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Towards a Comprovisation Practice
A Portfolio of Compositions and Notations for Improvisations

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Submitted in satisfaction of the requirements for the degree of PhD in the University of Edinburgh 2017
Declaration

I declare that this thesis has been composed solely by myself, and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own.

Dimitris Papageorgiou
31st of January 2017

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This thesis is dedicated to my family: Konstantinos, Chrisoula and Nefeli.
Abstract

This thesis explores the interplay between repeatability and contingency in a series of instrumental and electro-instrumental compositions, through a practice that involves the devising and development of unique notational strategies and the use of bespoke real-time digital signal processing software. In particular, this study examines the praxis of *comprovisation*, i.e. practices situated between the poles of composition and improvisation, and it is framed by three main research topics:

1. An exploration of musical time and form as components of a dynamic system between events and musical gestures, involving structures of variable and/or indeterminate temporal durations.
2. An investigation of the ways in which the temporal organization and the in-time *trépos* (τρόπος - “way, mode, modality, manner”) of an improvisational performance-practice for solo violin can be transduced into the symbolic level so as to be explored as compositional material.
3. An examination of the conditions in which Middle Eastern *makam* music composition and improvisation traditions can inform the development of contemporary notational devices for a *comprovisation* practice involving other performers.

In addition to the scores, software, and recordings of the compositions, a relevant portfolio of recorded solo-violin improvisations and two published papers examining the above topics are included to further illustrate the discussion.
Submitted materials

9 x Booklets
3 x Tubes
1 x USB removable drive

Note: The corresponding numberings are indicated at the bottom right of each booklet’s first page as an encircled abbreviation (i.e. B1, B2, ..., for Booklet 1, Booklet 2, etc.)

• Booklet 1
  Title / Declaration / Acknowledgements / Abstract
  Submitted materials
  Foreword - A portfolio of improvisations
  USB removable drive (attached envelope)

• Booklet 2
  the theme is one of the variations
  for violin and computer – ca. 9-10min
  2013

• Booklet 3
  Alba
  for violin and computer – ca. 12-13min
  2014

• Booklet 4
  a library of sound-configurations; towards a comprovisation practice
  for violin, or, any instrument of the violin family including the double-bass
  2012 - 2016
  circuit structures (I)
  comprovisation for any instrument of the violin family including the double-bass (amplified)
  dur. ad lib / suggested: 5-7min
  2014 - 2015

• Booklet 5
  grace is nothing but stepping aside
  for flute and computer – ca. 30-33'
  2014 - 2016

• Booklet 6
  circuit structures (II)
  comprovisation for any instrument of the flute family (amplified) – dur. ad lib / suggested: 10-12min
  2015 - 2016

• Booklet 7
  sapientia
  drone study for accordion and electronics – ca. 20-22min
  2015 - 2016

• Booklet 8 / Appendix I
  Speculative or Creative?
  miniature for string quartet – ca. 2min
  2013
  envelopes
  miniature for violin, clarinet in Bb, tenor saxophone, and tenor trombone – ca. 1min
  2013
  hybrid
  for bowed tam-tam (or gong), piano, and string trio – dur. ad lib
  2013
  a catalogue of parametric configurations
  for flute
  2014 - 2015

• Booklet 9 / Appendix II
  Published essays/papers
  Searching for a Voice (2015)
  The Notion of Seyir as a Conceptual and Typological Scheme for Comprovisation (2016)
Tubes

• Tube 1
Performance materials for circuit structures (I), compoision for any instrument of the violin family including the double bass (amplified). For indicative instructions please see booklet 4.

• Tube 2
Performance materials for circuit structures (II), compoision for any instrument of the flute family (amplified). For indicative instructions please see booklet 6.

• Tube 3
Performance materials for sapientia, drone study for accordion and electronics. For indicative instructions please see booklet 7.

Note: The USB drive can be found within the envelope attached on the last page of this booklet. The nomenclature used for the contents presentation below, is as follows: Subfolders are given using the file path to their location, with the asterisk signifying the respective main folder. Files are shown with their name followed by their type (.pdf, .aif, etc.).

The USB includes eleven (11) main folders:

1. a-portfolio-of-improvisations, containing the following files:
   - 1_plateau.aif
   - 2_for-my-friends-aka-those-that-escaped.aif
   - 3_lines.aif
   - 4_traces.mp4
   For more information regarding the audio recordings and the video please see the paragraph ‘A portfolio of improvisations’ on page 11 of this booklet.

2. the-theme-is-one-of-the-variations, containing the following subfolders and files:
   - /*/theme-patch
     MaxMSP project folder including the max patch required for the performance of the piece.
   - /*/theme-score-recordings
     Recordings of the sound-configurations comprising the piece. For indicative instructions please see booklet 2.
   - the-theme-is-one-of-the-variations.aif
     Audio recording. Summer-Autumn 2013 @ Reid School of Music studios, Edinburgh
     Violin / Recording / Mixing: Dimitris Papageorgiou
   - the-theme-is-one-of-the-variations.pdf (A3 size)
     The instructions and the performance score in digital format (booklet 2).

3. alba, containing the following subfolders and files:
   - /*/alba-patch
     MaxMSP project folder including the max patch required for the performance of the piece.
   - alba.aif
     Audio recording (rehearsal performance of the electronics, using as input signal to the max patch the solo violin acoustic part of the piece as performed by violinist Mieko Kanno and recorded in St Cecilia’s Hall, June 2014). Summer 2014 @ Reid School of Music studios, Edinburgh
     Violin: Mieko Kanno
     Electronics / Recording / Mixing: Dimitris Papageorgiou
   - alba.pdf (A3 size)
     The instructions and the performance score in digital format (booklet 3).

4. a-library-of-sound-configurations, containing the following subfolders and files:
   - /*/library-recordings
     Recordings of the sound-configurations comprising the library. For indicative instructions please see booklet 4.
   - a-library-of-sound-configurations.pdf (A3 size)
     The instructions and the notations in digital format (booklet 4).
5_circuit-structuresI, containing the following subfolders and files:

/*/circuit_structuresI-patch
MaxMSP project folder including the max patch required for the performance of the piece.

circuit_structuresI.aif
Audio recording, Winter 2016 @ Reid School of Music studios, Edinburgh
Violin / Recording / Mixing: Dimitris Papageorgiou

circuit_structuresI.pdf (Custom size - width x height: 241x33cm)
The performance score in digital format.
For indicative instructions please see booklet 4.

circuit_structuresI-parts.pdf (A2 size)
The performance score in five (5) separate pages and in digital format.
For indicative instructions please see booklet 4.

circuit_structuresI-diagram.pdf (Custom size - width x height: 84x16cm)
A diagrammatic representation including the numberings of the sounding-gestalts comprising the piece as these are listed within the library of sound-configurations, the pages these can be found, as well as their corresponding audio recordings. For indicative instructions please see booklet 4.

6_grace-is-nothing-but-stepping-aside, containing the following subfolders and files:

/*/grace-patch
MaxMSP project folder including the max patch required for the performance of the piece.

1_grace-is-nothing-but-stepping-aside.aif
Mock-up score recording using samples of the sound-cells of the piece as performed by flautist Marina Tantanozi and recorded in Edinburgh, December 2015.
Flute: Marina Tantanozi
Recording / Mixing: Dimitris Papageorgiou

2_grace-is-nothing-but-stepping-aside.aif
Audio recording (rehearsal performance). Summer 2016 @ Reid Concert Hall, Edinburgh
Flute: Marina Tantanozi
Electronics / Recording / Mixing: Dimitris Papageorgiou

grace-is-nothing-but-stepping-aside.pdf (A3 size)
The instructions and the performance score in digital format (booklet 5).

7_circuit-structuresII, containing the following subfolders and files:

/*/circuit_structuresII-patch
MaxMSP project folder including the max patch required for the performance of the piece

circuit_structuresII-instructions.pdf (A3 size)
The instructions of the piece in digital format (booklet 6).

circuit_structuresII.pdf (Custom size - width x height: 123x42cm)
The performance score in digital format.
For indicative instructions please see booklet 6.

8_sapientia, containing the following subfolders and files:

/*/sapientia-patch
MaxMSP project folder including the max patch required for the performance of the piece.

sapientia.aif
Audio recording (rehearsal performance of the electronics, using as input signal to the max patch the solo accordion acoustic part of the piece as performed by accordionist Jonas Kocher and recorded in Biel, May 2016). Autumn 2016 @ Reid School of Music studios, Edinburgh
Accordion: Jonas Kocher
Electronics / Recording / Mixing: Dimitris Papageorgiou

sapientia-instructions-accordion.pdf (A3 size)
The instructions of the piece and the solo accordion part of the piece in digital format (booklet 7).

sapientia-electronics.pdf (A2 size)
The electronics performance score in digital format.
For indicative instructions please see booklet 7.
**9_Appendix-I**, containing the following files:

*speculative-or-creative.aif*
Audio recording (workshop performance). February 2014 @ Reid Concert Hall, Edinburgh
Performers: Quator Diotima
Recording (using a Zoom portable recorder) / Mixing: Dimitris Papageorgiou

*envelopes1.aif*
Audio recording. June 2013 @ Gansevoort Plaza, New York
Performers: Eric Umble, Clarinet; Daniel Kochersberger, Saxophone; Nicholas Reilingh, Trombone
Meghan Todt, Violin; David Bloom, Conductor
Recording: Nodes Performing Arts organisation

*envelopes2.aif*
Audio recording. June 2013 @ Summerhall, Edinburgh
Performers: Fraser Langton, Clarinet; Rebecca Sneddon, Saxophone; Fiona Lund, Trombone; Emma Lloyd, Violin; Matthew Giannotti, Conductor
Recording: Nodes Performing Arts organisation

**Appendix_I.pdf** (A3 size)
Appendix I in digital format (booklet 8).

**10_Appendix-II**, containing the following files:

**Appendix_II.pdf** (A3 size)
Appendix II in digital format (booklet 9).

**11_Misc**, containing the following subfolders:

`*/Voxengo_IR`
Folder containing the Voxengo impulse responses required for the convolution reverb module used in all MaxMSP patches of the submission.
http://www.voxengo.com/impulses/

`*/Freeware_Plugins`
Folder containing the freeware VST/AU plugins used in some MaxMSP patches of the submission:
- *A1StereoControl v1.1* developed by Alex Hilton
  http://www.alexhilton.net/A1AUDIO/index.php/a1stereocontrol
- *Argotlunar v.2.06*, developed by Michael Ourednik
  http://mourednik.github.io/argotlunar/
- *Smear v.Nov10*, developed by Adam Somers at the CCRMA studios
- *Soundmagic Spectral* library (beta 9), developed by Michael Norris
  http://www michaelnorris.info/software/soundmagic-spectral

**Note - Accessing Media**
Throughout the thesis, suggestions to access submitted media will be given using the file path to their location.

Example 1:
/USB/1_a-portfolio-of-improvisations/1_plateau.aif

Example 2:
/USB/3_alba/alba-patch/alba.maxproj
Foreword - A portfolio of improvisations

The portfolio of musical outputs comprising this thesis has been generated under a framework of thoughts that attempt to propose the notion of composition as a twofold exercise: i) a creative procedure towards generating a trajectory of musical actions graphically illustrated with the aid of relevant notational devices; and ii) an explorative process investigating the synthesis between the flow of materials and the unique experiential patterns that frame one’s practice. That being said, the starting point towards developing the compositional work presented in the following pages has been my improvisational performance praxis for solo violin, as this has been shaped during the years and through the different musical landscapes I had the chance to experience and practice.

Although composition and improvisation have been an important aspect of my musical endeavours since I first started playing the violin 23 years ago, it is interesting for me to see the ways in which my extemporizations have been transformed during the past 7-8 years into a “non-idiomatic” form. This transformation was the result of a process that involved a “questioning of musical language,” a wrangling with the sound-historicity of the instrument, and an interaction with different communities of creative practitioners that influenced and reflected back into this process. For the sake of argument, I could perhaps describe the in-time manifestation of my current improvisational practice as a performance-generated melodic line on the violin, involving an open-ended materiality ranging from pitched sounds to unconventional playing and extreme extended techniques, guided by the gestures required to arrive at a particular sound and by “musical actions and reactions” taken in real-time. Following on from this, I like to see the practice of (free) improvisation as the techne of making a spontaneous composition. That is, a method of musical decision-making directed by the unforeseeable operations that can occur on-stage between people, instruments, and sounding-gestures; and, a setting that manifests the creative capacity generated through the refinement of an instrumental practice and a library of sounds ready to be recalled and transformed, as shaped from the different musical landscapes one has engaged with.

Having said that, my objective towards exploring my improvisational practice as a compositional process has been twofold: i) to transcribe and employ my improvised sounding-gestures as compositional material; and ii) to investigate the ways in which I could develop appropriate notational devices in order to graphically represent the conceptual path of compositional decisions taking place while I am improvising, with the aim to generate improvisation settings involving other performers.

Be that as it may, I would like to close this foreword by presenting a portfolio of improvisations that I recorded at several points during the past few years. The main reasons for including these, are: firstly, the improvised musical materials explored in the recordings are integral to my compositional practice; and secondly, they document part of the spectrum of my improvisational performance praxis. In this sense, they demonstrate the starting point of the compositional and notational work presented in the following pages, as well as the ways in which I have approached the two creative poles I am involved with.

Please open the folder /USB/1_a-portfolio-of-improvisations/ of the removable drive accompanying the submission:

1_platooi.aif
Solo violin improvisation; different layers of overdubs – dur. 10min
December 2013 - January 2014, Edinburgh/Athens

2_for-my-friends-aka-those-that-escaped.aif
Solo violin improvisation – dur. 6min
December 2014, Edinburgh

3_lines.aif
Solo violin improvisation – dur. 6min
December 2014 - January 2015, Edinburgh/Athens
* The piece has been included in the USB stick accompanying the book: Rothenberg, David, edit. 2015. vs. Interpretation; An Anthology on Improvisation, Vol. 1, Prague: Agosto Foundation.

4_traces.mp4
Sound: Solo violin improvisation; three layers of overdubs with additional DSP FX applied on one of them – dur. 4min
June 2014, Edinburgh
Video: A video montage of short clips made with a digital photo camera (640x480, 15fps) during several train trips from Edinburgh to Glasgow the period between June-July 2014.
* The video was produced in June 2015, a year after the recording of the improvisation.

For all the above and accordingly:
Violin / Recording / Mixing / Video: Dimitris Papageorgiou
the theme is one of the variations
for violin and computer
2013

Dimitris Papageorgiou
PhD in Musical Composition, 2017
The University of Edinburgh
Dimitris Papageorgiou
the theme is one of the variations
for violin and computer
c. 9-10min
Edinburgh, 2013

front cover image:
untitled - still image from video
Dimitris Papageorgiou, Glasgow 2014
Classical philosophy advises passing from modes and attributes, which are circumstantial, to substance; from adjectives, flighty and inconstant, to the stable and fixed noun: but the word subject, as I said, was an adjective before transforming itself into a noun. Cheat! One would say that flightiness, after having lived, settled down.

When you hear or compose variations on a given theme, don’t you sometimes ask yourself if the theme itself doesn’t develop like one variation among others? Simpler, doubtless, purer, shorter, certainly, but why separate it from them? There is as much distance between the variations as between them and the theme, which nothing prevents me from calling a variation on one of the variations. Why prejudge it as more stable and more centered than they? Yes, the theme is nothing but one of the variations.

Thus the king himself is a subject, a man among so many others, two feet, ten fingers, in the best cases, with his supports on the same earth as mine. The proof is that, ever since the guillotine welcomed him, all his former subjects, with a few rare and wise exceptions, dream of taking his place or of arranging it to welcome the temporary king, who never ceases to be a subject, more subject even than the first, in the political sense, because the number of assassination attempts directed against him are far above the number of those plotted against just anyone. He is thrown below: he must know that he owes his place as king to the fact that he is the most subjected of subjects.

Nominalized adjective, theme-variation, citizen-king; likewise the central sun is nothing but a marginal star, a yellowish and mediocre dwarf, without true grandeur, in the immense concert of supergiants, red like Betelgeuse or blue like Rigel. If King Solomon returned among us, would he say, Nothing new under the galaxy of Cygnus? It has been a long time since the astrophysical revolution taught us to no longer center the sky or the universe. It is even said that the big bang’s point of origin would have had no site or time.

Thus the center is nothing but a centon, a numerous ensemble of composite pieces. You ask the Emperor of the Moon to get undressed to show what he is hiding: well, he is not concealing anything. Everything is truly always and everywhere as it is here, give or take a few degrees of magnitude and perfection, I mean to say that everything is a Harlequin’s coat, even substance, even the theme, even the subject, even the self, even the king, even the sun, even nouns. Singularity is scattered, unity multiplies [...]
Introduction

The theme is one of the variations was written in two phases between winter and autumn 2013 in Edinburgh. The piece has two sound sources: a live amplified violin, and stereo-channel sound files (96kHz/24bit). Both sources are mixed and processed using a MAX/MSP patch I have developed (please see the theme.maxpat file residing within the /USB2_the-theme-is-one-of-the-variations/theme-patch/ subfolder of the removable drive accompanying the thesis materials). All sound files were created with the aid of: 1) the Common Lisp Music (CLM) package (using the splinter.ins instrument developed by Michael Edwards, and B1/B2, and C1/C2 respectively. Each sub-part is notated as an ensemble of composites ‘state-phases’ and should be performed as a continuous sound-configuration that manifests the, suggested each time, static-dynamic relations and types of mobility between them. All ‘states’, which can also be understood as ‘mapsheets’ of the spatio-temporal sounding-gestalt flow of each sub-part, are presented by combining traditional, pictorial, action, and word notation. The score is divided in two sections:

1. Micro-level (p. 8)

The first section of the score presents the ‘state-phases’ of each sound-configuration coupled with suggested durations, and aims to illustrate both the types of mobility and the manner in which transitions between the former can occur. Note that each ‘state’ is assigned to an encoded symbol used in the second section of the score (i.e. macro-level). The performer, at the end of each sound-configuration’s presentation is referred to a relevant solo-violin recording I conducted during 2013 (please see the /USB2_the-theme-is-one-of-the-variations/theme-score-recordings/ subfolder of the removable drive accompanying the thesis materials). The purpose of these sound files is to extend the written score and assist the violinist both in interpreting the inner workings of the notational devices, and in familiarizing themselves with the performance tricks (tropism - “way, mode, modality, manner”) each sounding-gestalt invites. The violinist’s goal should be to get from the notated descriptions and to improvise with the material, while following the suggested spatio-temporal flow and the tricks of practice. A solution to this oxymoron is to think of Middle-Eastern makam improvisation where performers acquire an experiential understanding of the “character” and the inner workings of a mode mainly through oral traditions and relevant teaching methods; This practice allows the violinist to gradually move smoothly between different modal entities while following the requirements regarding the structure of the melodic shape (sequi) each mode invites.

2. Macro-level (p. 15)

The second section of the score presents the overall shape of the piece and the counterpart between the two main voices: A live amplified violin that performs the sound-configurations presented in the micro-level, shown here as transitions between different ‘states’ (see the latter illustrated using their respective encircled symbols), also combined with indications regarding dynamic levels; and, the overlapping streams of stereo-channel sound files. The durations either between ‘states’, start/end points of sound-configurations, and/or cues activating the playback of a sound file are given in seconds. These are illustrated as blue, red, and green lines extending over the relevant time-partitions, coupled with their respective names, i.e. blue_clock, red_clock, and green_clock (see also ‘Clocks - iPad/MIRA’ paragraph below). Note that the macro-level should be considered as the main performance score for a live performance of the piece. There are also three rehearsal points given within as R1, R2, and R3 marks (see ‘Rehearsal points’ paragraph on page 6).

General instructions

Computer/electronics requirements

Macintosh computer (MaxMSP patch tested in OSX 10.7.5) with 16Gb RAM, MaxMSP v.7.3.1 application installed on your machine. Familiarity with the iPad application is helpful. High quality sound-card with minimum two channels mic inputs (8W) and two channels line-out; Mixing controller: Korg nanoKONTROL2 as the main MIDI controller used by the computer performer (http://www.korg.com/us/products/ controller/midi/nanoKONTROL2/); a USB MIDI Footswitch: Korg PCF-2 (http://www.korg.com/products/pcf-2). The piece also requires that you have the following VST/AU plugins installed on your system: FabFilter Pro-Q2 (http://www.fabfilter.com/products/proq-2-equalizer-plug-in), FabFilter Pro-C2 (http://www.fabfilter.com/products/pro-c-2-compressor-plug-in), developed by Fredrik Slijkerman and Floris Klinkert. Note that the FabFilter equalizer (Q2) and compressor (C2) are commercial plugins. Two versions of the on-stage signal schematic, depending on equipment available, are given on page 6.

Computer layers - Cues

The computer is used to trigger the playing of the overlapping streams of stereo-channel sound files, to initialize the three clocks that provide the performer with visual feedback regarding elapsed time between events and activation points (see ‘Clocks - iPad/MIRA’ paragraph below), and to mix the two sound sources. All modules are triggered, initialized and/or initiated with messages sent from a jliat Max object at specific points over the course of the piece. These trigger points (cues) are indicated in the score (macro-level) using the capital letter Q followed by their numbering, i.e. Q1, Q2, Q3, ...etc., and should be activated by the violinist using her/his USB MIDI footswitch. The computer performer is responsible for the live balancing of all layer’s levels using the faders of a Korg nanoKONTROL2 MIDI controller (see ‘Levels - Mixing controller’ paragraph on page 6).

Clocks - iPad/MIRA

As already mentioned, the macro-level section of the score provides the performer with relevant symbols aiming to denote durations either between ‘states’, start/end points of sound-configurations, and/or cues activating the playback of a sound file. These are illustrated as blue, red, and green lines extending over relevant time-partitions coupled with both a number (suggesting duration in seconds), and their relevant names, i.e. blue_clock, red_clock, and green_clock. The performer, with the aid of MIRA framework and an iPad monitor, has visual feedback of three number boxes (blue, red, and green) corresponding to the in-score clock names, allowing her/him to keep track of elapsed times. These show the output number of relevant Max Modules I have developed, that are activated to count upwards in seconds (and/or stopped) either the moment a cue point coupled to the respective in-score clock is triggered, or automatically, through internal parameter changes driven by the jliat Max object.  

- blue_clocks (and blue lines) are always coupled with cues activating the playback of a sound file. The durations these indicate should be followed exactly.
- red_clocks (and red lines) indicate partitions of blue_clocks durations, and are coupled either with ‘states’, start/end points of sound-configurations, and/or with cues activating the playback of a sound file. The durations these indicate should be followed exactly.
- green_clocks (and green lines) indicate partitions of blue_clocks durations and are coupled either with ‘states’, start/end points of sound-configurations, and/or with cues activating the playback of a sound file. Their duration is always given as a time-frame between a minimum and a maximum value within which the enclosed events/actions should occur.

1. Note the last second indicated with the end point of a clock’s line (short vertical borderline), is always the time-zero point for the next partition. An example is given in the generic score-figure below (fig.1). Cue point 1 (Q1) activates both the playback of sound file (1) and the counting up of the blue_clock, suggesting here a duration of 50 seconds (blue number box on the iPad screen). This means that the violinist should trigger cue point 2 (Q2) at exactly 50 seconds after Q1, with the fiftieth second becoming the time-zero point for the next partition. Cue point 2 (Q2), when triggered, will immediately reset/reset the blue_clock, and will activate both the counting up of the red_clock (red number box on the iPad screen) and the playback of sound file (2).

2. The clocks on which the performer should focus her/his attention each time, are always given within rectangles. Note that over the course of the piece and while moving between clocks a similar rectangular panel will appear on the iPad screen allowing the performer to visually track the occurrences of the events/actions. However, the performer has to shift her/his attention to the red_clock, so as to prepare for the moment the jliat object will automatically reset/reset it for the counting up of the second partition (i.e. 44 seconds after Q2), signalling that the violinist has to start playing sound-configuration (ii), and after 8 seconds, trigger the playback of sound file (2).
Mixing desk

Respective presets that reside within the ‘theme-patch’ ‘read’ messages connected with the two vst~ objects. These will load the ‘1_live_input_COMP.fxp’ and ‘2_live_input_EQ.fxp’. In case you would like to see the plugin parameters used while composing/rehearsing the piece then Note: It goes without saying that experimentation is encouraged both for the placement of the microphones, the lowest possible violin pitch is G3, of approx. 196Hz with reference the A4 = 440Hz equal tempered scale), and a low-pass below the main patch window. Using the compressor vst plugin – numbered in the patch as '(1) Fab-Filter Pro-C2.vst' – apply some. This chain includes: compressor › equalizer, using the acoustic and the amplified sound, also acting as a first solution to any feedback problems. Meters) of the violinist from the front stereo speakers. This number is automatically converted into a latency delay in samples, or, by directly typing the desired milliseconds value (relevant boxes, left part of main path window). At the same part of the screen you can find a similar number box that allows you to input the distance (in meters) of the violinist from the front stereo speakers. This number is automatically converted into its latency delay in samples, passed to the two mics mono-mix signal, serving the purpose of localizing better the perceived correspondence between the acoustic and the amplified sound, also acting as a first solution to any feedback problems.

The patch includes a pre-processing chain applied on the violin signal (two mics mono mix) before this is mixed with the sound files and sent to the mastering processing sequence. This chain includes: compressor - equalizer, using the Fab-Filter plugins mentioned earlier in the ‘Computer/electronics requirements’ paragraph. Please open the [p mixed input] sub-patch residing on the main patch window. Using the compressor vst plugin – numbered in the patch as ‘(1) Fab-Filter Pro-C2.vst’ – apply some (modulation-sum) downward compression, with a rather low threshold, and raise the output level of the signal by applying some parallel processing. The aim here is to restrain any sudden peaks, while allowing a greater definition of low intensity sounds. Although these depend highly on the mic-gain pre-amps levels and the circumstances each time, some suggested values could be: Threshold = -50 to -40dB; Ratio = 8:1 to 15:1; Soft “knee” (approx. 12-18dB, i.e. ± 6 - 9dB between unity gain and ratio segment); Attack = 10-100ms (remember that violin articulation noise transients are of the order of approx. 10-100ms); Release = 200-400ms; Gain makeup = 0 to +6dB; Dry gain (parallel compression) = 0 to +6dB. Using the graphic equalizer – numbered in the patch as ‘(2) Fab-Filter Pro-Q2.vst’ – apply a high-pass filter above 50Hz with a slope of 6-12dB/octave. (remember that the lowest possible violin pitch is G3, of approx. 196Hz with reference the A4 = 440Hz equal tempered scale), and a low-pass below 2000Hz with a slope of 6-12dB/octave. Here, and if necessary, you can also apply some general and subtle equalizing to the violin signal (e.g. raise/match any room frequencies that might be causing feedback problems. It goes without saying that experimentation is encouraged both for the placement of the microphones, the mixing of their signals, and the setup up of the pre-processing chain, without, however, highly deviating from the framework provided here.

Note: In case you would like to see the plugin parameters used while composing/rehearsing the piece then click on the relevant read messages connected to the two vst~ objects. These will load the ‘_live_input_COMP.fxp’ and ‘_live_input_EQ.fxp’ respective presets that reside within the ‘other’ subfolder of the main ‘theme-patch’ project folder.

Rehearsal points

As already mentioned, the pieces includes three rehearsal points: R1, R2, and R3 (see macro-level score section). The message boxes containing the numbers 1, 2, and 3 (bottom part of the main patch window) are coupled with the in-score rehearsal markers. Note that before you start rehearsing from a particular point, its respective number box has to be triggered first. This will initialize the patch with all relevant pre-programmed series of parameters, and will rewind the qlit (without executing) to one cue before the trigger point coupled to that particular rehearsal mark (see in-score instructions).

Initializing the mastering processing sequence 2

[p computer_output] sub-patch: The computer performer, if she/he wishes so, can attempt a better parameterization of the mastering plugins. However, this should happen by neither deviating from the framework provided with the loaded presets, nor by changing the master parameters’ sequence. If preset parameters are not shown up on the user interface windows after first opening the parent patch and when double-clicking on the vst~ objects, then please do the following:

• For the ‘(3) Fab-FilterPro-Q2.vst’ object, click on its respective ‘read’ message and load the ‘3_master_EQ.kxp’ preset that resides within the ‘other’ subfolder of the main ‘theme_patch’ project folder.
• For the ‘(4) Fab-FilterPro-Q2.vst’ object, load the ‘4_master_COMP.kxp’ preset.
• For the ‘(5) Fab-FilterPro-Q2.vst’ object, load the ‘5_master_EQ2.kxp’ preset.
• For the ‘(6) Fab-FilterPro-Q2.vst’ object, load the ‘6_master_EQ2.kxp’ preset.

Please save the patch when done.

Note that the graphic equalizer before the output – i.e. (6) FabFilterPro-Q2.vst – can be used to apply some more nothing to any room-frequencies that might still be causing feedback problems.

Levels - Mixing Controller

The patch has been set up so all on-screen faders and dial buttons can be controlled by the computer performer using a Korg nanoKONTROL2 MIDI controller. Please see the picture within the [p korg_nanoKONTROL2] sub-patch (residing within the [p setup] patch) that illustrates the correspondences between the hardware/software MIDI on-screen faders. The composition can be generally considered as an instrument-plus-tape piece and therefore, the only thing the computer performer has to do is to allow a balanced mix between all sound layers, while correcting with subtle fader changes. Two basic criteria should be kept in mind: 1) the gain levels of the overlapping sound files should remain fairly constant throughout (controlled by the sf_pl1, sf_pl2, sf_pl3, sf_pl4, and sf_mast faders; with the latter acting as a local master); and 2) the violin output level should be adjusted in such a way as to create the feeling that the amplified signal and the electronic sounds support, reinforce and extend each other without the violin sounding as if it is “above the mix” (controlled by the violin_out fader). There is one dial dedicated to the master convolution reverb. As mentioned, you can either load the IR I have selected while composing/rehearsing the piece, or, choose the one you prefer. In the latter case please make sure that the IR you select produces a reverberation time of maximum 3 - 4 seconds, and that the amount of reverb you apply doesn’t render the mix “heavier”. For this, the Dry/Wet volume should never be above 20%; ideally, less than 10%.

Note that the cycle button of the nanoKONTROL2, can be used to turn on/off the dac- object, apart from the on-screen start/stop recording (switch on/off the toggle).

The theme is one of the variations on-stage signal schematic depending on equipment available

Videoliner

(1 high quality condenser air-mic/1 miniature condenser mic)

Distance (D) of violin from front speakers: approx. 2m ≤ D ≤ 4m

Korg nanoKONTROL2

Computer performer

Sound-card

Videoliner

(1 high quality condenser air-mic/1 miniature condenser mic)

Distance (D) of violin from front speakers: approx. 2m ≤ D ≤ 4m

Korg nanoKONTROL2

Computer performer

Speakers L and R should be placed at violinist’s shoulder level. Depending on the actual space the piece is to be performed each time, adjust accordingly the length distance of the speakers from the performer.

Note: The numbering that follows is in accordance with the numbering that can be found, as comments, within the sub-patch mentioned.
Violin

Key to some general symbols used in the score

i) Bow Position

\[ \text{B. P.} \]
Seven-line stave indicating relative bow position
From top to bottom: Bridge; Natural; ¼ of fingerboard, ½ of fingerboard, ¾ of fingerboard; Nut

\[ \text{S. Tr.} \]
Four-line stave indicating number of string
From top to bottom: I; II; III; IV

\[ \mathcal{P} \]
Traditional five-line stave (pitch)

\[ \mathcal{P}_i \]
One-line stave for rhythmic sequences

\[ \text{B. P.} \]
Three-line stave indicating relative position of the hand on the fingerboard
From top to bottom: Top; ½ of fingerboard; Nut

\[ \text{B. S.} \]
Clef/Symbol indicating the area between bridge and nut

Graphic rhythmic notation

\[ \text{As fast as possible} \]
Irregular/Random

\[ \text{Irregular and as fast as possible} \]
Accelerando

\[ \text{Rallentando} \]

Right/Left hand techniques symbols

i) Bow Position

\[ \text{S} \]
Sul Pont; Right next to the bridge

\[ \text{N} \]
Natural/Normal sounding point; sound rich in harmonic content

ii) Bow Pressure

\[ \text{Molto flautando} \]
\[ \text{Poco flautando} \]
\[ \text{Ordinario} \]

iii) Finger Pressure

\[ \text{Harmonic} \]
\[ \text{Normal} \]
\[ \text{Intermediate} \]

iv) Other techniques

\[ \text{Jeté (used mainly with col legno)} \]

Other symbols used in the score

\[ \text{Continue the sound, technique, way of playing (etc.) until the point indicated by the vertical line, or, the parenthesis} \]

\[ \text{Transition from 'state', dynamic, etc. A, to 'state', dynamic, etc. B} \]
\[ \text{e.g.} \]

\[ \text{Brackets used for enclosing dynamics schemes} \]

\[ \text{Arrows and lines coupled with sound file indications, suggesting the time-span of a sound-file’s playback, and the moment these are stopped.} \]

General comment

Although this is something entirely left to the violinist to decide, my general suggestion would be to first explore and practice the micro-level section of the score (acoustically, without amplification) following the recommendations written in the introductory paragraph. This will allow you to acquire an understanding of the modality and the trópos of praxis each sound-configuration invites, and to establish a body relation with the improvised sounding-gestures. The ideal would be to be able to perform all sound-configurations from memory. Developing a body relation with the material will also allow you to build-up the ability to re-adjust your performance mode and trópos when you will experience your sound amplified and while interacting with the sound files layers, given the additional levels of complexity the macro-level section introduces (i.e. cues and clocks) and the stripped-down notation of the 'states' it involves.
The theme is one of the variations
for violin and computer
Micro-level

Part A involves the \textit{col legno} (with the wood) technique, either as \textit{col legno tratto} (drag the bow lengthwise to the strings), \textit{col legno battuto} (strike the strings), or, \textit{col legno tratto jeté} (throw the bow on the strings allowing it to bounce lengthwise). The left hand should always dumb the strings near the nut. The bow (unless suggested otherwise) should always touch the strings in pairs as if playing double stops (G/D, D/A, A/E). For the \textit{tratto} technique, the \textit{down} and \textit{up} bow symbols are used to indicate the movement of the bow ‘\textit{towards the nut}’ (\textit{down bow}) and ‘\textit{towards the bridge}’ (\textit{up bow}).

\begin{figure}
\centering
\includegraphics[width=\textwidth]{sound-configuration-1.png}
\caption{Sound-configuration 1}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{fig-2.png}
\caption{Fig. 2}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{fig-3.png}
\caption{Fig. 3}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{global-dynamic-level.png}
\caption{The global dynamic level of sound-configuration (1) should follow the scheme shown in figure 3.}
\end{figure}

The overall duration of A1 should be approximately 2 minutes 30 seconds. For a recording of sound-configuration (1), please listen to sound file A1.aif residing within the subfolder /USB/2_the-theme-is-one-of-the-variations/theme-score-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (2) should demonstrate a linear development from state [i] to state [iv] (see figure 4).

The global temporal flow and the transitioning rate between states should manifest an accelerando towards state [iv], while referencing earlier phases (see figures 4 and 5).

The overall duration of A2 should be approximately 1 minute. For a recording of sound-configuration (2), please listen to sound file A2.aif residing within the subfolder /USB/2_the-theme-is-one-of-the-variations/theme-score-recordings/ of the removable drive accompanying the thesis materials.
Both parts B and C involve the *arco ordinario* (with bow-hair), and the *arco ordinario tratto* (drag the bow lengthwise to the strings; with bow-hair) techniques combined with other parameters. *Up* and *down* bows here indicate normal bow movements.

**B**

\[ \text{\( \frac{d}{e} = 120 \)} \]

The overall duration of B1 should be approximately 1 minute 10 seconds.

For a recording of sound-configuration (3), please listen to sound file `B1.aif` residing within the subfolder `/USB/2_the-theme-is-one-of-the-variations/theme-score-recordings/` of the removable drive accompanying the thesis materials.
Arco ordinario.
Oscillate in a quasi feedback loop between sul pont and normal bow position, while randomly transitioning between molto flautando, poco flautando and ordinario bow pressure. Up and down bow movements are ad libitum and should accommodate the impetus of your gestures. At the same time, alternate "irregularly and as fast as possible" between normal, harmonic, and intermediate finger pressure. Change strings randomly, and move from the low to the high registers ad libitum using the whole fingerboard area. The global (aggregated) gesture should follow the crescendo/decrescendo scheme provided. The speed of your finger movement should always decrease at the end of the gesture (rallentando) emphasizing the dynamic shape.

Arco ordinario.
State [iii] drops to state [iv].
While lowering the speed of both the bow and the fingers movement, gradually fade-out to one of the harmonics of the G string. Allow a long sustained tone played in sul pont bow position.

Arco ordinario and arco ordinario tratto.
Gradual development of state [ii] to state [iii].
The tremolo of state [iii] should gradually change to an extravagant and very dense tratto-tremolo (i.e. a tremolo lengthwise to the strings). The fingers should continue to alternate "irregularly and as fast as possible" between different types of pressure, but now these should be touching the strings as if playing double stops (note that here we are much more interested in the sounding-qualities that will emerge from the aggregated gestures, rather than the accuracy of any intervals that might clearly surface). Change strings randomly and use the whole fingerboard to apply the movement. Move from low to high registers (and vice versa) ad libitum. Bow the pair of strings that the fingers are touching each time. Allow the impetus of the left hand to drive the energy of the right hand, and vice versa.

Arco ordinario.
State [iii] drops to state [iv].
While keeping all other parameters of state [i] constant, introduce and establish a very dense tremolo.

Sound-configuration (4) should demonstrate a linear development from state [i] to state [v], except from the ‘drop’ of state [iii] to [iv] (see figure 6).

The transitioning rate between phases should remain rather constant throughout (see figure 7).

The global dynamic level of sound-configuration (4) should follow the scheme shown in figure 7.

The overall duration of B2 should be approximately 2 minutes.
For a recording of sound-configuration (4), please listen to sound file B2.aif residing within the subfolder /USB/2_the-theme-is-one-of-the-variations/theme-score-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (5) should demonstrate a linear development from state [i] to state [ix], with the final drop to the open G string, appearing as a natural conclusion of state [viii] (see figure 8).

The transitioning rate between phases should remain rather constant throughout (see figure 9).

The global dynamic level of sound-configuration (4) should follow the scheme shown in figure 9.

The overall duration of C1 should be approximately 2 minutes 30 seconds.

For a recording of sound-configuration (5), please listen to sound file C1.aif residing within the subfolder /USB/2_the-theme-is-one-of-the-variations/theme-score-recordings/ of the removable drive accompanying the thesis materials.
Arco ordinario. 

Up and down bow movements are ad libitum and should accommodate the impetus of the gesture. Perform an "irregular and as fast as possible" finger movement above the fingerboard on the G string.

Ascend from state [i] to state [ii]. The word ascend here denotes a higher level of physical effort. While keeping all parameters of state [i] constant, introduce and establish a very dense sautille with a swift and relaxed wrist motion.

Ascend from state [ii] to state [iii]. The word ascend here denotes a higher level of physical effort. Allow the wrist to suddenly become more stiff and introduce an extravagant tremolo; almost like heavy, extremely quick, and absurd détaché strokes in the middle part of the bow.

State [iii] drops to state [iv]. Allow the gesture of state [iii] to end with a sound of indeterminate pitch above the fingerboard (sforzando). Lift the bow. Let the sound vibrate in the room.

Sound-configuration (6) should resemble a step process demonstrating dynamic transitions from state [i] to [iv], with the final unpitched sound appearing as a natural conclusion of state [iii] (see figure 10).

The global temporal flow and the transitioning rate between states should manifest an accelerando towards state [iv] (see figure 11).

The global dynamic level of sound-configuration (6) should follow the scheme shown in figure 11.

The overall duration of C2 should be approximately 30 seconds.

For a recording of sound-configuration (6), please listen to sound file C2.aif residing within the subfolder /USB/2_the-theme-is-one-of-the-variations/theme-score-recordings/ of the removable drive accompanying the thesis materials.
the theme is one of the variations
for violin and computer

Macro-level

Combining the triggering of cue 5 with a rather heavy col legno strike, as if it initiates the rhythmic pattern we can hear at the beginning of sound file 4 (i.e. a ‘wooden’ sound that bounces/moves from the left to the right of the stereo image)

Pause duration before you start playing A2, and before the red_clock (auto) resets/restarts (new partition)

Pause duration before you start B1, and before the red_clock (auto) resets/restarts
Your decrescendo should begin only after the recapitulation of the 'swelling' chords (sound file 4 material). You should aim to arrive at the G string shortly after the decrescendo of the final chord.
C \( \# = 120 \)

R3 [Max patch rewound cue = 6 | Ready for cue 7]

Pause duration before you start playing C2, and before the green_clock (auto) resets/restarts

Activate Q9 the moment you let the C open string to vibrate

Activate Q10 the moment you let the final violin sound of indeterminate pitch to vibrate

Fader: sf_pl1

Fader: sf_pl2

Fader: sf_pl3
Alba
for violin and computer
2014

Dimitris Papageorgiou
PhD in Musical Composition, 2017
The University of Edinburgh
Dimitris Papageorgiou
Alba
for violin and computer
c. 12-13min
Edinburgh, 2014

front cover image:
blue white - photograph
Dimitris Papageorgiou, Pelio 2014

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Alba -

- the mother city, white, blank […] nonexistent […] like the body of the dancer, the body of the possible

Michel Serres, Genesis (1982)
Introduction

Alba was written during June - July 2014 in Edinburgh. The composition was a co-commission from the Royal Conservatoire of Scotland and The University of Edinburgh (Oxygen 2014 project: The Heavenly View) and the C CURRMA developing workshops and are the basis for the project’s BEAT workshop at the first Fringe festival; the recording(s) of the solo violin acoustic part that allowed me to program the electronics; for her advice, tips, and suggestions that helped me to shape further my notational practice; and, for the fascinating rehearsals we had.

The piece has three sound sources: 1) a live amplified violin; 2) live processing of the violin signal; and, 3) stereo-channel sound files (44,1kHz/24bit).

The violin signal should be amplified with two high-quality condenser microphones: 1) a miniature mic of medium sensitivity, with soft cabling and a removable mounting body (e.g. DPA 4061); and, 2) an air-mic (e.g. Schoeps MK4/cardio,

General instructions

Computer/electronics requirements

Macintosh computer (MaxMSP patch tested in OSX 10.7.5) with 16Gb RAM, MaxMSP v7.3.1 application installed on your machine. (https://max-msp.apples.com/10.7.5/English/English.html)

High-quality sound-card with minimum two channels mic inputs (8v) and two channels line-out; Mixing controller: Korg nanoKONTROL2 as the main MIDI controller used by the computer performer (http://www.korg.com/us/products/computergear/nanokontrol2). The piece also requires that you have the following: VSTA/AU plugins installed on your system: FabFilter Pro-Q2 (http://www.fabfilter.com/products/pro-c-2-compressor-plug-in), FabFilter Pro-C2 (http://www.fabfilter.com/products/pro-c-2-compressor-plug-in), developed by Frederik Sijkmans and Floris Klinkert; A1StereoControl v1.1 developed by Alex Hilton (http://www.alexhilton.net/A1AUDIO/index.php/a1stereocontrol); FabFilter Pro-Q2, developed by Michael Ourednik (http://mourednik.github.io/argotlunar/); Smear v2.0162, developed by Adam Somers at the CCRRMA studios (https://ccrrma.stanford.edu/~adam/+/>index.php?page=effects&effect=smear); Spectral Freezing and Spectral Dnomemaker, part of the Soundmagic spectral library (beta 9), developed by Michael Norris (http://www.soundmagic-spectral.com). Note that the FabFilter equalizer (Q2) and compressor (C2) are commercial plugins. The rest are freeware, and the versions mentioned here can be found within the /USB/11_MISC/Freeze/Plugins subfolder of the removable drive accompanying the thesis materials.

Performance modes - Rehearsal points

At the centre of the main patch window you have the option of switching between two performance modes (i.e. 'Concert mode' or 'Rehearsal electronics with violin recording'). These, when triggered, initialize some max objects used in the patch: 'Concert mode': i) Rehearse electronics with violin recording - This should be used by the computer performer when rehearsing without a violinist. When switched on, the patch is set to use as violin-input signal the recording of the acoustic part of the piece we did in June 2014 with violinist Mieko Kanno (see in-scope instructions).

Violin signal

The violin signal should be amplified with two high-quality condenser microphones: 1) a miniature mic of medium sensitivity, with soft cabling and a removable mounting body (e.g. DPA 4061); and, 2) an air-mic (e.g. Schoeps MK4/cardio,

• For the ‘(10) SpectralGlidingFilters.auinfo’ object, use the ‘10_filters_GLIDING.png’ file and reconstruct plugin parameters.
• For the ‘(11) FabFilterProQ2.vst’ object, load the ‘11_filters_EQ.fp’ preset.
Please save the patch when done.

[p computer_output] sub-patch: The computer performer, if she/he wishes so, can attempt a better parameterization of the mastering plugins sequence. However, this happen by neither deviating from the framework provided by the loaded presets, nor by changing the mastering plugins sequence itself. If preset parameters are not showing up on the user interface windows after first opening the parent patch and when double-clicking on the vst~ objects, then, and for the numbered plugins (12), (13), and (14), follow the procedure mentioned earlier and load the: ‘12_master_EQ.fp’, ‘13_master_COMP.fp’, and ‘14_master_STEREO.fp’ respective presets (please save the patch when done). Note that when in ‘Concert mode’ the graphic equalizer before the output – i.e. ‘(12) FabFilterPro Q2.vst’ – can be used to apply some more nothing to any room-frequencies that might still be causing feedback problems.

Levels - Mixing Controller
The patch has been setup so that all on-screen faders and dial buttons can be controlled by the computer performer using a Korg nanoKONTROL2 MIDI controller. Please see the picture within the [p korg_nanoKONTROL2] sub-patch (residing within the [p setup] patch) that illustrates the correspondences between the hardware/software MIDl-on-screen faders. It should be noted, that individual plugins levels, as well as fade-in/out gestures of most processes of the piece are controlled by a series of pre-programmed parameter changes triggered by the qlist object. Therefore, the only thing the computer performer has to do is to allow a balanced mix between all computer layers, while correcting with subtle fader changes. Three basic criteria should be kept in mind: 1) the gain levels of the overlapping sound files should remain fairly constant throughout (controlled by the sf_pl1, sf_pl2, sf_pl3, and sf_pl4 faders; with the latter acting as a local master); 2) the DSP effects are there to augment and extend the live signal, and thus, their levels should be balancing the amplified violin (controlled by the freezer, grains, filters_grains, and FX_mast faders; with the latter acting as a local master); and, 3) the violin output level should be adjusted in such a way as to create the feeling that the amplified signal and the electronic sounds support, reinforce and extend each other without the violin sounding as if it is “above the mix” (controlled by the violin_out fader). The fader dry_to_FX controls the amount of violin dry signal (after the pre-processing chain; see ‘Violin signal’ paragraph above) that passes to the FX_mast (controlled by the violin_out fader). The latter acting as a local master); and, 3) the violin output level should be adjusted in such a way as to create the feeling that the amplified signal and the electronic sounds support, reinforce and extend each other without the violin sounding as if it is “above the mix” (controlled by the violin_out fader). The fader dry_to_FX controls the amount of violin dry signal (after the pre-processing chain; see ‘Violin signal’ paragraph above) that passes to the DSP effects (i.e. to the [p processes] sub-patch; see the DSP structure diagram on page 9). Its level should be adjusted in accordance to the aforementioned criteria. There is one dial fader (conv_reverb) controlling the Dry/Wet % amount of the master convolution reverb. As mentioned, you can either load the IR I have selected while composing/rehearsing the piece, or, choose the one you prefer. In the latter case please make sure that the IR you select produces a reverberation time of maximum 3 - 4 seconds, and that the amount of reverb you apply does not render the mix “heavier”. For this, the Dry/Wet volume should never be above 20%; Ideally, less than 10%. In addition to the above, there are a couple of other functions that are programmed to be controlled using the nanoKONTROL2, including: Cycle button = DaC on/off; Playback button (or, computer keyboard spacebar) = Next Cue (execute mode).

iPad/MIRA
The performer, with the aid of MIRA framework and an iPad monitor, has visual feedback of a metronome (in seconds) assisting her/him in keeping track of the beat (please use only if necessary; see [p metronome] sub-patch).

Recording
The patch allows the user to record (internally) a performance/rehearsal (stereo/main output, AIFF, 24bit, current SR), after following the relevant steps at the right part of the main screen: i) Make sure dac is on; ii) Turn on/off the recording process; iii) Initialize (click the ‘init’ message); iv) Open dialog box to save the sound file (click the ‘open’ message); v) Start/Stop recording (switch on/off the toggle). Other cue symbols used in the score
All cue points are combined with an indication of the main processes triggered at that point (for more details of parameter changes see the qlist.txt file by double clicking on the qlist object within the [p cuebox] sub-patch): The rate in which individual maxima (X or Y) emerge is indicated by the number of bars (between ticks) above the symbol. Oscillate in a quasi feedback-loop, from sound, technique, way of playing (etc.) X, to sound, technique, way of playing (etc.) Y, back to X, gradually passing through all states in between.

Key to some general symbols

Clef/Symbol indicating the area between bridge and nut

Clef/Symbol indicating the area between bridge and sul tasto

Mute/Dumb the strings

Brackets used for enclosing techniques, symbols, etc.

Oscillate in a quasi feedback-loop, from sound, technique, way of playing (etc.) X, to sound, technique, way of playing (etc.) Y, back to X, gradually passing through all states in between.

The rate in which individual maxima (X or Y) emerge is ab libitum.

Right hand

Tremolo (dense)

Buzz (really dense tremolo)

Ad libitum

Violin
The figure below illustrates the different parts of the notational scheme (tablature stave structure) used in the piece.
Body Point; A resonant point on the violin body (when played with bow-hair)

Another symbol for bridge

Continue the sound, technique, way of playing (etc.)

Note: When *arrows* start from a sound, technique, way playing (etc.) A, leading to another sound, technique, way of playing (etc.) B, then they indicate “a gradual transition passing through all states in between.”

e.g.  

Continue the sound, technique, way of playing (etc.) until the point indicated by the vertical line

---

**Graphic rhythmic notation**

As fast as possible

Irregular/Random

Irregular and as fast as possible

Accelerando

Rallentando

---

**Note:**
When the beam develops into an arrow, then the performer should generate a random sequence of events (i.e. note-heads of stems) from the set the latter comprise, incorporated into a gesture that globally demonstrates the spatio-temporal quality suggested by the graphic rhythmic notation symbol. When the beam stops at the final stem of the graph (i.e. neither extending, nor developing into an arrow), then the performer should generate the written sequence of events (in the order these appear), incorporated into a gesture that globally demonstrates the spatio-temporal quality suggested by the graphic rhythmic notation symbol.

*E.g.*

Generate a random sequence from the set comprising the given pitches incorporating this into an irregular gesture (i.e. randomly varying the duration of pitches).

Generate an irregular gesture by randomly varying the duration of the given pitches in the order these appear.

---

**Performing techniques**
(listed as these appear on the notational scheme/top-to-bottom)

**Right Hand**

**Bowing techniques**

- **A**
  - *Arco Ordinario* (normal playing; with bow-hair)
  - *Arco Ordinario Tratto* (drag the bow lengthwise to the strings; with bow-hair)

- **CL**
  - *Col Legno* and *Col Legno Ordinario* (normal playing but with the wood of the bow; in the second case, the indication *ordinario* cancels previous techniques, i.e. CLT, or, CLh)
  - *Col Legno and Col Legno Tratto* (drag the bow lengthwise to the strings with the wood)

- **CLh**
  - *Col Legno and Bow Hair* (normal playing but with the bow axis shifted in such a way so as both the wood and the hair are touching the strings)

**Bow Pressure**

- **B**
  - Molto flautando
- **A**
  - Poco flautando
- **O**
  - Ordinario
- **P**
  - Poco pesante
- **P**
  - Posante

**Bow Position**

- **B**
  - On the Bridge
  - *Place the bow right in front of the fingers (extremely close)*
- **SP**
  - Sul Pont (right next to the bridge)
- **N+**
  - Natural/Normal sounding point, but closer to sul pont
- **N**
  - Natural/Normal sounding point; sound rich in harmonic content
- **N-**
  - Natural/Normal sounding point, but closer to tasto
- **T**
  - Tasto (edge of fingerboard)
- **ST**
  - Sul Tasto (on the fingerboard)

**Dynamics**

The dynamics of the piece range from *pianississimo* (ppp) to *mezzo piano* (mp). Most of the times, and due to the nature of the material, these refer to the intensity of a performance technique, and not to the absolute dynamic level. Hybrid states (i.e. dynamics referring to both intensity and volume level) are given within parenthesis.
Left hand
Hand position

Seven-line stave indicating relative hand position according to the clef used each time (similar to bow position tablatures)

Finger pressure*

<table>
<thead>
<tr>
<th>Finger Type</th>
<th>Number of Fingers *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>1</td>
</tr>
<tr>
<td>Harmonic</td>
<td>2</td>
</tr>
<tr>
<td>Intermediate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Finger technique*

Alternate between three fingers “irregularly and as fast as possible”
Distance between them is *ad libitum*

Alternate between four fingers “irregularly and as fast as possible”
Distance is *as close as possible*

Position all fingers to all four strings as if playing a chord
Distance between them should be extremely close, almost perfect fifths

Four-line stave indicating number of string (from top to bottom): I; II; III, IV

* Provided in the score within brackets *

Notational devices denoting structured improvisation and types of relationship and mobility between different ‘state-phases’

The circle is used to frame a ‘state’ (or else, “snapshot”) of the spatio-temporal sounding-gestalt flow of the piece at a particular point. This will be notated following the symbols and scheme(s) presented above, excluding the duration and dynamics line. The performer is invited to explore the temporal geometry of the aggregated gestural shapes that yield the desired sound-configuration, and improvise (to begin) with the material for the duration given (to conclude).

‘to begin’

‘to manifest’ - ‘combined to produce’

While performing/improvising with sound-configuration 1, introduce sound-configuration 2, and counterpoint between the two in a quasi feedback-loop (creating something new/unexpected).
Other special techniques used in the score

**Right Hand**

Position the bow at the points indicated by the circles (see below). Apply **pesante** ~ pressure while moving the bow in two directions:

i) A subtle movement lengthwise to the hair of the bow

ii) A subtle arc movement (acute angles) around the contact point, while randomly changing strings.

**Left Hand**

Mute slightly all 4 strings by pressing with intermediate ~ pressure the given pitches.

Figure asterisks:

* The relative position of the bow to its axis will always be given as a circled number. That is, either 1 or 2:

1. Approximately at a ¼ of the length of the bow above the frog
2. Middle part of the bow

* Bow position can be one of the following (also given as a circled indication):

- Sul Tasto
- Natural
- Sul Pont
- In front of fingers

While performing the above technique you should aim to vary the bow pressure, and improvise both with the granular * characteristics of your sound and its coarseness.

* As Lasse Thoresen suggests, quoting Pierre Schaeffer, granularity “…is a dimension of sound comparable to the abrasiveness one can feel when touching a piece of cloth or a mineral, or the granular quality one can discern in a photograph […] sometimes the distinction between granularity and iteration can be hard to differentiate […] Generally, grains are a micro feature of the object in question, whereas iterations are of a coarser kind; thus grains would tend to be smaller, quicker, and be inseparable from the main body of the sound”

Violinist
(1 high quality condenser air-mic/1 miniature condenser mic)

Distance ($D_1$) of violinist from (main) front speakers
approx. 2m ≤ $D_1$ ≤ 4m

Speakers L1 and R1 should be placed at violinist's shoulder level. Speakers L2 and R2 should be placed approximately 0.5-1m higher than L1 and R1, creating a slightly wider stereo field than L1/R1 (approx. 0.5-1m further left/right from L1/R1 respectively). Note that in the context of the piece we do not (necessarily) mind the short phase offset to the output sound created from the (width) distance between L1/R1 and L2/R2 speakers (approximated values: 0.3m ≤ $D_2$ ≤ 1m ⇒ 0.87ms ≤ $T_2$ ≤ 2.91ms ⇒ 1149Hz ≥ $f_2$ ≥ 343Hz ⇒ Db6 ≥ $P_2$ ≥ E4), as long as this offset is not causing significant distortion and is not creating a "heavy" comb filtering effect. That said, using the mixing desk faders adjust dB levels of the secondary front speakers in accordance to the above, trying also to compensate any feedback problems that might emerge. Depending on the actual space the piece is to be performed each time, adjust accordingly the length distance of all speakers from the violinist.

scheme 1 (ideal)
scheme 2 (simplified)

Speakers L and R should be placed at violinist’s shoulder level. Depending on the actual space the piece is to be performed each time, adjust accordingly the length distance of the speakers from the violinist.
Q1: \[Gr < \quad Flt_Gr < \quad sf_pl1, sf_pl2, sf_pl4 <\]

Q2: \[Gr >\]

Q3: \[Gr <\]

Very gently; short arc movements; cracking noises; listen to the sound file

Gently

Somewhat twitchy; introduce more coarseness to your sound

Gently

Sudden 'swoop' of the bow on the fingerboard; start the gesture before the beat, a quasi acciaccatura
Q4 (Gr >)
A wooden and 'thin' hiss noise; slowly 'swoop' the bow on the fingerboard

Q5 (Gr = sl, Gr <)
Somewhat twitchy; introduce more coarseness to your sound

Q6 (Gr >)
Sudden 'swoop' of the bow on the fingerboard; start the gesture before the beat, a quasi acciaccatura

Q7 (Fr < | Gr <)
A 'thick', stable and uninterrupted noise sound

Q8 (Gr >)
Allow the AOT part of your gesture to create an unpitched sound (bow movement lengthwise to the strings); imagine this sound-configuration as hiss noise lines interrupted by cracking sounds
A 'thick', stable and uninterrupted noise sound.

Extravagant

Sudden 'swoop' of the bow on the fingerboard; start the gesture before the beat, a quasi acciacatura.

Gently

A wooden and 'thin' hiss noise.
While improvising with the parameters of sound-configuration (1) – see ‘Other special techniques’ paragraph of the instructions – introduce sound-configuration (2) and counterpoint between the two in order to ‘manifest’ something new.

Regarding sound-configuration (2):

The bow should be placed right in front of the fingers with the latter positioned as if playing a chord applying intermediate finger pressure. While oscillating in a quasi feedback loop between ordinario and molto flautando pressure, allow a very dense tremolo, randomly switching between strings.

Towards the end of the sounding gesture (approx. 25” of the 30” total time) the counterpoint between sound-configurations 1 and 2, should ‘drop’ back to 1.
Q14 [Fr < |Gr < |sf_pl2 <]

A high-pitched, stable and uninterrupted hiss noise sound; as if passing through a filter.

Murmuring; whispering

Extravagant

Q16 [Fr < |Gr < |fbL<Gr<]

A wooden and 'thin' hiss noise; as if passing through a filter.

Q15 [Fr > |Rb_Gr>]

A high-pitched, stable and uninterrupted hiss sound; as if passing through a filter.
A high pitched hiss sound that passes through different states; like a filter sweep.
A very dense murmuring/whispering. While oscillating in a quasi feedback loop between N and SP bow positions, and between molto fluotando and ordinario bow pressure, allow a dense tremolo, switching between strings “randomly and as fast as possible”. At the same time, move “irregularly and as fast as possible” the left hand up/down the fingerboard area, while oscillating between three and four fingers, alternating between natural and intermediate finger pressure. Introduce, ad libitum and brief cesuras to rest your body. Allow at points the sound of the open strings to emerge by not bowing the string the fingers are touching.
A high pitched “hiss” sound that passes through different states, like a filter sweep
Q27 [sf_pl2 >]

Somewhat twitchy; introduce some coarseness to your sound

Q28 [sf_pl1, sf_pl3, sf_pl4 >]

For the computer performer:
Allow the sound files to completely fade-out before activating Q30
Q30 [closes all DSP and sf players] / Q31 [final i-qlist syntax]

Q29 [Go > / Hi_Go >]

Perform the final decrescendo-fermata in concurrence with the sound files fade-out

Gently

Somewhat twitchy; introduce some coarseness to your sound
a library of sound-configurations; towards a comprovisation practice
for violin, or, any instrument of the violin family including the double-bass
2012 - 2016

circuit structures (I)
comprovisation for any instrument of the violin family including the double-bass (amplified)
2014 - 2015

Dimitris Papageorgiou
PhD in Musical Composition, 2017
The University of Edinburgh
Dimitris Papageorgiou

a library of sound-configurations; towards a comprovisation practice
for violin, or, any instrument of the violin family including the double-bass
Edinburgh, 2012 - 2016

- pp. 5 - 37

Epilogue - Further work

- p. 38

front cover image:
sand, aka purpose, i.e. noise - photograph
Dimitris Papageorgiou, Pyrgos/Kaiafa beach 2016
Nasrudin was sitting talking with a friend as dusk fell.

“Light a candle,” the man said, “because it is dark now. There is one just by your left side.”

“How can I tell my right from my left in the dark, you fool?” asked the Mulla.


There are those who say that logic is a straight line. I say, let logic be full circle of the self, expanding slowly as the deep red tint of the overshadowed moon reveals more and more nuances of inner sound.


That which is a whole and has a certain shape and form is one in a still higher degree; and especially if a thing is of this sort by nature, and not by force like the things which are unified by glue or nails or by being tied together, i.e. if it has in itself the cause of its continuity.


http://classics.mit.edu/Aristotle/metaphysics.10.x.html
Introduction

This library of sound-configurations is the outcome of my practice-based study, exploring the ways in which the *temporal* structure and the *in-time* τρόπος (τρόπος - "way, mode, modality, manner") of my improvisational performance practice for solo violin can be transduced into the symbolic level in order: i) to be explored as compositional material; and ii) to generate a notational strategy for *comprovisation* settings involving any instrument of the violin family and other performers. Due to the nature of the two aforementioned objectives, with this library I also aim to notationally document part of the *gamos* of my current improvisational language. In this sense, it can also be seen as a collection of notations for improvisation and as a series of improvisation études for any instrument of the violin family (including the double-bass).

The development process of this work can be traced in several compositions and sketches I have written during the past few years, including:

• (2012) *Le Nombre Aleph* - for 20 individual strings (20')
  Part of my master thesis portfolio for an MMus in Composition from The University of Edinburgh.

• (2013) *Speculative or Creative? - miniature for string quartet (2'*)
  Part of Appendix I of my PhD portfolio submission (booklet 8).

• (2013) *the theme is one of the variations* - for violin and computer (9:10')
  Main thesis of my PhD portfolio submission (booklet 2).

• (2014) *Alba* - for violin and computer (12:23')
  Main thesis of my PhD portfolio submission (booklet 3).

The presentation is divided in three parts:

1. Key to symbols (pp. 6-11)
   The first part presents instructions and guidelines regarding the notational schemes, objects and symbols employed to notate the sound-configurations.

2. A library of sound-configurations; Towards a comprovisation practice - pp. 13-37
   The second part presents all sound-configurations comprising the *gamos* divided in five basic categories:
   • Those that require a bow movement parallel to the bridge (pp. 14-20);
   • Those that require a bow movement longitudinal to the strings (pp. 21-24);
   • Those that are performed with the left hand positioned above the fingerboard (pp. 25-29);
   • Special techniques and sound-configurations that do not belong in one of the above categories (pp. 30-32); and,
   • Combinations (pp. 33-34).

All sound-configurations of this library have been arranged into an empirical general scale in regards to the relative physical effort and stamina their *in-time* realization requires (see p. 35). The *outside-time* category of the general scale is followed by a presentation of relevant notational devices I have developed, denoting types of modulation and transition between sounding-gestalts. These are used for generating *comprovisation* settings involving other performers (see p. 36-37).

3. circuit structures (I) - p. 38
   The third part includes one of my pieces entitled:
circuit structures (I) - comprovisation for any instrument of the violin family including the double-bass
   This is the first in a series of pieces under the same title, where I am exploring the notational strategy presented in this booklet.

* Please note that the performance score of the piece resides within *Table 1* accompanying the submission.

The presentation closes with a commentary for further work (see p. 39).

At the end of each sound-configuration’s presentation, the reader is referred to relevant solo-violin recordings I conducted during Autumn/Winter 2016. Please see the /USB/4-*a library of sound-configurations/library-recordings* subfolder of the removable drive accompanying the thesis materials. The purpose of these sound files is to extend the written symbols and assist performers both in interpreting the notational elements, and in familiarizing themselves with the performance *trópos* each sounding-gestalt invites.

It is important to mention that the thought process behind the notational types and objects presented here, has been influenced and informed by Middle-Eastern *makam* improvisation and composition traditions.

A discussion on this topic can be found in one of my recently published papers entitled: "The Notion of Sejri as a Conceptual and Typological Scheme for Comprovisation."*

Please note that the paper is included in *Appendix II* (booklet 9).

---

1 Throughout the comments included in this booklet, I am using the terminology proposed by Iannis Xenakis to distinguish between context independent elements – staying more or less the same between different performances – and elements considered to be contingent to a particular performance. Bhagwati suggests that notations are devices used to establish a distinction between context independent elements – staying more or less the same between different performances – and elements considered to be contingent to a particular performance. Bhagwati has approached the term in a rigorous manner.

2 See note 1.

3 Sandeep Bhagwati suggests that notations are devices used to establish a distinction between context independent elements – staying more or less the same between different performances – and elements considered to be contingent to a particular performance. Bhagwati has approached the term in a rigorous manner.

4 A library of sound-configurations; Towards a comprovisation practice - pp. 13-37

5 Please see the /USB/4-*a library of sound-configurations/library-recordings* subfolder of the removable drive accompanying the thesis materials. The purpose of these sound files is to extend the written symbols and assist performers both in interpreting the notational elements, and in familiarizing themselves with the performance *trópos* each sounding-gestalt invites.

6 As a short comment, it seems that the term comprovisation has been initially introduced during the '70s by the trombonist and free-improviser Paul Rutherford. Rutherford described as comprovisation a working technique he used with his band *Iskra 1903* (Derek Bailey, guitar; Barry Guy, bass) in which "he composed the repertoire fully, but offered the players the freedom to substitute newly improvised ideas for the written parts" (http://www.network54.com/Forum/393207/thread/1187262416/Paul+Rutherford+Iskra+1903). In 1991 Butch Morris released the album, *Dust to Dust*, which included a track entitled, "The Bartok Comprovisation." Although I have not yet found textual evidence, I suspect that the title of this piece is related to Morris' approach on free-improvisation. Morris was one of the first to introduce a series of hand gestures to conduct an improvising ensemble. Since then, the word comprovisation has been used in different isolated contexts, and, in my view, only composer Sandeep Bhagwati has approached the term in a rigorous manner.

7 See note 1.


9 Although I have not yet found textual evidence, I suspect that the title of this piece is related to Morris' approach on free-improvisation. Morris was one of the first to introduce a series of hand gestures to conduct an improvising ensemble. Since then, the word comprovisation has been used in different isolated contexts, and, in my view, only composer Sandeep Bhagwati has approached the term in a rigorous manner.


Key to symbols

Notational scheme - tablature structure

All sound-configurations of the library are given within circles, with the notation of most of them employing the scheme shown in the figure below. The latter comprises a tablature stave structure that allows the “decoupling of the various activities of sound production,” dissociating the left from the right hand.

Right Hand (RH)

Bow technique

AO Arco Ordinario
(with bow hair; normal playing - bow movement parallel to the bridge)

AT Arco Tratto
(with bow hair; bow movement lengthwise to the strings)

CLO Col Legno Ordinario
(with the wood; bow movement parallel to the bridge)

CLT Col Legno Tratto
(with the wood; bow movement lengthwise to the strings)

CLB Col Legno Batutto
(strike the strings with the wood)

CLH Col Legno and Bow Hair
(normal playing; bow movement parallel to the bridge, but, with the bow axis shifted in such a way so as both the wood and the hair are touching the strings)

Bow Pressure

Molto flautando

Poco flautando

Ordinario

Poco pesante

Pesante

Left Hand (LH)

Hand position

B Sul Pont; Right next to the bridge

N Natural sound point; sound rich in harmonic content

N– Natural sound point, but closer to Tasto

T Tasto (edge of fingerboard)

ST Sul Tasto (on the fingerboard)

¾ ¾ of fingerboard (starting from the nut)

½ ½ of fingerboard (starting from the nut)

¼ ¼ of fingerboard (starting from the nut)

n nut

Metrical sequences and dynamics are notated on a one-line stave of neutral clef, given in between the right and left hand tablatures of the notational scheme. Note that all sounding-gestures included in this booklet are combined with a whole note coupled to the fermata symbol ( ). This pair of signs aims to indicate the in-time open-duration of all sound-configurations, while at the same time to identify the latter as continuous outside-time entities that comprise a general scale. Similarly, the notated dynamic level used throughout this library is mezzoforte (mf), denoting both the average volume of a sounding-gestalt as it develops in-time, and the intensity of performance. The epilogue (see p. 39) illustrates an example of the ways in which more complex metrical sequences and dynamical patterns can be introduced.

Left Hand

Hand Position

Relative left hand position indications are given within circles, following the nomenclature presented earlier regarding bow position, noted on a seven-line tablature that can be combined with two clefs:

i. Clef indicating the area from Tasto to Bridge

ii. Clef indicating the area from Bridge to nut
Finger Pressure
- Harmonic
- Intermediate; A somewhat muffled/muted sound
- Normal

Finger Technique
0. Open string; Lift fingers
1. Use only one finger
A2. Alternate between two fingers as fast as possible
A3. Alternate between three fingers randomly and as fast as possible
A4. Alternate between four fingers randomly and as fast as possible
C. Position the fingers as if playing a chord (dyads, triads, or tetrads - the number of notes is given on the tablature indicating on-string fingers placement; see relevant paragraph below)
- Mute/dumb the strings

Finger spacing (combined only with A2, A3, A4, and C finger techniques)
MT. Microtone; Denoting intervals less than a minor second, i.e. a finger spacing that can range from as tight as possible to minor second
m2. Minor second
M2. Major second
m3. Minor third
M3. Major third

On-string fingers placement
Indications regarding on-string fingers placement are given as cross noteheads on a four-line tablature corresponding to the: I, II, III, and IV string numberings (top-to-bottom). The tablature can be combined with two clefs:
- i. Clef indicating the area from Tasto to Bridge
- ii. Clef indicating the area from Bridge to tailpiece.

Gestural shapes
All sound-configurations included in the library are noted as aggregates of dissociated gestural shapes, which when merged in-time by a performer, can yield a sounding-gestalt. The temporal geometry of each shape is suggested by combining graphic rhythmic notation symbols – denoting the global spatio-temporal behaviour of a gesture – with time-frame schemes indicating a minimum and a maximum temporal duration span for the individual events comprising a gesture.

Gestural events can be understood as simple, i.e. those represented using only one symbol, or composite, with the latter divided in three main categories:
1. Transitions between areas notated on the seven-line tablatures (left/right hand);
2. Oscillations/feedback-loop transitions between maxima; and,
3. Events/actions notated on the four-line tablatures (left/right hand).

Graphic rhythmic notation
- Random/Irregular
- Random/Irregular and as fast as possible
- Accelerando and random/irregular
- Rallentando and random/irregular

Important note: For consistency reasons – please read the foreword on page 13 – the sound-configurations documented in this library are notated using only the first two graphic rhythmic notation symbols presented above (random/irregular; random/irregular and as fast as possible). Note however that the theoretical framework discussed below can also be applied to the other two graphic notation symbols (accelerando and random/irregular; rallentando and random/irregular), and thus expand the creative potential of the gamut.

The idea of irregularity that runs through all graphic rhythmic notation signs presented above, denotes that an amount of performative randomness should be introduced in regards to both the succession of gestural events, and their duration.
For example, the following notation can be understood as:
\[
\begin{array}{c|c|c}
X & Y & H \\
\end{array}
\]
\[
= \begin{array}{c|c|c|c|c|c|c}
X & H & Y & H & X & H & \ldots \\
\end{array}
\]

or, any other sequence between the given (X, Y, H) events that can emerge in-time, through performance.

The same holds for all other graphic symbols (random/irregular and as fast as possible; accelerando and random/irregular; rallentando and random/irregular), with the only difference being the rate in which individual events emerge, thus rendering perceivable the global spatio-temporal character given by the design of the symbol.

Time-frame durations
With the exception of the graphic sign denoting ‘random/irregular and as fast as possible’, the amount of randomness, in regards to the durations of individual events, is always bound to a time-frame duration (t) indicated by a symbol of the form [A|B] shown in brackets. Numerals A and B denote seconds (example on next page).

Note that the framework in regards to the ways graphic rhythmic notation is combined with time-frame durations (pp. 7-8) is presented employing simple events. Composite gestural events are presented on pages 8 - 10. Simple events examples are: up/down bow movement, normal pizzicato, fingernail touch/drag etc.
2. Oscillations/feedback-loop transitions between maxima

The symbol is used to suggest oscillations, in a quasi feedback-loop manner, from sound, technique, way of playing A, to sound, technique, way of playing B, back to A.

Note 2: When graphic rhythmic notation is combined with oscillations/feedback-loop transitions, then the former indicates that an amount of performative randomness should be introduced in regards to the duration of a single oscillation as a whole, with the actual time-point of arrival to the second element of the loop being ad libitum. The time-frame values given in brackets denote possible duration spans of one full oscillation.

The following notation can be understood as:

\[ \text{Oscillate continuously, and in a quasi feedback-loop manner, between harmonic and normal finger pressure.} \]

3. Events/actions notated on the four-line tablatures (left/right hand)

3.1 On-string bow placement tablature

Gestural events notated on the four-line on-string bow placement tablature, denote bowing actions applied on the strings while performing with the suggested parameters notated above the staff, i.e. bow technique, bow movement, bow pressure, bow position. Below you can find a list of these according to the actions their respective symbols aim to convey. Their stems are connected with graphic rhythmic notation beams coupled with time-frame values; A notation example is given on page 10, after the presentation of all individual events/actions.

Important note: Each of the actions illustrated below aims to denote the family of permutations that should be generated when traversing the symbols/actions (or composite symbols) to all possible string combinations. Following on from this, the presentation here demonstrates only some important variations and their characteristic symbolic representation.

Event/Action 1

Continue performing (détaché) with the suggested bowing parameters until the point indicated by the vertical line (the arrow of the cross notehead without a stem denotes a continuous performance). Harmonic dyads will suggest that two strings should be bowed simultaneously. Stems denote bow direction. Following from this, the notation below can be understood as:

Transfer the suggested bowing parameters from string II to string III while changing bow direction, or, by lifting the bow and restarting the movement (illustrations on the right). The choice between the two is at ad libitum and should depend on the impetus of the performance.
Event/Action 2

Transfer the suggested bowing parameters between strings (or strings combinations) while bowing in the same direction. Both legato, articulated legato (louré), or legato/marcato can be applied ad libitum depending on the impetus of the performance. Stems denote bow direction. The first and second example denote that the string changes should happen fast enough, like an appoggiatura. The third example denotes an ad libitum duration before and after the string change, bound however by the given time-frame values (see example on page 10).

Event/Action 3

Arpeggio. Arpeggiate in triads/tetrads string combinations (ascending/descending), while performing with the suggested bowing parameters. The main stem denotes bow direction. The event can be combined with détaché strokes on the arrival string (event/action 1). Can also appear as harmonic dyads strings combinations.

Event/Action 4

Arpeggiando. Arpeggiate in triads/tetrads string combinations (ascending/descending), while performing with the suggested bowing parameters and while applying the ricochet technique (allow the bow to bounce by applying some pressure with the index finger). When the technique has a short duration span, it should generate a spontaneous spiccato (saltando). The main stem denotes bow direction. The event can be combined ad libitum with détaché strokes on the arrival string (event/action 1). Always used with the left-hand fingers in chordal placement (C). Note that the notation of the action always follows the type within the box, denoting all possible permutations of its constituent elements.

Event/Action 5

Jeté attacks. "Throw" the bow on the string and allow it to bounce in the same direction, while performing with the suggested bowing parameters. The second example denotes that the jeté can be followed ad libitum by a détaché stroke on a different string (event/action 1).

Note 4: The jeté attacks symbol can also be combined with arco tratto (or, col legno tratto) bowing techniques, notated on the stems of the bow position gestural beam given on the seven-line tablature. In these cases, it denotes a quasi jeté/ricochet technique applied lengthwise to the strings interrupting the (tratto) transitioning gesture.

Event/Action 6

An extravagant and unmeasured combination of tremolo/sautillé performed between the low-middle and the tip bow area (the exact point is ad libitum). The second example denotes that the tremolo can be followed ad libitum by a détaché stroke on a different string (event/action 1).

Note 6: The same symbol can also be combined with arco tratto (or, col legno tratto) bowing techniques, notated on the stems of the bow position gestural beam given on the seven-line tablature. In these cases, it denotes an extravagant unmeasured tratto-tremolo interrupting the (tratto) transitioning gesture.

e.g. AT (or CLT)

Event/Action 7

Used only with sound-configurations involving the arco tratto or col legno tratto techniques. Transfer the bowing parameters between strings by applying a détaché transition.

3.2 On-string fingers placement tablature

In a similar fashion to bowing actions, gestural events notated on the four-line on-string fingers placement tablature, denote fingering actions applied on the strings while performing with the suggested parameters notated above the staff, i.e. hand position, finger pressure, finger technique, finger spacing. Below you can find a list of these according to the actions their respective symbols aim to convey. Their stems are connected with graphic rhythmic notation beams coupled with time-frame values. Here too, each of the actions presented below denotes a family of permutations that should be created when transferring the symbols/actions (or composite symbols) to all possible string combinations.

Event/Action 1

Continue performing with the suggested fingering parameters until the point indicated by the vertical line (the arrow of the cross notehead without a stem denotes a continuous performance). Harmonic dyads, and triads/tetrads string combinations suggest that the strings should be depressed as if playing a double stop, or, a three/four part chord respectively.

Event/Action 2

Transfer the suggested fingering parameters between strings, or strings combinations.

Event/Action 3

Always used concurrently and in a synchronous manner with arpeggiando bowing events and with the left-hand fingers in chordal placement (C). Note that the notation of the action always follows the type within the box, denoting all possible permutations of its constituent elements.
Following on from the above, the notation below can be understood as:

```
1/3[2]
```

“Allow any sequence of actions from the family of permutations the events denote, with each action having any duration (irregularity) within the limits suggested by the time-frame values.”

Similarly, the following notation can be understood as:

```
1/4[2]
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“Allow any sequence of actions from the family of permutations the events denote, with each action having any duration (irregularity) within the limits suggested by the time-frame values.”

**Fingering patterns**

Fingering techniques involving either ‘as fast as possible’ alternations between fingers, or, chordal positions, are always combined with the abbreviations presented earlier indicating finger spacing, e.g. A3(M3), C(MT) etc.

The oscillation/feedback-loop symbol, apart from techniques involving transitions between different states, can also be used with finger spacing combinations. In these cases it denotes an ‘as fast as possible’ alternation between the fingers, allowing both ascending (asc.) and descending (desc.) intervals within the given bounds. The gesture should develop around the hand position area indicated on the respective seven-line tablature. The illustration below suggests a way that the following notation can be broken into its constituent elements:

```
\begin{itemize}
  \item \textbf{Fingering patterns}
\end{itemize}
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From whole to parts
A possible way a sound-configuration (left) can be broken into its constituent elements (right):
A library of sound-configurations: Towards a comprovisation practice

My work towards developing the notational devices presented in this booklet progressed in a manner that resembles a feedback-loop between two tasks: i) an instrumental and improvisational practice, combined with compositional work, research on other composers' notational approaches" and experimentation that allowed me to craft certain notational devices; and, ii) an investigation of the ways in which I could utilize these notational objects in order to transcribe my improvisational material and achieve the two interrelated objectives presented in the introduction. At a certain stage, I decided that the best way to approach the transcription objective was to abstract from the multiple of my improvisational language, those 'ones' (sounding-gestals) that are characteristic of my improvisational sound and of the tripos (tracing," way, mode, modality, manner") of my practice. This allowed me to formulate certain criteria (see below) as to which sounding-gestals should be transduced into the symbolic level, in order to portray the spectrum of my improvisational practice, and to also function as an outside-time category of sound-configurations.

In parallel to the explorative process described above, and in order to introduce the notion of modality into my compositional and notational practice, I examined the outside-time architecture of Turkish and Middle Eastern makam music modal system. Although further details can be found in the paper I am referencing in the introduction," it is important to address here a key idea of makam music theory that has informed my practice: Makam scales are mainly created by conjunct juxtaposition of tetrachords and/or pentachords (genres) that exist upon a general scale bound by the compass of the fretted instrument tanbûr. However, that which gives a makam modal entity its "character" is the so-called seyr of a mode, or else, its melodic development within a makam scale. The word seyr originates from the Arab verb sîra which means "to move, to set out, to travel" and as a musical term it can be understood to be a prescriptive path of melodic phases – or else, an outside-time structure of melodic stages – which denotes a melody as a particular makam mode. To be more specific, two modes sharing an identical position upon the general scale of the system (i.e. comprising the same tetrachords and pentachords) can be distinguished only on the basis of their in-time melodic development suggested by their seyris. It is worth mentioning that these prescriptive paths play a pivotal role in the art of takim improvisation. The latter not only requires an understanding of the architecture of the makam system, but also relies upon a knowledge through practice of the seyr of each makam mode; a knowledge that allows a musician to modulate freely between different modal entities. Having said that, modulation here should not be understood as a transition to a new tonal centre, rather as "a musical consonance of separate makam modes" that occurs in-time, through performance.

My research on the architecture of the makam musical system and the notion of seyr has significantly informed the processes described in the first paragraph. An important impact was that I started imagining the sounding-gestals that portray the tripos of my improvisational practice as modal units arranged into a general scale" in regards to the amount of physical effort and stamina their in-time realization requires. This allowed me to concretize the design of the notational scheme, its components and the ways these should be employed, so as to translate the parameters of action, effort, and endurance into structural and notational elements. At the same time, by experiencing-through-practice and transition between my improvised sounding-gestures, I started visualizing this general scale as a map of possible in-time paths (or seyris if you like) my improvisations could take. Based on this, I began developing notational devices that aim to communicate types of modulation and transition between sound-configurations, in order to generate comprovisation pieces for other performers.

Following on from the above, the sound-configurations comprising the library that follows, have been noted and selected under the following criteria:

i. Those that can be understood as matrices (multitudes) procreating others through variation, that is, either by modifying their notated parameters, or, by reducing their complexity levels.
ii. Those that can function as nodes in an empirical general scale required for their in-time realization.
iii. Those that can be effectively combined with the notational devices I have developed denoting types of modulation and transition between them.

Note 1: The library includes only some examples of variations. A documentation of all of them is unnecessary if not impossible. The creative potential and the full spectrum of the in-time variations that can be generated from matrices is left to those interested in exploring this booklet as a collection of improvisation études.

Note 2: The time-frame values of the gestural shapes comprising each sound-configuration (matrixes and variations) have been kept fairly constant so as to allow a comparison of the physical effort and stamina required when these are performed in a continuous manner. Accordingly, the graphic rhythmic notation symbols used in combination with gestural shapes, are either 'random/irregular', or, 'random/irregular and as fast as possible'.

Note 3: The grouping follows the categories given in the introduction. Matrices are numbered in normal fashion, while variations examples are coupled with Roman numerals.

As a conclusion, the purpose of the notational devices presented here, is to invite an interplay between determinacy and indeterminacy, as well as, repetitability and contingency between those performance elements that compose “different levels of musical structure.” Echoing my final comments on the ‘Key to symbols’ sections above, I like to see each sound-configuration as an aggregate of notational types and gestural shapes, which when merged in-time into a composite ‘one’, generates the micro-form that holds-together and melds the emergent sounding-gestalt. At the same time, the notational devices suggesting modulation and transition between sound-configurations intent to transfer this idea to the overall form of a piece of music. The piece, circuit structures (I), included in this booklet (see p. 38), can be thought of both as a noted path (seyr) between sounding-gestals (modal units), and as a phase space trajectory between sound-configurations that frames the global sounding-figure.

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8 Some composers whose work has informed the notational practice presented here are: Richard Barrett, Aaron Cassidy, Gerard Grisey, Klaus K. Höller, Helmut Lachenmann, Boguslaw Schaeffer, and Mathias Spahlinger.
9 For further information and sounding examples, please read the foreword of the thesis (booklet 1).
10 Papageorgiou, The Notion of Suyh as a Conceptual and Typological Schema for Comprovisation - see note 6.
12 This general scale is not the result of a qualitative data analysis, or any other relevant research method. It is rather an empirical finding, and in this sense, it should be considered subjective.
13 Here, I have in mind what James Tenney called as the "hierarchical levels of organization and perception [... that determine form." According to Tenney, there are three aspects of form we should take into consideration: (i) the structural (internal relations between sound-configurations); (ii) the morphological (shape, contour, the variation of some attribute in space or time); and, (ii) the statistical (state, condition). As Tenney writes, "Implicit in all the above is the importance of perception in the matter of form. We might say that form is equally dependent on the thing-in-itself and on perceptual processes. Actually, the thing-in-itself doesn’t even exist in music apart from our perception of it. All that may be said to ‘exist’ are various parhelion manifestations or symbolic representations of it, and even these must be mediated by perception. So it is really the form of the musical experience that must be dealt with." Tenney, James. 1969-70. Form in 20th Century Music (Original version of the author). Available at: http://www.plainsound.org/7/Work.html
1. Sound-configurations that require a bow movement parallel to the bridge (arco ordinario - col legno ordinario)

1.1 Bow position clef: From Bridge to Sul Tasto

Sound-configuration (1) / matrix
• We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
  - use of one string only (four-line tablatures)
• Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)

Please listen to sound files track1.aif (AO) and track2.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (i) / variation example of matrix (1)
• We can generate more variants (e.g., apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)

Please listen to sound files track3.aif (AO) and track4.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (ii) / variation example of matrix (1)

- We can generate more variants (e.g., apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)

Please listen to sound files **track5.aif** (AO) and **track6.aif** (CLO) residing within the subfolder `/USB/4_a-library-of-sound-configurations/library-recordings/` of the removable drive accompanying the thesis materials.

Sound-configuration (iii) / variation example of matrix (1)

- We can generate more variants (e.g., apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)

Please listen to sound files **track7.aif** (AO) and **track8.aif** (CLO) residing within the subfolder `/USB/4_a-library-of-sound-configurations/library-recordings/` of the removable drive accompanying the thesis materials.
Sound-configuration (2) / matrix

- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - alternative bow pressure, or oscillations/feedback-loops between maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
  - use of one string only (four-line tablatures)
- Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)

Please listen to sound files track9.aif (AO) and track10.aif (CLO) residing within the subfolder `/USB/4_a-library-of-sound-configurations/library-recordings/` of the removable drive accompanying the thesis materials.

Sound-configuration (iv) / variation example of matrix (2)

- We can generate more variants (e.g., apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)

Please listen to sound files track11.aif (AO) and track12.aif (CLO) residing within the subfolder `/USB/4_a-library-of-sound-configurations/library-recordings/` of the removable drive accompanying the thesis materials.
Sound-configuration (3) / matrix

- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
  - use of one string only (four-line tablatures)

- Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)

- Note that when the sound-configuration is performed with the *col legno ordinario* technique, the sautille part indicated by the tremolo/sautille symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files track13.aif (AO) and track14.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (v) / variation example of matrix (3)

- We can generate more variants (e.g., other time-frame values; transfer the sounding-gestalt to all four strings, etc.)
- Note that when the sound-configuration is performed with the *col legno ordinario* technique, the sautille part indicated by the tremolo/sautille symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files track15.aif (AO) and track16.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (4) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - fixed average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
  - use of one string only (four-line tablatures)
- Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)
- Note that when the sound-configuration is performed with the *col legno ordinario* technique, the sautillé part indicated by the tremolo/sautillé symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files track17.aif (AO) and track18.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (vi) / variation example of matrix (4)
- We can generate more variants (e.g., other time-frame values; can be transferred to all four strings, etc.)
- Note that when the sound-configuration is performed with the *col legno ordinario* technique, the sautillé part indicated by the tremolo/sautillé symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files track19.aif (AO) and track20.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
1.2 Bow position clef: From Tasto to nut

Sound-configuration (5) / matrix
• We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
• Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
• Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e., strings that the left hand is not applying fingering actions.

Please listen to sound file track21.aif (CLO) residing within the folder 'library_recordings' of the subfolder /USB/B-a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (6) / matrix
• We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
• Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
• Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e., strings that the left hand is not applying fingering actions.

Please listen to sound file track22.aif (CLO) residing within the folder 'library_recordings' of the subfolder /USB/B-a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (7) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e. strings that the left hand is not applying fingering actions.
- Note that the sautillé part indicated by the tremolo/sautillé symbol is not possible with col legno. In this case, the relevant sign denotes only tremolo.

Please listen to sound file track23.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (8) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e. strings that the left hand is not applying fingering actions.
- Note that the sautillé part indicated by the tremolo/sautillé symbol is not possible with col legno. In this case, the relevant sign denotes only tremolo.

Please listen to sound file track24.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
2. Sound-configurations that require a bow movement lengthwise to the strings
(arco tratto/col legno tratto)

2.1 Bow position clef: From Bridge to Tasto

Sound-configuration (9) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e. strings that the left hand is not applying fingering actions.

Please listen to sound files track25.aif (AT) and track26.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (vii) / variation example of matrix (9)
- We can generate more variants (e.g. apply other time-frame values, etc.)

Please listen to sound files track27.aif (AT) and track28.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (10) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e., strings that the left hand is not applying fingering actions.

Please listen to sound files track29.aif (AT) and track30.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (11) / matrix
- We can generate variations either by modifying its parameters, or by reducing/adding complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - constant tratto/tremolo on a fixed bow position;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e., strings that the left hand is not applying fingering actions.

Please listen to sound files track31.aif (AT) and track32.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
2.2 Bow position clef: From Tasto to nut

Sound-configuration (12) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average-dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e. strings that the left hand is not applying fingering actions.

Please listen to sound file track33.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (viii) / variation example of matrix (12)
- We can generate more variants (e.g. apply other time-frame values, etc.)

Please listen to sound file track34.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (13) / matrix

- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e. strings that the left hand is not applying fingering actions.

Please listen to sound file track35.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (14) / matrix

- We can generate variations either by modifying its parameters, or by reducing/adding complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - constant tratto/tremolo on a fixed bow position;
  - fixed bow position, or transitions between different areas than the ones given;
  - different average dynamic level than the suggested one;
  - fixed left hand position, or transitions between different areas than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Notice that the position of the bow, although on the fingerboard, is always in front of the left hand
- Right and left hand on-string placement can develop both concurrently and non-concurrently (gestural shapes on the four-line tablatures). This non-synchronous development means that bowing events/actions can also occur on open-strings, i.e. strings that the left hand is not applying fingering actions.

Please listen to sound file track36.aif (CLT) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
3. Sound-configurations where the left hand is positioned above the fingerboard
(arco ordinario/col legno ordinario)

Sound-configuration (15) / matrix
• We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - different average dynamic level than the suggested one;
  - fixed left hand position;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
• Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the
  four-line tablatures)

Please listen to sound files track37.aif (AO) and track38.aif (CLO) residing within the subfolder
/USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (ix) / variation example of matrix (15)
• We can generate more variants (e.g. apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)
• Note that the down-bow ricochet (allowing the bow to bounce by applying some pressure with the index finger) should only
  be used with arco ordinario.

Please listen to sound files track39.aif (AO) and track40.aif (CLO) residing within the subfolder
/USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
- different time-frame values than the ones given;
- fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
- different average dynamic level than the suggested one;
- fixed left hand position;
- fixed finger pressure, or oscillations/alternations between different maxima;
- Note that the down-bow ricochet (allowing the bow to bounce by applying some pressure with the index finger) should only be used with arco ordinario.

Please listen to sound files track43.aif (AO) and track44.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (17) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - different average dynamic level than the suggested one;
  - fixed left hand position;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
- Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)

Please listen to sound files *track45.aif* (AO) and *track46.aif* (CLO) residing within the subfolder
/USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (xi) / variation example of matrix (17)
- We can generate more variants (e.g. apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)

Please listen to sound files *track47.aif* (AO) and *track48.aif* (CLO) residing within the subfolder
/USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (18) / matrix
• We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - different average dynamic level than the suggested one;
  - fixed left hand position;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
  - use of one string only (four-line tablatures)
• Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)
• Note that when the sound-configuration is performed with the \textit{col legno ordinario} technique, the sautille part indicated by the tremolo/sautille symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files \texttt{track49.aif} (AO) and \texttt{track50.aif} (CLO) residing within the subfolder \texttt{/USB/4_a-library-of-sound-configurations/library-recordings/} of the removable drive accompanying the thesis materials.

Sound-configuration (xii) / variation example of matrix (18)
• We can generate more variants (e.g., apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)
• Note that when the sound-configuration is performed with the \textit{col legno ordinario} technique, the sautille part indicated by the tremolo/sautille symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files \texttt{track51.aif} (AO) and \texttt{track52.aif} (CLO) residing within the subfolder \texttt{/USB/4_a-library-of-sound-configurations/library-recordings/} of the removable drive accompanying the thesis materials.
Sound-configuration (19) / matrix
- We can generate variations either by modifying its parameters, or by reducing complexity levels, including:
  - different time-frame values than the ones given;
  - fixed bow pressure, or oscillations/feedback-loops between alternative maxima;
  - different average dynamic level than the suggested one;
  - fixed left hand position;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;
  - use of one string only (four-line tablatures)
- Right/left hand on-string placement should develop concurrently and in a synchronous manner (gestural shapes on the four-line tablatures)
- Note that when the sound-configuration is performed with the col legno ordinario technique, the sautille part indicated by the tremolo/sautillé symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files track53.aif (AO) and track54.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configuration/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (xiii) / variation example of matrix (19)
- We can generate more variants (e.g. apply other time-frame values; transfer the sounding-gestalt to all four strings, etc.)
- Note that when the sound-configuration is performed with the col legno ordinario technique, the sautille part indicated by the tremolo/sautillé symbol is not possible. In this case, the relevant sign denotes only tremolo.

Please listen to sound files track55.aif (AO) and track56.aif (CLO) residing within the subfolder /USB/4_a-library-of-sound-configuration/library-recordings/ of the removable drive accompanying the thesis materials.
4. Special techniques and sound-configurations that do not belong in the above categories

Sound-configuration (20)
• We can generate variations by applying different time-frame values than the ones given;

Please listen to sound files track57.aif residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (21)
• We can generate variations by applying different time-frame values than the ones given;

Please listen to sound files track58.aif residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (22)
- Using all fingers, including the thumb, create a ‘swarm’ pizzicato (normal, touch/drag using the fingernail and the pad of finger, snap); leave the bow aside.
- We can generate variations by applying:
  - different time-frame values than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;

Please listen to sound file track59.aif residing within the subfolder /USB/4/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (23)
- A ‘swarm’ pizzicato (normal, touch/drag using the fingernail and the pad of finger) using the left-hand while applying the fingering technique.
- We can generate variations by applying:
  - different time-frame values than the ones given;
  - fixed finger pressure, or oscillations/alternations between different maxima;
  - different fingering technique than the one given, combined with alternative finger spacing;

Please listen to sound file track60.aif residing within the subfolder /USB/4/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (24)
Please listen to sound file track61.aif residing within the subfolder
/USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (25)
Please listen to sound file track62.aif residing within the subfolder
/USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (26)

Sound-configuration (27)
5. Combinations

Sound-configuration (28)
• A gestural shape that combines détaché strokes, spiccato/saltando, and ricochet on a resonant point of the violin body, while applying a quasi 'swarm' pizzicato with the left hand behind the bridge.

Please listen to sound file track63.aif residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.

Sound-configuration (29)
Please listen to sound file track64.aif residing within the subfolder /USB/4_a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
Sound-configuration (30)
Please listen to sound file track65.aif residing within the subfolder
/USB/1a-library-of-sound-configurations/library-recordings/ of the removable drive accompanying the thesis materials.
**General scale**

An empirical arrangement of the notated sound-configurations in regards to the amount of effort and stamina these require when performed as single-units and with their time-frame values being fairly similar.

<table>
<thead>
<tr>
<th>Variations by reducing complexity</th>
<th>Matrices and variations by modification</th>
<th>Variations by reducing complexity</th>
<th>Matrices and variations by modification</th>
<th>Variations by reducing complexity</th>
<th>Matrices and variations by modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>High physical effort</td>
<td>Low stamina</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Bow movement lengthwise to the strings Arco Tratto / Col Legno Tratto</td>
<td></td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Low physical effort</td>
<td>High stamina</td>
<td>v</td>
<td>v</td>
<td>vii</td>
<td>vi</td>
</tr>
<tr>
<td>Run 2</td>
<td></td>
<td>9</td>
<td>9</td>
<td>vii</td>
<td>vii</td>
</tr>
<tr>
<td>High physical effort</td>
<td>Low stamina</td>
<td>vi</td>
<td>vi</td>
<td>vi</td>
<td>vi</td>
</tr>
<tr>
<td>Bow movement parallel to the bridge Arco Ordinario / Col Legno Ordinario</td>
<td></td>
<td>4</td>
<td>4</td>
<td>iv</td>
<td>iv</td>
</tr>
<tr>
<td>Low physical effort</td>
<td>High stamina</td>
<td>v</td>
<td>v</td>
<td>iv</td>
<td>iv</td>
</tr>
<tr>
<td>Run 3</td>
<td></td>
<td>3</td>
<td>3</td>
<td>iii</td>
<td>iii</td>
</tr>
<tr>
<td>Low physical effort</td>
<td>High stamina</td>
<td>ii</td>
<td>ii</td>
<td>ii</td>
<td>ii</td>
</tr>
<tr>
<td>Run 4</td>
<td></td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>High physical effort</td>
<td>Low stamina</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>RUN 5</td>
<td></td>
<td>ix</td>
<td>ix</td>
<td>ix</td>
<td>ix</td>
</tr>
<tr>
<td>Low physical effort</td>
<td>High stamina</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Special techniques**

The sound-configurations that fall in the categories of 'special techniques' and 'combinations', due to their distinct character, constitute a separate group within the general scale.
Types of modulation and transition between sound-configurations

The textual and graphic descriptors below, depending on the sound-configurations (matrices/variations) with which they are combined each time, aim to denote either, differences regarding sound-production parameters and actions required; divergences in respect to the temporal geometry of the aggregated gestural shapes; or, variances in terms of the relevant physical effort/stamina required while modulating/transitioning. Note that here, the parameter of physical effort/stamina depends on the overall flow and the global musical context of a composition piece; and in this sense, it does not function as a comparison criterion between sound-configurations when these are treated as independent units (see Note 2 on page 13). For example, although the general scale suggests that sound-configuration (1) is at a lower level of effort/stamina in comparison to (2), the relationship between the two can change when variations of them are joined through transition, or, depending on the amount of endurance the piece requires up until the point a modulation between the two is requested.

\[ \text{Sounding-gestalt (A) ‘begins’ and ‘concludes’ at the point indicated by the vertical line. Duration is ad libitum.} \]

\[ \text{Gradual transition (‘to move’) from sounding-gestalt (A) to sounding-gestalt (B). The transitioning duration is ad libitum. Although the transitioning manner is left to the performer, the modulation should allow a musical consonance between the two. Sound-configurations (A) and (B) either involve events/actions common to both, or, require the same level of physical effort.} \]

\[ \text{Gradual transition from sounding-gestalt (A) to sounding-gestalt (B). The transitioning duration is ad libitum. Although the transitioning manner is left to the performer, the modulation should allow a musical consonance between the two. Sound-configurations (A) and (B) either do no share events/actions, or, require a different level of physical effort (higher/lower).} \]
Two ways of interpreting depending on the context and the sound parameters involved:

i) *To change* suddenly from sounding-gestalt (A) to sounding-gestalt (B), or;

ii) *To show* sounding-gestalt (B) from sounding-gestalt (A), as in “allow (B) to be suddenly perceived from (A)” which requires (B) to be already part of (A).

The duration of each sound-configuration is *ad libitum*. The change from (A) to (B) should last for a brief moment.

The mirrored (B) indicates those cases where sound-configuration (B) requires a lower level of physical effort.

---

Two ways of interpreting depending on the context and the sound parameters involved:

i) *To manifest itself*, as in “join sounding-gestalt (A) with sounding-gestalt (B) and create something new”:

![Diagram](image)

ii) *Combined to produce*, as in “modulate *ad libitum* between sounding-gestals (A) and (B) and create something new”. Below are two graphic ways to imagine this second scenario:

![Diagram](image)

The duration of the whole is *ad libitum*.

The mirrored (B) indicates those cases where sound-configuration (B) requires a lower level of physical effort.

NB: Unless written otherwise, the circle of sound-configuration (A) suggesting sounding-gestalt (A) ‘to begin’, is also the starting point of the feedback-loop process in both interpretations above.

---

'Reveal' sounding-gestalt (B) from (A), and drop back to sounding-gestalt (A), or else, allow sounding-gestalt (B) to emerge from and disappear to (A).

The duration of (B) should be enough so as not to create the feeling that it establishes in-time.

The transitioning duration and the modulation manner should render the scheme perceivable (emergence/disappearance).

The mirrored (B) indicates those cases where sound-configuration (B) requires a lower level of physical effort.
circuit structures (I)

for Nikola

comprovisation for any instrument of the violin family including the double-bass (amplified)

duration ad libitum (suggested: 5-7min)

Exchange or indiscernibility thus follow each other in three ways in the crystalline circuit: the actual and the virtual; the limpid and the opaque; the seed and the environment […] Subjectivity is never ours, it is time, that is, the soul or the spirit, the virtual. The actual is always objective, but the virtual is subjective: it was initially the affect, that which we experience in time; then time itself, pure virtuality which divides itself in two as affector and affected, ‘the affection of self by self’ as definition of time.

Gilles Deleuze, Cinema 2 - The Time Image (1989), pp. 71, 96

circuit structures (I) was written in two phases between autumn 2014 and summer 2015, in Edinburgh. It is the first in a series of pieces under the same title where I am exploring the notational approaches presented in this booklet. With this piece, which can be thought of as a path (seyir) between sounding-gestalts I am combining some sound-configurations of the gamut with the notational devices presented earlier denoting types of modulation between them (see pp. 36-37) with the aim to generate a comprovisation setting.

Important note: The performance materials reside within Tube 1 accompanying the submission. These are the following:
1. The performance score as a single page (width x height: 241x33cm).
2. The performance score in five (5) separate pages of A2 size.
3. A diagrammatic representation (width x height: 84x16cm) including the numberings of the sounding-gestalts comprising the piece as these are listed within the library of sound-configurations, the pages these can be found, as well as their corresponding audio recordings within the /USB/4_a-library-of-sound-configurations/library-recordings/ subfolder.

Although this is entirely left to the performer to decide, my suggestion is to play the piece from memory. If this is not possible, then the single-page performance score should be used for practicing and rehearsal purposes, while the five separate pages of A2 size should be used for a concert performance. These should be placed upon five music stands forming a semicircle around the performer.

Amplification

The piece requires the instrument to be amplified with one high-quality condenser microphone (e.g. Schoeps MK6/cardiod, KM 140, KM 184). Amplification should be transparent without rendering the sound very “electric.” A small amount of reverb may also be added. Two technical setups could be applied:
1) You can either use a computer with MaxMSP installed; send the mic signal to a sound-card, passing the live-mix to two high-quality powered speakers; and, perform the piece with the aid of circuit_structuresI.maxproj patch residing within the /USB/5_circuit-structuresI/circuit_structuresI-patch subfolder of the removable drive accompanying the thesis materials; or,
2) You can send the mic signal to a mixing desk – preferably with on-board electronic effects to add some reverb in case needed – in turn connected to a stereo speaker system.

The position of the speakers could follow one of the two setups illustrated below. The arrows indicate the direction of sound.

1.

L

R

2.

L

R

audience

performer
Epilogue - Further work

I would like to close this discussion by presenting some further potentialities incorporated in the notational scheme I have developed.

A first interesting aspect of it, is that it allows one to introduce more complex metrical and dynamical structures, in two ways:

• Either by combining a sound-configuration (matrix/variation) with rhythmic/dynamical sequences notated on the middle line (see part A of figure 1 below);
• Or, by applying rhythmic notation upon the tablatures so as to elaborate in more detail (in case needed) associated/dissociated gestural shapes between the left and the right hand (see part B of figure 1 below).

At the same time, the middle line can be extended to a five-line stave so as to allow a musical dialogue between gestural material and traditionally notated musical elements (see part C of figure 1 below). Please notice that part B of this example closes with the left hand bowing the II and IV strings as harmonic dyads, while the right hand arrives at the fingerboard area near the nut (approx. 1st position) and with the fingers alternating in double stop between the B and III strings. The traditionally notated passage of part C, involves the same area of the fingerboard with the notated material developing from within the gesture of part B. Accordingly, the five-line stave can be combined with notations of compromised parts (paths/seyirs) between sounding-gestalts, thus significantly expanding the compositional and expressive possibilities (see part D of figure 1 below). All aforementioned extensions can be explored on the same piece of music, in different contexts, and involving any instrument of the violin family (solo, duets, chamber ensembles, string orchestras).

Apart from the aforementioned, and as future work, I aim to investigate ways in which the idea of time-frame values and graphic notation can be applied on fingering patterns too. Although still in experimental stages, a way this could be illustrated is shown in figure 2 below. I am also interested in exploring possible ways the notational style, types, and objects presented here can be applied on other instruments too. My piece, grace is nothing but stepping aside, for flute and computer, and circuit structures (II), comprovisation for any instrument of the flute family, which are both included on the main part of this thesis (please see booklets 5 and 6 respectively), are two examples towards this direction.
The piece consists of four sections. Apart from section A, it should be performed without rests/pauses, but rather as a continuous, swift and confident capriccio. Although all sound-configurations are coupled with a mezzoforte (mf) indication (denoting both their average dynamic level and the intensity of performance), section D can demonstrate a gradual transition from mezzoforte (mf) to mezzopiano (mp). With the exception of section A, the overall duration is ad libitum and should depend upon the performer's endurance (suggested: 5-7min). The spacing between sound-configurations does not aim to suggest a proportional structure; The flow of the piece depends upon the ways in which the performer modulates between sounding-gestalts.

A

B

C

D

approx. 30 - 50''

ad libitum

circuit structures (I)

for Nikolia

comprovisation for any instrument of the violin family including the double-bass (amplified)

duration

ad libitum (suggested: 5-7min)

Δηµήτρης Παπαγεωργίου

2014 - 2015

Bow both string I and the wooden purfling/moulding that exists between the instrument's belly and the waist rib.

Allow an abrupt ending.

repeat ad libitum (suggested: x1 repetition)

(CLO AO)CLH
The following diagram illustrates:

i) The numberings of the sounding-gestalts comprising the piece as these are listed in the library of sound-configurations booklet, followed by the pages these can be found (booklet 4).

ii) The corresponding audio recordings within the /USB/ library-recordings subfolder.

Any variances from the listed sound-configurations are mentioned and indicated accordingly.

Δηµήτρης Παπαγεωργίου
2014 - 2015
Dimitris Papageorgiou  
PhD in Musical Composition, 2017  
The University of Edinburgh  

grace is nothing but stepping aside  
for flute and computer  
2014 - 2016
Dimitris Papageorgiou
grace is nothing but stepping aside
for flute and computer
c. 30–33min
Edinburgh, 2014 - 2016

front cover image:
weathered occasions - photograph
Dimitris Papageorgiou, Edinburgh 2015
I would like to thank flautist Marina Tantanozi for accepting my initial request to write a piece for her back in 2011, for the amounts of tsipouro, meze, and laughs we had in Volos and Pelio the summer of 2014 when we committed in doing this, for our collaboration since then that undoubtedly passed from different phases and stages (I think we both learned a lot), for the trips back and forth from Zürich/Basel to Edinburgh and vice-versa, for the hours we stayed in Alison House in order to record all sound-cells included in the piece that allowed me to program the electronics (as well as many others, not included), and for the final recording(s) of the piece we did in July 2016 at the Reid Concert Hall -

- the piece is dedicated to her
**Thesis**

First title of the piece: a block of variable sensations

[...]

I say that I do philosophy, that I try to invent concepts. If I ask those of you who do cinema, what do you do? You do not invent concepts but blocks of movement/duration. Someone who makes a block of movement/duration might be doing cinema. This has nothing to do with invoking a story or rejecting it. Everything has a story. Philosophy also tells stories. Stories with concepts. Cinema tells stories with blocks of movement/duration. Painting invents an entirely different type of block. They are not blocks of concepts or blocks of movement/duration, but blocks of lines/colors. Music invents another type of block that is just specific. And alongside all of that, there is no less creative. I do not see much opposition between the sciences and the arts. If I ask scientists [...] do they create as much as an artist. It is not complicated, a scientist is someone who invents or creates functions [...] What is a function? A function occurs when there is a regulated correspondence between at least two sets [...] As soon as you put sets into regulated correlation, you obtain functions and you can say, "I am doing science" [...]

Gilles Deleuze, What is the Creative Act?

[...]

... Take as an example the case of Thomas Hardy: his characters are not people or subjects, they are collections of intensive sensations, each is such a collection, a packet, a block of variable sensations. There is a strange respect for the individual, an extraordinary respect: not because he would seize upon himself as a person and be recognized as a person, in the French way, but on the contrary because he saw himself and saw others as so many ‘unique chances’ – the unique chance from which one combination or another had been drawn [...]

Gilles Deleuze and Claire Parnet, On the superiority of Anglo-American literature.
In: Dialogues (1972), pp. 39 - 40

**Antithesis**

Second title of the piece: weathered melody

[...]

Music as well as painting has its subject as well as its surface. It appears to me that the subject of music, from Machaut to Boulez, has always been its construction. Melodies or twelve-tone rows don't just happen. They must be constructed. Rhythms do not appear from nowhere. They must be constructed. To demonstrate any formal idea in music, whether structure or stricture, is a matter of construction, in which the methodology is the controlling metaphor of the composition. But if we want to describe the surface of a musical composition we run into some difficulty [...]. While thinking about all this, I went to the telephone and called my friend Brian O'Doherty. "Brian," I asked, "what is the surface of music I'm always talking to you about? How would you define it or describe it?"[...] "The composer's surface is an illusion into which he puts something real – a sound. The painter's surface is something real from which he then creates an illusion." With such excellent results, I had to continue. "Brian – would you now please differentiate," I said, "between - a music that has a surface and a music that doesn't?" – "A music that has a surface contracts with time. A music that doesn't have a surface salutes to time and becomes a rhythmic progression." Now you know why I call Brian O'Doherty. When O'Doherty says that the surface exists when one constructs with Time, he is very close to my meaning, though I feel that the idea is more to let Time be, than to treat it as a compositional element. No – even to construct with Time would not do. Time simply must be left alone [...]. Picasso, who found Cubism in Cézanne, developed from this a system. He failed to see Cézanne's more far-reaching contribution. This was not how to make an object, not how this object exists by way of Time, in Time or about Time, but how this object exists as Time. Time regained, as Proust referred to his work. Time as an Image, as Aristotle suggested. This is the area which the visual arts later began to explore. This the area which music, dulled that it was counting down the seconds, has neglected [...]

Morton Feldman, Between Categories

[...]

Christian Wolff once remarked that eventually everything becomes melody. This is true. Time does untangle complexity. We are eventually left with the one-dimensional – with the face of the clock rather than the workings of its inner parts. Time in relation to sound is not unlike a surreal which enigmatic hard travels imperceptibly throughout its journey. But if sound has its nature almost being nature, let us then observe our sound in those moments when there is no longer even, just sound. Paradoxically, it is at this moment that time is less elusive. All shadows have left, leaving us a weathered object. In these moments time itself becomes less perceptible as movement, more with the face of the clock rather than the workings of its inner parts. Time regained, as Proust referred to his work. Time as an Image, as Aristotle suggested. This is the area which the visual arts later began to explore. This the area which music, dulled that it was counting down the seconds, has neglected [...]

Morton Feldman, Vertical Thoughts
In: Friedman, B.H. (edit) Give My Regards to Eighth Street (2000), pp. 15

**Fury**

Third title of the piece: grace is nothing but stepping aside

[...]

Music is not painting, but it can learn from this more perceptive temperament that waits and observes the inherent mystery of its materials, as opposed to the composers' vested interest in his craft [...]. The painter achieves mastery by allowing what he is doing to be itself. In a way, he must step aside in order to be in control. The composer is just learning to do this. He is just beginning to learn that controls that can be thought of as nothing more than accepted practice [...]

Morton Feldman, The Anxiety of Art
In: Friedman, B.H. (edit) Give My Regards to Eighth Street (2000), pp. 26

[...]

Whoever is nothing, whoever has nothing, passes and steps aside. From a bit of a force, from any force, from a thing, from any determination, the dancer, the dance step aside. The step is a step aside. Thus is movement born, thus is grace born. Grace is nothing, it is nothing but stepping aside. Thus is movement born, thus, perhaps is born time. Not to touch the ground with one's force, not to leave any trace on one's weight, to leave no mark, to leave nothing, to yield, to step aside. The dancer steps aside. Dance leaves the spot, it gives way to any other. Dance is Alba itself, it is its blank place. To dance is to step aside and make room, to think is only to step aside and make room, give up one's place. To leave at last the page blank [...]. Laughter is that little noise, uttered in blank ecstasy [...]. Thes is the action of putting something in a place. What is important is the place; and only then the manner of occupying it, of taking it, of holding it, setting oneself up there [...]. The antithesis immediately begins the battle, it is contemporaneous with the thesis, the noise is henceforth installed, stable, on the spot. I mean: on the board, on the canvas. And I had said: on the boards, on the stage. It has been said: in history [...]

Michel Serres, Genesis (1982), pp. 47 - 55
Introduction

grace is nothing but stepping aside was written in three phases between autumn 2014 and spring 2016, in Edinburgh. The piece has four sound sources: 1) a live amplified flute, tuned in A4 = 440Hz; 2) recording, playback, and processing of the flute signal using Macintosh computer (MacMSP patch tested in OSX 10.7.5) with 16Gb RAM; 3) a MIDI controller used by the computer performer (http://www.korg.com/us/products/computergear/nanokontrol2); 4) a third computer voice (computer voice playback). All sound sources are mixed, processed, and/or triggered by a MaxMSP patch 1 have developed (see please the grace.maxpat file residing within the USB/Grace.grace-is-nothing-but-stepping-aside.grace-path/ subfolder of the removable drive accompanying the thesis materials). The sound files were created with the aid of: 1) the Computer Loops Music Library (CLM) package, using the samp2.ins module developed by Michael Edwards and Jules Rawlinson; 2) the PaulStretch v2.2.2 Mac application developed by Paul Nasca; and, 3) the Logic Pro digital audio workstation. The aforementioned software have been used to apply several processing techniques (varispeed, effects) to various recordings of the acoustic part of the piece, as well as other material, performed by flautist Marina Tantanczio (15-19 December 2015 φ Reid School of Music studies).

The basic building/sounding block of the solo flute part (flute voice) is a bipolar element comprising of a sounding event (sound-cell) followed by a pause. There are forty-five (45) numbered sound-cells in the piece, scored as combinations and/or transitions between different breathing and/or embouchure techniques applied on various tones, harmonics, or multiphonics (see ‘Flute’ section on page 10). Although the general dynamic level of most first rehearsals: 1) a tempo mark of 30 bpm; and, 2) a suggested rhythmic (breathing) cycle as integer multiples of 3 beats (i.e. 3, 6, 9, etc. beats).

The piece has four sections given in the score as A, B, C, and D marks. Sections A and D are divided into two parts: A1, A2, and D1, D2 respectively. There are also four rehearsal points given within as R1, R2, R3, and R4 marks. The overall duration of the piece is divided in nine (9) subsections (or, time-frame durations) bound by a minimum and a maximum value, identified in the score as Clocks [1-9] (see ‘Time-frame durations and clocks’ paragraph on page 9).

General instructions

Computer/electronic requirements

Macintosh computer (MaxMSP patch tested in OSX 10.7.5) with 16Gb RAM; MaxMSP v7.3.1 application installed on your machine (http://www.fabfilter.com/products/pro-c-2-compressor-plug-in), and Pro Tools (www.alexhilton.net/A1AUDIO/index.php/a1stereocontrol); Spectral Freezing and Spectral Demaracter, part of the Spectral Library (beta 9) developed by Michael Norris (http://www.michaelnorriss.info/spectral); FabFilter Pro-Q1 (http://www.fabfilter.com/products/pro-q1-parametric-eq-plug-in); FabFilter Pro-C1 (http://www.fabfilter.com/products/pro-c1-compressor-plug-in) and FabFilter Pro-Q2 (http://www.fabfilter.com/products/pro-q2-parameter-eq-plug-in). The rest are freeware, and the versions mentioned here can be found within the USB/11_Misc/Freeware_Plugins/ subfolder of the removable drive accompanying the thesis materials. A diagram of the DSP structure of the MaxMSP patch developed for the piece is provided on page 13. Two versions of the on-stage signal schematic, depending on equipment needs, are given on page 14.

Computer layers

The basic building block of the MaxMSP patch used by the computer performer (http://www.korg.com/us/products/computergear/nanokontrol2); Performer’s controller: a MIDI Footswitch (one switch would suffice). The piece also requires that you have the following VST/AU plugins installed on your system: FabFilterPro-Q2 (http://www.fabfilter.com/products/pro-q2-parameter-eq-plug-in). All sound sources are recorded live with the aid of automated procedures incorporated in the MaxMSP patch (see Noise gate paragraph on page 9). These recorded sound-cells are either being played back (computer voice) while still being performed by the flautist so as to overlap the flute signal (canon) and the electronic background-noise created by the sound files; A process that could be imagined as waves appearing and disappearing. The second sound-cell is either the recorded sound-cell itself, or a sine wave oscillators bank layers; and, to process in real time both the live flute and the electronic background-noise (see also ‘Flute’ section on page 10). The time-length of a phrase depends on the same factors described in the previous paragraph, with the added parameter here being the overlapping sound-cell (computer voice playback). The latter’s inner movement emerges from and drops back to the background, as emerging from one sound-cell to the computer playback; Thus, creating longer phrases (3rd order building/sounding blocks). The time-length of a phrase is (upper) bounded by the maximum blowing (exhaling) timespan the performing of the techniques comprising the sound-cell, allows. Similarly, the duration of the second-order building/sounding blocks (sound-cell followed by a pause) is bounded by the memory of the computer performer, as given the variable temporal partitions of the piece (see ‘Time-frame durations and clocks’ paragraph on page 9).

Figure 1

Cues and overlaps

As mentioned in the introductory notes, the basic building/sounding block of the amplified flute voice is a bipolar element that emerges from ends and drops back to the background-noise, consisting of a sounding event (sound-cell) followed by a pause. A generic duration of the sound-cell is given in the score, is shown in Figure 1. All sound-cells are scored as combinations and/or transitions between different breathing and/or embouchure techniques applied on various tones, harmonics, or multiphonics (see ‘Flute’ section on page 10).

Second-order building blocks

As already mentioned, most sound-cells of the piece are recorded live with the aid of automated procedures incorporated in the MaxMSP patch, initialized when a red -Q- cue is triggered by the flautist. These live-recorded sound-cells are either played back (computer voice) while still being performed by the flautist so as to overlap the flute signal (canon) and the electronic background-noise created by the sound files; A process that could be imagined as waves appearing and disappearing. The second sound-cell is either the recorded sound-cell itself, or a sine wave oscillators bank layers; and, to process in real time both the live flute and the electronic background-noise (see also ‘Flute’ section on page 10). The time-length of a phrase depends on the same factors described in the previous paragraph, with the added parameter here being the overlapping sound-cell (computer voice playback). The latter’s inner movement emerges from and drops back to the background, as emerging from one sound-cell to the computer playback; Thus, creating longer phrases (3rd order building/sounding blocks). The time-length of a phrase is (upper) bounded by the maximum blowing (exhaling) timespan the performing of the techniques comprising the sound-cell, allows. Similarly, the duration of the second-order building/sounding blocks (sound-cell followed by a pause) is bounded by the memory of the computer performer, as given the variable temporal partitions of the piece (see ‘Time-frame durations and clocks’ paragraph on page 9).

Third-order building blocks

In a similar fashion, Figures 2 and 3 on page 8 illustrate the process where the flautist extends a canon by overlapping a new sound-cell to the computer playback; Thus, creating longer phrases (3rd order building/sounding blocks). The time-length of these longer sounding events depends on several factors described in the paragraphs above, with the added parameters here being the following: 1) The ways in which the joint inner movement and flow-pattern of all sound-cells are...
In fact, the MaxMSP patch includes two stopwatch-modules that do the above calculations. As mentioned earlier, triggered by the flautist)

The careful reader will notice that during procedure 2 (see figure 5), flute sound-cell (ii) is being recorded live, regardless of whether it is being used immediately as an overlapping playback, or, later on in the piece. This is true, and it relates with the fact that the flautist has to ‘open’ the noise gate module in order to initiate the automated recording process, and thus, allow the relevant stopwatch-modules of the Max patch to calculate and index the duration of sound-cell (ii) – i.e.time-span tii.

Note 4: It becomes apparent that by prolonging the triggering of Qj+1, the internal Max calculations will give a “spacious” lambda (λ) value for the performer to rest before playing sound-cells (ii) or (iii). This however will also require the durations of sound-cells (i) and (ii) – i.e. tii and tiii respectively – to be quite lengthy in order to allow an effective overlap with the computer voice playback. On the other hand, if TQj+1 is relatively short, then the internal Max calculations won’t give a lambda (λ) value that would allow the performer a comfortable enough rest before overlapping the computer voice with a new sound-cell; Something which, in the long run, can be rather tiring for the flautist.

Figure 2 and 3
Generic illustration of a second-order building/sounding block, as given in the score:

Figure 4 and 5
Generic illustration of a third-order building/sounding block, as given in the score:

NB: Illustrations within dashed boxes are NOT included in the score.
Note 5: Experience while rehearsing the compositions and discussions both with flautist Marina Tantanzio and other performers, suggest that the performing of the techniques comprising all sound-cells included in the piece allow a maximum lowering (exhaling) time-span that can range from 17 to 30 seconds. Similarly, the casura timespan the performer needs in order to rest her/his body after having played its paired sound-cell can range from 6 to 12 seconds. To give you an example, this means that if we have 16 sound-cells in the patch, a 5-recorded sound-cell is put in pre-amps, with overlapping the sound-cell, should be triggered at a time QTi > 8 seconds, resulting in a lambda (A) value sufficient enough for the performer to rest. The same holds for sound-cells recorded earlier, kept in memory and used as computer playbacks, in turn overlapped by new sound-cells performed by the flautist. In the cases, a framework like the one described above ensures that the formula: A × QTi + 1 sec + t = ti, won’t give a negative value.

Comment: Notes 4 and 5 above, along with the tempo mark and the rhythmic/breathing cycle suggested (see ‘Introduction’ notes and the score) are there to assist both performers (flautist/computer performer) towards exploring the performance practice and strategy the open-duration sounding blocks of the piece invite, and at the same time, to identify some (timing) problems/exploitative process might bring in the foreground. Following on from this, notes 4 and 5 should be just kept in mind while focusing on the five, far more important, performance parameters mentioned in the introduction. That is: 1) the inner movement and flow-pattern of each sound-cell as manifested by the combining or the transitioning between the suggested (see section on page 10); 2) the relationship of this signal to the ‘environment’ into which the ways in which all sound-cells block emerge from and drop back to the background-noise, as well as, the perceived rate of their appearance (see in-score instructions); and, 5) the variable temporal partials of the piece (see ‘Time-frame durations and clocks’ paragraph below).

Time-frame durations and clocks

The overall duration of the piece is divided in nine (9) variable temporal partials bound by a minimum and a maximum value, identified in the score as Clocks [0-9]. In other words, the composition is split into time-frame durations suggesting different time spans in which successive sounding blocks (i.e. sound-cells and phases) should be performed. These are given using the inequality chained notation borrowed from mathematics. For example, an indication of Clock [2]: 3 ≤ Ti ≤ 5.20 seconds suggests that the time-frame duration Ti of partition [i] should be greater than or equal to 3seconds, and less or equal to 5.20seconds. The flautist, and through the iPad/MIRA screen is provided with a visual stopwatch, allowing her/him to keep track of elapsed time-frame duration (see ‘iPad/MIRA’ paragraph on page 10). This stopwatch resets/restarts every time a cue point, coupled with one of the nine Clocks, is triggered.

Initializing the patch

The patch has been tested with the following audio-status setup: 44,100Hz SR, 512 I/O vector size, 64 signal vector size. At the top-right of the main patch window you can change the I/O and signal vector sizes if necessary (NB: The soundfiles are in 44,100Hz SR). Select the appropriate controllers (Mixing/Performer’s controller) from the relevant lists (bottom-right of screen), then by clicking the relevant toggle button you can set the relevant targets to either choose the main patch (the most relevant parameter to initialize for other modes - Rehearsal points’ paragraph below). Drag/Drop the subfolder named: ‘Voxengo IR’ (this can be found within the ‘/USB/1_Misc’ folder of the removable drive accompanying the thesis materials) in the relevant on-screen box. This will load the ‘Voxengo_IR’ (‘Voxengo IR’/impulse responses) for the two mics (this is one of the two subfolders used as IRs; you should load them separately as they have different impulse responses). Now you can click on the ‘load’ messaging to load the IRs I have chosen while composing/rehearsing the piece, or, select from the relevant list the IRs you prefer.

The flute should be amplified with the aid of two high-quality condenser mics (e.g. Schoeps MK6/cardiod, KM 140, KM 184). The flute signal is given approx. 246Hz with reference the A4 = 440Hz equal tempered scale), and a low-pass below 20000Hz with a slope of 6-12dB/octave. You can also apply some general and subtle-equalizing to the flute signal if necessary (e.g. lower some broadband frequency areas), and notch some room frequencies that might be creating feedback problems. Using the compressor vst plugin – numbered in the patch as ‘2_Fab-Filter Pro-C2(Mono).vst’ – apply some soft downward compression to the dynamic level of those sound-cells involving high pitch registers (e.g. cells: 9, 12), and raise slightly the overall intensity level of the signal. Although in this instance, the room acoustics and other circumstances such as the pre-amplifier/mic-gain, and the above-mentioned parameters set pre-amps in apply a high-pass filter above 100Hz with a slope of 6-12dB/octave (remember that the lowest possible concert-flute bite is B3, of approx. 246Hz with reference the A4 + 440Hz equal tempered scale), and a low-pass below 20000Hz with a slope of 6-12dB/octave. You can also apply some general and subtle-equalizing to the flute signal if necessary (e.g. lower some broadband frequency areas), and notch some room frequencies that might be creating feedback problems. Using the compressor vst plugin – numbered in the patch as ‘2_Fab-Filter Pro-C2(Mono).vst’ – apply some soft downward compression to the dynamic level of those sound-cells involving high pitch registers (e.g. cells: 9, 12), and raise slightly the overall intensity level of the signal. Although in this instance, the room acoustics and other circumstances such as the pre-amplifier/mic-gain, and the above-mentioned parameters set pre-amps in apply a high-pass filter above 100Hz with a slope of 6-12dB/octave.
graphic equalizers to apply some low and high pass filtering (30 - 20000Hz respectively), of a slope 6-12dB/octave, to narrow the spectrum of the two freezers. Some additional frequency notching of any penetrating flute/computer frequencies might still be causing feedback problems.

### Key to some general symbols used in the score

- **Generic notehead for normal tone**
- **Generic notehead for harmonic**
- **Generic notehead for multiphonetic**
- **Semitone sharp**
- **Quarter-tone sharp**
- **Somewhat higher**
- **Semitone flat**
- **Quarter-tone flat**
- **Somewhat lower**
- **Oscillations and Pitch bend**
- **Oscillations and Pitch bend cycles**
- **Structured improvisations**

### Basic blowing/embouchure techniques used in the piece

- **Air-noise with minimum tone possible**
- **Normal tone (clear and stable, as possible)**
- **50% normal tone, 50% air noise**

**fr.** Frullato - dental/alveolar consonant [r] trill

**ord.** Ordinario (cancells fr.)

All sound-cells included in the piece incorporate the above five basic blowing/embouchure techniques to demonstrate either static, or aggregated sound qualities suggested by the notated combinations between them. The latter have been arranged in the following manner: 1) Transitions; 2) Extended transitions; 3) Oscillations and Pitch bend cycles; 4) Combined categories; and, 5) Structured improvisations. The duration of all sound-cells is (upper) bounded by the maximum blowing (exhaling) time-span of the performing techniques they involve, allows. Similarly, the duration of the pause that follows – apart from those cases that is calculated as time lambda (Δ) – is (lower) bounded by the caesura timespan the performer needs in order to rest after having applied the accent. Be that as it may, the accent, or, each ensuing event, should be approached in accordance to the five performance parameters mentioned in the introduction.
1. Transitions
A ➔ B  Change gradually and in a linear way (transitioning rate of constant speed) from technique A, to technique B, passing through all states in between.

\[ \begin{align*}
\text{fr.} & \rightarrow \text{ord. fr.} \\
\end{align*} \]

\[ \begin{align*}
\text{e.g.} & \quad \begin{array}{c}
0 \rightarrow 1 \\
1 \rightarrow 2 \\
2 \rightarrow 3 \\
3 \rightarrow 0
\end{array}
\end{align*} \]

2. Extended transitions
A ➔ B ➔ A  Change gradually and in a linear way (transitioning rate of constant speed) from technique A, to technique B, back to A (feedback-loop) passing through all states in between.

\[ \begin{align*}
\text{fr.} & \rightarrow \text{ord. fr.} \\
\end{align*} \]

\[ \begin{align*}
\text{e.g.} & \quad \begin{array}{c}
0 \rightarrow 1 \\
1 \rightarrow 2 \\
2 \rightarrow 3 \\
3 \rightarrow 0
\end{array}
\end{align*} \]

Note 1: Another way to imagine Transitions and Extended transitions categories, is to think of them as a gradual cross-fading from technique A, to technique B. Note that each maximum (A or B) should be clearly distinguishable the very moment of its appearance (i.e. starting, and ending points for Transitions; starting, intermediate, and ending points for Extended transitions) and only then. The requirement of a constant speed movement between maxima, suggests that their perceived rate of emergence should be balanced. Thus, and in order for the duration of the transition phases to be symmetrical, the flautist needs to appropriately micro-partition a sound-cell’s (open) duration, given the rest of performance parameters.

3. Oscillations and Pitch bend cycles
When the graphic rhythmic notation symbol of ‘irregularity/randomness’ is combined with the Extended transitions category and with the latter noted using the feedback-loop sign, then the integer value above the symbol denotes the number of successive repetitions (Oscillations). Note that the end point of the first oscillation, is the starting point of the second one (and so on), and that all repetitions should develop in a linear manner, demonstrating a transitioning rate of constant speed. Here too, each maximum should be clearly distinguishable the very moment of its appearance and only then.

\[ \begin{align*}
\text{fr.} & \rightarrow \text{ord. fr.} \\
\end{align*} \]

\[ \begin{align*}
\text{e.g.} & \quad \begin{array}{c}
1 \rightarrow 2 \\
2 \rightarrow 3 \\
3 \rightarrow 1
\end{array}
\end{align*} \]

Note 2: All five static blowing/embouchure techniques, as well as their aggregated categories (Transitions, Extended transitions, and Oscillations) can co-exist with the pitch bend technique, and thus jointly influencing the inner movement and flow pattern of a sounding event. The nomenclature used in the score for the pitch bend, which will always be given on the second line of the notational scheme (see figure 6 on page 10), is the following:

Pitch bend

\[ \begin{align*}
\text{fr.} & \rightarrow \text{ord. fr.} \\
\end{align*} \]

\[ \begin{align*}
\text{e.g.} & \quad \begin{array}{c}
\downarrow \rightarrow \uparrow \\
\uparrow \rightarrow \downarrow
\end{array}
\end{align*} \]

\[ \begin{align*}
\text{The symbol } \downarrow \rightarrow \uparrow \text{ indicates the downward and upward movement (cycle) to the lower (fd) and upper (fu) limits possible, for a particular tone (f). Pitch bend cycles (apart from exceptions; see Structured improvisations category on page 12) should develop in a linear manner (i.e. demonstrating a transitioning rate of constant speed) starting from the centre (f); moving first downwards, reaching (fd); then, passing through (f) upwards reaching (fu); arriving back to the centre (f). One cycle = f • fd • f • fu • f.}
\end{align*} \]

\[ \begin{align*}
\text{Type 1: } \text{“to ascend” or “to develop”}
\text{The symbol suggests a gradual development from state A to state B. The coupled verbs denote the difference in the amount of “physical effort” (E) required, with E_s > E_a.}
\end{align*} \]

\[ \begin{align*}
\text{Type 2: } \text{“to descend” or “to drop”}
\text{The symbol suggests a gradual development from state A to (mirrored) state B. The coupled verbs denote the difference in the amount of “physical effort” (E) required, with E_s > E_a.}
\end{align*} \]
Structured randomness, is when used with sound-cells involving relevant notational devices that invite a transitioning rate of constant speed between them. The only case that the graphic rhythmic notation sign of ‘irregularity’ aims to, indeed, suggest is the requirement for a linear development and a transitioning rate of constant speed. In other words, the idea of ‘irregularity’ signified by the sounding event; and, ii) the requirement for the flautist to devise an appropriate strategy for micro-partitioning a sound-cell’s duration. There are a couple of sounding events in the score that provide a setting for structured improvisation. In particular, sound-cells 26, 27, 28, and 29. In these cases, the combinations between blowing/embouchure techniques are given using the notational device presented below:

"to manifest itself"
A and B combined to produce

B

A

joined together to create something new

Note that here, the relevant graphic rhythmic notation symbols denoting ‘random/irregular’, used in combination with the notational devices suggesting Oscillations between different blowing/embouchure techniques, are coupled with the abbreviation AL (ad libitum). This is used to indicate that an amount of performative randomness should be introduced in regards to both the duration of the Extended transitions comprising the Oscillations gestures, and the time-point that individual maxima emerge, with the number of successive repetitions being ad libitum. In other words, the graphic sign in combination with the AL sign, cancels the requirements for a linear development and a transitioning rate of constant speed. Following on from the above, the illustration below suggests a way in which sounding events 26, 27, 28, and 29, can be ‘broken’ into their constituent elements:

In a similar fashion, the graphic rhythmic notation symbol of the pitch bend technique that joins the flow pattern of the blowing/embouchure gestures noted above, is also coupled with the abbreviation AL (ad libitum). This is used to denote that an amount of performative randomness should be introduced in regards to the duration of the pitch bend cycles comprising the gesture; the upper (fu) and lower (fd) maxima that can be any value within the limits possible for a particular tone (f); and, the time-points that individual maxima emerge, with the number of successive repetitions being ad libitum. In other words, it cancels the requirement for a linear development and a transitioning rate of constant speed.

General comment: It is important to note, that when the graphic rhythmic notation symbol denoting ‘random/irregular’ is used with Oscillations. Pitch bend cycles and Combined categories it aims to emphasize: i) the open/irregular duration of a sounding event; and, ii) the requirement for the flautist to devise an appropriate strategy for micro-partitioning a sound-cell’s open duration. In other words, the idea of ‘irregularity’ signified by the graphic rhythmic notation symbol, does not aim to suggest in these cases that the instrumentalist should add an amount of performative randomness to the appearance rate the individual maxima comprising the gesture demonstrate, since this would contradict the requirement for a transitioning rate of constant speed between them. The only case that the graphic rhythmic notation sign of ‘irregularity’ aims to, indeed, suggest randomness, is when used with sound-cells involving relevant notational devices that invoke Structured improvisation (see below):

4. Structured improvisations
There are a couple of sounding events in the score that provide a setting for structured improvisation. In particular, sound-cells 26, 27, 28, and 29. In these cases, the combinations between blowing/embouchure techniques are given using the notational device presented above:

"to manifest itself"
A and B combined to produce

A

B

joined together to create something new

As mentioned, the aim of these sound-cells is to provide the flautist with a setting for structured improvisation. The goal here is to allow unexpected sounding qualities to emerge, as these are generated by both the amount of (controlled) randomness introduced, and the dissociated gestures that are coupled in-time through interference.

Dynamics
All sounding events (apart from exceptions given as comments within the score) should create the feeling that emerge from and drop back to the electronic background-noise. In the context of this particular piece however, this articulation is not always a matter of a subtle crescendo or decrescendo. It rather depends on the attack of the sound, the suggested each time blowing/embouchure techniques, as well as the inner movement of a sound-cell. Following on from this, the score indicates only general dynamic levels (which in most cases are pianissimo), and thus, the flautist should ensure that her/his sounding-gestures develop in such a way as to create the feeling of a subtle swelling from the background-noise. Please note however, that this swelling should be created by the global flow pattern of a sounding event and by the manners in which the latter interacts with the background noise. A naïve and repetitive dynamic emphasis on the individual maxima a gesture might comprise (e.g. clear tones, high/low pitch bend limits etc.) should be avoided.

Microtones - Multiphonics
The fingering tabulations of all microtones and multiphonics given in the score, are following the fingering charts provided in the book: “The Techniques of Flute Playing” (Die Spieltechnik der Flöte, Bärenreiter, 2004) by Carin Levine & Christina Mitropoulos-Bott, pp. 65 - 138. In most cases the score provides the flautist with two fingering options. The choice between the two should always balance the following three parameters:

1. The fingerings should allow an accurate performance of the transitions and/or combinations of the blowing/embouchure techniques applied, rendering as transparent as possible all desired sounding qualities, as well as the inner movement and flow pattern of a sound-cell.
2. The resulting tone (microtone), or constituent tones (multiphonics), should be in-tune with the electronic background-noise.
3. The resulting tone (microtone), or constituent tones (multiphonics), should generate a good approximation of the interval (semitone, or quarter-tone) when compared with their respective natural.
Generic symbol used in the score for rests/pauses

- **Fermata**
- **Short fermata**
- **Long fermata**

All rest/pauses of the piece which are not defined by a lambda (λ) duration value, are combined with a fermata symbol. These should be understood as a qualitative representation of the pause-time, assisting the flautist towards her/his partitioning strategy of the individual sections of the piece given the latter’s time-frame durations and suggested rates of emergence (see in-score instructions).

**NB:** Rests that follow second- and third-order sounding blocks where the computer has the last sounding-voice of the phrase, should be understood as pauses that are to be performed by the flautist after the computer playback has completely faded-out.

**General suggestions to the performer:**

1. Although this is something entirely left to the flautist to decide, my general suggestion would be to first practice all sound-cells with each having a duration equal to the maximum exhale possible for the combinations of techniques they involve. This will allow you to develop an understanding of the inner movement and flow pattern of each sound-cell, and to also experience the pause timespan your body requires to rest after playing each sounding event. By keeping the parameter of duration dependent to the reactions of your body will also allow you to understand the manner in which you need to partition the duration of each sound-cell, and thus foresee the ‘unexpected’ when you will explore their open durations in combination duration dependent to the reactions of your body will also allow you to understand the manner in which you need to partition the duration of each sound-cell, and thus foresee the ‘unexpected’ when you will explore their open durations in combination with the background-noise, the DSP effects, and the rest of the performance parameters the piece suggests.

2. Although the setup of the automated recording process (see [p. 7] sub-patch) involves strategies for eliminating noise gate 2.

**Other symbols**

Red lines (see also ‘General instructions’ paragraph on page 7) are used to indicate sounding-events, i.e. sound-cells or phrases. In the former case these are combined with the abbreviation sc, while in the latter with the abbreviation phr. Blue lines are used to indicate computer overlaps.

All cue points (Q, Q, or Q) are combined with an indication of the main processes triggered at that point: Rec_buf# indicates the buffer the sound-cell is currently being recorded (six buffers in total, see main patch window); Play_buf# indicates the buffer currently being played-back always combined with the quartet tone pitch shift applied as PS = i (with i, a positive or negative integer, e.g. i = 1 means a quarter tone higher, i = -1 means a quarter tone lower); FrFl, and FrC suggest that the flute/computer freezer effects are initiated; RmFl and RmC suggest that the flute/computer ring modulation effects are initiated (combined with an indication of the modulation frequency, or a glissando between different mod frequencies); Delay suggests that the delay effect is initiated; S1, S2, S3, S4, S5, S6, S7 indicate that signal will pass through the respective on-screen sound-files’ faders; Oscet and OscRm suggest the number of oscillator bank currently active (three in total, each with ring modulation applied, with triangle waves as modulators, see [p. 7] sub-patches); E3, D1, C1 suggest the triggering of the low pitch sinewaves drones the piece involves (see [p. 7] sub-patches). Most of the above are combined with the < > symbols indicating fade-in/out.
grace is nothing but stepping aside

on-stage signal schematic depending on equipment available

Flautist
(2 high quality condenser air-mics/1 miniature mic)

Distance ($D_1$) of flautist from (main) front speakers approx. $2m \leq D_1 \leq 4m$

Distance ($D_2$) between main and secondary front speakers approx. $0.3m \leq D_2 \leq 1m$

Speakers L1 and R1 should be placed at flautist’s shoulder level. Speakers L2 and R2 should be placed approximately 0.5-1m higher than L1 and R1, creating a slightly wider stereo field than L1/R1 (approx. 0.5-1m further left/right from L1/R1 respectively). Note that in the context of the piece we do not (necessarily) mind the short phase offset to the output sound created from the (width) distance between L1/R1 and L2/R2 speakers (approximated values: $0.3m \leq D \leq 1m \Rightarrow 0.87ms \leq T \leq 2.91ms \Rightarrow 1149Hz \geq F \geq 343Hz \Rightarrow P \geq P2 = E4$), as long as this offset is not causing significant distortion and is not creating a “heavy” comb filtering effect. The aim here is to create a “wall of sound.” That said, using the mixing desk faders adjust dB levels of the secondary front speakers in accordance to the above, trying also to compensate any feedback problems that might emerge. Depending on the actual space the piece is to be performed each time, adjust accordingly the length distance of all speakers from the flautist. The levels of individual electronic layers send to the flautist’s headphones should be mixed internally using the sound-card’s mixer, by assigning the desired software outputs (dac~ max object) to the relevant headphones hardware-output.
grace is nothing but stepping aside
for flute and computer

Δηµήτρης Παπαγεωργίου
2014 - 2016

Tempo = 60bpm
Rhythmic cycle: Integer multiples of 3 beats (i.e. 3, 6, 9, ... etc.)

For the time-frame duration of section A (clocks [1] and [2]), all sounding events (sound-cells, as well as, phrases) combined with rests, should appear from the background noise (sound files) in such intervals as to allow the audience to perceive that their rate of emergence grows exponentially, and that the overall musical time and form develop towards sound-cell 9.

For the time-frame duration of section A (clocks [1] and [2]), all sounding events (sound-cells, as well as, phrases) combined with rests, should appear from the background noise (sound files) in such intervals as to allow the audience to perceive that their rate of emergence grows exponentially, and that the overall musical time and form develop towards sound-cell 9.

With an almost imperceptible attack. Note that the recording of cell 8 will overlap cell 10.

Note for sound-cell 9:

At the beginning of the gesture your aim should be to yield a warm air-noise sound on the C4 fingering (fundamental). In order to perform a clear and stable tone in the intermediate part of the gesture you have to prepare your embouchure for the harmonic. This, and while transitioning, will yield a warm hiss noise. That said, you should allow the harmonic to softly emerge from the impetus of the hiss noise part of your transition. The same accounts for the second transition, i.e. from the harmonic tone you should transition to a warm hiss noise, to a warm air-noise sound on C4.
Rehearsal point 2: MIRA/Max patch rewind cue = 14 | Ready for cue 15

A < TQ16 - 2" + t4 - t10

Wait for the sound files to fade-out and the sinewaves to establish before playing cell 10.

With an almost imperceptible attack.

A < TQ23 - 2"

Aim to play sound-cell 13 approx. 50-60'' after the start of section B and clock [4].

There are the two extended transitions suggested here (dashed box). Choose the one you find is more suitable to the created musical context.

Think of the final transition to air-noise as the ending of the whole phrase and partition the duration of the cell accordingly.

For the time-frame duration of section B (clock [4]), all sounding events combined with rests, should appear from the background noise in such intervals as to allow the audience to perceive that their rate of emergence remains constant, and that the overall musical time and form develop towards cell 19.

Clock [4]: 4' ≤ T4 ≤ 4'20"

Clock [5]: 2' ≤ T5 ≤ 2'30"

Aim to play sound-cell 13 approx. 50-60'' after the start of section B and clock [4].

There are the two extended transitions suggested here (dashed box). Choose the one you find is more suitable to the created musical context.

Think of the final transition to air-noise as the ending of the whole phrase and partition the duration of the cell accordingly.

For the time-frame duration of section B (clock [4]), all sounding events combined with rests, should appear from the background noise in such intervals as to allow the audience to perceive that their rate of emergence remains constant, and that the overall musical time and form develop towards cell 19.

Clock [4]: 4' ≤ T4 ≤ 4'20"

Clock [5]: 2' ≤ T5 ≤ 2'30"
Section C (clock [6]) should be understood as a long phrase; a continuous sounding exhale that passes through different phases.

Clock [6]: $4' \leq T \leq 4' 20''$

Clock [6] starts with Q32

Rehearsal point 3: MIRA/Max patch rewind cue = 29

Ready for cue 30

Allow the flow of the piece to "stop" here for a while before moving to section C.

Start playing cell 20 slightly before the sound files fade-out completely. Choose the tone whose pitch-bend, sounds better in-tune with the sinewaves.

With an almost imperceptible attack. Your crescendo should follow the fade-in of the sound files.

With an almost imperceptible attack. Note that the recording of cell 22 will be played back while performing cell 24.

Allow the flow of the piece to "stop" here for a while before moving to section C.

Somewhat tight in duration. Create the feeling that the flow of the piece "moves" towards cells 26, 27, 28, 29.

Note that the recording of cell 26 will also be played back while performing cell 28.

Note for Clock [6]:
You should think that Clock [6] and section C consist of three sub-parts:

Sub-part 1: From sound-cell 21 until the beginning of sound-cell 26; Aim to perform this within approx. 2 min

Sub-part 2: From sound-cell 26 until the beginning of sound-cell 30; Aim to perform this within approx. 1 min

Sub-part 3: From sound-cell 26 until the beginning of sound-cell 34; Aim to perform this within approx. 1 min

Note that the recording of cell 26 will also be played back while performing cell 28.
Note:
For the part of the phrase comprising sound-cells 30, 31, 32, 33 and 34, allow some longer computer overlap durations, so as to create the feeling that the piece “moves forward” in a slightly different rate. However, do so without dropping below the TQj < 8 seconds limit, as this will lead to lambda (λ) values less than 6 seconds (see also ‘General Instructions’ on page 7).
For the time-frame duration of sub-part D1 (clock [8]), all sounding events combined with rests should appear from the background noise in such intervals as to allow the audience to perceive that their rate of emergence remains constant, and that the overall musical time and form develop towards cell 45.

Clock [8]: $4' \leq T_{9} \leq 4'3''$

Clock [8] starts with Q59

Note that the recording of cell 37 will overlap cell 40.

D2 For the time-frame duration of sub-part D2 (clock [9]), all sounding events combined with rests, should appear from the background noise in such intervals as to allow the audience to perceive that their rate of emergence decays exponentially, and that the overall musical time and form reach their closing point.

Clock [9]: $T_{9} = 3'$

Clock [9] starts with Q70

Repeat ad libitum slowly reducing the duration of the sound-cell, and increasing the pause duration, while applying a gradual decrescendo. Aim to finish together with the electronics fade-out.

Q71/Q72 [close everything]

Wait for the sound files to fade-out completely and the sinewaves to establish before playing cell 35.

Note for sound-cells 35/36:
The duration of both should be approx. equal. At the same time (and for these two sound-cells only) do not perform them with a subtle swelling from the background. Instead, imagine these as two sounding-blocks that their levels appear to be slightly above the electronics (from the very beginning of their entrance point), and that suddenly stop.

D For the time-frame duration of sub-part D1 (clock [8]), all sounding events combined with rests, should appear from the background noise in such intervals as to allow the audience to perceive that their rate of emergence remains constant, and that the overall musical time and form develop towards cell 45.

Clock [8]: $4' \leq T_{9} \leq 4'3''$

Clock [8] starts with Q59

Note that the recording of cell 37 will overlap cell 40.

For the time-frame duration of sub-part D2 (clock [9]), all sounding events combined with rests, should appear from the background noise in such intervals as to allow the audience to perceive that their rate of emergence decays exponentially, and that the overall musical time and form reach their closing point.

Clock [9]: $T_{9} = 3'$

Clock [9] starts with Q70

Repeat ad libitum slowly reducing the duration of the sound-cell, and increasing the pause duration, while applying a gradual decrescendo. Aim to finish together with the electronics fade-out.

Q71/Q72 [close everything]

Note for the computer performer:
Slowly bring down faders ‘FL_Comp’, ‘Freezer’, ‘S1’, ‘S2’, and ‘Sinewaves’, following flautist’s decrescendo. You should aim to finish the fade-out together. In case you are in Rehearse Mode 3, then the relevant qlist .txt file includes four more cues (71, 72, 73, 74), that activate the playback of four more pre-recorded flute samples imitating the decrescendo. In this case, cues 75/76 will close DSP.
circuit structures (II)
comprovisation for any instrument of the flute family
2015 - 2016

Dimitris Papageorgiou
PhD in Musical Composition, 2017
The University of Edinburgh
Dimitris Papageorgiou

_undertakes to provide_ for any instrument of the flute family (amplified)
duration: ad libitum (suggested 10-12min)

Edinburgh, 2015 - 2016

front cover image:

Dimitris Papageorgiou, Kythira 2015
The corrective nature of art

[...] What the unaided consciousness can never appreciate is the systemic nature of mind [...] mere purposive rationality unaided by such phenomena as art, religion, dream, and the like, is necessarily pathogenic and destructive of life; its virulence springs specifically from the circumstances that life depends upon interlocking circuits of contingency, while consciousness can see only such short arcs of such circuits as human purpose may direct [...] that is the world that we live in—a world of circuit structures—and love can survive only if wisdom (i.e. a sense or recognition of the fact of circuitry) has an effective voice [...] if art has a positive function in maintaining what I called “wisdom,” i.e in correcting a too purposive view of life and making the view more systemic, then the question to be asked of the given work of art becomes: What sorts of correction in the direction of wisdom would be achieved by creating or viewing this work of art? The question becomes dynamic rather than static.

Analysis of Balinese Painting

[...] the skill is first in maintaining and then in modulating the redundancies [...] The uniformity of the lower-level redundancy must be modulated to give higher orders of redundancy. The leaves in one area must be different from the leaves in another area, and these differences must be in some way mutually redundant; they must be part of a larger pattern [...] This principle is basic and accounts, I suggest, for the almost universal linkage in aesthetics between skill and pattern. The exceptions—e.g. the cult of natural landscapes, “found objects,” inkblots, scattergrams, and the works of Jackson Pollock—seem to exemplify the same rule in reverse. In these cases, a larger patterning seems to propose the illusion that the details must have been controlled. Intermediate cases also occur: e.g., in Balinese carving, the natural grain of the wood is rather frequently used to suggest de-tails of the form or surface of the subject. In these cases, the skill lies not in the draftmanship of the details, but in the artist’s placement of his design within the three-dimensional structure of the wood. A special “effect” is achieved, not by the mere representationalism, but by the perceiver’s partial awareness that a physical system other than that of draftmanship has contributed to determine his perception.

Composition

[...] the crux of the picture is the interwoven contrast between the serene and the turbulent [...] I can now attempt an answer to the question posed above: What sorts of correction, in the direction of wisdom, could be achieved by creating or viewing this work of art? [...] the picture can be seen as an affirmation that to choose either turbulence or serenity as a human purpose would be a vulgar error. The conceiving and creating of the picture must have provided an experience which exposed this error. The unity and integration of the picture assert that neither of these contrasting poles can be chosen to the exclusion of the other, because the poles are mutually dependent. This profound and general truth is simultaneously asserted for the fields of sex, social organization, and death.

Excerpts from Gregory Bateson’s essay: Style, Grace, and Information in Primitve Art
Introduction

*circuit structures (II)* was written in two phases between autumn 2015 and summer 2016 in Edinburgh, and it is the second in a series of pieces under the same title. The piece involves a notated path between sound-configurations, with the aim to generate a *comprovisation* setting for any instrument of the flute family. Although it has been composed while having in mind the western concert flute family members, the piece can also be explored by performers playing instruments of the eastern flute-family that are either side-blown, or, end-blown, and open-ended (e.g. bansuri, dizi, kaval, ney, shakuhachi, etc.).

**Important note:** This booklet contains the instructions and the key to symbols. The performance score (width x height: 123x42cm) resides within *Tube 2* accompanying the submission.

Amplification

The piece requires the flute to be amplified with the aid of either two (2), or four (4) high-quality condenser microphones (e.g. Schoeps MK6/cardioid, KM 140, KM 184). Two technical setups can be applied: 1) You can either use a computer with MaxMSP installed; send all four mic signals to a sound-card, passing the live-mix to two high-quality powered speakers; and, perform the piece with the aid of *circuit_structuresII.maxproj* residing within the /USB/7_circuit-structuresII/circuit_structuresII-patch/subfolder of the removable drive accompanying the thesis materials; or, 2) You can send all four mic signals to a mixing desk – preferably with on-board electronic effects – in turn connected to a stereo speaker system. The two (or, four) input channels should be panned according to the relative on-stage position of the microphones with the actual panning amount depending on the room acoustics and the perceived stereo image. The latter should be wide enough, but without creating the feeling of a “gap” in the centre of the stereo field. Depending on the room acoustics, a small amount of reverb could also be added. Note that the aforementioned technical requirements are incorporated and can be adjusted accordingly from within the MaxMSP patch accompanying the score (please see the [p setup] sub-patch residing on the parent patch window of *circuit_structuresII.maxproj*).

In case the piece is to be performed with an instrument whose body extends horizontally, or, in a quasi parallel direction to the ground, then the position of the microphones could follow the diagram below:

![Diagram of microphone setup at a horizontal angle to the ground.](image)

In case the piece is to be performed with an instrument whose body extends (quasi) vertically, or, requires a peg in order for the performer to customize its height, then the position of the microphones could follow the diagram below:

![Diagram of microphone setup at a vertical angle to the ground.](image)

Although there are different stereo microphone techniques that could be applied, in this particular case is preferable to use a setup similar to the suggested diagrams, and solve any phase-related problems through experimentation, combined with careful consideration and positioning of the microphones. The reason is that, here, we are very much interested in making more prominent any sounds that can emerge from the open parts of the instrument’s body (i.e. open key holes/opening end). The aim is to amplify, localize, and combine these isolated sounds with the sounds emerging closer to the mouth hole, in order to create a rich stereo image and to render these quasi “movements” within the stereo field as another performative aspect adding to the musical time, form, and theatricality of the piece. That said, and borrowing Gregory Bateson’s words, the intention here is to understand the stereo field as “the natural grain of the wood”; the other physical system that equally contributes in determining the perception of the experience.

**Comment:** In case you are planning to use the MaxMSP patch accompanying the score, please note that further strategies for solving any phase-related issues between the microphones signals are implemented within.

With the above in mind, and depending on the room acoustics, the position of the speakers could also be decided through experimentation. Below are two suggested setups. The arrows indicate the direction of sound.

1. ![Diagram of microphone setup at a horizontal angle to the ground.](image)

   ![Diagram of microphone setup at a horizontal angle to the ground.](image)

   **Two versions of the on-stage signal schematic, depending on equipment available, are given on page 10.**

Key to symbols

Different vowels used in the score to indicate a change in the form of the oral cavity, written phonetically

*[a]* car  
*[e]* let  
*[i]* free  
*[o]* thought  
*[u]* boot
Pronunciation of velar consonants used in the score, written phonetically

[k] caught
[g] gaggle
[x] loch (Scottish)
[γ] damalige (German)

Blowing/Embouchure techniques

- Air noise with minimum tone possible
- Normal tone (clear and stable, as possible)
- Normal tone 50% - Air noise 50%
- [r] trill
- Ordinario (cancells fr.)
- Open mouth hole as in normal tone production
- Half-closed mouth hole
- Closed mouth hole; blow directly into the tube
- Inhale/exhale without moving the flute away from the mouth and without allowing air to flow into the tube
- Inhale/exhale into the tube with either all flute-holes, or, those indicated by the current pitch of choice, closed (select ad libitum between the two situations)
- Inhale/exhale into the tube with open flute-holes

Transitions

A → B Change gradually and in a linear way from technique A, to technique B, passing through all states in between.

Oscillations

A ↔ B Oscillate in a quasi feedback-loop, from sound, technique, way of playing (etc.) A, to sound, technique, way of playing (etc.) B, back to A, gradually passing through all states in between.

Note 1: Another way to imagine transitions and oscillations, is to think of them as a gradual cross-fading from technique A, to technique B. Note that each maximum (A or B) should be clearly distinguishable the very moment of its appearance (i.e. starting, and ending points for transitions; starting, intermediate, and ending points for oscillations), and only then. However, the perceived rate in which individual maxima emerge does not necessarily have to be constant (see 'Graphic rhythmic notation' and 'Time-frame durations' paragraphs below).

e.g.

Oscillations

A → B

Graphic rhythmic notation

Time-frame durations

1) When the graphic rhythmic notation symbol denoting 'random/irregular' is combined with individual events, then, it indicates that an amount of performative randomness should be introduced in regards to both the succession of these events, and their duration.

For example, the following notation can be understood as:

X Y H = X Y H Y X H etc...

or, any other sequence of (X, Y, H) and in any order, that can emerge in-time, through performance.

2) When the graphic rhythmic notation symbol denoting 'random/irregular' is combined with oscillations/feedback-loop transitions, then the former indicates that an amount of performative randomness should be introduced in regards to the duration of a single oscillation as a whole, with the actual time-point of arrival to the second element of the loop being ad libitum.

For example, the following notation can be understood as:

However, and in both previous cases, the amount of irregularity in regards to the duration of individual events, is always bound to a time-frame duration (t) indicated by a symbol of the form A[B] shown in brackets above the graphic rhythmic notation sign, with numerals A and B denoting seconds.

e.g.
The temporal duration span of individual events comprising a gesture is given by the following inequality:

\[ A \leq t \leq B \]

For example, the notations below can be understood as:

\[ 2 \leq t \leq 12 \quad \Rightarrow \quad 2\text{sec} \leq \text{time-frame} \leq 12\text{sec} \]

\[ X \quad Y \quad H \]

\[ X \quad H \quad Y \quad Y \quad X \quad H \quad \text{etc.} \]

\[ 3 \leq t \leq 9 \quad \Rightarrow \quad 3\text{sec} \leq \text{time-frame} \leq 9\text{sec} \]

\[ X \quad Y \]

\[ X \quad Y \quad X \quad Y \quad Y \quad X \quad \text{etc.} \]

Note 2: It is really important to become clear that the idea of time-frame does not refer to the duration of the gesture as a whole. Rather, it should be understood as a variable temporal partition bound by a minimum and a maximum value, denoting the duration of individual events (with/without feedback-loop), which, when combined, constitute the gesture.

Note 3: A similar notation is also used in the score to indicate the time-frame duration of single events.

\[ \text{e.g.} \quad \text{2[12]} \]

Note 4: The graphic rhythmic notation sign suggesting ‘random/irregular’ can also be combined with only numeral [B] to indicate that events should have a fixed duration equal to the number within brackets.

\[ \text{e.g.} \quad \text{3[9]} \]

Here, although the succession/sequence of (X, Y, H) events is random, their individual durations are determinate, i.e. \( t = 6\text{sec} \).

Note 5: When the word \( \text{max} \) is given within brackets, then it suggests the maximum duration possible for this particular technique.

\[ \text{e.g.} \quad \text{[max]} \]

Note 6: Similarly, when the abbreviation AL is given within brackets [AL], then it suggest that the duration of the event is ad libitum.

\[ \text{e.g.} \quad \text{[AL]} \]

Note 7: Time-frame durations can also be given as fractions of one second.

\[ \text{e.g.} \quad \text{1/3[5]} \quad \Rightarrow \quad \frac{1}{3} \leq t \leq 5 \quad \Rightarrow \quad \frac{1}{3}\text{sec} \leq \text{time-frame} \leq 5\text{sec}, \text{with } \frac{1}{3} \text{ being equal to the duration of one triplet quaver,} \]

\[ \text{in Tempo: [crotchet = 60bpm]} \]

Pitch bend:

\( \text{Pitch bend using the embouchure} \)

Usually combined with a symbol of the form \( \bigvee \bigwedge \) indicating the upward and downward movement to the upper (\( f_u \)) and lower (\( f_d \)) limits possible for the pitch (f) chosen.

\( f_u \)

\( f_d \)

Note 8: When the pitch-bend symbol is combined with graphic rhythmic notation, then the design of the graph indicates the spatio-temporal gestalt character of the pitch-bend gesture as a whole.

\( \text{e.g.} \quad \text{[9][1]} \)

The sounding-event which is bound here by the suggested time-frame duration values (i.e. \( \frac{1}{2} \leq t \leq 1 \)), is the transitioning rate (i.e. speed) between the (\( f_u \)) and (\( f_d \)) frequency maxima. Please note that these can be any value (random choice) within the possible upper/lower pitch bend limits of the chosen tone (f).

Other symbols:

\[ \bullet \bullet \bullet \quad \text{Continue the sound, technique, way of playing (etc.) ad libitum} \]

\[ \text{AL} \quad \text{Ad libitum} \]

\( \text{Breath mark} - \text{short pause} \)

\( \triangle \quad \text{Short fermata} - \text{longer than the duration indicated with a breath mark} \)

\( \text{fr.} \quad \text{Generic symbol for rests/pauses} \)
Types of modulation and transition between sound-configurations*

=> Sounding-gestalt (A) 'begins' and 'concludes' at the point indicated by the vertical line. Duration is ad libitum.

=> Gradual transition ('to move') from sounding-gestalt (A) to sounding-gestalt (B). Although the transitioning manner is left to the performer, the modulation should allow a musical consonance between the two. Sound-configurations (A) and (B) either involve parameters common to both, or, require the same level of physical effort.

=> Gradual transition from sounding-gestalt (A) to sounding-gestalt (B). Although the transitioning manner is left to the performer, the modulation should allow a musical consonance between the two. Sound-configurations (A) and (B) either do not share parameters, or, require a different level of physical effort (higher/lower).

* For a thorough discussion on the introduced types and the thought process that led to these, please have a look at the following paper:
Two ways of interpreting depending on the context and the sound parameters involved:

i) 'To change' suddenly from sounding-gestalt (A) to sounding-gestalt (B), or;
ii) 'To show' sound-configuration (B) from sound-configuration (A), as in “allow (B) to be suddenly perceived from (A)” which requires (B) to be already part of (A).

The change from (A) to (B) should last for a brief moment.

The mirrored (B) indicates those cases where sounding-gestalt (B) is at a lower level of physical effort.

Two ways of interpreting depending on the context and the sound parameters involved:

i) 'To manifest itself', as in “join sounding-gestalt (A) with sounding-gestalt (B) and create something new”:

ii) 'Combined to produce', as in “counterpoint ad libitum between sound-configurations (A) and (B) and create something new” (feedback-loop). Below are two graphic ways to imagine this second scenario:

NB: The circle of sound-configuration (A), suggesting sounding-gestalt (A) ‘to begin’ is also the starting point of the feedback-loop process in both above two interpretations.

The duration of the whole is ad libitum.

The mirrored (B) indicates those cases where sound-configuration (B) is at a lower level of physical effort.

‘To reveal’ sounding-gestalt (B) from (A), and drop back to sounding-gestalt (A), or else, allow sounding-gestalt (B) to emerge from and disappear to (A).

The mirrored (B) indicates those cases where sounding-gestalt (B) is at a lower level of physical effort.
Flautist
- 2 (preferably 4) high-quality condenser mics -

Distance ($D_1$) of flautist from front speakers
$1m \leq D_1 \leq 2m$

Speakers L1 and R1 should be placed at performer's shoulder level.

Sound engineer

Flautist
- 2 (preferably 4) high-quality condenser mics -

Distance ($D_2$) of flautist from front speakers
$1m \leq D_2 \leq 2m$

Speakers L1 and R1 should be placed at performer's shoulder level.

Sound engineer
The performance score (width x height: 123x42cm) resides within **Tube 2** accompanying the submission.
Rests / Pauses

Pitches

isolated sounds with the sounding qualities that emerge close to the mouth hole in order to create a rich stereo image of your amplified performance. Techniques combinations. At the same time, play with the amount of air the chosen fingerings allow to flow from the open parts of the flute body (open flute holes/opening end), and combine these tones to form both tempered, pure, and microtonal intervals. The impetus of this finger movement can either be in concurrence with, or, contradict the impetus of the blowing/embouchure finger movement introducing a kind of “controlled randomness”, in regards to registers and pitches, allowing successive temporal partition, and/or to discard the comments if these do not suit your taste.

Below, and for each individual section, I am suggesting a time-frame duration of rests, and also commenting on the points I have imagined these. Please feel free to change their these however, should be introduced organically, moderately, and more as a suspension of breathing, adding to the theatricality of the performance, without over exaggerating.

For the verbs employed here, written in *bold italics*, please look at the performance guidelines pp. 8-9.
sapientia

Drone study for accordion and electronics

2015 - 2016

Dimitris Papageorgiou
PhD in Musical Composition, 2017
The University of Edinburgh
Dimitris Papageorgiou
sapientia
drone study for accordion and electronics
ca. 20-22min
Edinburgh, 2015 - 2016

front cover image:
<clasp> - digital illustration
Dimitris Papageorgiou, Edinburgh 2016
**sapientia (noun, f.)** -
wisdom, memory, prudence, discretion, reason, discernment, foresight, perfection of intellect and character

**bellow (verb)** -
to make a loud deep sound

- in memory of our aunt Σοφία that left us the 26th of November 2014

I am obliged to accordionist Jonas Kocher for the stimulating discussion we had on the piece, for his suggestions and remarks, and for the recording(s) of the solo accordion acoustic part that allowed me to program the electronics.
Introduction

sapientia was written in two phases between autumn 2015 and summer 2016 in Edinburgh. The piece has four main sound sources: 1) a live amplified accordion (chromatic button); 2) live recording and playback of the accordion signal creating four additional overlapping voices pitch shifted in such a way so as to generate interference patterns (beats); 3) a triangular oscillators bank; and, 4) Digital signal processing applied on all the above layers. All sources are processed and/or driven using a Max/MSP patch I have developed (please see the sapientia:maxpro) file that resides within /USB8/sapientia/sapientia-patch/ subfolder of the removable drive accompanying the thesis materials). The patch is grouped in four basic modules with the function of each being spread between different sub-patches. The computer performer is responsible for the live-mix of all layers following a faders-gestures score, and at points, with the performing (improvising) with the parameters of some digital signal processing modules of the patch.

The score is divided in two parts: 1) solo accordionion score (p. 9) 2) electronics performance score, in two A2 pages, 1st page: DSP modules diagram - 2nd page: live-mixing score and general guidelines

Important note: The two pages (A2 size) comprising the ‘electronics performance score’ reside within Tube 3 accompanying the submission.

Accordion

The solo accordionion score-part of the piece involves five tones, written in exact pitch notation, whose pitch register requires the use of a chromatic button accordion with a converter mechanism between the free-bass and standard-bass manuals on the bass side and with a compass of E1 - C9. It would be preferable that clarinet register switches are also incorporated in the instrument’s mechanism for an undisturbed playing on the treble side allowing a combined operation of bass registers when needed. These five tones (G7 - C7 - F6 - B6 - A1) should be performed one after the other by applying on each a full opening/closing of the bellows and in constant speed, creating a soft, stable and uninterrupted sound; a straight line. The time-frame duration of one full opening is 2min10sec, indicates that both its distance from the performer (proximity effect) and its gain level should be decided through experimentation aiming to achieve a good sounding quality, while balancing the contrasting loudness levels of the different pitch registers included in the piece. The patch also includes a pre-process signal before this is send to the rest of the DSP modules. This chain consists of: equalizer (1) - compressor (2) - equalizer (2), using the Fab-Filter plugins mentioned earlier in the ‘Requirements’ paragraph (for further details regarding the setting up of the pre-processing chain see also ‘initializing individual modules and plug-in parameters’ paragraph below).

Initializing the patch

The patch has been tested with the following audio-status setup: 44.100Hz FS, 1024 I/O vector size, 128 vector size. At the bottom-right of the screen you can choose between two performance modes. These, when triggered, seem to affect the other mix-ins of some mas objects used in the patch: i) Concert mode - Use this if in a concert situation; ii) Rehearsal with electronics - This should be used by the computer performer when rehearsing without an accordionist present so as to signal the recording of the acoustic part of the piece we did with accordionist Jonas Kocher (01 May 2016 @ BIEL, CH). In this case, all cues should be triggered by the computer performer, cue 1 activating the playback of the sound file.

Note that in the two performance modes automatically initializes the qist object – see sub-patch [p cubix] – with the appropriate .txt file. In case you are in ‘Concert mode’ you can input (in meters) the distance of the accordionist from the front stereo speakers (relevant left, back screen). This number is automatically converted to a latency delay in samples passed to the mixed accordion signal, serving the purpose of localizing better the perceived correspondence between the acoustic and the amplified sound, also acting as a first solution to any feedback problems. Drag/Drop the subfolder named: ‘Voxengo_IR’ (this can be found within the /USB11/Misc/ folder of the removable drive accompanying the thesis materials) in the relevant on-screen box. This will load the Voxengo impulse responses for the master convolulation reverber. You can either click on the “load” message and load the IR I have chosen while composing /rehearsing the piece, or, select from the relevant list the IR you prefer. In the latter case, please make sure the IR you select produces a reverberation time of maximum 4 - 3 seconds, and that the amount of reverb doesn’t render the mix “heavier”. For this, the dry/wet % reverb amount, which can be adjusted with the relevant on-screen slider, should never be above 5% (ideally, less than or equal to 2%). At the top-right of the screen, you can find a slider that allows you to choose a filter that alters the loudness level of the live-accordion signal gain apart from, and after, any mix pre-amps your sound-card might have.

Initializing individual modules and plug-ins parameters *

Macintosh computer (Max/MSP patch tested in OSX 10.7.5) with 16Gb RAM: MaxMSP v7.3.1 application installed on your machine ([cycling74.com]), iPad with MIRA ([itunes.apple.com/us/app/mira-controller/id948948801?mt=1&intent=8] High-quality sound-card with minimum one channel mic input (48), and two channels line-out; Mixing controller: Korg nanoKONTROL2 (the main MIDI controller used by the computer performer (http://www.korg.com/us/products/computer-key/nanokontrol2/); Performance controller: a USB MIDI Footswitch (one switch would suffice). The piece also requires that you have the following VST/AU plugins installed on your system: FabFilter Pro-Q2 (http://www.fabfilter.com/products/pro-q-comp-2-compressor-plugin) developed by Frederik Slijkerman and Floris Klinkert; A1StereoControl v1.1, developed by Alex Hilton (http://www.axelhilton.net/A1AU/INDEX/index.php#1Stereocontroller); spectral freezing and spectral drummer, part of the Sonambient Spectral Library (beta 9) developed by Michael Norris ([http://www.michaellofforsin.info/software/soundmagic-spectral]); Nanokontrol2 - FabFilter equalizer (Q2) and compressor (C2) are commercial plugins. The rest are freeware, and the versions mentioned here can be found within the /USB11/Misc/Freeware_Plugins/ subfolder of the removable drive accompanying the thesis materials.

Electronics

Requirements

Macintosh computer (Max/MSP patch tested in OSX 10.7.5) with 16Gb RAM: MaxMSP v7.3.1 application installed on your machine ([cycling74.com]), iPad with MIRA ([itunes.apple.com/us/app/mira-controller/id948948801?mt=1&intent=8] High-quality sound-card with minimum one channel mic input (48), and two channels line-out; Mixing controller: Korg nanoKONTROL2 (the main MIDI controller used by the computer performer (http://www.korg.com/us/products/computer-key/nanokontrol2/); Performance controller: a USB MIDI Footswitch (one switch would suffice). The piece also requires that you have the following VST/AU plugins installed on your system: FabFilter Pro-Q2 (http://www.fabfilter.com/products/pro-q-comp-2-compressor-plugin) developed by Frederik Slijkerman and Floris Klinkert; A1StereoControl v1.1, developed by Alex Hilton (http://www.axelhilton.net/A1AU/INDEX/index.php#1Stereocontroller); spectral freezing and spectral drummer, part of the Sonambient Spectral Library (beta 9) developed by Michael Norris ([http://www.michaellofforsin.info/software/soundmagic-spectral]); Nanokontrol2 - FabFilter equalizer (Q2) and compressor (C2) are commercial plugins. The rest are freeware, and the versions mentioned here can be found within the /USB11/Misc/Freeware_Plugins/ subfolder of the removable drive accompanying the thesis materials.

important: The numbers that follow in parenthesis with the numbering can be found, as comments, within the sub-patches mentioned earlier in the document. For a better understanding, see also: electronics performance score 1st and 2nd pages.

5
• For the ‘(7) Spectral DroneMake.auinfo’ object, ‘other’ project folder.

• For the ‘(10) A1StereoControl.vst’ object, load the ‘10_mix_triang_STEREO.fxp’ preset.
• For the ‘(9) FabFilter Pro-Q2.vst’ object, load the ‘9_mix_triang_COMP.fxp’ preset.
• For the ‘(8) FabFilter Pro-C2.vst’ object, load the ‘8_mix_triang_COMP.fxp’ preset.

MODULE #3

Please save the patch when done.

• For the ‘(12) FabFilter Pro-Q2.vst’ object, use the ‘12_PS_and_FX_EQ.fxp’ preset from the ‘other’ subfolder of the main ‘sapientia-patch’ project folder.

[p mix_accidents] sub-patch: Using the graphic equalizer – numbered in the patch as ‘(4) Fab-Filter Pro-Q2(Mono).vst’ – narrow down and apply some frequency notchings to any accordion frequencies (fundamental and partials) that might be penetrating by focusing mainly on the spectra of the in-score high register pitches: G7, F#6. Note that, in addition to the GUI window of the equalizer, the pitch tracker module which can be found within the [p analysis] sub-patch mentioned earlier, can assist you in this process, as it gives an estimation of the fundamental frequency of the tone the accordionist is playing each time, automatically calculating the first eight partials. Please follow the instructions written within. You can also use this second graphic equalizer to equalize frequencies that might still be causing feedback problems after the applied compression. It goes without saying that experimentation is encouraged, both for the placement of the accordion microphone (see ‘Accordone signal’ paragraph above) and the setting up of the pre-processing chain, without however, highly deviating from the framework provided here.

Important note: If you are in ‘Rehearse electronics with accordion recording’ mode then click on the ‘read’ messages connected with the three respective vst objects. This will load the ‘2_live_acc_EQ1.fxp’, ‘3_live_acc_COMP1.fxp’ and ‘5_live_acc_EQ2.Fxp’ presets (used while composing/rehearsing the piece) that resides within the ‘other’ subfolder of the main ‘sapientia-patch’ project folder.

[p triangular_oscillators] and [p tri_1], [p tri_2], [p tri_3], [p tri_4], [p tri_5] sub-patches residing within: In the main patch window, at the left part of the screen, the user can set the global amplitude level of all five (5) triangular oscillators submodules after the ring-modulation effects have been applied and thus, cancel (for rehearsal purposes) the automated fade-in process (please see within the [p tri_1] sub-patches, and the ‘electronics performance score’ - 1st page). This allows one to hear the triangular oscillators bank sound as it develops at approximately 16 minutes in the piece. With that in mind, the user can re-adjust (if necessary) the currently fixed amplitude level of each main triangle-wave generator by changing the value of the relevant number boxes, and before the ring-modulation effects have been applied (please see the comments within the aforementioned sub-patches). Your aim should be to obtain a sound that is roughly balanced on all registers, provided it that the room acoustics allow so.

[p mix_triang] sub-patch: Please do not alter any of the plugins parameters within this sub-patch. If preset parameters are not showing up on their user interface windows after first opening the parent patch and when double-clicking on the vst-objects, then please do the following:
• For the ‘(6) FabFilter Pro-Q2.vst’ object, click on its respective ‘read’ message and load the ‘6_mix_triang_EQ1.fxp’ from the ‘other’ subfolder of the main ‘sapientia-patch’ project folder.
• For the ‘(7) Spectral DroneMake.auinfo’ object, use the ‘7_mix_triang_DRONE.png’ that resides within the ‘media’ subfolder of the main ‘sapientia-patch’ project folder, and reconstruct plugin parameters.
• For the ‘(8) FabFilter Pro-C2.vst’ object, load the ‘8_mix_triang_COMP1.fxp’ preset.
• For the ‘(9) FabFilter Pro-Q2.vst’ object, load the ‘9_mix_triang_EQ2.Fxp’ preset.
• For the ‘(10) A1StereoControl.vst’ object, load the ‘10_mix_triang_STEREO.fxp’ preset.

Please save the patch when done.

MODULE #4

[p pitch_shift_and_FX] sub-patch: Please do not alter any of the plugin parameters within this sub-patch. If preset parameters are not showing up on their user interface windows after first opening the parent patch and when double-clicking on the vst-objects, then please do the following:
• For the ‘(11) Spectral Freezing.auinfo’ object, use the ‘11_PS_and_FX_FREEZER.png’ that resides within the ‘media’ subfolder of the main ‘sapientia-patch’ project folder, and reconstruct plugin parameters.
• For the ‘(12) FabFilter Pro-Q2.vst’ object, click on its respective ‘read’ message and load the ‘12_PS_and_FX_EQ2.Fxp’ from the ‘other’ subfolder of the main ‘sapientia-patch’ project folder.
• For the ‘(13) A1StereoControl.vst’ object, load the ‘13_PS_and_FX_STEREO.fxp’ preset.

Please save the patch when done.

MASTERING

[p master] sub-patch: The computer performer, if she/he wishes so, can attempt a better parameterization of the mastering plugins sequence. However, this should happen by neither deviating from the framework provided by the loaded presets, nor by changing the mastering plugins sequence itself. If preset parameters are not showing up on the user interface windows after first opening the parent patch and when double-clicking on the vst-objects, then, and for the numbered plugins (14) (15) (16) (17), follow the procedure mentioned above and load the ‘14_master_EQ1.fxp’, ‘15_master_COMP1.fxp’, ‘16_master_STEREO6.fxp’ and ‘17_master_EQ2.fxp’ respective presets (please save the patch when done). Note that when in ‘Concert mode’ the final graphic equalizer before the output – i.e. ‘(17) FabFilter Pro-Q2.vst’ – can be used for some frequent notchings of any room-frequencies that might still be causing feedback problems.

Levels - Mixing controller

The patch has been set up so as all on-screen faders can be controlled by the computer performer for the live-mix of the piece using a Korg nanoKONTROL2 MIDI controller. Please see also the 2nd page of the ‘electronics performance score’. Note that the master fader can be controlled only by its on-screen GUI. The [p_korg_nanoKONTROL2] sub-patch (residing within the [p setup] patch) includes a picture that illustrates the correspondences between the hardware/software MIDI-on-screen faders. NB1: Since nanoKONTROL2 has only sixteen (16) hardware faders, the patch uses two MIDI controller setups allowing the computer performer to control either the ‘Accordone’ and ‘Virt_Accord’ (Setup1), or, the ‘S_N_Conv’ and ‘Noise’ (Setup2) on-screen faders. The user can switch between setups by either pressing the left (Setup1), or the right (Setup2) marker arrows of the nanoKONTROL2. All other faders are available with both setups. The relevant code – see [p controllers] sub-patch – allows the storing of the last MIDI value of each fader pair, before switching between them, and passes out a new number only after the stored value has been reached. NB2: All MIDI fader values (0-127) are scaled to dB using a quadratic remapping function – see sub-patch: [p controllers] – with curvature of -1.0 (upside down parabola with zero grad at high value). The user can change this curvature value to a number that meets her/his tactile needs, as long as it allows enough flexibility to follow the general guidelines, and perform the live-mixing faders-gestures score (see ‘electronics performance score’ - 2nd page). NB3: In addition to the above, there are a couple of other functions that are programmed to be controlled using the nanoKONTROL2, including: Cycle button – Dac on/off, Playback button (or, computer keyboard spacebar) – Next Cue (execute mode); Rewind button – Rewind qst to zero; Fast-forward button – Ascend cues without executing (for rehearsal purposes only); Rec button – Start grains; Stop button – Stop grains. Note that the start/stop grains function is automatically triggered by the qst object at the points indicated in the score, and that the aforementioned two buttons (activating/stopping grains) should be used only if you would like to hear this particular electronic layer at any other point during the piece.

Recording

The patch allows the user to record (internally) a performance/rehearsal (stereo/main output, AIFF, 24bit, current SR), after following the relevant steps at the bottom-right part of the main screen: i) Make sure dac is on; ii) Turn on/off the recording process; iii) Initialize (click the ‘init2’ message); iv) Open dialog box to save the sound-file (click the ‘open’ message); v) Start/Stop recording (switch on/off the toggle).
Speakers L1/R1 should be placed at accordionist’s shoulder level. Speakers L2/R2 should be placed approximately 1-2m higher than L1/R1, creating a slightly wider stereo field than L1/R1 (approx. 1-2m further left/right from L1/R1 respectively). Note that in the context of the piece we do not (necessarily) mind the short phase offset to the output sound created from the (width) distance between L1/R1 and L2/R2 speakers (approximated values: 3m ≤ D_2 ≤ 4m ⇒ 8.77ms ≤ T_2 ≤ 9ms ⇒ 144Hz ≥ F_2 ≥ 83Hz ⇒ A_2 ≥ P_2 ≥ E_2), as long as this offset is not causing significant distortion and is not creating a “heavy” comb filtering effect. The aim here is to create a “wall of sound.” That said, using the mixing desk faders adjust dB levels of the rear speakers in accordance to the above, trying also to compensate any feedback problems that might emerge. Depending on the actual space the piece is to be performed each time, adjust accordingly the length distance of all speakers from the accordionist.

Speakers L and R should be placed at accordionist’s shoulder level. Depending on the actual space the piece is to be performed each time, adjust accordingly the length distance of the speakers from the accordionist.
Perform a full opening/closing of the bellows on each tone by applying a movement of constant speed. Create a soft, stable and uninterrupted sound; a straight line. Your calmness, your performance movements, and your body/instrument posture should bracket the gradual development of the electronic drone and its sound mass, as if the latter emerges from and drops back to your instrument (beginning/end of piece). Bellow changes as well as the operating of register switches should be inaudible.

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<th>Cue 1</th>
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Perform a full opening/closing of the bellows on each tone by applying a movement of constant speed. Create a soft, stable and uninterrupted sound; a straight line. Your calmness, your performance movements, and your body/instrument posture should bracket the gradual development of the electronic drone and its sound mass, as if the latter emerges from and drops back to your instrument (beginning/end of piece). Bellow changes as well as the operating of register switches should be inaudible.
The two pages (A2 size) comprising the 'electronics performance score' reside within Tube 3 accompanying the submission.
Cue1
Triggered by accordionist

Cue2
Triggered by computer performer

Cue3
Triggered by computer performer

Cue4
Triggered by computer performer

Cue5
Triggered by accordionist

MODULE #1
Mix_accords

MODULE #2
Tri_to_PSFX

MODULE #3
Stereo Comb filter

MODULE #4
Spectral Freezer

MODULE #5
Mono Signal Node

-

A1StereoControl

Stpage / DSP modules diagram

Amp 0

Accordian

Mono to Stereo

Mono Signal

FabFilter Pro-Q 2

FabFilter Pro-C 2

Stereo 2-tap cross-

White Noise

Stereo Pitch-shifter

Stereo Granulator

Grain pan = Range of 0.2 to 0.8

Grain rate = 0

Sinc function message send

Automated (qlist) comb filter delay

Automated (qlist) zero-crossings

Glissando

Recording Live into a buffer.

Triangular Oscillators #2

Duration of fade-in: 3min

Amplitude fade-in, from 0.0 to 1.0, triggered 60sec after Cue2.

Starting point of glissando triggered 120000ms after Cue1

Zero-crossings

Constant value (no transposition)

Tr.Osc.#4 automated (qlist) Amp fade-in

R40% (0.328n) R40% (-0.387n)

L40% (0.918n) L40% (-0.389n)

L80% (-0.659n) L80% (-0.329n)

R80% (1.945n) R80% (0n)

Starting point of glissando triggered 120000ms after Cue3

Amplitude fade-in, from 0.0 to 1.0, triggered 60sec after Cue2.

Starting point of glissando triggered 120000ms after Cue4

Glissando

Automated (qlist) comb filter delay

Starting point of glissando triggered 60sec after Cue1

Starting point of glissando triggered 120000ms after Cue3

Starting point of glissando triggered 60000ms after Cue2

Starting point of glissando triggered 60000ms after Cue1

Tri_Osc#2 automated (qlist) Amp fade-in

L80% (0n) L80% (0.387n)

R40% (0n) R40% (-4.044n)

Constant value (300 zero-crossings)

-Inf dB

-Inf dB

-Inf dB

-Inf dB

-Inf dB

Wet/Wet: 100% Vib:

Wet: 100% Vib:

Dampening on-off switch

Directed percussion

Dampening on-off switch

Directed percussion

Wet: 100% Vib:

Dampening on-off switch

Directed percussion

Wet: 100% Vib:

Dampening on-off switch

Directed percussion

-Inf dB

-Inf dB

-Inf dB

-Inf dB

-Inf dB

Wet/Wet: 100% Vib:

Wet/Wet: 100% Vib:

Wet/Wet: 100% Vib:

Wet/Wet: 100% Vib:

Wet/Wet: 100% Vib: