

Portfolio of Compositions with Commentary

Andreas Tsiartas

PhD

University of York

Music

September 2021

Abstract

My portfolio consists of nine original compositions, along with six recordings and this commentary. All nine works are the result of my research undertaken over the past five years (2017–22) at the Department of Music, University of York, and they cover an array of instrumentations from solo to chamber, one pocket music theatre work and one orchestral piece. Four of the submitted works were composed upon commission.

My doctoral studies coincided with my decision to visit the idea of rites in contemporary music composition, with the focus on the structure of sound. Along this journey, there have been numerous influences, musical and otherwise, new and past, that have intensified my research and shaped the outcome.

I particularly examine how the notion of rites can be integrated and further developed in my music so as to present me with new creative avenues. In the works presented in this commentary, I thus introduce the concept of *sound ritual* as my compositional approach. This is integrated into my musical language based on four conceptual traits: origin, memory, perception, identity. In order to delineate the development of this approach, I explored the technical opportunities it offered me through five specific elements: form, harmonic / time organisation, pitch material, and reverberation.

This research culminates with *Thrus* for orchestra (2021), which is the last work of this portfolio, hence, I consider it my substantial work.

List of contents

Abstract	2
List of contents	3
List of figures	4
List of accompanying material	7
Acknowledgements	9
Author's Declaration	10
1. Introduction	11
1.1. Research questions	11
1.2. Motivation	12
1.3. Compositional Objectives	14
1.4. Methodology	16
1.5. Outline	17
2. Towards a <i>sound ritual</i> I: memory	18
2.1. On myth	18
2.2. Embodiment	21
3. Towards a <i>sound ritual</i> II: Space	28
3.1. Sacredness	31
4. Towards a <i>sound ritual</i> III: Perception	35
4.1. The term <i>sound ritual</i> : definition	43
5. Musical Elements I: form, harmonic organisation, time organisation	47
5.1. Reasoning	47
5.2. Considerations	48
5.3. Solutions, deviations: golden ratio	49
5.4. Solutions, deviations: circle of fifths	53
5.5. Developing a metric notation (time organisation)	54
6. Musical elements II: pitch material in three layers	58
6.1. First layer	58
6.2. Second layer	64
6.3. Third layer	71
6.3.1. Additional multiphonics	75
7. Musical elements III: reverberation	79
7.1. The Impulse Response as the main event	79

7.2. Realisation of the dissemination.....	82
8. <i>Sound ritual</i> – now, what?	92
Appendices.....	95
Bibliography	96

List of figures

Figure 1: The five-pitch melodic fragment (nucleus).....	19
Figure 2: Versions of the melodic fragment.	19
Figure 3: The fragment augmented in Thrus (rehearsal marking J to I).	19
Figure 4: The fragment in diminution in Thrus, bars (bb.) 19-24.	20
Figure 5: Indication for humming or vocalising the fragment in Thrus (harp, bb. 232-240, before rehearsal marking M).	23
Figure 6: For the pianist: bowed string with bow hair in the interior of the piano... 23	
Figure 7: The TTE Konklang mallet in Íérkos bb. 185-187.....	24
Figure 8: Contrabassoon part in Thrus, b. 177.....	24
Figure 9: Progression of aeolian sounds for the flute in Anáero (also for Íérkos and partially for Thrus); from pure air (white circle) to regular pitch (black circle) and intermediate steps, resulting in various extended techniques.	25
Figure 10: Violin II part (first stand), in Thrus, bb. 189-190 (vibrato and ponticello degrees).....	25
Figure 11: An adaptation of the architectural pattern for sacredness as found in Alexander et al., <i>A pattern language</i> , 334 (read from right to left).....	32
Figure 12: The form of Dhákara.	32
Figure 13: Floor plan of the architectural pattern on Fig. 11 (right); façade of the overlapped chambers on Fig. 11 (left).	33
Figure 14: The harmonic spectrum on D and the distortion in the fourth octave range through a Hicaz maqam.	33
Figure 15: Indications of the sanctum sanctorum sections in Thrus (left) and Íérkos (right).....	34
Figure 16: Development of the floor plan of the architectural pattern on Fig. 11 in musical terms (circle of fifths – left, and golden ratio – right).	35
Figure 17: Approximate illustration of dividing time according to the golden ratio proportions in Pnoé.	37
Figure 18: Overall plan of Pnoé; the lowest layer depicts the harmonic foundations as allocated within the four ‘chambers’ - green, blue, yellow, pink markings; the uppermost layer demonstrates the sound ideas in abbreviation (corresponding to rehearsal markings in the score); the pitch indications demonstrate the registral directions (ambituses).....	38
Figure 19: The beginning of the con-temporal narrative (starting from F-sharp onwards) in Terra Incognita demonstrating the five sound ideas / fractures. Starting from the top left, brown (tremolo both hands, high register); green (tremolo both hands, low register); red (single pitch, tenuto); blue (rapid scale-like gesture, accelerating); pink (sudden loud chord, high register). These same colours appear	

respectively in figure 20 below. Note: these colours do not correspond to the above chambers.....	39
Figure 20: Overall allocation of the con-temporal narrative in bb. 60-93 of Terra Incognita.....	40
Figure 21: The desired stage set-up in Detriment (from the cover pages of the piece).....	42
Figure 22: The seven parts (in seven coloured boxes) of the con-temporal narrative in Detriment.	43
Figure 23: Tables comparing the attributes of a ritual and a sound ritual.	45
Figure 24: Overall final design of a sound ritual (1 is for the golden ratio, 2 for the circle of fifths, 3 for time in linear development, 4 / 5 main event as a vertical column resulting in pitch structures and sound gestures in horizontal development, 6 for reverberation evolving in time and space.	46
Figure 25: 12 fifths as the harmonic steps for the String Quartet no. 2 and Detriment. NB: the harmonic steps align with the rehearsal markings (dotted or regular vertical lines).....	48
Figure 26: The golden ratio divisions, both regular (arrow pointing right) and mirror (arrow pointing left), within an indicative duration of ten minutes.....	50
Figure 27: Two examples of reallocating ritual units in the String Quartet no. 2 (red) and Detriment (blue). N.B: the asterisk after G ⁷ denotes the reappearance of a D ⁸ at the closing of Detriment (not shown here).	51
Figure 28: The space between the regular and mirror golden divisions in Anáero (harmonic steps G – C – B) and the secondary peak on G-sharp.....	52
Figure 29: Harmonic steps in Terra Incognita, ðérkos, Thrus, Anapalmós and Anáero (table).	53
Figure 30: Example of a section of Pnoé subdivided by means of the golden ratio to organise time, in accordance with the sound ideas (bb. 79-87).....	56
Figure 31: An actual spindle (left) and a depiction of a tree with its roots (right). ...	59
Figure 32: Indicative process of merging the basic overtone and undertones (first 12 partials, left); schematic representation of overtones / undertones on a fundamental D upon an extended ‘spindle’ (right).	59
Figure 33: The resulting Arbor Vitae pitch order with reference points and octave areas (1-6).	60
Figure 34: Octave range D ² -D ³ from Arbor Vitae as the area to be explored	61
Figure 35: Sound textures generated from the lower octave range of the Arbor Vitae order (24-tone temperament).	61
Figure 36: Sound textures generated from the lower octave range of the Arbor Vitae order (equal temperament).	62
Figure 37: Sound textures in the opening of Pnoé (marked within the green boxes; red boxed numbers refer to the textures in fig. 35-36).....	63
Figure 38: Sound textures in the middle section of Pnoé (merged textures through pivotal pitches on the harmonic steps of A and D).....	63
Figure 39: Sound textures as a main sound idea in the String Quartet no. 2 (here rehearsal marking I).	64
Figure 40: Thrus, opening section, bb. 19-24.	64
Figure 41: The maqam composite.	65

Figure 42: The five blocks used to create the composite maqam in their original format.....	65
Figure 43: Superimposing the two pitch layers (octave areas 3 and 4); boxes with a star sign indicate pitches D and A intersecting both layers. Arrows indicate contrasting areas to be explored.	66
Figure 44: The three versions of the melodic fragment (top), and their correspondence to the maqam composite (bottom).	67
Figure 45: A rough depiction of the development of the central episode.	68
Figure 46: Dialectic of different intonalties (tension) between the two pitch layers as used by all four instruments in Pnoé.....	69
Figure 47: Organisation of the traversing lines in loose contrapuntal movement based on the golden ratio subdivisions for this section (manuscript); Pnoé, rehearsal markings B to C.	70
Figure 48: The beginning of the passage in figure 47 (Pnoé, rehearsal marking B)..	70
Figure 49: Clarinet multiphonic no. 710 in Gerhard Krassnitzer, Multiphonics für die Klarinette; NB: Greek letter 'α' stands for a low level of difficulty; large black note-heads stand for the most audible, while diamond-shaped, non-coloured note-heads stand for the least audible partials.	71
Figure 50: The multiphonic no. 710 as orchestrated in ðérkos (section D).....	72
Figure 51: The harmonic spectrum on F-sharp in comparison to the multiphonic no. 710.....	73
Figure 52: The clarinet multiphonic as a prime array (top); re-ordering the array and orchestrating different intervals (bottom).	74
Figure 53: Inverting the re-ordered array into the bass range.....	74
Figure 54: Resulting intervals from both treble and bass range.....	75
Figure 55: The three pitch layers in context to the overall organisation (on the fundamental of F-sharp).	75
Figure 56: Secondary clarinet multiphonic no. 407 ca. on C (Gerhard Krassnitzer)..	76
Figure 57: Three oboe multiphonics; top left on a fundamental of ca. a C, top right and bottom on a fundamental of ca. E-flat. Large diamond white noteheads are the most audible partials, while small black diamond noteheads are the least audible partials.....	76
Figure 58: Clarinet multiphonic no. 407 and oboe multiphonic no. 128 as an additional texture at rehearsal marking G, in Thrus (on the harmonic step of C). ...	77
Figure 59: Oboe multiphonics, four bars before section D, on ca. D-sharp / E-flat in Thrus.....	78
Figure 60: The three-layered chord of the pitch material on a fundamental of F-sharp as an example (left); graphic representation within a toroidal shape, suggesting the dissemination of sound in the sacred space (right).	79
Figure 61: The sound ideas' matrix. Overall mapping of main sound ideas deriving from the IR in linear (horizontal) development of the reverberation in time and space.	81
Figure 62: Kaija Saariaho's timbral axis.....	82
Figure 63: Allocating main sound ideas upon harmonic steps (here depicted as vertical, coloured columns) in conjunction with reverberation; linear time axis (top), and non-linear imitating a hypothetical architectural rectangular edifice (bottom).83	

Figure 64: Inserting the torus, which illustrates the dissemination of sound within this final design of the sacred space (an extension to figure 63 above).	84
Figure 65: Hypothetical IR dissemination (propagation) and interaction with units and their respective harmonic steps (an extension to figure 64).....	85
Figure 66: A realisation of a section of figure 65 on the harmonic step of F-sharp; legend (top), indicating the position of the section in the whole; the re-ordered array of the multiphonic on an F-sharp fundamental, merged with the equivalent on B – interval extraction and assimilation towards instrumentation (bottom).....	86
Figure 67: Excerpt of Thrus bb. 216-219 indicating the intervals mentioned before (compare to figure 66) orchestrated.	87
Figure 68: The IR, or the harmonic step on G in Thrus (including dissemination from the harmonic steps C, D, C-sharp affecting the chord).....	89
Figure 69: Different layers ('ripples') in the opening section of Thrus.	90
Figure 70: The reverberation principle / template: from top to bottom, reverb stages, dynamic degrees, reverberation pulses and their corresponding duration..	91
Figure 71: The nine perspectives of the narrative, illustrated as infinity mirrors in a hypothetical meta-space.....	93

List of accompanying material

Scores

1. *Dhákara* (2017) – for violin, tarhu, percussion and oud.
2. *Pnoé* (2018) – for ensemble.
3. String Quartet no. 2 (*Átractos*) (2019).
4. *Detriment* (2019) – for soprano, flute and piano.
5. *Terra Incognita* (2019) – for piano solo.
6. *Ìérkos* (2019–20) – for ensemble.
7. *Anapalmós* (2020) – for clarinet solo.
8. *Anáero* (2020) – for flute solo.
9. *Thrus* (2020–21) – for orchestra.

Recordings

1. *Dhákara* (2017) – 14:28 min., live recording (professional)
Ensemble Lingua Franca
Ninth International Pharos Contemporary Music Festival,
The Shoe Factory, Nicosia, Cyprus / 13 October 2017.

2. *Pnoé* (2018) – 13:18 min., live recording (professional)
Ensemble Modern
Tenth International Pharos Contemporary Music Festival,
The Shoe Factory, Nicosia, Cyprus / 05 October 2018.
3. String Quartet no. 2 (*Átractos*) (2019) – 11:19 min., live recording
Cuarteto Abreu
Sixth Edition of the Quatuor Diotima Academy
L 'Abbaye de Noirlac, Noirlac, France / 29 April 2019.
4. *Detriment* (2019) – first scene, 5:04 min., live recording (workshop)
Lore Lixenberg (soprano) and Joseph Houston (piano)
Department of Music, University of York / 03 December 2019.
5. *Ìérkos* (2019–20) – 13:22 min., studio recording
Cikada Ensemble, Christian Eggen (conductor)
Oslo, Norway / 05 December 2020.
Producer: Vegard Landaas (LAWO Classics, Norway).
Label: Stradivarius, Italy.
6. *Anapalmós* (2020) – 8:00 min., live recording (workshop)
Jérôme Comte (clarinet)
Department of Music, University of York / 18 February 2020.

Acknowledgements

My doctoral studies would have not been made possible without the generous scholarship granted by the A. S. Onassis Foundation, which provided me with the financial security to focus exclusively on my research (2017–2021). Likewise, I am grateful to the A. G. Leventis Foundation (2017–20) for granting me an additional annual scholarship.

I would like to express my heartfelt gratitude to my supervisor Thomas Simaku, for his invaluable guidance and support throughout my doctoral studies. His sincerity, confidence and unparalleled musical perception have deeply inspired me. Without his encouragement and trust, this research would have not been made possible. I am thankful also to the Department of Music at the University of York for providing us with an environment of the highest calibre, not least through regular workshops with internationally acclaimed musicians, with whom I had the opportunity to collaborate.

My appreciation also goes to the Pharos Arts Foundation, especially its President Garo Keheyran and Artistic Director Yvonne Georgiadou, who have entrusted and supported me over the years, and have commissioned two of the works presented in the folio.

Many thanks to the brilliant soloists and ensembles with whom I have closely collaborated. Without their enthusiasm and superb interpretations, this research would have not evolved: Ensemble Modern, Quatuor Diotima, Jérôme Comte, Cikada Ensemble, Ensemble U:, Taller Sonoro, Divertimento Ensemble, Ensemble Lingua Franca, Cuarteto Abreu, among many others.

To my cordial friends, Yvonne, Costas and Athena who have stood by me when all things seemed doomed, I am deeply grateful for their friendship.

Finally, I am evermore indebted to my family, for their sacrifices all through these years; for withstanding my dark days and shading light into my soul to keep me going. A special dedication to my late grandmother, Maroula (†2020), for instigating in me the passion, values and respect towards my country's tradition and rituals.

Author's Declaration

I declare that all the compositions in this portfolio, the commentary, and the research upon which it is based, constitute my own original work and I am the sole author. Wherever a reference is made to the work of others, the extent to which said work has been used, is indicated in the body of the text and acknowledged in the bibliography. This work has not been previously presented for an award at this, or any other, University.

Iérkos (2019–20) has been released on CD by the label Stradivarius in 2021 (STR 37181, Italy).

1. Introduction

The following commentary delineates the process through which I have attempted to redefine my compositional language over the years of my doctoral study at the University of York.

1.1. Research questions

The idea of revisiting the notion of rites within contemporary composition, with the focus on the structure of the sound, was primarily instigated by a personal and rather philosophical query, which was based upon three vital research questions:

- a) In what ways can the notion of rites offer new avenues to contemporary composers?
- b) How can the notion of rites be integrated into my musical language?
- c) What technical approaches can be developed towards this goal?

The notion of rites (traced in a vast pool of interrelated anthropological, sociological, and philosophical topics) can serve as a firm creative impetus for a composer, either thematically or technically. For me, these impulses perfectly coincide with my personal / existential and artistic inquiries, which I have been dealing with even before my doctorate studies. Initially, I handled these impulses thematically, attempting to re-enact or represent them in my works in a more overt manner. The first piece of this portfolio, *Dhákara*, is the last of a series of works that exemplify this approach. During my doctorate studies, I felt more mature to integrate the notion structurally – starting from the second piece of the portfolio, *Pnoé*, onwards. Inevitably, from that point and on, there was a shift in my compositional approach, as demonstrated in the current thesis.

I have focused on four conceptual traits, which I have adopted as my key terminology: *origin*, *memory*, *perception*, and *identity*, and I have subsequently transfigured those into musical ideas. This way, I have developed a framework so as to define the musical elements and technical approaches in each new work.

1.2. Motivation

In August 2010, I visited for the first time the Greek island of Syros in the Aegean. What struck me about Syros was its landscape; the way in which the colours of the little marble and asbestos houses were reflecting the colours of the sky from above and the sea from in front. The true wonder essentially occurred in conjunction with the intense sunlight: the houses, constructed in simple yet geometric forms, were carefully and strategically positioned so that the sunlight would transform their overall viewing perspective, depending on the time of the day. The impression was that of a living architectural organism in constant transformation: specific contours, patterns, shapes seemed to tame the abundant sunlight. I wondered how it would be if this architectural phenomenon finds its way into my compositions. My sound organisation could perhaps work in a similar manner. A constitution of structures, which are responsive to the habitat (my overall formal layout), in reflection to each other and in proportion to a main energy source (the overall pitch material). That was an exciting and challenging idea, but it needed time to evolve. It was not before my doctoral research that I felt confident enough to implement the architectural idea into the structure of my compositions.

How did the ritual idea actually arise? From a very young age, I have always felt a profound enthusiasm for the masses of the Greek Orthodox Holy Week. In particular, the mass of the Epitaph on Good Friday: halfway through the mass, the entire Epitaph is carried outside the church, followed by masses of people in a slow and steady procession around the neighbourhood, chanting some of the most evocative and profound hymns of the Greek Orthodox Church. The byzantine icons inside the church, covered in dark purple cloths, signifying the mourning for the death of Jesus, are unveiled in the early morning hours of Saturday. Then, the re-enactment of the resurrection takes place amid a roaring noise of the worshippers, hitting their seats with force, imitating the resurrection's earthquake.

Such ritualistic acts are deeply embedded in my culture, and they are an inherent and quite natural practice in my community. They constitute a blend of religion and history, whether on special occasions or as daily habits. As a Greek Cypriot, I have always been challenged with a lifelong predicament as to whether I

should embrace and integrate into my creative universe, aspects of my own cultural heritage and origin. At the same time, I have wondered how my Western educational background in music could be merged into a common compositional identity, affected by these elements.

It would be inaccurate on my behalf to state that I had not explored these ideas earlier in my works. From 2011 until mid-2017, I was experimenting with ritualistic ideas, though, in a rather simple representational manner: by granting performers the liberty to contribute their ideas into the creation process, imitating in a way the participatory character of such ceremonial occasions (via aleatoric / indetermined notation). In addition, as an alternative source of pitch and sound material, my compositional practices implemented elements of music traditions of the Eastern Mediterranean, with a direct reference to the *maqam* music system of the classical Arab music, as well as the Byzantine and Ancient Greek music systems.

In 2017, I finally decided to create a musical equivalent of the architectural impressions I gathered in Syros – not thematically but rather within the core (sound structure) of my compositions. I resolved to simulate a hypothetical location or edifice, in which a ritual would take place and unfold entirely via sound. It is worth mentioning that no electroacoustic or other media were used, and everything was calculated and applied manually.

The titles of my works are *Dhákara*, *Pnoé*, String Quartet no. 2 (*Átractos*), *Detriment*, *Terra Incognita*, *lérkos*, *Anapalmós*, *Anáero*, *Thrus*, which all refer to the sacred tree of life (*arbor vitae*) in the circle of life and death, which became the source of inspiration for my pitch material. *Dhákara* literally translates as ‘to remember’, signifying the collective memory of a pre-existing tree; *Pnoé* represents the divine breath imbruing life into the new tree, while the *String Quartet* no. 2 instigates this recreation. *Detriment*, along with *Terra Incognita*, refer to the zero point of creation, or the unknown land, where the tree is planted; *lérkos* reveals the process of sowing and ploughing; *Anapalmós* is a recurrent pulse of life, and *Anáero* is the circulating air; finally, *Thrus* discloses the rattling of the leaves on a mature tree.

1.3. Compositional Objectives

My compositional objectives are firmly associated with the definition of rites, which by itself is inclined to constant modifications: the available literature reveals ‘a welter of labyrinthine arguments and complex, multiclausal definitions’.¹ This is due to the various scientific disciplines, which study the phenomenon of ritual, and have different perspectives on the matter. As a result, the term is often ‘applied in a diffused manner with various associated expressions, such as ceremony, cult ... or routine’.²

For the purpose of this research, rites will be defined as the performative and / or commemorative acts³ that require the participation of a group, a community of people who share cultural memories. This community gradually inherits and develops a number of tools / signals⁴ (sounds, words, images, gestures) to express their memories upon ‘constitutive actions’,⁵ evoking – through repetition⁶ – a transcendental emotional stimulation.⁷ This state links their past with the present in a cathartic manner, and sustains as such the community’s collective identity for the future.⁸ While ceremonial, commemorative or liturgy-centred rituals follow a specific order of acts, Humphrey and Laidlaw sustain that performance-centred rituals are based on stipulating ‘ritual units’⁹ ‘which allow to repeat, change the order or come

¹ Caroline Humphrey and James Alexander Laidlaw, *The Archetypal Actions of Ritual: An Essay on Ritual as Action illustrated by the Jain Rite of Worship* (Oxford: Clarendon Press 1994), 65; a chronology of the various definitions on ritual as well as ritual theories, see Michael Stausberg, ‘Ritual Orders and Ritologues: A Terminological Quest for some Neglected Fields of Study’, *Scripta Instituti Donneriani Aboensis* 18 (2003): 221-242, accessed 22 March 2022, DOI: 10.30674/scripta.67295.

² Barbara Stollberg-Rilinger, *Rituale* [Rituals], *Historische Einführungen* 16 (Frankfurt: Campus Verlag, 2013), 8.

³ Paul Connerton, *How Societies Remember: Themes in the Social Sciences* (Cambridge: Cambridge University Press, 1989), 4.

⁴ Gilbert Rouget, *Music and Trance: A Theory of the Relation between Music and Possessions* (Chicago: University of Chicago Press, 1985), 177.

⁵ Humphrey, Laidlaw, *The Archetypal Actions of Ritual*, 117. See also Ulrike Dahm, *Opfer und Ritus: Kommunikationstheoretische Untersuchungen* [Offering and Rite: Investigations in Theoretical Communication], *Religionswissenschaftliche Reihe* 20 (Marburg: diagonal, 2003), 68.

⁶ Connerton, *How Societies Remember*, 38.

⁷ Edward Murir, *Ritual in Early modern Europe* (Cambridge: Cambridge University Press, 1997), 2. See also, Jean-Paul Sartre, *Transcendence of the Ego: An Existential Theory of Consciousness*, trans. by Forrest Williams and Robert Kirkpatrick (New York: Noonday Press, 1957), 93.

⁸ Edward L. Schieffelin, ‘Performance and the Cultural Construction of Reality’, *American Ethnologist* 12, no. 4 (November 1985): 721, accessed 22 May 2022, <http://www.jstor.org/stable/644178>.

⁹ Humphrey, Laidlaw, *The Archetypal Actions of Ritual*, 124.

back to a favourite section'.¹⁰ For this research, I am solely interested in performative rites.

Lastly, topography poses a significant parameter: ritual acts habitually take place at a specific location / edifice, which is ascribed either to a divine, mythological, or historical context, directly associated with the community's collective memory. This locus becomes a sacred place for the community, or as Lagopoulos suggests as 'the sky upon the earth',¹¹ for the ritual act to develop; and it often becomes the architectural epicentre of the community.

The above definition of ritual encapsulates four traits (*origin, memory, perception, and identity*), which constitute the very basis of my music-making. *Origin*, with regard to the commemoration of a community's primordial roots; *memory*, as to the cultural recollection enacted upon the participants; *perception*, as to the emotional stimulation and the conscious transformation on behalf of the participants, leading to the 'collective effervescence';¹² *identity*, as to the cultural distinctiveness bestowed to and preserved by the community. My compositions, therefore, become the topography upon which a rite is taking place, unfolding these traits through the works' structure.

In musical terms, I represented *origin* through a chord that generates the entire material. To achieve this, I have borrowed the idea of i) an Impulse Response (IR), which captures a space's acoustic environment so as to offer information concerning the formal structure and acoustic properties of a space; ii) the captured environment can be then simulated to bestow this sound imprint to another environment (auralisation).

¹⁰ *Ibid.*, 126. As opposed to the traditional stance of significant authors, indicatively Roy A. Rappaport, *Ritual and Religion in the Making of Humanity* (Cambridge: Cambridge University Press, 1999), Humphrey and Laidlaw argue that ritual acts are not merely based on communication (e.g. linguistic and structural models by Claude-Lévi Strauss). Instead, they emphasise on the ritual stance of the performer of a rite: the 'actor's ritualisation of actions' with regard to perception are as important as the intentions of a ritualised process (p. 65).

¹¹ Alexandros-Phaedon Lagopoulos, *Ο Ουρανός πάνω στη Γη: Τελετουργίες Καθαγίασης του Ελληνικού Παραδοσιακού Οικισμού και Προέλευση τους* [The Sky upon the Earth: Rituals of Sanctification of the Traditional Greek Settlement and their Origins] (Athens: Odysseus, 2002), throughout.

¹² Jason C. Throop and Charles D. Laughlin, 'Ritual, Collective Effervescence and the Categories: Toward a neo-Durkheimian Model of the Nature of Human Consciousness, Feeling and Understanding,' *Journal of Ritual Studies* 16, no. 1 (2002): throughout, accessed 01 July 2021, <http://www.jstor.org/stable/44368625>.

Memory is represented through the dismantling of this chord when propagated in space: individual pitch structures contained in the chord are horizontally activated through a specified time organisation. Then, several sound textures and patterns (gestures) deriving from the individual pitch structures are reflected in this space, until their final decay into silence. These gestures are in fact the ritual units of the composition, constituting an important feature for a performance-centred ritual, and being the inspiration behind several sections within my works. Furthermore, they resemble the various tools used by the participants, so as to narrate their memories. The effect of this propagation depends also on the *perception* of the listeners – their placement in the space but also the acoustics of the environment. As such, the variety of surfaces within this hypothetical topography are being represented through the harmonic steps of my works, upon which the overall formal structure is generated. *Identity* defines the overall imprint of this act: it defines my compositional route and establishes the individual character of the *sound ritual* – a descriptive title I have given to my compositional approach presented in this thesis.

1.4. Methodology

To shape this research, I have followed three distinct methods: i) with each composition, I explored one or two elements, adding the gained results onto the next one. This way, I was able to acquire useful insights into the feasibility of the experimentation with regard to pertaining what was of use and abolishing what could not serve me further. Each of the nine pieces of this portfolio is a stepping-stone to the next, all together culminating in the orchestral *Thrus*.

Accordingly, ii) my aim was to premiere as many pieces as possible in order to listen to the actual results. This was a catalyst particularly in the case of my String Quartet no. 2, which underwent several revisions in the workshop sessions with Quatuor Diotima. Likewise, the four different performances of *lérkos* by Cikada Ensemble, Divertimento Ensemble, Taller Sonoro, and Ensemble U gave me valuable insights.¹³

¹³ *lérkos* was commissioned by the network DYCE, and was premiered in Seville, Tallinn, Oslo, Milan in November and December 2020.

Further to that, iii) I was closely working with the instrumentalists to ensure that my sound ideas and techniques would be applicable. With the exception of the piano solo piece, which I had tested by myself, there was extensive research on each instrument involved prior to composing the score of each work. In some cases, this close collaboration inspired me to discover new sound ideas and better ways of articulating them, which I then applied or kept aside for future endeavours.

1.5. Outline

I have divided the commentary into three sections: the theoretical background (chapters 2, 3, and 4), the compositional section (chapters 5, 6 and 7), and a discussion (chapter 8).

Chapters 2, 3 and 4 examine the main philosophical traits in my research: how these were interwoven into my compositions, and in what ways they inspired the various techniques applied in my works. I also define the process through which my compositional approach is manifested as a *sound ritual*, hence I named these chapters 'Towards a *sound ritual*' I, II and III. Within these chapters I have also delineated how other composers have approached such notions, and in what ways I have been inspired by and / or differentiated to their aesthetics.

The compositional section is divided into three parts ('Musical elements' I, II, III – chapters 5, 6 and 7) and is entirely focused on the exploration of the main musical elements and techniques, as applied and identified in my works: form, harmonic and time organisation, pitch material, and finally reverberation. In addition, these chapters explore any considerations and solutions to issues that have arisen during the process, as well as deviations from the initial ideas and their reasoning.

Chapter 1 is an introduction to the origins of my research: the research questions, motivation, objectives, methodology, and this outline. Chapter 8 validates the conclusions of this research, and reviews possible future applications of the outcomes.

2. Towards a *sound ritual* I: memory

In this chapter I will focus on the trait of *memory* and how it is used in my works through the lens of myth and embodiment. I will also make a reference to the aesthetics of other composers who have dealt with analogous ideas and have had a major influence on my compositional language.

2.1. On myth

[A] myth narrates a sacred story; it relates [to] an event that took place in primordial Time, the fabled time of the “beginnings” ... [It] tells how ... a reality came into existence, be it the whole of reality, the Cosmos, or only a fragment of reality ... [It] is always an account of a “creation”.¹⁴

A myth is a capsule of information, a *prisca sapientia* of a civilisation, a memory well-protected in time: ‘[m]yths represent the collective memory of a group’.¹⁵ The philosophical term *endhoxon*, introduced by Aristoteles, attests to that;¹⁶ it is based upon the stance of a continuous, perhaps eternal remembrance of a primordial memory or potential, and as such it was used as a didactic tool. A rite is the process of re-enacting this primordial memory by means of embodied participation, within a collective context. The re-enactment is achieved through the triggering of a mnemonic code visually, semantically, and verbally.¹⁷

Throughout my works there is a nucleus, which behaves metaphorically as a myth, describing how the ‘reality’ of my works came into existence. This nucleus is a melodic fragment, and it is re-enacted by being distributed throughout the narrative.

¹⁴ Mircea Eliade, *Myth and Reality* (London: Allen & Unwin, 1964), 5-6.

¹⁵ Bettina E. Schmidt, *Einführung in die Religionsethnologie: Ideen und Konzepte* [Introduction to the Ethnology of Religions: Ideas and Concepts] (Berlin: Reimer, 2008), 67.

¹⁶ Thomas K. Johansen, ‘Myth and Logos in Aristotle’, in *From Myth to Reason: Studies in the Development of Greek Thought*, ed. Richard Buxton (Oxford: Oxford University Press, 1999), 288.

¹⁷ Connerton, *How societies remember*, 23, 27.

How is this nucleus translated in terms of music? It is in fact a five-pitch melodic cell with a mutable inner degree, hence a tetrachord (figure 1).



Figure 1: The five-pitch melodic fragment (nucleus).

The melodic fragment evolved from a pentachord in *Dhákara* and *Pnoé*; in *Detriment* as a tetrachord with the same first two degrees as the previous pentachord, while from *Terra Incognita* onwards, it emerges in its final outline (figure 2).

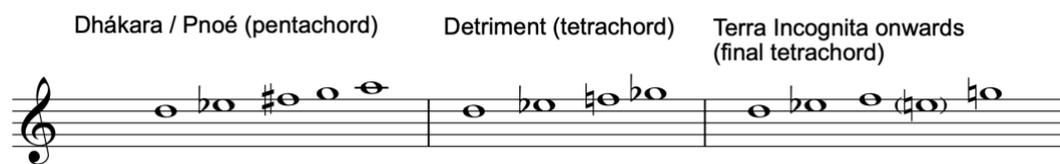


Figure 2: Versions of the melodic fragment.

As a texture in my works, the fragment appears extremely augmented as a melodic line:

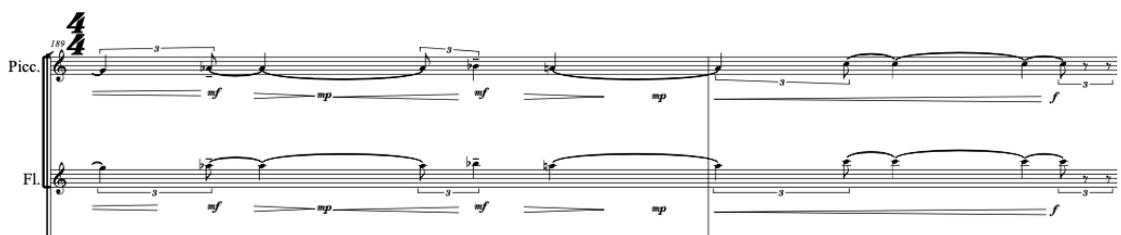


Figure 3: The fragment augmented in *Thrus* (rehearsal marking J to I).

It also appears in extreme diminution as a sound tapestry (figure 4):

Figure 4: The fragment in diminution in *Thrus*, bars (bb.) 19-24.

Besides its textural use, it appears as part of the central episode in many of my works: as a signal initiating a mnemonic code that interconnects all my works, reminding the listener of ‘an event that took place in primordial Time’. This central episode climaxes in a non-metric / aleatoric segment, while attaining an individual accelerating pace in contradiction to the ascribed formal and temporal structure of the referring passage. Poetically speaking, as a myth, it exists under an arc of timelessness, beyond the formal structure of the work, hence of the ritual act. For example, in *Pnoé* rehearsal markings B and D / F and the second half of G; in the String Quartet no. 2 rehearsal markings H and J; *Terra Incognita* bars (bb.) 27-38; *lérkos* rehearsal markings E and O; *Thrus* rehearsal markings E and M.¹⁸

The idea of the dissemination of memory in my compositions has been primarily influenced by the work of Beat Furrer. The composer has been a great impetus to my compositions since my student years in Dresden, when I was researching his *Lotófagos I* for soprano and double bass (2006) on a text by José Ángel Valente, for my master’s dissertation. In *Lotófagos I*, Furrer dismantles his narrative of sound ideas¹⁹ into segments scattered throughout the piece. This process has been termed by Marie Luise Mainz as the ‘physiognomy of the scream’,²⁰ exactly because the soprano unfolds the process when this technique is used.

Furrer is profoundly inspired by the diptych memory – oblivion: through Valente’s text, he induces the listener into a state of forgetfulness by using

¹⁸ Due to the extent of this central episode in the scores, no score sample is presented within the commentary.

¹⁹ Marie Luise Mainz, ‘Physiognomie des Schreis [Physiognomy of the Scream]’, liner notes to *Beat Furrer (*1954)*, trans. by Cristopher Barber, dir. various (Kairos Music Productions, 0012842KAI, 2008), CD, 11, accessed 10 January 2020, <https://www.kairos-music.com/sites/default/files/downloads/0012842KAI.pdf>.

²⁰ *Ibid.*, 6.

techniques such as ‘*topoi (loci)*²¹ of memory’ (recognisable sound ideas which reoccur throughout the piece). In addition, he creates an ‘anagram of sound ideas’,²² juxtaposing the linear development of his sound pallet and leading the process of dismantling into a state of disappearing, or even death.

2.2. Embodiment

The acceptance of the body, as the ‘agent between intention and action’²³ that encapsulates and thereafter unfolds memories, shifted radically the perspective of rites not as mere communicational but as performative acts. Indicatively, Victor Turner defined rites as ‘social dramas ... [which] do not simply release emotional tensions in a cathartic easing of social tensions ... [but rather] dramatise the ... situations’.²⁴ The participants, as embodied entities, are capable of ‘acquir[ing], localis[ing] and recall[ing] ... memories ... through the membership to a social group’: thus, the rite becomes a ‘habituated repetition’²⁵ of a coded mnemonic representation, in the sense of the French philosopher Henry Bergson, out of a community’s ‘reservoir of meanings’.²⁶ This is not achieved solely by the participant’s individual efforts but rather with regard to an exchange of individual parts of the collective memory each one possesses: an act in the sense of Edmund Husserl’s ‘intersubjectivity’.²⁷ As such, Turner brought into the foreground the human body as ‘the source of symbols and systems of symbols which are extended outward to organise

²¹ Andreas Tsiartas, ‘Mnéme and Léthe: Analytische Betrachtungen zu Beat Furrers Lotófagos I für Sopran und Kontrabass [Mnéme and Léthe: Analytical Observations to Beat Furrer’s Lotófagos I for Soprano and Double Bass]’, (master’s dissertation, Hochschule für Musik Dresden, 2010), 53.

²² *Ibid.*, 54.

²³ Humphrey and Laidlaw, *The Archetypal Actions of Ritual*, 133.

²⁴ Catherine M. Bell, *Ritual: Perspectives and Dimensions* (NY: Oxford University Press, 2009), 40.

²⁵ Henry Bergson, *Matter and Memory*, trans. by Nancy Margaret Paul and W. Scott Palmer (London: George Allen and Unwin, 1911), throughout.

²⁶ Connerton, *How societies remember*, 38, 48-49, 56, also compare Jan Assmann, ‘Kollektives Gedächtnis und kulturelle Identität [Collective Memory and Cultural Identity]’, in *Culture and Memory*, ed. Jan Assmann and Tonio Hölscher (Frankfurt am Main: Suhrkamp, 1988), 10-11.

²⁷ A term coined by philosopher Edmund Husserl, see Dermot Moran, *Introduction to Phenomenology* (London: Routledge Press, 2000), 377.

and understand the social world'.²⁸ He emphasised 'creativity' and 'physicality' via 'active participation',²⁹ instead of a mere information 'transmitter' and 'receiver'.³⁰

In my works, instrumentalists behave as agents between intention and action. I am not concerned with individualising them, but rather with exhibiting and accentuating their physicality (embodiment) as 'a conscious action of transformation'.³¹ It is as if the instrumentalists, while attempting to surpass the regular capacities of their instruments (physicality), they also transform themselves, augmenting what they actually are and arriving at a transcendental field to access the primordial myth: I have named this attained transformation *meta-physicality*.

To achieve this in terms of music, I opted for i) non-standardised sonorities via extended techniques, often in association with refined dynamic fluctuations, or ii) by equipping them with extra-instrumental items, and iii) by focusing on the extremities of the range of each instrument.

Regarding the latter (iii), I took into consideration the fact that an instrument's high, middle, and low range areas correspond acoustically to the formants of other instruments. For me, this technique serves also in reproducing the human voice: either singing, humming, whispering or even reciting by using the extremes of their range, in conjunction with the two other options arrayed before (i and ii). Any given instrument transforms its nature into something new: it attains a voice and as such, it becomes a transcendental entity within the structure of the musical work.

This phenomenon occurs both suggestively and explicitly: explicitly, in cases where the instrumentalists are requested to sing out or hum, as in the following example (figure 5). This example also illustrates the melodic fragment vocally expressed (verbal code):

²⁸ Bell, *Ritual: Perspectives and Dimensions*, 41.

²⁹ *Ibid.*, 73. Indicatively, Victor Turner, *From Ritual to Theatre: The Human Seriousness of Play* (New York: Performing Arts Journal Publications, 1982), 31, 100.

³⁰ Margaret Lock, 'Cultivating the Body: Anthropology and Epistemologies of Bodily Practice and Knowledge', *Annual Review of Anthropology* 22 (1993): 134.

³¹ Humphrey and Laidlaw, *The Archetypal Actions of Ritual*, 121.

humming or soft vocalise/
(adjust octave register appropriately)

mp mp mf mf

Hp.

Figure 5: Indication for humming or vocalising the fragment in *Thrus* (harp, bb. 232-240, before rehearsal marking M).

Meta-physicality occurs suggestively in cases where the strings apply metallic practice mutes, which although used to dampen the instruments' volume, they alienate their sound with a very distinct, introverted quality. Furthermore, the pianist often rubs bow hair on the strings, to create an airy voice-like texture; likewise, the harpist in *Thrus* (see fig. 5 above).

l.v.

mf

Figure 6: For the pianist: bowed string with bow hair in the interior of the piano.

Another example is found in the use of the percussion, particularly a specialised friction mallet (in *lérkos*) that abstracts specific frequencies from the tam-tam to resound as a singing body (figure 7). The mallet, which is produced by the company TTE Konklang in Germany, consists of two parts: a frictioner (in various head-sizes) and a handle (in three friction positions).³²

³² Michael Konrath, '[Gong Tam-tam \(Wuhan\) Rubbermallets TTE Konklang](https://youtu.be/dIBO8GIs3F8)', YouTube video, 6:07, posted by 'Michael Konrath', 20 December 2010, accessed 01 October 2020, <https://youtu.be/dIBO8GIs3F8>.

38

185 $\frac{4}{4}$ $\text{M} \text{♩} = 25$

Fl.

E♭Cl.

change to bass clarinet

T-t.

KK mallet (OSSIA: see guidelines in coverpages)

l.r.

sim.

l.r.

pp

mf

pp

p

Figure 7: The TTE Konklang mallet in *lérkos* bb. 185-187.

There is a general tendency of extending the instrumental range in the extreme lows and highs. This is achieved by the regular use of auxiliary instruments (both piccolo and bass, e.g., the use of E^b clarinet in *lérkos* and *Thrus*, the piccolo D trumpet in *Thrus*) as well as other instruments such as the contrabassoon in *Thrus*, where the instrumentalist is requested to insert a tube in the bell that extends its range to G¹ (bb. 177-179) and A¹ (bb. 284-285):

175

2. Contrabassoon

ca. 25 Hz-Use extension

pp_{poss.}

Figure 8: Contrabassoon part in *Thrus*, b. 177.

With regard to the extended techniques, performers are often requested to muffle their timbre: wind players, through the use of air in degrees (air only towards regular pitch and vice versa), as in figure 9. String players, through the use of vibrato in degrees (regular to extreme vibrato), or likewise regular to extreme sul ponticello; also, as a combination of the above (figure 10):

Aeolian sounds (various forms and notations):

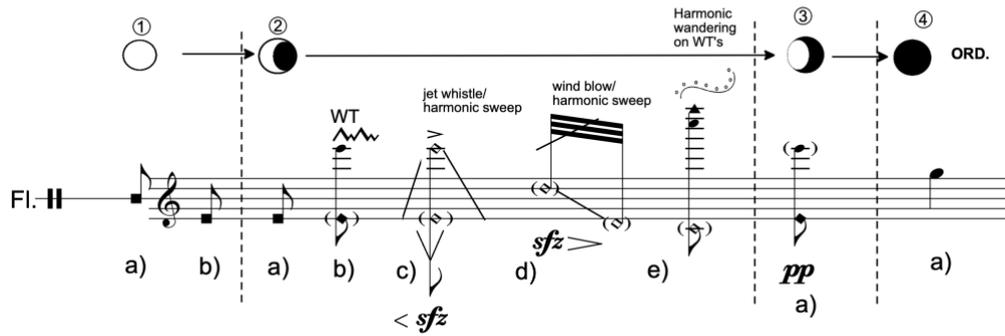


Figure 9: Progression of aeolian sounds for the flute in *Anáero* (also for *lérkos* and partially for *Thrus*); from pure air (white circle) to regular pitch (black circle) and intermediate steps, resulting in various extended techniques.

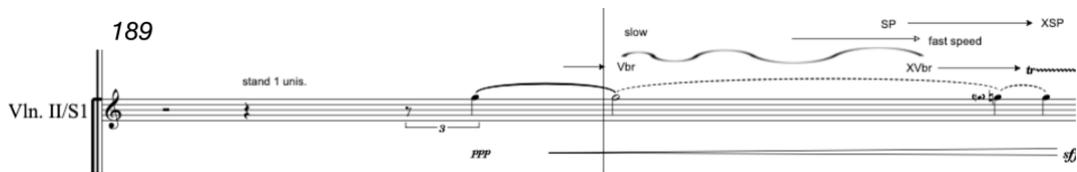


Figure 10: Violin II part (first stand), in *Thrus*, bb. 189-190 (vibrato and ponticello degrees).

Employing extra-instrumental gestures has been an accustomed practice of the mid-twentieth century onwards. Many composers have explored the expansion of the instrumental capacities that challenge and often question the performance margins. Most notoriously among many, John Cage, Mauricio Kagel and Jani Christou, each one in different ways and – as Yerosimou rightfully comments, with ‘different intentions’: for instance, whilst all three composers borrow elements of theatricality in their works, Cage and Kagel dealt with everyday materials and realistic situations, often bearing ‘a resemblance to musical happenings’;³³ Christou on the other hand, was concerned with the sacred, and his works ‘resembled spiritual practices’.³⁴

More importantly, Christou coined the term *metapraxis* as opposed to *praxis* (action and meta-action), an ‘inner process of experiencing the logic of a situation and its characteristics ... being led to a necessity of going beyond, transcending that

³³ Maria Yerosimou, ‘Jani Christou’s *Strychnine Lady* (1967): The Development of an Interpretative Strategy in the Context of the Interdisciplinary Ideas Surrounding its Genesis’, (doctoral dissertation, Goldsmiths College, 2014), 63.

³⁴ *Ibid.*, 63.

situation'.³⁵ As opposed to the practices employed by Cage and Kagel, Christou's term is related to expression intentionally as 'a challenge of expressive conventions'.³⁶ In his own words, in the commentary of his work *Praxis for 12* (1966):

a metapraxis is an implosion, a tension under the surface of a single medium, which threatens that medium's meaning barrier. An assault on the logic of the performer's relationship to his own particular medium. A violation within a single order of things.³⁷

The treatment of my instrumental forces towards a *meta-physicality*, as described above, might be at closest to Christou's notion of metapraxis: However, the differences to this term outweigh the similarities:

Although *meta-physicality* is not a challenge of expressive conventions per se, it somehow poses a challenge to the instrumentalists as it requires them to push their instruments' capabilities to the extremes. As opposed to metapraxis, it does not attempt to violate, nor assault any relationship. Neither does it constitute an extension of the performer's theatricality, and certainly not a provocation of the stage layout. Instead, it is a struggle to surpass one's capabilities within the actual sound force of the work. Literally to transcend into something beyond the medium's meaning barrier, creating thus an individual acoustic imprint.

In terms of sound, the resulting effect could perhaps be evocative of sonorities associated with electroacoustic modifications. However, these textures were not intentionally reproduced. Subconsciously though, electroacoustic music has been a significant influence in my sound universe, ever since my studies in Germany, while working on techniques such as algorithmic composition, additive / granular synthesis, for tape, or live electronics.

Apart from the technical applications, I was fascinated by the idea of a 'sound image' (*l' image de son*) by François Bayle. The latter, referred to *musique acousmatique* in 1974, as the image which 'is evoked acoustically ... firstly in [our]

³⁵ Andriana Minou, 'Sibyl's Leaves: Understanding Musical Performance Issues in Jani Christou's *Anaparastasis III* and *Epicycle*', (doctoral dissertation, Goldsmiths College, 2010), 42.

³⁶ *Ibid.*, 42.

³⁷ Jani Christou, 'Commentary', *Praxis for 12* (London: J. & W. Chester Ltd, 1970).

inner eyes';³⁸ at its core this notion is based on Pierre Schaffer's acoustic canvas (*ecran sonore*) in an analogy to a film: 'in reality you are being projected with a sound image and you are their canvas',³⁹ a mental image of sound.⁴⁰

The aforementioned stimuli constitute perhaps the main drive behind *meta-physicality*: in my works, instruments behave as resounding bodies, as entities actively participating in a rite, seeking to break a threshold and create a transcendental acoustic imprint. This imprint is metastasised to the new level of consciousness acquired by the participants of a rite, while the process towards this goal is a state of mania, trance, or even perhaps ecstasy (for example, in *lérkos* at rehearsal marking L).

³⁸ Nathalie Singer, 'Musique Invisible', in *Inventionen '98: 50 Years Musique Concrete*, ed. Helga de la Motte-Haber (Saarbruecken: Pfau Publications, 1999), 158.

³⁹ *Ibid.*, 158.

⁴⁰ François Bayle, *Musique Acousmatique: Propositions, Positions* (Paris: Buchet/ Chastel-INA-GRM editions, 1993), 54.

3. Towards a *sound ritual* II: Space

In the late seventies, the American psychologist and philosopher James J. Gibson crystallised an ontological stance, the result of long research since 1938, by suggesting a reciprocal relationship between the perceiver and the environment.⁴¹ According to this relationship, the environment ‘is what it is owing to the existence and actions of perceivers. Perceivers are what they are owing to the support of action by the environment’.⁴² Gibson’s understanding was that perceivers do not simply process or ‘compute’ the information they receive from their environment (that is ‘a kaleidoscopic inflow of sensations’⁴³) but rather they ‘resonate to ecological information’; a conception that would be verified much later on by cognitive neuroscience.⁴⁴ Therefore, Gibson brought into broader discussion the dimension of space as a result of perception and vice versa.

What is significant for the context of my research is that the participant within a rite can be contextualised within an environment. As such, the human body resonates information reciprocally with the surrounding environment, bringing the significance of space to the foreground. Yet, how do we define space in music, and most importantly, how do we create an environment as such in musical terms?

Space in contemporary music was allegedly brought to realisation first in Stockhausen’s monumental *Gruppen* (1955–57) premiered in 1958. Stockhausen, however, gave the first example of spatiality (spatial movement) a few years earlier, with his *Gesang der Jünglinge* (1956), on which he was working concurrently with *Gruppen*. In his *Gesang der Jünglinge*, he diffused the electroacoustic sounds of the

⁴¹ Referring to James J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, New Jersey: Erlbaum, [1979] 1986).

⁴² Pavel Zahorik and Rick L. Jenison, ‘Presence as Being-in-the-World’, *Presence: Teleoperators and Virtual Environments* 7, no. 1 (1998): 87, accessed 20 May 2022, <https://doi.org/10.1162/105474698565541>.

⁴³ James J. Gibson, *The Senses Considered as Perceptual Systems* (Boston, MA: Houghton-Mifflin, 1966), 5.

⁴⁴ Lorena Lobo, Manuel Heras-Escribano and David Traverso, ‘The History and Philosophy of Ecological Psychology’, *Frontiers in Psychology* 9 (November 2018), sect. ‘Conclusion’, accessed 25 April 2022, DOI: <https://doi.org/10.3389/fpsyg.2018.02228>.

work through four groups of loudspeakers distributed in the concert hall.⁴⁵ The results achieved in this work, would be transferred instrumentally in *Gruppen*: three independent orchestras, under a different conductor each, would surround the listener and ‘call, answer or echo each other ... [T]hey [would] wander from one sound body to the other’,⁴⁶ employing the real space as an additional parameter of composition:⁴⁷ an ‘extension of the musical structure and form on real spatial dimensions of the performing space’.⁴⁸ In reality, for Stockhausen (and also Pierre Boulez) space was applied to ‘tame complexity’⁴⁹ that resulted out of total serialism, and not as a parameter within the structure of a work.⁵⁰ It was an actual architect and engineer that would literally ‘explore the acoustic qualities of a space ... [as] a[n] expressive parameter’:⁵¹ Iannis Xenakis.

In 1955, when the premiere of Xenakis’ *Metastaseis* took place, it was clear that the composer was dealing with sound as a sonority, as a ‘complex entity’, rather than sound ‘in the physical sense’,⁵² or in a serialist approach. In the Xenakian universe, sound would be handled as a sculpture, ‘as a means to expand the boundaries of architecture through the creation of immaterial and dynamic spaces’ in which the listener would be immersed: a mode of listening that ‘somehow resembles the way one perceives a building’.⁵³ This notion was explored in works such as *Terretektorh* (1965) for 88 musicians or *Nomos Gamma* (1967–68), for large orchestra of 98 musicians, where performers are scattered throughout the audience. However, it fully evolved in his *Polytopes*, a series of multimedia installations, which were

⁴⁵ Originally five groups of loudspeakers, see Karlheinz Stockhausen, ‘Musik im Raum [Music in Space]’, in *Die Reihe* 5 (1959): 153.

⁴⁶ *Ibid.*, 156.

⁴⁷ Gisela Nauck, *Musik im Raum, Raum in der Musik: ein Beitrag zur Geschichte der seriellen Musik* [Music in Space, Space in Music: A Contribution to the History of Serial Music], Beihefte zum Archiv für Musikwissenschaft 38 (Stuttgart: Franz Steiner Verlag, 1997), 81.

⁴⁸ *Ibid.*, 36.

⁴⁹ Sven Sterken, ‘Music as an Art of Space. Intersections between Music and Architecture in the Work of Iannis Xenakis’, in *Resonance: Essays on the Intersection of Music and Architecture*, ed. Sven Sterken, Mikesh Muecke, and Miriam Zach (Ames: Culcidae Architectural Press, 2007), 47.

⁵⁰ For example, for Stockhausen, space was used in *Gruppen* to coordinate and bring attention upon the poly-temporal layers of the work, see K. Stockhausen, ‘...How Time Passes...’, *Die Reihe* 3 (1959): throughout.

⁵¹ Sterken, ‘Music as an Art of Space’, 47.

⁵² Makis Solomos, ‘Xenakis as a Sound Sculptor’, in *welt@musik - Musik interkulturell*, Publications de l’Institut für Neue Musik und Musikerziehung Darmstadt 44 (Mainz: Schott, 2004), 163-164 (3-4).

⁵³ Sterken, ‘Music as an Art of Space’, 48 and 49.

constructed during the 60s. In these works, Xenakis initiated a discourse between sound, image, and architecture as well as body, senses, and perception, within an 'immersive and artificial environment'.⁵⁴

Ever since these early endeavours, many composers have attempted to incorporate the notion of space in their works; Luigi Nono in his *Prometeo, a tragedy of listening* (1983-84), 'one of the most elaborate spatial compositions of its time'.⁵⁵ For the premiere of *Prometeo*, the interior of San Lorenzo's church in Venice was transformed into 'a huge musical instrument', a resonant box housing the stage, the audience and the orchestra;⁵⁶ Beat Furrer in his site-specific acoustic theatre *Fama* (2004-05), which required a special box of moving / rotating panels, in order to reflect or absorb the sound in various directions around the listener.⁵⁷

Even though space in music has many contradictory interpretations, there is one common denominator, which is also evident in the above examples: the urge to explore the perception of sound on behalf of the listener. This has been likewise a fundamental predisposition in my works within this portfolio. My main concern, nevertheless, was the gradual unveiling of an environment within a ritual act, in close conjunction to the musical elements involved in my works. This unveiling is achieved entirely by instrumental means. In addition, there is one predominant feature that strongly differentiates my notion of space to the examples of the aforementioned composers: space is conceptualised out of its association with rites and more specifically with the idea of sacredness.

⁵⁴ Sven Sterken, 'Towards a Space-Time Art: Iannis Xenakis's Polytopes', *Perspectives of New Music* 39, no. 2 (2001): 263, accessed 24 April 2022, <http://www.jstor.org/stable/833570>.

⁵⁵ Martha Brech and Henrik von Coler, 'Aspects of Space in Luigi Nono's Prometeo and the Use of the Halaphon', in *Kompositionen für hörbaren Raum*, ed. Martha Brech and Ralph Paland (Bielefeld: transcript Verlag, 2015), 193, accessed 24 April 2022, <https://doi.org/10.14361/9783839430767-012>.

⁵⁶ Renzo Piano Building Workshop Architects, 'Prometeo Musical Space: 1983-1984, Venice Italy', www.rpbw.com, accessed 25 April 2022, <http://www.rpbw.com/project/prometeo-musical-space>.

⁵⁷ Talea Ensemble, 'American Immersion: Beat Furrer', [www.taleaensemble.org](http://taleaensemble.org), accessed 24 April 2022, <http://taleaensemble.org/american-immersion-beat-furrer/>.

3.1. Sacredness

In the beginning of the 1960s, Mircea Eliade suggested that there are two modes for the perceiver for 'being in the world': the sacred and the profane.⁵⁸ With regard to the sacred mode, he introduced a 'morphology of the sacred' through terms such as sacred time and sacred space paying attention to the 'human experience, and management of spatial and temporal life conditions'.⁵⁹ For Eliade, the sacred space is a spatial situation that 'allow[s] man to define his place in the cosmos',⁶⁰ the 'centre of the world', the 'universal pillar, the axis mundi, which at once connects and supports heaven and earth', and 'requires certain rituals' to be brought into realisation following a 'celestial model'.⁶¹

Alexander, Ishikawa et al. identified as early as 1977 an architectural pattern that designates sacredness, and which is 'invariant ... in all cultures': 'whatever it is that is holy will only be felt as holy, if it is hard to reach, if it requires layers of access ... a gradual ... revelation, a passage through a series of gates'.⁶² They proposed a pattern (figure 11), in which several adjacent chambers ('precincts') are connected via thresholds or gateways that gradually lead into the innermost space, the sanctum, a most private area 'that can only be reached by passing through all of the outer ones'.⁶³

⁵⁸ Mircea Eliade, *The Sacred and the Profane: The Nature of Religion*, trans. by Williard R. Trask (New York: Harper and Brothers, 1961), 14.

⁵⁹ Christiane Barth, 'In illo Tempore, at the Center of the World: Mircea Eliade and Religious Studies' Concepts of Sacred Time and Space', *Historische Sozialforschung* 38, no. 3 (2013): 61, accessed 24 April 2022, <http://www.jstor.org/stable/23644525>.

⁶⁰ Richard Reschika, *Mircea Eliade zur Einführung* [Introducing Mircea Eliade] (Hamburg: Junius, 1997), 58.

⁶¹ Eliade, *The Sacred and the Profane*, 36.

⁶² Christopher Alexander et al., *A Pattern Language: Towns, Buildings, Construction* (NY: Oxford University Press, 1977), 332-333.

⁶³ *Ibid.*, 334.

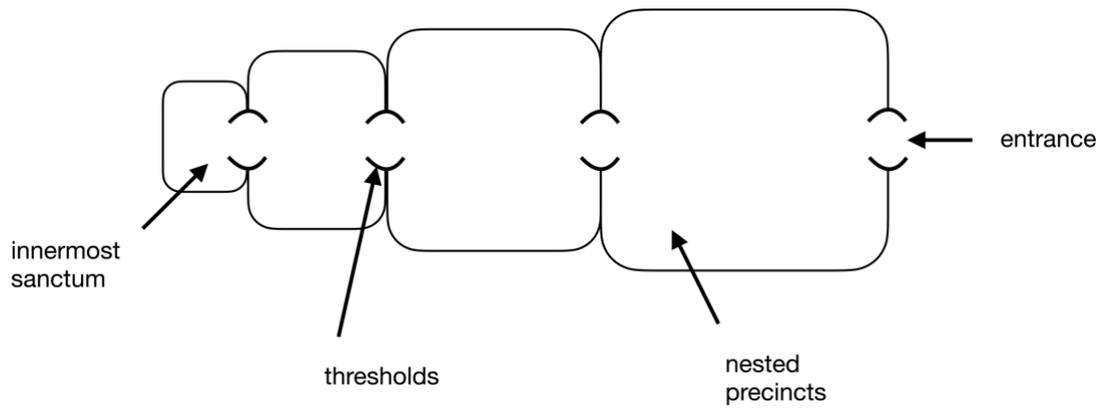


Figure 11: An adaptation of the architectural pattern for sacredness as found in Alexander et al., *A pattern language*, 334 (read from right to left).

This pattern was applied in the structure and form of *Dhákara* (as well as in the preparatory studies for the string quartet *Towards Atractus* – see Appendix I for the score of the piece) and as the formal foundation for *Pnoé*. Moreover, it remained a fundamental layer to the further development of a final design of sacred space, starting from String Quartet no. 2, and particularly from *Iérkos* onwards.

Dhákara is aurally structured upon three main arches (AB / AC / B), as shown in figure 12, recurrently showcasing various perspectives of a main sound idea. Not until the middle of the second arch (section F onwards), however, do these apparently ‘shattered’ aspects seem to take shape, demonstrating the complete sound idea in the final sections (H to K).

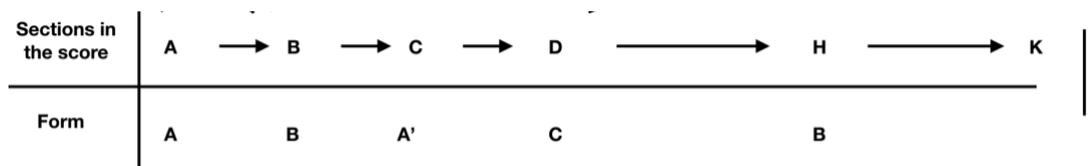


Figure 12: The form of *Dhákara*.

Under the listening impression however, the form of the piece is to be interpreted more analytically: if we take the floor plan of the architectural model as shown in figure 11 and overlap the adjacent precincts on top of each other (figure 13, right side), then we will create a floor plan, the façade of which is a spiral form (figure 13, left side). To my creative imagination, the idea of this pentachord resounding out

of the sanctum, would be enhanced if the premises were in spiral instead of a consecutive design (no obstructions to reverberation).

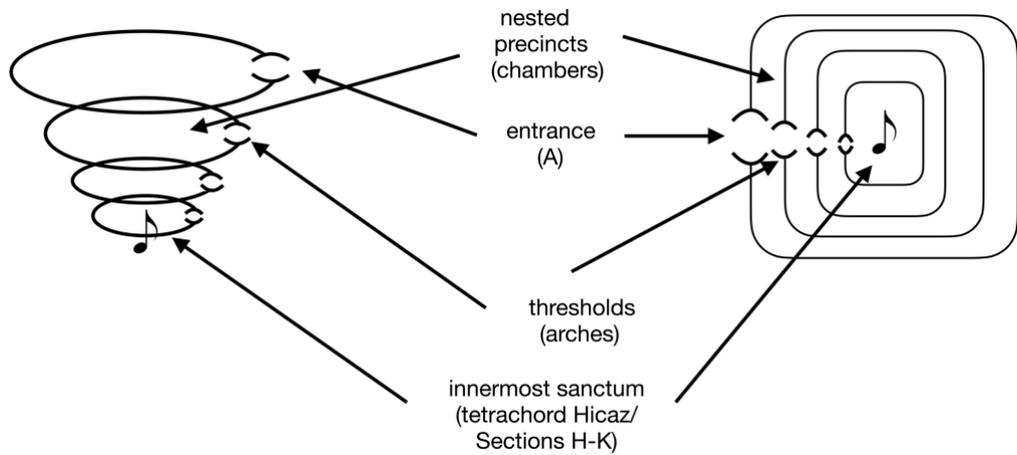


Figure 13: Floor plan of the architectural pattern on Fig. 11 (right); façade of the overlapped chambers on Fig. 11 (left).

Within the innermost sanctum, lays a nucleus that encapsulates the collective memory of a community. While in the case of a physical sacred space this nucleus could be an important item, a relic, or any material representation of this collective memory, in terms of my research, this nucleus is a sound idea. In *Dhákara* (figure 14) it is a pentachord *Hicaz* (more specifically a maqam *Hicaz* consisting of a pentachord and a tetrachord *Hicaz* – D to A and A to D respectively), blended within a harmonic spectrum on D, which conceals the entire material of the piece.

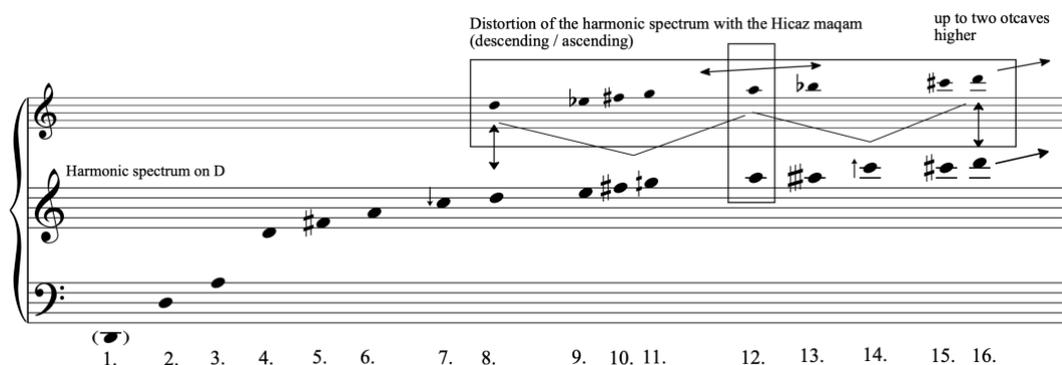


Figure 14: The harmonic spectrum on D and the distortion in the fourth octave range through a Hicaz maqam.

As the pentachord resounds within the space, its fractures are metaphorically disseminating through the antecedent chambers; likewise, its quasi-spectral components are echoing throughout the hypothetical edifice. It is interesting to note that in later works such as *lérkos* and *Thrus*, one may find explicit guidelines as to the stages of the passage towards the sanctum. For example, in *lérkos*, at rehearsal marking M, there is the indication of *Sanctum Sanctorum* (Latin for the holy of holies), which can be interpreted as the participant's entrance into the innermost space (figure 15). Also, in *Thrus* at rehearsal marking I, an indication that the participants are heading towards the sanctum (Latin *ad sanctum*):

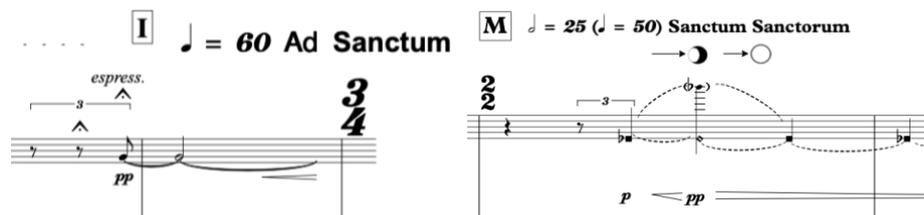


Figure 15: Indications of the sanctum sanctorum sections in *Thrus* (left) and *lérkos* (right).

This approach was further developed in *Pnoé*, before taking a final shape from *Terra Incognita* and particularly *lérkos* onwards.

4. Towards a *sound ritual* III: Perception

In *Pnoé*, I decided to take the architectural spiral pattern a step further by incorporating three significant features: i) part of the circle of fifths; ii) different registral ambituses; ii) the golden ratio.

As demonstrated in figure 16, left side, the entrance to the first nested chamber (green), and subsequently the trailing within the chamber itself, occur entirely on the fundamental of D; the second one (blue) shifts a fifth higher (A) then returns back to D; the third chamber (yellow) starts on A, traverses a fifth higher to E (and subtly towards B), and returns to A, entering the final precinct (pink) on D, again navigating a fifth lower on G – as well as a fifth higher on A: all together (G) – D – A – E – (B).

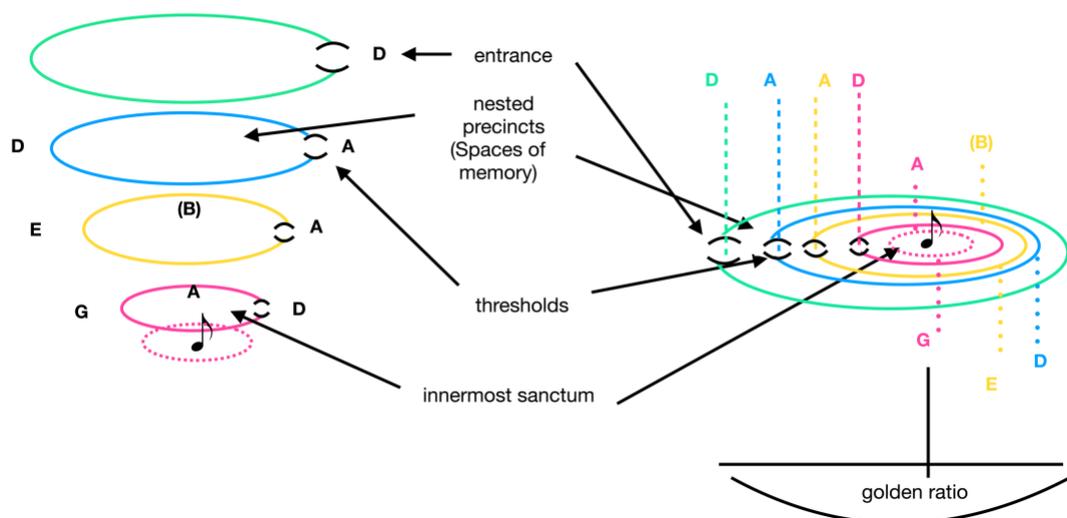


Figure 16: Development of the floor plan of the architectural pattern on Fig. 11 in musical terms (circle of fifths – left, and golden ratio – right).

By applying these fifths, I gradually unfolded my work towards both higher and lower registral directions (feature ii), reaching by the final chamber the largest ambitus of a range of D^1 - D^7 (pink – in *Pnoé*, rehearsal marking F to the end, figure 18). In fact, within these final sections, the open ambitus is established in two occasions: the first one being a D^2 to D^7 at rehearsal marking F, and the second one a D^1 to D^7 at H. In figure 16, these two occasions appear in pink with regular and dotted lines. By traversing through the open range in both cases, I intended to give my music

a sense of 'spatial depth', in order to depict the passage through the precincts and at the same time to intensify the spiral direction from top to the bottom towards the sanctum.

In *Pnoé* I also employed the golden ratio principle to diversify the concentric circles in the spiral design. To do so, I overlapped the chambers onto a floor plan (see figure 16 above, right side), this time slightly shifting the sanctum (the innermost pink circle) to be positioned exactly upon the golden section, and subsequently all other circles to be positioned appropriately in the plan.

To apply this concept in the actual form of the piece, I multiplied its duration by seconds ($10' \times 60'' = 600''$). Then, I used an application to quickly calculate the proportions of the golden ratio out of 600 seconds. Subsequently, I applied this for further time subdivisions down to ca. eight to ten seconds.⁶⁴ The sanctum (pink, figure 17, D – G – A) would be positioned ca. on the sixth minute ($a = 371'' = 6'$). The rest of the precincts would be eventually allocated on the subsequent divisions, for example the yellow chamber (A – E – B – A) upon the two-and-a-half-minute division, the blue (A – D – A) on the one-and-a-half-minute division, and the green (D – A) at start:

⁶⁴Piotr Małek and Mateusz Mucha, 'Omnicalculator: Golden Ratio Calculator,' *www.omnicalculator.com*, accessed 01 April 2018, <https://www.omnicalculator.com/math/golden-ratio>. These initial calculations would have significant deviations according to the performance (Ensemble Modern up to three minutes, while for Cikada Ensemble one minute 36 seconds – see figure 17 For the deviations in score and recording).

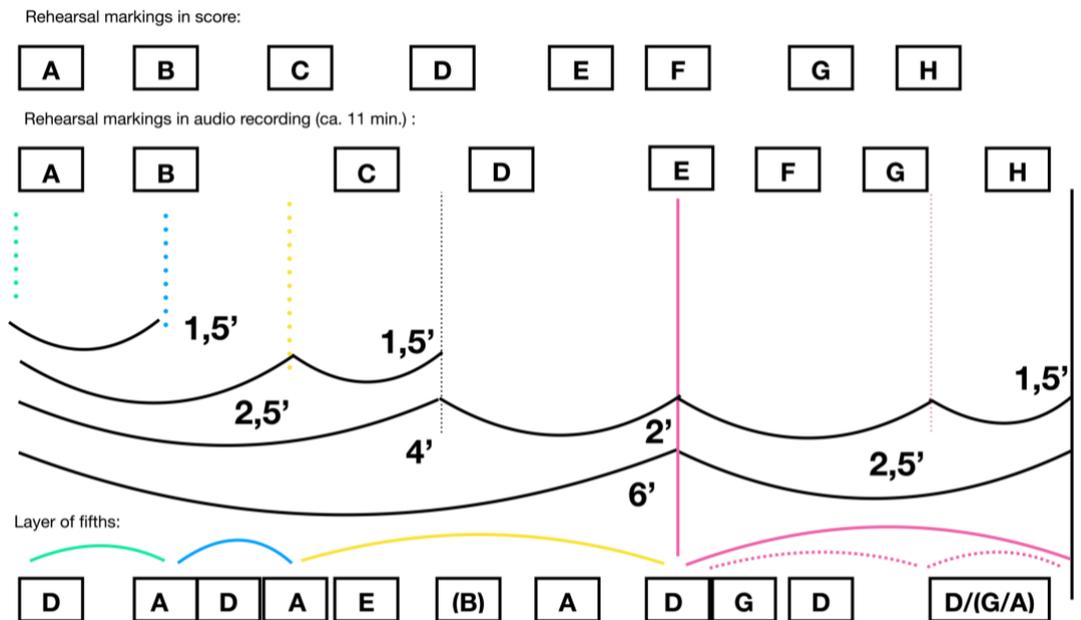


Figure 17: Approximate illustration of dividing time according to the golden ratio proportions in *Pnoé*.

As shown in figure 17, two chambers were given longer sections because some main divisions were bypassed (e.g., the fourth minute division was entailed within the yellow chamber). That was because the ascribed fifths within each chamber would be explored as stepping-stones upon which I would assign my sound ideas (organisation of harmony, in a broader sense). Poetically speaking, the various sound ideas allocated within these chambers, would ‘imbrue life or spirit’ to enliven these spaces, hence the title *Pnoé*. The musical element of harmonic organisation was particularly explored in later works: starting from the String Quartet no. 2, which presented the challenge of allocating sound ideas to 12 fifths (see chapter 5.4.).

In figure 18 I present a rough depiction of assigned ideas to the harmonic steps (stepping-stones) and the registral ambituses, as well as the divisions of the golden ratio in *Pnoé*: the top layer shows the main sound ideas explored in the piece (in abbreviations, e.g. masked pitches, tension 1, 2, 3 – T1-3, feathered fifths and so on).

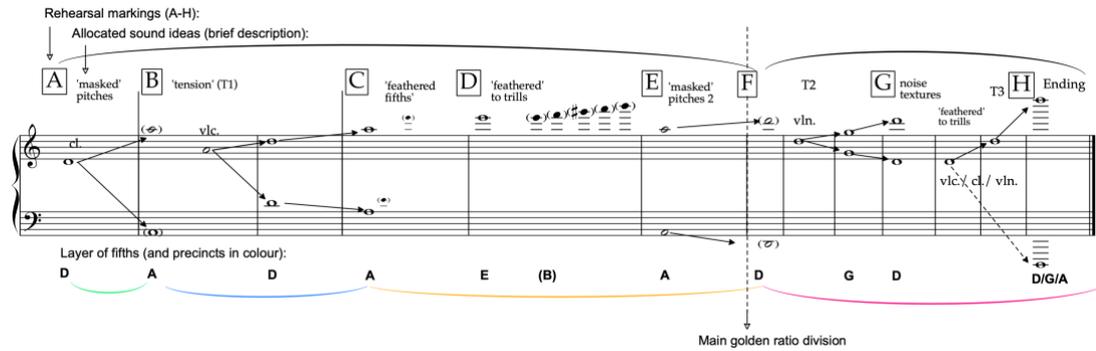


Figure 18: Overall plan of *Pnoé*; the lowest layer depicts the harmonic foundations as allocated within the four 'chambers' - green, blue, yellow, pink markings; the uppermost layer demonstrates the sound ideas in abbreviation (corresponding to rehearsal markings in the score); the pitch indications demonstrate the registral directions (ambituses).

This overall structural model, as it was applied in *Pnoé*, had revealed the potential of the nested precincts of the sacred space to be considered as *spaces of memory*. These were moderately explored in works after *Pnoé*, but they would become particularly essential from *lérkos* onwards, when the element of reverberation was considered. Reverberation in my works is not applied in the acoustical sense, but rather as a personal metaphor within the concept of the sacred space. As it is incorporated within the sound structure of my later works, it nevertheless attains an analogous acoustical presence.

Another reason for using the term *spaces of memory* to define the chambers, is the connection of memory to the notion of rites. The awareness of sacredness culminates in the innermost sanctum, where a community interprets the nucleus of their collective memory. This nucleus resonates within its precinct and towards the antecedent spaces disseminating fractures of memory, which echo this information throughout the edifice. Hence, the antecedent chambers also absorb and contain aspects of that memory: they are *spaces of memory*.

This idea was also explored in *Terra Incognita* and *Detriment*. For example, in *Terra Incognita*, I envisioned the sacred space as a timeless uncharted or unknown land, in which time ceases to exist linearly; it is instead resonated in fractures: I was intrigued by the possibility of structuring these fractures in compositional terms.

To do so, I developed a technique that I coined as *con-temporal narrative*. This is essentially a multi-part sequence within a specified timeframe, which is entirely based and positioned upon subdivisions of the golden ratio, in both regular and

mirrored time order. In the case of *Terra Incognita*, five different sound ideas, (the fractures) were allocated within a specific timeframe (figure 19):

The image shows a piano score for the piece *Terra Incognita*. The score is divided into two systems. The first system starts at measure 60 and is in 5/4 time, with a tempo marking of quarter note = 70. It features a brown box around measures 60-61 (tremolo both hands, high register), a green box around measures 61-62 (tremolo both hands, low register), and a red box around measure 62 (single pitch, tenuto). The second system starts at measure 62 and is in 4/4 time. It features a blue box around measures 62-63 (rapid scale-like gesture, accelerating) and a pink box around measure 63 (sudden loud chord, high register). The score includes various musical notations such as dynamics (sfz, f, mp), articulation (accents), and phrasing slurs.

Figure 19: The beginning of the con-temporal narrative (starting from F-sharp onwards) in *Terra Incognita* demonstrating the five sound ideas / fractures. Starting from the top left, brown (tremolo both hands, high register); green (tremolo both hands, low register); red (single pitch, tenuto); blue (rapid scale-like gesture, accelerating); pink (sudden loud chord, high register). These same colours appear respectively in figure 20 below. Note: these colours do not correspond to the above chambers.

Starting from the harmonic step of F-sharp (figure 20), the blue, pink and red boxed sound ideas (of figure 19) accelerate their presence (mostly in diverse timings) towards C-sharp, and then decelerate towards G-sharp all the way to the prime golden ratio on G-sharp / A / B-flat (bb. 60-93 in score); the top and bottom sound ideas (brown and green) decelerate their appearances at first, only to accelerate by the end of the timeframe (contrary to the rest above). Four out of five fractures (brown, blue, pink, red) concur upon C-sharp, while the green fracture, behaves

independently.⁶⁵ On the step of C-sharp, an unexpected intersection of three *ppp* chords occurs, interrupting or ‘freezing’ the sequence for a while (bb. 72-77). This intersection acts as a mirror, which reverses the sequence and its occurrences (see also Appendix II for a section of this sequence in draft manuscript with detailed divisions in numbers).

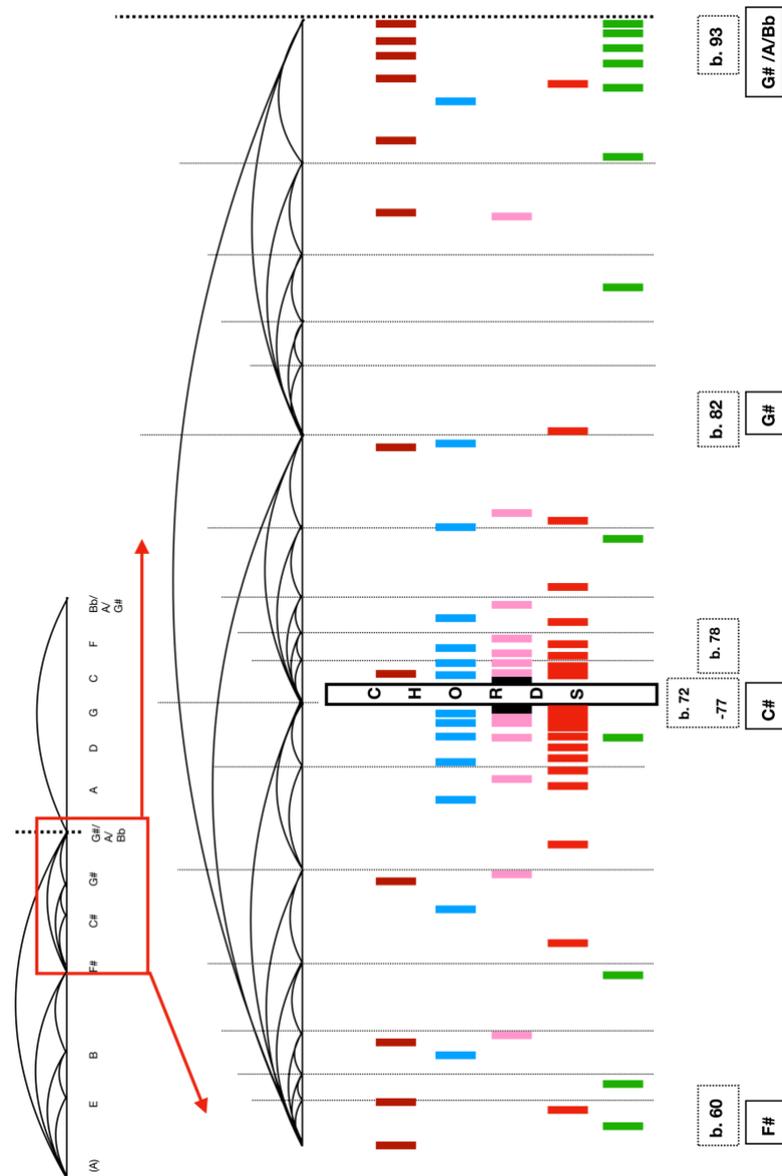


Figure 20: Overall allocation of the con-temporal narrative in bb. 60-93 of Terra Incognita.

⁶⁵ For the pink-coloured idea (chord impulses), the acceleration is enhanced with gestures of glissandi (see additional black colour upon the step of C-sharp, fig. 20).

To my creative imagination, this sequence would convey the allusion that the sound ideas occur as reverberant remnants, while augmenting or diminishing the perception of time. Thus, the name of this technique, *con-temporal*, signifies their occurrence in relation to time. This technique was used in a similar manner in *Detriment*, and it was further elaborated in *Iérkos* and *Thrus* (see 7.2.).

In *Detriment*, the singer's voice would personify the myth, and her narration would be reflected sonically and rhythmically upon both the piano and the flute layers, which would then embody the fractures she disseminates. These reflections gradually reach a seven-part sequence, based on the *con-temporal* narrative (rehearsal markings H to I, then J to K in score). All seven counter-voices (piano keyboard part / pianist's voice, flute / flutist's voice, singer reciting Latin / English text / singer singing) embodying these reflections delineate the idea of a chamber of judgment as implied in the text (figure 22, the seven different layers in coloured boxes). The audience members become witnesses, perceiving the singer's inner space as an amplified bodily experience in both sound and light. The dramaturgy of the work highlights and intensifies the merging of these seven counterparts; it is the only work in this portfolio where the sacred space is being visually investigated and dramatised along with the sound and formal structure of the piece.

The singer positions herself on stage upon four different indicated stations (marked in the score as 'memory spaces', figure 21): at first (scene I), at a conventional setting next to the pianist (marked as A in the stage setup illustration), where her Latin reciting is imitated by the piano keyboard part.

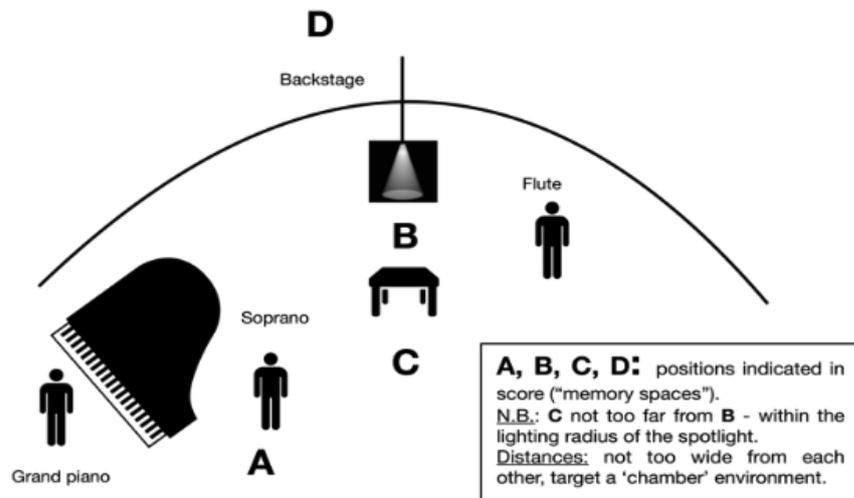


Figure 21: The desired stage set-up in *Detriment* (from the cover pages of the piece).

She then proceeds to a table (station B) at rehearsal marking G (*entr'acte*), on which there are several items that she overtly demonstrates (at G, dry granulated clay / or sand; at L, a glass pitcher). Clay and water are used symbolically in relation to the text, as to depict her mortal nature while being evaluated in the chamber of judgment. The climax of this section is at rehearsal marking H (scene II), upon smashing the clay pot, and hearing the flute performing melodic lines based on the tetrachord for the first time in the piece (as if overtaking her song). While in anguished breathing, she tries to follow up the flute, building up to an outcry at rehearsal marking K and station C, 'broken ... kneeling on the floor', in front of the table (finale). This tension is gradually released at the end, where she heads backstage (station D). The light design captures this dramatisation throughout the piece, until a final black out.

The image shows a musical score for 'Detriment' with seven parts highlighted in colored boxes:

- Green box:** Flute (Fl.) part, starting with a 'You!' annotation above it. Dynamics include *ffz*, *p*, and *pp*.
- Red box:** Spoken Text (Spk. Txt.) part with lyrics 'from the face - tes'. Dynamics include *ffz*.
- Purple box:** Singing part with lyrics 'in - re - pa - ra - bi - le' and 'I have'. Dynamics include *sim.* and *p*.
- Yellow box:** Spoken Text (Spk. Txt.) part with a 'You!' annotation above it. Dynamics include *f*.
- Blue box:** Piano (Pno.) part. Dynamics include *no pp*, *mp*, and *sim.*

Figure 22: The seven parts (in seven coloured boxes) of the con-temporal narrative in *Detriment*.

To illustrate more clearly the final version of the sacred space it is important to individually present the musical elements employed and the ways they were defined (form, harmonic and time organisation, pitch material, and reverberation). Any additional considerations of these techniques in *Pnoé* and later on works, not least the reasoning behind employing them, the advantages and disadvantages of these decisions, will be also demonstrated further on. Before doing so, I will proceed with a definition of the *sound ritual* that encompasses all the above ideas.

4.1. The term *sound ritual*: definition

The notion of rite has seldom been explored in post-war contemporary music-making, even though there have been several instances where it was used as a poetic reference, or a dramaturgical connotation, or within a specific cultural context, or even for its inter-communicational qualities.

For example, Pierre Boulez' *Rituel in memoriam Bruno Maderna* (1974–75) for orchestra in eight groups spatially separated from each other, explores repetition as

a ritual feature. Not least, it ‘evokes ... the sound worlds of non-Western musical ensembles be they Indonesian, African or South American’.⁶⁶ In a more overt manner, Jani Christou, whose works are imbued with philosophical notions on spirituality, myths, and archetypes, applied these ideas in a theatrical, performative context, particularly in his latter creative period. For example, his close collaboration with Greek director Karolos Koun on staging Aeschylus’ *Persians* (1965), in which ‘he wanted to find the meaning of the music within the context of ritualism’.⁶⁷

The idea of ‘the conscious and unconscious minds’⁶⁸ having a direct reference to spiritual ecstasy and transcendence, is particularly evident in some works by Liza Lim. She is inspired by the aboriginals of Australia and their traditions of altered states of consciousness, as explored in works such as *The Green Lion eats the sun* (2014) for adapted trombone.⁶⁹ In addition, in her *Tongue of the invisible* (2010–11), for improvising pianist, baritone and 16 musicians, she juxtaposes ‘precisely and meticulously composed textures and improvised elements’,⁷⁰ both sounds and text in an ‘open-end structure’ in an attempt to ‘capture the mystical heat at the core of ... the frenzy of Sufi rites’.⁷¹

Sound ritual is the term for my compositional approach that establishes a ritual occasion by means of contemporary music-making. This approach does not primarily intent to unfold a ritual act in a representational, or in a theatrical – dramaturgical manner. Instead, it resolves into narrating the ritual act entirely within the sound structure of the work, hence a *sound* ritual. To do so, it engages specific musical elements such as form (marked as 1 in figure 24, golden ratio), harmonic organisation (2, circle of fifths), time organisation (3), pitch organisation (4) – in figure 24, this

⁶⁶ Jonathan Goldman, *The Musical Language of Pierre Boulez: Writings and Compositions* (Cambridge: Cambridge University Press, 2011), 101-102.

⁶⁷ Angeliki Zachou, ‘The Use of Music in Greek Performances of Ancient Greek Drama in the 20th Century’, in *Staging of Classical Drama around 2000*, ed. Pavlina N. Šipová and Alena Sarkissian (Newcastle: Cambridge Scholars Publishing, 2007), 144.

⁶⁸ Andrew Ford and Liza Lim, ‘Spiritual Ecstasy and Earthly Desire: Interview with Liza Lim’, in *Earth Dances* (Melbourne: Black Inc, 2015), 136.

⁶⁹ *Ibid.*, 138.

⁷⁰ Schott Music, ‘Liza Lim: Tongue of the Invisible’, www.schott-music.com, accessed 24 May 2022, <https://en.schott-music.com/shop/tongue-of-the-invisible-no316158.html>.

⁷¹ Liza Lim, ‘Tongue of the Invisible’, www.lizalimcomposer.com, accessed 24 May 2022, <https://lizalimcomposer.com/tongue-of-the-invisible/>.

includes sound gestures numbered as 5, though not a separate element – and reverberation (6), which are modified accordingly.

In a *sound ritual* (figure 23), the instrumentalists become the active participants of a community (ensemble, or orchestra). Several gestural sound ideas are often repeated in an analogy to the tools applied in a ritual act. The re-appearance of these gestures is often filtered through specific extended techniques, additional items, and frequently through the use of the extremities of an instrument’s range. These techniques gradually transform the standard instrumental timbre over the course of a work, creating an acoustical illusion that intends to resemble the human voice. In a way, this illusion corresponds to the transcendence to a new realm (*meta-physicality*), in which all instrumentalists become one and indistinct from each other.

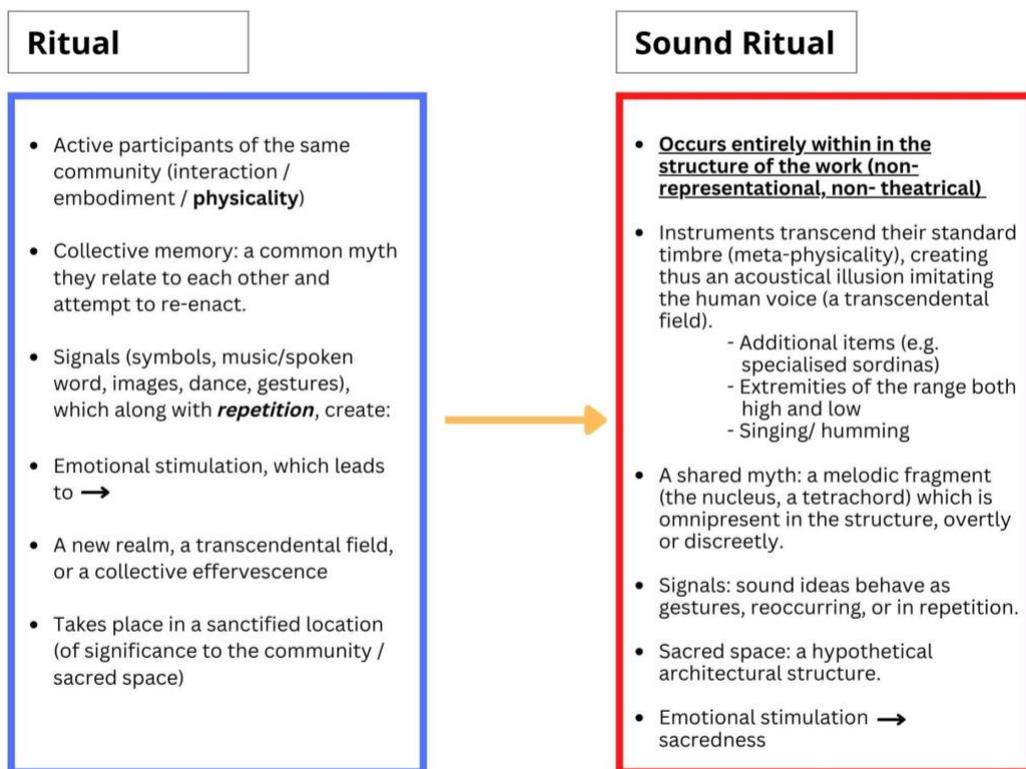


Figure 23: Tables comparing the attributes of a ritual and a sound ritual.

Transcendence is enhanced by the feature of sacredness, which is expressed by means of a hypothetical architectural structure, based on the pattern of a sacred space in architecture. The pattern is further developed to encompass the sharing of the primordial myth (cultural and collective memory) by the participants, which is

exemplified by a central episode. This is based on a melodic fragment, a tetrachord, which is omnipresent in the works' structure, whether overtly or discreetly. The primordial myth reverberates throughout the chambers of the sacred space. The dissemination of the myth in the sacred space (in an analogy to memory being shared), becomes a central idea of a *sound ritual*, and it is achieved by simulating an Impulse Response, out of which the entire sound material derives.

As shown in figure 24 depicting the overall final design of a *sound ritual*, the purple column in the middle is the Impulse Response, to be associated with the *Origin. Memory* is being represented through the various coloured circles indicating the propagation of the IR. While being disseminated, the propagation waves collide upon the various surfaces of this hypothetical sacred space (harmonic organisation / circle of fifths, in black letters within the rectangle), and merge with each other, creating the idea of *Perception* within this space. As such, the *sound ritual* consists of a specific acoustical imprint, which I have associated with the key trait *Identity*.

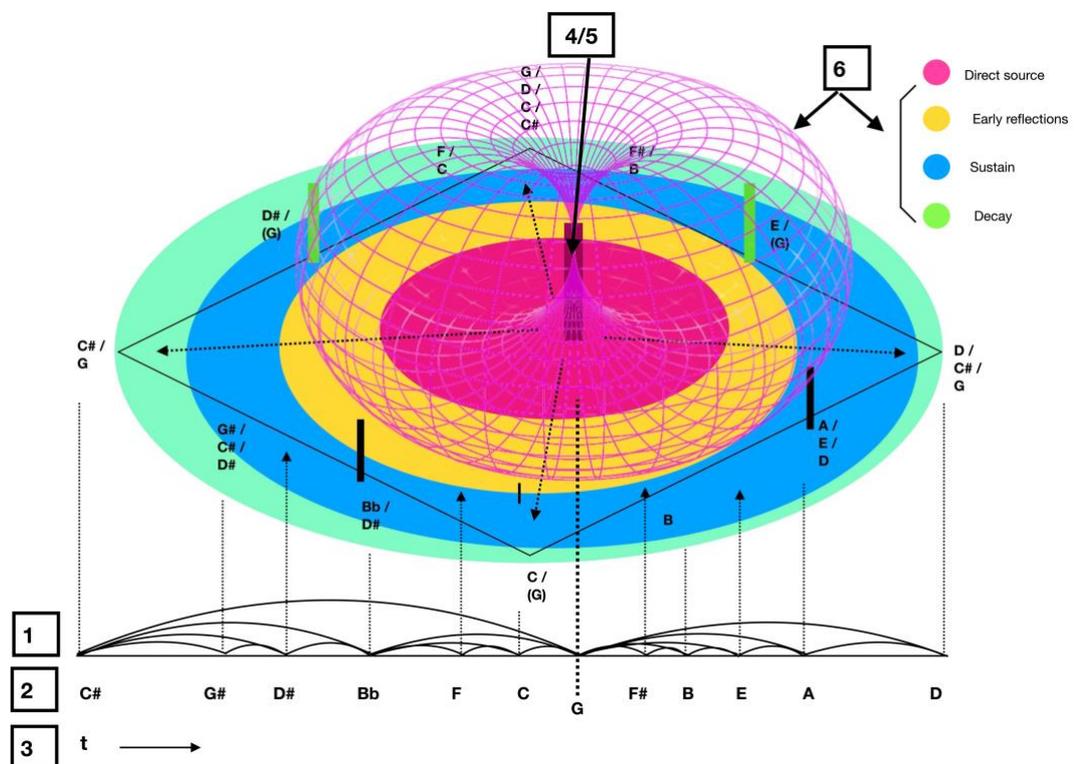


Figure 24: Overall final design of a sound ritual (1 is for the golden ratio, 2 for the circle of fifths, 3 for time in linear development, 4 / 5 main event as a vertical column resulting in pitch structures and sound gestures in horizontal development, 6 for reverberation evolving in time and space.

5. Musical Elements I: form, harmonic organisation, time organisation

In the previous chapter, I have presented form and harmonic organisation within the context of the sacred space. This chapter will focus on various deviations and considerations concerning the techniques used to define these musical elements (golden ratio and the circle of fifths). It will also discuss the element of time organisation with regard to metric notation in my works.

5.1. Reasoning

At the outset, the modifications for *Dhákara* and *Pnoé* were part of an early process of crafting the sacred space. Bearing in mind the words by Eliade that the sacred space ‘connects and supports heaven and earth’, both the golden ratio and the circle of fifths seemed to be the most appropriate techniques to illustrate this insight.

The golden ratio is to be found everywhere in the natural world, from flower petals to body parts, from shells and trees to hurricanes and spiral galaxies. The circle of fifths is a centuries-old, fundamental music theoretical principle, having its roots in the Pythagorean scale of dividing up the octave (2:1) by intervals of a fifth (3:2) and a fourth (4:3).⁷² These ratios were to be associated with the tetractys, the epitome of Pythagoras’ teachings in reference to mathematics, geometry and astronomy among others.⁷³ I have chosen to apply these two techniques in the structure of my works, as they symbolically resemble the idea of heaven on earth.

The golden ratio has the inherent attribute of dispersing a given unit in proportional subdivisions. In my works, these subdivisions (spaces of memory) were used to allocate the various sound ideas in conjunction with the harmonic steps (circle of fifths) related to them. In addition, these spaces of memory can be regarded

⁷² Marios D. Mavrovides, *Οι Μουσικοί Τρόποι στην Ανατολική Μεσόγειο: Βυζαντινός Ήχος, Αραβικό Μακάμ, Τούρκικο Μακάμ* [Music Modes in the Eastern Mediterranean: Byzantine Echos, Arabic Maqam and Turkish Makam] (Athens: Fagotto Press, 1999), 24.

⁷³ André Barbera, ‘The Consonant Eleventh and the Expansion of the Musical Tetractys: A Study of Ancient Pythagoreanism’, *Journal of Music Theory* 28, no. 2 (1984): throughout, accessed 22 May 2022, <https://doi.org/10.2307/843532>.

as *ritual units*, which constitute an important feature for a performative ritual act (see chapter 1.3. on ritual units). Likewise, spaces of memory in my works are reallocated or recontextualised upon a different harmonic step or even a different work (see figure 27 and chapter 7.2).

5.2. Considerations

In *Pnoé*, the application of the golden ratio and part of the circle of fifths proved to be very effective. However, my works written after String Quartet no. 2 raised several considerations:

a) The subdivisions of the ratio into smaller units did not allow sufficient time for more elaborated ideas to be organically developed and concluded. This was particularly evident in the String Quartet no. 2, as well as in *Detriment*, where the use of all 12 fifths in the circle would give the impression of brief and referential sections not evolving naturally. For instance (figure 25), if the duration of the piece is ten minutes in total, the allocation of 12 steps (starting from D¹ upwards) upon the golden ratio would allow subdivisions of approximately one minute. Hence, sound ideas requiring more time to develop would be ‘suffocating’.

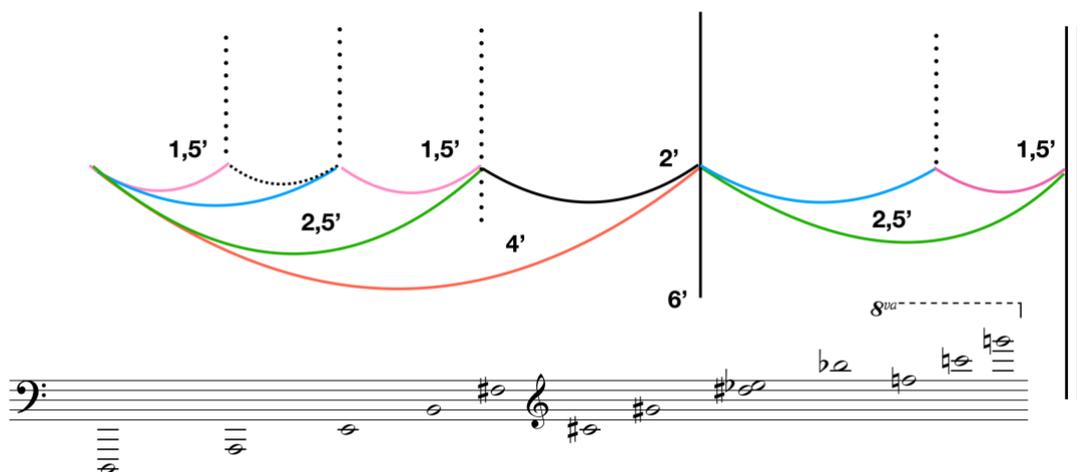


Figure 25: 12 fifths as the harmonic steps for the String Quartet no. 2 and *Detriment*. NB: the harmonic steps align with the rehearsal markings (dotted or regular vertical lines).

b) The ratio has another inherent characteristic: it tends to direct the climax towards its main division (e.g., within a ten-minute piece, ca. at the sixth minute, see

figure above). This is more evident in *Pnoé*, which was my first attempt on the ratio, and later on, in *Terra Incognita* and *Anapalmós*. In *lérkos* and *Thrus*, I was concerned that, due to their large scale, this attribute would evoke a sense of predictability; whilst in the solo flute piece, *Anáero*, it would have a simplistic and one-dimensional effect on the work's sound ideas.

c) Over the course of completing this portfolio, I realised that both techniques were held too strongly and did not obtain significant deviations in favour of a more natural musical flow: it was as if a work was bound to be developed within these pre-sets. This last point had often brought me into questioning the continuous application of the two principles in my works. However, I resolved that since I was exploring several aspects of the *sound ritual*, some elements would have to remain unchanged by default for others to be explored. Therefore, I explored variants of these techniques, without altering the core principles.

5.3. Solutions, deviations: golden ratio

I dealt with the golden ratio considerations by shifting away the epicentre of attention from the main (regular) golden ratio division. This was achieved by highlighting the mirror golden division with a significant sound idea. In figure 26, see the two arrows indicating the two golden ratio divisions (regular and mirror), within an example of ten minutes of duration.

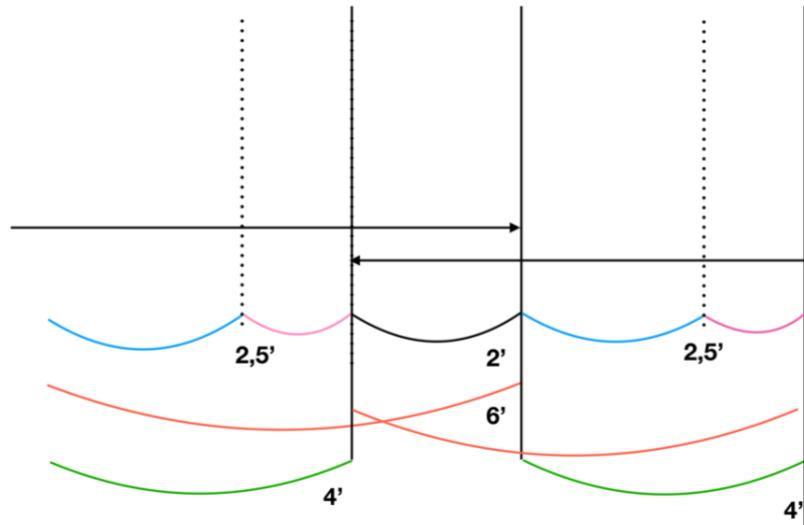


Figure 26: The golden ratio divisions, both regular (arrow pointing right) and mirror (arrow pointing left), within an indicative duration of ten minutes.

I explored two variants: i) developing the climaxes of the piece, using the mirror golden division, as well as a respective section in the second half of the regular ratio (String Quartet no. 2 and *Detriment*); ii) sharing the attention between the regular and the mirror golden division of the design (*Anáero*, *lérkos*, *Thrus*).

Figure 27 demonstrates how I explored the first variant: for the String Quartet no. 2 (red), I allocated the same significant sound idea upon both the harmonic step of F-sharp (the mirror golden division), and the step of F. The sound idea on the F-sharp step begins at rehearsal marking E: a suspended chord of harmonics with feathered trills is setting the chord 'in motion'; then at rehearsal marking F, circular bowing resulting in white noise is gradually revealing the ricochet gesture, which leads to the climax at rehearsal marking G, an aleatoric passage with ricochet gestures. Correspondingly, the harmonic step of F (rehearsal marking K) sets off directly with the aleatoric passage, leading to the suspended chord of harmonics, and then back again into the aleatoric passage.

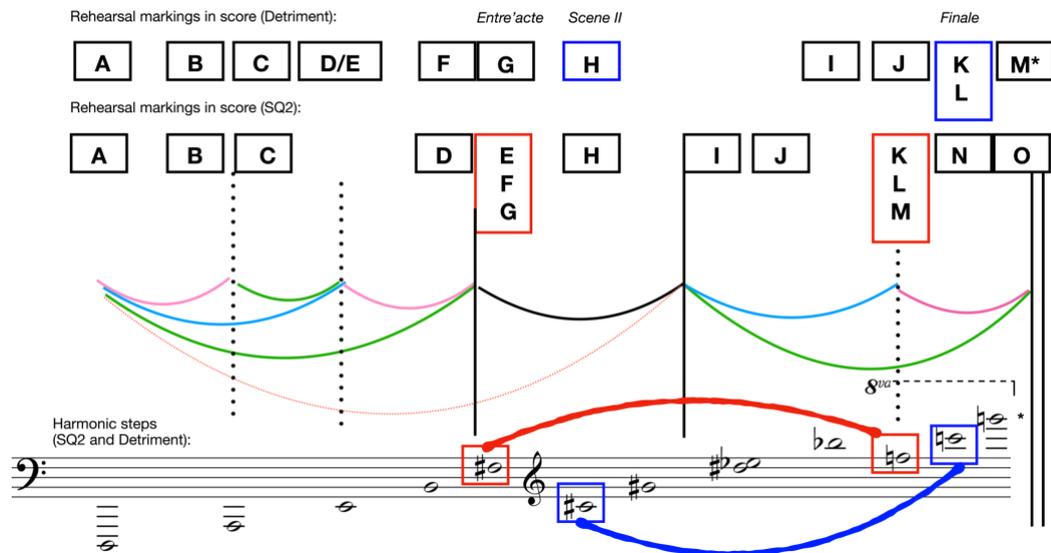


Figure 27: Two examples of reallocating ritual units in the String Quartet no. 2 (red) and Detriment (blue). N.B: the asterisk after G⁷ denotes the reappearance of a D⁸ at the closing of Detriment (not shown here).

For *Detriment* (blue), the first climax of the piece occurs on the harmonic step of C-sharp (rehearsal marking H), with the smashing of the clay pot by the singer, the first entrance of the flute, and the rhythmical pattern in the interior of the piano with a mallet. The second climax occurs on the harmonic step of C (rehearsal marking K), with the scream of the singer, the flute's jet whistle (imitating the rhythmical pattern of the pianist from H) and the rattling cluster in the interior of the piano (prepared with a chain). Then, at rehearsal marking L, this second climax gradually settles, with some resonant remnants of the chain's rattling, as well as the pianist's open range Cs (a reminder of the flute's jet whistle gesture afore), and the introduction of the glass pitcher with water.

As a result of this allocation, the attention from the main golden division would diminish. In addition, the prolongation of these ritual units in both works resulted in an extension of the originally planned duration of the piece, since they overpassed the structure of the golden ratio set in advance. This also resolved the concern of the sectional character of the subdivisions. For *Detriment*, this prolongation of ritual units was partly due to the text, which necessitated a structure of its own within the music setting. Thus, this expansion of the specific ritual units, would be further enhanced

through the consideration of the two scenes of the text and an *entre'acte* for the same reason.⁷⁴

Figure 28 demonstrates how I tackled the second variant: in *Anáero*, the central space is emphasised between the regular and the mirror golden divisions, based on the harmonic steps of G – C – B. The main idea of the piece is taking place within this space: starting from b. 44, (before D, on the harmonic step of G), where a whispered word is introduced through the tube, gradually evolving into a humming line, parallel to the musical line performed (bb. 45-52). Then at b. 53, a combination of air sounds and a fragment of the melody lead to a jet whistle section at b. 79. Then again, a different combination of these ideas leads to rehearsal markings E and F, which present this melodic line in overblows until rehearsal marking G, as yet a secondary peak. Nevertheless, the core of the piece is not taking place at rehearsal marking G, but within the two golden divisions.

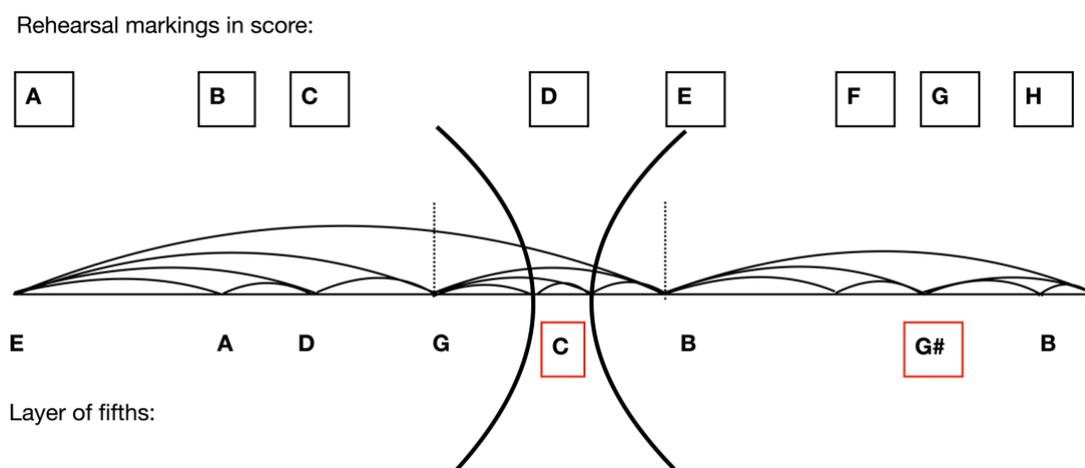


Figure 28: The space between the regular and mirror golden divisions in *Anáero* (harmonic steps G – C – B) and the secondary peak on G-sharp.

Due to the large scale of *Thrus*, and to avoid a sense of predictability, I came up with the idea of not just highlighting the mirror ratio but also interconnecting sound ideas upon it, in such a way that they would not disclose neither an ABA form, nor the golden ratio. This had been partially achieved already through the ritual units

⁷⁴ Due to the large extend of these passages in the score, they cannot be illustrated as figures in the commentary. Please see corresponding sections in the scores.

mentioned above, however, for *lérkos* and *Thrus*, this would be further elaborated by using a reverberation structure as part of the sacred space design (see 7.2.).

5.4. Solutions, deviations: circle of fifths

In *Terra Incognita* and all the subsequent works (*lérkos*, *Anapalmós*, *Anáero*, and *Thrus*) I explored the idea of interchanging the order of the circle of fifths, particularly in the second half of my works (regular golden division onwards).

More specifically, and as shown in figure 29: in *Terra Incognita* I kept the ascending order of fifths starting from A up until G-sharp on the regular golden division; then, starting a minor second higher, again on A, I set the descending order of fifths (A – D – G – C – F – B-flat) reaching again an interval of a minor second lower than the starting fifth (A). Moreover, in the passages of the minor second (on the regular ratio and at the end), I created a new sound idea, interplaying within a minor to major second (e.g. on the golden division passage, on G-sharp – A – B-flat), while at the final passage, I created a different order of this (as B-flat – A – G-sharp).

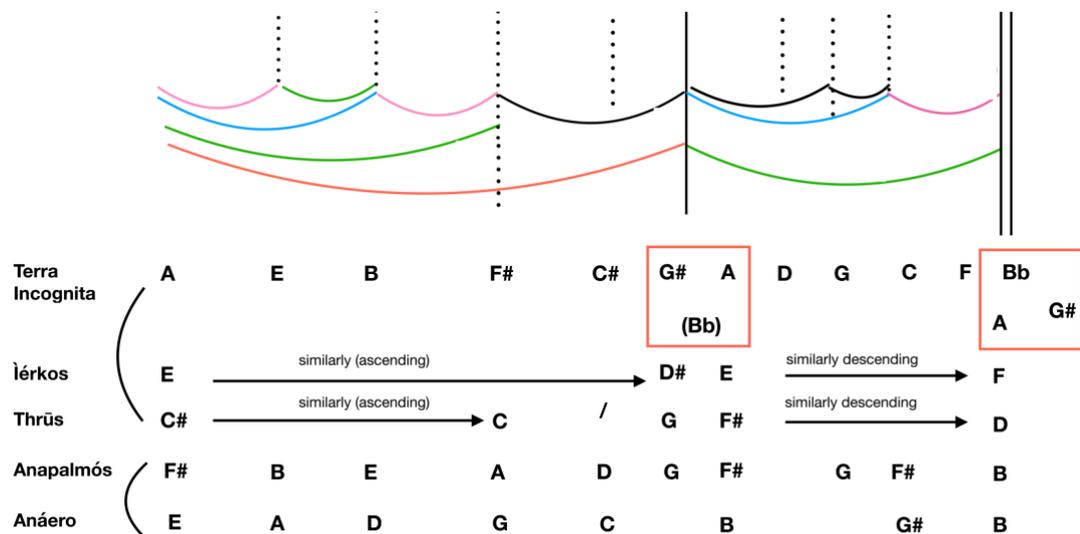


Figure 29: Harmonic steps in *Terra Incognita*, *lérkos*, *Thrus*, *Anapalmós* and *Anáero* (table).

In *lérkos* and *Thrus*, I kept the same structure (figure 29): for *lérkos*, starting on E – B – F-sharp – C-sharp – G-sharp – D-sharp (regular golden division) and then reversed from E (again a minor second higher), A – D – G – C – F; for *Thrus*, starting

on C-sharp – G-sharp – D-sharp (or E-flat) – B-flat – F – C – G / F-sharp – B – E – A – D. Again, I explored the sound idea of interplaying minor to major seconds; especially in *Thrus*, this sound idea was intermingled with the reverberation structure, incorporating other reflected fifths from prior or after.

In *Anapalmós* and *Anáero*, there were slight changes to the above structure: I initially reversed the design by using a descending instead of an ascending order of fifths. Subsequently, I applied an ascending order of fifths a minor second lower, instead of higher, upon the regular golden division. This time, however, the ascending order was not complete; it contained fewer steps of fifths. *Anáero* would deviate even further to this by traversing freely on seemingly random harmonic steps in the second half of the ratio (B – G-sharp-B).

The above deviations from the original structure of ascending fifths were taken primarily out of an artistic incentive. However, they also relied on factors such as the duration of the piece, the available instruments, and the sound ideas I wanted to explore. Due to their small scale, in *Anapalmós* and *Anáero* I explored only some steps. On the contrary, the overall sound environment in *Thrus* yielded for such a compact allocation. Despite the seemingly formalised framework, I was particularly attentive to merge these steps with appropriate sound ideas that would create a natural continuity from one to the other. In addition, I would often choose the order of the fifths depending on which sound ideas I wanted to explore and with which instruments. In *Thrus*, for example, I reserved the steps of C and G for in-between the two golden divisions (regular and mirror), to make use of the low open strings of the celli and double basses.

5.5. Developing a metric notation (time organisation)

In *Dhákara*, the application of graphic notation was the most viable solution to the constraints of the commission: the semi-defined, open score notation allowed the performers, who were accustomed to improvising, to memorise entire sections more easily and have the freedom to infuse their own touch in the work.

I also notated graphically *Towards Atractus*, which was workshopped with the Diotima Quartet in 2017. The workshop acted as a catalyst in my decision to return to metric notation because the piece raised a number of issues: despite the freedom in not prescribing metre, duration, and coordination in detail, graphic notation is largely dependent on the performers' musicianship, and requires much longer rehearsals. The intentions of the composer may not always be clear, therefore graphic notation might be interpreted in various ways.

As I returned to metric notation in *Pnoé*, I used the golden ratio principle. This enabled me to convert the subdivisions (as seconds) into corresponding beats: the amount of beats out of the ratio's specific subdivision provided a context within which a sound idea would be allocated, acquiring a time signature.

For example, as evidenced in figure 30, this section of 32 seconds (*Pnoé*, bb. 79-87), is first divided into two subsections of 20 and 12 seconds each. Then the 20-second section is further subdivided into approximately eight to 12 seconds, as a threshold of subdivisions. These eight to 12 seconds are then converted into beats (see vertical lines in colour, corresponding to the colours of the ratio subdivisions, red, green, and blue). Subsequently, they are brought into the context of the musical ideas (see the score excerpt above the layer of the beats in figure 30) and the tempo of the respective passage (in this case, crotchet equals 60 bpm). If the allocated musical idea is longer than the threshold, then I would allow the idea to be organically expressed by running into the next unit or borrowing from the previous unit. For this reason, b. 81 in the figure, borrows two beats / crotchets from the previous unit (red box).

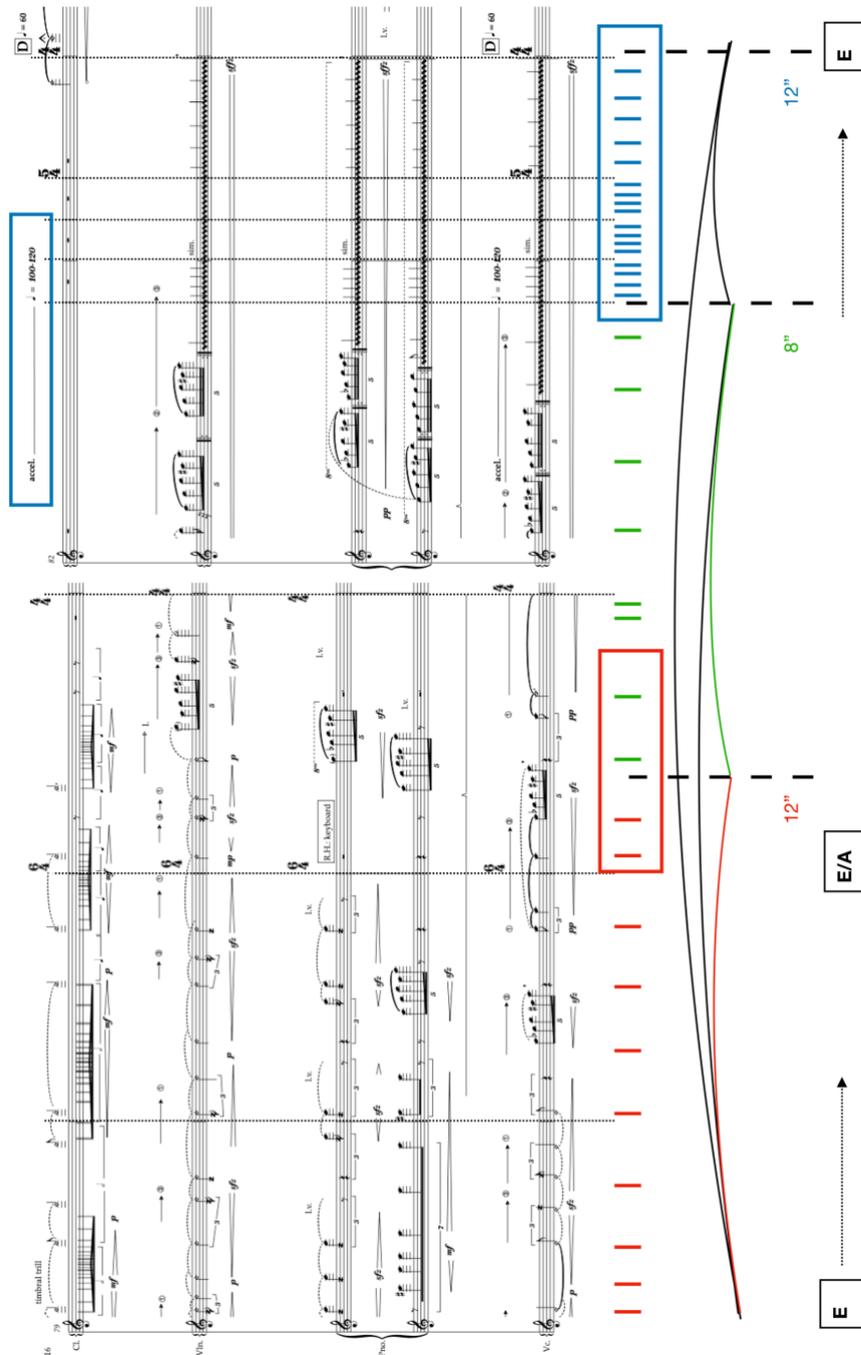


Figure 30: Example of a section of *Pnoé* subdivided by means of the golden ratio to organise time, in accordance with the sound ideas (bb. 79-87).

After applying and elaborating this technique meticulously in *Pnoé*, I worked more intuitively in the following works, especially when revisiting similar sound ideas in other pieces, which have already received a time signature in earlier instances. In total, each sound idea would receive a time signature of one to six beats (with a

preference in simple time). My aim was to facilitate the performers by keeping the time signatures simple and proportional.

I therefore used tempo shifts to either accelerate or decelerate the beat. At the end of the example above in figure 30, there are 17 instead of 12 beats, which would normally exist in the 12-second section (blue boxes). This is due to the accelerando starting in b. 82, reaching crotchet equals 100 – 120 bpm at b. 83, pertaining until b. 86 (rehearsal marking D). Because of the accelerated pace, these 17 beats will approximately fit into the 12-second unit.

6. Musical elements II: pitch material in three layers

I have employed a single background pitch environment across all the pieces of the portfolio, which is made of three distinct layers, offering flexibility within a clearly defined framework. The first layer does not appear independently in its entirety apart from the case of *Towards Atractus*, which was incorporated into the String Quartet no. 2. The second layer, which appeared from *Pnoé* onwards simultaneously with the first layer, remained as the solid foundation for the String Quartet no. 2, *Detriment*, and *Terra Incognita*. The third layer was partly applied in *lérkos*, while all three layers were applied only in *Thrus*, where the orchestral apparatus allowed their full capacity to be explored.

6.1. First layer

While revisiting the ‘Myth of Er’ in Plato’s *Republic*, I was particularly inspired by the imagery depicted at the very end of the narration, of a luminous spindle-like pillar connecting heaven to earth, around which eight orbits revolve producing individual sounds.⁷⁵ I came up with the idea of associating the shape of tree trunks to that of the spindle, and the tree branches to the orbits (figure 31) – so as to create a sound spectrum that manifests itself in a similar way, with the trunk being the fundamental and the branches being the partials.

⁷⁵ Plato, ‘616b,’ in *Republic: Book X*, translated by James Adams, accessed 01 October 2017, <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.04.0094%3Abook%3D10%3Asection%3D616B>. This narration inspired the subtitle of the String Quartet no. 2, which is *Átractos* – the Greek word used by Plato for ‘spindle’.



Figure 31: An actual spindle (left) and a depiction of a tree with its roots (right).

I decided out of an artistic incentive to also assign the roots of this tree to a counterpart; therefore, I associated them with the theoretical notion of undertones, as an inverted expansion of a harmonic spectrum. This would not be related to harmony as in the case of e.g., Zarlino,⁷⁶ but it would ultimately facilitate the creation of my pitch material. As such, I then incorporated these ideas into a spindle- or tree-like depiction (figure 32).

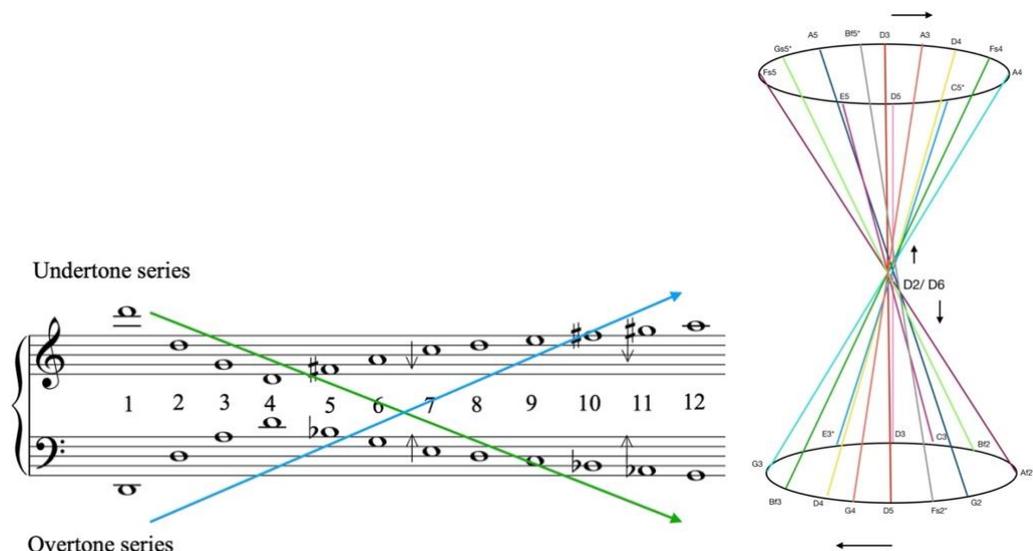


Figure 32: Indicative process of merging the basic overtone and undertones (first 12 partials, left); schematic representation of overtones / undertones on a fundamental D upon an extended 'spindle' (right).

⁷⁶ Referring to Gioseffo Zarlino's *Institutioni harmoniche* (1558), see John L. Snyder, 'Harmonic Dualism and the Origin of the Minor Triad', *Indiana Theory review* 4, no. 1 (1980): throughout, accessed 23 August 2021, <http://www.jstor.org/stable/24044496>.

The combination of overtones and undertones⁷⁷ on a fundamental D (using all microtonal deviations) formed a fascinating pitch array: in the final version of it (figure 33), some partials were distorted to create a musically appealing context upon which the array could be applied. An individual pitch material was now on the rise with abundant possibilities to explore. I termed this final version as the *Arbor Vitae* pitch order.

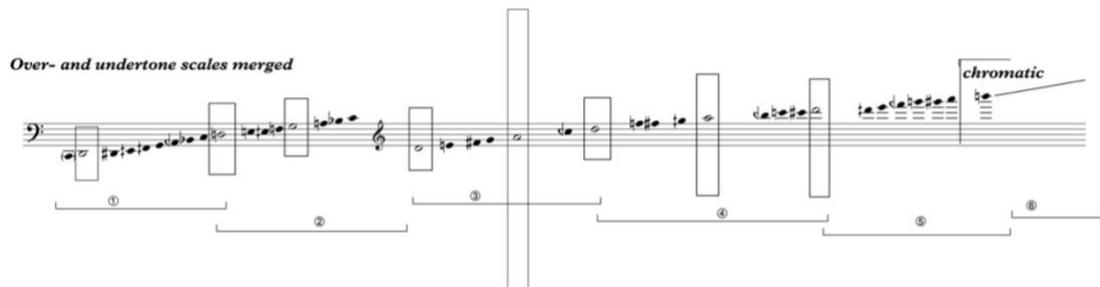


Figure 33: The resulting *Arbor Vitae* pitch order with reference points and octave areas (1-6).

In the illustration above (figure 33), the boxed pitches indicate the octave and fifth divisions (both overtone and undertone), creating reference points within the order for future use. For instance, the octave divisions (circled numbers one to six) indicate six different areas / possibilities of creating sound textures based on these pitches: the lowest octave downwards and the highest octave upwards would naturally lead beyond the spectrum, into noise. Despite the fact that in later on pieces the *Arbor Vitae* order has not been applied as the sole pitch material, but rather only within the additional layers, some of these sound texture areas have been used and developed extensively.

More specifically, the pitch material of one of the main sound ideas in the opening section of *Pnoé* (also in its middle and final sections) was taken from the octave area of $D^2 - D^3$ (numbered as one, figure 34).

⁷⁷ Up until the twenty-fourth partial.

Figure 36 consists of five numbered musical staves, each showing a sequence of notes in a treble clef. Staff 1 is labeled 'Original' and 'Extended'. An arrow points from the 'Original' section to the 'Extended' section. Staff 2 is also labeled 'Original' and 'Extended' with an arrow. Staff 3 is labeled 'Original' and 'Extended' with an arrow. Staff 4 is labeled 'Original' and 'Extended (independent)'. Staff 5 is labeled 'Original' and 'Extended (independent)'. The notes are chromatic and span a lower octave range.

Figure 36: Sound textures generated from the lower octave range of the Arbor Vitae order (equal temperament).

I incorporated these textures in nearly all my works, starting with *Pnoé* because of the possibilities they granted me: i) when they are chromatically transposed, depending on the harmonic step of each piece, and ii) by intuitively using pivotal pitches to traverse from one texture to the other. What is more, these textures were often used in association with extended techniques, as filters, enhancing their textural quality. For example, in the opening section (figure 37) and middle section in *Pnoé* (figure 38):

Cl. *pp* *PPP* *p* *pp* *p* *pp*

Vln. *p* *pp* *p* *pp* *p* *pp*

Vc. *p* *pp* *p* *pp*

1

metallic sound/ masked - less pitch

4

metallic sound/ masked - less pitch

Figure 37: Sound textures in the opening of *Pnoé* (marked within the green boxes; red boxed numbers refer to the textures in fig. 35-36).

Cl. *p* *pp* *p* *pp* *p* *pp* *p* *pp*

Vln. *sfz* *pp* *ppp* *p* *pp* *p* *pp* *p* *pp*

1

from afar (like an echo of the piano part)

3*

from afar (like an echo) (pont.)

* merged textures on steps on A (light green) and D (dark green)

Figure 38: Sound textures in the middle section of *Pnoé* (merged textures through pivotal pitches on the harmonic steps of A and D).

In the String Quartet no.2, the textures are explored in a similar manner, and used as a main sound idea (for example, the sound idea at rehearsal markings B, I, O at the highest range of the strings, as shown in figure 39):

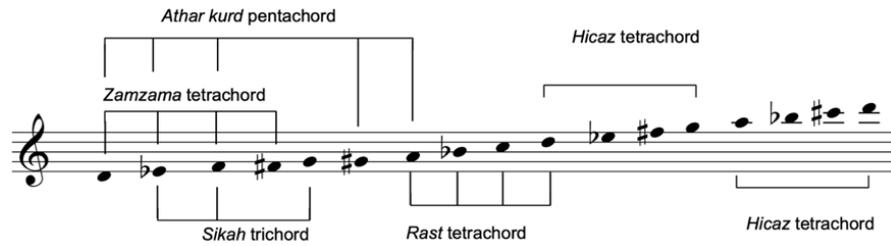


Figure 41: The maqam composite.

I chose five blocks (figure 42) that present striking similarities to the first layer octave area (e.g., the same intervallic beginning).

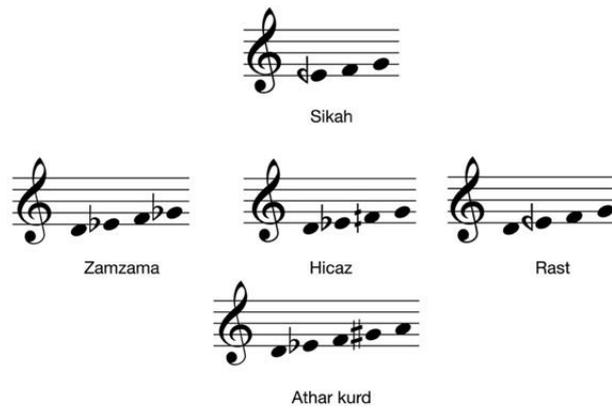


Figure 42: The five blocks used to create the composite maqam in their original format.

This composite maqam, which is not to be found in the literature, altered the overall texture of the pitch material from *Pnoé* onwards. I intentionally distorted the original building blocks within the maqam composite, by ascribing them to an equal tempered context. Since the *Arbor Vitae* order already included microtonality, this contrast would increase the tension between the two layers (figure 43), as I will discuss later on.

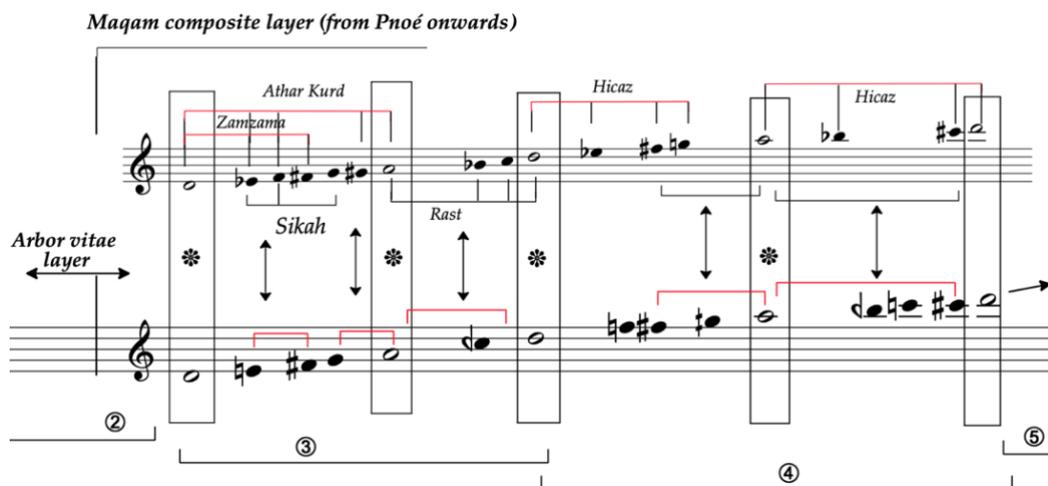


Figure 43: Superimposing the two pitch layers (octave areas 3 and 4); boxes with a star sign indicate pitches D and A intersecting both layers. Arrows indicate contrasting areas to be explored.

A *maqam* (Arabic, for place, location) is considered primarily a sound texture, and secondarily, a music scale. It consists of direction (termed as behaviour, ascending / descending or both), temporary reference points (termed as centres – on fixed degrees, to signal transitions into new environments) and in some cases, cadences.⁷⁸ Most importantly, the *maqam* is based upon the tetrachord as the fundamental building block, and then upon other such building blocks – trichords and pentachords.⁷⁹

The blocks subdivide and the permutations of these degrees within each block define its character and name. When these building blocks are combined, they create the various *maqam* scales. The actual music-making occurs while crossing from one *maqam* to another, by traversing from one block to the other using a kind of pivot passage. This significant attribute, that is, the creative flexibility of combining blocks and traversing from one to the other to generate a sound environment, inspired my treatment of the pitch material as sound textures.

Further to that, the incorporation of notions of the *maqam* music system in my music has another connotation and reasoning:

⁷⁸ Simon Jargy, *La musique arabe* (Paris: Presses Universitaires de France, 1971), 57. See also, Murat Aydemir, *Turkish Music Makam Guide* (Istanbul: Pan Yayincilik, 2010), 23-28.

⁷⁹ Mavroeides, *Music Modes in the Eastern Mediterranean*, 59-60.

This is a centuries-old musical system, still in use by several cultures, each in their own variation.⁸⁰ It was predominantly influenced by the ancient Greek music theory, especially the *systema meizon ametabolon* (the Greater Perfect System, four adjacent tetrachords within a range of two octaves).⁸¹ In fact, the only surviving evidence of ancient Greek music theory exists through the maqam system.⁸²

For me, this context resembles a living cultural memory, one of the key traits of my research. By incorporating this system in my music, it feels as if my works are imbued with aspects of my own cultural identity. Not least, this system is often associated with ritual habituations, accompanying several instances of social memory. As such, the melodic fragment, as the primordial myth, originates directly from the maqam composite (figure 44). It becomes a bridge between the past and present, a memory disseminated through time:

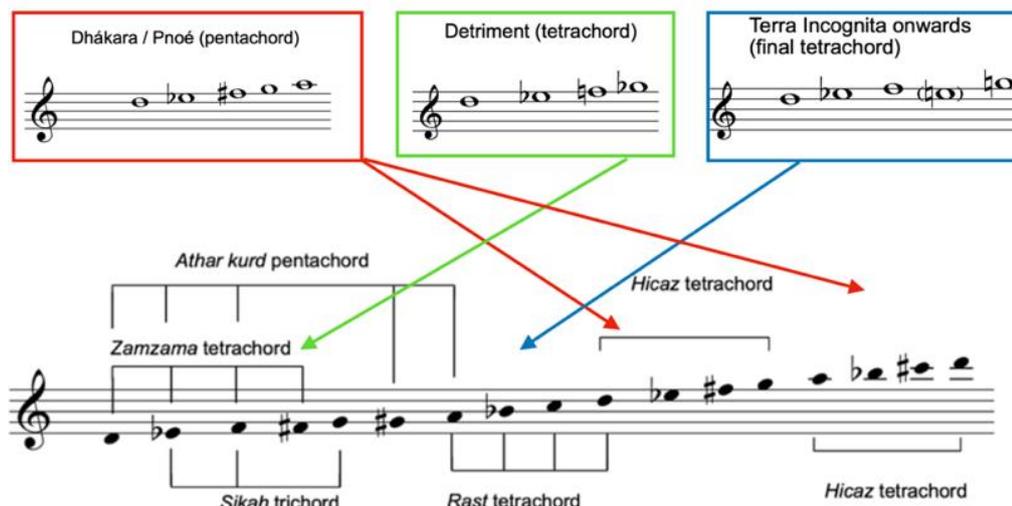


Figure 44: The three versions of the melodic fragment (top), and their correspondence to the maqam composite (bottom).

The central episode in my works (figure 45), derives out of the superimposition of the first to the second pitch layer. This ignites a tension between the two layers

⁸⁰ Jargy, *La musique arabe*, 5, 16, 19.

⁸¹ Ioannis Zannos, *Ichos und Makam: Vergleichende Untersuchungen zum Tonsystem der griechisch-orthodoxen Kirchenmusik und der türkischen Kunstmusik* [Echos and Makam: Comparative Investigations in the Tone System of the Greek Orthodox Church Music and the Turkish Art Music] (Bonn: Orpheus Verlag, 1994), 164.

⁸² *Ibid.*, 153.

(octave areas three and four) involving the melodic fragment; in particular, from String Quartet no. 2 onwards. The exceptions are *Pnoé*, *Terra Incognita* and *Detriment* in which this central episode unfolds with intermediate segments during this development (also see 2.1.).

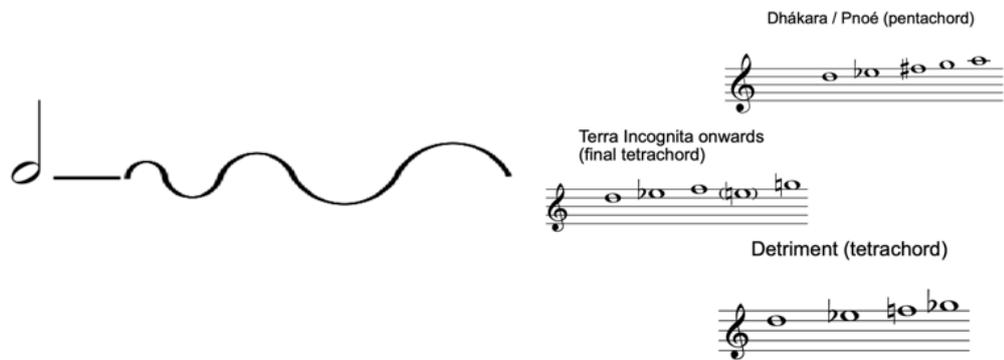


Figure 45: A rough depiction of the development of the central episode.

The initial tension is metaphorically created out of a dialectic of different intonalties between the two layers: a discourse between neighbouring pitches of the two layers, and pitches that tend to attract, or repulse each other. As evident in figure 46, in *Pnoé* rehearsal markings B to C, starting on A⁴, each instrument traverses through the two layers both downward and upward (often continuing from the top of the layers downward to complete their lines). The only exception is the piano part, which merges these traversing pitches by sustaining them via chords.

Figure 46: Dialectic of different intonalties (tension) between the two pitch layers as used by all four instruments in *Pnoé*.

To organise these traversing lines, I have applied loose contrapuntal motions, either contrary, parallel, or oblique (figures 47, 48). In addition, by means of the subdivisions of the golden ratio, their entrances are organised in such a way as to gradually reappear more frequently. Then, they are naturally led into fluctuations, through vibrato along with *sul ponticello* degrees, for example in the String Quartet no. 2, rehearsal markings, H and J, as well as the other works onwards.

Handwritten musical score for *Pnoé*, rehearsal markings B to C. The score is titled "T₁ analysis" and features four staves: Clarinet, Violin, Piano, and Cello. The music is in 4/4 time and includes various annotations such as "accel.", "sost. s. vibr.", and "remove block from strings". The score is annotated with golden ratio subdivisions: -15, -9, -14, -9, -14, -15, and -8. The Cello staff has a large blue line drawn through it, and the Piano staff has a large green line drawn through it. The score is marked with rehearsal letters B and C.

Figure 47: Organisation of the traversing lines in loose contrapuntal movement based on the golden ratio subdivisions for this section (manuscript); *Pnoé*, rehearsal markings B to C.

Printed musical score for *Pnoé*, rehearsal marking B. The score is in 4/4 time and includes various annotations such as "accel.", "sost. s. vibr.", and "remove block from strings". The score is annotated with golden ratio subdivisions: 3/4, 4/4, 5/4, 4/4, 3/4. The score is marked with rehearsal letters B and C. The score is annotated with "CHORD merging all lines" and "sost. s. vibr.". The score is marked with rehearsal letters B and C.

Figure 48: The beginning of the passage in figure 47 (*Pnoé*, rehearsal marking B).

6.3. Third layer

While exploring the ideas of *lérkos*, I reckoned that it was necessary to incorporate another layer of pitch material, which would act as a filter to the existing pitch layers, and which would possibly be less adventurous. Consequently, the common denominator was once again the harmonic spectrum; thus, I opted for the inherently distorted sound outcome of a multiphonic. This needed to have a flexible dynamic range from *pp* to *ff*, and to be relatively easy to be performed by any musician. I chose the following solution (figure 49):⁸³

Figure 49: Clarinet multiphonic no. 710 in Gerhard Krassnitzer, *Multiphonics für die Klarinette*; NB: Greek letter 'α' stands for a low level of difficulty; large black note-heads stand for the most audible, while diamond-shaped, non-coloured note-heads stand for the least audible partials.

In *lérkos*, this clarinet multiphonic appears selectively upon specific harmonic steps (transposed), as a projection in the ensemble. For example, at rehearsal marking D (figure 50), the multiphonic appears projected on the original harmonic step of F-sharp. Further harmonic steps include C-sharp (rehearsal marking F), G-sharp (rehearsal marking J), E-flat (bb. 170-177), and D (rehearsal marking Q). This projection would be further developed in *Thrus*, with regard to reverberation.

⁸³Gerhard Krassnitzer, *Multiphonics für die Klarinette mit deutschem System und andere zeitgenössische Spieltechniken* [Multiphonics for the Clarinet on a German System and other Contemporary Techniques] (Germany: Ebenos, 2003), n.p.

10

52

Fl.

Cl.

Crot.

Pno.

Vln.

Vc.

D ♩ = 70

♩ = ♩ 90 *L'istesso come sopra*

Accentuate dynamic fluctuations

M1

ORD. change to clarinet in E

pp

ppp^{poss.}

mp

mf

pp

mf

Figure 50: The multiphonic no. 710 as orchestrated in ðérkos (section D).

I applied the above projection (figure 50) by examining the context within the harmonic spectrum, from which the multiphonic originates: in figure 51, we can see the harmonic spectrum on a fundamental F-sharp and the allocated partials of the specific multiphonic in comparison (distorted spectrum).

Multiphonic no. 710 (clarinet)

Harmonic spectrum on F#

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

Figure 51: The harmonic spectrum on F-sharp in comparison to the multiphonic no. 710.

Out of the arrayed partials of this multiphonic, I selected intervals of a major or minor seventh (including one of a sixth, and the octave) purely out of an artistic incentive (figure 52, upper layer, a-e). I labelled this array of partials as prime, intending to develop it further.⁸⁴ I then mixed the order of these intervals, in a new arrangement; furthermore, I used other octaves to open up the range (figure 52, lower layer).

Subsequently, I selected different intervals as well as single pitches out of this latter order, which I then orchestrated: for example, for the corresponding passage at rehearsal marking D, I assigned a dyad multiphonic for the flute, which has almost the exact same pitches with the multiphonic order (including their microtonal deviations).⁸⁵ The piano and violin, on the other hand, were assigned single pitches of this order (a bowed string effect and a natural harmonic respectively). I orchestrated this section in such a way as to emphasise the fundamental (F-sharp) and the 'dominant' (C-sharp) degrees in order to provide an acoustic balance in the new quasi-spectral chord (figure 50, green boxes). This method was applied both in *lérkos* and *Thrus*.

⁸⁴ This elaboration is used in a free manner, even though it was perhaps subconsciously influenced by serialism.

⁸⁵ Howell, Thomas. 'The Multiphonics', in *The Avant-garde Flute: A Handbook for Composers and Flutists* (LA: University of California Press, 1974), 63-178.

Figure 52: The clarinet multiphonic as a prime array (top); re-ordering the array and orchestrating different intervals (bottom).

In *Thrus*, however, this latter order (figure 52, lower layer) was inverted, creating thus its bass range counterpart (figure 53, lower layer) because the orchestral layout of the work necessitated extensive bass material – unlike *lérkos*, which allowed flexible intercommunication among the two ranges.⁸⁶

Figure 53: Inverting the re-ordered array into the bass range.

In order to accommodate this necessity, I employed the same intervals as above (figure 52, a – e), both for treble and bass range, extracting the following intervals (figure 54, intervals in the second section, numbered 1 – 4). Likewise, I orchestrated these intervals in the appropriate passages / harmonic steps. In the examples given in figure 54, the harmonic step of F-sharp has been kept stable for demonstration

⁸⁶ This decision was inspired by the approach to my pitch material, referring to the first layer, the *Arbor Vitae*, and the application of both over- and undertones in one merged artificial order.

purposes (see further on 7.2. for applications in score). The final step for this development involves the element of reverberation.



Figure 54: Resulting intervals from both treble and bass range.

Overall, the idea of a projected multiphonic in the ensemble, or orchestral layout, and the treatment of this multiphonic in various orders, justifies the significance of an additional third layer in my pitch organisation.

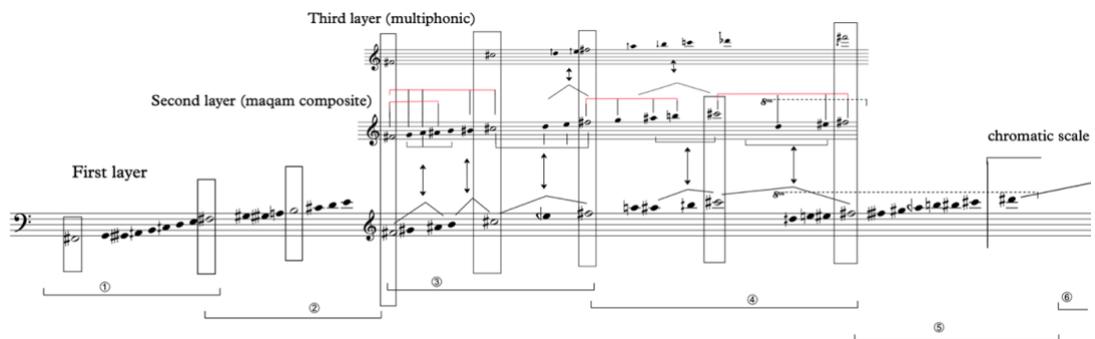


Figure 55: The three pitch layers in context to the overall organisation (on the fundamental of F-sharp).

6.3.1. Additional multiphonics

Apart from the multiphonic (no. 710) presented above, there was an additional clarinet multiphonic employed on the fundamental of C, which was not explored in detail, but it was inserted as an additional textural projection upon the harmonic step of C (rehearsal marking G) in *Thrus*.

407

α *pp - ff*

Es Cis
E
Gis

Figure 56: Secondary clarinet multiphonic no. 407 ca. on C (Gerhard Krassnitzer).

Likewise, there were three additional multiphonics for the oboe:⁸⁷ the top left in figure 57 (ca. on a fundamental of C) was used again as an additional textural projection upon the harmonic step of C (just like clarinet multiphonic no. 407 above, on the same fundamental) – figures 58, 59 for the respective passages in the score.

129

313

316

F
Eb

p-ff
 α
stacc.

mp-mf
 β
rep.

mf
rep.

Figure 57: Three oboe multiphonics; top left on a fundamental of ca. a C, top right and bottom on a fundamental of ca. E-flat. Large diamond white noteheads are the most audible partials, while small black diamond noteheads are the least audible partials.

⁸⁷ Peter Veale, Claus-Steffen Mahnkopf et al., *Die Spieltechnik der Oboe* [The Technique of Oboe Playing] (Kassel: Baerenreiter, 2018), n.p.

G ♩ = 90 Più mosso

23

The image displays a musical score for rehearsal marking G, titled "Più mosso" with a tempo of 90 beats per minute. The score is divided into three parts: a main score on the left and two detailed parts on the right. The main score shows three staves with dynamics ranging from *mp* to *mf*. The right side features three detailed parts: Flute (Fl.) starting at measure 156, Oboe (Ob.) 129 (1./2.), and Clarinet (Cl.) 407. Each of these parts includes performance instructions such as "vary air speed; create vibrations and interference" and "bells up". The Oboe and Clarinet parts are highlighted with red boxes containing their respective numbers: "Oboe 129 (1./2.)" and "Clarinet 407".

Figure 58: Clarinet multiphonic no. 407 and oboe multiphonic no. 128 as an additional texture at rehearsal marking G, in *Thrus* (on the harmonic step of C).

The top right and bottom multiphonics (figure 57) on the fundamental of ca. E-flat, were incorporated within the pitch material in *Thrus*, to enhance the element of reverberation (rehearsal marking D).

The image displays a musical score for Oboe multiphonics, divided into two main sections. The left section is marked $\text{♩} = 90$ *Più mosso* and features parts for Flute (Fl.), Alto Flute (A. Fl.), Oboe 316, Oboe 313, Clarinet (Cl.), and Bassoon (Bsn.). Red boxes highlight the parts for Oboe 316 and Oboe 313, with annotations: "very slow speed, more vibrations and overtones" and "change to piccolo". The right section is marked **D** $\text{♩} = 70$ and includes parts for Piccolo (Picc.), Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), Bassoon (Bsn.), Horn (Hn.), Percussion 1 (Perc. 1), and Percussion 2 (Perc. 2). This section features a 3/4 time signature and includes performance instructions such as "bell up", "gradually vary the [in quartertones]", and "senza sord.". Arrows point from the Oboe 316 and 313 parts in the left section to the Oboe parts in the right section.

Figure 59: Oboe multiphonics, four bars before section D, on ca. D-sharp / E-flat in Thrus.

7. Musical elements III: reverberation

The three-layered pitch material has another significant attribute within my overall compositional approach: when treated vertically, as a chord, it becomes the main event out of which the context of all sound ideas / gestures originates from. It is the Impulse Response, which via reverberation will disseminate this information in the sacred space. By information I refer to the sound gestures but also metaphorically, to the dissemination of memory, of the primordial myth within a ritual act. It also encapsulates the melodic fragment, as well as the central sound episode born out of the superimposition of the first to the second pitch layer.

7.1. The Impulse Response as the main event

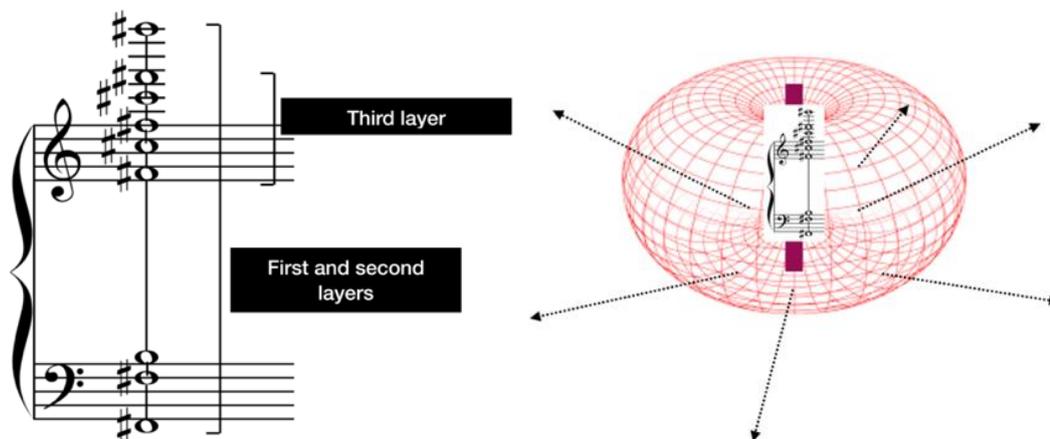


Figure 60: The three-layered chord of the pitch material on a fundamental of F-sharp as an example (left); graphic representation within a toroidal shape, suggesting the dissemination of sound in the sacred space (right).

In figure 60, I demonstrate the motion of the chord (IR) by presenting its dissemination graphically. This was achieved by means of a toroidal shape (horn torus), which in geometry, is the three-dimensional projection of the shape of a ring. The main characteristic of toroidal shapes is that they are created out of an ignition that produces energy, which circulates 360 degrees along the periphery of the

sphere-like object and returns to the ignition point (centre of the shape) and back and forth perpetually.⁸⁸

This energy is in fact the sound reverberating around the periphery of the torus expanding within the sacred space. More specifically, sound ideas originating from the IR chord, gradually transform their textures within the four reverberation regions which act as filters within the space: a) source / early attack, b) reflections / sustain, c) late field reverberation, d) decay.⁸⁹

Starting from the IR chord (left to right in figure 61), we gradually encounter multiphonics, but also triadic and dyadic intervals as minor chordal structures in general. Then come the single pitches, particularly the tension idea between the first and second pitch layer, out of which the melodic fragment evolves via oscillation. At first, the oscillation occurs with vibrato degrees – occasionally with feathered tremolos, leading to trills and then with additional *sul ponticello* degrees that alter the texture of the fragment. All these gradually lead to decay, thus into noise textures (or air textures for the winds), and ultimately silence.⁹⁰

An additional aspect, which I have not raised in this commentary is rhythm. As an element, this would open up for me entirely new research fields further to the current scopes, so I opted to explore it at a future stage. In this portfolio, the exploration of rhythm remained within the margins of the sound ideas' matrix (figure 61), as a development of the pulsation deriving from the reverberation process. The only exception of a rhythmical development occurs through the rhythmical values of the melodic fragment: see figure 61, the development of the four demisemiquavers of the fragment into a quintuplet or a nonuplet, often overlapped with each other to enhance rhythmical irregularity (e.g., in *Thrus*, beginning). We can also include the

⁸⁸ Eric W. Weistein, 'MathWorld – A Wolfram Web Resource: Torus', *www.mathworld.com*, accessed 01 September 2018, <https://mathworld.wolfram.com/Torus.html>.

⁸⁹ The four regions of reverberation, i) source, ii) early attack / reflections, iii) sustain, and iv) late field reverberation / decay in Barry Blesser and Linda-Ruth Salter, *Spaces Speak are you Listening? Experiencing Aural Architecture* (Cambridge, MA: MIT Press, 2007), 139; Bissera V. Pentcheva terms these regions as i) source, ii) direct sound, iii), early reflections, and iv) late field reverberation in 'Hagia Sophia and Multisensory Aesthetics,' *Gesta* 50, no. 2 (2011): 101, accessed 20 July 2021, doi:10.2307/41550552.

⁹⁰ It is important to note that the sound matrix figure 61 does not depict solely treble range gestures, but indicates basic sound ideas. It is thus implied that the amplitude of the reverb would include both treble and bass ranges (hence amplitude arrows pointing to both directions equally lead into noise textures).

percussive slaps on the piano strings with the palm, imitating the bass drum gestures
 – e.g. the opening of *lérkos* and the opening and climax of *Thrus*.

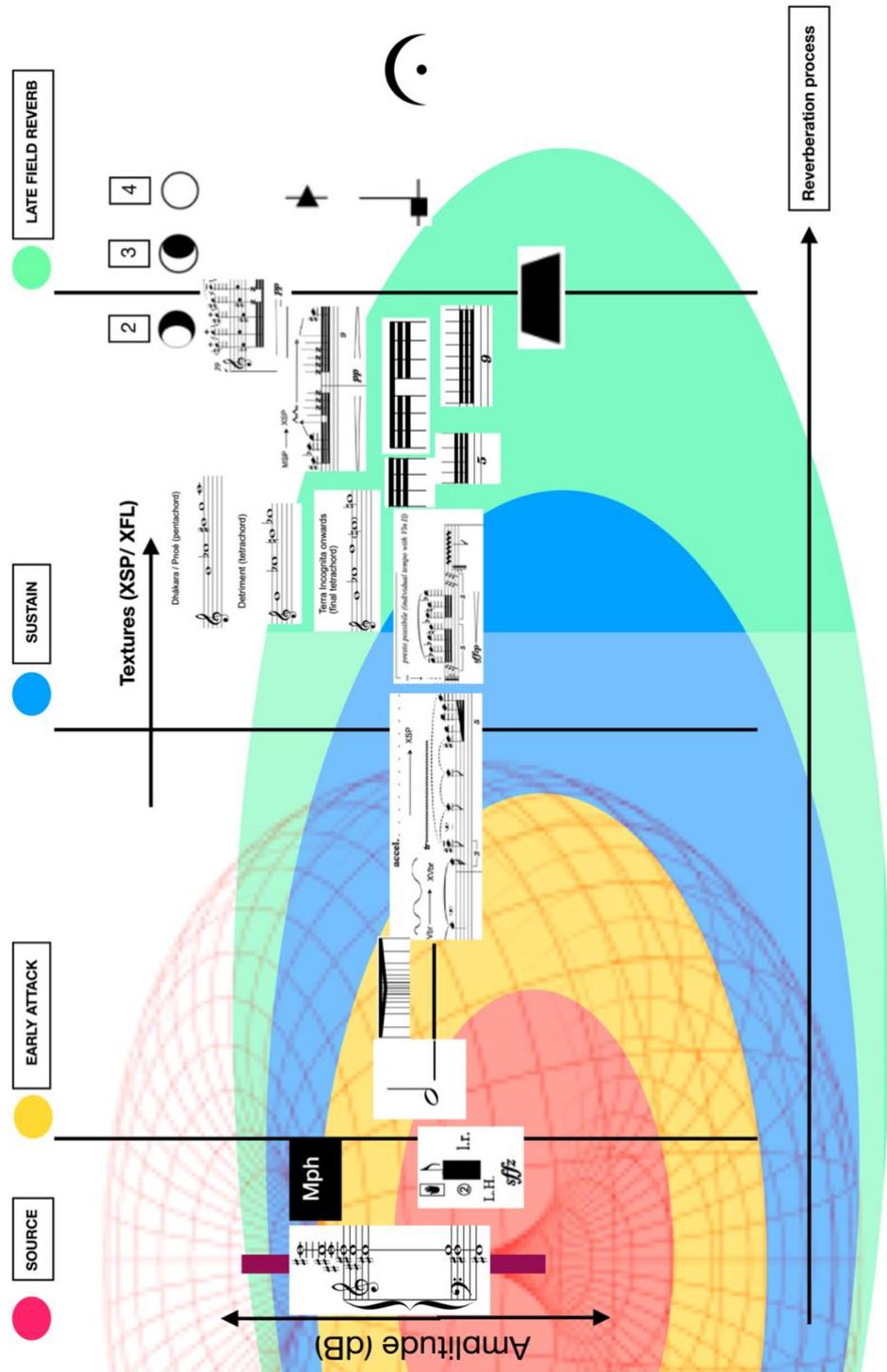


Figure 61: The sound ideas' matrix. Overall mapping of main sound ideas deriving from the IR in linear (horizontal) development of the reverberation in time and space.

My source of inspiration for the mapping of sound ideas was perhaps Kaija Saariaho and her idea of a timbral axis ‘to create a logical timbral organisation ... upon the qualitative differences of the sonic material’.⁹¹ For Saariaho, this axis (figure 62) stretches from natural harmonics to inharmonic sounds (such as bells, multiphonics on wind instruments, strings), into breath-tones, and whispering, to white noise. This axis has become an important element for Saariaho’s organisation of sound material since her *Verblendungen* for orchestra (1982–84). My works however, do not extract their sound material directly from a spectral background (or timbral origin), although this is implicit. Instead, the material derives primarily out of the concept of reverberation as explained before.

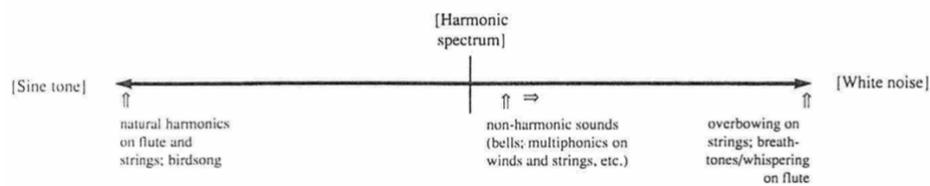


Figure 6 Kaija Saariaho's 'timbral axis'

The Works of Kaija Saariaho, Philippe Hurel and Marc-André Delbavie 83

Figure 62: Kaija Saariaho's timbral axis.

7.2. Realisation of the dissemination

For *Thrus*, the main sound ideas were initially allocated upon the work's harmonic steps in coloured vertical columns (figure 63, top). This allocation was in conjunction with the sound ideas matrix, and the reverberation process as shown above: that is, brown as the main event (the chord containing all three pitch layers); green columns as the sound textures originating from the maqam composite within the decay region; red as static chords containing multiphonics and their projections from the

⁹¹ Damien Pousset, 'The Works of Kaija Saariaho, Philippe Hurel and Marc-André Delbavie – Stille Concertato, Stile Concitato, Stile Rappresentativo,' *Contemporary Music Review* 19, no. 3, ed. Joshua Fineberg, trans. Joshua Fineberg and Ronan Hyacinthe (Harvard Academic Publications, 2000): 82-83.

direct source region; yellow as the tension idea within the early reflections region; and blue as intermediate material from the sustain region. These main ideas were positioned mostly in pairs (green, yellow), one triad (blue), and one tetrad (red), on both ends of the ratio (see ritual units afore).

I then attempted to depict the allocation of the disseminated ideas upon a non-linear format, by creating a rectangular shape to give depth to the illustration (figure 63, bottom). This non-linear design may well be a circle, or any other appropriate shape. I opted for the specific one as it would enable me to envision the sacred space as a literal architectural edifice.

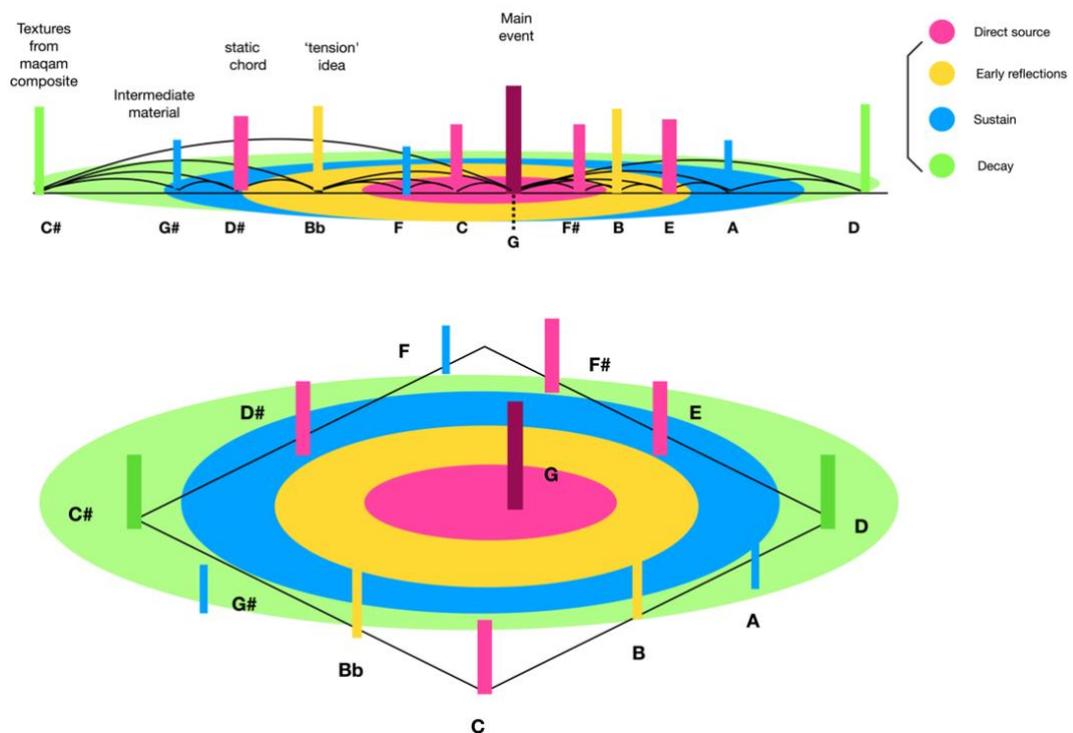


Figure 63: Allocating main sound ideas upon harmonic steps (here depicted as vertical, coloured columns) in conjunction with reverberation; linear time axis (top), and non-linear imitating a hypothetical architectural rectangular edifice (bottom).

At this point, I incorporated the toroidal shape to depict the dissemination of sound out of the main event. This illustrative way shows how the dissemination can interact with the ritual units, the 'columns' within the space (figure 64).

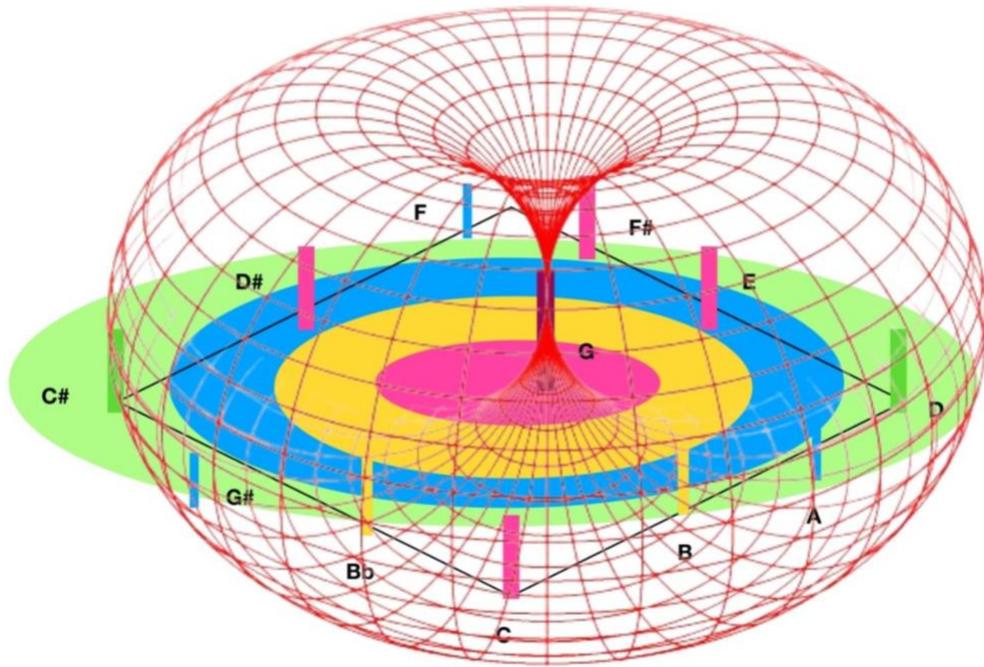


Figure 64: Inserting the torus, which illustrates the dissemination of sound within this final design of the sacred space (an extension to figure 63 above).

Having done so, I proceeded with hypothesising how the IR might strike upon the units within the space: as shown in figure 65, out of the main event, the ignition spreads as far as the C-sharp unit at the beginning and as far as the D unit at the very end. This is due to its greater force capable to reach the very ends of the space because of the energy of the spherical motion of the torus. Naturally, it also affects the IR's neighbouring units on C (on the left) and F-sharp (on the right). The ignition should also reach some of the remaining units: I decided that these would be D-sharp and E (pink).

At a secondary level, these first interactions (brown arches reaching C-sharp, D-sharp, C, F-sharp, E and D), would then likewise spread their sound force on neighbouring units in a similar manner: as such, for the pink units, out of D-sharp towards G-sharp and B-flat, out of C towards F and within G, out of E towards A and towards B. Likewise, for the green units, out of C-sharp towards G-sharp and retrograde towards D (at the very end). These primary and secondary interactions are shown in figure 65.

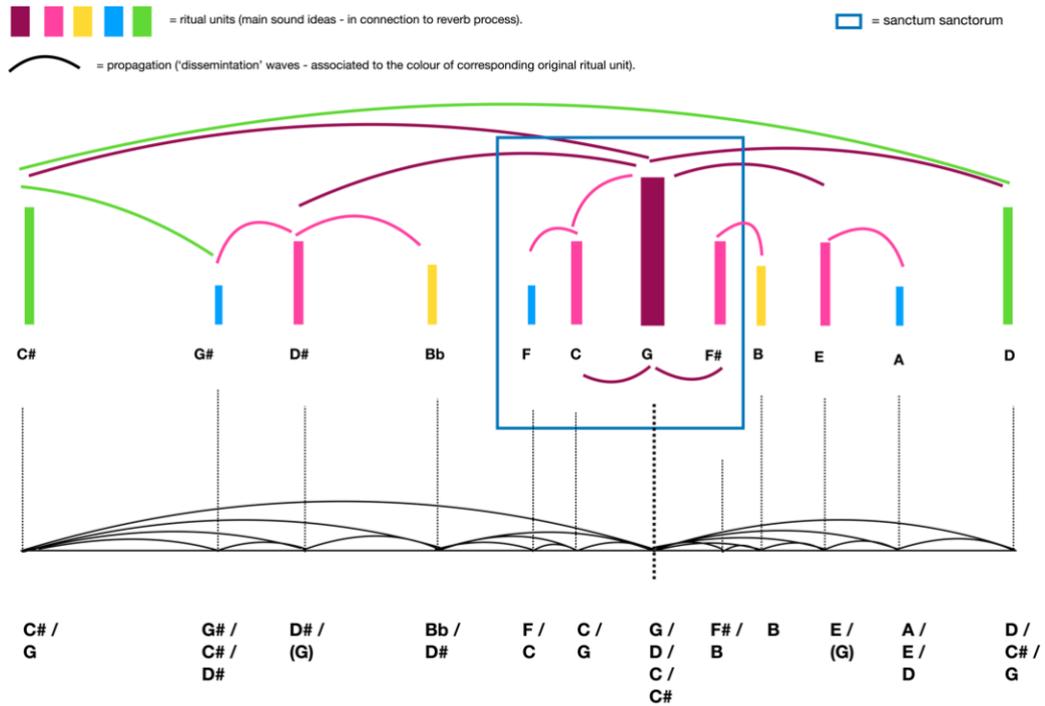


Figure 65: Hypothetical IR dissemination (propagation) and interaction with units and their respective harmonic steps (an extension to figure 64).

This hypothetical dissemination was then brought into realisation in terms of music in the example of F-sharp / B (straight after the main event – brown), shown in figure 66: building up on the re-ordered array of the partials of the main clarinet multiphonic on an F-sharp fundamental (both regular and inverted), I added the B equivalent on top (both treble and bass range). I then extracted the intervals for both steps and looked for similar pitches to apply them as pivotal intervals. In the example below, the first interval in the treble range (number one) on F-sharp is almost identical to the third interval of the treble range on B (green regular boxes and arrows). Furthermore, the third interval of the bass range of the F-sharp unit is almost identical to the first interval of the bass range of the B unit (red regular boxes and arrows). Some secondary matches occur in this example (dotted boxes and arrows), which would add to the overall process. Figure 67 shows how all these intervals were orchestrated (in other colours).

Legend (top):

| | | | | | | | | | | | | | |
|------|-------|------|-------|-----|-----|---|------|---|-------|-----|---|------|---|
| C#/G | G#/C# | D#/G | Bb/D# | F/C | C/G | G | F#/B | B | E/(G) | A/E | D | D/C# | G |
|------|-------|------|-------|-----|-----|---|------|---|-------|-----|---|------|---|

Score (bottom):

- Staff 1: Regular: (a.) e. b. d. c. (a.)
- Staff 2: Regular: (a.) e. b. d. c. (a.)
- Staff 3: Inverted: (a.) e. b. d. c. (a.)
- Staff 4: Inverted: (a.) e. b. d. c. (a.)

Annotations: Multiphonic (third layer re-ordered) sections are highlighted with green and orange boxes. Circled notes 1-4 indicate specific intervals. Arrows show the flow of interval extraction and assimilation.

Figure 66: A realisation of a section of figure 65 on the harmonic step of F-sharp; legend (top), indicating the position of the section in the whole; the re-ordered array of the multiphonic on an F-sharp fundamental, merged with the equivalent on B – interval extraction and assimilation towards instrumentation (bottom).

... .. L ♩ = 35 (♩ = 70)

34 stopped (echo-horn)

Violin I: Vln. I/S2, Vln. I/S1

Violin II: Vln. II/S2, Vln. II/S1

Violin III: Vln. III/S1, Vln. III/S2

Viola: Vla./S2, Vla./S1

Cello: Vcl./S2, Vcl./S1

Double Bass: Vc.

Figure 67: Excerpt of Thrus bb. 216-219 indicating the intervals mentioned before (compare to figure 66) orchestrated.

This process has been applied to all units, whether containing two or three overlapping harmonic steps.⁹² For some units in *Thrus*, however, there was not just the multiphonic array involved, but half of the maqam composite as well. This occurs in two instances: on the IR at rehearsal marking J, and on the opening chord rehearsal marking A. At rehearsal marking J, where four harmonic steps are overlapped (G – C – D – C-sharp), I incorporated the first half of the maqam composite within the first octave interval of the multiphonic, which was likewise inverted: the joined green, red, blue, and pink boxes show intervals that match, thus are being treated as pivotal intervals for the orchestration (figure 68). Along with orchestrating the derived intervals from the multiphonic arrays (mainly in the strings and woodwinds), I also orchestrated the first half of the maqam composite (green box) in the brass section, and tubular bells (in an open position along several octaves).⁹³ This is actually a good example of involving both the treble and the bass range as the inverted array of partials, and the inverted half of the maqam composite (see score *Thrus*, bb. 192-through rehearsal marking J).

⁹² In *Ĵerkos*, a similar method was applied, yet in a simpler manner, as it was only used to interconnect the harmonic steps on which the clarinet multiphonic appears. In contrast to *Thrus*, there was not an overlapping of harmonic steps in the sense of reverberation as shown here.

⁹³ In several cases some artistic liberty was taken, deviating from the calculated intervals, in order to have of a more musical / less calculated result.

The figure shows a musical score with several staves. On the left, a vertical bracket groups the staves for C#, D, C, G, C, D, and C#. The G staff is highlighted with a green box and contains a 'half second layer: maqam composite' and 'half second layer: inverted and amended'. Other staves are labeled 'third layer: clarinet multiphonic' or '(inverted)'. A central section is labeled 'Intervals:' and contains a complex network of colored lines (pink, blue, green, yellow) connecting notes across different staves. On the right, there are labels for 'Higher strings / woodwinds' and 'Lower strings / Low brass'. A green box labeled 'Brass' is also present.

Figure 68: The IR, or the harmonic step on G in Thrus (including dissemination from the harmonic steps C, D, C-sharp affecting the chord).

A final consideration: while the IR event would reach and merge with other harmonic steps within the space, I envisioned this merging as the means to break the reverberation waves into their constituent fractures. Like numerous water ripples in a pond, which collide with each other, they are gradually losing their strength and dissolving. By baring this image, it is clearer how the constituent parts dissolve in space, gradually deviating from the initial reverberation pulse.

In the opening section of *Thrus* for example, out of the starting chord (figure 69, blue), which is predominantly percussive as it directly originates from the IR, fractures of it (pink) gradually begin to deviate in independent ‘sound ripples’ (red), until they gradually dissolve (ca. until rehearsal marking B, where they give birth to new sound ideas). This is due to the impact of the local harmonic step on C-sharp to the IR on G. In fact, fragments of the IR on G (from section J), appear in score mostly in the bass line (yellow).

Tt
(2)
Jo

Full Score

[A] $\text{♩} = 70 (\text{♩} = 140)$

2/4

Piccolo

Flute 2 (doubling Alto Flute)

Oboe

Clarinet (Bb)

Bassoon

Horn (F) I/II

Horn (F) III/IV

Trumpet (Bb) (doubl. Acc. Tpt. Bb/ and D Tpt.)

Trombone

Percussion 1

Percussion 2

Harp

Piano

[A] $\text{♩} = 70 (\text{♩} = 140)$

2/4

Violin I (1-2)

Violin I (3-4)

Violin I (5-6)

Violin I (7-8)

Violin II (1-2)

Violin II (3-4)

Violin II (5-6)

Violin II (7-8)

Viola (1-2)

Viola (3-4)

Viola (5-6)

Violoncello (1-2)

Violoncello (3-4)

Violoncello (5-6)

Violoncello (7-8)

Double Bass (1-2)

Double Bass (3-4)

All rights reserved

Figure 69: Different layers ('ripples') in the opening section of Thrus.

The reverberation principle is based on the following template (figure 70): taking into consideration the first eight reverberation pulses from an initial strike (direct source), the dynamic markings are categorised from *fff* towards *ppp* into silence. These eight pulses are separated from each other on the principle of the Fibonacci sequence (as a direct association to the golden ratio). Overall, they are positioned within the reverb process (top). In addition, the first few immediate strikes appear within a duration of less than a second into decimals generated through the golden ratio.

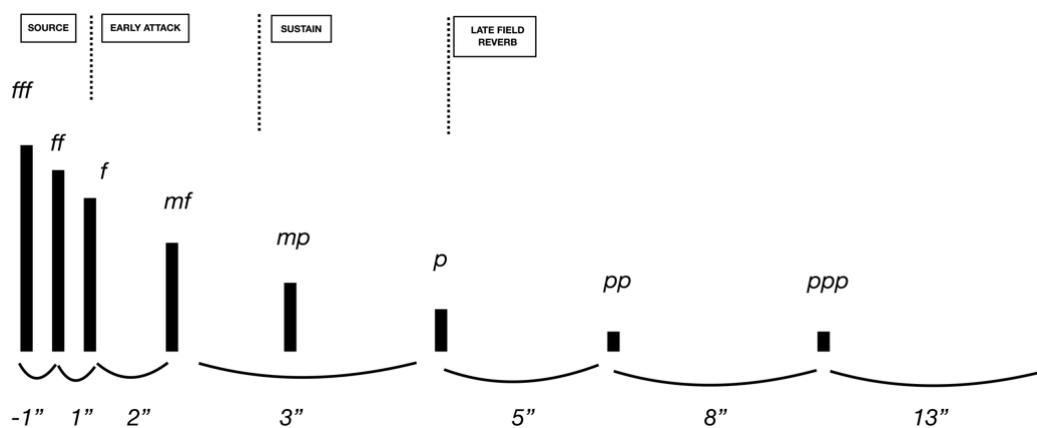


Figure 70: The reverberation principle / template: from top to bottom, reverb stages, dynamic degrees, reverberation pulses and their corresponding duration.

In essence, this design is yet another example of the *con-temporal* narrative technique I presented in chapter 4, as a multi-part sequence of several fractures or sound ideas excerpts within a specified timeframe, which is entirely based and positioned upon subdivisions of the golden ratio, in both regular and mirrored time order.

8. *Sound ritual* – now, what?

The process of my compositional approach is described above through the musical elements and their interwoven theoretical notions, leading to a *sound ritual*, which reveals two significant meta-attributes:

Any new composition can be potentially instilled in a specific sound imprint: for example, a captured Impulse Response can be applied to auralise a given space, adjusting its spatial parameters accordingly. Here, the sound imprint of a *sound ritual* can be applied to any new composition according to the five musical elements. Any slight change to these elements could differentiate, but not substantially alter, the sound signature. As a result, I deem the *sound ritual* a mobile / transferable construct – a compositional approach that can potentially ‘tune’ any new work with the captured sound environment.

During the past year, I have already had the opportunity to examine this meta-attribute; my latest work *Septiphobie* for large ensemble, which was written on a commission by the Ensemble Intercontemporain and premiered at the Philharmonie de Paris, on 09 March 2022, was constructed upon the *sound ritual* approach (see Appendix III, for score and Appendix IV for audio). In fact, *Septiphobie* was designed to try out this research on a large scale, since the orchestral *Thrus* is yet to be premiered. For this reason, it has profound assimilations to *Thrus*, in terms of form, harmonic, time and pitch organisation as well as sound ideas: it introduces a merging of determined and indetermined sound occasions (opening and ending of the piece), an exploration in extreme dynamics, as well as the element of rhythm. Due to its shorter duration, *Septiphobie* does not employ the element of reverberation to the extent *Thrus* does, though there is an implicit dissemination of sound ideas in the overall flow of the piece. Despite this, the work carries a strong sound imprint, enhanced through the larger instrumentation applied, which urged me to consider whether a *sound ritual* reaches its maximum potential when applied in larger instrumentations. Any final and more concrete conclusions on the effectiveness of

the first meta-attribute are yet to be delivered, pending the premiere of *Thrus*, whenever this takes place.

The second meta-attribute concerns the repetition or reappearance of sound ideas, and structural elements in the pieces. While working on *Thrus*, I realised that these nine pieces constitute nine different perspectives of the same narrative. The recurring sound ideas through the nine pieces could be regarded as fractured reflections of one piece to the other. Even more so, these nine pieces were functioning as if fractures of memories themselves, resonating endlessly in time past, present, and future, originating out of a single moment in time, the IR. As a result, I acknowledged the existence of a meta-space containing all nine perspectives, and I associated this with infinity mirrors creating a spatial illusion (figure 71). Perhaps, one could associate this meta-space with the subconscious, within which memories are stored in a non-linear order. Similarly, when a perspective is activated while one of the pieces is being performed, a process is also activated within this meta-space. This process might well be the ritual itself interconnecting certain aspects of other perspectives, which are activated in random sequences.

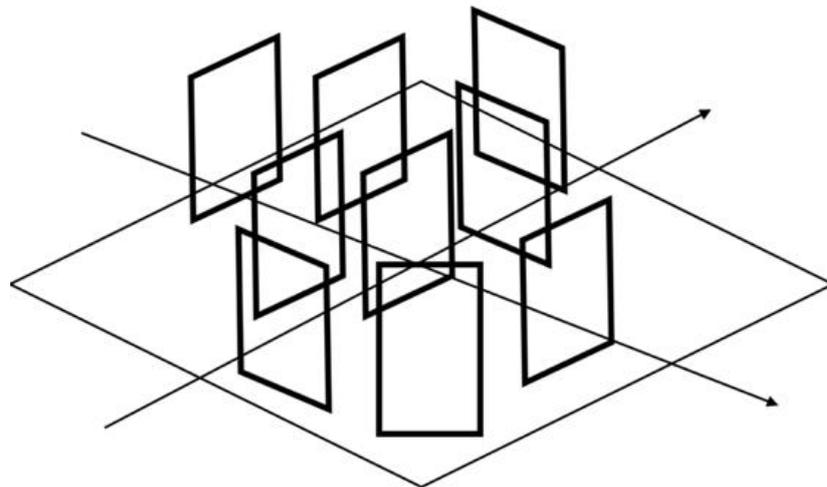


Figure 71: The nine perspectives of the narrative, illustrated as infinity mirrors in a hypothetical meta-space.

This conceptual representation will be the foundation of a long-term plan I am working on, concerning an hour-long music theatre work. The work will be based on a text which engages with the theme of the archaic female energy as an embodied

primordial myth. This idea which coincides perfectly with the notion of a primordial myth in my music, will enhance the process of exploring an archaic space within nine perspectives, illustrated by means of the scenic dramaturgy. As such, the research behind the current portfolio will be invaluable as to the application of the elements onto the music theatre genre – which I see myself engaging even more with in the future as it offers me the prospect of delving into these notions, both sonically and scenically.

The new music theatre in progress will be orchestrated for a female voice and a percussion ensemble; on this occasion, rhythm will be eventually given full attention as an individual element to be explored. In addition, it will also give me the opportunity to implement electroacoustic media in my *sound rituals* as a pre-set in generating new acoustic sacred spaces (literally and not just suggestively through the instrumentation) that would offer me the opportunity to enhance the acoustic experience of the above notions in future works. Not least, it would allow me to evaluate whether the electroacoustic dimension would alter the nature of sacredness in my works.

The completion of the portfolio signalled the culmination of a fruitful journey, and the arrival to new origins: it was a great challenge to develop an approach, which by nature would somewhat control my creative impetus. Perhaps that was subconsciously the reason why I was so eager to adopt and implement this calculative approach for my doctoral studies, because I knew that creative discipline would be one of my greatest challenges as a composer.

Upon listening to my own works, nowadays, I confess there are certain areas where I feel I could have applied more liberties but due to the *sound ritual* approach, I did not. For example, many of the musical elements could be further explored in different and more varied deviations, not least into experimenting with their full capacity – the pitch material, for instance. Nevertheless, I am content that I have remained systematic to this method because it has opened new avenues for me. I am also content that I have completed this research on a subject that is so close to me and has been occupying my creative imagination for years: the notion of rituals and how this can be applied into new music.

Appendices

- I. *Towards Atractus* (2017) – for string quartet (score, pages 1 – 19 in the PDF):

The cover pages and score of the preparatory study *Towards Atractus* for string quartet. It was written in November 2017, exclusively in graphic notation, and was workshopped with the Diotima Quartet in the same month. It was eventually merged into the research undertaken on the string quartet medium, which resulted in String Quartet no. 2 (*Átractos*) that was premiered at the Diotima Academy in Noirlac, France, in 2019 by Cuarteto Abreu.

- II. Con-temporal narrative for *Terra Incognita* (draft manuscript, page 20 in the PDF):

A section of the sequence in figure 20, before and after the harmonic step of C-sharp on draft manuscript, with detailed divisions in numbers. This passage is structured upon subdivisions of the golden ratio along with the Fibonacci sequence (see top of the illustration).

- III. *Septiphobie* (2021) – for large ensemble (score, pages 21 – 91 in the PDF):

Septiphobie was written on a commission by the Ensemble Intercontemporain and premiered at the Philharmonie de Paris, on 09 March 2022. It is constructed upon the *sound ritual* approach, and it is a good example of applying the findings of the research in a large-scale piece.

- IV. *Septiphobie* (2021) – 8:23 min., live recording (professional) – audio

Septiphobie (2021) – 8:23 min., live recording (professional)

Ensemble Intercontemporain

Tremplin de la Création,

Philharmonie de Paris, France / 09 March 2022

NB: Appendices I-III are attached in a separate PDF document (Thesis_2.pdf). Appendix IV is attached as a separate file (Thesis_2_AudioFile_Septiphobie.mp3).

Bibliography

In English

- Alexander, Christopher, Sara Ishikawa and Murray Silverstein. *A Pattern Language: Towns, Buildings, Construction*. NY: Oxford University Press, 1977.
- Aydemir, Murat. *Turkish Music Makam Guide*. Istanbul: Pan Yayincilik, 2010.
- Barbera, André. 'The consonant Eleventh and the Expansion of the Musical Tetractys: A Study of Ancient Pythagoreanism'. *Journal of Music Theory* 28, no. 2 (1984): 191-223. Accessed 22 May 2022. <https://doi.org/10.2307/843532>.
- Barth, Christiane. 'In illo Tempore, at the Center of the World: Mircea Eliade and Religious Studies' Concepts of Sacred Time and Space'. *Historische Sozialforschung* 38, no. 3 (2013): 59-73. Accessed 24 April 2022. <http://www.jstor.org/stable/23644525>.
- Bell, Catherine M. *Ritual: Perspectives and Dimensions*. New York: Oxford University Press, [1997] 2009.
- Bergson, Henry. *Matter and Memory*. Translated by Nancy Margaret Paul and W. Scott Palmer. London: George Allen and Unwin, 1911.
- Blessner, Barry and Linda-Ruth Salter. *Spaces Speak are you Listening? Experiencing Aural Architecture*. Cambridge: MIT Press, 2007.
- Brech, Martha and Henrik von Coler. 'Aspects of Space in Luigi Nono's Prometeo and the Use of the Halaphon'. In *Kompositionen für hörbaren Raum* [Compositions for an audible Space], edited by Martha Brech and Ralph Paland, 193-204. Bielefeld: transcript Verlag, 2015. Accessed 24 April. 2022. <https://doi.org/10.14361/9783839430767-012>.
- Connerton, Paul. *How Societies Remember: Themes in the Social Sciences*. Cambridge: Cambridge University Press, 1989.
- Eliade, Mircea. *The Sacred and the Profane. The Nature of Religion*. Translated by Willard R. Trask. New York: Harper and Brothers, 1961.
- _____. *Myth and Reality*. London: Allen & Unwin, 1964.
- Ford, Andrew and Liza Lim. 'Spiritual Ecstasy and Earthly Desire: Interview with Liza

- Lim'. In *Earth Dances: Music in search of the primitive*, edited by Andrew Ford, 136-148. Melbourne: Black Inc, 2015.
- Gibson, James J. *The Senses Considered as Perceptual Systems*. Boston: Houghton-Mifflin, 1966.
- _____. *The Ecological Approach to Visual Perception*. Hillsdale, New Jersey: Erlbaum, [1979] 1986.
- Goldman, Jonathan. *The Musical Language of Pierre Boulez: Writings and Compositions*. Cambridge: Cambridge University Press, 2011.
- Howell, Thomas. 'The Multiphonics'. In *The Avant-garde Flute: A Handbook for Composers and Flutists*, 63-178. LA: University of California Press, 1974.
- Humphrey, Caroline and James Alexander Laidlaw. *The Archetypal Actions of Ritual: A Theory of Ritual illustrated by the Jain Rite of Worship*. Oxford: Clarendon Press 1994.
- Johansen, Thomas K. 'Myth and Logos in Aristotle'. In *From Myth to Reason: Studies in the Development of Greek Thought*, edited by Richard Buxton, 279-294. Oxford: Oxford University Press, 1999.
- Lobo Lorena, Manuel Heras-Escribano and David Traverso. 'The History and Philosophy of Ecological Psychology'. *Frontiers in Psychology* 9 (November 2018): sect. 1-15. Accessed 25 April 2022.
DOI:<https://doi.org/10.3389/fpsyg.2018.02228>.
- Lock, Margaret. 'Cultivating the Body: Anthropology and Epistemologies of Bodily Practice and Knowledge'. *Annual Review of Anthropology* 22 (1993): 133-55.
- Maintz, Marie Luise. 'Physiognomy of the Scream'. Liner notes to *Beat Furrer (*1954)*, translated by Cristopher Barber, dir. various. Kairos Music Productions, 0012842KAI, 2008, CD. Accessed 10 January 2020.
<https://www.kairos-music.com/sites/default/files/downloads/0012842KAI.pdf>.
- Minou, Andriana. 'Sibyl's Leaves: Understanding Musical Performance Issues in Jani Christou's Anaparastasis III and Epicycle'. Doctoral dissertation, Goldsmiths College, 2010. Accessed May 2020. <https://research.gold.ac.uk/id/eprint/6535/>.
- Moran, Dermot. *Introduction to Phenomenology*. London: Routledge Press, 2000.
- Murir, Edward. *Ritual in Early modern Europe*. Cambridge: Cambridge University Press, 1997.

- Pentcheva, V. Bissera 'Hagia Sophia and Multisensory Aesthetics'. *Gesta* 50, no. 2 (2011): 93-111. Accessed 20 July 2021. DOI:10.2307/41550552.
- Plato. '616b.' In *Republic: Book X*. Translated by James Adams. Accessed 01 October 2017. <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.04.0094%3Abook%3D10%3Asection%3D616B>.
- Pousset, Damien. 'The Works of Kaija Saariaho, Philippe Hurel and Marc-André Delbavie – Stille Concertato, Stile Concitato, Stile Rappresentativo'. *Contemporary Music Review* 19, no. 3, edited by Joshua Fineberg and translated by Joshua Fineberg and Ronan Hyacinthe, 67-100. Harvard Academic Publications, 2000.
- Rappaport, Roy A. *Ritual and Religion in the Making of Humanity*. Cambridge: Cambridge University Press, 1999.
- Rouget, Gilbert. *Music and Trance: A Theory of the Relation between Music and Possessions*. Chicago: University of Chicago Press, 1985.
- Sartre, Jean-Paul. *Transcendence of the Ego: An Existential Theory of Consciousness*. Translated by Forrest Williams and Robert Kirkpatrick. New York: Noonday Press, 1957.
- Schieffelin, Edward L. 'Performance and the Cultural Construction of Reality'. *American Ethnologist* 12, no. 4 (November 1985):707-724. Accessed May 2022. <http://www.jstor.org/stable/644178>.
- Snyder, John L. 'Harmonic Dualism and the Origin of the Minor Triad'. *Indiana Theory Review* 4, no. 1 (1980): 45-78. Accessed 23 August 2021. <http://www.jstor.org/stable/24044496>.
- Solomos, Makis. 'Xenakis as a Sound Sculptor'. In *welt@musik - Musik interkulturell*. Publications de l'Institut für Neue Musik und Musikerziehung Darmstadt 44, 161-169. Mainz: Schott, 2004.
- Stausberg, Michael. 'Ritual Orders and Ritologiques: A Terminological Quest for some Neglected Fields of Study'. *Scripta Instituti Donneriani Aboensis* 18 (2003): 221-242. Accessed March 2022. DOI: 10.30674/scripta.67295.
- Sterken, Sven. 'Towards a Space-Time Art: Iannis Xenakis's Polytopes'. *Perspectives of New Music* 39, no. 2 (2001): 262–73. Accessed 24 April 2022.

<http://www.jstor.org/stable/833570>.

- _____. 'Music as an Art of Space. Intersections between Music and Architecture in the Work of Iannis Xenakis'. In *Resonance: Essays on the Intersection of Music and Architecture*, edited by Sven Sterken, Mikesh Muecke and Miriam Zach, 31-61. Ames: Culcidae Architectural Press, 2007.
- Stockhausen, Karlheinz. '...How time passes...'. *Die Reihe* 3 (1959): 10-40.
- Throop, C. Jason, and Charles D. Laughlin. 'Ritual, Collective Effervescence and the Categories: Toward a neo-Durkheimian Model of the Nature of Human Consciousness, Feeling and Understanding'. *Journal of Ritual Studies* 16, no. 1 (2002): 40-63. Accessed 01 July 2021. <http://www.jstor.org/stable/44368625>.
- Turner, Victor. *From Ritual to Theatre: The Human Seriousness of Play*. New York: Performing Arts Journal, 1982.
- Yerosimou, Maria. 'Jani Christou's Strychnine Lady (1967): The Development of an Interpretative Strategy in the Context of the Interdisciplinary Ideas Surrounding its Genesis'. Doctoral dissertation. Goldsmiths College, 2014. Accessed December 2020. <http://research.gold.ac.uk/id/eprint/12311/>.
- Zachou, Angeliki. 'The Use of Music in Greek Performances of Ancient Greek Drama in the 20th Century'. In *Staging of Classical Drama around 2000*, edited by Pavlina N. Šipová and Alena Sarkissian, 141-146. Newcastle: Cambridge Scholars Publishing, 2007.
- Zahorik, Pavel and Rick L. Jenison. 'Presence as Being-in-the-World'. *Presence: Teleoperators and Virtual Environments* 7, no. 1 (1998): 78-89. Accessed 20 May 2022. <https://doi.org/10.1162/105474698565541>.

In German

- Assmann, Jan. 'Kollektives Gedächtnis und kulturelle Identität [Collective Memory and Cultural Identity]'. In *Culture and Memory*, edited by and Tonio Hölscher and Jan Assmann, 9-19. Frankfurt am Main: Suhrkamp, 1988.
- Dahm, Ulrike. *Opfer und Ritus: Kommunikationstheoretische Untersuchungen* [Offering and Rite: Investigations in theoretical communication]. Religionswissenschaftliche Reihe 20. Marburg: diagonal, 2003.

- Krassnitzer, Gerhard. *Multiphonics für die Klarinette mit deutschem System und andere zeitgenössische Spieltechniken* [Multiphonics for the Clarinet on a German System and other Contemporary Techniques]. Germany: Ebenos, 2003.
- Nauck, Gisela. *Musik im Raum, Raum in der Musik: ein Beitrag zur Geschichte der seriellen Musik* [Music in Space, Space in music: A Contribution to the History of Serial Music]. Beihefte zum Archiv für Musikwissenschaft. Stuttgart: Franz Steiner Verlag, 1997.
- Reschika, Richard. *Mircea Eliade zur Einführung* [Introducing Mircea Eliade]. Hamburg: Junius, 1997.
- Schmidt, Bettina, E. *Einführung in die Religionsethnologie: Ideen und Konzepte* [Introduction to the Ethnology of Religions: Ideas and Concepts]. Berlin: Reimer, 2008.
- Singer, Nathalie. 'Musique Invisible'. In *Inventionen '98: 50 Years Musique Concrete*, edited by Helga de la Motte-Haber, 155-163. Saarbruecken: Pfau Publications, 1999.
- Stockhausen, Karlheinz. 'Musik im Raum [Music in space]'. *Die Reihe* 5 (1959): 152-175.
- Stollberg-Rilinger, Barbara. *Rituale* [Rituals]. Historische Einführungen 16. Frankfurt: Campus Verlag, 2013.
- Tsiartas, Andreas. 'Mnème und Léthe: Analytische Betrachtungen zu Beat Furrers Lotófagos I für Sopran und Kontrabass [Mnème and Léthe: Analytical observations to Beat Furrer's Lotófagos I for soprano and double bass]'. Master's dissertation, Hochschule für Musik 'Carl Maria von Weber', 2010.
- Veale, Peter, Claus-Steffen Mahnkopf, Wolfgang Motz and Thomas Hummel. *Die Spieltechnik der Oboe* [The Technique of Oboe Playing]. Kassel: Baerenreiter, 2018.
- Zannos, Ioannis. *Ichos und Makam: Vergleichende Untersuchungen zum Tonsystem der griechisch-orthodoxen Kirchenmusik und der türkischen Kunstmusik* [Echos and Makam: Comparative Investigations in the Tone System of the Greek Orthodox Church Music and the Turkish Art Music]. Bonn: Orpheus Verlag, 1994.

Other languages

Bayle, François. *Musique Acousmatique: Propositions, Positions*. Paris: Buchet / Chastel-INA-GRM editions, 1993.

Jargy, Simon. *La musique arabe*. Paris: Presses Universitaires de France, 1971.

Lagopoulos, Alexandros-Phaedon. *Ο Ουρανός πάνω στη Γη: Τελετουργίες Καθαγίασης του Ελληνικού Παραδοσιακού Οικισμού και Προέλευση τους* [The Sky upon the Earth: Rituals of Sanctification of the Traditional Greek settlement and their Origins]. Athens: Odysseus, 2002.

Mavroeidis, D. Marios. *Οι Μουσικοί Τρόποι στην Ανατολική Μεσόγειο: Βυζαντινός Ήχος, Αραβικό Μακάμ, Τούρκικο Μακάμ* [Music Modes in the Eastern Mediterranean: Byzantine Echos, Arabic Maqam and Turkish Makam]. Athens: Fagotto Press, 1999.

YouTube links

Konrath, Michael. 'Gong Tam-tam (Wuhan) Rubbermallets TTE Konklang'. YouTube video, 06:07. Posted by 'Michael Konrath'. 20 December 2010. Accessed 01 October 2020. <https://youtu.be/dlBO8Gls3F8>.

Websites

Lim, Liza. 'Tongue of the Invisible'. www.lizalimcomposer.com. Accessed 24 May 2022. <https://lizalimcomposer.com/tongue-of-the-invisible/>.

Małek, Piotr and Mateusz Mucha. 'Omnicalculator: Golden Ratio Calculator.' www.omnicalculator.com. Accessed 01 April 2018. <https://www.omnicalculator.com/math/golden-ratio>.

Renzo Piano Building Workshop Architects. 'Prometeo Musical Space:1983-1984, Venice Italy'. www.rpbw.com. Accessed 25 April 2022. <http://www.rpbw.com/project/prometeo-musical-space>.

Schott Music. 'Liza Lim: Tongue of the Invisible'. www.schott-music.com. Accessed 24 May 2022.

<https://en.schott-music.com/shop/tongue-of-the-invisible-no316158.html>.

Talea Ensemble. 'American Immersion: Beat Furrer'. *www.taleaensemble.org*.

Accessed 24 April 2022.

<http://taleaensemble.org/american-immersion-beat-furrer/>.

Weistein, W. Eric. 'MathWorld - A Wolfram Web Resource: Torus.'

www.mathworld.com. Accessed 01 September 2018.

<https://mathworld.wolfram.com/Torus.html>.

Images

Daeumler, Wolfgang W. *Horn torus*. Image, 1996.

Accessed 20 May 2022.

<https://www.horntorus.com/image8index.html>

Pschemp. *Spindle (textiles)*. Image, 2010.

Accessed 01 September 2018.

[https://en.wikipedia.org/wiki/Spindle_\(textiles\)](https://en.wikipedia.org/wiki/Spindle_(textiles)).

Topor. *Black tree with roots vector image (royalty free)*. Images, n.d.

Accessed 01 October 2018.

<https://www.vectorstock.com/royalty-free-vector/black-tree-with-roots-vector-18851971>.

Music scores

Christou, Jani. *Praxis for 12*. London: J. & W. Chester Ltd, 1970.