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Ekapon Muenyam
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Finding A Voice – Exploration of Modes and Timbres

A portfolio of ten original compositions with accompanying commentaries

Ekapon Muenyam

Submitted in partial fulfilment of the requirements for the
Doctor of Philosophy Degree (by Research) in Music Composition

Technological University Dublin
Conservatory of Music and Drama

Supervisor: Professor Dr Gráinne Mulvey

July 2019

I certify that this thesis which I now submit for examination for the award of Doctor of Philosophy's Degree (Ph.D), is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work.

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ABSTRACT

This thesis marks the culmination of four years' work, as part of my PhD study in composition. The portfolio consists of ten pieces, lasting in total approximately 2 hours and 10 minutes, and a commentary comprising an analysis of each of the works. The main emphasis has been on the development of an individual style, informed by the exploration of twentieth and twenty-first century compositional techniques, instrumental timbres, stylistic genres, forms, scale derivations and the wider aesthetic of contemporary music.

The portfolio includes works for solo instruments, ensemble and orchestra. One of the main areas of research has been to devise combinatorial scales, based on modality, whole-tone scales and pentatony, based on my knowledge and experience of a range of musical traditions and genres, both western and eastern, thereby deriving new melodic and harmonic resources.

Each piece in the portfolio was written with one or more different concepts in mind and consists of either single- or multi-movement formats.

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Above all, very special thanks to my grandmother,

Boonsong Muenyam,

to whose memory this work is humbly and lovingly dedicated.

CHAPTER 1

Growing up in Thailand, my earliest musical experiences were, naturally, of Thai traditional and folk music. This differs from Western art music in a number of fundamental aspects. It is almost entirely melodic, with no harmony or counterpoint; rather a single line is treated heterophonically. Like many others, I took up guitar because it was a relatively affordable instrument for someone from a poor background.

My first experiences as a performer were with rock bands. From this, I began to develop an interest in the idea of sound as an entity in its own right. Far from the rarefied, reverential atmosphere of the classical concert hall, the music I played was riven with feedback and distortion, mingled with the ambient sounds of a noisy audience. I gradually came to consider these ostensibly extraneous elements to be, on the contrary, an intrinsic part of the musical experience. It also began to dawn on me that we are immersed in sound throughout our waking lives. I came to embrace the randomness, which later became a major influence on how I organised material in my compositions.

In my work, this is manifested primarily through timbre, where “chaotic” elements frequently interrupt a prevailing, stable texture. These elements generally take the form of small, individual, “sound events”, but may also coalesce to form a large-scale “noise band” texture or even a “wall of sound” threatening to swamp the texture before receding or breaking back down into its component parts and being absorbed into the prevailing discourse. This process is particularly important in *Atmospheres*, for string quartet, and *Drop of Water* for trumpet, cello, vibraphone and piano.

Arriving in Ireland in 2015, I was struck by the weather, the landscape, and the small size of the country. I was aware of the customs and traditions of Irish music, but I had not experienced live traditional Irish music before. One of the common threads shared by Irish and Thai traditional music is the use of drones. In Thailand the drone is “active”, in other words, the drone moves from a tonal centre above and below the central pitch, so that it is continuously decorated by pitches either side. In Irish traditional music, however, for the most part the drone serves as an accompaniment, underpinning the melodic and harmonic structure of the tune or air. The use of the tin whistle in traditional Irish music,

with its particular timbre and the various cuts and rolls which act as ornamentation, correlates to the type of improvisational melodies characteristic of Asian and Thai music, though in a freer setting.

As mentioned before, there are other features that caught my imagination, such as the weather. Ireland's temperate oceanic climate produces generally moderate weather patterns, whereas Thailand's weather is more extreme. For instance, rain in Thailand is generally restricted to the Monsoon period, when it pours down in dense sheets of water; in Ireland rain is much gentler and more frequent. The rain in both countries was the catalyst for several pieces, influencing notation, structure, timbre and improvisation. I will return to this when discussing the pieces in detail.

There are three main objectives in this thesis:

Major objectives:

1. Composing original compositions for solo instrument, ensemble and orchestra.
2. To discover my own specific aesthetic, musical characteristics, style and particular compositional techniques.

Minor objective:

1. To develop and modify existing musical resources (scales, rhythmic patterns, etc.) by systematic processes.

Each piece in the portfolio was composed by applying specific concepts and processes to the musical material. The concepts are a result of observation of the human condition and environmental concerns through the lens of Buddhist philosophy. For example, *Rosso*, for solo violin, takes as its inspiration the concepts of the female, the colour red and "fire" as an element. I considered fire from two viewpoints:

- Fire can be uncontrollable
- While the colours of flames may be observable, their shapes and patterns are often not

Because of this inherent unpredictability, I chose to employ an unmetred rhythmic

structure, although there are recurring rhythmic cells which serve to delineate the different sections of the piece.

In contrast, *Blu*, for solo viola, is concerned with the male, water and the colour blue. Again, I shall return to these matters when discussing the works in detail.

The four-movement *Symphony* is inspired by my environmental concerns and Buddhist philosophy, including—as with *Rosso* and *Blu*—the four traditional “elements”.

Much of the research focused on the examination of scale constructs, particularly on modes, whole-tone scales, octatonic and synthetic scales. The result was a set of combinatorial derivations which presented me with interesting pitch and harmonic possibilities, and this will continue to be explored long after my research is completed.

The study of scores, books, attending the Irish Composition Summer School in three successive years, attending concerts and performances of my music, have informed my compositional style and aesthetic. Knowledge of various software, such as Audacity and Logic, have had a significant influence on my development as a composer, particularly concerning timbre, the transformation of material and the study of sound generally. I have endeavoured to apply my discoveries in the electroacoustic field to my writing for acoustic forces, especially for ensemble and orchestra. Again, I foresee that this will continue to be an area for further investigation after my formal studies are completed.

CHAPTER 2

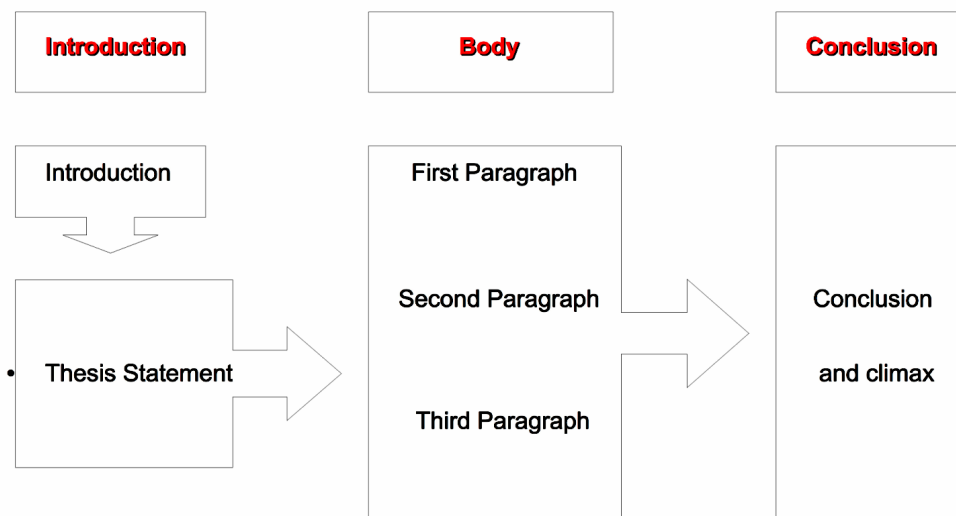
‘ESSAY’ MUSICAL FORM

I was interested to apply the structure of a literary essay to musical material, in order to find a way of organising contrasting material without recourse to the sort of tonal relationships that underlie conventional structures such as sonata form.

Traditionally, a written essay is subdivided into three sections:

- The *introduction* comprises the opening paragraphs that introduce the topic and include the thesis statement, which states the main idea of the essay and addresses the main topic of the paragraphs.
- The *body* of the essay comprises a series of paragraphs, each of which addresses and discusses an aspect of the thesis. Body paragraphs can sometimes have a different style of presentation depending on the content. Nevertheless, all paragraphs are connected by the thesis statement and body paragraphs usually consist of two or three sentences.
- Finally, the *conclusion* is the last paragraph, in which the argument is summarized, and any inferences drawn.

Ex. 2.01 Structure of essay writing form:



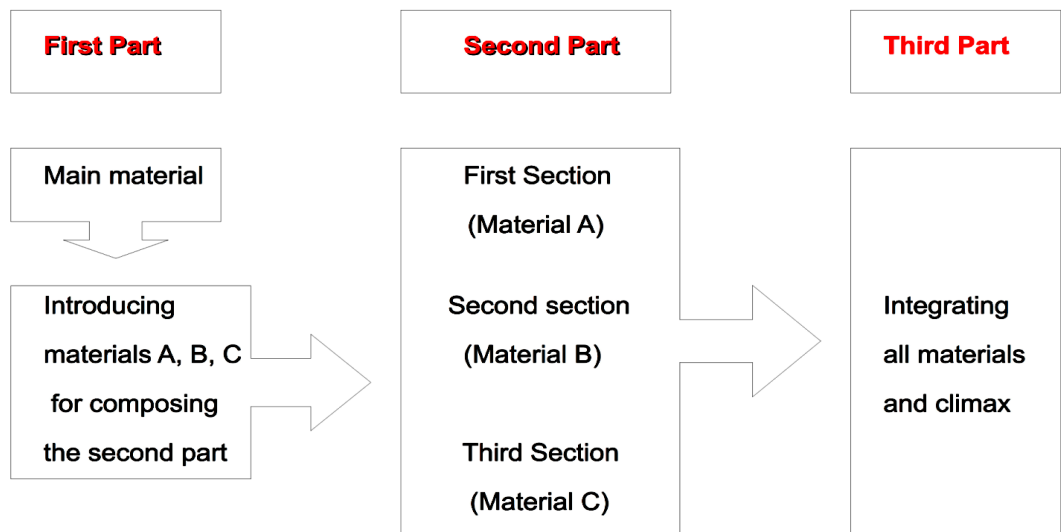
“Essay” form was used for my composition *Jatu*, for flute, clarinet, violin and cello, written for the Concorde Ensemble. The piece is in three sections, corresponding to the three sections of an essay: The first section introduces the main material, both melodic—including the materials of the second part such as the tone centre—and harmonic. These elements are the musical equivalent of a “thesis statement”.

The second section—the “body”—expands and develops the basic materials. Each element usually consists of two or more sub-parts differing in structure, texture and harmonic delineation, but connected by the main idea introduced in the “thesis statement”.

In the final part—the “conclusion”—the “thesis” is restated in the light of the “arguments” developed in the second part.

The tripartite *introduction – body - conclusion* structure may superficially resemble sonata form, but differs in that it is specifically about the development and elaboration of different musical *material* rather than the establishment of a particular *tonality*. Furthermore, the material is developed sequentially rather than simultaneously/contrapuntally as might be expected in sonata form. Integration of material does not occur until the conclusion, just as it would in a written essay; in sonata form, such integration would be expected earlier, in the development section.

Ex. 2.02 Structure of essay musical form:



The concept of musical form derived from particular styles of essay writing, such as a comparison essay, supporting essay etc., was also applied to other musical parameters such as texture, timbre, register, etc., and used as a means of transforming existing and new musical techniques and materials. *Jatu* is discussed in detail in Chapter 3.

TECHNIQUES DERIVED FROM LEGO TOYS

I thought that it would be an interesting experiment to apply the characteristics of Lego® bricks—simple interlocking shapes in different sizes and colours that can be combined to construct an infinite variety of forms—to compositional parameters. The Lego analogy involves the use of additive rhythmic processes as a means to extend material. There is an infinite number of ways in which material can be extended or combined; imposing a set of arbitrary restraints was a way to focus—to see the wood from the trees. As Stravinsky remarked:

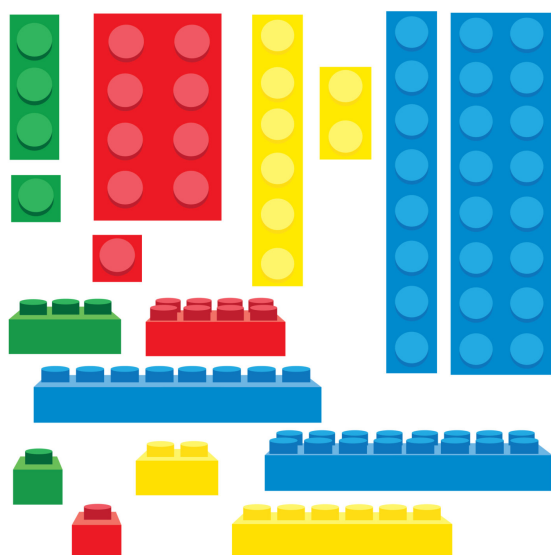
my freedom will be so much the greater and more meaningful the more narrowly I limit my field of action and the more I surround myself with obstacles.¹

¹ Stravinsky, I: *Poetics of Music in the Form of Six Lessons (The Charles Eliot Norton Lectures)* (Harvard, 1942), 65

The discipline I learned from this deliberately reductionist approach was to prove invaluable in later works, especially the Symphony.

The general attributes of the bricks are the geometric shapes, mostly square and rectangular. The interlocking bricks consist of circular protrusions and inner tubes for connecting them together. Lego bricks can generally be classified into two basic types consisting of single and double rows of connections. The single column bricks have one, two, three, four, six, eight and twelve protrusions, whereas the double column bricks have four, six, eight and sixteen protrusions (two, three, four and eight pairs) respectively.

Ex. 2.03 Shapes of Lego® bricks

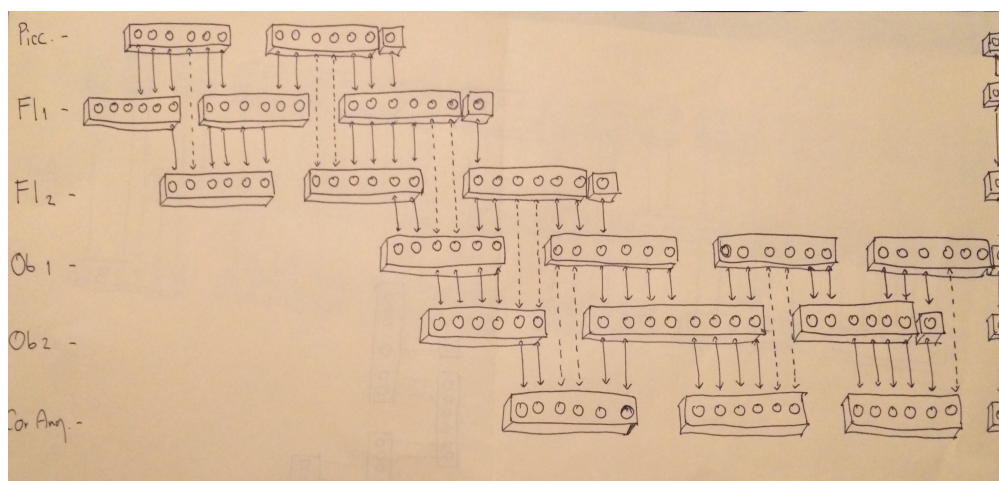


Having thus classified each type of brick, I constructed a series of 'blueprints' that allowed me to transfer their characteristics to musical parameters. The precise correlation between bricks and specific musical parameters was left open, to be decided on a case-by-case basis according to musical context. For example, double-row bricks might be interpreted as parallel harmony, instrumental doubling, two lines moving in rhythmic unison and so forth. Vertical stacking could be interpreted by independent contrapuntal lines, multiple isorhythmic structures, simultaneous timbral layers, etc. Another possibility for the vertical aspect might be spatialization of the sound. Though not used here, this is an aspect which I plan to explore in the future, particularly in the electroacoustic field. At the other extreme, “single peg” bricks relate to individual, isolated “events” which punctuate the prevailing texture; in examples 2.4 and 2.5, below,

for instance, they are interpreted first as the long, sustained notes that emerge from the repeated quavers, then as the accent that ends the gesture.

It became obvious to me during the composition process that a potential weakness of the use of fixed-size blocks of material was a tendency towards an overly sectional form, where each idea (or group of ideas) is simply juxtaposed with the next. I tried to avoid this by considering how *actual* walls are built. Just as a brick wall's strength is dependent on the overlapping of successive layers, so that each brick bridges two below it, so here the entries are staggered so that beginnings and endings of gestures in each layer did not coincide, unless specifically required (as at bar 11 in ex. 2.5). The overall structure therefore resembles a lattice, wherein all the material is diagonally in opposition. At the opening, a hocketed rhythmic mobile based on a 6x1 brick forms the bedrock upon which the (static) harmonic material rests (ex. 2.04 and 2.05).

Ex 2.04 Layout of bricks for opening of *Lego*, for orchestra



Ex. 2.05 *Lego*, for orchestra, bars 7-11: Hocketed rhythmic mobile based on layout in Ex 2.4

The pitch material at the opening is taken from both transpositions of the whole-tone scale, gradually aggregating to form the full chromatic. Smaller bricks are introduced later, to splinter the rhythmic durations and further disrupt the hocketed melody. Longer, sustained melodic material is derived from the hocketed melody; the vertical being replicated by the horizontal, as in a *cantus firmus*. Gradually, the texture becomes denser until the sustained material entirely replaces the hocketing. The resulting homophonic texture is shared between the orchestral families, in the manner of *Klangfarbenmelodie*. As well as integrating the Lego-derived melodic construction with *Klangfarbenmelodie* technique, a similar process allows for the melodic material to be elongated and distributed amongst orchestral instruments. I refer to this technique as “scattering of line”.

Metric modulation is used to effect tempo transitions. Again, the use of Lego bricks as a model is applicable. Just as the precisely constructed pieces of Lego usually fit into one another seamlessly, so the metric modulation can be effected smoothly and accurately. Vague subjective directions such as *accelerando* and *ritenuto*, do not directly communicate the composer's intentions; metric modulation effectively eradicates this problem. *Lego* is discussed in detail in Chapter Three.

SCALES DERIVED FROM MODALITY

My research into pitch material and modality led me to a personal system of codifying modal scales. Using the traditional seven-note church modes as a starting point, I endeavoured to codify their intervallic construction by listing their similarities and differences. I then proceeded to organise the modes in a similar manner to the diatonic system of scales, though without the hierarchical functionality of traditional diatonic harmony. The final step was to extrapolate a series of “rules” by which I could construct a set of my own specific scales.

Ex. 2.06 The seven church modes in “white note” form

	Tonic	Supertonic Maj. 2nd	Mediant Maj. 3rd	Subdominant Perf. 4th	Dominant Perf. 5th	Submediant Maj. 6th	Leading note Maj. 7th	Octave Perf. 8ve
Ionian		Maj. 2nd	Min. 3rd	Perf. 4th	Perf. 5th	Min. 6th	Min. 7th	Perf. 8ve
Dorian		Min. 2nd	Min. 3rd	Perf. 4th	Perf. 5th	Min. 6th	Min. 7th	Perf. 8ve
Phrygian		Maj. 2nd	Maj. 3rd	Aug. 4th	Perf. 5th	Maj. 6th	Maj. 7th	Perf. 8ve
Lydian		Maj. 2nd	Maj. 3rd	Perf. 4th	Perf. 5th	Maj. 6th	Min. 7th	Perf. 8ve
Mixolydian		Maj. 2nd	Min. 3rd	Perf. 4th	Perf. 5th	Min. 6th	Min. 7th	Perf. 8ve
Aeolian		Min. 2nd	Min. 3rd	Perf. 4th	Dim. 5th	Min. 6th	Min. 7th	Perf. 8ve
Locrian		Min. 2nd	Min. 3rd	Perf. 4th	Dim. 5th	Min. 6th	Min. 7th	Perf. 8ve

By transposing each of the modes to C, the following table is derived:

Ex. 2.07 The seven church modes transposed to C

	Tonic	Supertonic Maj. 2nd	Mediant Maj. 3rd	Subdominant Perf. 4th	Dominant Perf. 5th	Submediant Maj. 6th	Leading note Maj. 7th	Octave Perf. 8ve
Ionian		Maj. 2nd	Min. 3rd	Perf. 4th	Perf. 5th	Min. 6th	Min. 7th	Perf. 8ve
Dorian		Min. 2nd	Min. 3rd	Perf. 4th	Perf. 5th	Min. 6th	Min. 7th	Perf. 8ve
Phrygian		Maj. 2nd	Maj. 3rd	Aug. 4th	Perf. 5th	Maj. 6th	Maj. 7th	Perf. 8ve
Lydian		Maj. 2nd	Maj. 3rd	Perf. 4th	Perf. 5th	Maj. 6th	Min. 7th	Perf. 8ve
Mixolydian		Maj. 2nd	Min. 3rd	Perf. 4th	Perf. 5th	Min. 6th	Min. 7th	Perf. 8ve
Aeolian		Min. 2nd	Min. 3rd	Perf. 4th	Dim. 5th	Min. 6th	Min. 7th	Perf. 8ve
Locrian		Min. 2nd	Min. 3rd	Perf. 4th	Dim. 5th	Min. 6th	Min. 7th	Perf. 8ve

By analysing these modes, I was able to codify the intervallic structure of each:

- The supertonic is a major 2nd above the tonic in all cases except the Phrygian and Locrian modes, where it is a minor 2nd above.
- The mediant is a major 3rd above the tonic in the Ionian, Lydian and Mixolydian modes, a minor 3rd in the others.
- The subdominant is a perfect 4th above the tonic in all modes except the Lydian, where it is an augmented 4th.
- The dominant is a perfect fifth above the tonic in all cases except the Locrian mode, where it is a diminished 5th.
- The submediant is a major 6th in the Ionian, Dorian, Lydian and Mixolydian modes, a minor 6th in the Phrygian, Aeolian and Locrian.
- The true leading note occurs only in the Ionian and Lydian modes, where it is a major 7th. In the rest of the modes, the penultimate note is a minor 7th, which does not exert the same pull towards the tonic.

Having completed this analysis, I proceeded to construct new modes by selecting intervallic sets which do not occur in the traditional modes. For example, for *Blu* and *Rosso* I chose to make features of the flattened supertonic (from the Phrygian and Locrian modes), the sharpened subdominant (Lydian) and the natural dominant (all bar Locrian). With these intervals fixed, I then filled in combinations of natural or flattened mediant, submediant and leading notes to derive two new modes as follows:

Ex. 2.08 New synthetic modes

	min2	maj3	aug4	perf5	min6	min7
Form 1						
	min2	min3	aug4	perf5	maj6	maj7
Form 2						

Ex 2.09 Derivation of Form 1

Mode	1	2	3	4	5	6	7	8
Ionian	C	D	E	F	G	A	B	C
Dorian	C	D	E \flat	F	G	A	B \flat	C
Phrygian	C	D \flat	E \flat	F	G	A \flat	B \flat	C
Lydian	C	D	E	F \sharp	G	A	B	C
Mixolydian	C	D	E	F	G	A	B \flat	C
Aeolian	C	D	E \flat	F	G	A \flat	B \flat	C
Locrian	C	D \flat	E \flat	F	G \flat	A \flat	B \flat	C
New Scale 1	C	D\flat	E	F\sharp	G	A\flat	B\flat	C

Ex. 2.10 Derivation of Form 2

Mode	1	2	3	4	5	6	7	8
Ionian	C	D	E	F	G	A	B	C
Dorian	C	D	E \flat	F	G	A	B \flat	C
Phrygian	C	D \flat	E \flat	F	G	A \flat	B \flat	C
Lydian	C	D	E	F \sharp	G	A	B	C
Mixolydian	C	D	E	F	G	A	B \flat	C
Aeolian	C	D	E \flat	F	G	A \flat	B \flat	C
Locrian	C	D \flat	E \flat	F	G \flat	A \flat	B \flat	C
New Scale 2	C	D\flat	E\flat	F\sharp	G	A	B	C

The tables below show the new seven-note scales and their transpositions, which amounts to eleven major or minor modes:

Ex. 2.11 Transpositions of Scale Type 1

The image displays four staves of musical notation, each representing a different transposition of Scale Type 1. Each staff consists of three measures of music. The notes are represented by circles with stems, and various accidentals (sharps, flats, and naturals) are used to indicate the specific pitch of each note. The clefs vary across the staves, and the overall structure of the scale is maintained across all transpositions.

Ex. 2.12 Transpositions of Scale Type 2:

The image displays four staves of musical notation, each representing a different transposition of Scale Type 2. Each staff consists of three measures of music. The notes are represented by circles with stems, and various accidentals (sharps, flats, and naturals) are used to indicate the specific pitch of each note. The clefs vary across the staves, and the overall structure of the scale is maintained across all transpositions.

In addition, each new mode can produce seven further modes by using successive notes of the mode as the “tonic”, just as successive white note scales produce the traditional modes. Moreover, the new seven modes can be transposed chromatically as with the normal modes. These charts show the rotation of new scale structures. Chart 1 shows the procedure of rotation and Chart 2 demonstrates new seven-note modes derived from rotation taking the tonic as C.

Ex. 2.13 The rotation of the new Scale Type 1:

Seven musical staves, each containing a scale of eight notes. The scales are written in treble clef and consist of half notes. The notes are: C, D, E, F#, G, A, Bb, C. The key signature (number of flats) increases by one in each successive staff, starting with no flats and ending with two flats (Bb and Eb).

Ex. 2.14 The rotation of the new Scale Type 2:

Seven musical staves, each containing a scale of eight notes. The scales are written in treble clef and consist of half notes. The notes are: C, D, E, F, G, Ab, Bb, C. The key signature (number of flats) increases by one in each successive staff, starting with no flats and ending with two flats (Bb and Eb).

Ex. 2.15 New modes derived from rotation of scale type 1 (transposed to tonic C)

Seven musical staves, each containing a single note with a stem and a flag, representing a mode. The notes are: C, Bb, B, Ab, G, F, Eb, and D. The staves are arranged vertically, with the first staff starting on C and the last staff ending on D.

Ex. 2.16 New modes derived from rotation of scale type 2 (transposed to tonic C)

Seven musical staves, each containing a single note with a stem and a flag, representing a mode. The notes are: C, Bb, B, Ab, G, F, Eb, and D. The staves are arranged vertically, with the first staff starting on C and the last staff ending on D.

PENTATONY AND GAPPED SCALE STRUCTURES

Pentatony is a feature of many musical traditions, especially in Eastern and South-Eastern Asia. In its most common forms, the pentatonic scale consists only of major 2nd and minor 3rd steps. I use the pentatonic scale as a basis for much of my melodic material, but expand it by “borrowing” other intervals from diatonic and modal scales to construct further series of new scales. For example, consider the pentatonic scale with the following intervals from the tonic:

major 2nd, major 3rd, perfect 5th, major 6th, octave.

Ex. 2.17 Pentatonic scale on C



This scale, when compared with the C major scale, lacks the subdominant and leading note (or the perfect 4th and major 7th from the tonic).

Ex. 2.18 Major and pentatonic scales compared

C Major scale	maj2	maj3	perf4	perf5	maj6	maj7
C Pentatonic	maj2	maj3		perf5	maj6	

The pentatonic gains its characteristic “flavour” from the spaces that exist between the E and G and, if the octave is taken into consideration, the A and C. The C pentatonic scale can be subdivided into two groups as follows:

Ex. 2.19 Subdivision of pentatonic scale

The gapped nature of the pentatonic scale precludes the use of the semitone and augmented 4th harmonically or melodically.

By applying a similar “gapped” process systematically to the major scale, other intervallic sets can be derived. For example, alternating seconds and thirds produces a pitch set that is important to my approach to melodic construction:

Ex. 2.20 Derivation of “gapped” major scale

C major scale

"Gapped" version

cycle repeats

In several pieces in the portfolio, melodic material was created by merging whole-tone scales with the aforementioned modified pentatonic and modally-derived synthetic scales. This creates a labyrinth of pitch possibilities through which to navigate. The following examples illustrate various methods by which this can be done.

1. Mixing both whole-tone scales by the modified structure technique.

The alternating seconds and thirds of the gapped major scale (see Ex. 2.20) are applied to both forms of the whole-tone scale, switching where the process would lead to a closed loop within one or other form:

Ex. 2.21 Original whole-tone scales:

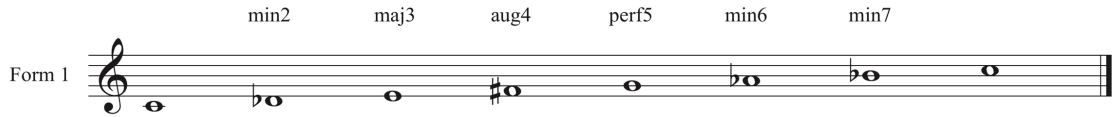
Ex. 2.22 Gapped mode, combining both whole-tone scales:

OR

2. Modification of mode-derived synthetic scale

The same “gapping” process may be applied to the new mode-derived scale forms described above to produce further derived scale types.

Ex. 2.23 The original structure type 1 of the new scale derived from modality:

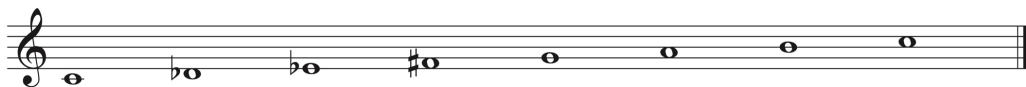


Ex. 2.24 Gapped version:

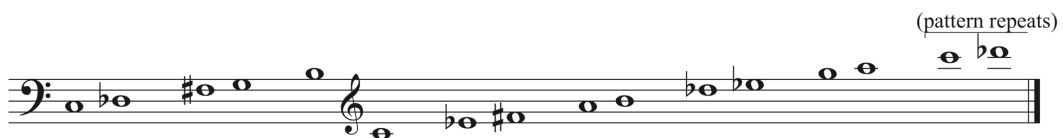


Here there is no need to alternate transpositions, as in the whole-tone example; the loop contains all notes of the mode.

Ex. 2.25 The original structure type 2 of the new scale derived from modality:



Ex. 2.26 Gapped version:



COMBINING *KLANGFARBENMELODIE* WITH OTHER TECHNIQUES

In my portfolio of compositions, *Klangfarbenmelodie* is frequently used, primarily because it facilitates smooth transitions between timbres, allowing those transitions to be treated as a musical parameter in their own right. In its simplest form, a melodic line can be shared between two or more instruments that have similar timbral properties. It can also be used to shape the music dynamically, dovetailing instrumental phrasing to blend the melodic discourse and seamlessly weave together passages that might otherwise appear disjointed. It is also a very useful tool for expanding orchestral textures and generating musical material. This technique is particularly relevant to my

orchestral piece, *Lego*, where it is used as a mechanism to delineate the structure of the different shapes and sizes of Lego bricks, but it is also employed to varying degrees in the smaller scale works.

By combining the principles of *Klangfarbenmelodie* with quasi-improvisatory elements, static harmonic material—often in the form of an unmeasured ostinato—can be smoothly transferred from one voice or section to another, or the voices may merge, creating a new, collective timbre. This free, rhythmically amorphous, material is frequently set against contrasting melodic material which has clearly defined rhythmic patterns.

Figure 2.27, from *Drop of Water* for trumpet, cello, vibraphone and piano, illustrates the combination of *Klangfarbenmelodie* and improvisation. The *Klangfarbenmelodie* here enables the dynamic level and the metrically free figuration in the piano, written in box notation, to transform smoothly to the vibraphone part. This procedure is employed throughout the piece in order to maintain continuity and momentum.

Ex. 2.27 *Drop of Water*, bars 90-94: *Klangfarbenmelodie* and aleatory textures combined

The image shows a musical score for two instruments: Vibraphone (Vib.) and Piano (Pno.). The Vib. part is on the top staff, and the Pno. part is on the bottom staff. The Vib. part starts with a dynamic marking of *mf*, followed by *p*, *f*, *mf*, *p*, *pp*, and *p*. A section of the Vib. part is enclosed in a box. The Pno. part starts with a dynamic marking of *p* and the instruction *sempre*. It includes markings for *mf*, *p*, *mp*, and *f*. A section of the Pno. part is enclosed in a box, and there is a *15^{me}* measure improvisation indicated. The score includes various musical notations such as notes, rests, and dynamic markings.

Ex. 2.28, from the string quartet *Atmospheres*, illustrates the combination of *Klangfarbenmelodie* with improvisation within a single instrumental line, even though that might at first seem a contradiction in terms. In fact, it simply refers to gradual transformations between noise and pitched material. Beginning with free arpeggios behind the bridge, bowed normally, the sound is gradually transformed by the use of different bowing techniques: *spiccato*, leading to *col legno battuto*, then constantly shifting between different timbres.

Ex. 2.28 *Atmospheres* for string quartet, Violin II, bars 203-216

Violin II

203 *improvisingly* *ff*

204 205 206 *pp* *sff* *pizz. ord.L.V.* *arco*

207 *gradually change to spicc.* *p*

208 *spicc.* *p*

209 *gradually change to col legno battuto.*

210 *col legno battuto*

211 *pp*

216 *col legno tratto (half hair) sul pont.* *pp*

In the orchestral work *Lego*, hocketing textures are formed from patterns created by combining *Klangfarbenmelodie* and my “Lego techniques”. A musical line is divided between several instruments but connected through the use of shared notes and overlapping the line between instruments, just as the Lego bricks connect to one another. Although *Klangfarbenmelodie* is primarily concerned with sound and timbre, having studied both techniques during the composition of *Lego*, I began to explore the idea of combining them. The result was a texture built from ephemeral, scattered melodic lines (Ex 2.29).

Ex. 2.29 *Lego* for orchestra, bars 133-138, showing use of Klangfarbenmelodie in the woodwind. (Sounds as written)

133

Ob. 1 *p sempre*

Ob. 2 *p sempre*

Cor Ang. *p sempre*

B♭ Cl. 1 *mp sempre*

B♭ Cl. 2 *mp sempre*

B. Cl. *mp sempre*

Bsn. 1 *mp sempre*

Bsn. 2 *mp sempre*

C. Bn. *mp sempre*

B♭ Tpt. 1 *mp sempre* Harmon Mute

B♭ Tpt. 2 *mp sempre* Harmon Mute

B♭ Tpt. 3 *mp sempre* Harmon Mute

Vln. I *mp* *f* *mp* *f* *mf sfz* *mf* *ff* *subito p* *ff* sul pont. *poco a poco*

Vln. II *mp* *f* *mp* *f* *mf sfz* *mf* *ff* *subito p* *ff* sul pont. *poco a poco*

Vla. *mf* *mp sfz* *mp* *f* *mp* *f* *mf* *pp* sul pont. *poco a poco*

Vc. *mf* *mp sfz* *mp* *f* *mp* *f* *mf* *pp* sul pont. *poco a poco*

Cb. *p* *mf* *mp* *f* *mp* *f* *mf* *ff* *poco a poco* sul pont. *poco a poco*

Ex. 2.30, from the string quartet *Atmospheres*, illustrates another use of the combined *Lego* / *Klangfarbenmelodie* technique. The sole musical material is repeated dyads, first introduced in the second violin, then spreading to the other parts through *Klangfarbenmelodie*, matching or contrasting playing techniques. The durations of entries are derived from the different sizes of the Lego bricks.

Ex. 2.30 *Atmospheres* for string quartet, bars 139-144

139

System 1 (Bars 139-142):

- Vln. I:** *ord.* *f* *sul pont.* *p* *sul tasto* *mp* *ord.* *mf*
- Vln. II:** *sul tasto* *mp* *ord.* *mp* *sul pont.* *f*
- Vla.:** *sul pont.* *p* *ord.* *f* *sul pont.* *p* *ord.* *f* *sul pont.* *f*
- Vc.:** *sul pont.* *p* *ord.* *f* *sul tasto* *p* *sul pont.* *p*

System 2 (Bars 143-144):

- Vln. I:** *poco a poco* *ord.* *p* *sul pont.* *mp*
- Vln. II:** *sul tasto* *p* *ord.* *mf*
- Vla.:** *ord.* *p* *ord.* *p* *sul pont.* *f*
- Vc.:** *ord.* *f* *ord.* *f* *sul pont.* *p*

Normale (spicc. cancelled)

CHAPTER 3

THE COMPOSITION PORTFOLIO

The portfolio comprises the following ten works, composed between 2015 and 2018:

- *Rosso* for solo violin. (2015)
- *Jatu* for flute, clarinet, violin and cello. (2016)
- *Nimit* for panoramic string quartet. (2016)
- *Lego* for orchestra. (2016)
- *Four preludes* for flute family. (2016 – 2017)
- *Blu* for solo viola. (2017)
- *Drop of Water* for trumpet, cello, vibraphone and piano. (2017)
- *Six Elements of Nostalgia* for solo vibraphone. (2017)
- *Atmospheres* for string quartet. (2017 - 2018)
- *Symphony* for orchestra. (2018)

3.1 COMPOSITIONS FOR SOLO INSTRUMENT

3.1.1 *Rosso* for solo violin

Rosso takes its title from the Italian word for “red”. Apart from its literal meaning, “red” is also used in many figurative senses, such as “in the red”, “red”, as in socialist, or “seeing red”. To me personally, the colour red has always evoked feelings of warmth, luminosity and richness of texture. However red is also associated with aggression, fear, anger or danger. I have always been fascinated by this colour; it always looks particularly vibrant when worn in my home country, where the brightness of the sun lends it a distinctly fiery quality. In music, I associate red with the high end of the wavelength spectrum, where discernible pitch gives way to brilliance of timbre. Purely subjectively, I associate red with certain aspects of femininity, which I sought to reflect in the various moods and characteristics of this piece. The violin, because of its high tessitura, has often been associated with expression, tenderness or emotional fragility and has been—equally

subjectively—considered to possess a “feminine” quality. These associations inspired—and significantly influenced the development of—this piece. In addition, aspects of melodic contour, phrasing and register were inspired by artistic representations of the female form.

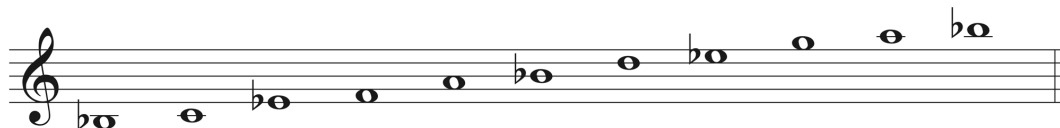
Structurally, *Rosso* comprises a series of variations between which are interspersed freer interludes wherein the melodic line is developed and expanded. The single movement is divided into five main sections followed by a coda. The first section is centred on the four notes, A – G – E – D, that are presented in the first bar; these are of course the pitches of the open strings, but rearranged to form a “gapped scale”—in this case a truncated pentatonic scale. The second system presents the main melody, in which the four-note figure is expanded through the use of the “modified pentatonic” process (see Chapter 2, page 16). This process continues through letters B, C, D, G, K and L. Section E serves as a transition between sections D and F; similarly, M is a transition between L and the coda. Letter M is the last section, incorporating the main climax; it is also in this section that the main melody, introduced at Letter A, is stated in its fullest and most explicit form.

As stated above, the pitch material is derived from the open strings of the violin, which are also part of the pentatonic scale. The main melody is as follows:

Pentatonic scale:	C	D	E	G	A	C
the main melody:		D	E	G	A	

This material is expanded by combination with additional pitches from the “modified pentatonic” scale on Bb.

Ex. 3.01 “Modified pentatonic” scale on Bb



These three elements—open strings, C pentatonic and Bb “modified pentatonic”—are used to form the main melodic and harmonic material, using the note D, common to all three, as a “pivot note”. For example, in the second bar, the D on the fourth crotchet begins the new rotation of the Bb pentatonic scale.

Ex. 3.02 *Rosso*, for solo violin, bar 2

Violin

Sul D
Sul Pont.

mf

pp

Accel.

Sul A

5 Sec.

fp

fmp

Ex. 3.03 Scale related to the modified pentatonic structure technique on A.

A	G	E	D	F	G	Bb	C
---	---	---	---	---	---	----	---

Open strings / C pentatonic scale Pivot Bb pentatonic scale

The pitch A, which overlaps with G, acts as the dominant in relation to the pitch D, which is the pivot note. These, along with the following pitches—D, E and G—from the main melody and the remaining melodic material from Letter A, form the basic material for the whole work. The tone centres, which are derived from the open string pitches, relate to the melodic line in the first and second bar, which are transposed while retaining their intervallic relationships. From Letter B until the end of the piece, the procedure relating to the melodic line follows the same basic principles, with the addition of material derived from the modified modes.

The melodic and harmonic material of each section is related to a tone centre selected from the aggregate of the pitches A – G – E – D; this tone centre serves as a drone for that section. For example, at Letter B—the first variation—the tone centre is D, which acts as an “active drone”. Before Letter C, the active drone now moves to the pitch A, acting as dominant to the note D, in double stops on the violin, outlining the main melodic material in the upper part. At Letter C, the second variation, the melodic line in the top tessitura of the material is embellished by arabesques outlining the drones D and A underneath.

The third variation, at Letters D–E and F, combines normal pitches, quarter tones and the tone centre A, which transforms by a series of glissandi to a drone on E at Letter E.

The fourth section starts at Letter G. Here the open E string is used as the drone,

around which is woven a melody in A minor pentatonic. At the last system of Letter G, the melody expands from A minor pentatonic to A Mixolydian, as a transition to Letter H. At this point the melodic line changes to E Mixolydian which then moves to E Lydian around the end of Letter H and then, in the last system of this section, modulates by a cross-fertilization of the Lydian and Locrian modes based on E. Letter I acts as a transition, leading to the first climax in this section. The drone E modulates at a fast harmonic rate, eventually arriving on A. The melodic material here derives from a combination of the Lydian and Locrian modes on A, which now functions as a dominant, finally arriving on the tone centre D three bars before Letter J. The Letters J, K, L and M lead to the second climax, which features a cadenza in which all the preceding material is integrated at a triple forte dynamic level.

Letters J, K and L retain D as the pitch centre, which transposes to G at Letter L and then reverts to A at Letter M. The last section, Letter N, brings back the main melody from the opening of the piece leading to a coda and the third climax, whereby the tone centre changes from A to E, with the melody decorated by the pitches E and G in a dotted rhythm ostinato, embellished with grace notes on the pitch E, taken from the main melody. In conclusion, the main melody incorporates the pentatonic scale, similar to the pentatonic scale in Asian music, and Western modes, which correlate to seven note modes in Asian music, albeit with different intervallic inflections.

Many of the timbres and techniques employed in this piece were also chosen to correspond, again subjectively, to various ideas of “redness”. *Molto vibrato*, scratch tones, *tremolandi* and dynamics are used to evoke images of unstable aggression and fieriness. Others, such as *sul ponticello*, *sul tasto*, *col legno tratto*, playing behind the bridge or mixing these techniques together for example, between *col legno tratto* and *sul ponticello*, then gradually moving to behind the bridge, or to *sul tasto* returning to *normale* etc. are used to emulate timbres characteristic of various Asian traditional instruments on the Western violin. The use of *col legno tratto*, for instance, evokes the characteristic breathy timbre of many Asian flutes. The prominent use of drones is also inspired by traditional Asian instruments. At Letters G, H, I, J and K in the score, the combination of melody line and drone is reminiscent of North-Eastern Thai traditional music, which features the *kan*—a type of bamboo mouthorgan—and the *pinn* (or *phinn*)—a traditional string

instrument somewhat akin to a bouzouki or a fretted lute. This has three strings usually tuned in perfect fifths, occasionally perfect fourths. Both instruments produce drones, however while the drone produced by the *kan* is static, the *pinn* produces by an active drone, characterized by alternating picking with a plectrum between two strings, one playing the melody, the other the interlocking drone. I emulate both kinds of drones in this piece: from G to K there is a *kan*-like static drone on the top line (the open E string) and the main melody on the A string. Conversely, at C, the melody is in the top part, with the drones shared between the D and A strings of the violin reminiscent of the active drone of the *pinn*.

Tempi and rhythmic patterns in the music are inspired by the motion of flames observed when looking into a fire. Flames flicker and dance unpredictably, never adhering to the same pattern. Similarly, the rhythmic patterns in this piece fluctuate between clearly metrical passages and free, improvisatory sections. At the very opening, the first two bars of Letter A are in even crotchets at crotchet=60. The third and fourth bars are rhythmically free—only the overall durations are specified—then the opening tempo is resumed for the first statement of the principal melodic material. At C, the rhythm evokes the image of flickering, dancing flames, with the precise semiquaver movement being subverted by the use of accelerandi within fixed durations, indicated by the feathered beaming. From there to Letter K, the notation alternates between fixed notation and grace notes in durations incorporating quintuplets, septuplets and improvisatory graphic notation, which together contribute to the rhythmic impetus of the piece.

My main concern in writing the piece was to unify as far as possible the overall design of the work. Loosely in variation form, my intention was to try and integrate the whole into a continuous development with the maximum fluidity between metered and unmetered sections, rather than simply juxtaposing them. On reflection, having heard the piece performed, I would now give the gestures more space, while exploring the timbral possibilities far more thoroughly.

Rosso was the first piece composed for my portfolio and was workshopped and recorded by violinist Elaine Clark, of the Concorde Ensemble. The opportunity to collaborate with performers of this calibre is invaluable. I am now much more aware of the importance of the physicality of playing an instrument to effective and idiomatic

writing; what may seem perfectly possible on paper, may be ineffective—or even impossible—practically. It is also only through collaboration with such adventurous and open-minded players that one can really learn what an instrument is capable of beyond its “normal” voice. I would like to take this opportunity to express my appreciation and thanks to all the players who were so generous with their time and advice during my time studying in Ireland.

3.1.2 *Blu* for solo viola

Blu for viola is a sequel / companion piece to *Rosso*. Whereas *Rosso* is inspired by the colour red, with its connotations of blood, fire, warmth and passion, *Blu*—the Italian for “blue”—is its polar opposite. Blue sea, blue sky, water, coolness... Figuratively, it is associated with feelings of sadness, indifference and uncertainty; blues music, “a fit of the blues”, and so forth. The inspiration for this piece came from observing water in various forms—in particular the distorted shadows that appear when an object disturbs the surface of a lake or a river. In larger volumes of water, particularly the sea, the blueness is extremely prominent.

The viola is the most understated instrument of the string family. Its presumed “weaker” voice—in comparison to its more extrovert counterparts, the violin and cello—I personally find very attractive. What it lacks in brilliance, it more than makes up for in the depth and fascination of its own timbre. For me, therefore, it was the ideal instrument to contrast with the “fiery red” of the violin.

Blu is divided into four main sections, each characterised by a different melodic structure. The first section runs from the beginning to Letter E. The main melody is presented at the first bar and then, from Letter A to C, is developed through the same scale transformation techniques which were employed in *Rosso*. Sections D and E are characterised by the insertion of rests, and function as a transition leading to the next main section.

The second section, which runs from Letters F to I, features a disjunct melodic outline, with prominent use of octave displacement and timbral contrasts from *arco* to *pizzicato*.

The third section comprises Letters J to M. This marks the first climax of the piece, revisiting the relentless *moto perpetuo* character of *Rosso*’s fourth variation.

Paradoxically, the second “climax”, at Letter N, is the opposite to the first; a moment of calm, tranquil reflection amidst the surrounding busyness, subverting the received notion that a climax must be loud. N is the complement to M: a short group of interlocking melodies with inserted pauses in contrast to M’s single relentless gesture. The fourth and final section is from Letter O to the end. Here, the main melody is interspersed with brief “recollections” of the preceding variations. *Blu* and *Rosso* are very much complementary. Both employ similar musical and transformational processes, but their moods are very different: *Rosso* is aggressive and fiery, *Blu* predominantly tranquil; *Rosso*'s climax is very loud and active, *Blu* uses the melodic understatement of *Rosso*'s fourth variation as the main climax

The pitch material of the piece *Blu* is drawn from the following mode-derived scale, as described in Chapter 2:

Ex. 3.04 Type 1 mode-derived scale



Ex 3.05 Type 1- gapped version



Since *Rosso* and *Blu* share the same pitch material, I expanded the resources in the latter to include noise timbres. At Letters A and B, these elements are derived by combining the definite pitch material with the indefinite pitches produced by playing behind the bridge. Letters C and D continue this development comprising almost exclusively timbral gestures.

The third section centres on pitch material derived from modality type 2 (Ex. 3.06).

Ex. 3.06 Type 2 mode-derived scale



Again, these are mixed with the noise elements: playing behind the bridge, *col legno tratto*, *col legno battuto*, *sul ponticello*, *molto sul ponticello* and *sul tasto*.

The last section, which starts from Letter O, recapitulates the main melodic material from the beginning to bring the piece to an end.

The rhythmic structure of the piece is generally free and unmetrical, with rubato passages allowing the performer flexibility to give an individual interpretation.

As with *Rosso*, I was very fortunate to have the opportunity to workshop this piece with a fearless and committed performer, in this case Andreea Banciu of the ConTempo Quartet. Although the piece was fully composed before the workshop, there were numerous revisions made during the consultation process. Again, these were primarily practical matters, for example: the incompatibility of *molto sul tasto* with high left hand positions, the physical issues of sustained high writing with *molto sul pont.*, or the near impossibility of left hand *pizzicato* on anything other than open strings when bowing other stopped pitches. Once again, I am eternally grateful for the time, patience, enthusiasm and encouragement she brought to the workshops.

3.1.3 Four Preludes for flute family.

The objective in writing these preludes for flute was to allow me to explore the full range of instruments in the flute family. Since there are four individual preludes, I have assigned each prelude to one specific instrument of this family from the highest to the lowest range. Therefore, the first prelude concentrates on the piccolo, the second on the standard flute, the third on the alto flute and finally the fourth on the bass flute. Each prelude was designed to exploit the characteristics and timbres associated with each specific instrument. Before writing these preludes, I spent some time studying two of the standard flute works from the post-war period, Messiaen's *Le merle noir* and the Boulez *Sonatine*. From the Messiaen I learned how agile the flute could be, and how easily it could switch from lyricism to rapid arabesques. The Boulez showed another, aggressive, character not customarily associated with the instrument. It is as if Boulez deliberately

set out to challenge Nielsen's much-quoted comment that:

The flute cannot deny its own nature, its home is in Arcadia and it prefers pastoral moods. Hence, the composer has to obey its gentle nature, unless he wants to be branded a barbarian.²

What I found surprising was the degree of overlap in gestures in two works written from very different aesthetic standpoints. An account by Stockhausen of a particular turning point in Messiaen's career is revealing:

There was a very special moment at this time when Messiaen's students—Boulez, Barraqué, Phillipot, Michel Fano, Yvonne Loriod and Yvette Grimaux—persuaded him to synthesize the different influences that he had already incorporated in his own work; influences from the Viennese school, because they were more interested in them than in their own tradition of Debussy and Ravel, and the techniques of Indian raga and tala that Messiaen had learned from Indian music.

This led to the composition of a number of piano pieces, among them *Mode de valeurs et d'intensités* 'Mode of values and intensities', and *Ile de feu*, 'Fire Island', in which, following Messiaen's researches in early renaissance music, we find duration formulae and pitch formulae treated with equal importance, and the length of silences having the same importance in the musical structure as the measured durations of the sounds.³

The explosive, angular, gestures that characterise Messiaen's birdsong-inspired music are often remarkably similar to those in the serially-determined works of Boulez, Stockhausen and their contemporaries at the time. It occurs to me that while the younger composers were happy to set forth with a *tabula rasa*, looking back little further than Webern, Messiaen perhaps sought a "natural" inspiration for the new aesthetic; after all, to him composition was as much an act of worship as an artistic statement. That inspiration he found in birdsong. This is of course speculation on my part, but the idea that using abstract precompositional systems need not be incompatible with expressing ideas from nature—often regarded as the prerogative of romantic and impressionist music—is for me at once profound and liberating.

The Messiaen is also interesting in that it demonstrates the development not only of the composer's interest in birdsong as the principal musical material but also the increasing importance of quasi-serial techniques, in particular the use of independent processes to organize pitch and rhythm. The piano part of the final *vif* section consists

² Nielsen, Carl: *Works II/9: Concertos* (Copenhagen, 2002), xxxiii - xxxiv

³ Stockhausen, K.: *Stockhausen On Music; Lectures and Interviews*, ed. Robin Maconie (London, Marion Boyars, 1989), 34

entirely of successive upward semitone transpositions of a twelve note set, the prime in the right hand, paired with the inversion in the left, swapping over at the halfway point. Rhythm is derived from a simple permutation of durations from one to four semiquavers:

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

etc.

These cycles are then superimposed in two layers:

Ex. 3.07 Messiaen: *Le merle noir*, piano, bars 91-100 (rebarred to show rhythmic structure)

Another important influence is the work of Robert Dick, whose *The Other Flute* is an exhaustive guide to the timbral and multiphonic resources available to the performer and composer. The two volumes of his *Flying Lessons*, a set of progressive studies that explore the resources described in *The Other Flute*, were also of great use in demonstrating how “extended” techniques are in themselves stylistically and aesthetically neutral, being applicable to a wide range of music, not just the *avant-garde*. In fact, the term “extended technique” is a misnomer; one might better describe “standard” technique (on any instrument) as a subset of the available sonic resources.

Two of the movements from *Flying Lessons* held a particular fascination for me given my own history: an evocation of Asian flute traditions—in particular the Indian *bansuri*—and an “electric” blues inspired by Jimi Hendrix, complete with distortion and feedback effects. These encouraged me to draw on my own musical experiences as much as the western classical tradition that had hitherto been the basis of my formal musical training. This insight was to be particularly important in the later ensemble works.

Ex. 3.08 Dick: *Flying Lessons*, Vol. 2, No. 4, bars 1-8

IV

fluidly, gracefully
♩ = 69-80

The musical score is presented in three staves. The first staff contains four measures of music with dynamics *f*, *p*, *f*, and *p*. The second staff contains two measures, each with a first and second ending, with dynamics *mf*, *f*, *pp*, and *f*. The third staff contains two measures with dynamics *f*, *ff*, *mf*, *pp*, *f*, *p*, *mf*, and *p*. Below each staff are fingering diagrams for a seven-hole flute, showing finger positions and movements with arrows.

Ex. 3.09 Dick: *Flying Lessons*, Vol. 2, No. 6, page 1

slow, "electric" blues

In the introduction to *The Other Flute*, Dick states that:

...the traditional conception of the flute encompasses only a restricted number of the sonorities the instrument can produce.⁴

⁴ Dick, R.: *The Other Flute; A Performance Manual of Contemporary Techniques* (New York, Multiple Breath Music Co., 1989), v

In particular, he sets out to refute three generally-accepted misconceptions about the instrument:

1. The flute has only one basic tone quality and its ability to vary that quality is sharply limited.
2. The flute can only produce one note at a time.
3. The mechanical construction of the Boehm flute allows production of only a few microtones.⁵

In writing these four preludes, I was also fortunate to be able to consult with Joe O'Farrell, a flautist who specialises in contemporary music and who has premiered and championed many works by Irish composers. Since he has himself studied with Robert Dick, he was able to give a first-hand insight into how the techniques described could be interpreted and applied in my own music

Prelude No. 1

The piccolo has a range of three octaves from D on the treble clef. The lowest register is somewhat weak and diffuse, and can easily be lost in dense textures. However, as it ascends to its highest register it can cut through even the loudest dynamic level of an orchestra, as it has a piercing quality and unmistakable timbre. It is also extremely dexterous and can execute rapid passages of many notes at incredible speeds. Moreover, it can do this with clarity and precision, especially in its highest register. It is also suited to slower melodic material and can sound plaintive, though this first prelude, being the opening movement to the work, is predominantly fast and lively.

I based the first prelude on sonata form, as this provided a structural framework within which gestures could expand and metamorphose into larger phrases. The tempo is set at a fast mm quaver = 150. Metered and unmeasured passages with no specific time duration (as they include grace note patterns) coexist and each melodic phrase occupies a bar or a system as the motives expand. The first five bars function as an introduction to the exposition, which begins at A and ends at K. The thematic material is characterised by syncopation and octave displacement, and is based on the A harmonic minor scale, though starting on the fourth, instead of the A itself, in a form of Lydian mode (Ex. 3.7).

⁵ Dick, R.: *The Other Flute; A Performance Manual of Contemporary Techniques* (New York, Multiple Breath Music Co., 1989), v

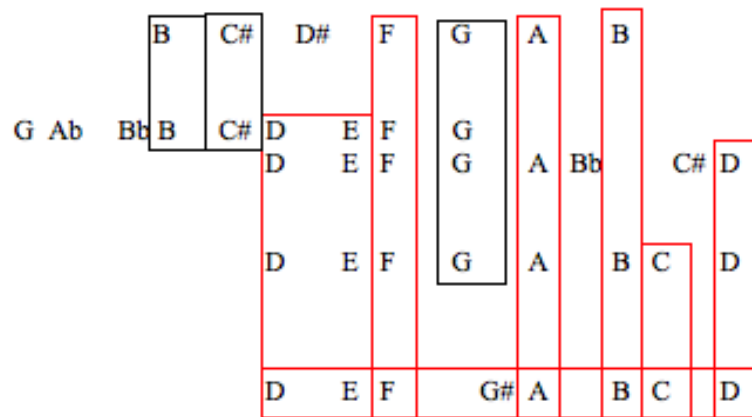
Ex 3.12 *Prelude No. 1* - Modal modulation back to A harmonic minor

Letter L – O =
(B Wholetone scale)

Letter Q =
(G octatonic scale +
D harmonic minor)

Letter R =
(G octatonic scale +
D dorian mode)

Letter S =
(A harmonic minor)



The recapitulation—S to U—brings back the main material from letter A, again based on the A harmonic minor scale, incorporating the former elements with grace notes and timbral trills. Finally, letters V to W represent the coda and climax of the piece. In this section the melodic material is presented at a fast tempo and unmetered, ascending at points to the highest tessitura in the piccolo's range. The piece ends centred on the piccolo's low D.

Prelude No. 2

The second of the *Preludes*, composed for the standard flute in C, explores various techniques which produce air and diffuse sounds: breathy sounds, jet whistles, tongue rams, pure air sounds, inhalation sounds, flutter tonguing, overblowing, singing inside the instrument and transformations from noise to pitched sounds. Because the flute is reedless, the embouchure is completely open, so that many different articulations and sonorities can be used.

Prelude No. 2 has an aggressive character. Although thematically related to the grace note material from *Prelude 1*, the rhythmic structure here is much freer, combining free, unmetered phrasing with precisely notated durations. The player is thus guided towards a liberal interpretation, especially in the *rubato* passages, while keeping sight of the general tempo of crotchet = *ca.* 50.

The piece is in four sections. The first, from the beginning to I, presents arabesques based on the 'Type 1' modally-derived scale and the gapped 'modified

pentatonic' structure described in the previous chapter. The phrases in the opening section describe zigzag descending contours inspired by the outline of mountain ranges; geometric shapes generally were a significant influence on the overall musical discourse. At letter A, the melodic outline is similar to the main melody but is rearranged by rotation, using the mountain shapes in a higher octave. At letters B – D, the same pitch material is combined with a simpler asymmetric ascending and descending contour, like two sides of a scalene triangle. Letters E to I combine all the foregoing.

Ex. 3.13 *Prelude No. 2* - “Mountain range” contour of the main melody

The image shows a musical score for Ex. 3.13. Above the staff is a thick black line representing a zigzag contour that descends overall. The musical staff contains a series of notes with various dynamics: *fff*, *f*, *fff*, *mp*, *ff*, *mp*, *ff*, *p*, *f*, and *p*. Above the staff, there are annotations: "poco a poco" with a dashed line and "Airy sound 50%".

Ex. 3.14 *Prelude No. 2* - scalene triangle shape from the melody at point B

The image shows a musical score for Ex. 3.14. Above the staff is a thick black line forming a scalene triangle shape. The musical staff contains notes with dynamics: *p*, *fff*, and *p*. Above the staff, there are annotations: "Airy sound" and "Tone" with dashed lines.

The second section of *Prelude No. 2* runs from letter J to M. Here, in contrast to the first section, the tempi and rhythm are specified. The texture in this section comprises small cells with rests and pauses, in the “mountain” and “triangle” shapes.

Ex. 3.15 *Prelude No. 2*, bars 41-43

The image shows a musical score for Ex. 3.15, bars 41-43. It includes tempo markings: "poco accel." and "accel.". A metronome marking shows a quarter note equal to 60 (♩ = 60). The score features various dynamics: *p*, *fff*, *mf*, *pp*, *f*, *mp*, *mf*, *p*, *f*, *mp*, *ff*, and *mf/ffz*. Above the staff, there are annotations: "Airy sound" and "Tone" with dashed lines.

The third section (N to R) juxtaposes material from the first and second sections, with pitch resources now expanded by the addition of pitches from the Type 1 scale on D,

whereas the previous section is based only on the Type 1 C scale. Rhythmically, this section is characterised by longer durations of notes and gestures, with interjections of overblown harmonic sweeps.

Ex. 3.16 *Prelude No. 2, Section P*

The material in the fourth section (S to Z) is predominantly linear. Apart from letter Z, most of this section is improvisatory and *rubato*. There is conspicuous use of *Klangfarbenmelodie*, adapted for a monophonic instrument by using contrasting timbres creating a “meta-instrument” effect, whereby a single line appears to contain several layers.

AA to the end is the coda; in the context of the complete set of preludes, this also acts as a transition to the third prelude, introducing the use of singing through the flute (Ex. 3.17).

Ex. 3.17 *Prelude No. 2, coda*

Prelude No. 3

Prelude No. 3 is for alto flute. Pitched a fourth lower than the standard flute, it possesses a dark, sonorous lower tessitura along with a brighter mid to top range. This piece focuses on the middle range of the instrument and makes much use of multiphonics, vocalisation and “airy” sounds. There are four major sections, although they are less

clearly differentiated than in the other preludes, the music being predominantly soft and slow.

The first section, to letter H, combines the octatonic scale with the “modified pentatonic” structure, with A as the main tonal centre. The piece is related to *Prelude No. 2* in the use of the “mountain range” and “scalene triangle” melodic contours, but here the music is slower and more spacious, juxtaposing free and metrical passages to evoke a timeless, meditative mood. The alto flute is very sensitive to overblowing, so I decided to turn this apparent weakness to musical advantage by exploring techniques such as harmonic sweeps.

Letter G and H form the transition to the second main section. Here, techniques derived from the Japanese *shakuhachi*—in particular breathy timbre, glissandi and highly ornamented melodic line—are central to the development of the melodic material which unfolds in the second section.

Ex. 3.18 Techniques derived from shakuhachi

The second section starts from letter I to U, and represents an extension of the transition. It includes multiphonics from letter K to N created by incorporating *shakuhachi* flute techniques, airy sounds and overblowing, bringing us to letter P which involves singing a fundamental pitch D while playing a melody above. This melody is still centred on the octatonic scale and the interpolation of my modified structures.

Ex. 3.19 *Prelude No. 3* - second section - interpolation of various techniques. (Sounds as written)

The musical score consists of three staves. The first staff is for Alto Flute, starting at measure 39. It begins with a triplet of eighth notes marked *fff*. A *rit.* (ritardando) marking is placed above the staff. The dynamics shift to *subito p*, then *mf*, and *pp*. A box labeled 'L' is placed above the staff. The tempo is marked *c. 90*. The second staff is for A. Fl. (Alto Flute), starting at measure 41. It features a *p* dynamic, followed by *fp*, *ff*, *ff*, *mp*, *ff*, and *pp*. Performance instructions include 'Tone', 'Air', 'Airy sound', and 'Air'. A note is marked 'Normale (flutter tongue and airy sound canceled)'. The third staff is also for A. Fl. (Alto Flute), starting at measure 41. It begins with *fff*, then *p*, *mp*, *ff*, *pp*, *p*, and *ppp*. A box labeled 'M' is placed above the staff. The instruction 'Overblow (Harmonic sweep randomly)' is written above the staff.

The third section is from letter V to Z. Most of melodic material is faster than the previous section and is largely in free tempo. Some of the melody is constructed utilising the modified *Klangfarbenmelodie* techniques of *Prelude No. 2*. The coda, characterised by key clicks and tongue slaps, serves as a transition into *Prelude No. 4*.

Prelude No. 4

Prelude No. 4 is composed for solo bass flute. With its tenor register and generally quiet dynamic range, this is the most understated instrument of the four. As it is easily drowned out by other instruments of comparable register, such as the clarinet, it is rarely heard orchestrally; its most common usage is as part of a flute choir. In recent years, however, it has found its own distinctive voice, especially in solo and chamber contexts. Given the limited dynamic range of “standard” playing, I decided to focus on timbres that incorporate percussive and “noisy” effects, including key clicks, tongue rams, flutter tonguing and ornamentation.

There are three sections. The first runs from the first bar to letter D. The melodic material is derived from the whole-tone scale on A combined with my “modified pentatonic” scale. Melodically, this section is influenced by the ornamentation in the

shakuhachi tradition, combined with the mountain / triangle contours of the preceding two movements. D – E is the transition to the second main section, the pitch material moving from whole-tone to octatonic. The second section proper, E to I, centres around the C octatonic scale, as well as including percussive timbres and references to *shakuhachi* ornamentation.

Ex. 3.20 *Prelude No. 4* - Melody from the first section.

Ex. 3.21 *Prelude No. 4* - Melody from the second section.

At letters H and I, the music is focused on timbral techniques, including percussive and staccato sounds and singing while playing. The short third section, from letter J, presents the restatement of the main motivic material from the beginning and the second section before the coda, from letter L, brings the piece to a close.

In conclusion, this piece has been a helpful source of research into the flute family and I have gained many insights into the timbral qualities that are possible in every tessitura throughout all the instruments. Certainly, it is one of the most, if not the most agile of instruments and I believe that there are many more sonic possibilities that have still to be explored, including the insertion of other implements which will change the characteristics of the natural timbres and result in new terrains which will lead to interesting outcomes.

3.1.4 Six Elements of Nostalgia.

Six Elements of Nostalgia is a piece for solo vibraphone with a duration approximately 20 minutes that explores various techniques and timbres of the vibraphone. There are six short movements, each focusing on a specific character and compositional idea, inspired by my subjective emotional responses to the instrument's specific timbres:

1. *Distortion*
2. *A Mind*
3. *Childhood Memories*
4. *Rain and Happiness*
5. *Aggression*
6. *Fireworks*, including the extra coda which brings the piece to a close.

Each movement presents a different set of challenges, allowing the performer to showcase the range of their technical and musical skills.

In the first movement, *Distortion*, major and minor seventh intervals predominate both melodically and harmonically, derived by using the “Lego” technique to divide the chromatic scale into the two forms of octatonic scale on D (Ex. 3.19)

Ex. 3.22 Division of total chromatic into octatonic sets

Chromatic:

Octatonic type 1:

Octatonic type 2:

These two scales are used to produce two melodic polyphonic lines. The harmonic material is derived from the same pitch material outlining the major and minor seventh intervals with occasional quartal and quintal chords. The dominant technical characteristics of this movement are pitch bending and setting mallets, including the use

of bow. Both melodic lines are performed by using the bow and mallets together, combining pitch bending with ordinary playing (Ex. 3.23). The title refers the idea of a distorted soundscape evoked by the combined playing techniques.

Ex. 3.23 Simultaneous use of mallets and bow

Prepare mallets
 RH. = Hard mallet & Bow
 LH. = Hard mallet & Bow

Motor = Off
 (prepare speed volume at medium level)

I. Distortion
 ♩ = c.c.40

Ord. (use mallets) L.V. RH. Ord. Bow Ord. Bow L.V.

Vibraphone

The second movement, *A Mind*, traverses between homophonic and monophonic textures. As in the first movement, the melody and harmony are composed from mixing two octatonic scales, but here combined via octave displacement into a single melodic line (Ex. 3.24 and 3.25). Timbral variation is effected by the performer being directed to change mallets and the motor speed during performance.

Ex. 3.24 The melodic line in the second movement

Motor = On
 Speed volume = Fast

ff *f* *fff* *f* *fff* *f* *pp* < *p* > *pp*

Ex. 3.25 Derivation of the melody from the combination of the two forms of the octatonic scale on D:

- — Octatonic type 1
- ✕ — Octatonic type 2
- — Common to Octatonic types 1 & 2

The third movement, *Childhood Memories*, begins at a very slow tempo and then gradually increases in speed. The main melody is underpinned by an ostinato line, using the octatonic scale, evoking those recurring childhood memories and routines that stay with us into adulthood. From L, the ostinato melody loses its rhythmic identity, coalescing into a freely-repeated figuration which serves as a transition to the fourth movement, *Rain and Happiness*.

This features two independent lines differentiated by using different techniques. The first is a series of *improvisando* ostinati, played with mallets in the right hand; the other a long, sustained melody, performed *arco* with the left. The inspiration for this movement was an encounter in the Thai countryside with a farmer who was looking forward to a rainy season. While many consider rain to be unwelcome, for that farmer it was a joy, the harbinger of life, rejuvenation and prosperity. The right hand figurations evoke the sounds of rain, while the left hand melody symbolises the continuity of life.

Ex. 3.26 Melody from *Rain and Happiness*

IV. Rain & Happiness

No tempo 10 sec. ♩ = c.c. 50

Mallets
RH = Double soft mallets
LH = Bow

Motor = On
Speed volume = medium
Vib.

LH prepare bow

LH. Bow

The fifth movement, *Aggression* focuses on using mallets. The music is fast and continuous, exploring various textures: monophony, heterophony, polyphony, homophony and unmeasured ostinato. The pitch material is again drawn from octatonic scales, here interpolating my “modified pentatonic” structure. Harmony is again centred on the major and minor seventh intervals (or their transposed equivalents) with the perfect fourth and fifth interval. The piece contrasts free, unmeasured ostinato passages with rhythmically strict material whose tempo variations are controlled by metric modulation.

The sixth movement, *Fireworks*, was inspired by a spectacular firework display, with many colourful layers of overlapping patterns. When considering how to portray this image musically, *Klangfarbenmelodie* came to mind. The technique is here modified by being applied to a single melodic line, the colours being provided by the harmonic underpinning combined with frequent changes of mallets: hard head, soft head, normal, “hot rods” and brushes. The pedal and oscillator motor are used to sustain the sound during the mallet changes. The pitch material is the same as in the previous two movements.

Ex. 3.27 Melodic material in the movement *Fireworks*

DD

VI. Fireworks
♩ = c.c.40

Mallets
RH. = Single soft mallet
LH. = Single soft mallet

Motor = On
Speed = medium

Tempo

LH. & RH. quickly change to single hard mallet

LH. & RH. quickly change to single soft mallet

LH. & RH. quickly change to single normal mallet

LH. & RH. quickly change to single soft mallet

LH. & RH. quickly change to single normal mallet

LH. & RH. quickly change to single soft mallet

LH. & RH. quickly change to single hard mallet

accel. -----

LH. & RH. quickly change to hot rod sticks

Hold the pedal (Not cut)

The coda, which continues without a break from the sixth movement, represents the summation of ideas and characteristics from the six previous movements.

3.2 COMPOSITIONS FOR CHAMBER ENSEMBLE

The chamber element of the portfolio of compositions consists of four quartets, each for a different combination of instruments. Again, the aim is to exploit the different timbral characteristics of each combination, while maintaining my personal compositional voice.

3.2.1 *Jatu* for flute, clarinet, violin and cello.

Jatu is a Pali, Sanskrit word, meaning simply “quartet”. In this case, the quartet consists of flute, clarinet, violin and cello. The work is approximately fifteen minutes in duration and was workshopped and recorded by the Concorde Ensemble. In this work, I sought to integrate the impressionist style with elements drawn from the Asian traditions I grew up with. In part, this was a conscious act of “cultural re-appropriation”; as Debussy, Ravel, Delage and others borrowed superficial elements of Asian music, so I sought “redress” by incorporating elements of impressionism—in particular, modality, synthetic scales and non-functional harmony—into music rooted in my own heritage.

As mentioned in Chapter 2, the piece uses “essay” form, consisting in this instance of an introduction (“thesis statement”), three “body paragraphs” and a conclusion. Each section presents different, but related, tone centres and textures.

The first section, from A to D, is analogous to the “thesis statement” in a written essay. It presents the main melodic material that will be later developed in the second section. The tonal centre of this first section is B, with the main melodic and harmonic material drawn from the octatonic scale on B, with an emphasis on the augmented fourth. The principal melodic and contrapuntal material is entrusted to the flute and clarinet, while the violin and cello play chords drawn from the octatonic scale, the intervals of the fourth, fifth and major and minor sevenths predominating.

Ex. 3.28 *Jatu*, Letter D, part of “thesis statement”

Col legno tratto (half hair)

Vln. *pp*

Vc. *pp*

Airy Sound 50% & Flutter Tongue

Fl. *pp* *ff*

B♭ Cl. *pp* *ff*

Airy Sound 50%

Vln. *pp* *ff*

Vc. *pp* *ff*

Col legno tratto (half hair)

Col legno tratto (half hair)

The second section divides into three subsections, corresponding to the “body paragraphs” of an essay, each focussing on a particular element of the argument. The melody and harmony of this part are based on a G# octatonic scale. The first subsection,

E to I, was modelled on the idea of a comparison essay, using textures to highlight differences and similarities between superimposed layers of contrasting material, those layers themselves differentiated by being assigned to pairs of instruments. The first group, alto flute and bass clarinet, plays two melodies using tongue pizzicato. The material is heterophonic, the second voice being derived from the contour of the first, but expanded and transformed. In contrast, the violin and cello focus on “noise” elements, using timbres such as *col legno tratto* and *portamento* in a homophonic texture. From letter to G to H, the main melody is in the violin part while the other parts have the countersubject.

Ex. 3.29 *Jatu* Letter G

The score for Ex. 3.29 'Jatu' Letter G is a four-part setting for Flute (Fl.), Bass Clarinet (B♭ Cl.), Violin (Vln.), and Cello (Vc.). The tempo is marked as quarter note = 100. The piece is in 3/4 time and consists of 16 measures. The Flute and Bass Clarinet parts play a heterophonic texture using tongue pizzicato. The Violin and Cello parts play a homophonic texture using *col legno tratto* and *portamento*. The score includes dynamic markings such as *p*, *ppp*, *mp*, and *f*, as well as performance instructions like 'Airy Sound & Flutter Tongue', 'Airy Sound', 'Poco a poco', 'Normale', 'Arco Normale Legato', 'Arco Normale', and 'Accl.'. The piece concludes with a *f* dynamic marking.

At letter H the main melody is assigned to the bass clarinet part. The pointillistic entries in the other parts apply *Klangfarbenmelodie* in a hocketing texture using the same material as the principal voice.

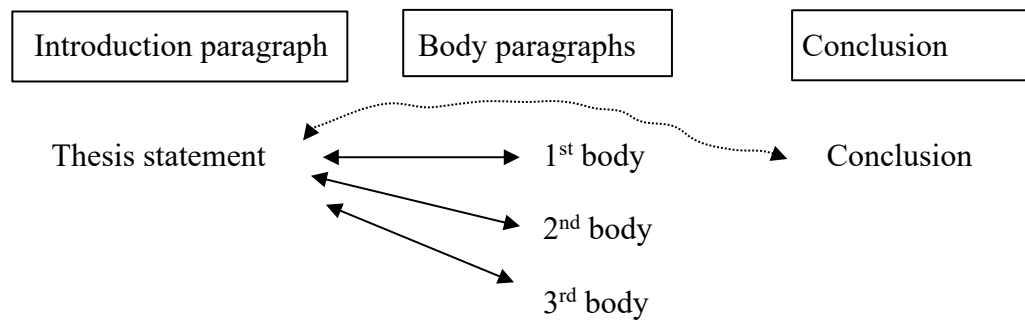
Ex. 3.30 *Jatu*, Letter H

The score for Ex. 3.30 'Jatu' Letter H is a four-part setting for Flute (Fl.), Bass Clarinet (B♭ Cl.), Violin (Vln.), and Cello (Vc.). The tempo is marked as quarter note = 120. The piece is in 3/4 time and consists of 16 measures. The Bass Clarinet part plays the main melody. The other parts play pointillistic entries in a hocketing texture. The score includes dynamic markings such as *f* and *mp*, as well as performance instructions like 'Normale', 'Flutter Tongue', 'Sempre', 'Pizz.', 'Arco', 'Arco Trem.', and 'Non Trem.'. The piece concludes with a *f* dynamic marking.

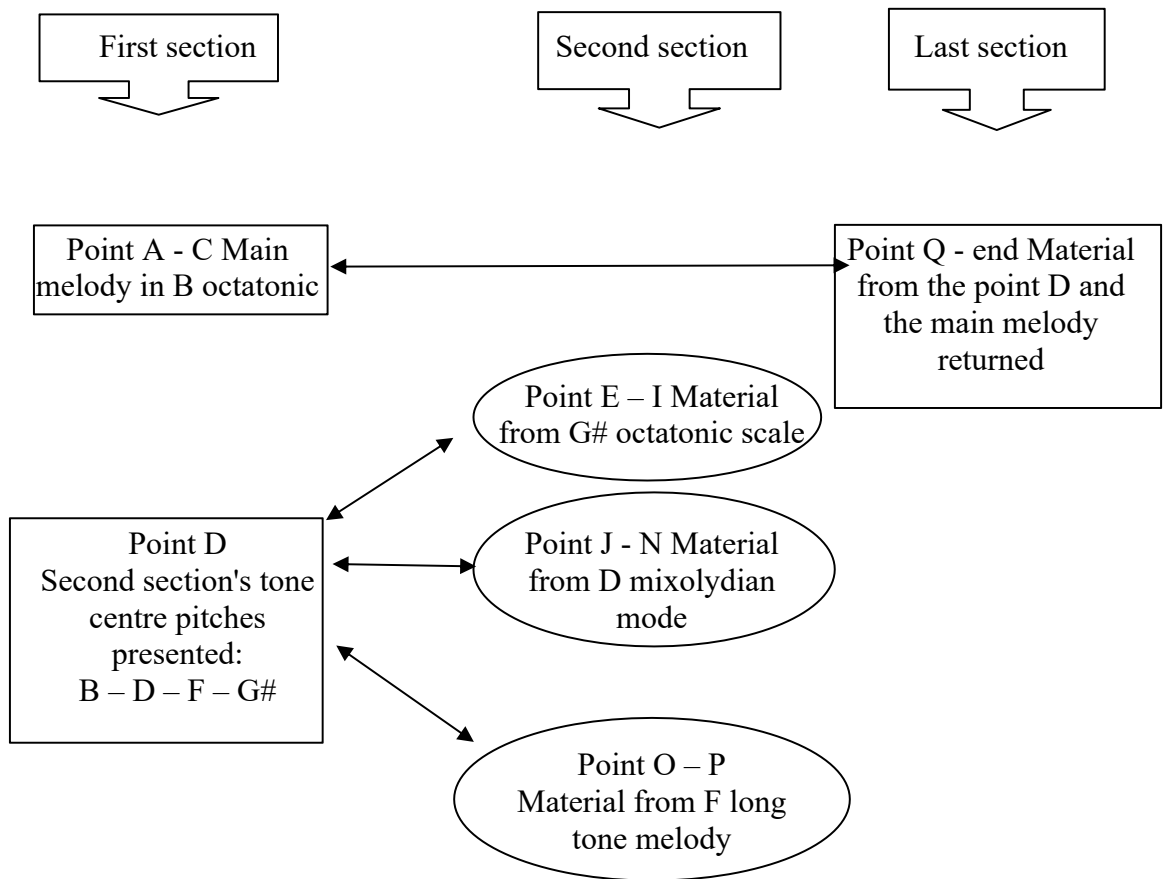
Letter I forms the transition to the second subsection. The hocketing gradually gives way to rhythmic homophony, where the harmonic material consists of cluster chords. The

second subsection starts at letter J and goes to letter N. The melodic and harmonic material here rotates around the pitch D. The concept of this subsection is an “argumentative essay” in which the writer seeks to change the reader’s mind. Musically, this again begins by pairing and opposing the instruments, winds against strings. Both groups involve improvisation, creating polyphonic textures. The improvisation pattern uses ostinati and arabesques with specific pitch material, articulated as fast as possible, which merges with intermittent fixed rhythmic passages based on a D mixolydian mode. The material coalesces to reiterate the homophonic material in all parts at letter M. The third subsection starts from letter O, where all the instruments arrive at a cadential point resting on the pitch F. Here percussive effects, *col legno battuto* and *tratto* in the strings and key clicks in the wind alternate with long notes, over a slower metronomic marking. At letter P all instruments reiterate the pitch F, which leads to the recapitulation of the opening material now transposed to encompass an octatonic scale based on F. The letter Q represents a coda which brings back all the former elements, leading to the climax at the end on triple forte.

Ex. 3.31 Essay form in writing



Ex. 3.32 Application of “essay form” to composition in *Jatu*



The chart above shows the application of essay writing to composition. The methodologies developed in the process of composing this piece were later applied to other works in the portfolio.

3.2.2 *Nimit* for panoramic string quartet

Nimit was composed while attending the Irish Composition Summer School in 2016 and was recorded by the Robinson's Panoramic String Quartet, an unusual string quartet consisting of violin, viola, cello and double bass. It lasts about 15 minutes.

The inspiration for *Nimit* comes from a native supernatural belief in Thailand. ‘Nimit’ means a dream which one may have when in the state of meditative trance. When one’s mind is concentrated and almost still, one approaches a state called *Rêverie*, where the trance occurs. A traditional belief among Buddhist monks and others who practice meditation is that this trance state can engender prophetic dreams.

As well as referencing these eastern beliefs, I wanted to draw certain parallels with western thought and tradition, using quotations from Debussy's *Rêverie* as part of the material. This is particularly evident in the first movement, where it provides the bulk of the musical substance, hence the subtitle *Quotation*. The material from *Rêverie*, in various guises, permeates every part of the movement. At the opening, it is stated explicitly in the double bass part, in artificial harmonics. It is then fragmented and developed by transposition and inversion, and distributed among the four instruments through *Klangfarbenmelodie*. Instead of Debussy's predominantly triadic writing, the harmonies here are based on fourths, fifths and sevenths (minor and major), derived from the whole-tone and octatonic scales. Timbre is an important part of the discourse, with much use of such techniques as playing behind the bridge, scratch tones, *col legno tratto*, *sul ponticello* and *sul tasto*. Although, like Debussy's original, the music is written in 4/4 for almost the entire movement, the sense of pulse is undermined by quasi-aleatory passages in free time, reflecting the idea of being "outside time" when in a trance state. The ending of the first movement acts as a transition to the second movement. Pitch gradually gives way to noise, with viola and double bass playing behind the bridge, fading to silence, evoking the state of approaching *Rêverie*, in which the mind is completely calm and enters into semi-consciousness, oblivious to one's surroundings.

Ex. 3.33 Debussy *Rêverie*, for piano bars 3-10

The musical score for piano, bars 3-10 of Debussy's *Rêverie*, is presented in two systems. The first system (bars 3-6) shows a right-hand melody with a fermata over the final note and a left-hand accompaniment of eighth notes. The second system (bars 7-10) continues the right-hand melody and left-hand accompaniment, with a fermata over the final note in bar 10. The score is in 4/4 time and features a piano accompaniment with a melodic line in the right hand and a rhythmic accompaniment in the left hand. The key signature is one flat (B-flat).

Ex. 3.34 *Jatu*, for panoramic string quartet: Melody of Debussy's *Rêverie* quoted in the first movement, bars 1-10

The second movement, *Rêverie*, is inspired purely by the composer's imagination regarding the trance state. The texture is pointillistic. The main melody from the first movement is modified by means of a transformation via superimposing its melodic contour on to different scale patterns to produce new variants. The melodic and harmonic material is derived from pentatonic scales, quintal and quartal chords, combined with unpitched and semi-pitched noise. The *pizzicato* and note-bending techniques evoke the sound-world of Asian traditional music, in particular the Chinese *guqin*, a seven-stringed, fretless zither. In such usage, I have been greatly influenced by the work of composers such as Takemitsu, Tan Dun and in particular my former teacher Narongrit Dhamabutra, among others, who have explored the use of such instruments in the western classical

tradition. In the absence of access to these instruments, I have taken the opposite route, drawing on (so-called) “extended techniques” as a means to evoke the sounds of the east with western instruments.

The beginning of the movement outlines quartal and quintal chords shared between each line. The main melody in the cello line at letter G is written to be played with pizzicato techniques inspired by the sound of the *guqin*, while the violin and viola evoke the sound of another Chinese instrument, the lute-like *pipa*, by means of *Bartók pizzicati*, *col legno battuto* and hitting the fingerboard with the palm. The writing contrasts specified rhythm and durations with unmeasured passages. The overall tempo is very slow, with many rests in each part creating a sense of calm. The *Rêverie*, as I imagine it, is misty and indistinct, but relaxing, leading eventually to the *nimit*.

Ex. 3.35 *Nimit*, second movement

The image shows a musical score for the second movement of *Nimit*, starting at letter G. It features four staves: Violin (Vln.), Viola (Vla.), Cello (Vc.), and Double Bass (D.B.). The score includes various performance instructions such as *arco*, *espress.*, *p*, *mp*, *mf*, *f*, *ff*, *sfz*, *Left hand pizz.*, *pizz. behind the bridge*, *ord. pizz. L.V.*, *H.P.* (with a note: *H.P. = hit strings with palm of hand*), *arco ord. bow freely*, and *pizz.*. The notation includes notes, rests, and dynamic markings across the staves.

Like the second movement, the third, *Nimit*, draws on my own imagined conception of *nimit*. *Nimit* dreams might reveal a situation or event which may happen in the near future or might have happened in the past. It might be a premonition, but might equally be a vague, misty scenario which cannot be pinned down.

There are three sections. The first lasts from letter I to N, and evokes the impression of a blurred scenario by combining disparate pitch material, as at letter J, where instruments are divided into two groups, both playing homophonically. The violin and viola parts are based on an E minor scale, the cello and double bass primarily on a whole-tone scale. The melodic material between letter K and M combines whole-tone and octatonic scales. At letter N, the material is the aggregate of combining the octatonic scale in the double bass, the pentatonic scale in the viola, and the whole-tone scale in the violin. All this material is further “blurred” by being played as independent ostinati patterns. The

second section, O to R, reprises the Debussy quotation in the cello and double bass. The accompanying harmonies are drawn from a synthesis of the pentatonic, whole-tone and octatonic scales. From Q to R this material is presented in a series of independent ostinati, creating a harmonic stasis but coloured by continuous, rapid internal activity and timbral transformation. Letter S marks the ending of the movement which cadences on the pitch G in all instruments, in different timbres, gradually metamorphosing into noise behind the bridge.

Ex. 3.36 *Nimit* third movement.

Ex. 3.37 *Nimit* - melody of Debussy's *Rêverie* at Letter O

Ex. 3.38 *Nimit*, 3rd movement, ending.

3.2.3 Drop of Water

Drop of Water was composed for trumpet, cello, vibraphone and piano while attending the Irish Composition Summer School in 2017. The shape of water droplets and the play of light on water served as compositional inspirations that I attempted to depict musically in the work.

Drop of Water is set in “moment form” and every section of the music is related. It is not a “goal orientated” piece, but rather a mosaic of sections that coalesce to form a whole. The structure was derived from the characteristics of water droplets and streams. The refraction of water, portraying a distorted and blurred reflection, inspired and influenced the compositional processes. These ideas were initiated as melodic lines, harmonic progressions, textures, techniques and timbres. The music opens with vibraphone on the pitch C, in octaves, using *tremolandi* techniques. Arrhythmic drops in the right hand and water drops are characterised in the left hand of the piano part, using chords in thirds and fourths based on the pitches C, Db, Gb, G, Ab, E. The texture gradually becomes denser and more contrapuntal through the addition of more melodic material and chord progressions in different voices. All voices maintain a relationship in that they all combine at points, corresponding to a stream of water flowing in a single direction. Each individual melodic line emulates the shapes and propulsion rates of different types of water drops: raindrops, slow droplets, simultaneous droplets, streams, and arrhythmic dripping; the different types of flow are delineated by the rhythmic motives that occur throughout. The texture in Letter H is meant to imitate combinations of water drops; from erratic dripping in the left hand of the piano part, to water slowly dripping as in the right hand. Half-dripping and streaming on the vibraphone are depicted by the use of *tremolo* and arabesques and arrhythmic dropping on the cello is characterised via the obliteration of the downbeat, as in bar 57. The sound of active droplets is evoked by the use of grace notes and *hemiolas* in the trumpet part at bar 58. The sudden amplification in dynamic level and the denser texture at Letter I, where all instruments play together, is an attempt to depict the character of water falling heavily. At Letter P, the improvised ostinato in the cello line portrays the changes from one type of dripping to another by switching from normal *arco*, to *spiccato* and finally to *col legno battuto*.

Ex. 3.39 *Drop of Water*, Letter H

The pitch materials used in *Drop of Water* are derived from two different synthetic scales on based on the pitches C and D. The harmony at the beginning comprises a juxtaposition of pitches from both. At letter B the trumpet melody is derived from the A harmonic minor scale, whereas the pitch material on the cello and piano is based on the D synthetic scale and the melody on the vibraphone was composed by mixing the D synthetic scale and C mixolydian mode. In point E the C whole-tone scale is juxtaposed with the D synthetic scale. After letter K, every line except for the piano's is based on different D scales: the melody from the D synthetic scale on the cello, D major and minor scales on the vibraphone, which improvises and the right hand in the piano and the melody on the trumpet outline a whole-tone scale based, again, on D. At the same time, the left hand of the piano juxtaposes a C synthetic and C major scale. At point L, the tone centre changes from D to C. Here, the melodic line in the cello part has improvisation based on a C major scale and the melodic material in the trumpet and in the left hand of the piano is based on a C Lydian mode, whereas the improvised motivic material in the vibraphone part juxtaposes the D synthetic scale and the C major scale. At points M and N (bars 89-98) the motivic material is based on the C Lydian mode and the C major scale. At point M (from bar 89), the fifths played by the vibraphone are derived from the C Lydian mode and the C major scale, whereby at the same time the motivic material in the trumpet and cello use C major at first and then C Lydian mode at point N (bar 94). The piano part at N uses a whole-tone scale on C, juxtaposed with a C major scale in the left hand and a C major and minor scale, written as an improvisation in the right hand. The gravitational centre changes to the pitch Bb at Letter P (bar 105), which is the coda of the piece. From these details, one can see that all scales selected for use in the piece relate to each other by pivot notes, as shown in Ex. 3.40.

Ex. 3.40 Scales used in *Drop of Water*. Common “pivot” pitches are aligned vertically

The image displays eleven musical staves, each representing a different scale. The scales are listed on the left side of the staves. The scales are: C new synthetic, D new synthetic, Whole-tone, A harmonic minor, C Mixolydian, D major, C Lydian, C Major, D minor, C minor, and B \flat new synthetic. The notes in each scale are written in treble clef. The scales are arranged such that common "pivot" pitches are aligned vertically across the staves. The scales are: C new synthetic (C, D \flat , E, F \sharp , G, A \flat , B \flat , C), D new synthetic (D, E \flat , F, G \sharp , A \sharp , B, C, D), Whole-tone (C, D, E, F \sharp , G \sharp , A \flat , B, C), A harmonic minor (A, B, C, D, E, F \sharp , G, A), C Mixolydian (C, D, E, F, G, A, B \flat , C), D major (D, E, F, G, A, B, C \sharp , D), C Lydian (C, D, E, F \sharp , G, A, B, C), C Major (C, D, E, F, G, A, B, C), D minor (D, E, F, G, A, B \flat , C, D), C minor (C, D \flat , E \flat , F, G, A \flat , B \flat , C), and B \flat new synthetic (B \flat , C \flat , D, E, F, G \flat , A \flat , B \flat).

Thus, the scales are all related through the use of pivot pitches, but all have different pitch delineations.

Beyond dripping and distorted reflection, the play of light and the shininess of water were incorporated into the composition by using timbral and orchestration techniques.

For instrumental arrangement, I considered the timbre of each instrument, starting with the trumpet, which differs from the other instruments. The trumpet sounds selected for this piece utilise a harmon mute, (with stem) and a plunger mute, which produces a wah-wah effect and a thin, dry treble sound. At times both mutes are used together. A small sound is created by flutter-tonguing an airy sound, creating a special sound effect for the piece. More combinations of techniques include flutter-tonguing an airy sound while using the harmon mute, creating a wah-wah effect with the harmon mute (with or without stem), and flutter-tonguing an airy sound with the plunger mute. The harmon mute bends the trumpet voice, making it smaller and lighter, to make it fit in the context of the ensemble (to make it have similar characteristics as the other instruments). The selected techniques for cello consist of *sul ponticello (molto)*, *sul tasto*, and bowing behind the bridge. All selected techniques are integrated with the timbres of the trumpet and vibraphone to create the sound world of a single “meta-instrument”. The vibraphone uses various mallets and sticks as well as manipulations of the motor system and sustaining pedal. The vibraphone acts as the medium between the piano and the other instruments by using the *Klangfarbenmelodie* techniques to connect and merge all the voices, as well as the blending of timbres in the different contrasting instruments.

Drop of Water was recorded by the Irish Composition Summer School Ensemble in 2017: Tom Poulson, trumpet; Ailbhe McDonagh, cello; Richard O'Donnell, vibraphone; David Adams, piano. It was conducted by Professor Dr Nicola LeFanu, mixed by Ian Brabazon, and supported by Professor Dr Kevin O'Connell and Dr John McLachlan.

3.2.4 Atmospheres I & II, for string quartet

Atmospheres was composed for a standard string quartet. This composition integrates various sounds to depict a variety of atmospheres. I imagined the natural atmospheres and ambiances that are all around us, and then applied those ideas to create the composition. This analysis investigates three major elements in the work consisting of structure set by the rhythmic patterns, pitch material and arrangement of instruments based on their timbres.

The music divides into three major sections clearly delineated by their textures. The first section is from bars 1–94. This section has contrasting motives creating a polyphonic texture and these are notated in free rhythmic durations but controlled by tempo and

range. The music of this section was inspired by sound ambiences that combine background noises at various registers and frequencies, in tandem with instrumental pitches in strict and improvised rhythmic durations. The second section happens from bar 95 – 167. Homophony is used at bar 122 and applies the Lego and *Klangfarbenmelodie* techniques. The texture here combines contrasting voices which support and play simultaneously as repeated chords. Rhythms change to strict rhythms, which use repeated notes. The tempo gradually increases and the timbral techniques change the sonic shading of these chords. Improvisation happens at the first climax from bar 151 to 157. All instruments perform improvise here, executing indeterminate free gestures. The time notation controls the duration of the diverse polyphonic textures. Cluster sounds assist in creating the frenetic atmosphere. Bars 158 -167 transition into the third section. In this transition, the polyphonic texture and tempo from the previous section are gradually dispersed and decreased until all that remain are only long-held notes at a soft dynamic. The third section is from bar 168 to the end. The character is different than the previous section in that the homophonic texture in the violins is supported now by the long-held notes in the viola and cello, at a slower tempo and a lower dynamic level. There are many silent spaces in this third section in an attempt to create a relaxing and calm atmosphere. Bars 185 until the end functions as a coda. The improvisatory techniques and noise sounds are recapitulated – the music starts from noise and silence, with the violin and cello playing accompanying melodic material. Eventually all instruments gradually have active rhythmic stasis, resulting in chaotic noise.

Ex. 3.41 *Atmospheres*, for string quartet; section 1

16 ♩ = 50 molto sul pont. - -

Vln. I

Vln. II

Vla.

Vc.

17 18 19

ppp

Airy sound
gradually cross the bridge
sul pont.

p *f*

molto sul pont. *poco a poco* *sul pont.*

pp *p* *pp*

Airy sound
sul pont.

gradually move to behind the bridge

ff *f* *mp* *ff* *mf*

20 21 22

ord. *molto sul pont.* *sul pont.* *ord.* *sul pont.*

mp *p* *mf* *p*

Normale
molto sul pont. *poco a poco* *ord.*

p

vib.
ord. *sul pont.* *gradually move to behind the bridge.*

f *mp*

L.H. pizz. L.V. *f* L.V. *f*

mp

Ex. 3.42 *Atmospheres*, 182-188, showing “Lego” technique

The musical score consists of two systems of four staves each. The first system covers measures 132-134, and the second system covers measures 135-138. The instruments are Violin I, Violin II, Viola, and Violoncello.

System 1 (Measures 132-134):

- Vln. I:** Measures 132-134 feature a continuous sixteenth-note pattern starting at measure 132. Dynamics are *p* throughout.
- Vln. II:** Measure 132 has a sixteenth-note pattern (*f*). Measure 133 has a sixteenth-note pattern (*p*) followed by a half note (*f*). Measure 134 has a half note (*mp*).
- Vla.:** Measure 132 has a sixteenth-note pattern (*p*). Measure 133 has a sixteenth-note pattern (*f*). Measure 134 has a sixteenth-note pattern (*p*).
- Vc.:** Measure 132 has a sixteenth-note pattern (*p*). Measure 133 is silent. Measure 134 has a sixteenth-note pattern (*p*).

System 2 (Measures 135-138):

- Vln. I:** Measure 135 is silent. Measure 136 has a sixteenth-note pattern (*f*) followed by a half note (*p*). Measure 137 has a sixteenth-note pattern (*f*) followed by a half note (*p*). Measure 138 has a sixteenth-note pattern (*f*) followed by a half note (*p*).
- Vln. II:** Measures 135-138 feature a continuous sixteenth-note pattern (*sempre*).
- Vla.:** Measure 135 has a sixteenth-note pattern (*f*). Measure 136 has a sixteenth-note pattern (*p*) followed by a half note (*f*). Measure 137 has a sixteenth-note pattern (*mp*) followed by a half note (*f*). Measure 138 has a sixteenth-note pattern (*p*).
- Vc.:** Measure 135 has a sixteenth-note pattern (*f*). Measures 136-138 are silent.

Performance techniques indicated by dashed lines include *sul pont.*, *sul tasto*, *ord.*, and *spicc.*. A note "Normale (spicc. cancelled)" appears above the Viola staff in measures 133 and 138.

Ex. 3.43 *Atmospheres*, section 3

The musical score for Ex. 3.43 *Atmospheres*, section 3, is written in 5/4 time. It consists of four staves: Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), and Violoncello (Vc.).

- Violin I:** Starts at measure 178 with a *spicc.* marking and a dynamic of *p*. Measure 179 is boxed with the number 179. Measures 180 and 181 are mostly rests.
- Violin II:** Starts at measure 178 with a dynamic of *p*. Measures 180 and 181 are mostly rests.
- Viola:** Starts at measure 178 with a dynamic of *p* and the instruction *molto sul pont.*. It features a crescendo to *ppp* by measure 180. Measures 181 and 182 include *pizz. L.V.* markings with triplets, dynamics of *mf* and *mp*, and *arco* markings.
- Violoncello:** Starts at measure 178 with a dynamic of *f* and *pizz. L.V.* markings. It features a complex texture with triplets and dynamics of *p*, *sf*, *mf*, *p*, and *mp*.

Measures 182-184 show a *rit.* (ritardando) and a *Normale* section. The dynamics in this section include *pp*, *p*, *ppp*, *f*, *mp*, *mf*, and *fff*.

The pitch material is derived from a synthetic scale based on D, indefinite pitch “noise” effects (produced by timbral techniques on the string instruments) and mixing fourth, fifth and seventh intervals. The material was composed using noise and pitched sounds in counterpoint. These sounds support and contrast one another, while the pitch materials create ambiances and atmospheres by integrating the techniques which I applied in *Nimit* earlier, to create a blurred scenario. The harmony of the second section mixes

types one and two of synthetic scales based on the pitch D, using the chordal structure which is made from fourths, fifths and seventh intervals in freely inverted patterns. In the third section, the materials from the first section are re-used but for different effects. This section presents noise effects and silences. The first section creates a complicated polyphonic texture and the harmony of each section corresponds with the structure to construct musical unity. The listener hears clarity in the texture but at the same time, hears contrasting sounds. This piece works through different forms and levels of perception, just as one's perceptions constantly change in everyday life.

Instrumental arrangement in *Atmospheres* creates ambiances by integrating various timbres, string instrument techniques and compositional techniques such as noise sounds which are produced by the strings to differentiate and present the specific voices. Noise sounds are created by integrating techniques such as performing on the string, behind the bridge, airy or silent sounds, *sul ponticello (molto)* and *sul tasto* enabling a changing noise sound, *molto sul ponticello*, percussive sounds such as *col legno battuto* and *Bartók pizzicati*. All these techniques are integrated into the composition, as are *Klangfarbenmelodie*, “Lego” technique and normal pitch sounds, all of which lend the piece a predominantly timbral character. To these “western” sounds, I added colours imitating Asian traditional instruments to create a continuum between oriental and occidental sound worlds. For instance, the cello performs melodies using *pizzicato* in imitation of the sound of the *Guqin*, a seven-stringed zither from China. In addition, the strumming techniques on the violin and viola create sounds like the *Pipa*, another Chinese instrument, akin to a lute.

Ex. 3.44 *Atmospheres*, bars 38-43: techniques derived from Guqin

38 pizz. L.V. *p* *f* *mf* *ffz* *p* *rit.*

39 40 41 $\text{♩} = 65$ Sul A Sul D *f* *mp* *mf* *f* *p* *f* *f* *mp*

42 43

Ex. 3.45 *Atmospheres*, 108-111 techniques derived from Pipa (from bar 108)

The image shows a musical score for two violins, Vln. I and Vln. II, covering measures 108 to 111. The key signature is one sharp (F#). Measure 108 starts with a treble clef and a key signature change to one sharp. Vln. I begins with a *p* dynamic, followed by a *ff* dynamic. Vln. II plays sustained chords with a *p* dynamic. Measure 109 is mostly rests for Vln. I, with a *ff* dynamic marking. Measure 110 features a 'strum on strings' instruction above the staff, with Vln. I playing a series of chords and Vln. II playing a rhythmic pattern. Measure 111 continues with similar textures, including a 'L.V.' (Lento) marking and a *ff* dynamic. The score includes various musical notations such as slurs, accents, and dynamic markings.

Atmospheres was composed while attending the 2018 Irish Composition Summer School. It was recorded by ConTempo String Quartet, conducted by Professor Dr Gráinne Mulvey, recorded and produced by Ian Brabazon and supported by Professor Dr Martin O'Leary and Dr John McLachlan.

Atmospheres III (acousmatic / *musique concrète*)

The acousmatic piece *Atmospheres III* is derived from the string quartet of the same name, the two parts of which comprise *Atmospheres I* and *II*. It is a *musique concrète* work, using, in addition to material from the quartet (recorded during rehearsals at the 2018 Irish Composition Summer School), water sounds and field recordings made in a public park: birdsong, people walking and talking, children playing, passing traffic... These elements were subjected to the usual manipulations associated with *musique concrète*: splicing, reversal, pitch shift, time stretching and compression, phasing, filtering and so forth. By and large, the process of finding the desired sounds was a matter of trial and error; in particular, slowing down a sound can reveal hidden rhythmic and pitch patterns that are inaudible at normal speed.

It was important to me that the resulting piece should be a specifically electronic work, making full use of the available resources, not something that could be produced by conventional means. This was the reason I opted for the *musique concrète* route rather than, say, a keyboard and sampler, which can all too easily lead to thinking in keyboard (and thus 12-note equal temperament) terms—and clichés—rather than freeing the imagination to explore the new possibilities the medium offers.

3. COMPOSITIONS FOR ORCHESTRA

The portfolio is completed by two orchestral compositions, integrating all previous knowledge and experiences gained from composing the solo and ensemble pieces.

3.3.1 *Lego* for orchestra

Lego for orchestra was inspired by Lego® toys. The concept of writing a piece based around Lego was a fascination for me and one that I wanted to explore for some time. The bricks, their physical shapes, playing with them to create objects, conjured up images from the structures and shapes that I felt might translate into musical material and so I thought of writing for a large orchestra which would best serve my research and give me scope to explore several musical parameters. The basic material of *Lego* can be divided into four components, as follows:

1. Structure
2. Pitch material
3. Rhythm
4. Arrangement.

The underlying rhythmic structure—the “bedrock” of the piece—was outlined in Chapter 2 (*see* examples 2.4 and 2.5); the motives are all devised from the number of sockets and plugs per brick, onto which the melodic and harmonic material is projected.

The structure can be divided into five sections - the first section starts from bar 1–106. Repeated notes in ostinati derived from Lego bricks set up a *hoquetus* texture in staggered entries, offset by high, long-note drones in the upper wind section. The rhythmic strands consist of motives in groups of six quavers, apart from oboe 2, which has a group of eight in its second entry (Ex. 3.48). The resultant sound is meant to signify a crowd of jumbled voices. Toward the end of the first section, the motivic patterns slightly change by the addition of more notes. Moreover, the texture gradually metamorphoses from polyphonic to homophonic.

Ex. 3.46 *Lego* - end of first section

91

Picc. *ff* *p* *f*

Fl. 1 *ff* *p* *f*

Fl. 2 *ff* *p* *f*

Ob. 1 *mp* *f*

Ob. 2 *mp* *f*

Cor Ang. *mp* *f*

B♭ Cl. 1 *f* *mp* *f*

B♭ Cl. 2 *f* *mp* *f*

B. Cl. *f* *mp* *f*

Bsn. 1 *f* *mp*

Bsn. 2 *f* *mp*

C. Bn. *f* *mp*

Hn. 1 *ff* *p* *f*

Hn. 2 *ff* *p* *f*

Hn. 3 *ff* *p* *f*

B♭ Tpt. 1 *ff* *p* *f*

B♭ Tpt. 2 *ff* *p* *f*

B♭ Tpt. 3 *ff* *p* *f*

Tbn. 1 *p* *f p*

Tbn. 2 *p* *f p*

B. Tbn. *p* *f p*

Tuba *p* *f*

Ex. 3.46 (cont.)

94

Picc.

Fl. 1

Fl. 2

Ob. 1

Ob. 2

Cor Ang.

B♭ Cl. 1

B♭ Cl. 2

B. Cl.

Bsn. 1

Bsn. 2

C. Bn.

Hn. 1

Hn. 2

Hn. 3

B♭ Tpt. 1

B♭ Tpt. 2

B♭ Tpt. 3

Tbn. 1

Tbn. 2

B. Tbn.

Tuba

The second section starts from the bar 107 – 183. Here, the music is canonic. The use of canon allowed me to consolidate the material presented at the opening of the piece. The material presented vertically in the additive rhythms at the opening is here presented linearly. In this I was inspired by Messiaen’s *Et exspecto resurrectionem mortuorum*, where the same material is presented first as arabesque, then harmony and finally melody. The harmonic treatment is particularly interesting in that the order of the pitches is outlined by the *ending* of each note, in what Messiaen describes as

mélodie par manques (“melody by default”), a technique echoed in the use of terminal accents on long notes in *Lego*.

Ex 3.47 Messiaen: *Et exspecto resurrectionem mortuorum*, 2nd movement, 1-18

Vir (♩ = 68) **Très modéré** (♩ = 72)

2^e Pic^{te} Fl.
Fl. 1, 2
3^e Fl.
3 Htb.
C. angl.
1^{re} Clar.
Clar. 1, 2
3^e Clar.

Très lent (♩ = 72)

3 Fl.
3 Htb.
C. angl.
Clar. 1, 2
3^e Clar.
3 Bass.
6 Cors

Presque lent (♩ = 52)

1^{er} Htb.
1^{re} Clar.
C. angl.
1^{re} Clar.
2^e Clar.
1^{er} Bass.

* *Mélodie par manques* – on doit entendre nettement la cessation de chaque son (aux +). L'instrument qui va cesser doit faire un léger crescendo, presque au moment d'arrêter, et sans exagération. A.L. 23.681

Bar 107 of *Lego* introduces the start of the canon in the cello, the viola entering with the inversion at 110. The second violin part brings back the original cello line at 113 and then the first violin enters with the viola's voice at 116. Then the double bass enters with line transposed starting on the note F at 119. All the entries are completed by bar 124. At bar 125 there is a *hoquetus* section based on the motives from the canon resulting in *Klangfarbenmelodie* between the piccolo and flutes, which is transferred to oboes and cor anglais at bar 127 and then to the bassoons at bar 130. The clarinet entries at bar 134 are transferred to the brass section at bar 137. At bar 131, new contrapuntal material is introduced in the strings, combining two different whole-tone scales, as in the "Lego technique" mentioned earlier. This acts as a background to the *hoquetus* textures delineated between the brass and wind sections. Bar 137 introduces the trumpet parts, which mark the beginning of a "fanned" *hoquetus* spread throughout the wind and brass eventually arriving in the lower tessituras of the brass at bar 140. At bar 144, this texture begins to dissipate, with longer periods of rests between the entries until all that remains is a solo bassoon. From bar 149 the violin begins the motivic material from the canon and staggered entries lead to more and more voices entering the texture to create one, rhythmic, homogeneous mass, the equivalent would be a solo singer being joined by more and more singers as the material progresses. The strings prevail with this texture until bar 162. Bar 163 heralds the arrival of the "Lego" techniques based on the similar concept from the start of the piece leading to the first climax of this piece at bar 179 and the end of this second section.

This is the culmination of a cumulative process whereby small vertical cells are gradually "stretched" to form longer linear phrases, an adaptation of the idea of converting harmony into melody in the Messiaen example above. The following redundant entries in the wind presage the return of the hocketed material, breaking down the long phrases in the strings, who gradually return to providing static harmonic support.

At bar 131, the opening material is reintroduced in the form of a double canon, the quaver movement in the wind being supported by the same material in the strings in augmentation. At this point, I was thinking of the analogy of cell division whereby each cell produces two copies of itself, which then repeat the process and so on,

proliferating exponentially to the point where individual cells are no longer distinguishable, and the material begins to act as a single mass, the characteristics of the whole being emergent properties resulting from the simpler underlying processes. In order to delineate the various strata, a form of *Klangfarbenmelodie* is used, so that each layer is differentiated by timbre.

Ex. 3.48 *Lego*, second section, 109-120

The musical score for Ex. 3.48, second section, 109-120, is presented in two systems. The first system (measures 109-114) features Violin I and II with 'sul pont.' and 'poco a poco' markings, Viola with 'Staccato sul pont.' and 'mp', and Violoncello/Contrabasso with 'mp' and 'f'. The second system (measures 115-120) continues with Violin I and II, Viola with 'Normale (staccato cancellato)', Violoncello/Contrabasso with 'f' and 'mp', and includes 'Marcato' and 'Staccato sul pont.' markings. The score is written in 4/4 time and includes various dynamic and articulation instructions throughout.

Ex. 3.49 *Lego*, second section

125

132

The third section starts from bar 184 and the *hoquetus* and *Klangfarbenmelodie* still prevail, but now the quaver *Klangfarbenmelodie* material is metamorphosed into an active drone at bar 191. The *hoquetus* between low brass and high woodwind becomes intermittent and punctuated by rests. The drones now outline a contrapuntal dialogue from bar 205, underpinned by the strings at bar 203 in rhythmic unison, in a homophonic texture. The *hoquetus* and the drones in the brass section, at bar 212 become homophonic and the strings and brass eventually lead to contrapuntal, homophonic, rhythmic unison. To this is added the broken *hoquetus* in the woodwind, so as to create three dense, independent, contrapuntal voices (Ex. 3.50)

Ex. 3.50 *Lego*, section 3, 211-216 - three independent contrapuntal layers

36

Lego

The drones eventually dominate the texture again in a contrapuntal dialogue. The rhythmic layers dovetailing seamlessly, particularly in bassoons and cor anglais starting from bar 219. The drones on C and D, using *Klangfarbenmelodie* techniques at different rhythmic rates, have another contrapuntal element in that their cross-rhythmic structures

create their own melodic, static oscillation as one voice in itself. Bar 242 introduces a heterophonic texture in the second violin and cello part. Here both lines play in homophony yet outline a heterophonic line within their own specific parts, which leads to pan-heterophonic, ostinato textures in the second violin, viola and cello lines. Bar 265 has the combination of heterophonic and homophonic material in cross-rhythms in values of 3 against 2 in the first violins, 6 against 4 in the second violins, 6 against 2 in the violas and the cellos have 6 against 3. Bar 267 is like the macro of the former micro string part, acting as an accompaniment in the low brass in a homophonic texture. The other instruments combine again in homophony to support this texture. At bar 278, the texture is again in homophony spread between woodwind and brass, while the string parts in counterpoint are ascending with multi-cross-rhythmic voices while the viola, cello and double bass play in unison in monophony.

Ex. 3.51 *Lego*, 253-264 - heterophonic texture in the strings

The image displays a musical score for strings, covering measures 253 to 264. The score is arranged in five staves: Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Cello (Vc.), and Double Bass (Cb.). The music features intricate rhythmic patterns, including sixteenth and thirty-second notes, often beamed together. Dynamic markings such as *mp*, *ppp*, and *mf* are used throughout. Performance instructions include *Dco. sul tasto* (Double Bass) and *poco a poco* (gradually). The score is divided into two systems, with the first system ending at measure 264 and the second system starting at measure 259. The second system includes further dynamic markings like *ord.*, *molto sul pont.*, and *ppp*.

The material before the climax is a recycled version of all the previously described materials combined with a transition at bar 400 where the tempo metrically modulates from minim 100, to minim 80, (quintuplet quaver to quaver) leading to the climax of the piece at bar 422: a solo timpani cadenza that uses some of the opening material’s pitches as in F, A, B; other pitches are purely colouristic for the purposes of contrast. This marks the final transition which starts at bar 459; again the metric modulation transitions from

crotchet 45 to crotchet 54 via the semiquaver sextuplet to the quintuplet. At bar 463 this modulates to crotchet 67 from quintuplet semiquaver to semiquaver, leading to bar 466 changing to crotchet; semiquaver to tuplet quaver. Finally, bar 472 represents the start of the final section and the tempo is minim 112 – quintuplet semiquaver becomes the quaver pulse.

Ex. 3.52 *Lego* - metric modulation from final transition section (bar 398)

The musical score for Ex. 3.52 'Lego' illustrates a complex metric modulation starting at bar 398. The score is divided into two main sections. The first section, from bar 398 to 462, features a tempo of 80 and a 3/4 time signature. It includes a quintuplet semiquaver pattern in the woodwinds and strings, which then transitions to a semiquaver pattern. The second section, starting at bar 463, modulates to a new tempo and time signature, featuring a quintuplet semiquaver pattern that becomes a quaver pulse. The score includes parts for various instruments: Hn. 1-3, B♭-Tpt. 1-3, Tbn. 1-2, B. Tbn., Tuba, Timp., Perc. 1 (Marimba), Perc. 2 (Cajon), Perc. 3 (Bass Drum), Vln. I, Vln. II, Vla., Vc., and Cb. Dynamic markings such as *mp*, *f*, and *sf* are used throughout. Performance instructions include '*** Prepare the triangle' and '*** Go to chimes'. The score is marked with 'poco a poco' and 'sul pont.' in the string parts.

Ex. 3.53 *Lego* – from climax section (bar 422)

The last section is the recapitulation of all the former elements and bar 511 is the coda to this, which again incorporates metric modulation from crotchet 90 to crotchet 75 from 5 to 6 semiquaver ratio. Here the material reduces gradually from all parts to the percussion, which is left alone, ending the work.

Ex. 3.54 *Lego* – ending (bars 512-523)

3.3.2 *Symphony for orchestra*

The *Symphony for orchestra* consists of four movements, each inspired by the four classical elements: earth, water, wind and fire. These are represented by means of considering the attributes (real or imagined) elements to create a narrative which in turn inspired the musical characteristics of each movement.

The first movement represents Earth, which I see as a strong and massive planet. This suggested to me the use of percussive sounds, therefore the use of timpani and other types of percussion naturally feature heavily, but it is also evident in the wind section, which execute non-pitched key clicks, and in the strings, where *Bartók pizzicati*, *molto sul ponticello*, playing behind the bridge, *sul tasto*, *col legno battuto* and *spiccato*, accompany the timpani which has the most prominent role, particularly as regards the rhythmic material and dynamics. Syncopated rhythmic unisons prevail throughout this movement, framed by the homophony in the strings. The percussion has the most independent and soloistic material, particularly the harp and timpani. The pitch material is derived from a combination of the full chromatic, divided into two whole-tone scales, juxtaposed intermittently with non-pitched timbral material. These are most prevalent within the wind and strings, as mentioned before. In the brass, mutes and *cuivré* are utilised to distort clear pitch delineation and to give the impression of unstable terrain, as the Earth is also, ever-changing. The employment of improvisatory, metric mobiles also serves to destabilise the fixed rhythmic processes and add to the textures.

The structure of the first movement can be divided into three main parts. The first is from the beginning up to letter I. There are many textures in this section, which consist equally of many melodic lines. Timpani and percussion are the main instruments as mentioned and supported by the brass section, which has a percussive character by means of the rhythmic repetition and accentuation and the woodwind and string section form a timbral counterpoint to the aforementioned. Regarding the motivic material and harmonic progression comprising chromatic saturation, the tone centre is on the pitch F, which is moved around from strings to the harp and brass liberally. *Klangfarbenmelodie* is utilised to transition between the normal rendition of the F drone and the F pitch with timbre applied as in the case of the strings, where *sul pont.* to *ord.* to *sul tasto* changes the quality of the drone as in bar 71, in the viola and then is transferred to the cello part at bar 74

with the same timbres applied. Letter D to I acts as a transition, albeit the tone centre modulates from the pitch F, to E at letter H and I.

Ex. 3.55 *Symphony*, 1st movement—harp and strings (bars 71-74)

The score shows the harp and string parts for bars 71-74. The harp part is marked 'sempre' and 'mf'. The string parts are marked 'p' and 'ff'. The harp part features a melodic line with grace notes and a steady accompaniment. The string parts provide harmonic support with sustained notes and dynamic markings.

The second section, J to O, is a transition, in which the hitherto dominant string parts give way to the timpani and the solo mallet percussion instruments—vibraphone, marimba and xylophone—outlining the material in syncopated octave displacement, with intermittent improvisation.

Ex. 3.56 *Symphony* - solo mallet percussion part in the second part of 1st movement

The score for solo mallet percussion includes parts for Timpani, Vibraphone, Percussion 1, and Percussion 2. The tempo is marked 'K' and '♩ = 75'. The score is in 4/4 time and features dynamic markings such as 'mp', 'sfz', 'p', 'f', 'pp', and 'ff'. The percussion parts are characterized by syncopated rhythms and octave displacement.

The third part is the coda starting from letter P until the end. The *Klangfarbenmelodie* is shared between harp, percussion and strings and here, the pitch material is based on a synthetic scale, in preparation for the second movement.

Ex. 3.57 *Symphony* - synthetic scale used in the third part of 1st movement.

F# new Lydian mode

= C new specific scale

Ex. 3.58 *Symphony* - Klangfarbenmelodie technique in the third part of first movement (bars 193-198)

193

B♭ Cl. 1

Perc. 1

Perc. 2

Vln. I

Vln. II

Vla.

Vc.

D.B.

196

Ob. 1

Ob. 2

B♭ Cl. 1

B♭ Cl. 2

Perc. 1

Perc. 2

Vln. I

Vln. II

Vla.

Vc.

D.B.

The second movement is inspired by the concept of water and shares some thematic material with both *Drop of Water* for ensemble and *Blu* for solo viola. The concept blurring and refraction by water in its various states resonates throughout the work, both in the way materials overlap and merge and in the fluidity of the textures that emerge and disappear within the disparate families of the orchestra. The structure of the second movement can be divided into three parts: the first, from the beginning to letter H, starts with a solo flute which is taken up by flute 2, oboe and finally, clarinets via *Klangfarbenmelodie* is supported by strings and brass. The pitch material is derived from a synthetic scale based on G, Ab, B, C#, D, Eb, F, integrated with noise sounds produced by timbres and technique such as *col legno battuto*, playing on the strings behind the bridge to evoke an elusive texture with drones.

Ex. 3.59 *Symphony* - Example of *Klangfarbenmelodie* technique at beginning of the 2nd movement

From letter D to H represents a transition, where the instruments are divided into three groups, each in different textures culminating in different layers pitted against one another that consist of a monophonic texture in the brass, bassoons, percussion, cello and double bass sections. Group 2 centres on chords and homophonic textures in a *tremolandi* technique in the flute, oboe, clarinet and viola sections, which could be compared to a shiny reflection of a wave on water. Group 3 supports both the former groups in a heterophonic texture that happens between the first and second violin sections.

The second part starts from letter I to N and here the string section comes to the fore, supported by the brass and woodwind. The string section is divided into two groups consisting of a solo string quartet and the string tutti. The string ensemble at this point supports the string quartet playing noise and drones. The harmonic material of the second part was devised by juxtaposing the whole-tone scale, harmonic series and noise sounds.

Ex. 3.61 *Symphony*, 2nd movement, 97-102: example of the string writing in the second part.

The image shows a musical score for the string section, measures 97-102. The score is written for five parts: Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), and Contrabass (Cb.).

- Vln. I:** Starts with a solo part marked *p* (piano) and *f* (forte). It features a melodic line with accents and dynamic markings including *mp* (mezzo-piano), *f*, *griss.* (grissando), and *mp*.
- Vln. II:** Features a solo part marked *f* and *mp*, and a tutti part marked *p*. It includes a melodic line with accents and dynamic markings like *f*, *mp*, and *griss.*
- Vla.:** Features a solo part marked *p* and *f*, and a tutti part marked *p*. It includes a melodic line with accents and dynamic markings like *f*, *mp*, and *griss.*
- Vc.:** Features a solo part marked *pp* (pianissimo) and *f*, and a tutti part marked *p*. It includes a melodic line with accents and dynamic markings like *mp*, *f*, and *griss.*
- Cb.:** Features a solo part marked *p* and *f*, and a tutti part marked *p*. It includes a melodic line with accents and dynamic markings like *mp*, *f*, and *griss.*

The score includes various performance instructions such as *Solo*, *Tutti*, *griss.*, and dynamic markings like *p*, *f*, *mp*, *pp*, and *ppp*. The notation includes notes, rests, and accents.

The third part starts from letter O until the end, where the pitch material is again derived from the whole-tone scale gradually metamorphosing into a G synthetic scale. The structural pillars consist of solo violin supported by harp and percussion, with other instrumental parts acting as *ripieno*, in support of the solo leading to the climax which ends the movement.

The third movement is inspired by air, more specifically wind. For me, the characteristics of wind are movement, vortices, freedom without specific shape or direction. The ideas were generated by means of using improvisation techniques, multi-tempi, complex rhythms, textures, chromatic saturation and timbre. The structure of the third movement can be divided into three parts: the first starts from the beginning to letter F, comprising harp and percussion especially tubular bells and non-pitched percussion such as snare, tam-tam and cymbals are the main instruments that use improvisation techniques in order to generate chaotic sounds and textures to symbolise the sounds of strong wind. In this part, the harp has drone material, by applying *Klangfarbenmelodie* by means of switching between normal sound and the sound effects that are produced by playing *près de la table*.

Ex. 3.63 *Symphony* - 3rd movement: Klangfarbenmelodie technique in harp

The musical score for Ex. 3.63 is divided into three distinct sections. The first section, labeled '9 sec.' with a tempo of $\text{♩} = \text{ca. } 65 - 70$, features a complex rhythmic pattern in the Percussion 1 part, primarily using tubular bells. The Harp part plays a drone with a 'près de la table' technique, marked *pp*. The second section, labeled 'ca. 1 min.' with a tempo of $\text{♩} = \text{ca. } 70 - 75$, continues the tubular bells in Percussion 1, now marked *p* and *mf*. The Harp part remains in the 'près de la table' technique, marked *pp*. A third section begins after 30 seconds past, where the tubular bells are marked *adlib.* and *poco a poco*. The Harp part continues with the 'près de la table' technique, marked *pp*.

The second part starts from letter G to H, the music here is based on the concept and techniques of the piece *Atmospheres* for string quartet. The woodwind section has measured improvisation against the brass section that enters at letter H, in homophony against this texture simultaneously. The tempi in the wind sections is deliberately different in each part so as to control the improvisational motivic material and at the same time, create a textural, controlled chaos and this is against a background of free improvised string textures playing behind the bridge creating noise drones, with no temporal relationship, save for the phrases numbered in seconds.

The major innovation for me in this movement was the introduction of simultaneous independent tempi for certain players. While I had used this idea in chamber works, I was initially reluctant to attempt it in an orchestral context. However, perusal of certain scores, in particular Messiaen's *Éclairs sur l'Au-delà*, as well as many of the orchestral works by

Gráinne Mulvey, persuaded me that it was indeed possible. I was particularly drawn to the idea of simultaneous use of measured and free notation in works such as Mulvey's *Diffractions* and *Akanos*, where individual lines are entirely free of the prevailing metre, whilst others are strictly measured and co-ordinated.

Since vertical (temporal) co-ordination is unimportant, giving each layer its own tempo indication allows the music to flow freely, without the risk of getting bogged down in overly-complex metric ratios.

Ex. 3.64 Messiaen: *Éclairs sur l'au-delà, IX – Plusieurs oiseaux de l'Arbre de Vie*, opening

The musical score is organized into sections for different instrument groups:

- PICCOLOS:** 1. Black-Crested Bulbul (Singapour) - ** Modéré*; 2. Grey-Checked Bulbul (Singapour) - *Bien modéré*.
- FLÛTES:** 1. Shama (Inde) - *Modéré*; 2. Merle de roche (Grèce) - *Modéré*; 3. Burung Gambala Palanduk (Singapour) - *Vif*.
- FLÛTE EN SOL:** New-Guinea Friarbird (Papouasie Nouvelle Guinée) - *Un peu lent*.
- PETITES CLARINETTES EN MI \flat :** 1. Murai Mata Putih (Singapour) - *Bien modéré*; 2. Merbah Berjanggut (Singapour) - *Presque vif*.
- CLARINETTES EN SI \flat :** 1. (Empty staff); 2. (Empty staff); 3. (Empty staff); 4. (Empty staff); 5. (Empty staff); 6. (Empty staff).
- IV. 1^{er} TRIANGLE:** (Empty staff).
- VIII. PETITE CYBALE:** (Empty staff).

Performance instructions include: "(Les instrumentistes attaquent au signe du chef)" and a note at the bottom: "Le chef d'orchestre doit veiller à ce que les instrumentistes fassent les nuances marquées. Les *ff* doivent être très en dehors."

In the third movement of the Symphony, I restricted use of this technique to short repeated motifs, which can be easily “brought back into line” at a signal from the conductor. This is a technique I envisage using on a much larger scale in later works.

Ex. 3.65 *Symphony*, 3rd movement – independent tempi in the wind

The musical score for Ex. 3.65 is divided into two main sections. The first section is labeled '6 sec.' and the second is labeled 'ca. 1 min.'. The instruments listed are Fl. 1, Fl. 2, Ob. 1, Ob. 2, B♭ Cl. 1, B♭ Cl. 2, Bsn. 1, and Bsn. 2. Each instrument part contains several motifs with dynamic markings such as *mp*, *sfz*, and *ffz*, and tempo markings like *ad lib.* (play ad lib. under the tempo provided.). Specific tempo markings are provided for each motif, such as 'ca. 65', 'ca. 90', 'ca. 65', 'ca. 75', 'ca. 110', 'ca. 90', 'ca. 75', and 'ca. 80'. The score is written in a standard musical notation with a key signature of one flat and a time signature of 3/4.

The third part starts from letter I to the end and transitions to the Fourth movement without a break. The same timbral materials from the first movement, as cyclic remembrances of the opening are presented again in the timpani, percussion and harp parts and supported by the other instruments.

The fourth movement is based on the element of fire, using the concept of the random and imagined shapes seen when watching an open fire in a grate. The movement is characterised by an aggressive and fast tempo. The predominant texture is a combination of unison melodic material in the string section as monophony interpolated with other instruments in polyphony and homophony. The main melody, played in octaves in the strings, is fast and active primarily made of octave displacement in ascending and descending patterns in a quest to replicate the randomness of flames mainly set as semiquaver configurations with accentuated notes that produce a percussive, rhythmically displaced downbeat. All the material is subdivided into several parts. The first part starts from letter A to B, whereby the melody and harmony is compiled from the chromatic scale, integrating with the process from the “Lego” technique as in the same concept as

Lego for orchestra by means of dividing the chromatic scale structure into two whole-tone scales.

Ex. 3.66 *Symphony* - 4th movement 19-24

The image displays a detailed orchestral score for the 4th movement of a symphony, specifically measures 19 through 24. The score is organized into two systems of staves. The first system includes woodwinds (Flutes 1 & 2, Oboes 1 & 2, Clarinets 1 & 2, Bassoons 1 & 2), brass (Horns 1-4, Trumpets 1-3, Trombones 1-3, Tuba), and percussion (Timpani, Percussion 1-3, Harp). The second system includes strings (Violins I & II, Viola, Violoncello, Contrabass). The score is characterized by intricate rhythmic patterns and dynamic markings such as *mp*, *f*, *ff*, and *p*. Performance instructions include *prepara harmonia maius (per stacc)* and *Sylphides*. A section of the percussion part is marked *Sylphides* and includes the instruction *stip. sylphides per in silphides*.

The second part starts from letter C to G – here the melody and harmony are based on the Dorian mode and a D and G synthetic scale using *Klangfarbenmelodie* techniques. The third part starts from letter H to L using a synthetic scale based on A, the Dorian mode based on the pitch A and A mixolydian mode. In this part, the concept of the second movement regarding the melodic structure and of the *tremolandi* techniques, appears again. At letter M to N, the pitch material is based on a G synthetic scale, in order to transition to the next part. Letter O uses the concept of the piece *Lego for orchestra* by means of instigating the pattern of split melodic material, connecting the concept of the “Lego bricks” idea to the full melody integrated with *Klangfarbenmelodie* techniques.

Ex. 3.67 *Symphony* – 4th movement, 163-168

The musical score for Ex. 3.67, Symphony – 4th movement, measures 163-168, is presented in a standard orchestral format. The score includes parts for Flutes 1 & 2, Clarinets 1 & 2, Bassoons 1 & 2, Trombones 1, 2, & Bass, Timpani, Percussion 1 (Marimba), Percussion 2 (High Bongo), Harp, Violins I & II, Viola, Violoncello, and Contrabass. The score is marked with dynamics such as *p*, *mp*, *f*, *sfz*, and *mf*, and includes performance instructions like "take the mute off", "change to soft mallets", "more = on speed = fast", and "change to normal mallets". A circled "O" is placed above the first measure of the flute parts.

Then the melodic structure gradually changes to ostinati patterns and scale material changes to a B synthetic scale. Letter P is the coda of the movement. The musical materials from the First movement are represented again by means of timpani, tubular bells, bass drum and harp in this section representing the main parts ending with the bass drum articulations. The concept of the ending is inspired by Buddhist thinking, which postulates that all life is created from four natural elements and gradually disappears into natural elements again. This has a correlation to the Symphony, where every pitch and

CHAPTER 4

CONCLUSIONS

Although this chapter is headed “conclusions”, this is really just the beginning; learning and development are lifelong pursuits. One area in particular that I will be exploring in greater depth in the future is electroacoustic and acousmatic composition. This in itself is an entire universe to explore, hence I only touch upon it here. However, much of what I have discovered in researching for this portfolio and composing for acoustic forces will, I believe, provide me within a solid base for my researches in this area. In particular, ideas about timbre, layering of sounds, spatialization and ways of transforming one sound into another, forming a continuum with which one can then compose, will be invaluable in navigating this new terrain. Conversely, techniques of electronic music and *musique concrète*—timbral transformation, splicing and intercutting, time stretching/compression, equivalence of pitch and noise, etc.—frequently inform my writing for conventional forces; this is particularly evident in *Atmospheres*. Above all, the sense of form—the art and craft that makes a piece *music*, rather than an arbitrary sequence of sounds—will I hope guide me to avoid the apparent “randomness” that all too often characterises electronic music. The democratisation of resources, with facilities that were once the preserve of large institutions now being available to anyone with access to even the most basic laptop or even tablet, does not *ipso facto* make everyone an “electronic musician”, any more than simply owning a piano makes one a pianist. The technology alone is not enough.

It is fitting that this portfolio should conclude with the *Symphony for orchestra*. It is by far the most substantial work I have composed to date, and stands as a summation of all that I have learned over the course of my years of study and work towards this degree, encapsulating the progression I have made on both musical and personal levels. Lifelong preoccupations—the natural world, the natural and built environment, religion, philosophy—featured to a greater or lesser degree in all the works in the portfolio, but it was with the larger canvas of the *Symphony* that I first had the space, freedom and, not least, confidence to fully assimilate and integrate them all. As such, with this piece I feel I have truly found my own individual voice and style, and proved to myself that the

techniques I have developed, coupled with my own creativity, can sustain a musical argument on the largest scale. With this portfolio I believe I have laid the foundation for ever more fruitful explorations of the musical vistas that now lie open before me.

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