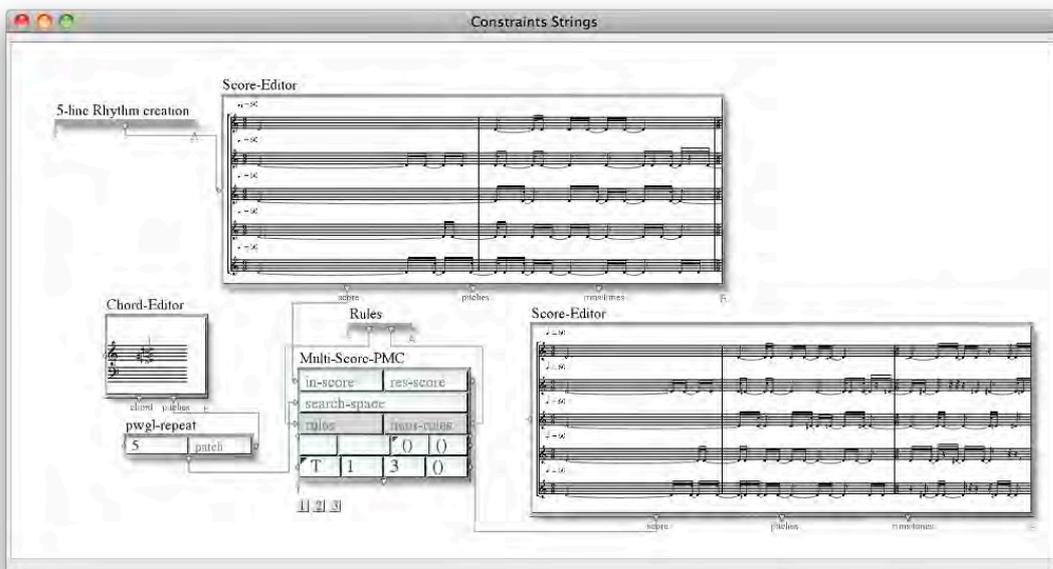


Fig. 18: The final patch

The rules abstraction outputs are connected to the two rules inputs of the Multi-Score-PMC box. The Multi-Score-PMC box is the score-orientated tool related to PWGLConstraints.

In the search area of the box we need to define the area in which we want our search to take place for all the 5 voices by using the pwgl-repeat box to cover all the voices.

By evaluating the Multi-Score-PMC box we then render the rules and look in the res-score output connected score for our results. By the inputting of a different number in the r-cnt input area, there is a possibility of multiple results. In this case three different solutions to the problem were asked for. Here are the first 10 bars of our second solution.

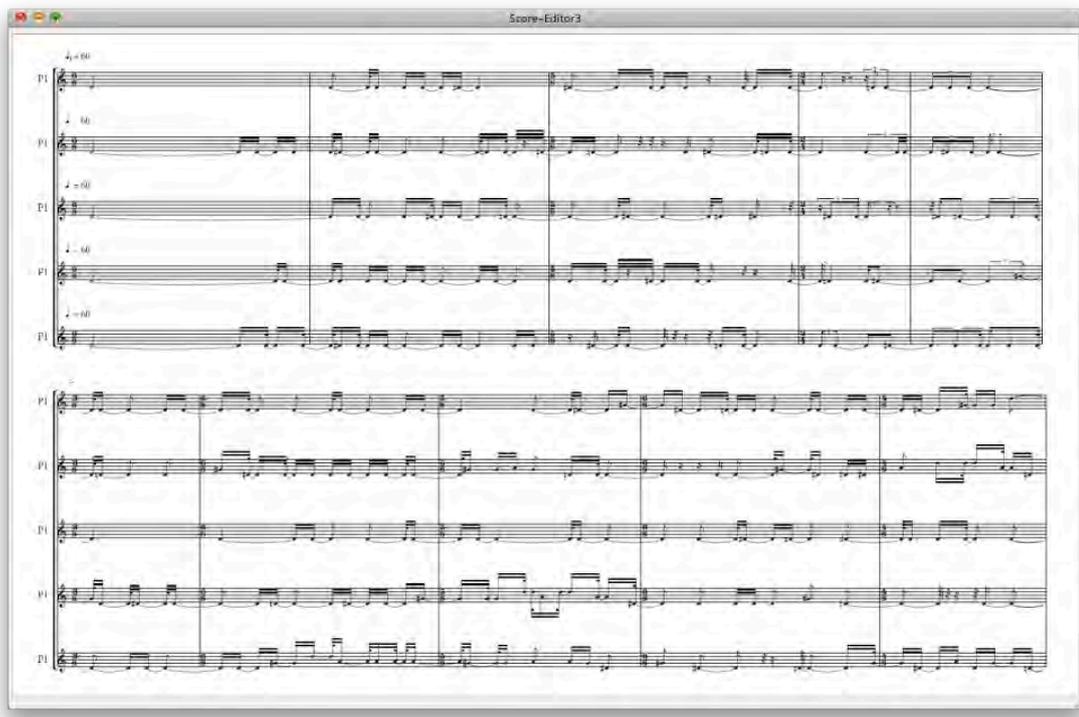


Fig. 19: First 10 bars of second solution

Conclusion

In my opinion, PWGL provides an excellent platform for composers to generate, experiment with and manipulate music material, allowing multiple results and providing a fast output for procedures of the composition process. The open character, user-friendly interface as well as the various user libraries already in existence, provide a broad palette of tools for many different types of work and compositional approaches. In this paper only some of the basic functions and procedures for the producing of texture needed for a layer of a string quintet have been used.

References

- G rard Assayag, Camilo Rueda, Mikael Laurson, Carlos Agon, Olivier Delerue (1999). *Computer-Assisted Composition at IRCAM: From PatchWork to OpenMusic*. Computer Music Journal, Vol. 23, No. 3, Recent Research at IRCAM (Autumn, 1999).
- Laurson, M. (1996). *PATCHWORK: A visual programming language and some musical applications*. PhD Thesis, Sibelius Academy, Helsinki, Finland.

- Sandred, Ö. (2009). *Approaches to Using Rules as a Composition Method*. Contemporary Music Review, Vol. 28, No 2, April 2009, pp. 149–165.
- Schilingi, J. P. (2009). Local and Global Control in Computer-Aided Composition. Contemporary Music Review, Vol. 28, No 2, April 2009, pp. 181–191.

Web References

The PWGL Book
<http://www2.siba.fi/PWGL/downloads.html>

STRUCTURAL ASPECTS OF INSTRUMENTATION IN MULTI-PERCUSSION MUSIC

Jeff Beer

1.) Thinking about instrumentation is like speaking about possible trails or ways through a forest – even more so when we focus on the widespread field of timbre of multi-percussion instruments. Therefore, please allow me to begin by recalling the most significant sound families, first giving a kind of basic overview and then proceeding from there to more detailed and specific features.

The focus of my lecture today is on how to discover possible connecting potential within individual significant sounds and the attempt to show the principles of their connecting affinities. Due to the fact that the mutual affinities connecting different percussive sounds are very high – even between instruments which are neither made of the same material nor belong to the same sound category – we should focus on questions which hopefully will bring us nearer to the secrets of orchestrating percussion instruments.

Let me now structure our main percussive instruments into several family trees of sounds according to the materials they are made of:

As you can see here I have made a table of the best-known percussion instruments, classified in registers of their sounding belongings. I think it is still very useful to specify the huge variety of percussion instruments in colour families because colour is – I believe – still the most dominant way by which they enter our hearing as regards significant instrumental perception and the totality of their sounding connotations.

So here we find first of all three different colour families which cover the most important percussion instruments from all continents and cultures:

SKIN

Timpanies

Bass drums

Tom toms

Snare & field drums etc

Frame drums (e.g. *bodran*)

American Indian drums

Boo bams

Darabukkas

Bongos

Congas

Tambourine (without bells)

Timbales

Indian drums (Tablas, Taval etc)

Chinese tom toms

Japanese drums

Roaring Lion (Lion's roar)

etc.

METAL

Vibraphone
Glockenspiel (chimes)
Celesta
Bells (large bells, hand- and fingerbells)
Plate bells (Plattenglocken)
Cow Bells (chromatically tuned sets of Almglocken; Cencerros)
Tubular bells
Anvil
Steel plates
Break drums
Japanese dobacis
Tam tams (cast and hammered types)
Gongs (Bali, Java, China, etc.)
Turkish cymbals
Chinese cymbals
Tibetan cymbals
Triangles
Crotales
extras (e.g. junk instruments)
Hungarian cymbalon
Zantoor (Persian)
etc.

WOOD

Marimbaphone
Xylophone
Wood tom toms
African log drums
Temple blocks
Woodblocks
Claves
Castagnettes
(wooden) Hooves = 'Horseshoes'
Board-play (hanging suspended boards approximately tuned)
etc.

STONE

Lithophone
Stone marimba (Switzerland)
etc.

GLASS

Glass harmonica
Bouteilophone
Glass rods and tubes (approximate scale; hanging)
etc.

CERAMICS

Wasseramsel

etc.

BONE

Quijada (rattling jaw bone from a donkey)

Skull-type instruments (using skulls as shells for drums)

etc.

FLUTE TYPES

Lotos flute

etc.

OTHERS

Maracas

Geophone

Shells

Rattles (all sorts)

Fruit-type instruments (calabashes; dried cucumbers; etc)

Are there any possibly existing categories within the connecting potential of sounds which – when we work, or when we listen to the work of others – concern connections of sounds which make us feel more satisfied as soon as we have found them and heard the results of our decisions? How can we connect sounds at all? Can we summarize the complex item of instrumentation in a range of fundamental phenomena which could help us to structure our thinking regarding the vast open field of sound seen from the pre-stage perspective of composing?

Let me move on now to deepen this question regarding categories of instrumentation:

CATEGORIES

When we try to question and analyse the potential of instrumentation we find ourselves at the question: What is instrumental colour (or timbre) in general and in particular? So – what actually is colour? [theory of perception; are we in the same field as painters who question the same subject?; science of colour; or questioning the perceiving and assimilating functions of our brain – regarding all interactions between our physiology and psychology etc.] In which language can we describe colour so as to keep our questioning wide enough to be deepened to a certain philosophic extent which provides the necessary mental – or should I say – spiritual frame or space needed to grasp our subject thoroughly enough without losing ourselves in discussions beyond practical use.

Arnold Schoenberg. It is high time we mentioned the contributions to our subject of a man called Arnold Schoenberg, which I still assume to be of great importance as it was he who discovered the interactive relations between pitch and colour and derived advantage for his epoch-making scores whose far-reaching consequences continue to inspire our musical thinking today. Of course Arnold Schoenberg's statements regarding colour and "Klangfarbenmelodie" would need their own chapter in our inquiry. Not only Schoenberg's, but also those of Hector Berlioz, Claude

Debussy, Bela Bartok, Anton Webern, Edgar Varèse, Olivier Messiaen, Pierre Boulez, Karlheinz Stockhausen, György Ligeti, Giacinto Scelsi, Helmut Lachenmann, Frank Zappa, Gérard Grisey, and many others would need to be quoted, reflected on and analyzed.

So I would like to repeat my question: What is it with the term “colour”? How is it connected to the title of our subject, which is: “Structural aspects of instrumentation in multi-percussion music”?

If we were to x-ray our feelings and mental reflections when we heard well-worked, satisfying instrumentations, we might come up with a range of qualities which we could characterise in terms of the following:

similarity (and its opposite: non-similarity)
homogeneity (or inhomogeneity)
relation and relatedness (or forms of non-relatedness and contrast)
affinity of different grades
analogy (and non-analogy of different grades)
structural and formal logic
evidence
etc.

What does that mean?

(sound refinement)

: worked texture

: significant order appearing as something like sense and evidence

: something which appears as something clearly perceptible with connotations of form, shape, likeness and *Gestalt*

It means nothing less than discussing here the regularities of perception regarding the basic structures of order and all its transitions – from pre-stage forms of order which we often call chaos up to highly organised complex forms of order which – due to their complexity in density of information and form – can easily appear, too, as something like chaos if we are not able to read the code of the structures involved, or – since we are mainly speaking of colour – to read the code of colour organisation and all its implications.

Now it is time to become practical. Please have a look at our tables of instruments. Let us try to confront them with the terms we just have analysed, which I will repeat.

We will try to go different ways through the “forest” – maximising the possibilities for the orchestrating of percussive sounds. Of course we cannot fathom all today’s possibilities for the connecting or combining of colours, because their potential might be well-nigh unlimited. We can only touch on certain aspects and principles in order to get a little deeper into the subject of our question.

a) Let us begin with the first category which we have just found above:

Homogeneity, which to a certain extent is related to similarity.

How can we work with these terms?

If we have a look at the tables of colour families which we listed above, we will find one very strong basic structure which indicates that the individual sounds in each table belong to their

relating orders. For instance, all the instruments in the wood category have the parameter sounding wood in common – which might make you think that this structure most certainly and obviously does not even need to be mentioned. But this is not my view, since thinking in mono-chromatic palettes is an important tool which we should never forget when considering colour concepts for our scores.

So we have found the principle of homogeneity to start off our considerations, which again has to be put in a range of order from the most related mono-chromatic sounds to the least related ones, although each instrument we are talking about belongs here in the colour family of “wood instruments”, for instance.

Now we might take a closer look at the statement that there are more related monochromatic sounds and less related ones and wonder how these sounds can be used constructively in our scores.

By questioning different aspects of instrumentation such as maximum homogeneity as opposed to maximum contrast, or gradual progressions from one extreme to another, let us have a look at the possibilities for connecting individual sounds.

b) Structural progression of single-sound phenomena which are to be connected in succession, starting from high homogeneity between single sounds to successively decreasing grades of relation

c) Continuous (homogeneous) transitions (colour bridges) from one colour to another

Examples:

From skin to wood sounds
From skin to metal sounds
From metal to wood
etc.

d) Special techniques and methods (procedures)

Colouring; subtle successive re-dyeing;

Covered attack

(Several examples given or demonstrated on blackboard):

1. A sounding chord of tubular bells hit first in the manner of a “covered attack”, then a different sound action slowly appears like a coloured “echo” from the previous superimposing attack event

2. Superball-stroke on large bass drum becoming audible by “growing out” from another colour field (chord of metals, e.g., cymbals, tam-tam combinations etc.)

– A mention of the importance of knowledge of individual instruments involved and sophisticated knowledge and use of sticks and mallets to achieve the subtle grades of timbre and balance in dynamics

Clouding or hazing of the primary colour = interfering with and modifying an introduced sound by homogeneous and inhomogeneous changes of instruments

Criteria and degree of relation which can express itself in different modes and qualities

Shaping chains of sounds by adjusting or levelling attacks

Modifications and modulations of timbre

Significance of the instrumentation

Originality and Expression

To finish off the lecture:

— Several examples to be demonstrated live and additionally explained and visualised by graphics

Additionally:

*) Mention of the theory of colours (science of colours) as formulated by Goethe, Runge, Kandinsky, Itten, and others, which can inspire reading for the widening of one's understanding of colour phenomena and colour-thinking.

The Aesthetics of Blurriness

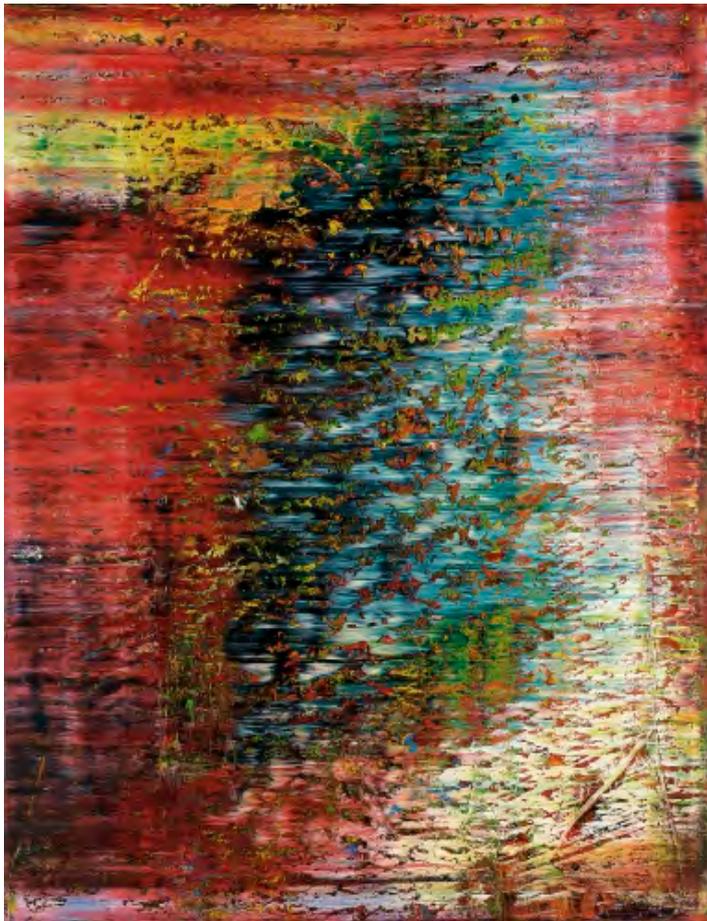
Peter Beyer

Blurriness is a type of perception which is mostly associated with seeing. We know the visual effect of blurriness, which we experience while adjusting the lens of a camera, for example. The idea of using the visual effect of blurriness in art is very old; it occurs in impressionistic painting, for instance, although the blurriness still is very stylized. A genuine realistic aesthetic of blurriness in painting was created by Gerhard Richter, who began in the 1960s to imitate photographic blurriness by means of painting only, as we see in “Woman with Child”, one of his early paintings (Example 1).



Example 1

In his later paintings Richter’s art became more and more abstract without losing the immediate impression of blurriness, as is the case with “Abstract Painting” of 1991 (Example 2), which can be described as a radical variation on the previous painting.



Example 2

Inspired by this kind of painting, I have been trying for several years to realize an aesthetic of blurriness in composition, using purely instrumental rather than technical means. An example of this is the beginning of my orchestra piece “Aussicht” (Example 3). Using rhythmical shifting while simultaneously sustaining the same two tones creates the effect of blurriness, which can be compared to the visual effect of an unfocussed camera lens. This example shows very clearly the difference between blurriness in music and blurriness in painting: while painting usually represents certain objects, music mostly does not relate to a concrete acoustic reference. In this sense music can be called an abstract art, understood not as nonsensuous but in the sense of not concrete. Consequentially, the impression of musical blurriness can only be created when a clearly recognizable musical model is blurred. In other words, only those objects which clearly exist in the musical awareness of the listener can appear blurred. In my orchestra piece it is the elemental figure of a pulsing tone change which can be perceived as a model, because of its permanent repetition – already in blurred form at the beginning – as a blurred clarity.

The idea of blurred music is quite old, although blurriness in older music, especially 19th century music, is an exceptional situation which cannot establish an autonomous aesthetic of blurriness. An example of this is found in the 2nd movement of the 3rd symphony by Johannes Brahms (Example 4).

Aussicht

für Orchester

Peter Beyer

1 $\text{♩} = 40$
legato
pp

Violine I 1-4
Violine I 5-8
Violine I 9-12
Violine I 13-16
Violine II 1-4
Violine II 5-8

2 $\text{♩} = 50$

VI. I 1-4
VI. I 5-8
VI. I 9-12
VI. I 13-16
VI. II 1-4
VI. II 5-8
VI. II 9-12
VI. II 13-16

Example 3

Musical score for measures 52-54. The score includes parts for Flute (Fg.), Horn in C (Hrn. (C)), Violin (Vl.), Viola (Vl.), Trumpet (Br.), Violoncello (Vc.), and Kontrabaß (Kb.). The Flute part starts with a *mf* dynamic and a *cresc.* marking, then changes to *pf*. The Horn part has a *pf* dynamic. The Violin and Viola parts have *cresc.* and *pf* markings. The Trumpet part has *mf* and *cresc.* markings, then *pf*. The Violoncello part has *mf* and *cresc.* markings, then *poco f*. The Kontrabaß part has *mf* and *cresc.* markings.

Musical score for measures 55-57. The score includes parts for Clarinet (Kl.), Flute (Fg.), Horn in C (Hrn. (C)), Violin (Vl.), Viola (Vl.), Trumpet (Br.), Violoncello (Vc.), and Kontrabaß (Kb.). The Clarinet part starts with a *m* dynamic and a *zu 2* marking. The Flute part has a *m* dynamic. The Horn part has a *m* dynamic. The Violin and Viola parts have *m* dynamics. The Trumpet part has a *m* dynamic. The Violoncello part has a *m* dynamic. The Kontrabaß part has a *m* dynamic.

Example 4

The wavelike blurriness of this music is caused by a relatively simple operation, a kind of heterophony between violins and cellos. The constant eighth notes of the cellos are distorted by the syncopated triplets of the violins, which attract attention due to their high register. This produces a strange kind of swaying reminiscent of waves, an impression further intensified by the dynamic ups and downs at the end.

The possibility of these kinds of effects in older music is directly related to the existence of a clear basis. Therefore blurriness in older music exists mostly in a coexistence of clear and unclear, so that the unclear form is a special sort of variation.

The difficulty of striving for an autonomous aesthetic of musical blurriness is above all the choice of an appropriate musical basis, which has to be selected so that it does not need to be exposed in an original clear version; still it should be exposed in a way that allows its recognition as such in its already blurred version.

As we saw in the case of "Aussicht", this basis is a pulsing tone change figure, which is exposed from the beginning in the blurred version. The technique which creates blurriness is rhythmical distortion, here in the four groups of the first violins combined with the same tones sustained in the second violins, which only makes the effect possible.

Another essential difference between music and painting is the perception of music in time. This makes it possible to express blurriness as a process in time, thus as a gradual blurring or clearing up. This can be seen in the next example of "Aussicht" (Example 5), which shows a three-part constant pulsation where the pulsation of the different voices appears and disappears only via a change in rhythmical distortion, making the voices clear and blurred, without any change in dynamics.

Another type of blurriness in "Aussicht" is microtonal distortion, which in the following example deforms an E flat major chord in the high-pitched instruments, which are pulsing at two different tempos, an effect which produces a sort of vibration as well. In addition, the sound is blurred by a disturbing sound in the clarinets, bassoons and double basses that returns periodically (Example 6).

66 11

Klar. 1, 2
Klar. 3, 4
VI. I 1-4
VI. I 5-8
VI. I 9-12
VI. I 13-16
VI. II 1-4
VI. II 5-8
VI. II 9-12
VI. II 13-16
Vla. 1-3
Vla. 4-6
Vla. 7-9
Vla. 10-12
Vc. 1, 2
Vc. 3, 4
Vc. 5, 6

Example 5

Looking for further possibilities for musical blurriness, I inevitably found another way of musical reference: quoting familiar pieces of music. An example of this is my “Canonic Variations on a Theme by Arnold Schönberg”. The theme varied in this composition is Schönberg’s piano piece Op. 19: No. 2 (Example 7). First introduced in the original version, the theme is varied twelve times, with each variation showing a different way of dealing with the principle of blurriness.

Kanonische Veränderungen über ein Thema von Arnold Schönberg für Klavier

Peter Beyer

Langsam (♩ = ca. 50)

Example 7

In the fifth variation there is the technique of a fragmented canon, i.e. a canon in which, in this case, three voices play the fragmented theme by cutting out several of its elements. The uniqueness in this canon is further given by the fact that the three voices start simultaneously and then diverge from one another more and more. The effects of canon fragmentation and

stretching are twofold: on the one hand the music is cut into pieces, while on the other the pieces are reassembled, so to speak, as a defragmentation of fragments by which the theme is heavily deformed (Example 8).

a tempo

52 *pp*

55

57

59 *p*

Example 8

In the sixth variation, another kind of blurriness, a sort of musical version of a photographic negative, occurs: short tones become long, long tones become short, at the same time all tones are doubled and transposed to different octaves, with the result that Schönberg's pulsing staccato eighth notes become a continuous soundboard. On the other hand, the actual thematic motives of the cantilenas become fragmented tone fields in which the underlying background can be recognized only as shadow (Example 9).

♩ = 85

65 *pp* P mP

68 8¹

71 mP P 8¹

74 P mP 8¹

Example 9

In contrast to the essentials of musical blurriness as I explain it above, in this kind of musical reference – as shown in the Schönberg Variations – I thought it necessary to expose the subject which is to be blurred at the beginning in the original version. In this case, the blurriness can probably only be perceived if the quotation is present at all times in the awareness of the listener; otherwise the music does not sound particularly blurry. To this extent, this piece has been a kind of intermediate stage which has led me to choose less specific sorts of musical quotations, but rather those which do not need to be recognized as quotations in order to be perceived as blurry.

'Dirty Light': approaching lighting in audio-visual contexts beyond its material-immanent properties

Marko Ciciliani

ABSTRACT

In this paper I am going to address a specific question concerning the compatibility of sound and light as a generic visual medium. The focus will be on the question of whether a form of 'dirty light' as a corresponding form to 'sonic noise' is imaginable.

The musicalisation of noise is a prominent aspect of the development of music in the 20th century. The same can be said of the inclusion of non-artistic materials in art objects in the field of visual arts, as opposed to traditional ones like paint on canvas. However, these analogies cannot be easily applied to light as an artistic medium, since light is characterised by purity and can neither incorporate extraneous materials nor be rendered dirty. In an artistic work which attempts to find correspondences and compatibilities between the media of sound and light, noise therefore poses the biggest challenge since a direct translation into the visual domain does not seem possible. However, by applying a semiotic approach and conceiving light as a symbolic form rather than a medium that is characterised by specific 'material'-immanent properties, a form of 'dirty light' becomes very well conceivable.¹

NOISE AND DIRT

When investigating the notion of dirt in societies, it can be said that hygiene and pathogenicity play only a secondary role. Rather, the idea of dirt reflects a certain order, which is to be maintained. Dirt is not an isolated event but an expression of a system with a set of ordered relations and a contravention of that order. Therefore, dirt is the by-product of a systematic classification of elements in the environment, in so far as ordering involves rejecting inappropriate parts (Douglas 1966:5).

In much the same way as dirt is not an isolated event but a result of a system of ordering, the meaning of noise in music has not been a stable one but has constantly shifted through history. The history of music in the 20th century in particular can be read as an ongoing redrawing of the line that separates musical sound from noise.

In order to comprehend the notion of 'dirty light', I propose to analyse light and sound as a 'symbolic form'.

¹ In video art, 'visual noise' is an established term. It is important to point out that it does not apply to lighting, as 'visual noise' addresses phenomena that are mainly either related to the resolution of images and artifacts due to conversion or inconsistencies of colour fields. These phenomena are specific to the medium of video and therefore cannot be transferred to the more generic medium of lighting.

TOWARD DIRTY LIGHT, SOUND AND LIGHT AS SYMBOLICALLY CHARGED IDIOMS

As mentioned above the inclusion of sounds or materials in artistic works that have formerly been perceived as unacceptable has been a driving force in the development of music and the visual arts. This was especially obvious in the 20th century, although it can be observed as a stimulating principle in much of the history of Western art.

When comparing sound and light, it becomes apparent, however, that light – as a medium – is reluctant to be placed within a polarity that distinguishes purity from dirtiness. Rather, purity seems to be an aspect that is in the very nature of the immateriality of light. In other words, light can neither be rendered dirty, nor can it expand its boundaries by including elements that were previously not part of it, in the way that music can internalise noise or visual art can incorporate “non-artistic” materials. This pure aspect of light is probably one of the main reasons why it has often been associated cross-culturally with the divine.

When working with light in the context of contemporary composition, sounds with noisy qualities – in the many different forms that these can take – are likely to play a part. The following section asks if there is any such thing as ‘dirty light’ that can serve as a corresponding element in the visual domain.

CONTEXTUAL AND LIMINAL NOISE

In this paper I develop a set of categories of noise where the terms noise and dirt can be used interchangeably, since the underlying meaning of both is the same, although noise tends to refer to sound and dirt to matter. The following differentiation of noise is therefore equally applicable to aural as well as visual phenomena.

In order to form a better understanding of the different qualities that noise or dirt can have in the context of sound and light, I propose to distinguish between three categories of noise. In this section I am going to introduce two of them: *contextual* and *liminal* noise.

Contextual noise is best described in terms of what Mary Douglas wrote about dirt:

There is no such thing as dirt; no single item is dirty apart from a particular system of classification in which it does not fit (Douglas 1966:xvii).

Hence, within a particular system, dirt is defined by not being part of that system. It cannot be considered an absolute value or condition. Dirt is what is excluded from a set of order, since order includes the rejection of inappropriate elements (Douglas 1966:44). Therefore dirt depends on relationships that are inherent in a system; in other words, it depends on the context. When working with sound and light, the term *contextual* noise describes the use of any material – musical or visual – that contradicts a certain order that has been established. What becomes noise or dirt in one context can be part of the accepted order in another.

Helmut Lachenmann’s composition *Accanto* (1975/76) for clarinet, orchestra and tape serves as a good illustration of this. Lachenmann wrote this piece in reference to W. A. Mozart’s *Clarinet Concerto* K. 622. In *Accanto* the sonic texture is dominated by the use of instruments with extended techniques, which yields a highly differentiated palette of noisy sounds – noisy in the sense of being primarily non-pitched. A tape part is also included in the composition, which consists of an original recording of Mozart’s *Clarinet Concerto*. This concerto is also the conceptual provenance of the orchestral material of *Accanto*. For an extended period of time the tape is only turned up for fractions of a second. Thereby it appears as short sonic bursts, too short to make the actual

content recognisable. The first moment when the tape is played for a longer passage is at m. 192, about 17 minutes into the piece, which has a total duration of approximately 27 minutes. Here, the utterly harmonic music of Mozart becomes recognisable. As the listener has become used to the abstract sonic idiom of Lachenmann in which very detailed instrumental noises with subtle nuances establish an idiom in their own right, the sound of Mozart appears as a dissonance in the context of the composition. The Clarinet Concerto has become *contextual* noise despite its harmonic and sonorous character, which might otherwise be used as an example of the opposite of what is commonly associated with “noise”. In the context of Lachenmann’s *musique concrete instrumentale* the Mozart is “matter out of place”.

The term *liminal* noise refers to the experience of noise that is less dependent on its context. It describes the direct experience of sensorial stimulation that is at the upper or lower limits of what our sensual organs can adequately process. Any sounds that are too loud or too soft, too high or too low to be properly perceived, or any visual impressions that are too bright or too dark to be clearly recognised, are examples of *liminal* noise. The term *liminal* is used because the perceived information touches the limits of what the senses can handle. *Liminal* noise refers to a more immediate sensual experience than *contextual* noise, since it addresses the thresholds of what the senses can perceive. It is important to note, however, that despite this direct experience, *liminal* noise can still be commoditised. By changing its meaning, dependent on the context it is placed in, it can become part of an established system. An example of this is how the perception of volume, or sheer sound pressure, has developed in rock music. In the 1950s, the amplified sound of rock ‘n’ roll was essential in order to express rebellion. Loudness was its stylistic element (Hegarty 2007:59). Back then it was perceived as an expression of aggression, for which rock n’ roll was often attacked as immoral, anti-social and – because of the sound pressure – damaging to the ears. Nowadays an average rock concert produces peaks in sound pressure that are significantly higher than what was possible with the amplification systems of the 1950s. Nevertheless, the loudness of rock concerts has long lost its offensive character. The volume has become part of performance tradition. Despite its threat to hearing, it has become an accepted commodity. *Liminal* noise has become accepted and therefore lost its ‘noisy’ aspect, even when it causes pain.

However, for a differentiated understanding of the forms that noise can take, it is valuable to distinguish *liminal* noise from the other categories of noise.

A SEMIOLOGICAL APPROACH TO MUSIC AND ART

In his book Music and Discourse the musicologist Jean-Jacques Nattiez proposes a semiotic approach to music analysis. In the understanding of semiologists,² every human action – and therefore also every work of music or art – is considered to be a “symbolic form”. Nattiez claims:

The symbolic is a constructive and dynamic phenomenon, characterized first and foremost by the process of referring; in this regard, it is *distanced* from reality, even as it is an element of the real. [...] The symbolic function is generally spoken of as a “capacity to represent that which is absent” (Nattiez 1990:34–5).

Understanding a work of music or art as a “symbolic form” means that any human expression

² The semiotic approach described here is taken from Nattiez (1990). Other writers on semiology might use a different terminology with other associated meanings.

entails a web of references that are open to interpretation. In the interpretation of a work of art a “metacontext” that reaches beyond the factual consistence of an expression is assumed. The referential character of music is certainly different than that of linguistics, but

... one cannot develop a semiology for a special domain such as music, except by agreeing to inventory *all possible forms of referring* without limiting oneself to the single example of referential modalities in verbal language (Nattiez 1990:116).

In musical and artistic contexts, two basic types of references have to be distinguished – *extrinsic* and *intrinsic*. To different degrees, they are both present in every work. *Intrinsic* references are inherent in the formal manifestation of a work. For example, motivic cells that occur at different times and in different forms and contexts in a musical composition create a web of references. In contrast to this, *extrinsic* references point beyond the materiality of a work. All sorts of programmatic music deliberately use extrinsic references. They can be mechanical imitations of nature, psychological effects or physiological gestures. Acquaintance with *extrinsic* references is often not crucial for an understanding of a work. However, familiarity with and an understanding of them opens an additional channel of interpretation.

EXTRINSIC NOISE

The *extrinsic* quality of artistic material can form a third category of noise, which is referred to as *extrinsic* noise. *Extrinsic* noise is at hand if neither of the aesthetic criteria of *liminal* or *contextual* noise are fulfilled, but a sense of irritation is evoked by creating an association with an impure extrinsic experience.

A good example of *extrinsic* noise is Nicolas Collins’ composition Broken Light for skipping CD and string quartet from 1991–92. Here Collins combines a string quartet with a manipulated CD player, which plays string music by the Italian Baroque composers Corelli, Torelli and Locatelli. As a result of the manipulation of the CD player, the playback of the CD gets stuck in loops (Collins 2009). Such loops are a common error that is likely to happen with scratched or dirty CDs. For the regular consumer of recorded music this is as familiar a phenomenon as the regular thumps resulting from scratched records on turntables. Hence it evokes the feeling that a malfunction is at hand and that a piece of equipment is not behaving in the way that it is meant to. A lack of control seems to be imminent and as such it carries aspects of noise. However, in the case of Collins, the sonic results of the loops do not carry noisy sound characteristics in any traditional sense. Rather they create a lush harmonic texture that is completely congruent with the harmonic idiom of the rest of the piece. The noisy quality that remains is neither *liminal* nor *contextual*; it is based on the association with malfunctioning media and is therefore *extrinsic*.

SOUND AND LIGHT AS “SYMBOLIC FORMS” – SEARCHING FOR “DIRTY LIGHT”

The semiotic approach shows that the expressive content of a work functions on levels that are beyond its factual materiality. In the case of light, this means that its potential meaning does not have to be constrained by its apparent pureness. Since dirtiness represents a stark contrast to light’s medium-specific characteristics, this chapter will investigate how far its expressive range can be stretched. The question will be pursued of whether something like ‘dirty light’ – metaphorically speaking – is conceivable.

The cultural connotations of purity and dirtiness are manifold. The following list shows terms that are commonly associated with pureness and dirtiness and that also include light and darkness (Groot 1998:224–5):

Pureness =	Order =	Light =	Control =	Spirit =	Virtue =	Joy =
Dirtiness =	Chaos =	Darkness =	Loss of Control =	Matter =	Evil =	Sadness

Since defilement of light in the literal sense is not possible, the other pairs of terms may offer a more suitable lead to the use of light in combination with sound. Especially 'order' as opposed to 'chaos' and 'control' as opposed to 'loss of control' are aspects that are closely related to noisy phenomena in music. While it is not possible to imagine that light is rendered dirty, it is certainly conceivable to use it in such a way that the impression of chaos or loss of control is evoked. How this could be obtained brings us back to three sorts of noise that have been distinguished above: *contextual*, *liminal* and *extrinsic* noise. When these terms are combined, the following chart can be composed to show how these are related with each other, and how a single light or sound element can function in an artistic work.

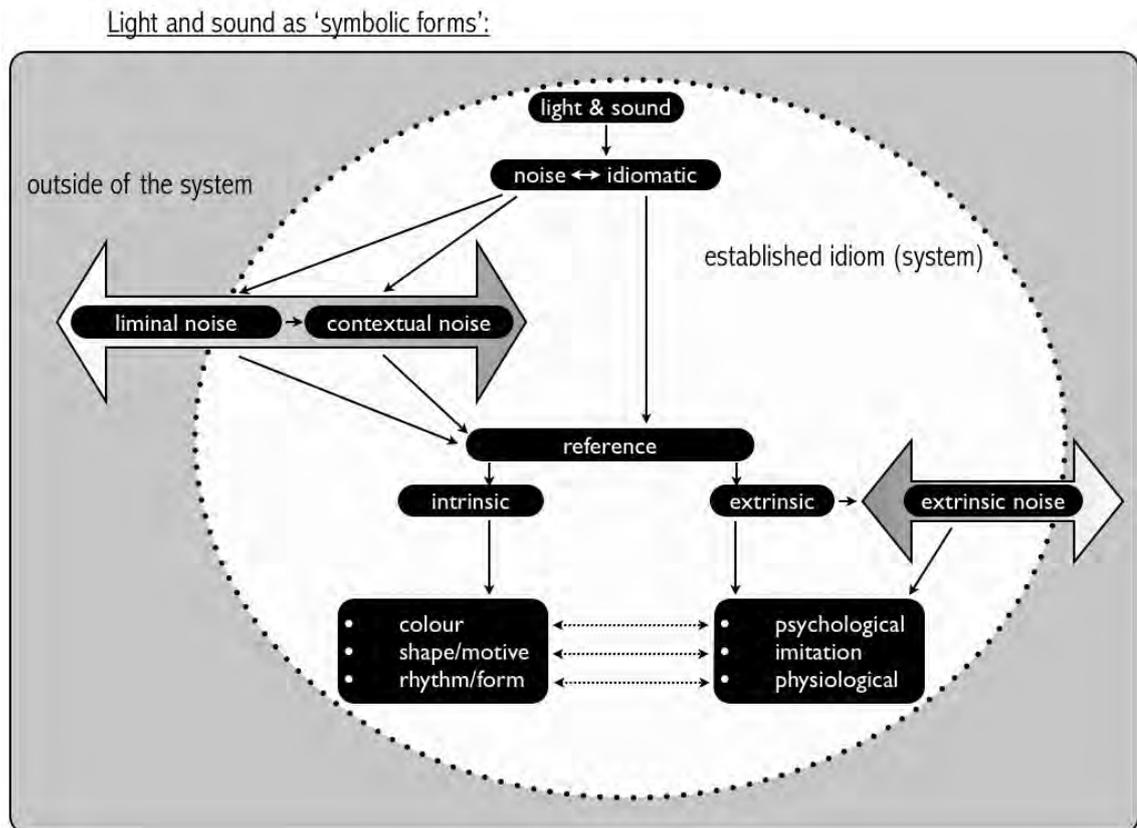


Fig. 1 Light and sound as symbolic forms, graphic layout of terms used

Here is an explanation of the different connections in the chart: within a particular work, the use of light and sound either fits or contradicts an established idiom. If it lies within the idiom, it also has referential qualities. If it is not part of the idiom and its particular order, it is noise. In this case it can either be *liminal* noise or *contextual* noise. In the former case it lies beyond the range that a sense can comfortably process as it addresses the senses at the thresholds of their capabilities. In the latter case, it does not pose a challenge to the capacity of the senses,

but it appears to be aesthetically incompatible with the established idiom. *Contextual* noise is always in a dynamic process with the established idiom since it challenges its boundaries and often eventually becomes part of it (Hegarty 2007:ix). This is also the reason why the circle has been drawn with a dotted instead of a full line: the border between what is inside and outside a system is only rarely a definitive one. If a noisy element becomes idiomatic despite its contextual noisiness it also gains referential qualities. Hence, it is reintegrated into the system. However, if it remains too much in contradiction with the established system, it does not become integrated.

Since *liminal* noise has a direct, irritating effect on the senses, it forms a more autonomous experience. Its noisiness does not depend on the context. But while being *liminal*, it can, if it is in aesthetic contradiction with the idiom at hand, at the same time be *contextual* noise. As shown by the example of volume in rock music, it, too, can become integrated as part of an idiom and thereby become referential. Both *contextual* and *liminal* noise are always in danger of falling out of the system completely if their noisiness is too much in contradiction with the idiom at hand.

Being referential, sound and light can form either an *intrinsic* or an *extrinsic* reference. The former refers to all relationships that are based on the material of a work and the structures that are generated by manifold medium-specific cross-references. *Intrinsic* structural relationships can be created, for example, by the use of motivic, colouristic, rhythmic or formal elements. Those references that point beyond the structure-immanent relationships in a work are *extrinsic*. They can be imitative (naturalistic), psychological or physiological (gestural), to name just a few possibilities. The extrinsic aspect brings yet another sort of noise into play, namely *extrinsic* noise, which does not depend on either sensual (*liminal*) noisiness or material-based (*contextual*) noisiness, but which entails a noise aspect through association. Remember the example of Nicolas Collins' work Broken Light. *Extrinsic* noise, too, can fall out of the system if it cannot be reintegrated into the idiom.

*

By investigating sound and light as 'symbolic forms' it has been possible to establish a differentiated vocabulary of various sorts of noise/dirt that function on separate perceptual levels. This reveals the numerous ways in which they can function in artistic contexts and has opened the door to conceiving ways in which light, too, can appear noisy or dirty despite its medium-specific purity. A factual dirtiness is therefore no prerequisite for the creation of experiences in artistic contexts that are analogous to dirt. "Dirty light" therefore *IS* possible.

SUMMARY

Approaching lighting with the differentiated vocabulary that we have established does not automatically lead to completely novel light designs. However, it does provide a new perspective on visual and aural phenomena and helps us to comprehend and establish analogies between the two that lie beyond traditional ones that are based, for example, on rhythmic, colouristic or spatial correspondences. It can therefore serve as a valuable tool to an additional analytical and aesthetic understanding of the manifold manifestations that are possible between these two media.

REFERENCES

- Collins, Nicolas. *Hacking the CD Player*. 2009.
www.nicolascollins.com/texts/cdhacking.pdf (accessed 05 30, 2010).
- Douglas, Mary. *Purity and Danger*. London: Routledge Classics (2002), 1966.
- Groot, Jan Willem de. "Gnosis en raszuiverheid." In *De Hang naar Zuiverheid*, by Labrie and Melching Laarse. Amsterdam: Het Spinhuis, 1998.
- Hegarty, Paul. *Noise/Music, a history*. New York: Continuum, 2007.
- Lachenmann, Helmut. *Accanto*. Vol. 61/62, in *Helmut Lachenmann*, 63. Edition Text & Kritik GmbH, 1988.
- Nattiez, Jean-Jacques. *Music and Discourse*. Princeton: Princeton University Press, 1990.
- Discography:
- Collins, Nicolas: "Broken Light", in: *It Was a Dark and Stormy Night*, CD, New York: Trace Element Records (1992).
- Lachenmann, Helmut: "Accanto", in *Helmut Lachenmann Musique Concrète*, CD, Stockholm: x5musicgroup (2009).

Gérard Grisey's *Quatre Chants pour franchir le seuil*

Lukas Haselböck

On 24 August 1997 Gérard Grisey wrote in his diary: “Depuis huit jours je suis absolument seul dans ces montagnes et la musique devient comme une fleur qu’il suffit de cueillir. [...] Je suis heureux.”¹ When Grisey wrote these words, he was involved in an intense phase of composing in the little village of Schlans in the mountains of Switzerland.

The composition that resulted from this working process was called *Quatre Chants pour franchir le seuil*, which means “Four Songs in order to transcend the threshold”. This piece could be called a kind of a requiem in which texts of four cultural traditions are combined. For the first song, Grisey chose a text from the collection *Les heures à la nuit* by the French poet Christian Guez-Ricord, who died in 1989. Grisey had met him in 1972 when he won the Rome Prize and spent a year at the Villa Medici in Rome. In the second song, inscriptions of Egyptian sarcophagi and old Egyptian poems are set to music. For the third song, Grisey used poems by the ancient Greek poet Erinna of Telos; for the fourth song he used a text from the old Babylonian Epic of Gilgamesh.

In 1998, only a few months after Grisey had completed this composition, he died due to a stroke. This was a shock for all those who knew him and loved his music, not least because he was only 52 years old.

Before I begin with an analysis of the first movement of this work, it is necessary to deal with aesthetic and historical aspects of spectral music. Spectral composers including Grisey, Murail and Dufourt developed their aesthetic positions mainly as a reaction against serialism – the music of Boulez, Nono and Stockhausen (although it is obvious that Stockhausen had a strong influence on Grisey). At the end of the 1960s and beginning of the 1970s, the so-called “spectralists” developed a musical style which was focussed mainly on slow processes: sounds developed slowly led to other sounds, and the transitions between these sounds gained major importance.

In the 1980s, the spectralists started to enrich these continuous processes by contrasts. In this regard, Grisey was influenced by jazz music, by the music of Nancarrow and – I am happy to mention his name here in Brno – by Janáček. All these influences were important for works like *Talea* and *Vortex Temporum*.

Another important aspect, as the name “spectral music” suggests, is the analysis of spectra and the dimension of timbre – not only in the context of instrumental music but also of vocal music. For Grisey, meaning in vocal music was not a result of a hermeneutical interpretation of a text which was set to music but it was primarily bound to the dimension of timbre – not only to the instrumental timbre but also to the sound quality and structure of the text. In the opinion of Grisey, texts nowadays cannot be set to music by associating text and music directly (in the sense of the tradition of musical rhetoric). In his diary we can see that he reflected on this problem quite often. Here is an example from July 1996, when he was starting to compose the *Quatre Chants*:

“En composant la structure et la forme du mouvement *De qui se doit ...* des Chants de Mort et

¹ Gérard Grisey, *Écrits ou l’invention de la musique spectrale*, ed. Guy Lelong, Paris 2008, pp. 326f.

d'Éternité... Voir s'il est possible de dissocier la mélodie ou le geste vocal du texte qu'elle met en son: Echo à la dissociation déjà opérée dans *L'icône* entre la voix et le son, sorte de reflet de la situation de l'homme et du cosmos: fusion, harmonie ou indifférence, lutte stérile. Si je compose un opéra, faire advenir l'enjeu et le tragique non des situations externes des voix entre elles mais du rapport des voix et du son cosmique. Pour signifier le temps humain, face (ou dans ou porté par ou rebelle) au Temps cosmique, rien ne vaut la voix humaine toujours radicalement autre par rapport aux sons instrumentaux ou électroniques. La voix comme radicale altérité. Pourtant elle émet des sons elle aussi."²

Here is another citation from 1970: "*Rapport texte et musique: Suivre avec attention la sonorité et le rythme des mots ou des phrases plutôt que leur sens. Le sens a peu d'importance. La musique peut habiller un texte dénué de sens pourvu que les sonorités en soient musicales (Cf. Cinq Rechants de Messiaen).*"³ Here, Grisey comments on his aesthetic position, which seems to exclude musical rhetoric. We will try to keep this in mind when we analyse the first movement of the *Quatre Chants*.

First let us look at the poem *La mort de l'ange*. The poem is important in many ways as Grisey mentions in his texts that the first movement is based on a structural analysis of the proportions of the text.

*La mort de l'ange*⁴

De qui se doit
de mourir
comme ange
... ..
comme il se doit de mourir
comme un ange
je me dois
de mourir
moi même
il se doit son mourir
son ange de mourir
comme il s'est mort
comme un ange

In the sketches we can see that Grisey established a direct relation between the structure of the text and the musical structures (see Example 1). In the first line under the text we see the number of syllables, which is important for the duration of the formal sections of the first movement. In the second line we see the same numbers of syllables, but here long syllables like "mourir" and "comme ange" are counted as 2 syllables, and therefore the numbers are higher: 5 instead of 4, 4 instead of 3 etc. On the left side of this sketch Grisey adds the numbers 4, 6, 5, 4, 3, 2, 1, and the result of this addition is 25. Here Grisey presents another kind of structural analysis of the text. In this case, the analytical focus is on the question of how often crucial words are used. Guez-Ricord uses "se doit" 4 times, "mourir" 6 times, "comme" 5 times etc. The result is a decreasing

² Grisey, *Écrits*, pp. 326.

³ Ibid.

⁴ Christian Guez-Ricord, *Les heures à la nuit*, in: *Le sujet de ma poésie c'est ma poésie*, Crest 1992.

sequence of numbers which is an important determinant for formal processes. In the lower part of the sketch, he uses the term *archetype*, which is influenced not only by C. G. Jung but also by the music of Janáček. Archetypes are simple motives – or rather, figures – which are important for the oeuvre of Grisey in general.

This kind of structural analysis is a first strategy by which Grisey tries to avoid a hermeneutical interpretation of the text. At the beginning of the score we see how Grisey translated structural aspects of the text into music. The melodic figures of the beginning have 4 tones, 3 tones, 2 tones, 7 tones and 3 tones. This can be compared directly with the number of syllables of the text.

Another interesting observation is as follows: in the *Quatre Chants* Grisey does not compose spectra in their original structure – big intervals below and small intervals in the higher region – but he prefers spectral modi. In Example 3 we see that all the pitches of the spectrum are summarized within a mode, and in this mode the lower partial tones are regarded as higher-ranking. So in the third layer (tuba and harp), for example, tone 2 (E) and tone 3 (B) are more important than the partial tones 9, 5 and 7. Thus a new hierarchical structure is created.

I cannot mention all the details here, but it is obvious that Grisey formed many tiny details of the structure out of this principle of spectral harmony and out of the structure of the text.⁵

⁵ For details see Lukas Haselböck, *Gérard Grisey: Unhörbares hörbar machen*, Freiburg i. Br. (Berlin) Wien 2009, pp. 264–333.

MI

Sax / Vc.
 11 23 25 13 27 29 15 31 33 17 34 37 19 21

ClB / Cb.
 5 11 12 13 7 15 17 9 19 21

1 ubai / Hp.
 2 9 5 3 7

DO

11 23 25 13 27 29 15 31 33 17 19 21

5 11 12 13 7 15 17 9 19 21

be (to be)

RE

11 23 25 13 27 29 15 31 33 17 35 37 19 21

5 11 12 13 7 15 17 9 19 21

2 3 (i o d o)

Example 2: Grisey, *Quatre Chants pour franchir le seuil*, sketch (harmony)

Another aspect of the first movement, the relation between micro- and macroform, can be regarded as a kind of serial heritage. Nevertheless, in the *Quatre Chants* the micro/macro relationship is not governed by serial principles but by the structural properties of the text. First Grisey defines the length of the first movement: 500 crotchets (= quarter notes). These 500 quarter notes are divided by 59, which is the number of syllables of the poem. In this way the form of the first movement is built.

Up to now I have spoken mainly about directional processes. The numbers 4, 6, 5, 4, 3, 2 and 1 form a directional sequence, and so does the music. But Grisey offers not only one interpretation but two interpretations of the poem, which are different from one another. The second interpretation can be described as follows: Grisey is adding groups of syllables, and the result is the structure 9-10-8-12-7 (see Example 1, left side, lower part), which can be grouped into two streams that drift apart: 9-10-12 and 9-8-7. Here the governing principle is not a directional sequence but a sequence of different streams that drift apart. This can be observed in regard to different aspects of the movement, e.g., the rhythmic oscillation of the three structural layers.

In this context, let us have a look at the beginning once more. Here we see a proportional canon. In layer 2, the durations of layer 1 are increased by the factor 5:4, while and in layer 3 the durations of layer 2 are increased by the factor 4:3. These relations seem to be very technical and remote from musical reality. Nevertheless they are important for the musical result, because Grisey establishes statistical oscillations which are grouped around an average duration. This average duration is 25 (Example 4 – here the differences are getting bigger – again we realize that two developments are drifting apart).

Reasons for this compositional strategy can be found in psychoacoustics and the psychology of listening. If we listen to a kind of music consisting of sections of precisely equal length, we get tired. It seems to be more interesting to listen to music in which the durations of the sections are of unequal length. Grisey observed this kind of variety in the temple at Paestum (Italy), where each section of the roof has almost but never exactly the same length as the others.

In the context of tendencies drifting apart, another aspect should be mentioned: the processes of mutation. The formal sections consist of elements which are mutated in the course of the first movement. As a result, the unpredictability of musical events is increased. Short durations get even shorter, long durations get longer, and this process can be described as proliferation – this is a term which had already been introduced by serial composers such as Pierre Boulez.

At the beginning of my paper I spoke about Grisey's aesthetic aim – his ambition to establish the alterity of the human voice. Now I would like to mention another strategy by which Grisey intended to achieve this goal. In many passages of the first movement the tones of the vocal part are derived from the instruments by means of "Patchwork" software. This helped Grisey to derive combination tones from the instrumental parts. But combination tones can only be heard in an electronics studio or under special acoustic conditions. Therefore, the logic of ring modulation is another way by which Grisey might realize the alterity of the vocal part.

In conclusion we might say that Grisey tried to dissociate text and music, and that he achieved this by analysing the text from a structural point of view and avoiding a hermeneutic approach.

Nevertheless it would be wrong to maintain that Grisey adapted a kind of naturalism where the sound or the structure itself dominates and the formal process simply consists of sounds and structures which unfold themselves. It would be wrong to maintain that Grisey's kind of musical thinking is governed by determinism. The interpretation of spectral music as a "self-unfolding" of sounds (in French: "auto-engendrement") would be a misinterpretation.

Grisey's way of analysing the poem is only one of several possible ways; this way was Grisey's choice, the decision of the composer. In the course of his structural analysis, he selected the aspects he needed in order to establish the kind of transfiguration of sound he imagined. In the end it is the composer as a human subject who organizes his own path through the possibilities of structure and sound.

Of course it would be interesting to ask what might be the reason for this combination of structuralism on the one hand and the search for a profound humanity on the other which seems to be one of the most impressive qualities of Grisey's music. Unfortunately we have no time to discuss this point in detail, but in Grisey's texts we can find an answer: he says that he wanted to become acquainted not only with himself but also with unknown and foreign dimensions of structure and sound in order to be enriched, overwhelmed and changed.

“The trend is that there is no trend” – Contemporary Music in Austria

Christian Heindl

When I saw the theme of this conference, “Current trends of contemporary music composition”, at first I was totally mystified. I immediately thought of Austrian music in general, and especially of the musical scene in the city I come from, Vienna: What trends? We don’t have any trends! Well, also a non-trend might be a trend, and so I decided to call this paper: “The trend is that there is no trend – Contemporary Music in Austria”.

Of course, this title is deliberate provocation. I also could talk about a contrary position, but the result of this paper should be that what was meant as a provocation is not a provocation at all, but just a perhaps simple, but realistic view of today’s music. I would like to try a historical report and comparison. As for the last thirty years these are also the memories of a contemporary witness.

At the beginning I would like to quote another witness, one quite well known in Austria and abroad and surely one of the most competent to talk about trends during the last half century – the musicologist Lothar Knessl, who writes and speaks about music. We were sitting side by side at a concert in April last year¹, listening to four world premiere pieces performed – played and acted – by four percussionists. Finally Knessl said with great impatience but a smile: “We heard and saw all that in the 1960s in Darmstadt and Donaueschingen – decades ago!” I replied to him: “Yes, of course, you heard it – but those young composers didn’t!”

Though we have to agree to differ on “no trends” and “nothing new at all”, I think they come together in this dialogue. It follows that my thesis is this: there exists nothing in contemporary Austrian music that was not there decades ago, except, of course, for certain things which are based on present-day technological, electronic and computer development. But this is development, it is not a trend. Nowadays, composers in Austria – there are said to be some 800 of them today – are individuals. Some of them present us with interesting, very interesting, even extremely interesting music, while some do not.

It is obvious, however, that there are no “trends” in a trend-setting way, giving direction to others and educating younger ones. A Kurt Schwertsik or Iván Eröd of 2011 composes like a Schwertsik or Eröd of 1971, a Friedrich Cerha of 2011 almost like a Cerha of 1981, a Wolfram Wagner of 2011 like a Wagner of 1991, a Beat Furrer of 2011... and so on. And their colleagues like Kranebitter, Spuller, Haselböck all do their “job” – as I said – in an often quite interesting or even admirable way. But as for “trends” ...?

I mentioned my colleague Dr. Haselböck by pure chance. Because by pure chance my first example of music is by him. There is quite a “trendy” private opera group in Vienna, founded in 1998, called the sirene Operntheater. Their recent production comprised 12 new pieces based on stories from *The Thousand and One Nights*, all by one librettist, Kristine Tornkvist, and eleven composers. The performances took place on three evenings within three days. Let us take a glimpse at what it was like:

¹ 10 April 2010, Vienna, Konzerthaus, Berio-Saal. Platypus Marathon IV. Works by Niklas Seidl, Qin Huang, Diego Collatti and Ingmar Gritzner. Berndt Thurner, Harry Demmer, Margit Schoberleitner and Georg Mittermüller – percussion. Fernando Riederer – electronics. Conductor: Jaime Wolfson.

Example (Video): Lukas Haselböck (1972), Yunan und Duban (sirene Operntheater, 26 August 2011)

Quite an entertaining piece, somehow funny, interesting, typical of today's musical output in Austria. But definitely this is neither part of a trend nor a pretence at or even the beginning of a trend. So once again my thesis: there are no trends in Austria today! (Don't forget this sentence.)

As I mentioned, this sirene production, which was performed late in this year's hot August, comprised twelve new short operas (in fact ten operas and two dance pieces). Compare two more excerpts: different composers, totally different aesthetics.

Example (Video): Willi Spuller (1979), Attars Tod (sirene Operntheater, 25 August 2011)

Example (Video): Matthias Kranebitter (1979), Der Apfel aus Basra (sirene Operntheater, 25 August 2011)

A short retrospective: Unlike in earlier centuries, especially the first quarter of the 20th century, it seems that since World War II Austria has lost any claim to leadership in international trends in New Music. Nevertheless, there have always been conservative as well as progressive composers and groups, which for decades seemed to be serious rivals – until – and this is a major point, I think – the beginning of the 1990s, since which time things have been much more individual and liberal.

If we think of the situation in the 1950s and early 1960s, there was a very strong ultra-conservative "tonal" party as well as mainly the composition class of Karl Schiske at the Vienna Academy of Music, which was markedly progressive. In 1958 Cerha and Schwertsik founded the "die reihe" ensemble as a chamber ensemble specializing in new music only and reflecting international trends (!) as well as new Austrian, mainly progressive, and definitely not conservative music.

In 1988 the "Wien modern" music festival was established. It was not the first festival dedicated to contemporary music, but it was the first large festival dedicated to mainly New (with a capital "N") music. Since then quite a few other institutions – ensembles, smaller festivals, composers' groups – have been founded.

Just one example: When the Wiener Saxophon-Quartett was founded in 1987, suddenly there was quite an explosion of new pieces for saxophone quartet. Yes, that was a trend. But the music that was composed for them, was not.

Of the younger initiatives I could name the composers' and performing group "Platypus", the composers' group "Gegenklang", the performing group "Cercle – Konzertreihe für neue Musik", not to mention the opera performing group "sirene". Again and again – a great many composers who do not see themselves as part of any "group" or "school".

A good trend that has existed for some three or four hundred years concerns young composers from abroad coming to Austria, mainly to the capital Vienna, and settling here – and enriching our musical life. Very often these are very interesting individuals – who do not set trends.

A few years ago the Prague composer Šimon Voseček came to Austria, because he had fallen in love with a Viennese. Now he lives in Vienna; he is a founding member of "Platypus" and in 2008 was given the Austrian State Award for his opera "Biedermann und die Brandstifter" – which is unfortunately still unperformed. Here is a short excerpt from his oft-performed string quartet Im Säurebad (In the Acid Bath).

Example (Audio): Šimon Voseček (1978), Im Säurebad for string quartet, ensemble LUX (2008)

I would say that the one really important trend in Austrian contemporary music of recent decades happened in the very late 1980s and early 1990s, when there was a young generation of composers who “suddenly” felt free to compose without any aesthetic bonds. There were no more questions like, What will my colleagues say? What will audiences say? What will the critics say? I remember one major event that made a great impression on me, though I did not attend it in person. This was the first performance – twenty years ago, in 1991 – of Wolfram Wagner’s “Hiob” oratorio. What was so impressive was not only the music itself, which is some sort of new new-tonality not really reminiscent of the conservative tonality of the 1950s (certain composers still compose like this today). The main thing was the reception: to our great surprise there were a lot of reviews in all the important daily papers – and by then it was quite unusual for the daily press to write about contemporary music. Not only were there so many reviews, nearly all of them praised the fact that a young composer was writing music free of any avant-garde dogma. In my opinion this was the point: the breaking through of the trend (!) that has since allowed (especially young) composers to feel more and more free in writing music as individuals.

Here is an example that makes clear what I mean. One of my fatherly friends, the composer Marcel Rubin, who died in 1995, once told me a story: In the mid 1950s he received a visit from someone who is today a very prominent Austrian composer, who presented him with a Violin Sonata in A major. About one year later the same composer came again and showed him an extremely “modern”, experimental piece. Rubin asked: What has happened? Last year you had this good Sonata in A major? The then-young colleague answered: Yes, but if I still composed that way, I would have no chance of a breakthrough.

That is what I mean. You can see that there was some sort of strong rivalry between the old conservatives on the one hand and the so-called avant-garde on the other. In the 1970s there were already composers trying to go their own way. This started with dodecaphonic and serial techniques and finally turned to tonality. I mention Iván Eröd, who from that time on was no longer respected in New Music circles. But there was another way to “solve” the problem: to present your aesthetic ideas in a more humoristic way, which leaves you much less open to attack. This is what the composers Kurt Schwertsik, Otto M. Zykan and Heinz Karl Gruber did forty years ago, when they founded the so-called “MOB Art and tone ART”. This is a reaction to the Beatles on the one hand, to New Music on the other, and at last the fulfilment of a wish to write their own music. What was represented by an extremely small minority in the 1970s, is common sense in 2011: one has to and one can write one’s own music. To demonstrate the link between past decades and today, I would like to stop here and present to you some six minutes of music which might say much more than another six minutes of talking.

I think that in this wonderful city of Brno, and at this important institute, I should let you listen to at least one complete movement of music before I close. A piece that perhaps could have been composed decades ago, although it was composed as late as 2009. The world premiere took place last year in Manchester², where it was recorded for a CD that was released some eight weeks ago on the Chandos label. It is op. 104 by Kurt Schwertsik, a work consisting of five movements and originally intended to be performed in concert followed by a Mahler symphony. So Mahler is the important spirit in this work. But the first movement is dedicated to another well-known predecessor: its title is “Janáček ist mir im Traum erschienen” (“Janáček appeared to me in a dream”). You may make free associations to the Sinfonietta, Příhody lišky bystroušky and

² Kurt Schwertsik, *Nachtmusiken* op. 104 – World premiere 16. 01. 2010 Manchester, Bridgewater Hall. BBC Philharmonic. Conductor: Gianandrea Noseda.

Věc Makropulos – but in the melodic lines you can find some original Schwertsik. This is no trend in today's Austrian music, but it is the trend of Kurt Schwertsik – so it is one trend among many hundreds today; not a bad one, I would like to add.

Example (Audio): Kurt Schwertsik, Nachtmusiken op. 104, 1st movement – Janáček ist mir im Traum erschienen. BBC Philharmonic. Conductor: Heinz Karl Gruber (Chandos).

GPS-Art and others

Marek Choloniewski

GPS-Art is a new art domain and a new field of artistic activity based on motion in an open, outdoor space. GPS-Art is a global interactive instrument used for setting up and processing both audio and video material. It integrates elements of audio-visual installation to be used for intermedia communication. All GPS-Art projects explore large urban and open spaces – on land, on water, in the air, under water, as well as in outer space. All GPS-Art projects use the GPS-12 device (Global Positioning System used for navigation), Internet, as a large net-instrument, as well as mobile phone technology. GPS-12 describes its own location reflected from the position of 12 satellites hanging above the Northern Hemisphere of the globe. Originally GPS-12 was used for navigation, measuring in an interactive way several topographic parameters such as altitude, latitude (from 10 meters to thousands of miles), and speed. All measurements are used as a starting point for many elements of GPS-Art.

From 2001 till 2012 the GPS-Art idea was realized by a series of thirteen GPS-Trans net-cellphone-GPS performances, where “trans” refers to transmission in time and space.

GPS-Trans 1 (part of <http://krakow.cafe9.net>) was realized on December 16 and 17, 2000 in the form of online, live Internet composition. It combined four 3-hour blocks in a total webcast of 12 hours. Sixteen mobile phones transmitted sounds from different places at the very center of the city of Krakow. All of them were mixed and transformed live in a studio and sent individually through a dedicated audio channel to the web to be received with 14–16 seconds of Internet delay. Overlapping delayed audio material was the essential core concept of Internet Loop and Internet Wave. Those particular processes were used as the two basic principles of GPS-Trans 1 for audio Internet manipulation. The project was also an introduction to non-commercial web/radio, using free software for art activity.

GPS-Trans 2 was performed on August 9, 2001 as the second part of the city sound exploration called “An audiovisual map of the city of Krakow”. A map of the town was used as a graphic score for an audio-visual composition. An original element of the project was the position of a car moving through the city with a GPS-cellphone system installed. The car was used as a live performer exploring the city of Krakow and also playing the role of a large urban instrument. The area between the small ring road (Planty) and the big ring road (Aleje) of the city of Krakow was the site of GPS-Trans 2 exploration. Selected parts of the city center were divided into 41 small areas. Hundreds of the most characteristic audio tracks from each region were loaded on the server/sampler to be controlled live during the performance of the project. GPS-Trans 2 was webcast live on Radio Jeleni, a regular weekly Czech Internet radio channel.

GPS-Trans 3 was performed on December 2, 2002, with similar principles as GPS-Trans 2, although new visual forms were included in the project. The car moving through selected areas of the city controlled live sounds from prerecorded areas as well as a series of pictures controlled live by the speed of the car. An interactive slide-show was an element of the website available to all Internet users, who became active performers in the project as they observed live the car’s activities as it moved through the city. A new element in GPS-Trans 3 was a mirror interactive system installed in Chicago. GPS-Trans 3 used an Internet bridge for the simultaneous, ‘twin’ performances in Krakow and Chicago. GPS-Trans 3 was one of three European projects forming

Cathedral, a multi-continental Internet project composed and performed over previous years by Williams Duckworth. (www.monroestreet.com/Cathedral).

Additionally, all GPS-Trans projects (1–3) were projected live from the web in the Bunkier Sztuki, the city of Krakow's gallery of modern art.

In 2003 GPS-Trans 4 marked a turning point in the basic concept of the project: cyber stage Internet was replaced by a public venue with a live webcast. All the following GPS-Trans projects were performed mainly for an audience at a single gallery space with additional webcast. The basic change from cyber stage to public venue also changed the form of the performance and other elements. GPS-Trans 4 was prepared and performed at the Krzysztofory Gallery in Krakow on June 30, 2003. The new video material from the city of Krakow was recorded by a set of four synchronized digital camcorders which were fastened in the car, capturing the front, back and both sides of the moving vehicle. The city center was explored and recorded through an originally designed mapping system. All video and audio recordings were used later as material for interactive video and audio streams towards a rectangular form of 4 screens at the Krzysztofory Gallery which imitated the cabin of the car and was used earlier for the city recording. The audience was located inside and outside the projection box so as to be an active receiver of the projection. The car sent its own coordinates through a GPS/GSM system to the server controlling different parameters of live audiovisual projection. The Improvising Artists Ensemble, featuring Miho Iwata, Tomasz Choloniewski, Rafal Mazur and Tomek Nazarewicz, performed a live concert with an interactively composed 3-dimensional audiovisual map of the city of Krakow.

GPS-Trans 5 was based on a live video web transmission from a car exploring the city of Luxembourg on January 16, 2005. All material was used in the form of an active, 3-dimensional, audiovisual score for live, semi-improvised performance. An ensemble of nine musicians – Marek Choloniewski, Keir Neuringer, Gilad Roth, Sacha Pecaric, Tomek Choloniewski, Tomasz Nazarewicz, Krzysztof Iwanicki, Rafal Mazur and Lukasz Szalankiewicz, supported by Marcin Wierzbicki and Jan Choloniewski – performed a live concert at the Bunkier Sztuk.

For GPS-Trans 6, basic elements of GPS-Trans 4 were transported to Ujazdow Castle in Warsaw on December 9, 2005. The interaction of past and present recordings resulted in an original and unique video and audio phase shifting, a multichannel illusion of real/non-real space and a continuous overlap between pre-recorded and live material. The GPS-Trans 6 team comprised Marek Chołoniewski, Marcin Wierzbicki, Jan Chołoniewski and Maciej Walczak.

To take the GPS-Art idea out of Poland had been the main challenge for several years, since GPS-Trans 2, for which an Internet bridge was designed and set up between Krakow and Chicago. So the American city with a huge Polish population was at this time already considered a GPS-Art city of the future. However, moving the project to another country with different technical and linguistic circumstances was a big challenge.

Extensive research completing all necessary elements was performed by Ryan Ingebritsen and Marcin Wierzbicki on April 7, 2007. Art design of the original GPS-Trans 7 project was prepared and rearranged by Marek Choloniewski as a part of his residency in the US supported by a CEC ArtsLink grant.

The Deadtech gallery, an independent gallery outside Chicago city center, was chosen as the main venue of GPS-Trans 7. The distance from the downtown to the gallery was the basic diameter of the city measured between the downtown to the North, West (Deadtech Gallery) and South of Chicago. The semi-circle was the geometric form located to the West of the Michigan Lake. Over a two-week period the selected area was divided into 83 sectors with independent

measurements, audio and video recordings. All recorded material was used as live samples for an interactive score projected over a cubic screen at the Deadtech gallery. 3D video and 4-channel audio projection of Chicago were controlled interactively by the car moving live with GPS/GSM system over selected areas. All coordinates and the speed of the car determined directly the selection of pre-recorded material. An ensemble of local musicians featuring William Jason Raynovivh, Jason Wampler, Michael Patti, Shannon Budd, Rob Ray and Gabriel Patti followed interactively the composed score of the city of Chicago.

GPS-Trans 8 was held at the Bunkier Sztuki gallery in Krakow one month later, on May 7, 2007. It brought together the four cities already participating in GPS-Art. Video pre-recordings from Krakow, Luxembourg, Warsaw and Chicago were projected simultaneously over 4 screens controlled by cars exploring Krakow, Warsaw, Chicago and Luxembourg. The Improvising Artists Ensemble, featuring Tomasz Choloniewski, Michal Dymny, Rafal Mazur and Tomek Nazarewicz, followed interactive scores assembled live from the video material from the four cities.

GPS-Trans 9 was a part of two projects – COOP workshops and Orkiestra ElektroNova – both coordinated by the Polish Society for Electroacoustic Music. Public video and audio activities were held at the Center for Contemporary Art Solvay in Krakow on March 26, 2009. Students and teachers on the COOP project formed an active team of artists for all preparation and performance of GPS-Trans 9, and also created the model for the next project, GPS-Trans 10, which was performed one month later in Krakow, Prague, Budapest and Bratislava as a common project of the Multiplace festival coordinated in Bratislava.

The GPS-Trans 11 – Pecs Derive project was premiered with the European Bridges Ensemble at the University of Pecs on December 10, 2010. Pecs Derive/GPS-Trans 11 was an integration of an urban audiovisual installation and an interactive performance by the European Bridges Ensemble, a project composed and assembled by Marek Choloniewski for the city of Pecs, the European Capital of Culture in 2010.

Quadroscopic side-view material of the city of Pecs was recorded by a system of 4 side-view cameras installed in the car. During the concert the video and audio material was projected over 4 screens and 4 speakers in the form of a square geometric object at the venue which simulated the shape of the car. The car/performer controlled the streaming of the audiovisual material by sending GPS coordinates live to the venue. In this way the car became a live performer of its own recordings. The audience moved inside and outside the screening object. The video of the streets of the city was the basic audiovisual form of the installation and described the basic model of interaction between car/performer, city and performing artists controlling selected elements of the composition. The speed of the video materials was appropriate for the speed of the car. Four composers/performers sat in front of each screen, using the video material as a graphic score. The GPS city material was separated by solo sections composed by each member of EBE and dedicated to selected city areas.

Center – Andrea

TV Tower – Andrea Tutti

Railway Station – Andrea Solo

Pipes – Adam

Mines – Johannes

Poor Mining Village – Johannes Tutti

Lonesome Skyscraper – Ivana

Center – Tutti

Marek Choloniewski – concept, composition, coordination
Georg Hajdu – programming, coordination
Johannes Kretz – programming
Marcin Wierzbicki – programming
EBE
Andrea Szigetvari – Budapest
Ivana Ognjanovic – Beograd
Johannes Kretz – Vienna
Adam Siska – Budapest
Kai Niggemann – Münster
Georg Hajdu – Hamburg
Stewart Collinson – Lincoln
Marek Choloniewski – Krakow

GPS-Trans 12 was held in Wroclaw on May 19, 2011, during the Musica Electronica Nova festival.

The GPS coordinating team comprised Marek Choloniewski and Marcin Wierzbicki, with improvising musicians Paulina Owczarek (saxophone), Michal Dymny (guitar), Rafal Mazur (bass) and Tomek Choloniewski (percussion). The Wroclaw edition of the project opened a new model of video processing controlled live by improvising musicians as an immanent integrated form of performance.

GPS-Trans 13 brought the global internet project, which by now had been running for over a decade, to the Defibrillator Gallery in Chicago on March 4, 2012, in which a car driving around the city of Chicago controlled 4 video screens projecting a drive around the city re-interpreted by the location of the car. The video processing initials during GPS-Trans 12 were extended toward a sophisticated model of city video live transformation with mixed controls of the car driver and improvising musicians. The GPS-Trans 13 was designed and performed by:

Marek Choloniewski: Concept, Artistic Director and Performer; Marcin Wierzbicki: Programming and Technical Support; Ryan Ingebritsen: Chicago logistical coordination; Improvising musicians: Dan Dehaan, Katherine Young, Ed Hammel, and Ryan Ingebritsen.

All GPS-Art projects explored a very special use of art networking. Series of miscellaneous models integrate different wireless technologies. They use discrete, invisible and virtual channels for limited and controlled streams of coded data, converted and controlled by moving objects (cars), live performers (musicians) and observers/listeners/receivers (an audience located in a single venue and global space). All technologies, processes and art models invented and designed for GPS-Trans projects have an open form and can be used for different unlimited artistic purposes.

www.gps.art.pl

Closed systems and polarities in music

Ondřej Jirásek

Why this topic?

The 21st century is a time of global trends – fusions in music. This method helps to analyze and combine different styles or cultures.

What is the closed system?

Every closed system in nature is combined from different components and contains 2 kinds of bindings:

- consistent/positive
- conflicting/breaking

Consistent forces

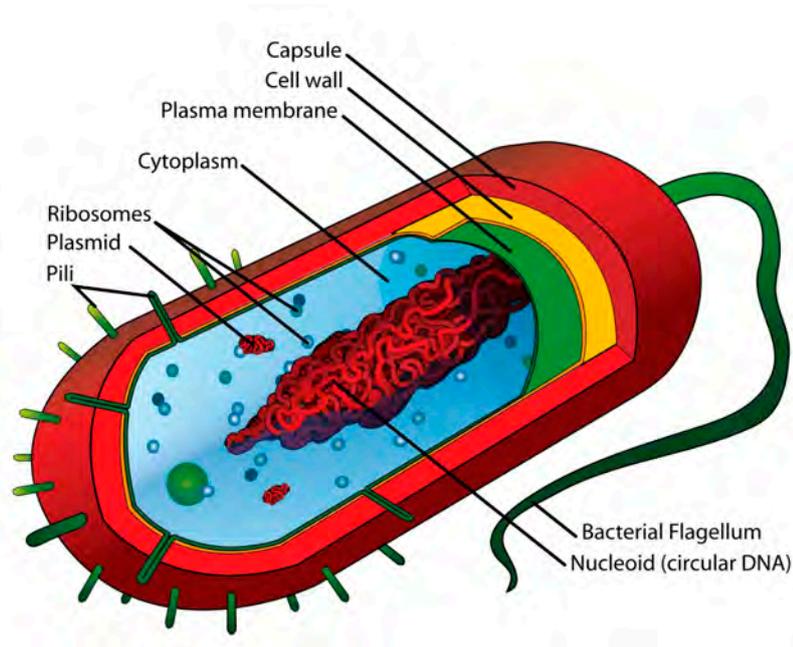
- are dominant in the system
- are based on the full accordance of single elements
- create a framework or scope for the system
- protect this unit against forces from outside

As fugal/breaking forces

- are based on diversity and conflicts among single elements, produce a tension inside the group
- play only a subordinate role in the unit (dominant consistent forces are able to manage/organize them)
- form the quality and character of the group

An example from nature

Picture 1



The capsule, wall and membrane protect the cell.

The cytoplasm, ribosomes and other factors create tension inside, but produce energy for the organism too.

Balanced system

Both forces are important, even essential for the life of the system.

When some of them outgrow the needs of the group, the whole system can perish in a short period.

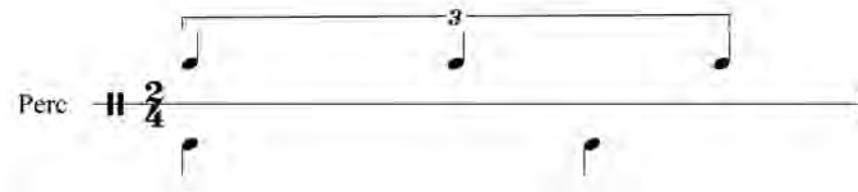
An example from sociology

Democracy

- Very strong and dictatorial forces can give rise to a non-flexible, frozen system (for example, dictator government).
- A very open and free system with internal conflict can become very weak against forces from outside (for example, democracy without rules).

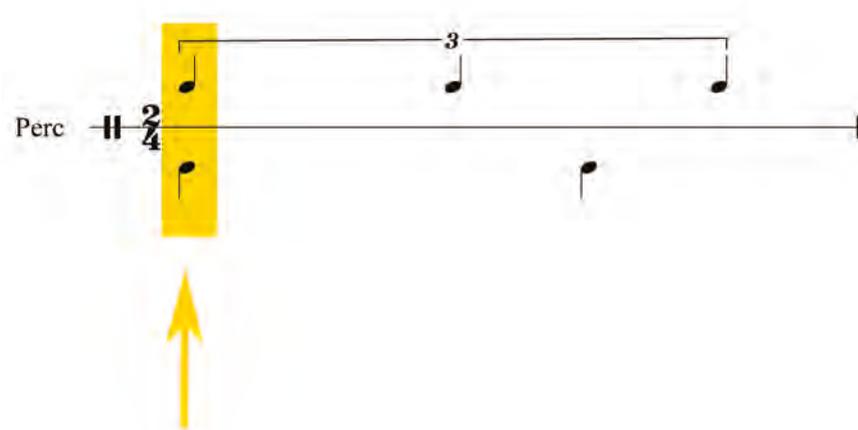
The closed system in music – the triplet

Picture 2



The triplet – consistent forces

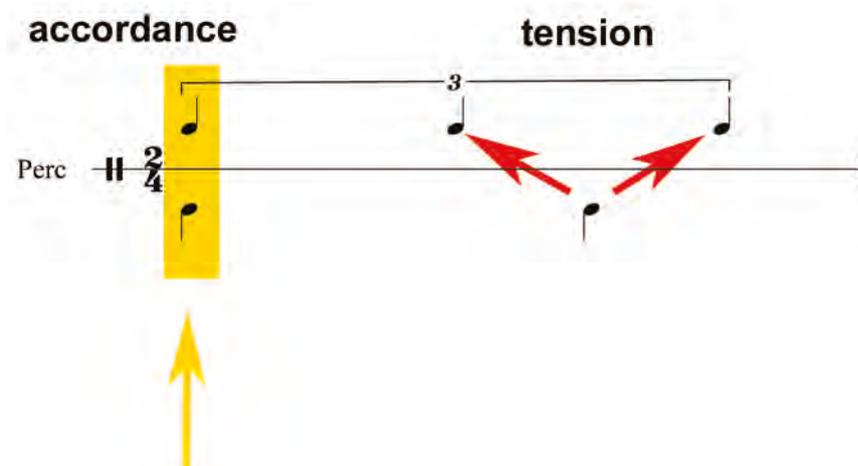
Picture 3



- The first beat is a consistent point in the organization of the bar and the notes within it.
- Musicians feel the first beat as the main place for their orientation.

The triplet – breaking forces

Picture 4



- Relations among the second beat and the second and third notes of the triplet create tension.
- This proportion is very complicated for rhythmical orientation.

Poles and polarities

The positive pole +

- Consistent forces create a positive pole.
- Their task is to organize inside and to protect outside.

The negative pole -

- Conflicting forces create a negative pole.
- Their task is to produce energy and improve the quality of the organism.

Musical example 1

What is common to and what is different in these structures – J. S. Bach – Das Wohltemperierte Klavier versus a Bach baroque counterpoint combined with a jazz/rock guitar?

Picture 5

J.S.Bach - pftc

♩ = 58

Piano

Em Am Em B7

Pno.

Em B7 Em B7 Em Am Em B7 G C

13 G D G Emi Bmi F#7 Bmi F#7

A Bach baroque counterpoint combined with a jazz/rock guitar

Picture 6

J.S.Bach - gtr

♩ = 58

Electric Guitar

8

E. Gtr.

13

E. Gtr.

D Em7 D Em7 D Em7 Am Em7 B7

Em7 Am B7 Em7 B7 Em7 Em7 Fm7 Em7 G13 C7

G13 D9 F#7 Bm7 F#7 C#m13(omit9)

Common parameters could be:

- same key (e minor)
- latent harmony
- same time signature
- tempo

Different parameters could be:

- thicker jazz harmony (9, 13) and syncopation
- both bring tension to Bach's traditional structure

Picture 7

♩ = 58 J.S. Bach

The score is divided into three systems, each with a Piano (Pno.) and Electric Guitar (E. Gtr.) part. The key signature is one sharp (F#) and the time signature is 3/8.

System 1 (Measures 1-7):
Piano: Treble clef, mostly rests, with some notes in measures 6 and 7.
Electric Guitar: Treble clef, playing chords with fingering (I-IV). Chords: D, Em7, D, Em7, D, Em7, Am, Em7, B7.
Annotations: Em, Am, Em, B7 above the piano staff.

System 2 (Measures 8-12):
Piano: Treble clef, moving up the scale. Red arrows point to notes in measures 10, 11, and 12.
Electric Guitar: Treble clef, playing chords. Chords: Em7, Am, B7, Em7, B7, Em7, Em7, Fm7 Em7, G13, C7.
Annotations: Em, B7, Em, B7, Em, Am, Em, B7, G, C above the piano staff.

System 3 (Measures 13-16):
Piano: Treble clef, moving up the scale. Red arrows point to notes in measures 13 and 14.
Electric Guitar: Treble clef, playing chords. Chords: G13, D9, F#7, Bm7, F#7, C#m13(omit9).
Annotations: G, D, G, Emi, Bmi, F#7, Bmi, F#7 above the piano staff.

Musical example 2

A Moravian folk song combined with dodecaphonic series

What is common to and what is different in these structures?

Let us put together the Moravian folk song "If you were not at home?" with dodecaphonic series.

Picture 8

Čis nebyl doma 1

The image displays two systems of musical notation for the piece "Čis nebyl doma 1". The first system includes staves for Flute, Piano, and Violin 1. The Flute part is in 3/4 time and features a melodic line with a dodecaphonic series. The Piano part provides harmonic accompaniment with chords and arpeggios. The Violin 1 part is currently silent. The second system, starting at measure 9, shows the Flute and Violin 1 parts playing the same melodic line, while the Piano part remains silent. The notation includes various musical symbols such as clefs, time signatures, accidentals, and dynamic markings like *vi* and *mf*.

Common parameters could be:

- twelve tone terrene
- same time signature
- organization of bars
- tempo

Different parameters could be:

As regards the folk song:

- tonal centre
- melody
- harmonic cadence

As regards dodecaphony:

- atonal
- without melody
- without harmonic cadences

The shapes—silhouettes of leading voices—are very important common parameters. Dodecaphony with similar shape of leading voice and the same rhythm maintains closer relations with the national song.

Picture 9

Čis nebyl doma 1

The image displays two systems of musical notation for the piece 'Čis nebyl doma 1'. Each system contains three staves: Flute (top), Piano (middle), and Violin I (bottom). The music is written in 3/4 time. Red lines are drawn above the Flute and Violin I staves, highlighting specific melodic phrases or 'silhouettes'. The Piano part provides harmonic accompaniment with chords and single notes. The Violin I part mirrors the melodic lines of the Flute. The first system ends with a double bar line, and the second system begins with a measure number '9'.

Dodecaphony without similar shape of leading voice and the same rhythm is very different and contrasting, creating stronger tension.

Picture 10

Čis nebyl doma 2

Musical score for Flute, Piano, and Violin 1. The score is in 3/4 time and consists of 8 measures. The Flute part has a melodic line with various intervals and rests. The Piano part provides harmonic support with chords and single notes. The Violin 1 part is mostly silent, with a few notes in the final measure.

Musical score for Flute, Piano, and Violin 1, starting at measure 9. The Flute part features a complex melodic line with red annotations above it, including slurs and accents. The Piano part has a rhythmic accompaniment with some chords. The Violin 1 part has a melodic line with slurs and accents. The score ends with a double bar line.

Musical example 3

Acoustic timbres combined with electro-acoustic, electronic or digital samples

What is common to and what is different in these structures?

The source is scenic music by Duncan Hendy, written for his book Pub English.

Picture 11

pub 6

The image shows a musical score for two instruments: Oboe and Cor Anglais. The score is divided into six systems, each with two staves. The key signature has one flat (B-flat) and the time signature is 4/4. Measure numbers 1, 5, 11, 16, and 19 are indicated at the start of their respective systems. The Oboe part features melodic lines with various articulations, including slurs and trills. The Cor Anglais part provides harmonic support with sustained notes and some rhythmic patterns. The score concludes with a double bar line at measure 19.

Oboe and cor anglais produce consistent timbre and can have these common and different properties.

Common parameter:

- category of sound

Different parameters:

- number of harmonics in the spectrum
- shape of wave/signal
- quantity of noise and harmonic components in the signal

Let us take a look at the following two examples.

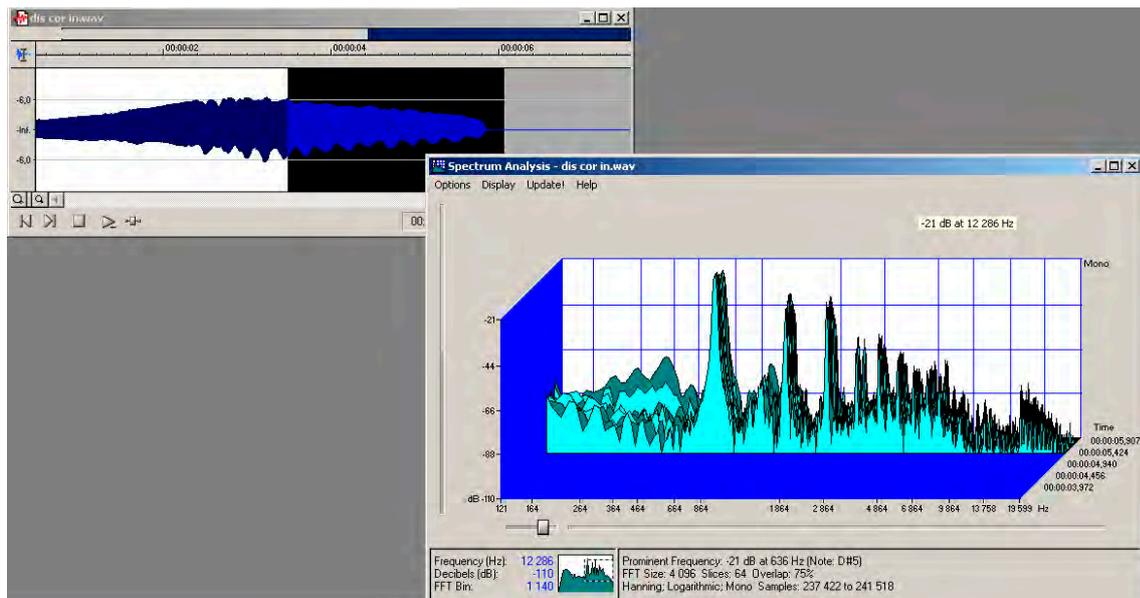
Case A

— combination of full, penetrating acoustic timbre with full artificial timbre

Spectrum of cor anglais

The timbre of the cor anglais is based on a pulse signal that is typical in a full spectrum of harmonics; their amplitudes/volume decrease (from basses to trebles) in bows.

Picture 12



Oboe + synthetic pulse signal

The synthetic signal is built up from 2 oscillators with a signal in pulse shapes (see light arrows).

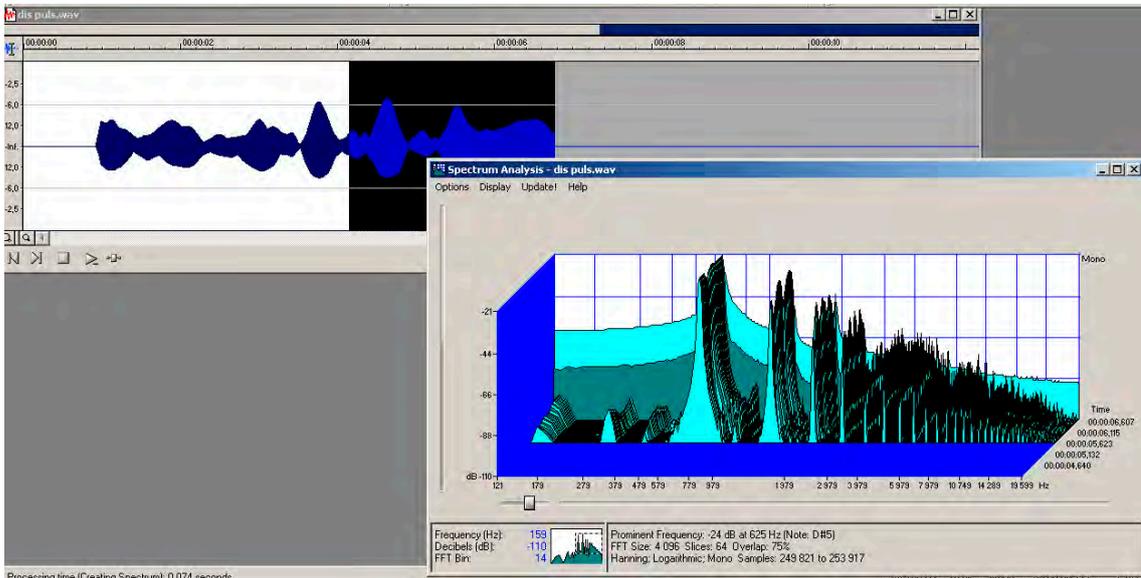
Picture 13



Spectrums of pulse/synthetic signal

Also, the artificial register built up from the pulse signal shows a full line of harmonics.

Picture 14



The synthetic pulse signal is in graphs and real sound, too, plus or minus the similar natural signal of the cor anglais, so it provides greater support to consistent forces. Both instruments will keep one timbre category – the sonant.

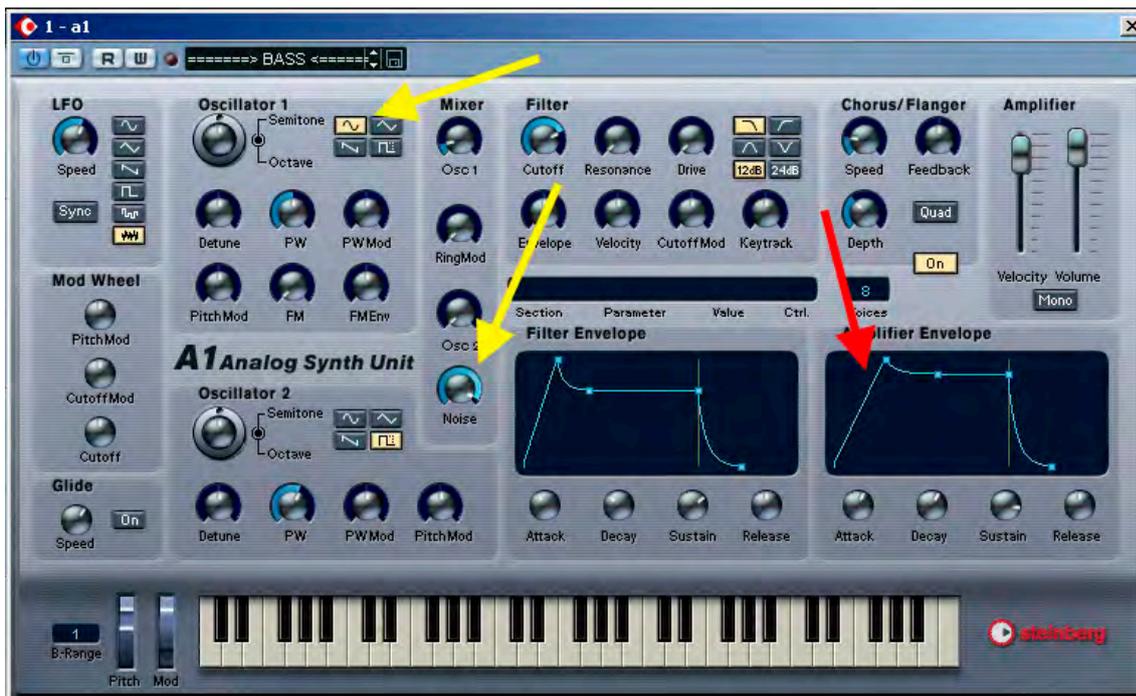
Case B

— combination of penetrating acoustic timbre with gentle artificial timbre

Oboe + synthetic sinus signal

The synthetic signal is built up from 2 oscillators: by sinus signal and noise signal.

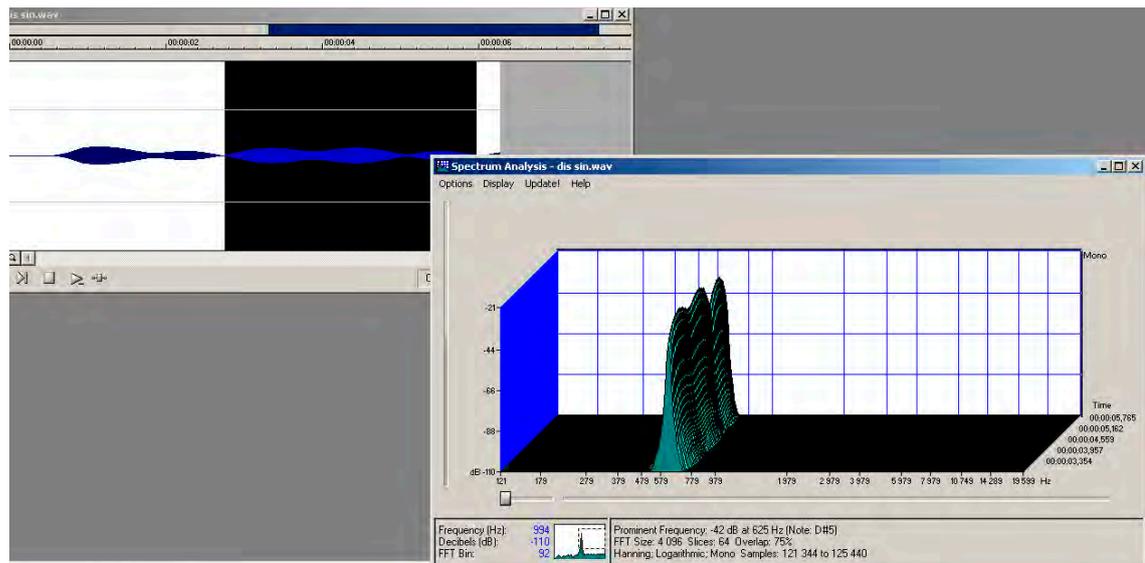
Picture 15



Spectrum of sinus

The sinus is dominated in this register and has more load than noise ingredients, so the final sound will be very soft and colourless. The spectrum shows us only one harmonic – that timbre can remind us of ex gentle whistling or a wooden flute.

Picture 16



The synthetic sinus/noise signal is different from the acoustic cor anglais and will stay in opposition and support axial forces.

Conclusion

The method of polarities can help me in selecting and combining different musical material. Like every method it can be helpful, but in the case of non-sensitive, even orthodox or dogmatic access this method can become dangerously dictatorial. It is dependent on specific cases and on reflection, not only from the inside.

Literature

- Blatter, A.: Instrumentation and Orchestration, Wadsworth Pub Co, 1997.
- Burhauser, J., Špedla, A.: Akustické základy orchestrace, Praha 1967.
- Cook, P. R.: Music, Cognition and Computerized Sound, An Introduction to Psychoacoustics
- Forró, D.: Musitronika, elektroakustické hudební nástroje. II. Analogové a analogově-digitální syntetizéry, JAMU, Brno 2001.
- Forró, D.: Musitronika, elektroakustické hudební nástroje. IV. Samplery, JAMU, Brno 2001.
- Janoušek, I.: ABC akustiky pro hudební praxi, Editio Supraphon, Praha 1979.
- Jež, R, Jirásek, O, Mikoška, L: Zoufalý aranžér, dvouroční seriál v časopise Muzikus 02/09–03/10.
- Jirásek, O.: Kytara a počítač, Computer Press, Brno 2005.
- Kennan, K., Granthan, D.: The Technique of Orchestration, Prentice Hall, 1996.
- Krotíl Z: Aranžování pro moderní taneční orchestr, Státní hudební nakladatelství, Praha 1963.
- Kurfürts, P.: Základy hudební akustiky, Vydavatelství MU, Brno 2000, str. 19.
- Meyer, J.: Akustik und musikalische aufführungspraxis, Verlag Erwin Bochinsky, Frankfurt am main 1999.
- Otčenášek, Z.: O subjektivním hodnocení zvuku, Akademie múzických umění, Praha 2007.
- Syrový, V.: Hudební akustika, Akademie múzických umění, Praha 2003.
- Špelda, A.: Úvod do akustiky pro hudebníky, Státní nakladatelství krásné literatury, hudby a umění, Praha 1958.

Intuitive Music Workshop

Krzysztof Knittel

The art of improvisation as a way of music making blossomed after World War I, as a result of a major interest in jazz music. Even today, jazz musicians are the major actors on the improvised music scene, **including numerous musicians** associated with free jazz born in the 1950s. “In those times,” writes Jacek Niedziela, “the word ‘free / freedom’ was on everybody’s lips and referred to deeds worth living, and sometimes even dying, for.”¹ Quoted as being among the creators of free jazz are musicians such as saxophonists Ornette Coleman, John Coltrane, Archie Shepp, Roscoe Mitchell and Joseph Jarman, pianists Cecil Taylor and Sun Ra, trumpeters Lester Bowie and Don Cherry, bass player Charles Mingus, as well as lesser-known European musicians including sax players Peter Brötzmann and Evan Parker, pianists Misha Mengelberg and Alexander von Schlippenbach, guitarist Derek Bailey, and the Poles Tomasz Stańko and Zbigniew Seifert. The key elements of jazz – swing, tunes based on chord progressions, 12- and 16-bar phrasing (with stable harmonic progress) – were questioned as a basis for improvisation. Instead, free jazz used “tonal centres, scales, motives, sound effects, contrasts and emotional communication. Rhythm and tempo were not subject to the jazz canon anymore. Increasingly, importance was put on the pure sound element”². This, of course, took free jazz closer to contemporary classical music.

Many jazz musicians turned to free improvisation when, according to Steve Lacy, “jazz got so that it wasn’t improvised any more [...]. It got so that everybody knew what was going to happen and, sure enough, that’s what happened. Maybe the order of the phrases and tunes would be a little different every night, but for me that wasn’t enough.”³ Lacy talks about his meetings with Don Cherry who “used to come over to my house in ’59 and ’60, around that time, and he used to tell me, «Well, let’s play». So I said «OK. What shall we play?». [...] And it took me about five years to work myself out of that. To break through that wall. It took a few years to get to the point where I could just play”⁴, i.e., play without stabilizing a theme, a rhythmic structure, harmonic functions etc.

Free improvisation, which I will discuss today, namely *free improvised music*, is connected with the free jazz movement, but its roots go back to the tradition of contemporary classical music (e.g. the works of Cage, Stockhausen, Boulez, Berio, Scelsi), the music that jazzmen listened to and that often inspired their own compositions.

One of the best explanations I have read about free improvisation is to be found in an article by Swedish musician and theorist (and professor of philosophy at the University of Gothenburg) Christian Munthe. He defines improvisation as such: “Improvisation is the activity of, to some extent, creating and constructing a piece of music in the same time as it is being performed. [...] Usually, the improvising takes place within some kind of given constraints or frames – sometimes guided by formalized rules – that are tied to some established tradition dictating how music should sound [...] (e.g., jazz, heavy metal, Baroque music or flamenco).

”Then there are a few who, like myself, cannot describe their music-making in any of the above-

¹ *Historia jazzu, 100 wykładów* Jacek Niedziela, Grupa INFOMAX, Katowice 2009.

² *Ibid.*

³ Derek Bailey, *Improvisation: Its Nature and Practice in Music*, New York: Da Capo Press 1993, pp. 55.

⁴ *Ibid.*

mentioned ways. We are improvising, but, we claim, in contrast to most other improvisation our playing is FREE. There are also listeners who, even if they do not enjoy improvised music in general, like free improvised music. What are we talking about when we say such things?"⁵

Meanwhile, Derek Bailey, guitarist, writer and one of the founding fathers of European improvised music, writes: "*free improvisation* is not a particular style, it is a way of making music."⁶

Within improvisation, there exist thousands of performance practices, starting with different jazz formulas that are practised for years, contrary to the illusion of spontaneity suggested by the very term 'improvisation'. There exist certain schools and established principles of improvisation that are followed by students.

Derek Bailey uses the terms 'idiomatic' and 'non-idiomatic improvisation', the former being applied, for instance, to flamenco or jazz, and the latter to *free improvisation*. Bailey argues that improvising musicians rarely evoke the term 'improvisation' at all: they simply say they play flamenco or jazz, which is "due to its widely accepted connotations which imply that improvisation is something without preparation and without consideration, a completely ad hoc activity, frivolous and inconsequential, lacking in design and method. And [...] they know from their own experience that it is untrue. [...] It completely misrepresents the depth and complexity of their work"⁷.

The key principle of free improvised music, therefore, is its non-idiomatic character, i.e. a lack of idiom, or according to free improviser Andrzej Izdebski, its multi-idiomatic character.

Going back to Munthe, "[...] all of us have a history which has put its mark on us and which influences the decisions we take today [...] The difference between one who is active within the borders of some particular idiom and the free improviser is instead to be found in *the way of looking at* this idiom.

"[...] The chosen principles form an idiom, which is normally seen as a collection of rules for what is allowed, possible and suitable from a musical point of view. [...] The free improviser, however, refuses to make any *binding* choices of this kind. [...] Musical (idiomatic) rules are thus not considered to be valid in any other sense than that they, for the moment, are accepted by the improviser. However, in the next moment they may have been discarded in favor of some other point of view."⁸

For many years, the term of *intuitive music* has been used in modern music. Playing according to one's intuition is the most personal way of music making. It, too, can be exercised, but principally it follows what the musician has created and worked out on his/her own, based on his/her intuition and imagination. But it should be emphasized that performing schemes and sound schemes can also be chosen intuitively on the basis of existing musical traditions. Consequently the notion of *intuitive music* often refers both to the creative method and the sound substance, both strongly linked (in my mind) to modern art, music created aleatorically, creative treatment of chance in performance-shaped form that is generated by the interaction of the performers, and finally, to a free treatment of musical material, i.e. with specific sounds, the selection of which should not be limited by any preliminary creative principles, because the principle of artistic freedom lies at the heart of intuitive music. The situation is similar in the milieu of free improvisation musicians. Incidentally, in my mind both notions have a similar meaning, so I sometimes use

⁵ Christian Munthe, *What is free improvisation?*, <http://www.efi.group.shef.ac.uk/fulltext/ftmunt.html> (accessed 19th April 2012).

⁶ D. Bailey, *Improvisation...*, op. cit., pp. 142.

⁷ Ibid., pp. xii.

⁸ C. Munthe, *What is free improvisation?*, op. cit.

them alternatively, though free improvisation musicians do not emphasize the importance of intuition, even though intuition plays a major role in their playing.

Let us now reflect on the relationship between the art of improvisation and composition.

Derek Bailey writes: “[...] starting in the early 1950s, there have been continuous attempts to re-integrate improvisation and composition. Mainly this has been through a broadening of the concept and role of notation.”⁹ Bailey conducted several interviews with Earle Brown, who told him about his impressions from observing the mobiles of Alexander Calder and about attempts, first made in 1952, to translate into music the idea of allowing several interpretations of the same work. In the last movement of his *String Quartet* of 1965, Brown introduced a free form. The score contains the following instruction: “There are 8 or 10 events for each musician, separated from one another by vertical dotted lines. Each musician may play any of his events at any time, in any order and at any speed. [...] This section is, in effect, a free coda, to be assembled spontaneously by the quartet.”¹⁰

Eddie Prévost, English percussionist and co-founder (with pianist John Tilbury) of the improvisers’ ensemble AMM, considers that “the reality of improvisation is different from the reality of composition; the premises of composition are incompatible with the premises of improvisation, nor are they competitive with them”.

Prévost believes that “the art of improvisation consists of creating music with no imposed form, no expectations and with no other objective but the very action of music making”.

Munthe adds: “An obvious consequence of this way of seeing things is that it becomes much more difficult to uphold any sharp distinction between composers and musicians, between those who make the music and those who perform it, when it comes to ultimate responsibility for the emergence of a particular piece of music. [...] Thus, improvisation turns into a necessity: to perform is to compose and vice versa.”¹¹

Let us return for a moment to the issue of form in improvisation and composition.

Eddie Prévost believes that opponents of self-generating forms simply fear the unordered and unharnessed in them. “The idea of letting music play itself is cursed in Western culture because it suggests something primitive, an uncontrolled behavior of the human being and society,” he claims. French clarinetist Louis Sclavis answers: “There basically is no difference. In both cases music is composed. When you improvise, you compose. When you write, you compose. These are two different methods, but basically there is no difference. Good music needs to be composed. When you play as an improviser, alone or with others, you create a composition.” Eminent pianist Cecil Taylor (who could be tagged as post-jazz) argued in 1965: “If a man plays for a certain amount of time – scales, licks, what have you – eventually a kind of order asserts itself. Whether he chooses to notate that personal order or engage in polemics about it, it’s there. [...] There is no music without order – if that music comes from a man’s innards. But that order is not necessarily related to any single criterion of what order should be as imposed by the outside. Whether that criterion is the song form or what some critic thinks jazz should be. This is not a question, then, of ‘freedom’ as opposed to ‘non-freedom’ but is rather a question of recognizing different ideas and expressions of order”¹². And for Giacinto Scelsi, “the score is only a ‘deposit’ of the process of creation, which in improvisation, runs with no breaks in real time”.

⁹ Ibid., pp. 59.

¹⁰ Ibid., pp. 61.

¹¹ C. Munthe, *What is free improvisation?*, op. cit.

¹² Cecil Taylor, liner notes to *Trance*, Black Lion Records BLCD 760220 (1996).

In the above-mentioned issue of *Glissando* dedicated to improvisation, Michał Libera quotes a story by Frederic Rzewski: "In 1968 I ran into Steve Lacy on the street in Rome. I took out my pocket tape recorder and asked him to describe in fifteen seconds the difference between composition and improvisation. He answered: 'In fifteen seconds the difference between composition and improvisation is that in composition you have all the time you want to decide what to say in fifteen seconds, while in improvisation you have fifteen seconds.' His answer lasted exactly fifteen seconds and is still the best formulation of the question I know."

Having performed for several decades now, I have gradually enriched both my musical language and my palette of sounds (without traditional rhythm and melody); in my live playing I have used structure, points, lines, sound masses, repeatedly juxtaposed layers. Chance, intuitive, free playing, shaping of the form and phrasing subjected to the course of intuitive improvisation, and finally a certain electronic virtuosity: this is my experience between the 1990s and now.

Where have my performance 'models', phrasings, motives come from? From a long-standing practice of playing, rehearsing, and concert life. And patterns? From recordings of eminent specialists in improvised (mostly free jazz) and intuitive (experimental, modern) music. Who were my teachers? Masters of improvisation whom I knew from recordings and concerts, colleagues, musical partners. Those 'models', phrasings, motives, often invented with the aim of common improvisation, later reappeared in many of my written compositions.

KLANGPILOT – A SOFTWARE AND A NEW PARADIGM FOR WRITING SOUND

ao. Univ. Prof. Mag. Johannes Kretz

ABSTRACT

The creation of music with electronics is still, in some sense, in a state similar to “oral culture”. The articulation of an expressive vocabulary, which cannot be represented well by the traditional music score, often forces composers to use confusing or vague verbal descriptions and/or the distribution of inhomogeneous performance material, like a paper score plus digital media. Both verbal descriptions and mixed performance material lack standardization. This makes the creative process difficult and performances nearly impossible to pull off without the composer’s presence. The software KLANGPILOT by Johannes Kretz and Adam Siska is an environment for sound synthesis, but it is also meant as a contribution to bridge the methodical gap between traditional score writing and the creation of electronic sounds. It provides an intuitive interface for representing spectral properties of sound in a way as close as possible to traditional score writing.

Introduction

When extending the creation of music with the use of electronics and even when using non-standard playing techniques on acoustic instruments, we are still, in some sense, in a state similar to “oral culture” (Bennett, 1997). On one hand pitch, dynamic level, and rhythm can be notated in a way that accurately/reasonably represents the aural result, allowing the experienced musician to imagine the sound by looking at the notation. On the other hand timbral characteristics of music cannot easily be notated with this degree of precision. We must either use symbolic or textual description of actions (fingerings, playing techniques etc.) in the case of paper scores, or save technical parameters for computer programs in some abstract file format. Both methods are neither intuitive nor efficient working methods for composers.

When working with sound synthesis in particular, the need for an extended graphical score language (that is human-readable but can still handle the complexity of all necessary sound parameters) becomes obvious. While several attempts have been made, ranging from the graphical score for Ligeti’s “Articulations” (Ligeti & Wehinger, 1958) to software like *l’Acousmographe*¹, none of these truly solves the problem, since they provide post-facto symbolic representations of analysis put together after the creative process, and are not suitable as production tools. Other graphical scores, such as those by John Cage or Roman Haubenstock-Ramati (Karkoschka, 1966), leave much ambiguity of interpretation for the performer and are far less specific than traditional scores. This restricts their usefulness to specific aesthetic approaches.

Computer Aided Composition (CAC) is often used to handle the unwieldy amount of parameters involved with sound synthesis. KLANGPILOT was designed to provide an extended score language which can easily communicate with a CAC environment, and to represent timbral characteristics (spectra, envelopes, etc.) in a way that is similar to how we notate pitch and rhythm. In this sense it aims to be more than a tool for controlling sound synthesis. It should be seen as a contribution

¹ <http://www.ina-entreprise.com/entreprise/activites/recherches-musicales/acousmographe.html>.

to the development of a better score language with a focus on sound characteristics, helping to bridge the gap between traditional music notation and the – often – technically oriented working methods of computer music.

The design of KLANGPILOT

From the very beginning the design of KLANGPILOT (Kretz, 1999 and Kretz, 2002) was inspired by the work of Marco Stroppa (Agon et al., 2000), Jonathan Harvey (Harvey, 1981 and Osborne, 1984), Jan Vandenheede (Vandenheede & Harvey, 1985 and Vandenheede, 1991) and Steven McAdams (McAdams, 1982, 1989 and 1989b) and experiences with the Patchwork environment (Laurson & Duthen, 1989). Also the idea of accessing sub-parameters of timbre like brightness, spectral flux, percussivity and harmonicity as described by Grey and Moorer (Grey & Moorer, 1978) was essential.

The current version of KLANGPILOT is under development at the Centre for Innovative Music Technology (ZiMT) at the University for Music and Performing Arts Vienna². It is realized completely within the Max/MSP environment and uses highly optimized externals for sound synthesis (programmed in C++ by Adam Siska). The GUI, programmed by Johannes Kretz, consists of a Score Editor (Fig. 1), an Instrument Editor (Fig. 2) and an Analysis Tool. The Score Editor gives a timeline view allowing the arrangement and playing back of “notes” (sound events) performed by KLANGPILOT instruments.

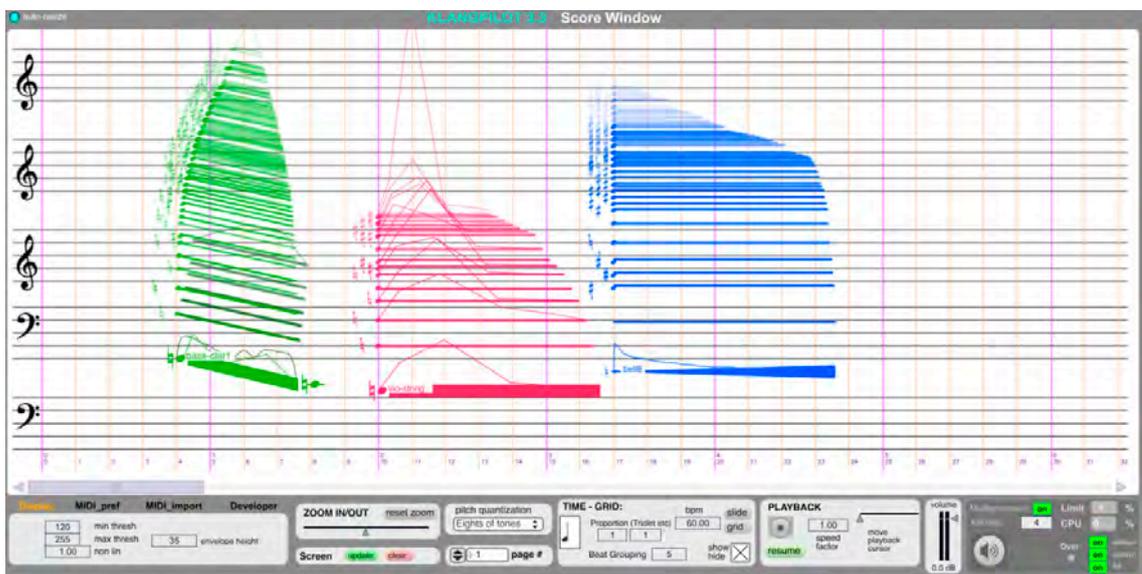


Figure 1: Score Editor

In the Instrument Editor a KLANGPILOT instrument can be created/edited. These instruments can use either one or several of the supported synthesis methods simultaneously.

² See www.mdw.ac.at/zimt/ in the “Downloads” section.

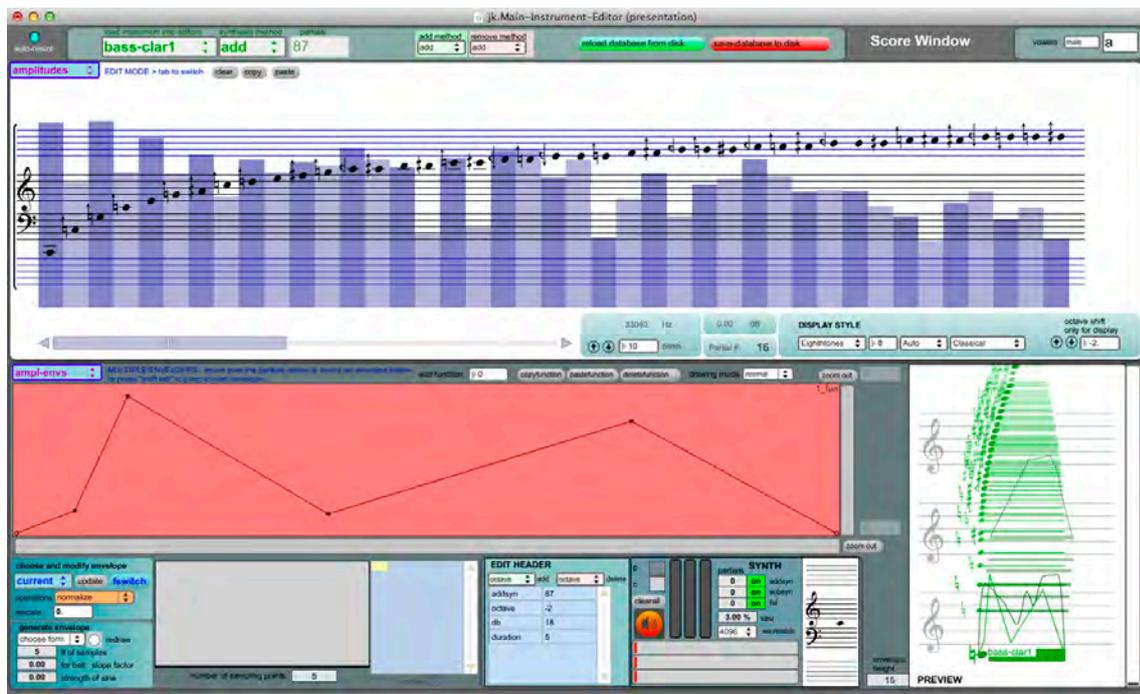


Figure 2: Instrument Editor

The score editor

The graphical paradigm of the KLANGPILOT score language can be seen as an extension of the classical piano roll (Fig. 1). Unlike MIDI files and normal piano roll representation KLANGPILOT also supports:

- microtones – graphically represented at the maximum precision of eight notes, internally stored as floating point numbers allowing almost arbitrary precision
- polyphonic microtonal glissandi

The size of the note head and the thickness of the beam representing the duration of the note give an impression of the loudness at the beginning and the end of each note.

The colour of events can be used to indicate different instruments.

Labels showing the instrument's name above each note can be activated.

If instruments are contained in the KLANGPILOT instrument database, their spectrum and their envelopes can be displayed.

Rhythm is represented as position of the notes in the x-axis. A user defined grid can be used to quantify time into beats and subdivisions of beats in a given tempo for entering metric music.

In general the design philosophy of the KLANGPILOT score language is that the display of certain information such as spectrum, envelopes, instrument names etc. is optional and can be enabled/disabled. The user can decide about the complexity with which the musical information is represented at a given moment. (Fig. 3).

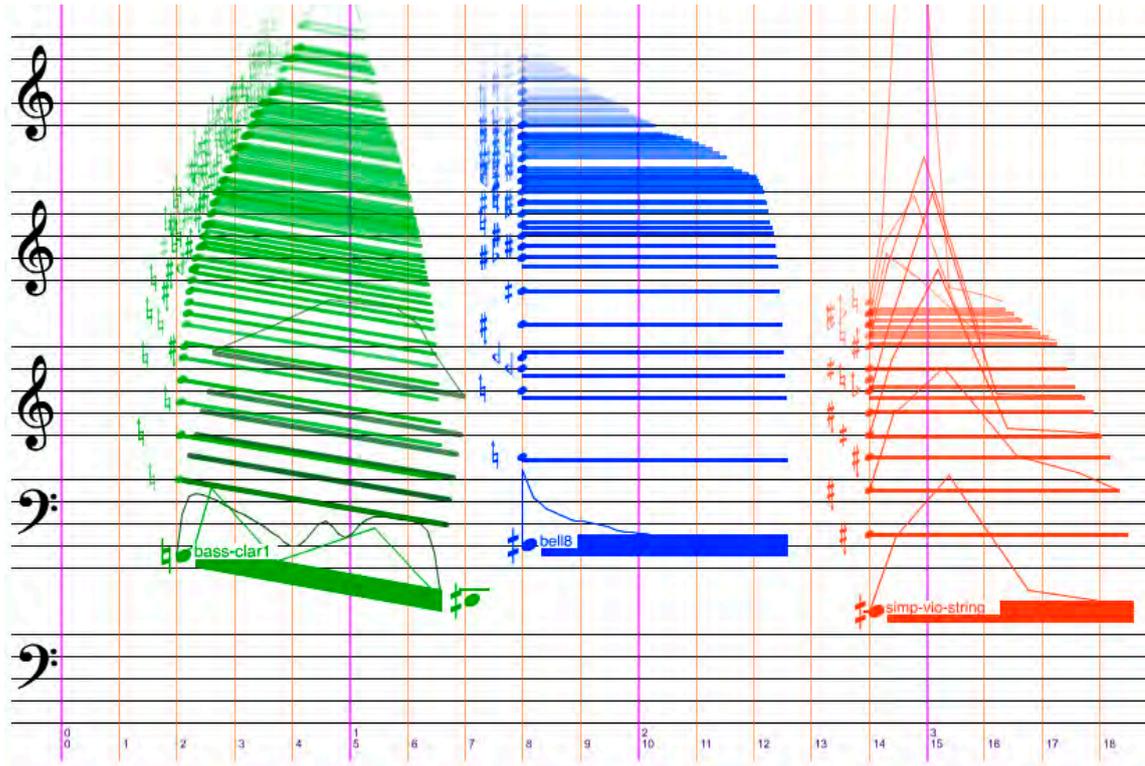


Figure 3: Score Editor details

While the underlying techniques of sound synthesis and treatment are not new, the main idea of KLANGPILOT provides a new graphical user interface that is as intuitive as possible for composers. The complexity of working on the level of sound rather than on the level of notes requires an interface which balances the needs of sophistication and simplicity. If the graphical “language” of KLANGPILOT turns out to be successful, it may contribute to a way of composing where the artist can focus more on sounding results (through their graphical representation) rather than being caught up in the complexity of technical details.

KLANGPILOT instruments

At the moment KLANGPILOT instruments only support additive, subtractive and formantic synthesis. The choice of synthesis methods is based on the fact that all the above methods are linear, which means that a corresponding analysis method can be found. For additive synthesis the following parameters can be defined: a list of frequencies and a list of amplitudes define the main quality of the spectrum. Additionally, envelopes for frequency and amplitudes can be specified for temporal characteristics. For those partials where no envelope is specified, the missing envelopes are calculated by interpolation between the given ones. Particular attention is paid to all kinds of micro-fluctuations of sound, jitter of amplitudes and frequencies, frequency modulation (vibrato) and amplitude modulation (tremolo), which help to create rich sounds with a lot of inner life. The relative durations of each partial can also be specified as well as time offsets for the entry of each partial. Again, missing data are always complemented by interpolation. For subtractive and formantic synthesis, additional parameters like q-factor/bandwidths are available.

A KLANGPILOT instrument contains three different kinds of data:

Constant values like octave transposition, main volume in dB, duration etc. are represented by a parameter name and a number. These constants are stored in the “Instrument Header”. (See Fig. 4).

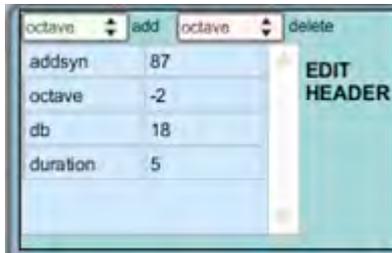


Figure 4: Edit the Instruments Header

The second data type is a list of parameters where each number corresponds to one overtone. These include the frequencies, amplitudes, durations and time-offsets for individual overtones in the case of additive synthesis. Since all these parameters refer to one set of overtones, they are represented graphically in the same window (see Fig. 5), sometimes overlaid in a transparent way.

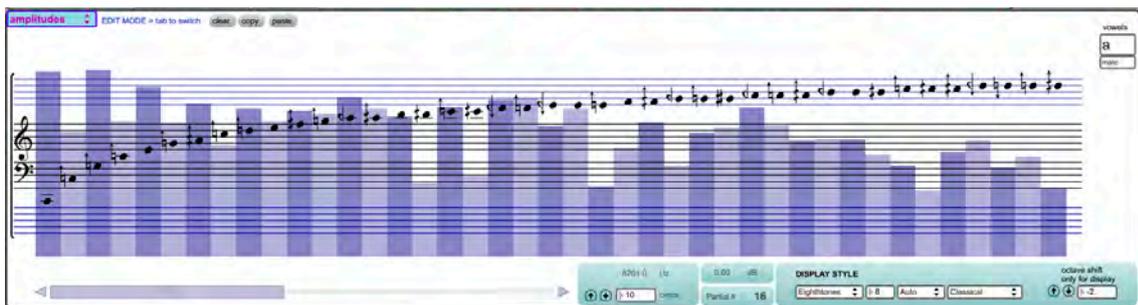


Figure 5: Editor for Amplitudes, Frequencies, Durations, Time-Offsets

The third data type is a set of envelopes where each envelope corresponds to one overtone. If an envelope is missing for one or more overtones, it is later added by the system through interpolation. In this way, the user needs only to specify as little data as is really necessary. (Fig. 6)

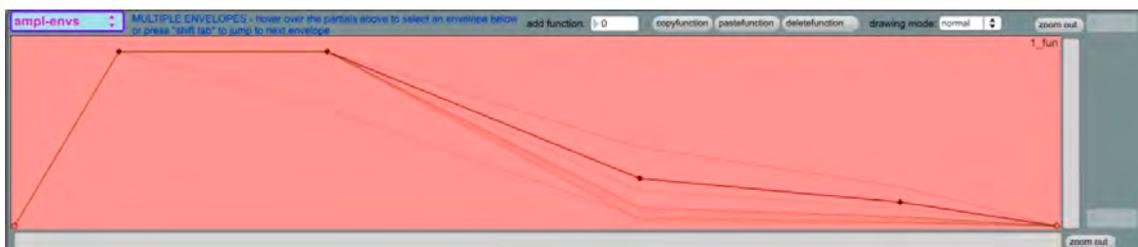


Figure 6: Editor for multiple envelopes

The Analysis Tool

A KLANGPILOT instrument can also be obtained from analysis of any given sound file. Nevertheless it is recommended that short sounds (a few seconds) containing a single note or sound event are used. In the waveform display the user can select a part of the sound file for analysis. One can specify various parameters which control details of FFT analysis as well as the post-processing and data reduction applied afterwards. (See Fig. 7 and Fig. 8.)



Figure 7: Analysis Tool for KLANGPILOT

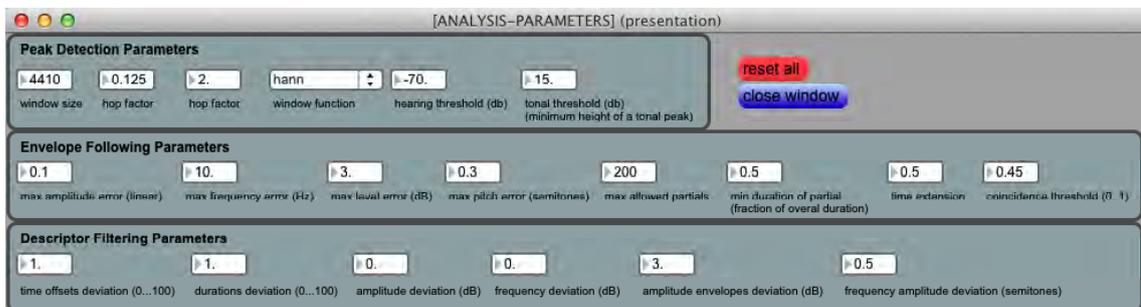


Figure 8: Analysis parameters

Future work

At the moment we are exploring the possibility of creating a new graphical canvas for MaxMSP based on SVG (scalable vector graphics)³. This would have several advantages, especially regarding speed of redraw and the efficient interaction of the user and the graphical interface. Also a sophisticated interpolation engine for creating dynamic hybrid instruments is in preparation.

References

- Agon, C., Stroppa, M., Assayag, G. (2000). High Level Musical Control of Sound Synthesis in OpenMusic, Proceedings of the International Computer Music Conference, Berlin, Germany.
- Bennett, G. (1997). "Music since 1945 and Oral Culture", In: Dufourt, H., Fauquet, J.-M. (Ed.). *La musique depuis 1945. Matériau, esthétique et perception*, Belgium.
- Grey, J. M., Moorer, J. A. (1978). Perceptual Evaluations of Synthesized Musical Instrument Tones. In: *Journal of the Acoustical Society of America*, 62 (pp. 454–462).
- Harvey, J. (1981). *Mortuos Plango, Vivos Voco: A Realization at IRCAM*. In: *Computer Music Journal*, Vol. 5 No. 4 Winter 1981, MIT Press, MA, USA

³ <http://www.w3.org/TR/SVG11/>.

- Karkoschka, E. (1966). *Notation in New Music*. New York, 1972. Original German edition: *Das Schriftbild der Neuen Musik*. Moeck.
- Kretz, J. (1999). KLANGPILOT – a software environment for control and composing synthetic sounds. In: *books@ocg.at* Vol. 133: Diderot forum on Mathematics and Music pp. 255–266. (Feichtinger/Dörfler ed.), Österr. Computergesellschaft, Vienna.
- Kretz, J. (2002). *Composing Sounds – Developing tools for refined control of timbre in music*. Published in: Johannsen, G. and De Poli, G. (Guest Editors): *Human Supervision and Control in Engineering and Music*. Special Issue, *Journal of New Music Research*. Vienna.
- Kretz, J. (2010). *Extending the KLANGPILOT Score Language for Real-Time Notation*. Published in: Clay, A. – Freeman, J. (eds.): *Contemporary Music Review*, Volume 29, Part 1, Edinburgh/Boston, pp. 29–37.
- Kretz, J. (2011). KLANGPILOT – A NEW INTERFACE FOR “WRITING” (NOT ONLY) SYNTHETIC SOUNDS, publ. in: *Proceedings of the International Computer Music Conference ICMC 2011, Huddersfield 2011*
- Kretz, J. (2011). KLANGPILOT – A NEW INTERFACE FOR “WRITING” (NOT ONLY) SYNTHETIC SOUNDS, publ. in: *Proceedings “Forum Medientechnik” St. Pölten 2011*
- McAdams, St. (1982). *Spectral Fusion and the Creation of Auditory Images*. In: Clynes, M. (ed.) *Music, Mind and Brain: The Neuropsychology of Music*. Plenum Press, New York. USA.
- McAdams, St. (1989). *Psychological constraints on form-bearing dimensions in music*. In: *Contemporary Music Review*, Vol. 4 (pp. 181–198) Harwood Academic Publishers.
- McAdams, St. (ed. 1989b) *Music and the Cognitive Sciences* (*Contemporary Music Review*, vol. 4), London.
- Laurson, M., Duthen, J. (1989). *Patchwork, a graphical language in Pre-Form*. In: T. Wells and D. Butler (Ed.): *Proceedings of the 1989 ICMC*. pp. 172–175. San Francisco, USA.
- Ligeti, G., Wehinger, R. (1958). *Articulation – eine farbige Hörpartitur*. Reprint of original edition. Schott Music.
- Osborne, Nigel. (ed. 1984). *Musical Thought at IRCAM*. *Contemporary Music Review* vol. 1 part 1, London.
- Rodet, X. (1984). *The CHANT Project: From Synthesis of the Singing Voice to Synthesis in General*. In: *Computer Music Journal* Vol. 8 No. 3 MIT Press. Cambridge, MA., USA.
- Vandenheede, J., Harvey, J. (1985). *Identity and ambiguity. The construction and use of timbral transitions and hybrids*. In: Truax, B. (1985, ed.), *Proceedings of the International Computer Music Conference 1985* (pp. 97–102) San Francisco, California, USA.
- Vandenheede, J. (1991) *Jonathan Harvey’s Ritual Melodies*, manuscript, unpublished (?), copy available from the author upon request.

A Calculus of Form: Basal Self-Reference in the Compositional Practice of Brian Ferneyhough

Klaus Lippe

When asked about the concept of form in contemporary music, Brian Ferneyhough states:

‘One approach is to locate ›form‹ in the act of formation itself, the resonance of the ritual space which the work will come to occupy, in taking unruly, turbulent or chaotic materials and, by imposing formal constraints on them, allowing ›form‹ to appear: or else engendering something so perfectly and self-referentially constructed as to be redundant with the express intent of damaging, degrading or deranging it – rewriting it by means of directed streams of coherent energy.’¹

As a verbal description, the composer’s concept of ‘form’ surely remains rather metaphoric. On the other hand, one could read this as an invitation to re-enact the self-referential procedures by which a composition gains its form. Before I try to reconstruct a few aspects of the compositional practice in the first movement of Ferneyhough’s *Fourth String Quartet*, I would like at least to outline a possible re-description of Ferneyhough’s basic idea in the context of Niklas Luhmann’s theory of ‘Art as a Social System’, in which a comparable ‘calculus of form’ plays an important role.²

*

The term ‘calculus of form’ refers to a book by the British mathematician George Spencer-Brown with the title ‘Laws of Form’³. ‘Laws of Form’, published in 1969, became quite influential in systems theory, not only with respect to far-reaching epistemological consequences but also with respect to a difference-theoretical approach to a social theory of art in modern society.

Luhmann’s concept of the social evolution of art is not primarily based on its modern institutionalization and its critique – as is the case with theories by Gehlen, Bürger or even Bordieu, for example, nor is it placed ‘against’, which would imply ‘outside’ society, as Adorno’s ‘Aesthetic Theory’ seems to suggest. Rather, in accordance with the general idea of the functional differentiation of modern society, the social evolution of art is based on the very specific, *self-referentially closed operations* by which art as a social system produces (or re-produces) its own ‘forms’. The artworks themselves, or rather the form-decisions embedded in an artwork as a kind of ‘compact communication’⁴, are the basis for the evolutionary process. Therefore, artistic praxis, which includes production as well as apprehension, becomes a central issue of the theory.

‘In the beginning’, says Luhmann, ‘there is a difference, the cut made by a form that begins to regulate the following steps’.⁵ ‘Form’ in this sense is understood as a ‘difference’ that is made by

¹ In: Sabine Sanio and Christian Scheib, ed., *Form – Luxus, Kalkül und Abstinenz: Fragen, Thesen und Beiträge zu Erscheinungsweisen aktueller Musik* (Saarbrücken: Pfau, 1999), pp. 21.

² Niklas Luhmann, *Art as a Social System*. Translated by Eva M. Knodt. (Stanford, CA: Stanford University Press, 2000); original in German: *Die Kunst der Gesellschaft* (Frankfurt a. M.: Suhrkamp, 1995).

³ George Spencer-Brown, *Laws of Form* (London: George Allen and Unwin Ltd., 1969).

⁴ Luhmann, *Art as a Social System*, pp. 35.

⁵ Luhmann, *Art as a Social System*, pp. 25f.

‘drawing a distinction’. In Spencer-Brown’s logical calculus, the instruction to ‘draw a distinction’ – symbolised by the ‘mark of distinction’, which is the border between the marked and the unmarked states – is the only operator used throughout the whole logical calculus.

‘Form’ is always a two-sided form – and also a paradox insofar as it creates a space in which only the internal side of the distinction is marked, while at the same time the unmarked side is necessarily co-produced. This means that ‘form’ is always an asymmetrical form, because only one side of the form can be used for further distinctions. In order to indicate the unmarked side of the form, the mark needs to be crossed. And by doing that, another distinction has to be drawn for which the same conditions are reproduced. In other words, at any given time the external side remains unreachable. By trying to reach the unreachable, or to achieve the unachievable (as flautist Matteo Cesari formulated with reference to Ferneyhough’s music)⁶ the horizon keeps retreating.

Spencer-Brown calls this calculus of form ‘a system of constructions and conventions which allows calculation’, and calculation ‘a procedure by which, as a consequence of steps, a form is changed for another’⁷. Every primary distinction, every initial form is contingent: that is, endowed with the possibility of being different. But once a particular ‘constellation of contingencies’⁸ is taken seriously, to use another expression by Ferneyhough, everything else will follow the necessary pull of its own distinctions. With respect to this, Luhmann formulates the idea that the artwork demonstrates in itself how something that is contingently made and not at all necessary per se ultimately seems to become necessary, because it eliminates, in a kind of self-limitation, all possibilities of being different. A modern artwork realises both in the same formal calculus: it changes its necessary contingency into contingency-based necessity.⁹

Although this is stated in a context that is meant to be valid for art in general, I would nevertheless like to re-read it as a quite appropriate description of the specific compositional procedures in the music of Brian Ferneyhough. Or to put it differently, I would like to re-describe the specific programmatic issues of the music as a reflection of the modern conditions under which modern art in general gains its form.

*

In the following I would like to reconstruct a few fundamental steps in the compositional process of the first movement of the *Fourth String Quartet*.¹⁰ The Quartet was composed between 1989 and 1990, still mostly without the assistance of a computer, although a lot of rhythmic sketches were already written using notational software. Around 260 pages of sketches exist that can be studied in the Paul Sacher Foundation in Basel. The examples I am going to present here are my own transcriptions of the sketches.

The initial cut, the first distinction in the calculus of form, is an indication of a ‘large-scale form’

⁶ Matteo Cesari, ‘The Achievement of the Unachievable or The Absurd Hero’, paper given at ‘Brian Ferneyhough: A Symposium’ on 23 February 2011, Kingston University, London.

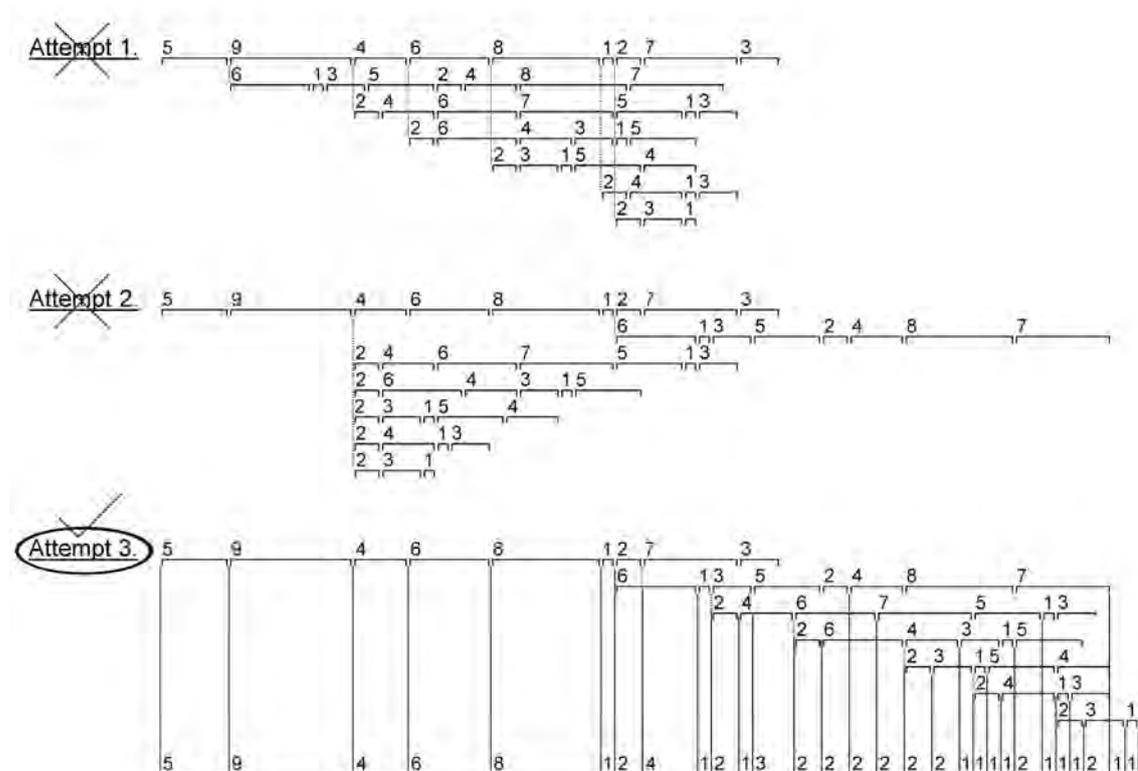
⁷ Spencer-Brown, *Laws of Form*, pp. 11.

⁸ Cf. Felipe Ribeiro / James Correa / Catarina Domenici, ‘An Interview with Brian Ferneyhough’, (Interview organized by Felipe Ribeiro and conducted at the Robert and Carol Morris Center for 21st Century Music, State University of New York, Buffalo, February 26th, 2009), in: *Search. Journal for New Music and Culture*, Issue 5 (Summer 2009) pp. 12, <http://www.searchnewmusic.org>.

⁹ Cf. Luhmann, ‘Das Kunstwerk und die Selbstreproduktion von Kunst’, in: Hans Ulrich Gumbrecht and K. Ludwig Pfeiffer, ed., *Stil. Geschichten und Funktionen eines kulturwissenschaftlichen Diskurselements* (Frankfurt a. M.: Suhrkamp, 1986), pp. 625.

¹⁰ For a detailed reconstruction of the compositional process see Klaus Lippe, ‘Medium/Form Relations in Brian Ferneyhough’s *Fourth String Quartet*’, in: *Tempo* (Vol. 66, Issue 261, July 2012), pp 37–50.

by superimposing seven different metric layers. Example 1 shows the initial form distinction with three different attempts to mark, in Ferneyhough's words, the »ritual space which the work will come to occupy«. Every subsequent compositional step is based on this initial form distinction.



Example 1: Initial form distinction

The numbers in each of the seven layers indicate the length of the bars counted in quavers. The numbers themselves are taken from each first line of the Random Funnel Series with sets of 3 to 9 numbers¹¹ (Example 2). The basic principle of these tables is to progressively transfer any first randomisation of numbers into an ordered set. On a very basic level the Random Funnel Series exemplifies how the contingency of any primary distinction is transferred into contingency-based necessity. The funnels can be applied to any quantifiable musical parameter such as rhythm, meter and pitch, and are used to steer through the compositional processes, implementing certain directional tendencies.

Example 2 shows the relevant funnels used by Ferneyhough in the *Fourth String Quartet* for meter and rhythm.¹²

¹¹ See also Ross Feller, "Random Funnels in Brian Ferneyhough's 'Trittico per Gertrude Stein'", in: *Mitteilungen der Paul Sacher Stiftung* 10 (March 1997), pp. 32–38.

¹² Cf. Klaus Lippe, "'Figurale Aspekte' im 4. Streichquartett von Brian Ferneyhough", in Ludwig Holtmeier, Michael Polth and Felix Diergarten, ed., *Musiktheorie zwischen Historie und Systematik. Kongreß der Deutschen Gesellschaft für Musiktheorie*, Dresden 2001 (Augsburg: Wißner, 2004), pp. 79–90.

5	9	4	6	8	1	2	7	3
7	1	4	5	9	2	6	3	8
6	1	3	2	8	4	7	9	5
6	4	3	8	1	5	7	9	2
8	6	3	1	5	4	7	9	2
6	9	3	2	5	1	7	8	4
9	1	3	2	5	6	7	8	4
2	1	3	9	5	6	7	8	1
9	2	3	4	5	6	7	8	1
1	2	3	4	5	6	7	8	9

6	1	3	5	2	4	8	7
6	7	3	8	4	2	5	1
1	2	3	4	7	5	6	8
1	2	3	4	6	5	7	8
1	2	3	4	5	6	7	8

2	4	6	7	5	1	3
7	6	2	3	5	1	4
4	2	7	6	5	3	1
7	2	1	6	5	4	3
6	2	3	7	5	4	1
6	2	3	4	5	1	7
1	2	3	4	5	6	7

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

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

2	4	1	3
2	1	4	3
1	2	4	3
1	2	3	4

2	3	1
1	3	2
1	2	3

Example 2: Random funnel series

Looking again at the three attempts, in Example 1 one can see that although the order of the measures in each layer is arbitrary, the constellations of these contingencies as a whole are not. Rather, in each case a general self-referential instruction is employed throughout the arrangement that follows. In the third and chosen attempt, for example, the instruction is that the entry of each succeeding layer shall be defined by the first number itself, counting the number of bars in the former layer after which it shall enter the form. So, for example, the second layer, which starts with a bar counting six quavers, enters after the sixth bar of the first layer, and so on.

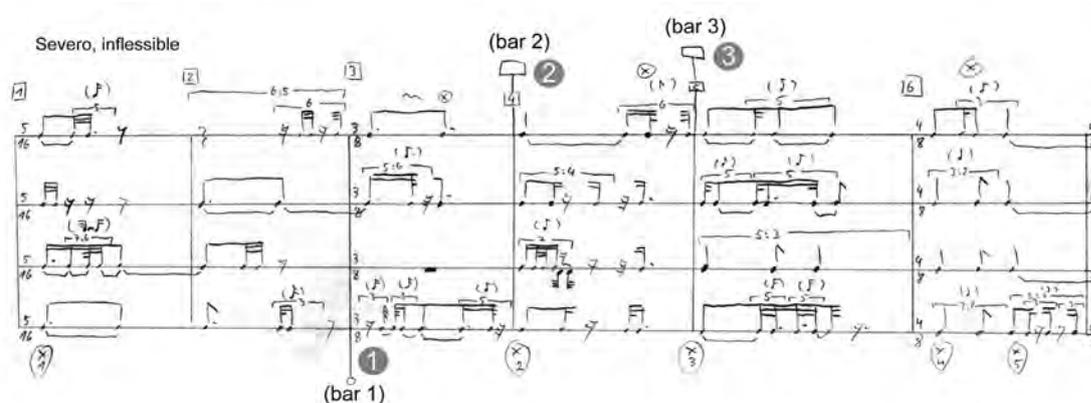
In the next step of the compositional process, each measure of the seven superimposed layers is given a number of main impulses, as can be seen in Example 3.

The musical score is divided into five types (Tpo. 1 to Tpo. 5) and four rows (1 to 4). The notation includes rhythmic patterns, dynamic markings, and performance instructions. A large bracket labeled 'B' spans across the top of the score, and a large bracket labeled 'A' spans across the bottom. The score concludes with a final section labeled 'RF 3. F' and a key signature change to F major.

Example 3: Large scale subdivisions

Most apparent is that the initial top layer is divided into four sub-layers of synchronous four-part writing. Although these four sub-layers are not yet clearly distributed to the string instruments, it becomes evident that the formal objective of composing a string quartet is emerging. At the same time, the form is clearly divided into two, slightly overlapping parts. Both parts not only use the same methods in the assignment of impulses per bar, but also the same Random Funnel series. Because of the increasing impulse density and metrical superimposition, the general tendency of the overall form can be described as an increasing dissolution of the stability to be expected of traditional four-part writing.

In a number of further compositional steps, which are not explained here, the main impulses are subdivided into secondary impulses which undertake different functions in the calculation of further derivations of the rhythmical material. Step by step, the original form is changed for another, rewritten 'by means of directed streams of coherent energy'. Finally, a rhythmically contoured form is sculpted:



Example 4: Rhythmical form

Example 4 shows a sketch with the first 6 bars (of 21 bars in total) of the final rhythmic sketch of the quartet writing. However, the formal process of generating the rhythmic material is still not finished. As indicated by the numbers in grey circles (originally in red) in Example 4, certain separate bars are designed to be inserted directly into the original continuation of the 21 bars. Each of these eight bars is a special derivation from a selected bar of the original 21 bars and – except for the last – is followed by a second insertion bar, which consists mainly of held notes and rests, and therefore functions as a complete stopping point. By inserting the additional derivation bars, the whole continuous pathway of 21 bars is split up into nine $[(3 + 3) + 3]$ clearly separated phases which nevertheless correspond with the initial continuous two-part dissolution process. This is directly linked with another specific musical form idea for the first movement – a kind of developmental variation of a simple tremolo gesture, played on one pitch over two strings, which is successively enriched with glissando, contrary motion glissandi, micro-tonal rotations and the like. This development culminates in phase 7, where all different 'types of movement' infiltrate the rhythmical environment at once.

Types of movement

- | | |
|--|--|
| a)  (both stable). | e)  (upper or lower stable). |
| b)  (upper changes [gliss.]). | f)  (independent glissandi). |
| c)  (lower changes [gliss.]). | g)  (microtonal movement). |
| d)  (both gliss.). | h)  (independent 2-voiced microtonal movement). |

Example 5: 'Types of movement'

Incidentally, phase 7 marks a kind of 'recapitulation' of the development in the former phases and corresponds roughly with the point where the second part of the original rhythmic set-up enters the form. However, the point of interest lies, as Ferneyhough himself states, in the observation of 'how [...] this apparently logical transformation [of the tremolo] is sometimes subverted by the distortion lens of local context, or else is subjected to sudden and unpredictable fractures'.¹³ Even here, where the central musical thread is rather simple to grasp, the main attention is drawn to the subverting and distorting context, which makes itself observable in the way the gestures suffer by being infiltrated into a given rhythmic form.

In the 'act of formation' which is taken as the 'form' itself even the unexploited possibilities in the labyrinth of the compositional procedure are part of the form in a general sense, namely in the sense that they are necessarily given as the remaining unmarked side of the form. In this, I agree with Richard Toop who has claimed that the final score is an 'arbitrary by-product'¹⁴ of the compositional processes. The final score is a contingent selection of possibilities which appears as its form. Example 6 shows the final notation of the first three bars of phase 7:

¹³ Brian Ferneyhough, *Collected Writings*, edited by James Boros and Richard Toop (Harwood Academic Publishers, Amsterdam 1996), pp. 160f.

¹⁴ Richard Toop, 'Brian Ferneyhough's Lemma-Icon-Epigram', in: *Perspectives of New Music*, 28/2 (1990), pp. 53.

Application of Synergetic Principles for Analysis of Compositional Processes

Zuzana Martináková

Abstract

I consider music to be an emergent and self-organizing system and other basic principles to be at least compatible with concepts of synergetics. The consequence of this assumption is that the *needs* and *requirements* of environment control the system and initiate *processes* in the system of the music or musical work. This is important for analysis of compositional processes underlying not only conscious but also unconscious regularities. Two forces – competitive and cooperative – impact on forming the system and changes to it, while the endeavour to minimise effort causes the forming of competitive forces on both sides of the communication channel.

1 Introduction

Musical texts (e.g. compositions, songs and other written or unwritten musical manifestations) are results of compositional processes. The author of musical texts does not have to be a composer in a narrow sense but similarly he creates musical texts under principles of more general validity, which affect compositional processes. The systems theoretical and synergetic approach enables us to understand regularities and rules in both the compositional process and the musical text.

2 Systems Theoretical Approach

Systems theory represents a more complex systematic approach to investigation in different scientific disciplines. The methodology of systems theory comprises the analysis of structures, processes, functions, sub- and super-systems and their interrelations (Bunge, 1979). The central axiom of this approach is the assumption that music (also language, art etc.) and its subsystems are self-regulating and self-organising systems, and other basic principles are at least compatible with concepts of synergetics (e.g., Haken & Graham 1971, Haken 1978, Haken & Wunderlin 1991).¹

We start from the assumption that it is possible to establish general scientific theories and laws which could help us to understand structures, processes and functions in musical systems. The systems theoretical approach has cognitive and practical aspects and enables the *mathematical modelling* and *experimental testing* of models in a methodological way.

Classical musicology represents analysis of musical work oriented rather to the describing of elements and “grammatical rules” than to the discovering of theories and scientific laws concerning the processes and functions of musical work and its environment.

¹ Hermann Haken is the founder of the new discipline of synergetics – Lehre von den Zusammenwirken – based on the idea that there are mutual laws and regularities between different systems in animate and inanimate nature.

3 Emergent systems

Musical work as a system has properties that are emergent and not intrinsically found within any of the components. They exist only at a higher level of description: for example, the artistic value and the emotional effect of the musical work is not a feature of musical tones, chords, rhythmic patterns, choice of instruments or any parts in isolation; they have to be suitably interconnected. If the properties of the elements play an important role by describing the musical work as a whole, the results are incorrect. As the properties of the system *water* differ from the properties of the molecules, the properties of the system *musical work* differ from the properties of its elements (e.g. tone, rhythm, dynamic, colour etc.).

As early as 2300 years ago Aristotle (384 BC – 322 BC) discovered this fact and wrote: “The whole is something over and above its parts and not just the sum of them all...”²

In the second half of the nineteenth century George Henry Lewes wrote: “Every resultant is either a sum or a difference of the co-operant forces; their sum, when their directions are the same – their difference, when their directions are contrary. Further, every resultant is clearly traceable in its components, because these are homogeneous and commensurable. It is otherwise with emergents, when, instead of adding measurable motion to measurable motion, or things of one kind to other individuals of their kind, there is a co-operation of things of unlike kinds. The emergent is unlike its components insofar as these are incommensurable, and it cannot be reduced to their sum or their difference.”³

We can find many examples in structures of nature which have an emergent property. This observation is, for example, connected with the birth of fractal theory, which has also affected research in music.

Investigations of music and fractals have been made for several decades. Mathematician and composer Harlan Brothers (who collaborated with Mandelbrot, among others) thinks: “Music and mathematics are intimately related. What they do share is an abiding respect for the power and the importance of pattern recognition, whether it’s a sequence of numbers or a sequence of notes. Bach did appear to think like a mathematician because the techniques he used all have analogues in the world of classical geometry. [...] Bach believed that the microcosmic order must be mirrored in the macrocosmic. It’s not surprising then that the Art of the Fugue is in some sense composed of smaller copies of itself.”⁴ In his book *Gödel, Escher, Bach: An Eternal Golden Braid* (1979) Hofstadter Douglas, too, sees the presence of logical and symmetrical processes in Bach’s music and compares him with logician and mathematician Kurt Gödel and artist Maurits Cornelis Escher. The book is an exposition of concepts fundamental to mathematics, symmetry, and intelligence and discusses how self-reference and formal rules allow systems to acquire meaning despite being made of “meaningless” elements.

4 Synergetic Approach

Using the concepts of synergetics, musical systems – to which also musical texts belong – can be considered self-regulating and self-organizing systems. The consequence of this assumption is that the *needs* and *requirements* of environment control the system and initiate *processes*. Processes relate to *functions* of the system, e.g. a specific kind of music (chamber or orchestral,

² Aristotle, *Metaphysics*, Book H, 1045: 8–10.

³ Lewes, George Henry (1985): *Problems of Life and Mind*, vol. 2, pp. 413.

⁴ http://www.mlfilms.com/productions/bach_project/harlan_brothers.

symphony or wedding) or genre (classical, pop, folk music, etc.) is a functional equivalent of a need of environment. The system *musical work* (composition, musical text) can be considered a dynamic, open (constantly changing) and emergent system, in which the following aspects operate:

forces leading to changes, phase transitions, etc.

needs of system environment, e.g. needs of human society, culture, etc.

order parameters in the sense of synergetics

emergent laws managing self-regulation

There are two basic forces affecting the forming and changing of a system: competitive forces and cooperative forces. *Competitive forces* bring destabilisation into the system, while *cooperative forces* lead to system stabilisation. These forces are determined by *the needs* of the system environment. If there are suitable conditions for changes in musical work given, for example, in a special historical period and determined by both artists' (composer's or performer's) and percipients' need for innovation, *competitive forces*⁵ start to operate, one trying to preserve the old state, the other trying to break it. Processes evoked by these forces cause destabilisation of the system (here the musical work is functionally unsuitable) and a new need for innovation leads to the creation of a new composition. Competitive forces operate also within the musical work, e.g. between themes (main and contrast theme, rhythmic and dynamic patterns etc). The composer is concerned with the set of possible options, with the possible variety of conditions and the set of output states (what the composition will be like). This variety must be reduced by constraints (e.g. the need to create in a specific style, forbidden sequences in harmony or melody, historically and personally determined restrictions, etc.). This causes less information, less freedom and easier prediction. (We can make a prediction that one composition will be similar to another composition created in the same style, e.g. many compositions in minimal music or minimal musical style use similar means.) In this state of the system *musical style* we can speak about *cooperative forces*; they lead to consolidation of minimal music "style" (most composers create compositions in similar style) and to system stabilisation.

Every semiotic system (including music) must meet basic communicative needs for coding meanings and applying already existing codes. Fundamental are the *requirement of coding*, i.e. of creating new forms, and the *requirement of application* of existing forms. These are functionally complementary.

Due to the external requirement of coding the inventory of the parts of the system increases (in system-specific music, for instance, the number of musical works increases), whereas due to the requirement of application the size of this inventory does not change or decrease. A polar pair of next requirements or needs of opposite effect is formed by the *need for confirmation*, met by deterministic principles and the competing *need for innovation*, met by indeterministic principles. The *need for confirmation* has a positive effect on the *requirement of application* and the *need for innovation* on the *requirement of coding*. These requirements are reflected, for example, in musical work and music in two main streams (orientations): *avant-gardism* (new and original art) and *traditionalism* (application of traditional methods, recycling art, eclecticism, post-modern art, etc.).

Norbert Wiener describes two types of feedback effects: positive and negative. The positive or recursive effect leads to system destabilisation and chaos, while the negative effect tends to get out of chaos to attain system stabilisation. In biological and social systems we can see the

⁵ Several self-organising biological systems where competitive forces operate (e.g. a fight between foxes and rabbits) are described by synergetics.

interaction of these two types of feedback, e.g. in the self-limiting systems and cycles of nature (origin and death, increasing and decreasing of different kinds of bio-organisms etc.). Similar recursive processes can be observed in music or musical work. Recursive processes are given by the alternating of styles (a more rational and objective style alternates with a freer and more subjective style) or in the musical work (harmony cadence is a recursive process, many kinds of the form, e.g. sonata, symphony, song, polyphonic structure like canon and imitations are recursive etc.).

Essential in synergetics is the *order parameter*, which plays an important role in self-regulating and self-organising systems. Parameters operate as *regulators* balancing extreme situations in the system. The *order parameter* in the sense of synergetics “tells” the systems how to behave⁶. In our case this parameter is a human need causing the system of music or some of its subsystems to develop towards an objective where it can become stable. The order parameter affects the compositional process according to the following needs: minimisation of memory effort, of perception, of coding and decoding, optimisation of the state of music or parameters of composition, minimisation of production and reproduction effort as well as the need for innovation or confirmation etc. At the same time these needs evoke processes that are described in physics as *dynamic attractors*. These regulators are created gradually from the inner parts of the system and its environment: e.g. in nature, this is the regulation of the bio-organism population (e.g. choice of sex, regulation between foxes and rabbits, predators and their prey) as well as between flora and fauna, earth and water, coldness and warmth etc. This so-called *circular causality* or *feedback effect* causes the oscillation of system states with the aim of achieving a balance or optimal state. Circular causalities are also observed in music (musical work, musical style), e.g. in the state of expanding a rational approach, of the depersonalising and objectivism or a strict “atticistic” style: the regulator starts to be active and moves the situation to another pole (feedback effect) to the state of preferring an irrational approach, of subjectivism and free “asianistic” style. Somewhere between these extremes an optimal situation resulting from compromises can be found.

More complicated systems such as the evolutionary systems to which music and its subsystems belong are characterised by complicated processes influenced by order parameters and processes resembling cyclic and chaotic attractors. From this point of view the creating of musical works (in special mode or style expressions or individual compositional language) is not evoked by a linear dynamic, i.e. deterministic processes, and it cannot be assumed or derived from previous development. Multiple factors, multiple causes and multiple effects inter-relate in the system *music*. Many options can operate here (multiple inputs) and can cause different states of the system (multiple outputs). In other words, in such complex multiple parameter systems as music, competing regulators play an important role.

5 Conclusion

I believe that compositional processes are determined on a subconscious level by the principle that synergetics describes. The composer and his environment affect the start of the compositional process. The need or requirement of environment also includes the need or requirement of the recipient. But the requirement of the composer can differ from the requirement of the recipient. We can say that they are incompatible, so the composer tries to regulate the system/subsystem (his own composition) in his own way and the recipient would like to hear a composition

⁶ Cf.: Haken, H.: Synergetics: An Introduction. Berlin, Springer 1978.

according to his expectations. The recipient tries to control the composer, who should create a composition in the recipient's way (the recipient belongs in the input by the compositional process of composer). The control inputs of the composer form the disturbance inputs of the recipient and vice versa, and in the limit of their inputs are the total sum of all effects of every other influence in the world. By the Law of Requisite Variety, composer and recipient cannot oppose the action of the disturbance and cannot prevent changes in the world. They can probably stabilise selected aspects of the system and work together. In other words, competitive forces transform into cooperative forces and the system ends up in a state of stability (both composer and recipient are satisfied). In a communication system (to which a musical work belongs), in order to transmit an artistic message and receive it successfully the coding and decoding variety must exceed the interference variety (the composer, who codes the musical work, and the recipient, who decodes this musical work, must communicate, otherwise the interference variety is higher and the communication will break down). An awareness of this principle is very important for musical analysis of musical works. If we only analyse elements and inner processes in the musical work we cannot understand the work in its wholeness and its interaction with its environment.

References

- Aristoteles: *Metaphysik*. Neubearbeitung der Übersetzung von Hermann Bonitz durch Horst Seidl, Band 5 der Aristoteles Studienausgabe "Philosophische Schriften", Meiner, Hamburg 1995, ISBN 978-3-7873-1243-6.
- Bertalanffy, Ludwig von (1968): *General System Theory. Foundations, Development, Applications*. New York: George Braziller.
- Bunge, Mario (1998): Semiotic Systems. In: Altmann & Koch (ed.). *Systems. A New Paradigm for the Human Sciences*. Berlin, New York: Walter de Gruyter, 337–349.
- Haken, Hermann & Graham, Robert (1971). *Synergetik. Die Lehre vom Zusammenwirken*. Umschau 6, 191.
- Haken, Hermann (1978). *Synergetics*. Berlin, Heidelberg, New York: Springer.
- Hofstadter, Douglas Richard (1979): *Gödel, Escher, Bach: An Eternal Golden Braid*. Basic Books USA.
- Hofstadter, Douglas Richard (1986): *Metamagical Themas: Questing for the Essence of Mind and Pattern*. New York: Basic Books.
- Jelmer J. Scholte: *Emergent behaviour: viewpoints in literature, and their usability in ATM*. In: <http://complexworld.innaxis.org/presentations/Scholte.pdf>.
- Köhler, Reinhard (1986): *Zur linguistischen Synergetik. Struktur und Dynamik der Lexik*. Bochum: Brockmeyer.
- Köhler, Reinhard und Altmann, Gabriel (1986): *Synergetische Aspekte der Linguistik*. Zeitschrift für Sprachwissenschaft 5: 253–265.
- Köhler, Reinhard (1990). *Elemente der synergetischen Linguistik*. Glottometrika 12: 179–188.
- Köhler, Reinhard & Martináková-Rendeková, Zuzana (1998): *A systems theoretical approach to language and music*. In: Altmann, Gabriel & Koch, Walter A. (eds.). *Systems. A new paradigm for the human sciences*. Berlin, New York: Walter de Gruyter, 514–546.
- Köhler, Reinhard (2005): *Synergetic Linguistics*. In: Köhler, Gabriel Altmann & Rajmund G. Piotrowski (eds.). *Quantitative Linguistik. Ein internationales Handbuch. Quantitative Linguistics. An International Handbook*. Berlin, New York: Walter de Gruyter, 760–775. ISBN 3-11-015578-8.

- Martináková-Rendeková, Zuzana; Mačutek, Ján; Popescu, Ioan-Iovitz; Altmann, Gabriel (2008): *Some Problems of Musical Texts*. In: *Glottometrics* 16, pp. 82–110. ISBN 1617-8351.
- Martináková-Rendeková, Zuzana (2009): *Systems Theoretical Approach to the System Music and its Environment*. In: *Dzielo Muzyczne 5: The Musical Work and its Contexts*, Bydgoszcz. ISBN 978-83-61262-24-4, pp. 35–50.
- Martináková-Rendeková, Zuzana (2010): *Relationships between Functions of Music and Requirements of Environment*. In: *Dzielo Muzyczne 6: Musical Work and Its Functions Contexts*, Bydgoszcz. ISBN 978-83-61262-60-2, pp. 63–68.
- Martináková-Rendeková, Zuzana (2010): *Odhaľovanie zákonitostí v hudbe pomocou kvantitatívnych metód*. In: *Hudební teorie dnes a zítra. K nedožitým devadesátinám Karla Rísingera*. AMU, Praha 2010. ISBN 978-80-7331-195-7. pp. 73–90.

ANARCHY AS AN ORDERING PRINCIPLE

Jaroslav Šťastný

- In ancient China two types of order were recognized: the first, called *tse*, was formulated in words as a rule, a law for the people; the second, called *li* (which originally meant the markings in jade, the grain in wood, and the fibre in muscle) we can translate as *organic pattern*. It designates a type of order which is too multidimensional, too subtly interrelated, and too complicated and vital to be represented in words or mechanical images. It is an order of Nature. We can see it in the shapes of clouds, in the different shapes of branches, etc.
- This idea of order came to my mind in summer 2010, when I was invited to Tábor in South Bohemia (once the town of the Hussites) to see the work of a special international improvisation orchestra. It was a collaborative project of a young generation of improvising musicians from Austria, Norway and the Czech Republic. They formed together a 32-piece improvisation orchestra under the name ÖNCZ Kekvist. ÖNCZ is an abbreviation for Österreich, Norway and the Czech Republic. In Norway, *kekvist* is a word for “twig” used by water-diviners. This name has an obvious symbolic meaning: something as refreshing as the “Water of Life” is very much needed for contemporary music, since all its forms show an inclination to routine, which leads to petrification.

This improvisation orchestra is rather exceptional, not least in terms its size – in the field of improvised music, duos, trios and very often soloists tend to predominate. Apart from obvious economic and practical reasons there are also musical ones: in a small group working over a longer time span it is much easier to find a common language and to get satisfying results.

This was not in fact the first attempt in the world at a large-scale improvisation project, although earlier ones were usually created and organized by already well-known leading personalities as realisations of their own musical visions (e.g., Sun Ra Solar Orchestra, Cecil Taylor, Anthony Braxton, Keith Tippett Centipede, Alex von Schlippenbach Globe Unity Orchestra). In the case of Kekvist the musicians were very young and their common interest in improvisation and musical experiment made it possible for them to play without conducting, a score or any other other kind of predefined restriction. The working methods were based on free improvisation, followed by reflection in small groups. The key points were summarised in a plenum after each session. This is the second point: consequent anarchy without any leadership, which is a main feature of this project. Agnes Hvizdalek, an Austrian singer of Czech origin who lives in Norway and was the initiator and organiser of the whole project, was quite strict in upholding the rule of “no-rules”.

- So called *free improvised music* is a special approach to music-making which is seemingly without rules. Actually, there are some rules in it, but they are mainly unspoken – in the sense of the Chinese *li* (and sometimes the rules are actually formulated – in the sense of *tse*). In the case of ÖNCZ Kekvist the anarchy is strictly respected – there is no leading personality and musicians play without conducting, a score or any other kind of predefined restriction.
- This collaborative process lasted for about a week. After the initial phase of exercises (for example:

find a sound of the room you are in
listen to the silence
listen to the others
form duos and trios within the ensemble or give space to emerging duos and trios
take part in the collective dynamic or go against it
listen more than play, etc.)

one could observe two tendencies. The first was a tendency towards routine, repetition and a “soup” of polite ambient sounds. At the same time there was a second tendency towards distinctive musical shapes and unexpected ideas – certain unpredictable moments occurred when everyone felt that something important had happened. New forms of order appeared. The sound contributions of the different musicians were interwoven in unexpected ways. People became more sensitive. Step by step they discovered the degree of self-governance and social responsibility that is demanded by this kind of anarchy, and this atmosphere produced creative behaviour.

- In ancient Greece, the kind of involvement which binds together and is the principle of attraction and union, was called *Eros*; the opposite principle, of differentiation and division, was called *Logos*. *Eros* means creativity and joy. *Logos* means control. (By the way, through working with my Japanese students I have found that in Japan logic is considered aesthetically inferior...)
- As the two opposites are mutually interconnected, both principles, *Logos* and *Eros*, *tse* and *li*, work together. In everything new that starts as a chaotic eruption, some order is later discovered. This order is imitated and repeated: *li* is transformed into *tse*. What was originally a matter of feeling becomes a norm, standard, and eventually a binding regulation. This brings a loss of the original feeling. This state produces a certain need for revolt, anarchy and chaos again. That is the way in which anarchy works as a birthplace of a new law and order.

The text and beyond: real-time opera notes

on *La Dafne*, *Coronide* and *Mente*

Vít Zouhar

The real-time opera conception originated within the *La Dafne* opera project on which the stage director Rocc, the composer Tomáš Hanzlík and I worked from 2007 to 2011. When it comes to Jacopo Peri's eponymous opera, nothing but the printed libretto by Ottavio Rinuccini and seven musical fragments have been preserved.¹ The fate of numerous other operas of the time was similar. And it was precisely this situation that served as an impulse for the director Rocc, who in February 2007 mooted the idea of creating a new *La Dafne*. He did not, however, intend to reconstruct the Baroque opera, nor did he aim to update the historic theme. Instead, he wanted to instigate the formation of a workspace titled postopera. Forma, in which we would test the forms, shapes, functions and roles of opera, the workspace within which the opera *La Dafne* came into being. Hyperbolically, I termed this process "net opera" and "real-time opera". The internet was not only a common shared space, the workspace I mention and a place of sources for the new opera, but it was also a place whose interactivity and open space were one of the variants for the staging of the opera. And similarly, the designation "real-time opera" related not only to communication technologies but also the actual process in the workspace which blended together with its staging. Although we eventually decided to stage the opera (this year) in the traditional spaces of the National Theatre in Brno, I would like to draw your attention to at least some of the situations that preceded this production and that predetermined it, since it concerns just one of the forms of real-time opera that we have been creating since 2001.

Deconstructing the text

La Dafne links up to the conception of resurrecting the opera celebration within which operas based on Baroque works whose music has not been preserved, originate. The first such opera was *Coronide*, whose libretto I was offered in 1996 by the composer, stage director and performer Tomáš Hanzlík. The original Baroque opera was staged in 1731 in Kroměříž,² yet merely the printed libretto, written by an author known by the pseudonym Un Pastore Arcade, has been preserved. I wrote the new *Coronide* in 2000, when Tomáš Hanzlík performed and staged it with Ensemble Damian. Hanzlík himself has set to music a number of other opera texts that had a fate similar to that of *Coronide*. In 2001 he completed and staged the opera *Endymio*, two years later the Estates Theatre presented his *Yta innocens* (2003) and in 2006 the National Theatre in Prague performed his *Lacrimae Alexandri Magni*. And our collaboration was similar in the case of the opera *Torso* (2003).

The determining objective during this work was not historically informed reconstruction of the original works but the creation of a new form in which the original theme becomes one of the many starting points for a new opera, with the original text being just one of the layers of a new libretto. The text is often purged of the original linear story, form and structure, drama and

¹ See William V. Porter: Peri and Corsi's "Dafne": Some New Discoveries and Observations, In: *Musicological Society*, Vol. 18, No. 2 (Summer, 1965), pp. 170–196.

² Pastore Arcade: *Coronide*. Kreamsler, 1731. Research Library Olomouc, SVKO 24.769.

character development. A decisive role is played by the dramaturgy of the music, not of the text; the musical, not the literary, action. The resulting form ranges between concert, theatre performance and installation.

Coronide

In the case of the opera *Coronide* (2000), I chose an approach similar to that of browsing through the opera, when the reader creates a whole from individual points that capture his/her attention. Therefore, I made use only of several fragments from the original libretto, in which the semantic and sonic functions alternate. I supplemented these fragments with commentaries from Ovid's *Metamorphoses*, in the English translation of Samuel Garth and John Dryden, and a new text referring to the Antique myth of Apollo and Coronis. I shifted the opera's original moralistic tone in the direction of manipulation with the unverified information pertaining to the myth. In a fit of jealousy, Apollo kills his beloved nymph Coronis, who is expecting his child, since someone (Corace, the raven) claimed she was unfaithful to him. His subsequent ruing of the reckless act is in vain. Apollo believed and acted, without verifying anything.

The difference between the opera's original text, which dates from 1731, and 2000's *Coronide* is evident from the following comparison. The original five characters and chorus are reduced to four roles; the twenty-four scenes spread over three Acts are compressed into twelve scenes, of which merely nine draw on the Baroque text.

Table 1: Comparison of the libretti from 1731 and 2000

	Coronide (1731)	Coronide (2000)
Texts and sources	Un Pastore Arcade	Un Pastore Arcade, Publius Ovidius Naso, Vít Zouhar
Acts	3	1
Scenes	9, 8, 6	12
Characters	5 + chorus + ballet	4
Characters	Apollo (Tirsi)	Apollo
	Coronide	Coronide
	Apidamia	Apidamia
	Dafni	Dafni
	Corace (finally changed into Raven)	

Similar shifts have been made in the story axis. The textual fragments of the original libretto are set in the new text in such a manner that their typical figures and concentrated affect evoke references to and reminiscence of the Baroque operatic tradition and at the same time make it possible to follow and understand the action. The affect is accompanied by musical gestures, which are also underlined by the significance of tonalities.

Table 2: Sources of texts, arrangement of roles and set-up of tonalities³

Vít Zouhar: <i>Coronide</i> (2000)	Sources				
Scenes:	Un Pastore Arcade	Ovid	Zouhar	Character	Tonality
1. Coro: Coronide ama Apollo			X	Chorus	Es major
1. Coro: è gelosa	I/3. Apollo		X	Chorus	Es major
2. Coro: Felice chi prova... Cinto il crine	III/4. Corace			Chorus	Es major
2. Apidamia: In sembianze	III/2. Corace			S, Chorus	Bb major
3. Apidamia: Qual va tortorella	II/6. Apidamia			S	F minor
4. Coro: Corvus ad dominum tendebat		545		Chorus	F minor
5. And found him out		595/A (title)		S, A	C7
6. Apollo: Aprite, aprite	II/7. Apidamia			T	G minor
6. Apollo: Non rider, nò	II/8. Coronide			T	G minor
7. Coro: The God was wroth		600		Chorus	C7->
8. Coronide: Tutto mi dice	I/5. Apidamia			A	E minor
8. Coronide: Moro primi di mirar	II/2. Coronide			A	E minor
8. Apidamia: Non mi dice	I/1. Apidamia			S	E minor
9. Coro: Mora quell perfida	II/4. Dafni	609 (moriemur)		Chorus	F minor
10. Dafni: Coronide è morta			X	B	C minor
11. Apollo, Dafni: Di vita usci	III/6. Apollo			T, B	C minor
12. Coro: Tutte quelle	I/4. Corace			Chorus	B major

View of a detail. A fragment from the sixth scene of Act 2 is used in Apidamia's first aria. It is arranged in such a manner as to characterise in a textual acronym the role of Apidamia, whose love is unrequited ("Ma incontrar non m' è dato").

Example 1: Comparison of texts

The situation's tragic consequences are underlined by the symbolism of the F minor key and the text's slowed-down flow. Before Apidamia pronounces the phrase "tortorella amorosa",

³ See Karla Zouharová: *Gesta a řád v opeře Coronide Víta Zouhara* [Gestures and order in Vít Zouhar's opera *Coronide*] Theses. Pardubice: 2005, p 47.

a concealed gesture of a turtle-dove appears (bars 11–14, lowered sixth degree of F minor), which refers to the turtle-dove musically characterised by Antonio Vivaldi in the first movement of the concerto *L'Estate*:

Example 2: *Coronide*, Scene 3, bars 1–14

Let us return to *La Dafne*. In many aspects, its situation was different to that of *Coronide*. Although for a long time Ottavio Rinuccini's 1597 text was merely a theme and vehicle for the new opera, it ultimately determined the structure and was for the most part set to music. For a relatively long time, we were seeking a way in which to approach the theme and text. We worked with a number of variants, from music-movement theatre with a specially built mobile stage, through video opera and educational projects for schools, yet eventually returned to Rinuccini's text and chose the form of ensemble opera. Over the course of three years, we worked, often independently, on various conceptions of the opera *La Dafne*, owing to which the director Rocc also pondered the variant of simultaneous staging of several versions of the opera. It gradually made itself known to us that more essential than the specific form of *La Dafne* was how our sketches, conceptions and techniques mutually influenced us. With a touch of hyperbole, it may be said that everything the three of us – Tomáš Hanzlík, Rocc and I – created at the time was linked together with or referred to *La Dafne*. The spectrum was wide indeed. Rocc helmed opera productions ranging from Joseph Haydn's *Lo speziale* to Bohuslav Martinů's *Ariane*, while Tomáš Hanzlík worked on operas in different genres, *Tvarůžkové ódy* [Little Cheese Odes] and *Labyrint vášně* [The Labyrinth of Passion], while I sought further possibilities of working with the text in the electro-acoustic composition *Mente* or the scenic melodrama *Radúz and Mahulena*. And it was *Mente* that in 2008 clarified my approach to *La Dafne*. Even though in the end we did not choose this form, thanks to *Mente* we did so deliberately.

Mente

Although the text by the eminent German-language poet Peter Waterhouse in the book *Prosperos Land* (2001), with which I worked, is not an opera libretto, the manner in which I approached it in the case of the electro-acoustic piece *Mente* did not differ in any way. The resultant text collage and the method I applied when working with it is similar to my opera texts, in which a textual fragment determines the nature of the scene and the border between the meaning and colour of words is erased. Notwithstanding that Waterhouse's reductionist text is distant from the verbose style in which the myth of Apollo and Daphne is told, I conceived it as another variant for the opera *La Dafne*.

I always subordinate the text to the musical structure and its tempo.⁴ That is why this time, too, I selected for the final text collage individual phrases and verses from which I first created new stories and images that conformed to the musical tempo-rhythm and subsequently divided these into seven scenes. A comparison of the first two scenes with the original text clearly shows the starting point for the collage:

⁴ See Vít Zouhar: *Mente and Expressive Possibilities of Morphing in Contemporary Melodrama*. In: Patrick Devine; Vladka Kopecká; Jiří Kopecký (eds.): *Musicologica Olomucensisa 12. Zdeněk Fibich as a Central European Composer at the End of the Nineteenth Century*. Olomouc: Palacký University Press, 2010, pp366.

Table 3: Comparison of the text collage in the composition *Mente* with the original text in *Prosperos Land*

Vít Zouhar: <i>Mente</i> (2008)	Peter Waterhouse: <i>Prosperos Land</i> (2001)
I	(p. 8)
Die Bäume drehen sich	Die Bäume drehen sich
Die Häuser drehen sich	Die Häuser drehen sich
Die Äpfel rollen	Die Äpfel rollen
Die Kinder Rollen	(p. 9) Die Kinder Rollen
	Die Rundungen dreier Eimer antworten Mond Sonne Mars Gespräche Gespräche
Und die Wege kreisen wie Zeiger	An der Wegkreuzung Gespräch zweier Frauen Und die Wege kreisen wie Zeiger
II	(p. 78)
	Baum steht offen Das Haus unterirdisch
	Der Baum macht einen Anfang
Die zehn Sterne flimmern in den Finger- spitzen	Die zehn Sterne flimmern in den Finger- Spitzen
	Haus geht hinüber in Haus des Nachbarn

Similarly, the tempo of Waterhouse's reading is subordinate to the rhythm of the composition. This is also evident from the first scene. In the first column, time data determine the accession of individual verses in *Mente*, while in the second this concerns data from Waterhouse's reading.

Table 4: Comparison of the tempo of reading in the composition *Mente* with Peter Waterhouse's original reading

	<i>Mente</i>		<i>Prosperos Land</i>
I	0:00	Die Bäume drehen sich	0:00
	0:22	Die Häuser drehen sich	0:06

0:39	Die Äpfel rollen	0:12
1:10	Die Kinder Rollen	0:18
1:41	Und die Wege	0:41
1:56	kreisen wie Zeiger	0:43

Recordings of selected fragments from the collection *Prosperos Land* served as the basis for *Mente*. They oscillate from meaning to sound, to melody, rhythm and back; from authentic reading to purely sonic, rhythmic or melodic objects. Individual words, such as “*blinzeln*” (twinkle), “*flimmern*” (glimmer), “*Wege*” (roads), etc. determine the character and the processes of individual scenes. For instance, in the first part “*Wege*” the basis of accompanying sounds evokes the natural “landscape”. Seemingly natural sounds illustrating the landscape of the first scene include the processed and transformed words “*Wege*”, “*Kinder*” (children) and “*Bäume*” (trees). On the other hand, the second scene begins with a seemingly rhythmic-melodic pattern which, however, is in point of fact filtered from the reading of the text “*Die zehn Sterne flimmern in den Fingerspitzen*” (“*Ten stars glimmer on the fingertips*”). The key word for the nature of the scene is the verb “*flimmern*”. During the course of this scene morphing occurs, whereby from the initial pulses the text gradually comes through in its original meaning. Similar processes also take place at the visual level: a constant of the first scene is represented by the verbs “*rollen*” (roll) and “*drehen sich*” (turn). Similarly to this scene being characterised by seemingly natural sounds, visual objects and processes here form a direct parallel, too – this time of motion: the scene is built on the rotary principle of individual verses. Conversely, for instance, the sixth scene remains an abstract image: the rhythmic-melodic model transforms into samples of the barely perceptible “*Baum steht offen*” (“*The tree stands open*”) and back. The periphrastic nature of the first scene is on the whole counterbalanced by the direct parallel in the final, seventh scene, whereby the text “*gehen Sonnen auf*” (“*suns are rising*”) is accompanied by the symbolic *ascensus* of aliquot tones generated from this text.

La Dafne

In the same year as *Mente* originated, Tomáš Hanzlík set to music Prologo, the first part of the opera *La Dafne*. He chose for it a configuration referring to Greek monody and hence only applied voice and lute. Hanzlík consistently adhered to Ottavio Rinuccini’s Baroque text and referred to the Florentine declamatory style, which he combined with the form of strophic loop. Although in 2008 the conception appeared as merely one of many possibilities, two years later it became the starting point for the scenic version of the new *La Dafne*. Although, or precisely because, our conceptions of the opera at the time differed significantly, at the end of 2010 the director Rocc divided Rinuccini’s libretto into twelve scenes and determined the structure and form of the new opera. It was not an interpretation of Rinuccini’s text but a grid, which could be filled with both new and historical texts. Rocc thus outlined the principle of a number opera, yet its actual form was entirely up to us, including whether we would make use of the principle of the empty grid or, contrariwise, only focus on the original text.

Almost a year before Rocc determined the platform of the new *La Dafne* he proposed the venue at which the opera would be staged. He deliberately chose not a theatre hall but the Reduta concert hall in Brno so that the situation would remain multivalent and the venue itself would refer to the historical practice of performance of early operas in knight halls, as well as to the current trend of transferring productions beyond theatres. The venue in question represents

Brno's oldest, longest opera tradition and is a space whose interior, adorned with Petr Kvíčala's sgraffito, is a minimalist set design in itself. And this multivalence pervades *La Dafne*. The orchestra setting resembles a Baroque reflection of Antique drama and is reduced to a basso continuo tradition (theorbo, positive organ, cello), yet this ensemble can also be understood as a paraphrase of a rock band made up of guitar, keyboards, bass and percussion. Rinuccini's opera text not only determines the form and shape of the new *La Dafne* and is largely literally set to music, but in a number of scenes it is referred to by mere fragments. This multivalence has a common denominator in our differing conceptions. Whereas Tomáš Hanzlík gives preference to narration and a reverent approach to the original text, I myself prefer textual reduction, allusion and gesture, where a scene is characterised even by a single phrase. The two approaches becomingly supplement each other.

The tendency to textual reduction becomes clear in the fourth scene when we compare Rinuccini's libretto with the new text. The Baroque text makes use of some twenty-four verses to glorify God, whereas the same scene in the new *La Dafne* is reduced to the mere "Almo Dio". Everything is concentrated in this single point and accentuated by a single pattern which imperceptibly transforms itself and is symbolised by the key of A minor, which, for instance, Christian Schubart symbolised by the softness (*Weichheit*) of the character.⁵

Table 3: Comparison of the libretti

The chorus in the ninth scene is similarly gestic. The text is condensed into the sentence "che non senta d'amore" ([a heart] – that would not feel love), which is gradually unrolled from the vowel and through "che non senta" (that does not feel) to the entire verse. This scene too is characterised by the same attribute that symbolised the glory of God in the previous example, i.e. the A minor chord oscillating with the C major key, which in the spirit of Schubart's aesthetics also refers to naivety and innocence.

Yet all these attributes are not decisive for an understanding of *La Dafne*, *Coronide*, or *Mente*. It is something that can be discovered, not something which it is necessary to know or which everyone must be aware of so as to be able to approach these compositions. The very opposite is true.

This study is part of the GA408/09/0121 project *Research on post-indeterminacy composing methods: classroom composing*.

Abstract

Vít Zouhar: The text and beyond: real-time opera

The essay deals with different ways of using, deconstructing and transforming the verbal text in the operas *La Dafne*, *Coronide* and the electro-acoustic piece *Mente*. These processes, together with communication media, form the basis of the conception of the real-time opera project.

⁵ See Christian Friedrich Daniel Schubart: Charakteristik der Töne. In: Christian Friedrich Daniel Schubart: *Ideen zu einer Ästhetik der Tonkunst*. Viena, 1806; Hildesheim 1969.

Compositions entitled *Music* in the instrumental music of Latvian composer Pēteris Vasks

Ilona Būdeniece

Every period of music is marked by certain artistic searches, changes and instabilities. This phenomenon becomes evident with particular brightness in the 20th century, causing us to re-evaluate traditions – including those of musical genre – established over the long run of the centuries. On the whole, the situation concerning the music of the last century is characterized by two principal trends. The first of these reflects a tendency to continue to develop and improve traditional musical genres formed and stabilized in previous centuries. The latter trend highlights the tendency to abandon typical models of musical genre and the search for new and unconventional variants of genre.

As a result of these processes, a group of musical compositions, manifold and impressive in terms of quantity, is being established in whose titles we do not find such common, habitual and well-known labels as *symphony* or *sonata*. Instead of these common labels of musical genres, novel, non-traditional and previously seldom used titles – e.g., *Book, Landscape, Drawing, Dedication, In memoriam* – are met with increasing frequency.

There are many musical compositions by both Latvian and non-Latvian composers whose titles include the word *music*. The aim of this paper is to look at and reflect on the distinctiveness of such compositions in the creative contribution of Pēteris Vasks, one of the brightest and most distinguished Latvian composers worldwide, with a focus on instrumental music.

According to the concept of musical genre elaborated by Lithuanian musicologist Gražina Daunoravičiene, compositions whose titles reflect the word *music* are representatives of the so-called *librogenre*. The term *librogenre*, which means *a musical genre without traditions or a free genre*¹, is attributed to compositions whose titles do not contain any signs of traditional musical genres. Untraditional labels of musical compositions and their frequent recurrence have become one of the first and most essential impulses for a discourse on such a phenomenon as the development of a new kind of musical genre in twentieth-century music. Thus, the aspect of title is one of the most significant parameters towards classification of these particular compositions.

Based on this parameter, it is possible to differentiate between at least four diverse groups of *librogenre*: 1) compositions whose conception is based on one particular pitch, as reflected in the titles (e.g., *In Es* for two piano by Lepo Sumera, 1978, *In C* for indefinite performers by Terry Riley, 1964); 2) compositions in whose titles a certain method of development is emphasized (*Sequences* by Luciano Berio – a total of 13 sequences for different instruments, 1958–1996); 3) compositions with unique, non-recurrent and poeticized titles, e.g., *Night conversations* for clarinet and piano by Pēteris Plakidis (1992), *Do you hear me?* for cello by Andris Dzenītis (1996), *Ice dusts* for flute, clarinet in *B* / bass clarinet, percussion, violin, viola and cello by Santa Bušs (2007); 4) musical works in whose titles some recurrent ideas are reflected. Owing to the moment of typification it is possible to subdivide these compositions into yet smaller groups, e.g., *music, dedication, in memoriam, meditation, landscape, book, drawing*.

¹ Дауноравичене, Гражина: Проблема жанра и жанрового взаимодействия в современной музыке (на материале творчества литовских композиторов 1975–1985 годов) / Автореф. дисс. ... канд. искусствоведения. Вильнюс, 1990. 24 с.

It should be noted that in Latvian instrumental music only the last two types of librogenre are characteristic, specific and typical. Within the framework of those musical works in whose titles some recurrent ideas are reflected, the label *music* is the most popular and frequent.

The first compositions with *music* in their titles date back to the 18th century. These are well-known compositions, written by baroque and classical composers (*Water Music* (1717) and *Music for the Royal Fireworks* (1749) by George Frideric Handel and *A Little Night Music* (1787) by Wolfgang Amadeus Mozart). It is interesting to note that in spite of these early examples, the use of such titles for musical compositions did not become a tradition. It is almost impossible to give an example that demonstrates the existence of such labels in 19th century music.

A significant turning point in this respect occurred in the first half of the 20th century. A great contribution to the developing and updating of such compositions was made by German composer Paul Hindemith, who wrote about twenty musical works for different performers whose titles contain the word *music*. Striking and interesting examples of *music* were created by such distinguished composers of the 20th century as Béla Bartók (*Music* for strings, percussion and celesta, 1936), Witold Lutosławski (*Musique funebre* for strings, 1958), Sofia Gubaidulina (*Music* for flute, strings and percussion, 1994), and Krzysztof Penderecki (*Music* for alto flute, marimba and strings, 2000).

In Latvian instrumental music compositions with the word *music* in the title appeared in the second half of the 20th century. The first example was *Music* for string orchestra, written by Jānis Kalniņš in 1965. Several composers followed his lead straightaway, e.g., Artūrs Grīnups (*Music* for symphonic orchestra, 1966), Pauls Dambis (*Festive Music* for symphonic orchestra, 1967), Ģederts Ramans (*There is no Time to go round the Rapids*, music for symphonic orchestra, 1967), and Pēteris Plakidis (*Music* for piano, strings and timpani, 1969).

If in the beginning composers were somewhat careful in their writing of such unstable and indefinite compositions in terms of musical genre, then the following decades were marked by an explicit and progressive tendency that revealed an astonishing increase in the number of such musical opuses. From a chronological point of view it is possible to conclude that from the 1970s such musical works were on the increase, a tendency that was particularly prevalent in the 1980s and 1990s².

Latvian composer Pēteris Vasks has created fourteen compositions with the word *music* in the title, covering the period 1974–2009³.

When asked about the first and most essential impulse for the use of the unusual label *music*, the composer answered: “The idea was that I obviously didn’t want to take a frequently used label such as ‘suite’. I wished for some other title. I wanted each musical composition to have a name of its own because, though it is in the mind, each composition is like a child of my own”⁴.

It should be stated that the music of Pēteris Vasks has developed in two principally different

² A total of 89 compositions with titles comprising the word *music* (60s – 6, 70s – 16, 80s – 19, 90s – 25, the first decade of the 21st century – 20; the decade of origin of three compositions – unknown).

³ *Music* for two pianos (1974), *Chamber Music* for wind quintet (1975), *Music for Flown Away Birds* for flute, oboe, clarinet, french horn, bassoon (1977), *Little Night Music* for piano (1978), *Autumn Piano Music* for piano (1981), *Music in Memoriam of a Friend* for flute, oboe, clarinet, french horn, bassoon (1982), *Musica dolorosa* for string orchestra (1983), *Little Summer Music* for violin and piano (1985), *Evening Music* for french horn and oregano (1988), *Musica seria per organo* (1988), *Spring Music* for piano (1995), *Musica adventus* for string orchestra (1995/1996), *Musica appassionata* for string orchestra (2002), *Music for a Summer Evening* for piano (2009).

⁴ From an interview with Pēteris Vasks conducted in 2008.

directions. On the one hand, he develops and cultivates classical musical genres of non-program music, while his symphonies, string quartets, sonatas and concertos reflect and confirm the traditions of genres developed in the course of centuries. On the other hand, Pēteris Vasks seeks original, fresh and alternative ideas to be incorporated into the sphere of the librogenre.

To sum up the knowledge gained and observations made in the analysis and research of such musical compositions by Pēteris Vasks, it is possible to draw some significant and relevant conclusions as well as to mark out particular tendencies that characterize the creative work of this composer.

First of all, concerning the titles of these musical works, there is an outstanding tendency to use the word *music* in combination with one or more than one elucidating word. Thus it is possible to direct listeners to a more or less particular emotional mood. In some way such titles work as an emotional code, impulse or direction without providing the concreteness of programmatic music. It was interesting to hear the opinion on this of the composer himself: “Now I can see that in '74 there is *Music...*, then in '75 – *Chamber Music...* and finally in '77 there is *Music for Flown Away Birds*. It is a composition which has a name. It seemed to me to be substantial and significant. It would be advisable for the name of a particular composition to be different from other names of musical works in the first place. And there is one more factor – elucidating, because a listener is pretty confused when faced with instrumental music. The title, if it is successful, helps to dispose listeners to something even before they listen – *Music in Memoriam of a Friend*, *Little Summer Music...* The title gives some reference to the listener so as not to leave him alone in the middle of a field, so that he knows which direction to look in.”⁵

The aspect of the performing staff has become one of the typical and specific parameters of such compositions. The Russian musicologist Galina Grigorjeva, for instance, considers this aspect to be significant and crucial in the development of this kind of librogenre. She stresses the dominant role of the librogenre *music* in the 20th century, relating it mainly to varied sonority and inexhaustible resources of the chamber performers⁶. In this respect, the creative work of Pēteris Vasks could be characterized as manifold and variable – starting with compositions for solo instrument and finishing with music opuses written for string orchestra. Consequently, it is possible to say that this parameter is quite unstable, although the general tendency is shared by Latvian instrumental music of the late 20th century as a whole, namely in its orientation towards *chamberness*. Such a tendency can be traced not only in chamber but also in orchestral compositions, with a preference for a string or chamber orchestra over a full symphonic one.

Finally, from the point of view of compositional structure and form building, two groups can be distinguished – single-movement and cyclic. The cyclic structure is represented by three musical compositions only, but even though it is the smallest component in the librogenre with the title *music*, one essential and interesting tendency is revealed – cyclic compositions demonstrate a vivid connection and similarity with and closeness to more or less concrete traditional classical genres (e.g., *Music* for two pianos displays a connection with the sonata genre genotype because it is written in three movements: I – *Moderato*, sonata form; II – *Free Variations, Largo*; III – *Motion, Presto*, free rondo form).

A tendency to write *music* opuses as single-movement compositions becomes predominant. The characteristic features of these single-movement works are gradualness, dynamic and determined development, progression towards climax and the presence of continuity in every

⁵ From an interview with Pēteris Vasks conducted in 2008.

⁶ *Теория современной композиции*. Москва: Музыка, 2007. pp. 23–39.

composition. Moreover, it should be stated that every single musical piece demonstrates an individual solution in terms of form building. The form of musical composition develops as a result of a process.

Consequently it is possible to conclude that a unifying factor can be found not in similarities of compositional structure but on the conceptual level. This common situation highlights the fact that the word *music* in a title is linked in particular with small single-movement instrumental compositions in which a lyrically dramatic mode of expression prevails. This tendency describes not only the creative work of Pēteris Vasks but also that of other Latvian composers.

In conclusion it should be stated that since the late 20th century Latvian composers have used the word *music* in the titles of their compositions with increasing frequency. Thus this tendency is proving to be a stable and long-lasting phenomenon.

The Musical Language of Košut's Vocal-Instrumental Composition

Nostradamus

doc. Mgr. Petr Hala, Ph.D.

Košut's oratorio for solos, reciter, choir and orchestra to words by Věra Mikos has yet to be performed. It will premiere on November 16 2011 in Brno's Besedni dům at a concert of Masaryk University.

This large composition, which lasts approximately 43 minutes, is written to words based on the form of similar librettos for oratorios from the 18th century by Händel, Haydn, Mysliveček and others. The fact that the text is rhymed is also a deliberate reference to forms of the past. The text is written to order. From a dramatic point of view the communication between the two main characters is most significant. The first main character is Nostradamus (bass), who was a real person living in the 16th century, a doctor and a respected prophet – a number of his predictions came true. The second main character is a ghost-whisperer, Nostradamus's inner voice Medareton (contratenor), whose name is an anagram of the word Notredame. During the oratorio, both characters act in harmony and contraposition. The other characters in Košut's work play only marginal roles. The basic textual thread is on the topic of tolerance, God's function in religious learning and real human society, and last but not least a criticism of social morality. The text respects basic historic facts and is based on some of Nostradamus's prophecies, but as a whole it is a fiction.

As is traditional, the text is partly devoted to a narrator. His entries divide the composition into several significant parts and are of different lengths. The narrator's nine solo entries range from 6 seconds to one minute. (Specifically, their lengths are as follows: 60, 55, 12, 35, 20, 37, 6, 30 and 20 seconds.) Obviously, the variety in the length of individual entries is not burdened by a predictable rising or falling tendency. The vocal-instrumental areas last from 1:29 to 8:26 – specifically 4:00, 1:36, 3:38, 2:40, 8:26, 1:29, 4:56, 3:00 and 7:47.

The individual areas of the music have a rich inner structure in terms of their instrumentation, movement density and rhythm and regarding the organisation of the tone heights.

The instrumentation moves along with a standard amount of variety, from orchestral tutti with the choir, over areas devoted to the separate instrument sections or combinations of these, to areas with a real chamber character and solo entries. Significant instrument combinations that go beyond the above-mentioned possibilities include bells, violoncellos, double basses; strings, solo lines of brass instruments; strings, cembalo, solo voice, trumpet; two French horns, tuba; harp, solo voice, two flutes; separate strings. A typical feature of Košut's instrumentations – not only within the composition under analysis – is the very quick changing of instrumented areas of fundamentally different composition, with not even a small vertical overlapping in at least one of the participating voices (e.g., bars no. 141–144). The first area is produced by a flute, oboe, choir, strings, the second by organ and kettledrums, the third by woodwind instruments, bells and strings.

The area of instrumentation includes some expected problems with the technical performance of certain passages. The difficulties are the result of the combination of a high tempo, short rhythmical values and complex rhythmical structures, which cause problems in non-solo entries

in particular. In solo entries, these agogic changes or possible small inaccuracies in performance would not necessarily mean the disturbance of the entirety of a given part. An example of a problematic place is the passage already mentioned (bars no. 142 and 143). A creative attitude from the performer is needed in some areas of the string parts, where we find, for instance, chromatic scales in both directions or application of the five-finger key technique at the pace $\frac{3}{4}$ (quarter note) = 100 where thirty-second values are used.

As far as rhythm is concerned, the composition is usually very clearly based on basic metrical units – partly regular, partly irregular, but in all cases traditional. The only exception to this is the falling passage with written *ritardando*, which includes triplets shifted from the beginning of the metrical beat to its partial parts in individual layers proceeding in various rhythmical values. This may cause problems in ensemble. A perfect ensemble is not a condition for the achieving of the intended rhythmical freedom of the whole passage (bars no. 146 and 147). Some simple unusual things – such as variety in the division of the same rhythmical values into groups of two, three and four notes – sounds very spectacular in the given extreme tempo. To maintain this high tempo will be very difficult for the performer (e.g., in bars no. 227–231). In the vocal parts rhythmical structures are very clearly dependent on text recitation and a tendency to divide the text according to metrical beats where one word (or group of words) = one beat. The metrical units are in this case divided regularly or irregularly depending on the number of syllables in the word.

Concerning the tone heights, the whole composition is characterized by the use of sectors from diatonics and chromatic passages. The author tries deliberately to avoid scales which would enable the judging of chords as harmony functions of a particular key that differ in importance. The interval structure of the vocal part is very significant in the horizontal sense. The superiority of perfect primes and minor and major seconds is not so surprising; what is surprising is the extent of this superiority. If we divide the total 6,856 melodic intervals in the choir and solo parts into free groups of perfect primes (A), minor and major seconds (B) and other intervals (C), we will gain the ratio 4 735 : 1988 : 130 (in percentage terms A = 69 %, B = 29 % and C = 2 %). In addition, in some passages the superiority of perfect primes is even more significant, and the use of intervals from group C prevails in the solo parts in particular.

Aleatoric Principles and Graphic Notation

František Chaloupka

Abstract

Since the 1960s, when aleatoric principles were widely explored by leading composers such as Witold Lutoslawski, John Cage, Karlheinz Stockhausen and Krzysztof Penderecki, the aleatoric concept of music notation and the interpretation of music scores have both shifted away to the margins of our interest.

Meanwhile, since the 1980s, exact notation (often very complicated for musicians to perform) has become predominant. It was often not expected that these demanding scores (e.g., by Xenakis and Ferneyhough) would be performed mathematically exactly as they were written or intended; they were a kind of instruction, or even a metaphor. This included latent aleatorics but also used an extremely complex classical notation of rhythm, metre, bars etc. in order to express it.

The aleatoric music of the 1960s, on the other hand, got rid of most musical parameters, such as rhythm, bars and metre. Changes in this kind of music focused mainly on how to deny or do without these parameters. Now the topic of discussion is not how to leave out these basic musical parameters, but how to manipulate them using aleatoric approaches to music.

Introduction

In this talk I will draw mainly on my own experience as a composer. I will use examples from my compositions from the years 2010 and 2011. If the phenomenon under discussion is rooted in some other compositions I will not hesitate to use another composer's examples. Since my dissertation thesis – "The theory and practice of contemporary music ensembles" – also deals with the issue of aleatoric and graphic notation, I have chosen to discuss this topic at the conference. For the sake of research on new approaches to aleatorics, synthesis of aleatoric elements, graphic symbols and exact (classical) notation I founded the Dunami Ensemble. This ensemble consists of players trained in both classical and experimental music. During the presentation of findings I will also draw on this research and present some results here.

The topics we will discuss here are:

- Synchronising musicians while using aleatoric elements in notation
- Aleatoric rhythm and metre and function of the bar from an aleatoric perspective
- The Idea of Crippled Barlines and a Triple-Bar

Let us move on to Chapter One.

1 Beats (Time Signature)

— “Una Battuta”

Una Battuta

This way of conducting means the conductor always gives the first beat (the downbeat) and the rest of the bar (or the grid) is not conducted. We know this way of conducting from *Livre pour orchestra* by Witold Lutoslawski, for instance. There are two (or more) basic options for this way of conducting (or let us say synchronising):

1 “Una battuta” conducting with **non-synchronised** notation – every musician plays his or her own **small figure** (motif) right on the beat or slightly after the beat. All the music is **gathered around the barline**.

The image shows a page of a musical score for an orchestra, numbered 5 in the top right corner. The score is for measures 29 through 35. A boxed letter 'B' is placed at the beginning of measure 30. The instruments listed on the left are Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), Bassoon (Bsn.), Horn (Hn.), Harp (Hp.), Alto Saxophone (A. Ga.), Violin (Vln.), and Violoncello (Vc.). The Flute part has a 'non legato' marking and a 'fff' dynamic. The Oboe part has a 'non vibrato sempre' marking. The Clarinet part has 'non legato' and 'P' markings. The Bassoon part has a 'fff' marking. The Horn part has a 'non legato' and 'f' marking. The Alto Saxophone part has a 'fff' marking. The Violin and Violoncello parts have 'fff' markings. The score shows various rhythmic figures and dynamics for each instrument, illustrating the 'non-synchronised' notation where each musician plays their own small figure on the beat or slightly after the beat.

2 “Una battuta” (as previous) but the small non-synchronised motif (a rhythmical figure consisting of few notes) is repeated through the bar:

11

3 “Una battuta” conducting used for the whole pattern. This can give a classically-trained conductor a heart attack, because after the conductor gives a downbeat a musician plays not only his or her small figure but the pattern which goes through the whole bar. And now the heart attack part: the conductor has to wait for all the musicians to finish their patterns before continuing with another bar giving another downbeat. So **the conductor has to wait** for the musicians.

5

A problem arises when we want bars to run smoothly from one to the next without stopping at the end of each bar. And this is the true role of a conductor in this case – to hear, react and

decide on the right moment. Fluent passage from bar to bar using una battuta conducting works surprisingly well during ensemble playing, especially when musicians are able to improvise and bear responsibility for the output.

(Play The Book of Sand and show score example.)

2 Metre (Pulse)

— Floating Metre (LISTEN)

— The Free Metre (first music – or process, graphic – then barlines, beats and tempo)

“Floating Metre”

Usually we talk about metre if there is a pulse – beats in the background we can recognize or count. I use Floating Metre to mean the situation where the recognized metre is dissolved (wound up) so that every player has his or her own metre for a while and the complex vertical metre structure is not synchronised. We can also call this aleatoric metre.

There are various forms of notation. In the first example we can see classical notation – the bars in the brackets are instructions to change the tempo (slow down and speed up again) continuously. Although it may look like clear notation, I do not think this is the best way – musicians still feel quite attached to exact notation and are not able truly to free their minds and give up the initial tempo, let alone in the case of the conducting of this piece.

(Show the LISTEN score and play.)

The image displays two systems of musical notation for 'The Book of Sand'. The first system shows a complex arrangement of staves with various rhythmic markings and tempo changes indicated by brackets. The second system shows a similar arrangement but with a more graphic notation style, including a section labeled '(others not th.)' and a 'ffff' dynamic marking. The notation is dense and intricate, reflecting the 'floating metre' concept where traditional rhythmic structures are dissolved.

We can of course combine the exact notation from the previous example with graphic notation. In this example the notes are very short at the beginning, then they get longer and longer, and then they return to staccato. The density is clearly seen in the picture: its texture goes from thick to thin in the middle, before ending up thick again. Quite a long time is reserved here for the whole process (9 beats/Grave) in the assumption that every musician will work individually and independently with the given time.

The image shows a musical score with three staves. The top staff is a bass clef, the middle is a treble clef, and the bottom is another treble clef. The score is divided into two sections by vertical dashed lines. The first section is labeled 'Grave' and '9 BEATS'. Above the first staff, there are labels: 'staccato' with a dashed arrow pointing right, 'longer and longer notes' with a dashed arrow pointing right, and 'staccato (hold note)' with a dashed arrow pointing right. The notes in this section are represented by a dense field of dots that becomes sparser in the middle and denser again at the end. The second section is labeled 'Allegro' and '4 BEATS'. The notes in this section are represented by a regular, dense field of dots. The label '(hold note)' is also present above the end of the second section.

The other possibility is to use the graphic notation of density together with “una battuta” conducting in the middle (indicated with the arrow on the barline), so that the “counting” stops. The notes in the fourth bar (una battuta bar) are first longer and longer, while from the other una battuta bar the notes get shorter and shorter.

The image shows a hand-drawn musical score with five tempo sections: MOTO (7/8), LARGO (3/8), PRESTO (4/8), ADAGIO (6/8), and MODERATO (4/8). The score is divided into sections by vertical dashed lines. Above the first staff, there are labels: 'MOTO 7/8', 'LARGO 3/8', 'PRESTO 4/8', 'ADAGIO 6/8', and 'MODERATO 4/8'. There are also time intervals: 'ca 4 sec.' and 'ca 6-7. sec.'. Below the first staff, there are labels: 'LOWER AND LOWER' and 'SHORTER AND SHORTER'. The notes in this section are represented by a dense field of dots that becomes sparser in the middle and denser again at the end.

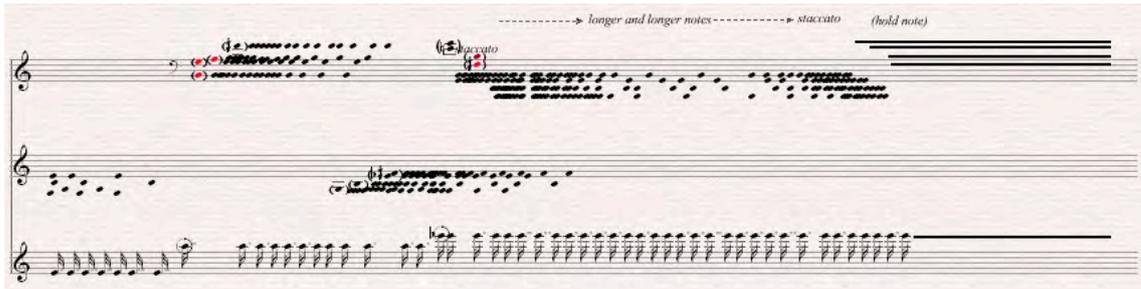
The Free Metre

Here is something that I call the Free Metre. To express musical ideas best and not be bothered with details at the very beginning as a time signature, metre or tempo I often choose the option of composing (or drawing) an object first. This also allows me to deal with the core of a musical

idea at the beginning and not lose the point of the idea. So first we have an object (motif, graphic, process), then we add the barlines, and only at the very end do we add the metre with the tempo marks or expression. Look at these three stages in the pictures:

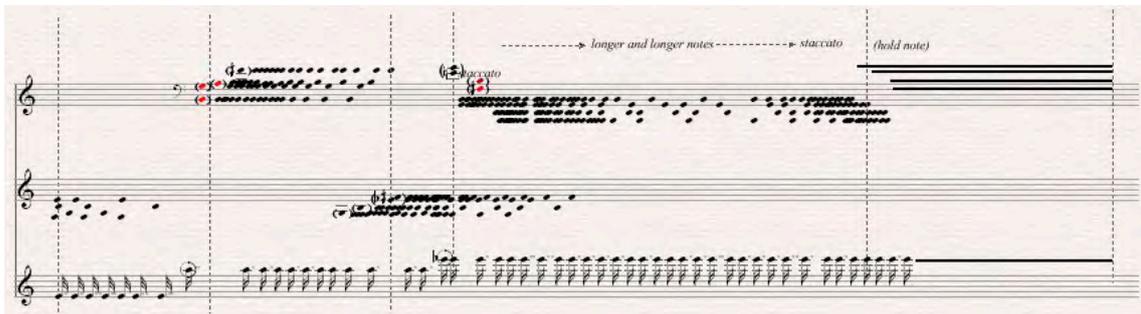
a) Object

After the object is projected (composed or drawn on paper) we look for key situations – where they stop or begin. Then we decide what the most important situations are and what is musically important – we create a hierarchy. Once we understand our material perfectly, we consider the conducting – where the downbeats start, how long a bar long is, etc.



b) Barlines

When all this is finished, we can easily add the barlines.

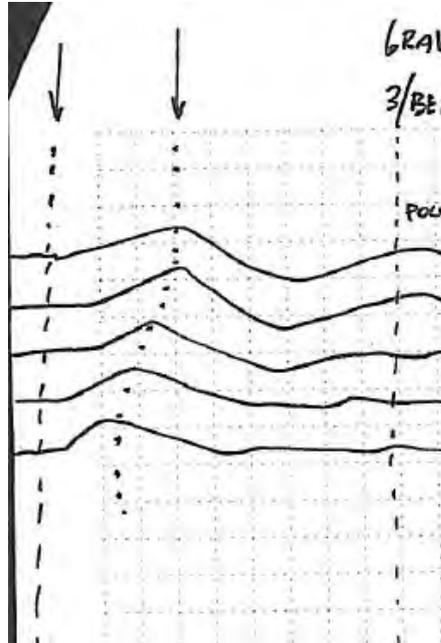


c) The metre with tempo marks and expression

As step three we add the time signature. For a time signature I use the term “beat” (e.g., 3 beats, 7 beats etc.), and this is indicated above the staves. Because there is no metre in the classical sense, the use of a conventional time signature (e.g. $\frac{3}{4}$, $\frac{7}{4}$) would be, of course, confusing and incorrect. After the “beats” (the lengths of the bars) are distributed, I add the tempo marks. For every composition I usually have a set of tempo marks from slow to fast (Grave, Largo, Moderato, Andante, Allegro, Presto, etc.). These tempo marks are conducted, however, in the baroque or romantic idiom – classically. To avoid a periodical metre I usually change violently the amount of beats and tempo marks from bar to bar.

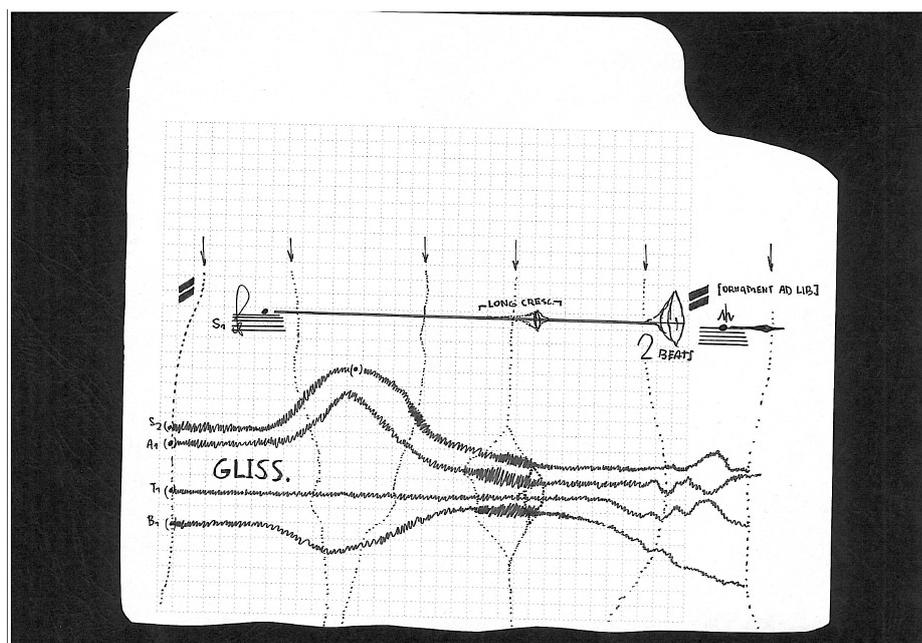
Crippled Barlines

The Crippled Barline is a barline inside the bar. It is irregular and serves for the further division of a bar (grid). I took the term “crippled” from Morton Feldman’s piece Crippled Symmetry, of course – although in this piece Feldman divides “time” (the score) horizontally, giving an independent metre to different layers. The Crippled Barline divides the bar vertically. It shapes the musical object in a kind of “3D” and gives instruction to the players for the different layers.



Triple-Bar

Triple (or Double) Barline is an extension of Crippled Barlines. It virtually shapes the space, giving different instructions to multiple layers **using only the one giving beat**. This means that the same beat or barline (upper side of the barline) indicates different positions in the score. Let me finish this talk with a short, heretical saying or wish:



Understanding Musical Concords from the Viewpoint of Sound Spectra

Petr Pařízek

This article discusses various links between two different views on concords – as complex sound timbres, or as tone series applied in music. Finding links between these two viewpoints allows us to think not only about particular facts in acoustics which are valid in general but also about the historical development of the concept of musical chords regarding some phenomena which existed long before music itself.

The information contained here may be of use primarily to composers of electronic or timbre music, composers of microtonal and spectral music, and authors of mathematical algorithms for modelling sound timbres or resonators; it may also be of some use to performers of Renaissance and Baroque music and anyone who tries to answer some basic questions on intonation in a chamber orchestra or choir without limiting their repertoire to the music of Classicism or Romanticism (where the topic of intonation is often viewed as being of secondary importance).

Electronic music uses the medium of sound in a totally different way than music based on chords does. Therefore, if we want to use some timbre-based elements in a chord-based piece or vice versa, there is the possible danger of a one-sided attitude that will depend on which of the two fields we are more experienced in. The aim of the following paragraphs is to minimize these barriers.

The article is divided into two sections. The first describes important facts regarding sound spectra as complex multi-frequency tones, while the second links these with the issue of musical intervals and briefly describes how these links have been dealt with as scales and temperaments have developed.

I. Acoustical periodicity and linearly equidistant tone series

Simply put, periodic spectra are generally perceived as tones while non-periodic spectra are perceived as noises. There are many possible variants between these two extremes.

In mathematics, the sine and cosine functions (sometimes referred to as sinusoids) are usually used as a model of periodicity. An acoustical rendition of a sinusoidal period sounds to us like a single tone of a given frequency with no particular timbre (as it does not contain any higher frequencies which would serve as overtones). An exact sine wave can only be realized by electronic means, while acoustic sounds approximating it may include whistling or the sound of some clay ocarinas, for example.

Thanks to the specific properties of the sinusoidal functions, virtually any motion (be it motion in sound, light, mass, temperature, or anything else) can be broken down into many sinusoidal periods of varying frequencies, intensities and phases, and can be understood as a parallel sum (i.e. linear combination) of all these sinusoids.

For example, if we mix sine waves whose frequencies are integer multiples of 100Hz (in theory up to infinity) and whose intensities change in inverse proportion with frequency (i.e. the intensity of the lowest tone is 100%, that of the next tone is 50%, that of the following tone is 33.33%, etc.), we get a periodic wave of a downward sawtooth shape. Therefore, in terms of frequency

analysis, we can describe a sawtooth period using the regular series of harmonics since all the included frequencies are integer multiples of the lowest one.

This process of converting temporal motion to a series of frequencies, amplitudes and phases is known as the “Fourier Transform” and is a key tool in the field of spectral analysis. However, it should be noted that the result of such a conversion does not contain any information about time scaling and is essentially something like a static sonic picture. Therefore, only periodic spectra can be expressed with 100% exactitude by this method.

The most apparent cases of acoustical periodicity are, of course, single tones, specifically sinusoids, as they have one clearly given frequency. Irrational relationships of pitches in tempered musical intervals may make us think that mixing two or more tones would always result in a non-periodic sound. In fact, if there are two or more tones sounding together, the resulting sound may be either periodic or non-periodic, depending on the ratios of the sounding frequencies.

Primarily, the resulting sound is periodic if the sounding frequencies are divisible by one common value, no matter if the periodicity is audible or not. Then a new frequency appears which belongs to the concord itself, not to any of the sounding tones. This newly-created frequency is known as the “fundamental” and is equal to the greatest common divisor of all the sounding frequencies. If all the sounding periods begin in the same phase, the phases of all of them coincide after every such cycle. If not, then they do not coincide but the phase relationships between them are anyway repeated periodically. If the frequency of the fundamental is in the range of audible frequencies (about 20 to 20000Hz), phase coincidences may be unnoticeable to our hearing, which means that the phenomenon of periodicity is then only perceived on the basis of repetitive phase relationships (i.e. the absolute phases are no longer important but the repeating changes in their relationships are).

For example, in a triad like 402:501:599Hz, the general periodicity of 1Hz is essentially inaudible (unless the sounds have loud overtones and periodic beating occurs as beating between them). On the contrary, in a triad like 400:500:600Hz, the general periodicity of 100Hz is clearly audible.

In both cases, the same integer number of periods of each sounding tone occurs within one period of the fundamental. That is why the phase relationships of the individual periods are always repeated when one period of the fundamental expires, which results in a synchronous multi-frequency period whose general frequency is equal to the fundamental. This means that a triad of 400:500:600Hz can be understood either as a proper triad or as a particular period of frequency of 100Hz, with its specific timbre given by the ratios of the included harmonics. This is where the concept of chords and musical harmony comes from. Before temperaments came into use, the aim was to tune concords in such a way that the resulting fundamental was often “mistaken” for another sounding tone.

For example, if we play a triad of C3-E3-G3 while tuning the E3 a bit lower than on a conventional piano (about 15 cents), we can hear softly a low C1, which is the approximate fundamental of the almost periodic sound.

If there is a common linear difference between every two consecutive frequencies, the resulting sound is periodic as long as the individual frequencies can be expressed as a rational part of the difference. If they cannot, then the sound only exploits partial periodicity (an explanation of the phenomenon of partial periodicity is beyond the scope of this article).

For example, in a triad of 200:500:800Hz, the lowest frequency is equal to $\frac{2}{3}$ of the difference, the middle one is its $\frac{5}{3}$, and the highest one is its $\frac{8}{3}$. Therefore, this sound is generally periodic at 100Hz and partially periodic at 300Hz.

If it is true that an integer number of periods of each sounding tone fits into one period of the fundamental, then it is equally true that a deliberate choice of one particular fundamental frequency restricts the selection of sounding frequencies to its integer multiples. This means that every loop of a sound only contains frequencies which are integer multiples of the frequency of the loop itself.

For example, if we play repeatedly a loop of a length of 10 ms (i.e. one 100th of a second), then all the sounding frequencies are integer multiples of 100Hz. If the loop contains a single infinitely short impulse, all the integer multiples of 100Hz (in theory up to infinity) will come out in equal intensities and in equal starting phases (in the case of a positive impulse, these will be cosine periods). Similarly, if we mix sinusoids of integer multiples of 100Hz at equal intensities and starting phases, we get the same impulse repeated 100 times per second. The resulting sound will be identical, no matter if we make it simply by repeating a single impulse, or by mixing frequencies which make up a regular series of harmonics.

II. Comparing musical and timbral perception

It is a well-known fact that we perceive musical pitches on the basis of exponential relationships rather than linear ones. For example, doubling the frequency is the same as raising the pitch by one octave, while halving the frequency means lowering the pitch by one octave (i.e. if an A4 of 440Hz is followed by an A3 and then by an A2, the A3 and A2 will have frequencies of 220Hz and 110Hz respectively). This means that the important parameter here is the frequency ratio and not the difference. For this reason, musical scales and intervals are classified on the basis of exponential relationships of frequencies, not of linear ones. Therefore, most operations with musical intervals are done with the help of frequency ratios. These are usually converted logarithmically to some other units which correspond to the way we hear intervals (the most favoured units of this kind are “cents”, where 1 cent is 100 times smaller than an equal-tempered semitone, therefore an octave is equal to 1200 cents).

In the previous section we learned that linearly equidistant series of tones (i.e. those that have equal differences between consecutive frequencies) exploit a certain amount of periodicity in the whole spectrum, and also that the sound is fully periodic if the difference frequency is equal to the fundamental. From this we can deduce that the primary tone series of this kind is the series of harmonics. A concord tuned to this series is not actually perceived as a chord but rather as a complex tone whose frequency is equal to the fundamental/difference frequency (the same holds if we remove a few of the lowest tones since this does not alter the fundamental frequency, even though it is not present itself). This is because most acoustic periodic sounds differ primarily in the timbre – i.e. varying intensities of individual harmonics. Therefore, it is desirable that we hear a single tone, whether played by a violin or sung by a voice, as one tone with a specific timbre rather than many tones of different pitches sounding together. For this reason, periodic spectra are usually well recognizable by human hearing and often relatively “attractive”, and they play an important role in the field of consonance/dissonance of chords.

We may notice that there are significant differences in requirements and preferences if we compare the musical understanding of concords to the timbral one, which results in some ambiguity in aims for a good-quality choice of pitches for actual scales and tunings. From one point of view, it would be appropriate to base everything on exponential relationships between frequencies, which would make it possible to link chord progressions effectively, modulate, transpose, and so on. From another viewpoint, it would be appropriate to include linearly equidistant tone series (though they are not exponentially equidistant), which would make it

possible to alternate between chords with a unifying or restful sound and chords with a cold and tense sound. However, one particular system of intervals cannot express every rational factor using rational exponents (nor vice versa). Because of this, a good choice of pitches is usually some kind of compromise with a slight preference for one or the other. One such compromise is our usual 12-tone equal temperament, which divides an octave into 12 equal ratios, using 7 of these to approximate a perfect fifth (i.e. 700 cents instead of ~702 cents).

In the oldest civilized organized system of musical pitches, known as “Pythagorean tuning”, all the intervals can be described as an integer number of pure octaves (1200 cents) and pure fifths (~701.955 cents), either rising or falling. This means that a minor third, for example, has a size of ~294 cents (i.e. 2 rising octaves, 3 falling fifths). While the standard equal temperament is 1-dimensional, Pythagorean tuning is actually 2-dimensional since its intervals are made by layering two different intervals whose logarithmic sizes are not commensurable (because $3/2$ cannot be expressed as a rational power of 2). Octaves, fifths, and fourths sound stable and pure in this tuning, while thirds and sixths contain fast unharmonic beats because of their complicated frequency ratios. For this reason, thirds and sixths were, right up to the 14th century, called “imperfect”, and intervals of this kind were supposed to be resolved into “perfect” ones at the end of a phrase.

Towards the end of the 15th century, “Didymean” or “Ptolemaic” tuning (often also “5-limit just intonation”) came into use, which meant that Pythagorean major and minor thirds were replaced by more concordant intervals (~386 and ~316 cents respectively). This made it possible to split a pure fifth into two linearly equidistant steps, which led to the introduction of a new musical element never before used – a chord. Even though Ptolemaic tuning turned out to be quite attractive for listening, it cannot be rendered uniquely in standard staff notation. The reason for this is that staff notation is 2-dimensional, while this particular tuning is 3-dimensional, and therefore some tones differing in pitch are notated in the same way. The primary issue here is the non-existence of symbols for pitch adjustments by a “syntonic comma” (~21.5 cents). Although it should be more important to represent music in sound than on paper, the significance of 2-dimensional staff notation was so substantial that no secondary accidentals independent of “#” and “b” have ever come into wider use. If they had, then a unique written representation of Ptolemaic just intonation would be perfectly possible without confusion.

Almost all subsequent tuning systems attacked the issue of harmonic ratios by means of “tempering” (i.e. the slight mistuning of certain intervals for the purpose of approximating others). “Meantone temperament”, which was introduced around 1530 and was favoured for almost 200 years, is also 2-dimensional since all of its intervals can be achieved by combining pure octaves and slightly narrower fifths (~696.5 cents in the oldest version of this temperament). This made thirds and sixths much closer to pure than in Pythagorean tuning or in modern equal temperament. “Well-tempered” tunings used varying sizes of fifths in such a way that a chain of 12 fifths was equal to 7 octaves, which allowed the application of the idea of enharmonic equivalence (i.e. the use of one pitch for both C# and Db) and resulted in the concept of a circle of fifths. Equal temperament, as we know it, aims to do the same only by using a single size of fifth (to be precise, 700 cents).

The goal of tempering is, in fact, to turn a small interval (ideally about 30 cents or less) into unison (0 cents). We then say that the original interval has been “tempered out”, which means that two pitches differing by this interval in just intonation turn into a single pitch in the resulting temperament. Meantone, for example, tempers out the syntonic comma, while well-temperaments and modern equal temperament temper out the Pythagorean comma.

Towards the end of the 19th century, there were numerous ideas for tunings dividing an octave into fewer or more than 12 equal steps. However, only as late as the 1970s did it become apparent that it is much more effective to look for new 2-dimensional, rather than 1-dimensional tunings (i.e. to use a different generating interval – or “generator” – in place of a fifth). The reason why none of these newly suggested tunings has become widespread seems to be, once again, our conventional staff notation, which is derived from a fifth-based system (and therefore incapable of representing chains of generators other than fifths or fourths). Nevertheless, a few musical pieces have been composed in these tunings, and these make it obvious that tunings of this kind offer significantly better musical qualities than the 1-dimensional ones do. In naming but a few of the most notable newly suggested 2-dimensional temperaments, we should be sure to mention “miracle” (generator = ~116.7 cents), “hanson” (~317 cents), “porcupine” (~164 cents), “tetracot” (~176.5 cents), and “semisixths” (~443 cents).

MATHEMATICAL OPERATIONS IN MUSICAL COMPOSITION

FOCUSING ON THE NUMERICAL DEVICES OF PRE-COLUMBIAN MIDDLE AMERICA

MgA. Edgar Omar Rojas Ruiz

Keywords: music, mathematics, Mayans,
Tzolkin, Haab

Summary

Talking about the Mayans means to make reference to one of the most important civilizations not only from the pre-Columbian Americas, but from all the so-called Antique civilizations of the world. Their cultural and scientific legacy has been the subject of multiple researches and speculations all through modern human history. Of the most developed Mayan scientific devices we can highlight their numerical systems based in the number 20 and different astrological and bio-cyclical facts, together with the design of a complex but precise calendar system which was one of the main bases of the modus vivendi of this civilization.

In my life as a young Latin American composer of music I have recently had the chance to get closer to these numerical systems and calendars, finding them particularly fascinating for the development of new compositional techniques, from which I have been able to collect the first practical results applied to music, and which will be the main subject of my active participation at this conference.

Introduction

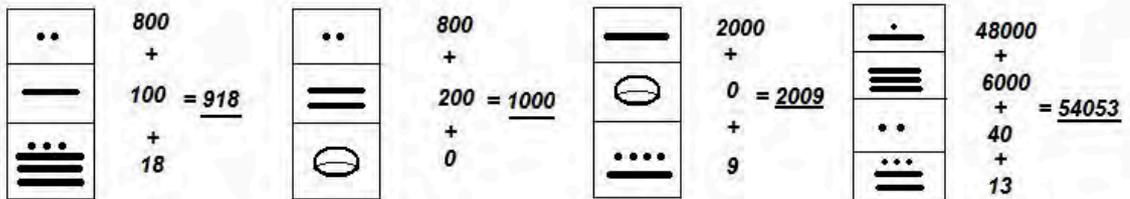
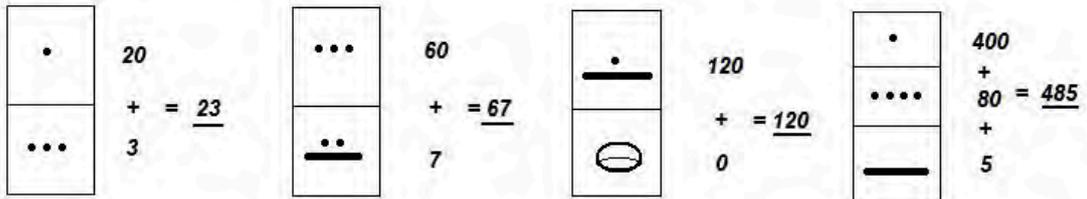
Mexico – Tenochtitlan, 1521

After almost two years of a bloody war between the Mexicas (Aztecs) and the Spanish conquerors, the great city of Tenochtitlan, capital of the Aztec Empire, was turned into something similar to a hell on earth; even when the Aztec warriors were able to keep the Spaniards away from the city for one year after the biggest defeat that the peninsular army suffered (at the “Battle of the Sad Night”), the inhabitants of Tenochtitlan had to face different enemies which were no less deadly than the foreign invaders: hunger, a lack of drinking water and an aggressive smallpox epidemic that killed thousands of Aztecs.

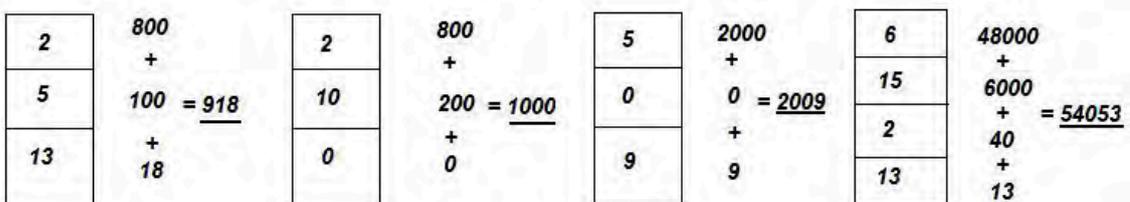
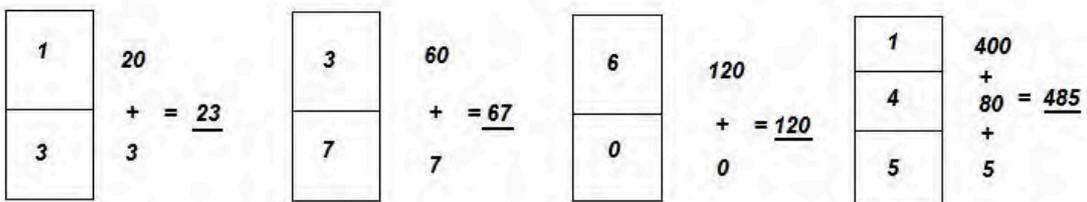
The Spanish troops took advantage of this situation to organize a definitive attack on Tenochtitlan joined by an army of 100,000 Indian allies, drawn mostly from tribes under Aztec military domain. Cuahutemoc, the last Aztec emperor, was captured by the army of Hernán Cortés in 1521. The Indian governor asked the Spanish captain to give him a dignified death, but Cortés used his position of emperor to force the Aztecs to rebuild the destroyed empire, and after four years of constant humiliation and brutal torture, Cuahutemoc was murdered by the Spanish conquerors.

That was the end of one of the greatest civilizations of world history; as the swords of the Spanish soldiers and the rage of diseases unknown to the Indians finished the lives of so many brave

The level of the trails where the numbers are located will determine by which power of 20 they will be multiplied, which means: at the first level they will be multiplied by one, at the second by 20, at the third by 400, at the fourth by 8000, etc. The following are a few examples of how to read quantities greater than 20 written using the Mayan system:



If we turn the base numbers of each of the levels of the trails into Arabic numbers without raising them to the power determined by each level (which is already implicit in the level itself), we will get a very interesting organization of small quantities from 0 to 19; the former examples could be read in Arabic numbers as follows:



It is important to mention that it is not my intention to speak about Mayan or Aztec music nor to go into detail about the scientific branches of pre-Hispanic Middle American cultures; out of respect I do not believe that this is a work of interest to experts in anthropology and anthropomusicology, which are definitely not topics we are gathered here to speak about. My intention is to show some of the possible ways of application in musical composition of what I have been able to find in these numerical systems; in order to achieve this aim, it will be necessary to divide this presentation into three main subjects:

Mayan mystical numbers

The Mayan calendar

Some possible applications of the Mayan numerical system to musical composition

1. Mayan mystical numbers

In Mayan culture there were certain numbers which were determinants in daily and religious life; the following is a list of those numbers, with some reasons for why they should be considered important:

0: This number is one of the most interesting numbers in Mayan culture; it was taken from their ancestors the “Olmeca” (Central Mexico), who defined the concept of “nothing” in the year 36 B.C.

1: Unit of measure

4: The Mayans counted their months as 4 weeks of 5 days (20 days in total), while the minimum cycle of years in Mayan counts was made up of 4 years (related by several anthropologists to the Greek Olympics). On the other hand, one of the divisions of the “Tzolkin” (moon calendar) is made in 4 serial colors, which are determinant in matrices obtained from this calendar.

5: As mentioned above, Mayan weeks were made up of 5 days only (unlike ours, which are made up of 7); according to the repetition of the colors row in the graphic view of the Tzolkin, this calendar can be divided into 5 quadrants. On the other hand, 5 is the number of “awful days” that include the “Uayeb”, or last month of the Haab (sun calendar).

13: According to the Mayans, this number is quite important due to the fact that it is related to 13 main points of energy in the human body; this fact is a determinant for many other issues of their lives – for instance, it is important to remember that the Tzolkin is divided into 13 empires from its vertical view, that every Great Count is divided into 13 cycles of 4 years that give us a result of 52 years, while 13 is the number of celebration days between every Great Count.

18: The number of months of 20 days in the Haab, plus one month of 5 days known as the “Uayeb”, or “awful days”.

19: The total number of months in the Haab (sun calendar), once we include the “Uayeb”; it is also the limit of possible numbers at every level of the Mayan system of numerical organization.

20: This is probably the most enigmatic number in Mayan culture, not only because it is the base of their numerical system, but because we find it in all their mystical counts – e.g., the 20 sacred sings, the 20 repetitions of the cycles of 13 empires in the Tzolkin, the 20 days of each month in the Haab.

52: According to the Mayans a human being reaches the age of maturity at 52; every 52 years 2 Mayan calendars coincide, thus completing a “Great Count”. We should bear in mind that the number 52 is a fractal of 5200, which is the number of years that a “sun” or human life takes on earth.

260: Total number of days in the Tzolkin (Mayan moon calendar).

365: Total number of days of the Haab.

2. The Mayan calendar

The Mayans were able to develop a calendric system based on 2 different counts (calendars): the “Haab” – or calendar of the sun, with 365 days – and the “Tzolkin” – or calendar of the moon, which had 260 days. Both of these calendars were in motion simultaneously, and they coincided back at their starting point every 52 years; this cycle is also known as the “Long Count”.

The Haab (Sun Calendar): This calendar is the one that counts the time that the earth takes to orbit the sun, which is 365 days divided into 18 months of 20 days (each month had 4 weeks of 5 days) and one month of 5 days known as “Uayeb” (the “awful” days). The Mayans, like most Middle American cultures, measured their time in cycles of 4 years (called “Olympics” by some prestigious archeologist). Archeologists and anthropologists consider this calendar to be one of the most precise in human history due to the fact that every day and every month have specific energy charges which mark life cycles, natural cycles and other phenomena.

The Mayans’ conception of this calendar and the division of its cycles was based on accounts of the behavior of the sun, the moon and the planets, in addition to certain numbers which were important from the mystical point of view of Mayan numerology. The following is a brief explanation of how this calendar is divided:

5 days = 1 week

4 weeks (20 days) = 1 month

18 months + 1 “Uayeb” (short month of 5 “awful days”) = 1 year (360 + 5 days)

4 years = 1 energy cycle

13 energy cycles (52 years) = 1 “Long Count”, or period that it takes the *Haab* (sun calendar) to coincide with the *Tzolkin* (moon calendar). It is important to point out that at the end of every Long Count, 13 days of celebration were added as a pause before the start of the new Long Count; it is also worth a mention that according to the Mayan way of thinking a human being reached the age of maturity in wisdom when he was 52 years old.

100 Long Counts (5200 years) = 1 sun. In Mayan culture “one sun” is the life-span of humankind before it is destroyed to make way for the arrival of a new one; specialized studies of Mayan prophecies based on this calendar show that our humankind is living in the “5th sun”, which will finish on 21st December of the year 2012 of the Roman calendar.

The Tzolkin (moon calendar): In Mayan etymology the word “Tzolkin” comes from the joining of two words, “Tzol” (account) and “Kin” (day); as the *Haab* measures the behavior of the earth according to the sun, the *Tzolkin* determines the behavior of living beings according to the moon.

While the *Haab* is a calendar full of precise divisions of time cycles, the *Tzolkin* is a calendar full of symmetry, biological facts, and mysticism. According to several anthropological researches, and the tradition inherited by the Mayan community which still lives in the region today, it is possible to discover the destiny of a person according to the date of his birth by the correct use of the *Tzolkin*; perhaps this is the reason why the Spanish conquerors burned a lot of information related to this calendar, which was considered an evil count related to the devil.

Probably the most important difference between the *Tzolkin* and the *Haab* is that the moon calendar counts only with 260 days, which are divided into 20 sacred sings or archetypes (horizontal view) representing the water stream that sustains our lives, and 13 “Empires” (vertical view) representing the light. The multiplication of these two views results in a matrix of 260 days.

The *Haab* and *Tzolkin* calendars can be seen as two engines of different sizes which move simultaneously in time and coincide at their beginning every 52 years. The *Tzolkin* can also be seen as a “linear” matrix of two axes; this view not only allows us to uncover many interesting characteristics related to organization and symmetry but also to find hidden sequences in each number of this calendar. A very basic view of the organization of the *Tzolkin* can be described as follows:

- The calendar is divided into two main axes: a) vertical with 13 empires and b) horizontal with 20 sacred sings.
- Cycles of 13 days are repeated horizontally 20 times, resulting in a matrix of 260 days.
- The 20 sings of the horizontal axis of the matrix are organized in groups of 4 serial colors (one per sign) – red, white, blue and yellow; when we divide the 20 sacred sings into rows of 4 colors, the result is a new organization of 5 quadrants in the calendar.
- According to Mayan calculations, among the 260 days of the *Tzolkin* there are 52 days with a special charge of energy from the universe, coming mainly from the sun, the moon, Mars and Venus; the organization of these 52 days in the linear view of the *Tzolkin* presents us with some very interesting symmetrical facts, one of the most important being the existence of a so-called “mystical band”, which is located in the middle of the matrix and contains very interesting devices in numerical organization.

3. Some possible applications of the Mayan numerical system to musical composition

Due to the time limits per lecture agreed for this conference, it would be practically impossible and inappropriate for me to try to explain in a few lines all the compositional procedures based on pre-Hispanic numerical systems which I have been able to find for my PhD. thesis so far; nevertheless, I do believe it would be practical to summarize some of these devices by explaining in a few steps the typical compositional procedure which I use based on these systems:

3.1. Total Mayan Row and its Hidden Row

As we discovered in the explanation of the Mayan numerical system given earlier in this work, there exist some numbers which have special mystical meaning in the perception of the world, astrology and different natural processes in the existence of this pre-Hispanic civilization. If we take these mystical numbers and give them the form of a numerical row, the following sequence emerges:

0, 1, 4, 5, 13, 18, 19, 20, 52, 260, 365¹

For reasons of functionality in the understanding of this text, for the time being we will call this particular group of numbers the “Total Mayan Row”. A basic analysis of the numerical intervals which exist between the values of this row, or the “Hidden Row”, could be the following:

¹ In this numerical row the number “5200”, which is the total number of years of a “Long Count”, is omitted due to the fact that its fractal (52) is represented in the row.

0	1	4	5	13	18	19	20	52	260	365
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1	3	1	8	5	1	1	32	208	105
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Numerical values of the Total Mayan Row

Hidden Row

3.2. Basic Mayan Row

A variant in the use of the Total Mayan Row consists in reducing it to the most important values according to their mystical meaning from the Mayan perspective. The result of this procedure can be defined as the “Basic Mayan Row”. The numbers taken in order to make this reduction, together with its Hidden Row, would be as follows:

0	1	4	5	13	20
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1	3	1	8	7
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Numerical values of the Total Mayan Row

Numerical intervals between the values of the Total Mayan Row

3.3. Translation of the Basic Mayan Row into tones

In order to make primary use of these numerical devices in musical composition, it is possible to convert the values of the Hidden Row generated by the Basic Mayan Row into musical intervals, doing so by a rate of conversion whereby **1 = One Semitone** as a unitary value. The translation of this Hidden Row into musical intervals would be as follows:

2m	3m	2m	6m	5P
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***2m = minor second**

3m = minor third

5P = perfect fifth

6m = minor sixth

This row of intervals can be very helpful in obtaining musical devices from the “Basic Mayan Row”. A very simple way of achieving first musical results from this row would be the generating of a group of notes from these intervals, taking “C” as a “base note” or “point zero” to give us a six-note row which for the time being we will define as the “Mayan Hexachord”. It is important to point out that the Mayan Hexachord has twelve possible transpositions, which are generated over each value of the chromatic scale:

C	Db	E	F	Db	Ab
---	----	---	---	----	----

2m	3m	2m	6m	5P
----	----	----	----	----

Notes of the Mayan Hexachord

Musical intervals generated by the Hidden Row of the Basic Mayan Row

3.4. Extension of the Mayan Hexachord

In the course of my research I have found several useful possibilities for the extension of the Mayan Hexachord. At this conference I would like to speak about one of them in particular: "extension through parallel symmetrical axes in two dimensions". Out of this, other important devices called "Mayan Modules" will be generated. This procedure departs from the symmetrical location of the second and fourth notes (symmetrical axis) of the Basic Mayan Hexachord, which is shown in the following example taking "C" as a base note of the Hexachord, together with the location of these axes in the numerical and intervallic structure of the hexachord:

Basic Mayan Hexachord (taking "C" as the base note):

C	Db	E	F	Db	Ab
---	----	---	---	----	----

Base note or departure point of the Basic Mayan Hexachord

Second and fourth notes of the chord symmetrically located

Numerical structure and parallel symmetrical axes included in the structure of the Basic Mayan Hexachord:

1	X	3	<u>1</u>	8	Y	7
---	---	---	----------	---	---	---

Melodic structure and parallel symmetrical axes included in the structure of the Basic Mayan Hexachord:

2m	X	3m	<u>2m</u>	6m	Y	5P
----	---	----	-----------	----	---	----

Symmetrical Axis

Central interval

In order to achieve this extension, it will be necessary to read the intervals of the hexachord from each of the symmetrical axes to its opposite extreme; in the case of "X" the intervals will be read forward (ascendant/positive intervals), while in the case of "Y" they will be read backwards (descendent/negative intervals). It is worth mentioning that in order to achieve a "real extension" of the hexachord (what means new added values), it will be necessary to switch the direction and the quality of the intervals which are read in this process, as is shown in the following diagrams:

Extensions of the axis "X" (using the rate of conversion 1 = one semitone):

-7	-8	-1	-3	X
----	----	----	----	---

-5P	-6m	-2m	-3m	X
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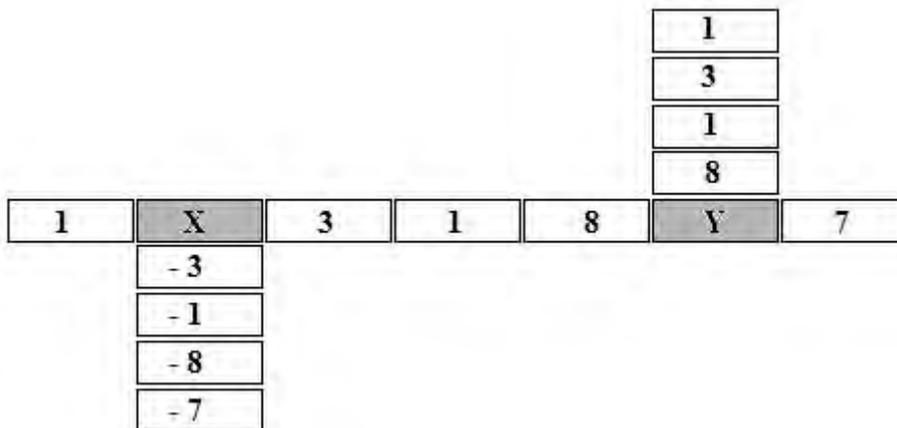
Extensions of the axis "Y" (using the rate of conversion 1 = one semitone):

Y	8	1	3	1
---	---	---	---	---

Y	6m	2m	3m	2m
---	----	----	----	----

These new extensions will be added vertically to the structure of the Hexachord and placed over or under their respective symmetrical axes, thus giving us a new possibility for an Extended Mayan Hexachord in two dimensions. Due to the fact that the extension of the axis "X" is made by descendent intervals (-) this will be placed under this axis, while the extension of the axis "Y", which is made by ascendant intervals (+), will be placed over this axis. This procedure is clearly shown in the following diagram:

Numerical structure of the Extended Mayan Hexachord by parallel symmetrical axes in two dimensions



Intervallic structure of the Extended Mayan Hexachord by parallel symmetrical axes in two dimensions

					6m	
					2m	
					3m	
					2m	
2m	X	3m	2m	6m	Y	5P
	- 3m					
	- 2m					
	- 6m					
	- 5P					

What is turned into notes, taking “C” as a departure point of the Basic Mayan Row which is extended, results in the following Extended Mayan Hexachord:

				D	
				Db	
				Bb	
				A	
C	Db	E	F	Db	Ab
	Bb				
	A				
	Db				
	F#				

Symmetrical Axis

3.5. Mayan Harmonic Modules

As we could observe in the previous statement, the procedure of “extension through parallel symmetrical axes in two dimensions” of the Mayan Hexachord has many things in common with procedures used in order to get a matrix from a twelve-note row in serial composition; departing from this concept, it will be possible to generate “diatonic” transpositions over each of the notes given by the extension of the Mayan Hexachord. The result of this process will be called the “Mayan Harmonic Module”, which is as follows:

Eb	D	F	F#	<u>D</u>	A
C	Db	E	F	<u>Db</u>	Ab
A	Bb	Db	D	<u>Bb</u>	F
Ab	A	C	Db	<u>A</u>	E

C	Db	E	F	Db	Ab
A	Bb	Db	D	Bb	F
Ab	A	C	Db	A	E
C	Db	E	F	Db	Ab
F	F#	A	Bb	F#	Db

Upper point of extension/right symmetrical axis

Original version of the Basic Mayan Hexachord with "C" as a base note

It is worth mentioning that the Mayan Modules have some notes which are structurally more important when compared with the rest of the values of the module; these "Structural Notes" would be as follows:

Db	D	F	F#	D	A
C	Db	E	F	Db	Ab
A	Bb	Db	D	Bb	F
Ab	A	C	Db	A	E
C	Db	E	F	Db	Ab
A	Bb	Db	D	Bb	F
Ab	A	C	Db	A	E
C	Db	E	F	Db	Ab
F	F#	A	Bb	F#	Db

- a) **3 Generators located** at the beginning of every instance of the Basic Mayan Hexachord in the Module (base notes): 
- b) **6 Symmetrical Points** located in the symmetrical axes of every instance of the Basic Mayan Hexachord in the Module: 
- c) **2 Upper Terminals** located in the symmetrical axes of the last upper transposition of the Basic Mayan Hexachord inside the Module: 
- d) **2 Lower Terminals** located in the symmetrical axes of the last lower transposition of the Basic Mayan Hexachord inside the Module: 
- e) **3 Lateral Terminals** located at the end of every instance of the Basic Mayan Hexachord in the Module: 

Conclusion

The features and devices presented in this lecture about pre-Columbian Middle American numerical systems are only the basis of a whole compositional system, which I continue to work on as my PhD. research. If some of those present at this lecture are interested in learning more about the different applications of Middle American numerical systems to musical composition, I would be honored to answer any questions and listen to each of your suggestions.

My presence here represents a wonderful opportunity for me to share with you my thoughts on what – in my opinion – are not only the numerical devices of one of the most wonderful civilizations of human history, but also the very personal interpretation of these devices of a young Latin American composer, who, like many others of his kind around the world, is looking for an artistic identity. I believe I am beginning to find this in one of the branches of the scientific roots of my culture.

*MgA. Edgar Omar Rojas Ruiz
Brno – Czech Republic 2011*

References

- A. RIVAS SALOMÓN. Análisis sobre de la Piedra del Sol (Analysis of the Stone of the Sun). Mexico 2007.
- D. WILCOCK, HAUS, MALKUN – FACTOR MAYA. Trabajos del Calendario Maya (Works about the Mayan Calendar). Mexico 1997.
- V. RODENS. Conferencias de Etnomusicología Maya (Conferences about Mayan Ethnomusicology). Universidad de Marroquín, Guatemala 2008.
- ANONYMOUS. Popol – Vuh. Fondo de Cultura Económica. Mexico 1960.

Abstrakt

Debatou na téma Mayové se dotýkáme jedné z nejdůležitějších civilizací nejen z před-Kolumbovské Ameriky, ale jedné z „antických“ civilizací celého světa. Jejich kulturní a vědecká dědictví dalším generacím byla a jsou předmětem množství výzkumů a úvah během celého novověku.

Mezi nejvyvinutějšími vědeckými prostředky Mayů musíme zdůraznit jejich numerický systém založený na čísle 20 a různé astrologické a bio cyklické skutečnosti, společně s tvorbou komplexního ale zároveň velmi přesného systému kalendáře, který je jedním z hlavních základů modus vivendi této civilizace.

Během svého profesního života mladého latinsko-amerického skladatele jsem měl možnost seznámit se s numerickým systémem a kalendáři, jež jsem shledal fascinující pro vývoj nových skladatelských technik. Dané postupy jsem poté prakticky využil při tvorbě hudby a stanou se hlavním předmětem mé aktivní účasti na tomto kongresu.

An Improvising Ensemble

Pavel Zlámal

In this article I will give a general introduction to my doctoral work and my dissertation thesis. Following on from my musical activities and strong interest in performing modern music and improvisation, I am continuing my studies and activities with a greater focus on the idea of free improvisation. I am also working to create and hopefully establish a free improvisation ensemble, which is the subject of my dissertation thesis.

While the topic Musica Nova is thematically framed as “new compositional tendencies”, I consider improvisation to be a specific musical space, from which composers can receive and learn lots of ideas which they would hardly be able to figure out by writing alone without previous sound experience. I am sure that this connection of the influences of composition and improvisation works in both directions. So I am doing my own sound research with my instruments as I go through contemporary compositions, trying to learn and master as many featured musical ideas, sounds and expressions as I can in order to include them in my own improvised music. Skills of improvisation can offer a considerable body of material for composers to work with and think about. Improvisation itself not only reflects musical evolution, but it also comments on the current situation, which means that it contributes actively to musical development in general.

As I am an active, working instrumentalist (clarinets/saxophones), my further doctoral research is based on practical musical activity. And the thesis is meant to be a record of my activities, attempts, applied intentions, subjective reflections and experiences, as well as consequent changes in my approach and other developments.

Dealing with the topic of a free-improvising ensemble, in the following part I will divide the subject into a few thematic sections, where I will try to explain my point of view in greater detail. Of course we can find more objectives, but for now I will stick with the few listed below.

Background

Aims of the band

My role in the ensemble

Philosophy

Finding musicians

Practising

Conclusion

Backgrounds – where it comes from

The idea of free improvisation and a completely improvising band is not new at all, of course. But in the Czech Republic the improv scene is not yet very strong and well established. If I compare the situation to that in western Europe, here it is a bit scattered. In my opinion this situation still offers some space for creation of an ensemble, which might be of a certain significance as an exceptional project. In any case we cannot expect that free music will become very popular.

Free music projects are not exceptional, but they usually come from the jazz tradition and so retain some relation to jazz. There are also electronics players – improvisers working with noise.

But there is nothing of the size of the orchestras of Evan Parker, Barry Guy and Anthony Braxton, the sources of my motivation.

My intention is to create a band that basically consists of more than 4 players and is based on the natural acoustics of the instruments used. It should avoid a jazz sound, follow in and develop the European tradition of improvisation and refer to musicians such as Derek Bailey, Evan Parker and John Butcher, to mention just a few.

Aims of the band

With this kind of ensemble I want to make live, interesting music, explore something new and different, produce honest music with characteristic features of the natural perfection of “imperfections”, and apply a creative approach that is different to that of composition. I want to avoid total control, rules, a calculated impact on the listener, composed exactness. I want to use elements of the unexpected, the unforeseen, the spontaneous. This brings a different conception and application of creative responsibility – each player is active, important and responsible – and creates an original, rich, collective sound of the widest possible range of colours and options for the continuing of the musical stream or suggestions for how to change it. To reach new, different, individual sounds and timbres I encourage players to explore their sound in other uncommon, experimental ways of playing, and to push their instruments to the limits.

The ideal outcome is music which is led only by the spontaneity of all the players, from the beginning to the end. At the same time, we are tempted subconsciously by a higher creative principle. Where does this spontaneity come from? Perhaps from universal cosmic chaos or from inner, subconscious spaces of individual minds (which might be mirror reflections of one another). Just let it come, that is the thing. In other words we are learning to trust our own feelings and sensitivity, and we are getting to know how to trust and support our fellows in the ensemble. We are inventing a way to devote ourselves truly to the music, to be led by its needs, leaving egoistic matters behind. Basically we are following the musical stream, letting the music go its own way so that the music in progress can suggest what to play next.

This band is meant to be a kind of open ensemble. The current sound and outcome therefore depend on a changeable personal set-up. I will not try to push people to sound the same. I will try to lead the band towards its own specific collective sound, but much more in the sense of a creative atmosphere and feelings inside the band; it should stay open-minded. I think it might be useful to set a basic, ironic rule for every member: “Stay open, so that anything can happen.” Only then can some special moments emerge – something we can definitely call “uncomposable”, as it arises out of instant contextual continuity.

What is my role in the ensemble?

I want and suppose myself to be a player, initiator and coordinator. I should take all primary artistic responsibility for:

- finding, initiating and inviting players
- rehearsing
- maintaining the artistic direction (which can, of course, develop or move away from the original direction, since at the beginning we essentially do not know the result)
- the shape of the band, developing an idea of collective free improvisation

I am not, however, the one to control the process or the result, unless as part of a certain exercise.

Philosophy

To initiate and spread different, deeper individual sensitivity of players, and hopefully transfer this to listeners as well. To apply a more individual, subjective approach; players are directed deeper into themselves, to trust their own sensitivity, not to be limited by standard measures, not to be determined by the ideas of others – those with a strong voice or a very straightforward and convincing (therefore often manipulating) way of manifestation.

Still, the ensemble wants to play concerts, to impress, to hold the attention of the audience – but in a different way, without exact notation and without fixed and flawlessly trained passages. This needs a lot of preparation, even though it is free, spontaneous music. It cannot be just a mess: playing free does not mean “playing anything you want”. We need to develop a sense of responsiveness, interaction, listening, support, contradiction. Part of my dissertation will be a detailed list of exercise suggestions.

To play such music also means to transcend expectations and the imagination – mine and that of any other member or player. The task is to devote oneself to the music and to abandon oneself on behalf of higher collective needs – the needs of the music itself. (This can be useful for normal life as well – a good exercise for lowering persistence in one’s behaviour.)

At the same time each of us should be ready and able to take full responsibility and become a temporary leader capable of contributing in any possible virtuoso way in the matter of social behaviour inside the band as well as through musical and technical skills.

It naturally emerges that members of such a band cannot be just hired musicians. Contemporary composers sometimes suffer by having their music performed without trust or appropriate concern on the part of performers – because composers want or need their music to be played, sometimes at any cost. In this kind of ensemble, there is absolutely no sense in making a similar compromise. So it might be quite challenging to find players able and willing to do this.

When dealing with free, spontaneous music, we are all confronted with natural negative features (which perhaps we only perceive as negative because we have learned that they are so, as people always make comparisons with previous experiences). This means that at the beginning of every free musical production we are challenged by the possibility of complete or partial failure. This is because we start to play with no song to rely on, no composition which has its own quality given (composed) in advance and has been reworked many times. We have to be brave enough to accept this.

Speaking philosophically, there is actually no bad result at all if we try our best. Even if we do not achieve the best we are capable of, this is only what should happen and it could not be better or worse at the moment. But of course, since we want to play for an audience that has been raised mainly on a certain musical/compositional tradition, and if we want to stay interesting, we learn from “uninteresting parts” and “mistakes”, we gain experience, and we try to make the music attractive, which means, of course, that we work consciously.

Anyway, it is quite obvious that this music might not be easy to deal with. It does not guarantee even a basic quality of result in advance, as everything has to be created in a moment. This requires full concentration and dedication on the part of each musician. Many professionally

trained musicians are not used to this, so they are suspicious or sceptical (which in some cases might be a heritage of narrow, shortsighted pedagogical leadership).

Another important process in the creation of an ensemble is the finding of the musicians.

Finding musicians

I suggest several points in the first place:

- An important part of the whole starting process, deserves proper attention – in the case of improvised music, the person (player) brings certain musical material and a certain ability to use it
- Positive motivation. Individual discussions and short rehearsals, no sense of hiring musicians. Attract attention of potential player, show examples. It does not always mean instant success, it is a long-term project – someone gets “only” initiated, do not push, save him for later. Everyone needs time to think about something that is new.
- I need players to enjoy the process of playing and creating this music. This is the way to present it to listeners; only when we show full passion do we have a chance to be interesting for an audience. We need to be convincing, not unsure and hesitant.
- At this point positive conviction is a more important criterion than technical virtuosity.

I meet a lot of straightforward, focused musicians, of course. Some are not interested, some are just suspicious because they have accepted their teacher’s point of view – as I mentioned before. Also a lot of jazz players somehow do not understand this approach as they are too stuck on the rules of jazz improvisation and scared of what happens when they try to leave their safe limitations.

On the other hand there are young musicians who are open to experimentation. (Recently I had positive experiences with top Czech modern jazz guitarist David Dorůžka and former orthodox jazzman Petr Zelenka.)

Practising

When we practice, we create rules (ironically enough, every freedom has its rules); we set many different kinds of limitations. The reason for such practising is to zoom in on small musical particles and make the most out of them in the sense of mastering the principle, to get the widest possible range of ideas, to explore as many sound options as possible, to develop interaction between players, to expand the (individual and collective imagination), to form a language.

It is also to learn and suggest how to behave in a group of people without leading them, to establish collective feeling, freedom, support from others, self-confidence, trust in others, trust in oneself. (There is no bad sound). To see music as a sequence of options and decisions. To accept the ideas of other players. Virtuosity appears to be a social matter, too, not just a technical skill.

I have gratefully taken lots of ideas from personal meetings with other, more experienced improvisers. I am working with those ideas and coming up with concrete exercises to be used at rehearsals, which will be described in my thesis.

Conclusion?

Obviously I have not drawn up a complete list of issues and matters to be dealt with, but hopefully I have managed to introduce the basic idea behind my intentions. At the end of my article, instead of designing conclusions, I would rather put a few questions:

Will such music succeed – in the sense that it is attractive, different, new, but still meaningful? Is it fun to make such music? Does it have a reason, a substance? Do listeners need this kind of music? Is it going to work?

That is what I am about to explore.

MUSICA NOVA VII

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