The synthesis of diverse musical strands

Commentary on a Portfolio of Original Compositions

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The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

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Abstract

This thesis has the purpose of demonstrating that to explore and investigate profoundly, and then to synthesise, a wide range of ideas leads to an enrichment of musical language. The more ideas are tested to their extremes, by extending them, opposing their preconditions, challenging them and transgressing predefined limits, the more extreme, and therefore profound, the investigations and explorations will be. The widest range of ideas reflects open-mindedness to the greatest number of possibilities. Synthesis represents coherence, the absorption and understanding of the ideas, and the potential for communication in a clear manner. This testing and then absorption, probing and then synthesising, is central to all human progress. By applying this method to music, and by possible implication to the other arts, the sciences and to other aspects of life (including politics), enrichment in the form of an extension of knowledge and awareness will be made possible.

I show in six recent compositions which are the results of this research complex networks of synthesised interrelationships. The compositions stand as statements and symbols of the attempt at open-minded questioning that led to their creation. I introduce several new techniques into musical composition, attempts at further enrichment and complexity. Finally I show that it is possible to extend such synthesis even further, through the input of ideas from elsewhere, in this case the visual arts, theatre and film.

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commissioned by ZeitRäume Basel

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Further performances:
11.09.2015 Basel : SchülerInnen von Gymnasien BS/BL, cond. Oliver Rudin; Trombone Unit Hannover (part)
16.09.2015 Broadcast SFR2 : SchülerInnen von Gymnasien BS/BL, cond. Oliver Rudin; Trombone Unit Hannover (part)

Untitled No.8
piano and orchestra (13 mins.) 2016
commissioned by Wien Modern

First performance:
30.11.2016 Wien Modern, Vienna Konzerthaus : Nicolas Hodges, Wiener Symphoniker (Vienna Symphony Orchestra), cond. Ludovic Morlot
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First performance:
23.11.2018 Vienna (Wien Modern) : Irvine Arditti

Chapter I: Introduction

Much in the same terms as Hegelian oppositions of thesis, antithesis and synthesis, my work has concentrated on specific areas and then, either in a subsequent period or simultaneously, set about an investigation of their opposite. A recent example is the composition of extremely detailed, virtuosic and complex material suitable for performance by expert musicians, such as the Arditti String Quartet or the ensemble Klangforum Wien, and the composition of music which might been seen as the antithesis of this: music written for large groups of student performers involving a much reduced set of skills and thus a reduction of the detail required in each musical part in order to create a compositional result. These latter works have been for 200 or 300 musicians and so the sheer scale of the numbers of performers involved leads to a quality of sound far removed from that of, for example, the virtuoso string quartet.

Another example of a thesis being proposed and then opposed is to be found in my works composed in the 1980s and 1990s onward, details of which appear below. In the 1980s I investigated methods of creating transforming, gradually evolving forms, directional and narrative in character, as a way of unifying as many aspects of the musical material as possible. A transforming idea such as the metamorphosis of a single note through various intermediate stages into a melodic theme could thus be clearly related to other transformations such as a *crescendo* from *piano* to *forte*, or a transformation from sparse textures to dense ones, or from a high register to a low register (to take just three possibilities), in order to result in a unified and coherent structure. This perhaps hermetic way of approaching musical form was then opposed in works composed from 1988 onwards by its antithesis, a deliberate attempt to disrupt and break up structures with unpredictability and volatility. Within such subsequent works an opposition appears between dense, highly complex material, containing very many notes and instructions as to the details of performance, and sparse, clearer material, such as single held notes or chords. These often result in imbuing in the music a certain tension and a sense of anticipation of a possible impending explosion of new material.

In 2006 my music written thus far was now imagined as a thesis to be opposed by a new

antithesis, music focused on an increased clarity of means and on slow transformations of small elements of material within a sometimes static overall framework. I made the decision to remove titles from my compositions; any descriptive element or reference to external matters was stripped from the work in order to concentrate on the essence of musical experience without the distraction of possibly inferred allusion or illustration.

Starting in 2009 I reunited (synthesised) the wild complexity of the works from the 1990s, pushed to new extremes, with the apparent clarity of the works since 2006, focusing particularly on a concentration on listening to the details or inner life of held sounds. This further development of the thesis of complex detail and its antithesis of held, unchanging sounds is pursued in order, in part, to show that in fact a synthesis is present. I maintain that the question is not that one kind of material is complex and the other is not, but rather that there are two distinct kinds of complexity present: on the one hand there is the most commonly understood type, with a large density of written information and detail; on the other there is a complexity within held notes or chords which is ever changing in subtle ways at a micro-level. No note played by human hand or breath is ever constant and there is an extreme complexity at this, as it were, microscopic level. The musical works discussed here explore methods of synthesis of the various opposing factors mentioned. They create forms that unite elements of directional, narrative processes with unpredictability; they integrate the extremes of complex musical detail which is ever changing on a surface level with its antithesis of held sounds containing that which I shall define as a 'micro-complexity'.

Many composers (and other artists) pursue an increasing refinement of their preoccupations, channelling the resulting work into ever narrower and more specific regions. It is this that leads one immediately to recognise, for example, 'a Rothko'. The subtle varying of the immediately visible (or audible) limiting features defines the artist's style, by removing an enormous number of possibilities and concentrating on a few.[1] But a composer or artist might feel impelled to explore different regions, or strands, which are in many respects mutually exclusive. A work might be extremely

[1] See David Anfam, *Mark Rothko, The Works on Canvas, Catalogue Raisonné*. (New Haven: Yale University Press, 1998).

dense, complex and full of very many notes; it might be extremely sparse, transparent and have almost no notes at all. The strands that have led to these different possible outcomes might be left in their independent and separate states. This is Gerhard Richter's approach: some paintings are abstract, some are portraits or otherwise figurative, some are 'mechanical' in that they repeat squares of colour as in a commercial paint-sample.[2]

The purpose of this thesis is to examine ways in which such strands might be unified, using my own music as a reference. It may be observed that, as in the case of Richter, my own music exists in complementary strands.[3] My aim is the enrichment of musical language through their synthesis.[4] Both within and between different works, I also show that these new ways of synthesising different strands lead to a reassessment of the individual strands themselves. One such strand may be described as 'complex'; an apparently opposite strand may appear to be 'simple' in comparison. My research shows that the unification of the two leads to a re-evaluation of their properties, to a new way of understanding them and the connection between them. This topic, the unification of 'complexity' and 'micro-complexity', will be discussed in detail. It is one of numerous related topics that will be presented and subjected to questioning. Any idea that establishes itself as a thesis is to be challenged by its antithesis; these two opposite poles are then analysed and synthesised, the most positive aspects of each united, leading to profound, interconnected results. I claim that a musical work is a statement, an independent 'world', which will potentially be enriched by the questions posed and answers found in this research, and that the key principle uniting both is that of synthesis.

The context from which my musical explorations emerge starts with the developments made by Schoenberg and Webern in the early twentieth century that have led to the rich and complex area of atonal music of special interest to me. The composers mentioned in the text that follows will indicate the roots from which my own musical ideas have

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[2] See Gerhard Richter, *Text (Writings, Interviews and Letters) 1961-2007*, edited by Dietmar Elger and Hans Ulrich Obrist (London: Thames & Hudson, 2009).
[3] An extreme example of one strand is *Untitled No.3* (2006) (see Appendix 1).
[4] 'Clarke's expressive spectrum is so complex, it can also embrace simplicity.' Review in The Gramophone (undated), <https://www.gramophone.co.uk/review/clarke-j-redgate-piano-works> (last accessed: 6 March 2018).

grown, most especially Xenakis and Stockhausen, as will be seen particularly in the next chapter. The music and ideas of Boulez, Nono, Spahinger, Sciarrino and Holliger have been of particular importance in providing reference points with which my own work has affinities. Among composers from Britain mention should be made of Maxwell Davies, Ferneyhough and Finnissy as important forebears, the first of particular relevance to my early explorations of transformation, the latter two for their very individual extensions of rhythmic language, a road partially travelled but not fully explored by Boulez and others in the 1950s. Further mention may be made of other important composers whose contribution has been meaningful for me: Barbaud, Berio, Donatoni, Feldman, Klaus Huber, Nilsson, Nørgård, Nordheim, Penderecki, Rădulescu, Takahashi, Wittinger, and B. A. Zimmermann.

The compositions presented are the following: *2015-M*, for 300 voices and eight trombones (2015), which may be considered on one level an example of the highlighting of one strand in my present music, but, as I shall show, demonstrates various kinds of synthesis as well; *Untitled No.8*, for piano and orchestra (2016), *2016-E*, for ensemble (2016), *Untitled No.9*, for orchestra (2017) and *String Quartet No.4* (2017), which unite and synthesise separate strands in many different ways and attempt to show how the resulting complexity of interrelationships enriches the musical results; *2017-V*, for solo violin (2017), which gives prominence to one technique, in this case that of variation, but unites this with others, particularly two of the new techniques that I introduce in the following pages.

Chapter II: Definitions

Xenakis begins his book *Formalized Music* with the following words:

> Art, and above all, music has a fundamental function, which is to catalyze the sublimation that it can bring about through all means of expression. It must aim through fixations which are landmarks to draw towards a total exaltation in which the individual mingles, losing his consciousness in a truth immediate, rare, enormous, and perfect. If a work of art succeeds in this undertaking even for a single moment, it attains its goal. [...] This is why art can lead to realms that religion still occupies for some people.[5]

I argue that a work of art is a statement. The 'truth' referred to is found in a listener's or viewer's confrontation with this statement and if it is moving, exciting or captivating in any way, the goal of an intense communication has been achieved. An experience is present which is beyond words. It makes contact with the listener's or viewer's perception and understanding, and leads to an enrichment of profound areas of the mind that are awakened and enlivened. It is potentially one of the most powerful and joyous experiences one can have. 'Losing one's consciousness' in this 'exaltation' is overstating the situation in a forgivable piece of exaggeration, for to be aware of the intelligence behind the statement, while *simultaneously* being moved to being almost 'out of one's mind' by it, is even more fulfilling and rewarding than the implied bewilderment of Xenakis's suggestion.[6]

Xenakis goes on to speak of his 'point of departure, which is the magma of contradictions in present music'.[7] He proposes new methods of achieving certain sound qualities and textures which were being attempted by many composers at the time and suggests ways of creating them that he believed were more logical and consistent than those methods employed by his colleagues. In other words, in order to create a rich and complex texture of atonal, aperiodic sounds, it was, he contended, more logical to use

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[5] Iannis Xenakis, *Formalized Music : thought and mathematics in composition*, translated by Christopher A. Butchers (Bloomington: Indiana University Press, 1971), p. 1. Originally in French as *Musiques Formelles*, Richard-Masse, Paris, 1963.

[6] Xenakis is of course following in an extremely long tradition. '... when falling under the power of music and metre they are inspired and possessed; like Bacchic maidens who draw milk and honey from the rivers when they are under the influence of Dionysus but not when they are in their right mind.' Plato, *Ion, A Dialogue*, translated by Benjamin Jowett (London: Polit, 2010), p. 15.

[7] Xenakis, *op.cit.*, p. 1.

stochastic techniques than serial ones.[8] Interestingly, he did not question the sound-world itself, predominately aperiodic and atonal, but took that as read. He was concerned with how best to create this sound-world in a logical manner.

A work of art is a statement, in the sense that a proposition is being put before the listener or observer. My own view is that it is something that exists, independently of everything around it.[9] It is defiant, alone, and awaits anyone who dares challenge it. It is like a tree or an island. It is, in a particular sense, a world.[10] It is also, perhaps, like a great building in its placement in, and yet distinctness from, its surroundings; and here there is more than a simile, because of course a great building is a work of art.

A statement, a proposition, contains a subject or subjects which are considered. A statement is a world 'which is everything that is the case'.[11] A subject is an idea. It has certain characteristics which are communicated to the listener or viewer. It is the way in which *consideration* is given to the subject(s) that makes the statement, and it is this statement that gives identity to the work of art. The statement is the work of art. Consideration, in this context, means how a subject is, or how subjects are, presented, opposed, developed, within the statement (the work of art). The subject is put before us and allowed to explain itself, its content and complexities; it demonstrates what it is. Where there is more than one subject, not only is consideration given to each, but their

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[8] Xenakis, *ibid.*, passim.

[9] Obrist: 'Marcel Duchamp once said that the beholder of a work of art did 50 per cent of the work. Do you agree?' Stockhausen: 'I don't think much of psychology. It's all the same to me what percentage someone listening to a piece by me contributes through their own musical education. What is not all the same to me is that this piece exists in itself, even when no one is listening. [...] The works exist.' Hans Ulrich Obrist, *A Brief History of New Music* (Zurich: Ringier & Les Presses du Réel, 2013), p. 30.

[10] 'The nature of a work of art is to be not a part, nor yet a copy of the real world (as we commonly understand that phrase), but a world in itself, independent, complete, autonomous [...]'. A.C.Bradley, Oxford Lectures on Poetry, 1901, as cited in Jeanette Winterson, *Art and Lies* (London: Jonathan Cape, 1994), p. ii.

'[E]very great work of art is [...] an entire and resonant *world*.' Gabriel Josipovici, *Hamlet Fold on Fold* (London: Yale University Press, 2016), p. 2.

[11] Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*, translated by C.K.Ogden (London: Routledge & Kegan Paul, 1981 [1922]), p. 1. This is C.K.Ogden's English translation of the book's opening words, 'Die Welt ist alles, was der Fall ist.' Another interpretation might be 'The world is all that concerns us (need concern us)'; thence we might say, 'The world is all that we shall consider'. (In my own text: The statement is the work of art. Consideration, in this context, means how a subject is, or how subjects are, presented, opposed, developed, within the statement (the work of art).)

interaction becomes a further topic of investigation defining the identity of the statement (the work of art).

An example of a subject is called for. It might be a melody, a melodic theme or motive, a chord, a rhythmic pattern. It might be a chord which is presented one note at a time and then held for a certain duration (such as the subject 'S[O]' in my work *2015-M* (2015), to be discussed in the next chapter). It might simply be a sound, either complex or simple.[12] The more detailed it is and the more information it contains, the more interesting and full of potential it will be.

To repeat: a work of art is a statement (or proposition) consisting of one or more subjects (or ideas). The art of composition is the consideration of this subject or these subjects, how they are presented, opposed, developed. The simplest composition might present a subject unaltered, an idea positioned in time. Where there are two or more subjects these may be positioned in various ways: they may be assembled; they may be repeated or changed; one might transform or metamorphose into another. A subject might be 'developed' (a favourite method of Classical music), which is to say cut up, split into fragments, splintered, magnified, condensed, contorted, altered, and (most importantly in tonal music) transposed, while maintaining some recognisable links to its origin.

The simplest composition assembles subjects and places them in time. The more complex the composition, the more the subjects are investigated, explored, treated to methods of development, transformation or alteration, which display causal and logical links and networks, channels of information and profound interconnections.

It is this that Xenakis failed to recognise when he concentrated on stochastic processes in order to create masses of sounds. There is no reason why music may not be made by these means but I claim that the result is far richer if one creates a deeply profound and complex set of interrelationships, such as one observes in a forest, which is not a

[12] 'I fell into a kind of somnolent state, in which I suddenly felt as though I were sinking in swiftly flowing water. The rushing sound formed itself in my brain into a musical sound, the chord of E flat major, which continually re-echoed in broken forms.' Wagner, *My Life*, quoted in Anthony Storr, *The Dynamics of Creation* (London & New York: Penguin, 1972), p. 249.

random set of elements but a complexity of extremely ordered forms intermingling and interacting. The individual details may be so densely compacted as to be unanalysable from afar but it is their existence that distinguishes the forest as a magnificent, complex sight, and as being more than an arbitrary set of stochastically arranged fragments.

To summarise: I shall define a subject as an idea. A work of art is a statement or proposition consisting of one or more subjects. A statement gives consideration to the subject(s), using methods ranging from the simplest (assemblage, the placement of the subjects next to each other unaltered) to the most complex (involving methods of development, transformation, variation, and other techniques which throw different light on the subjects and allow them to be considered from different angles, viewpoints or perspectives). Development has been defined above. Transformation is the gradual metamorphosis of the subject from one state to another, either from one subject to another, or from the original state of the subject to its disintegration, negation or extinction. The reverse, a process of change from nothing, a negative state or a disintegrated state to the subject is also a possible example of transformation. Variation is defined as the repeat of the subject with some aspect(s) or element(s) altered, while most of the subject's characteristics remain unaltered.

Other techniques might include 'suspension', where the subject is stretched, extended or treated as if suddenly placed under a magnifying glass, slowed down and inspected; or 'erasure', whereby the subject is treated to a type of variation in which its repeated presentation has parts omitted: a melody or chord might be repeated with notes left out, for example.[13] These two techniques will be discussed later. Other possibilities exist which might be different forms of alteration, amalgamation, evolution, fragmentation, magnification, multiplication, dissipation, dissolution, mutation, randomisation, negation, extension, condensation or contraction, to name just a few.

Form may be defined as the presentation of these considerations of the subject or subjects in time or space. Whether we take the simplest considerations of the subjects

[13] I first employed 'erasure' as a technique in a work for percussion solo, *Acid* (1998), in which a line is played and then replayed with a few notes omitted. This second line is subjected to the same process, and so it continues until the last 'replay' has but two notes in it. Stockhausen used a different version of this idea in *Punkte* (1966), in which blocks of sound have 'holes' of silence cut into them, something very clearly visible in sections of the score.

(to state them unaltered, to assemble them) or the more complex methods (involving different types of alteration), this is presented in time in music, and in space in the visual arts. In music (as well as in literature, theatre and film) there are two fundamental methods of presentation: one is directional or narrative, in which one event leads with a degree of coherence to another. Here a subject might be transformed, developed or varied, in a way that suggests that one thing is leading to another by logical, linear argument, much as a discourse in words might be carried out under normal circumstances. The other method is the opposite of this: a subject might be presented and then something completely unexpected takes places, as if a film had been cut and spliced with apparently unrelated actions or images. The connections between these actions or images will exist on a different level, one which is not linear but which relies on connections being made by other means.

Most traditional forms in music, literature, theatre and film, at least in Western culture, favour the former method, a narrative, linear presentation of ideas and material. The most disjointed, fragmentary techniques in film, for example, such as in the works of Man Ray, to name just one, conjure up parallels with dreams and other states of mind which are not those of what one might call ordinary, daily life.[14]

One method of creating art using this second method of presenting ideas is to consider the subjects not as needing to sit within a linear logic, to be presented as if part of a narrative, with A leading to B and then to C and so on, but to isolate the subjects and allow them to exist unconfined by time, as 'partial-statements' which can exist independently, no matter where they are placed within the statement as a whole. The connections are made not by moving from A to B to C, but by a global contemplation, much as when one observes a painting and can see elements relating together on many levels simultaneously, not simply in a single order. By separating parts or sections of a piece of music in this way, and presenting the subjects (in altered or unaltered form) for contemplation in a non-narrative context, we arrive at something called moment form, in which each individual moment of a composition has an independent identity, relating to others on a level that is not directional.

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[14] See for example *Le Retour à la raison* (1923), *Emak-Bakia* (1926) and *L'Étoile de mer* (1928–29).

Moment form is a term coined by Stockhausen, explained in detail in a chapter in Volume 1 of his collected writings *Texte zur Musik*.[15] Here he makes no mention of the spiritual and superstitious matters that were increasingly to obsess him. He starts from a consideration of the listener's subjective impression of duration while listening to music, and how a composition's reception might be influenced by the comfort or otherwise of the concert hall. (He mentions the first two performances of *Kontakte* (1958–60) in Cologne by way of example.) This practical problem leads him to observations about the difference between narrative and non-narrative music but only on the level of suggesting a refusal of conventional compositional practice in favour of the possibility, inspired by the then new media of radio and record player, of the listener choosing him/herself when to start and stop listening, without the restrictions of the orthodoxies of concert giving. He then goes on to deduce the possibility of endless, or at least very long, works of music, to which people could listen to parts at will. From this stems the non-narrative attention to information concentrated on the 'now', and not on a directional process which necessitates listening to the conclusion of an argument for sense to be made, or for the story or journey to be fulfilled or completed. He defines moments, part-moments and groups of moments, as having individual characteristics and a degree of autonomy, 'an independent identity, relating to others on a level which is not directional' (to quote my own text above).

Moment form encourages a concentration on the 'now', on the subject itself or subjects themselves within the Moment, as material that can stand alone as an individual painting does and can bear a relation to other Moments as paintings do to one another when shown in a sequence. (I assume here that the paintings are by the same artist and that they have things in common, but this need not necessarily be the case.) The point is that the paintings can be moved from one wall to another within the space, their sequence can be altered, without any loss of connection between them, or any loss of their own identity. In a narrative or directional form this is not the case, because some parts of the music are not subject but predicate, and only make sense in their context of informing the listener of the directional (developmental, transformational or transitional) process that is being communicated.

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[15] See Karlheinz Stockhausen, *Texte zur Musik* 1963–1984, vol. 1 (Cologne: DuMont, 1984) pp. 189–210.

I return to the exploration of different ways of presenting the statement: narrative, directional, transformational forms; and disjointed, non-directional forms in which connections are made on levels other than the linear. In the present thesis I present ways of synthesising these diverse possibilities into solutions that are enriched by taking the best elements of both, either within single works or across different works which each might highlight a different aspect.

Chapter III:
Narrative, directional v. Non-narrative, non-directional
2015-M

2015-M (2015)

In 2012 I composed *2012-L*, a work for 200 woodwind and brass players to be performed in the foyer of the Philharmonie in Luxembourg. The performers were school-aged students from various music schools from across the country of Luxembourg. These musicians were positioned in a long line from high on a ramp which forms the concert halls' foyer to low down near the entrance doors. The 200 musicians were divided into 23 groups, each with a leader or conductor. Coordination was by means of stopwatches, which were started together at minus 30 minutes, giving the performers time to be fully in position in time for an exact start at 0'00". The work lasts 30 minutes.

The music was composed in moment form. Each Moment is considered as an entity that is to some extent self-sufficient, in that it is not of necessity intelligible primarily as part of a development, transformation or transition. A Moment can appear and maybe reappear (perhaps altered) during the course of the work. Most of the Moments last exactly one minute, giving a pacing to the composition which I found stimulating and appropriate to the sound I had in mind.

The practical considerations of the number, positioning and capabilities of the performers, together with the given rehearsal time, were a prerequisite and dictated these elements of the work's construction. I had been considering moment form as a technique before the composition of *2012-L* (and unused sketches for a previous plan for the commission written in 2011). The earliest recent interest in moment form dates from a diary entry on 12 January 2011 in connection with a possible (as yet unwritten) work for large ensemble.[16] However, had I not been presented with this particular

[16] The very earliest investigation is a work entitled *Moments*, for solo piano, written in 1973. It is arguable that *Isolation* for solo violin or viola (1997) is an early example of the use of repeated sections considered as Moments; my use of repetition, which owes much to this composition, is discussed in Chapter IV.

challenge, I believe I would not have found solutions of precisely this kind and progressed to the further considerations that have stemmed from them, considerations which I now regard as a crucial element in my work.

The composition that followed *2012-L* was *2013-V* (2013), for solo violin and eleven instruments, which is in a sectional form similar to moment form and uses techniques of repetition and 'suspension'.[17] The distinction between moment form and other kinds of sectional form is not simple. I would regard sectional as implying that the progress from one section to the next has a certain directional intention, whereas moment form contains Moments (sections) which are equally valid wherever they appear in the course of the composition. *2013-V* falls in the exact midpoint between these two poles, indeed I regard the work as synthesising them.

In the following year I composed *2014-N*, for twenty musicians, which is a rewriting of *2012-L* for smaller forces, with revisions and alterations. The experience of writing *2012-L* and *2014-N* led directly to the procedures employed in the work now under discussion, *2015-M*, for 300 voices and eight trombones (2015). A general description of this work is as follows.

Three hundred singers are distributed in six choirs positioned throughout a very large building. In the case of the first performance, in the Basler Münster, they were positioned in front, behind, to the left and to the right of the audience; and above the audience in the cathedral's gallery, left and right. There is an ensemble of eight trombones, which are similarly placed in different parts of the building.

The (un)title simply indicates the year of composition, together with a code letter to distinguish it from other musical or visual works created in the same year. In the programme book I wrote:

> Three hundred or so young singers are asked to create many different kinds of sound in addition to singing. The work explores the mass effect which is made possible when such a large number of musicians is present. A parallel might be with phenomena in the natural world, a connection first brought systematically into music by Iannis Xenakis, in

[17] See Chapter VI.

> which the individual sounds form part of a global effect far more powerful than the mere sum of parts. An example is the phenomenon known as murmuration, which is created when thousands of birds flock together and create extraordinary moving dark clouds in the sky, often in the evening before they roost. These clouds change shape and make patterns which resemble a huge, ever changing organism. And the effect of flocks, herds or swarms of birds, mammals, fish or insects creating clouds either of a visual or an aural kind is found throughout the natural world.
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> The three hundred musicians not only sing but shout or call; they perform with wine glasses and bottles, and even use mobile telephones. The sound of rubbing one's finger on a wine glass to create a beautiful, ethereal sound is well known: here a hundred such sounds are heard together to create massive clouds. Similarly the flute-like sound made by blowing over the top of a bottle is magnified a hundred times to form different clouds.
>
> I live near two large schools in London and occasionally I have had the good fortune to hear a child or teenager sing a fragment of a favourite pop song. It is astonishing how accurate is the imitation of the inflections ('ornaments'). Music students are taught that musical notes are single entities: one plays or sings the note A, for example, for a certain duration, and that is that. This is indeed the case on an organ, and also on a piano (with the natural effect of diminuendo built in), but throughout the world it is very rarely the case in sung or played music, which is almost always full of what in Baroque times was called ornamentation, and each note is alive with small details and embellishments. This applies to almost all sung folk music, and often to instrumental melodic lines in both folk and classical traditions, from Indian *ragas* to Albanian village music (both particularly good examples). In contemporary Western popular music the same applies and I ask the singers here to choose a favourite example and play it on their smartphone for five seconds, imitating it with their voices. But this effect is multiplied by three hundred, so you will hear an extraordinary burst of sound, not quite identifiable. The singers then hold a note from the melody they have imitated, each note is different, and so huge chords of one or two hundred very subtly different notes are created.[18]

The work introduces the notion of 'Subjects'. This was examined in Chapter II. It will be remembered that the word subject refers to an idea, as in grammar. A 'Subject' has a shape and certain characteristics, chosen specifically for a particular composition. A Moment may consist of one or more Subjects.

2015-M opens with a Subject composed for the ensemble of eight trombones and the choirs, who sing normally. A chord is built up: G, Bb, C, E, Ab. Staccato, bullet-like attacks are fired through the cathedral by the trombones and gradually transform to held notes forming this chord. The choirs sustain the notes, in parallel with the trombones.[19]

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[18] Programme note, *Zeiträume Basel* Programme Book 2015, *Zeiträume* Basel, 2015.

[19] It will be observed that here there is a synthesis of *staccato* and *legato* and that within the Subject there is a directional transformation taking place.

At later points in the work this Subject is re-presented in retrograde inversion, inversion and retrograde forms (Moments 8, 9 and 22) and then again in inversion (Moment 30). I wrote at the time, 'Now that I have a more visually influenced approach, as opposed to directional or literary, retrograde forms make logical sense. Before I found the idea of playing the music backwards inconsistent with the forward moving transformational approach. Now I think of receiving music in similar ways to the observation of a painting: information is placed in front of the observer and it is not dependent on a narrative interpretation.'[20]

I stated that a Moment may consist of one or more Subjects. In the present case the two notions are blurred together because the Subject in question lasts for the entire duration of one Moment (one minute). The Subject can, however, have other material superimposed on it, and this is the case in Moment 1 (Page 1), which combines the Subject in its Original form (S[O]) with elements from the following Moment (M1). Perhaps confusingly, this is labelled M1, despite first appearing in minute 2, but the Moments dealing mainly with material for the voices are given the designation M1, M2, etc., starting from this point.

The material of M1 consists of the voices shouting the phoneme 'hey' and clapping. M2 is characterised by the use of wine glasses, rubbed with a finger, and the sound of breath. M3 employs the sound of flute-like blowing into wine bottles, the phoneme 'sh', and again the use of wine glasses. Each Moment has particular sound qualities. The trombones parallel this process with other music, their Moments being superimposed onto those of the voices, using a different set of repetitions and alterations. For, as will be seen from the following diagram, the Moments appear more than once, with or without various kinds of alteration.

Each Moment numbered in the upper line corresponds to one minute. In the lower line, S[O] means Subject [Original]; M means Moment; S[RI] means Subject [Retrograde Inversion]; and so on. A lower case letter after the letter M denotes which variant of the Moment this is, so M1a is the first form of Moment 1, M1b is a varied version, M1c another varied version. A further number, such as in M5a2, means in this case that this is the second appearance of M5a (although possibly with some minor alterations). The

[20] Email to Arnold Whittall, 29 May 2015.

trombones' material is not indicated in this plan but its deployment operates according to the same principle.

1	2	3	4	5	6
S[O] + M1c	M1a	M2	M3a	M4a	M4b
7	8	9	10	11	12
M5a + M6a	S[RI]	S[I]	M5a2 + M6a2	M7	M3b
13	14	15	16	17	18
M5b	M8a	M1b	M3c	M5b	M72
19	20	21	22	23	24
M8b	M22	M5a2 + M6b2	S[R]	M8a2	M73
25	26	27	28	29	30
M74	M3c2	M3c3	M5b2	M5b3	S[I]2

It will be seen that there is a total of eight Moments concerning vocal material, each occurring in various forms two, three or four times, together with a ninth, labelled S, which occurs five times in its different permutations.

In Chapter II I referred to Xenakis's interest in mass sounds and the use of stochastic processes in order to obtain the effect required. With or without the mathematical calculations, the aim is a random collection of sounds within a prescribed texture. 'The more numerous the phenomena the more they tend towards a determinate end', to quote the Law of Large Numbers, may apply in this context to the composition of specific sound masses, the quality of which becomes more predictable the larger the number of performers involved.[21] In *2015-M* three hundred singers are involved. The sounds of wine glasses, wine bottles, or sung chords resulting from holding notes arrived at by the means described above, are easier to imagine, the greater the number of participants. Were there three performers making sounds, a three-note chord would sound; when one

[21] See Xenakis *op. cit*. page 206.

hundred perform, a one-hundred-note chord sounds and a degree of predictability appears. Chords of one hundred notes (with the same timbre) will sound more similar to one another than chords of three notes, such is our human perception, since it is less easy to identify the characteristics of one hundred different parts than those of three.

In this case, to compose a chord of one hundred notes by any means other than general specifications mixed with elements of randomness would have no benefit, for the result would sound to us much the same. Aside from that, there are practical problems with assembling three hundred musicians and finding time to work on precise details (similar to the practical considerations which dictated aspects of *2012-L*).

So something similar to Xenakis's use of stochastic techniques is employed in this work in order to produce the resulting sounds at one end of a scale of types. At the other end, sounds are precisely written in the conventional manner; they are precisely notated. Diverse methods are thus synthesised in this work and can be described as ranging from one extreme – single notes and chords, fully notated – to an opposite extreme – mass sound effects, notated as verbal instructions. In between there is a scale of categories containing varying degrees of synthesis of these extremes: the use of wine glasses or bottles whereby the actual pitches are not specified but will be within a limited range determined by the objects' physical nature; the use of chords sung as a result of notes arrived at randomly from interrupted melodies played on mobile phones; shouts, calls and the sound of clapping, which are to be placed at random within bars in the score. Although I regard this work as being an example of one strand in my work (it clearly uses very different techniques to those that I would use in a complex string quartet), within it this example of a synthesis of diverse methods is presented.

I stand by my earlier statement about the richness of complex structures made of interrelationships, wherein I drew a parallel with a forest. This would indeed have given a more detailed and interesting result with more varied textures at the micro-level. But to compose in this way would have been impractical, given the abilities of the performers and the time available for rehearsal. The only way to do so would have been to prepare and put together individual parts electronically but this would have removed the live element of the work and resulted in a quite different composition.

Chapter IV
Repetition v. Non-repetition

As well as allowing subjects to stand independently, unconnected to any directional process, moment form can encourage a new approach to repetition, as has been observed in *2015-M*. It was argued, and became the prevalent view in the latter part of the twentieth century, that in avant-garde music repetition was redundant, obsolete and should be avoided. I discussed the illogicality of this in an essay in 2006.[22]

Repetition can of course be used in directional music, but it often disrupts the logical argument being presented and is on this level inconsistent. This inconsistency is normally not troubling and comes across as the reinforcement of the argument, but it remains nonetheless. The most common example is in sonata form, in which the exposition is usually performed twice before the commencement of the development. Assuming that the point of the exposition is to present music to be developed (and thus we distinguish this form from the more trivial suite or from a collection of unrelated pieces) the repetition halts the argument temporarily. In moment form there is no such inconsistency. Since each Moment stands isolated within the form of the complete work, there is no logical reason why it should not appear more than once (either altered or otherwise). This does not halt or interrupt any process or directional argument.

My own interest in repetition has taken many forms in different works. I eschewed it in some earlier circumstances, but by no means always. In recent compositions in moment form it appears in various ways in each work, as in *2015-M* described above, and it has appeared in a number of earlier compositions in ways that are pivotal, as I shall describe below.

[22] James Clarke, 'Essay 2006: On my work, on teaching, on New Complexity, on Minimalism', available online at <www.jamesclarke.org/06essay.2006.html> (last accessed: 1 June 2016). This is a survey of some of my views on my music and its development at the time of writing, together with observations about teaching, complexity and minimalism.

On the use of Repetition

It is well known in musical circles that Pierre Boulez spent his life revising and attempting to improve many of his works, seemingly rarely to be completely satisfied that the result was fully successful.[23] Other composers complete a work and move on, leaving behind any slight feelings of dissatisfaction and considering it more important (or more practical) to go on to another, new attempt at expression. Jonathan Harvey said that he could never revise a piece, preferring to 'leave it as it is', and yet I had the impression that he partially wished that he could.[24] This is because by starting with an already developed statement the possibilities for developing a more profound and complex vision will surely be greater; much of the groundwork has been done and there is more mental energy for refining and making more profound the statement.

In the visual arts the situation is somewhat different. Painters usually produce more works than composers. It is not unusual to talk of a couple of thousand paintings being completed in a lifetime, whereas a composer might write a couple of hundred works (and many, considerably fewer). A painting is quicker to produce; the action is faster. This was not always the case: in the Baroque and early Classical periods a vast number of cantatas, sonatas and (compared to those of later) modest symphonies could be composed rapidly. Equally, some great paintings, let alone other visual works (most of all works of architecture) might take years to complete. But today, in the area of music that concerns us, work on a composition is detailed and laborious, and slower than work on most paintings.

The result of this is that a painter will often explore ideas over the course of a very large series of works, whereas a composer might restrict the exploration and its conclusions to one (or, in the case of so-called cycles, half a dozen).[25] A leap forward to the

[23] Compare for example the different published versions of works such as *Pli selon pli* (1957–62, revised in 1983 and again in 1989), *Cummings ist der Dichter* (1970, revised in 1986), *Répons* (1980, revised and expanded in 1982 and again in 1984) and especially *...explosante-fixe...*, which went through an extraordinary set of metamorphoses.
[24] Personal conversation, early 1980s.
[25] Composers such as Ferneyhough have explored related ideas in cycles such as the *Time and Motion Studies* (1971–77) or *Carceri d'Invenzione* (1982–86), but even here the individual works are very different one from another.

following explorations and conclusions will manifest itself in the next work and the two compositions will share less in common than two paintings, painted in tandem.

Certain elements will remain consistent throughout the lifetime of the composer or artist, or at least part of it. It is this that we call his or her style. Consistency of style means having matters in common. One hundred per cent of matters in common would lead to a repetition of the same work. In the case of Mark Rothko (cited earlier and to name just one of many) these 'matters in common' remain prominent from work to work during his mature period, so that one can instantly recognise the characteristics that make a work 'a Rothko' – rectangular shapes with wisp-like borders, a distinct layering of opaque and translucent colour, and other characteristics that are well known.

In music the 'surface', or outward appearance of the statement, is often more different from work to work. Stockhausen was proud of the fact that each work he created had a distinctly different manifestation from every other one, sounded 'unique', and yet one can usually recognise aspects that lead us to suspect that it was Stockhausen who composed it, even if these aspects are more an attitude of extraordinary belligerence, defiance and daring that comes across, often in unprecedented approaches to sound itself.

Ligeti, on the other hand, was more like a visual artist in his approach during the 1960s. His *Cello Concerto* (1966) and some other works, pursued a specific idea and investigated its potential, explored it, reused it, until he felt that he had exhausted its possibilities, in *several* compositions, not a single one. One such idea was to start on a single note, have it split and widen to a tritone, widen further to octaves, presenting sound as continuous colour. Berio provides another example of this kind of re-investigation, especially in his works *Chemins II*, *IIb*, *IIc* and *III* (1967, 1969, 1972 and 1968 respectively). In this they were echoing Rothko's approach: 'If a thing is worth doing once, it is worth doing over and over again – exploring it, probing it, demanding by its repetition that the public look at it.'[26]

[26] Achim Borchardt-Hume, ed., *Rothko: The Late Series* (London: Tate, 2008), p. 19.

My own approach is somewhere between the two but, overall, closer to Stockhausen's. More often than not, I start from scratch and attempt to invent something quite new and different from (and perhaps in opposition to) that which went before. But when a idea occurs that I feel is important, is worthy of further investigation, or which obsesses me for a while, two or more related works tend to result, exploring the new idea in different ways.

The second approach, pursued by many visual artists, may be thought of as the exploration of variations on specific ideas. If a variation is defined as a situation in which most elements remain constant while a few alter, in the case of such artists it is the subtle alteration of a few characteristics within an overall consistency. The smaller the proportion of altered elements, the more the tendency is to repetition; the greater the proportion, the further the object comes to uniqueness.

We may use the word repetition even if a small number of details are very slightly different. The overall effect is of a repeat. It is this liberal definition that should be born in mind in my following remarks.

In Abstract Expressionist art, a myth arose that the act of painting was spontaneous and improvised; people likened it to jazz, by which they meant free improvisation within certain formulae, rather than a pre-considered, crafted composition. Whereas this might sometimes have been the case (and in performance art by those such as Georges Mathieu and others it certainly was),[27] in the more serious art grouped under this designation, it most definitely was not. Jackson Pollock maintained that he had complete control over the paint while he used techniques such as pouring.[28] Barnett Newman calculated with mathematical precision the placement of his 'zips' (vertical,

[27] Georges Mathieu, 1921-2012. 'On several highly publicized occasions, Mathieu introduced a performative dimension to his painting, executing large canvases before audiences while dressed in costume. [...] This merging of painting and performance anticipated the work of Yves Klein and other artists of the late 1950s and 1960s', available online at <http://www.guggenheim.org/new-york/collections/collection-online/artists/bios/852/Georges%20Mathieu> (last accessed 5 October 2015).

[28] 'I can control the flow of paint; there is no accident.' Ines Janet Engelmann, *Jackson Pollock and Lee Krasner* (Munich: Prestel, 2007), p. 54.

usually white, lines which appear to divide the canvas).[29] Each work by such artists remained different, however; an act of variation rather than repetition.

But the borderline is a thin one. Rothko's 'demanding by its repetition that the public look at it' led to a long series of closely related works, the repetitive nature of which is a key feature. This is quite different from the minimalism within pop art that was quickly to follow. While the repeating elements remained very consistent it was the variations that distinguished the artistic content and its uniqueness. It is for this reason that the paintings remain serious works of art rather than artifacts on a production line.

Also grouped under the epithet of Abstract Expressionist was the painter Clyfford Still and most people consider him to have produced works which vary one from another in the same way as here mentioned, if not more so. There is far less repetition of shape than is the case in Rothko or Newman but many distinctive elements are consistently explored throughout his mature work. So it was with some astonishment that it was discovered that he had made what he called 'replicas', works which existed in two or three versions that were so similar to each other they were almost literal repeats. The spontaneous, instinctive or uncontrolled certainly had no place here; these were subtly altered near-copies, meticulously executed. Many people's perception of what Abstract Expressionism meant had to be revised.

He wrote: 'Making additional versions is an act I consider necessary when I believe the importance of the idea or break-through merits survival on more than one stretch of canvas.'[30] (Fig. 1)

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[29] 'Newman generally did not discuss the internal proportions of his paintings, but in most cases the disposition of the vertical bands reveals clearly measured intervals. [...] Edges of zips usually occur at points that mark a fractional unit within the composition, and distances between zips also are often proportionally calibrated.' Temkin, Ann, ed., *Barnett Newman* (Philadelphia, PA: Philadelphia Museum of Art, 2002), p. 49.

[30] David Anfam, *Repeat/Recreate* (Denver, CO: Clyfford Still Museum Research Center, 2015), p. 14.

Fig. 1 Two paintings in the exhibition *Repeat/Recreate*, Clyfford Still Museum, 2015

Throughout my own work (and starting long before I was aware of these parallels) I have pursued a similar pathway, sometimes regarding the statement of an idea or discovery as important enough to re-explore and to develop further. There are examples dating back to some of my earliest compositions in the 1970s, and I have already mentioned the connection between *2012-L* and *2014-N* in the previous chapter.

What is the act of beginning a composition, or any work of art? The blank page, the blank canvas: where, many ask, does the initial idea come from? A single note, perhaps. Harrison Birtwistle spent several years during which he began each composition on the note E, simply because it was 'as good a place to start as any other'.[31] Of course an idea, in the form of a sound, a motif, a melody or some harmonic progressions (that which I described as a subject in Chapter II), or a general idea of shape or form or sound quality, might spark the imagination and the work begins. Some composers start with the music of others: variations on a theme by x or y can be found frequently throughout the musical canon. Or one can start with one's own existing work, and this is, at least sometimes, a technique that I have employed and continue to employ.[32]

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[31] Jonathan Cross, *Harrison Birtwistle: Man, Mind, Music* (London: Faber, 1999), p. 97.

[32] I am far from alone in this. As Michael Spencer has written '[James] Dillon has stated that he often takes a moment from an earlier work as the starting point.' Michael Spencer (2014) James Dillon: String Quartets as a Complex Causal Network, Contemporary Music Review, 33:3, 244-265. However, as will be seen, and as in the example of Berio already given, I sometimes take far more material than is implied by this.

When I told him that I was thinking of revising one of my works, Jonathan Harvey even told me that he was envious, seeing as, as mentioned above, he felt unable to do this. But revising implies that one is dissatisfied with a work and wishes to improve it. In the case such as that of a 'replica' by Clyfford Still the opposite is the case: one is all too satisfied with the success of the development and one wishes to repeat it (in his case partly for practical reasons, given the danger of a canvas being destroyed). To take an earlier composition, or a fragment of one, as a starting point is not to revise it but to explore further the ideas it might generate. Completely new possibilities emerge as one considers ways of expanding, contracting, transforming, contradicting, distorting, extending, amplifying and revitalizing elements of the material. A new work results from this process and it may differ markedly from its original inspiration, so much so, in my own case, that unless I specifically show the connections to an observant listener or score reader, these connections will not be apparent. In this case the work is not a replica but something quite new. However there are inevitably areas in between where the connections will be more clear. This, on a grand, perhaps one might say global scale, is an extension, or expansion, of the very process that often takes place within a single piece of music.

There are times when no connection with a previous work occurs to me. Such is the case in the use of material in *2015-M*, although the form and structure follow on directly from *2012-L* and its companion piece *2014-N*. There are other times when a work is directly based on a previous one, almost as in the case of a palimpsest. And there are many stages in between.

String Quartet No.2 (2009) closely follows the material and structure of two previous compositions. However, it was during the course of composing it that I introduced a new element, which seemed to suggest itself as being appropriate at a certain point, and it is this element that went on to have an enormous impact on subsequent compositions and my thoughts about the concept of complexity in composition. It was in this work that the first exploration of 'micro-complexity' was made, several chords being held for unprecedentedly (in my work) lengths of time. Because I was already on a higher level, with so many aspects of the composition already suggested by its being modelled on previous decisions, I believe I gained a freedom of thought that might not have been so easy to reach had every decision had to start from zero.

Isolation, a work for violin or viola, written in 1997, took its starting point from an instrumental part from another work, which, on my looking at it, suggested new and I believe extremely fruitful possibilities. The part happened to be five pages long in the copy I had made (by hand). At some stage during the composition, during which I had 'written over' the existing material, almost as if both translating it into another language and adding new material over the top of it,[33] I suddenly decided to play the pages thus: pages 1, 2, 3, 4, 5, 2, 4, 3, 5. It was a 'flash of inspiration' such as one reads about in cheap novels, but such events do exist and are in reality extremely exciting. Such use of repetition was most unusual in the kind of complex style I employed. Indeed at the time I could not think of a precedent (and I still cannot). I had previously repeated one page verbatim in an orchestral piece written some years earlier,[34] but here the whole structure was affected and this was new.

In *String Quartet No.1* (2003), which contains dance-like rhythmic patterns and a rotation of material which appears to return, the first section, of several pages, literally does return: it is repeated exactly. 'You don't normally get repetition in this type of music', Irvine Arditti observed to me, and this is certainly true.[35] I pointed to the inconsistency of the near obsession with avoiding repetition in complex avant-garde music in the aforementioned essay in 2006: 'it has for a long time struck me as a paradox that we talked of a music with little or no direct repetition and yet required – no, insisted – that the music will be best understood by repeated listening.'[36]

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[33] 'A poor translator returns a sentence to the 'thought' that sentence is supposed to 'express'; then the translator 'expresses' that 'thought' in words in his own language. In my translations I do not thrust sentences into some mid-linguistic limbo. I write Finnish language sentences *over* them, so they disappear.' ('Huono kääntäjä palauttaa lauseen siksi 'ajatukseksi', jonka lause muka 'ilmaisee'; sitten kääntäjä 'ilmaisee' oman kielensä sanoin tämän 'ajatuksen'. Minä en kääntäessäni sysää lauseita mihinkään kieltenväliseen limbuksee, vaan kirjoitan suomenkielisiä lauseita niiten päälle, niin että ne häviävät.'), Pentti Saarikoski, *Asiaa tai ei* [Something or nothing] (Keuruu: Otava, 1980), p. 159, trans. James Clarke.

[34] Sciarrino's early (and many later) works use a method of repeating material on a micro-level (eg. *Rondo* (1972) and *Variazioni* (1974)). One can find small scale repeating sections in works by Lachenmann (eg. *Kontrakadenz* (1970-71)) and Spahlinger (eg. *Morendo* (1975), *Akt, eine treppe herabsteigend* (1997-98), and others). These examples are relevant because they stand out as exceptional within an otherwise non-repetitious style. They are not, as in Feldman or Aldo Clementi, integral to the entire language.

[35] Personal conversation.

[36] Clarke, *op. cit.*

The rewriting of a composition – reusing, revising or replicating elements from one composition to another – carries the question of repetition to a new level. These elements recur from work to work in the same way as elements recur within a single work. One gains a heightened awareness of the connections already within a composition and this awareness may be employed to add new layers of meaning and complexity to a subsequent composition.

Any advantage of using repetition in this new context is purely a question of personal preference, of whether the composer feels that it plays a relevant role within the composition or between compositions. (This process of decision-making applies to the choice of every other aspect of a composition too.) For me, it hints at notions of memory, part-memory, recall, return, to what extent we are sure that we have experienced something before, and whether or not we have. In *2012-L* one Moment is altered slightly in its third occurrence, and in so slight a way that I would defy the listener to be completely sure of the difference, even after a few hearings. In *2015-M* similar play is made on the idea that we might not be completely sure if something is being restated or is slightly different; our memory is questioned and thereby our security, our certainty. We are left to question, to remove prejudice, to become open-minded, and this has political implications. The more open or broad-minded we become, the more our species is likely to survive peacefully; conversely, the less broad-minded, the less likely.

The question of repetition has a meaning within literature which is quite different from its meaning in music. In music we are used to hearing fragments, themes, melodies, ideas or whole sections repeated and accept the use of such a procedure and understand it in its musical context. In literature the matter is different. It is unnatural for a conversation to reappear in a play, repeated word for word. This is clearly not something that happens in every day life and when it happens in the theatre it is surreal. The effect can be startling and arresting, leading the audience to a detachment from the action, its narrative directional quality, and 'normality'. It is something of this that I attempt to echo in my use of repetition in works in moment form.

In the context of a recent piano piece, *Untitled No.7* (2014), I wrote that it has

> to do with the way our minds work when recalling, dreaming about and processing information, the way in which a thought or fragment of thought returns, often altered. This is influenced not by musical forms but rather by the surreal effect sometimes used in theatre, in which repetition is employed in an unnatural way. The most famous example is the exchange in *Waiting for Godot* ("Let's go." "We can't." Why not?" "We're waiting for Godot." "Ah!") which returns verbatim several times. This heightening of reality is literally surreal. In music, when material is placed, and re-placed, in different parts of the structure, one finds symmetries and echoes which are not part of a narrative, directional structure, but relate more to moment form, and the focus on the present. In this my work in the visual arts has been an influence, because I approach the musical form of a piece much as I would a large canvas, judging where statements and shadows should be placed and should balance each other.[37]

The example from Beckett's *Waiting for Godot* is possibly the most famous example of this technique in modern theatre but there are others which have been equally important for me. *Playback*, a radio play by Gabriel Josipovici, uses fragmented repetition to intensify the portrayal of a character's mental breakdown. Václav Havel's plays *Audience* and *Private View* use repetition to disrupt the narrative discourse, circling back to refrains that heighten tension. Further examples, albeit in a slightly different manner for they have more to do with an insistent and relentless repetitive style intermingled with literal repetition, include works by Thomas Bernhard, Harold Pinter and Severo Sarduy, as well, of course, as other works by Beckett himself.

If one strand may be said to be narrative, transformational or directional, the other attempts the opposite, a focus on a present moment or on a disrupted, disjointed and non-directional compositional approach. Repetition in its various guises and usages can aid in distorting, intensifying or heightening this distinction.

[37] Email to Harry Vogt, 24 October 2014.

Chapter V

Untitled No.8

I have defined my concepts of subject and statement, discussed the distinction between narrative-directional form and moment form, and explored the use of repetition and the reinvestigation of material. I now return to my opening remarks in which I referred to the introduction of two techniques which are new types of variation that I call 'suspension', and 'erasure'. I shall also introduce a third type, named 'octave transposition'; a harmonic technique that uses causal reasoning to create new possibilities, which I call 'linear logic'; and a method for generating pitch material using different magnifications of scales. This last topic will be discussed in Chapter VII, but the use of pitch scales in general is fundamental to the next work to be presented here, *Untitled No.8*, for piano and orchestra (2016), and is a central preoccupation in my work. I now demonstrate the techniques in an analysis of the work, focusing in detail on an examination of the pitches used and their relevance to musical scales.

The first idea for this work was that some of the piano's notes would be tuned in quartertones, so as to give a special character to the sound. Starting from the note A4 I decided to add E♭, a tritone below, and B♭, a fourth below that. This gives intervals of six and then five semitones. By adding the note E a perfect fifth above the A (an interval of seven semitones), and G♭, four semitones below the B♭, a gradually expanding numerical sequence becomes evident – 4, 5, 6, 7.

I decided to retune eight notes altogether (a limit that seemed practical and not over-taxing for the piano tuner) and decided to choose a symmetrical chord: C G D♭ G♭ B♭ E♭ A E. Symmetry plays an important role in the work on many levels. The number of semitones separating these notes forms the pattern 7, 6, 5, 4, 5, 6, 7. The notes are considered as a scale and after retuning them a quartertone lower (Cd, Gd, Ddb, Gdb, Bdb, Edb, Ad, Ed), they are labelled Scale A.[38] (Fig. 2)

[38] In this text accidentals are designated as follows: d = quartertone flat, db = three-quartertone flat.

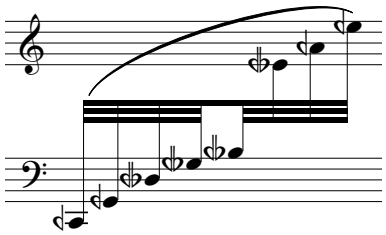

Fig. 2 *Scale A. Bar 1, beat 2, piano part.*

In order to highlight the new tuning, the scale is played twice, in its original form and *before that* in a transposition a 3/4-tone higher. (Fig. 3)

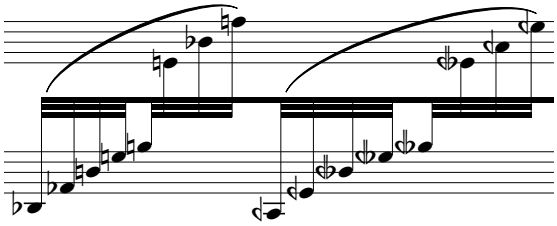

Fig. 3 *Scale A, played twice. Bar 1, beats 1 and 2, piano part.*

The expanding nature of this sequence led me to construct two further scales based on the same idea. The first, labelled Scale B 1, is made up of intervals expanding from one to eleven semitones, descending from the F which is the top note of Scale A in its transposition a 3/4-tone higher. The notes of Scale B 1 are then 'filtered' through Scale A. This means that those notes that are tuned a quartertone down on the piano are necessarily altered; they cannot be played any other way on the newly retuned piano. Thus in Scale B 1, reading from the top, the second note, E, is altered to Ed, and the eighth note, Db, is altered to Ddb. The seventh note, which should be A♭, is here altered to Gdb – a freely decided error in the system, in order to give another quartertone and to avoid there being two A♭s close together. (Fig. 4)

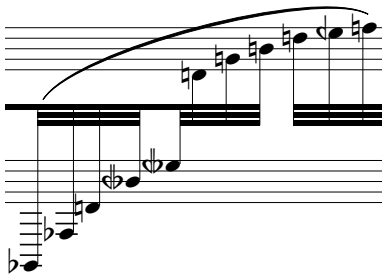

Fig. 4 *Scale B 1. Bar 1, beats 3-4, piano part.*

The second new scale, Scale B 2, is an inversion of Scale B 1: the intervals expand from one to eleven as they ascend, starting from B♭, which is the lowest note of Scale B 1. Again this is filtered through Scale A, resulting in two quartertones in the new scale. (The repeated final F in this example hints at oscillating figures to come.) (Fig. 5)

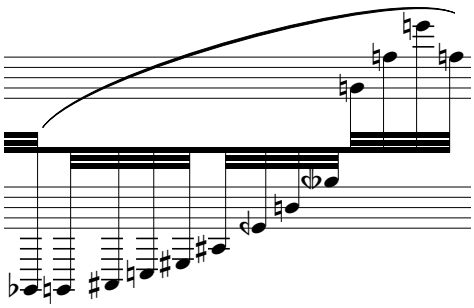

Fig. 5 *Scale B 2. Bar 1, beats 4-5, piano part.*

We may summarise the scales as follows:

Scale A Sequence of intervals in semitones: 7 6 5 4 5 6 7
Notes: Cd, Gd, Ddb, Gdb, Bdb, Edb, Ad, Ed

Scale B 1 Sequence of intervals in semitones: 10 9 8 7 6 5 4 3 2 1
Notes: B♭, A♭, F, D♭, A♭, D, G, B, D, E, F (the second A♭ sometimes altered to Gdb; three notes a quartertone flat when filtered through Scale A)

Scale B 2 Sequence of intervals in semitones: 1 2 3 4 5 6 7 8 9 10 11

Notes: Bb, B, C#, E, G#, C#, G, D, B♭, G, F, E (two notes a quartertone flat when filtered through Scale A)

This material is presented together in bar 1 of the piano part. (Fig. 6)

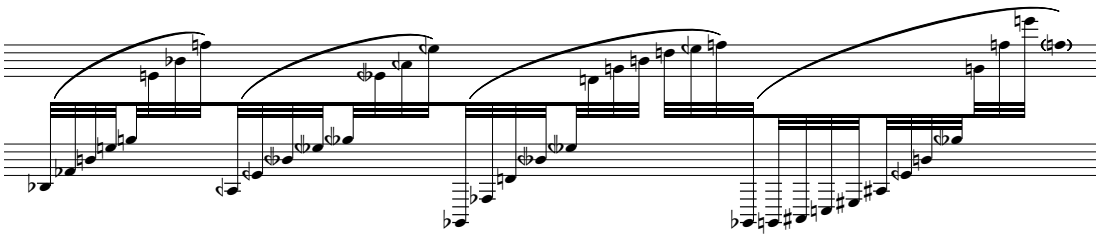

Fig. 6 *Scale A (3/4 tone higher), Scale A (original), Scale B 1, Scale B 2. Bar 1, piano part.*

The piano material in bars 1–14 is composed of seven sets of scales and oscillating notes:

1. Presentation of the scales as described above. The last note (F) hints at oscillation to come.
2. Oscillation (from last notes of Scale B 2), Scale B 2 (downwards), Scale B 1 (down).
3. Scale B 2 (upwards), Scale B 1 (part) + Scales B 1 and 2 combined (down), Scale B 1 (four notes) (up) into oscillation.
4. Oscillation (Scale B 2), Scale B 2 (down), Scale B 1 (up) into oscillation (Scale B 1).
5. Oscillation (Scale B 2), Scale B 2 (down).
6. Oscillation (fragment of Scale B 2).
7. Scales A, B 1 and B 2 combined.

A second section follows (bars 15–22) which is made up of six iterations of a rising and falling scalic passage, constructed as follows. A twelve-note chord was constructed (but has so far not been used as a chord in the work). It is then filtered through Scale A, resulting in one note being retuned a quartertone flat. (Fig. 7)

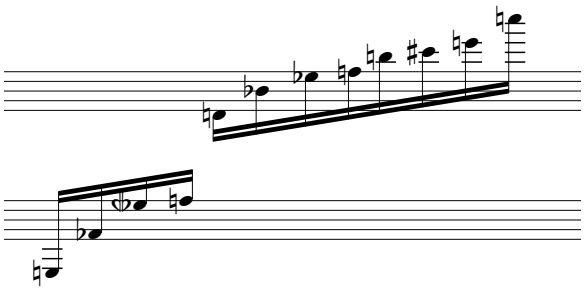

Fig. 7 *12-note Chord filtered through Scale A.*

An ascending, scale-like pattern is created from interpolating notes from Scale A, and some others, into the 12-note Chord. (Fig. 8)

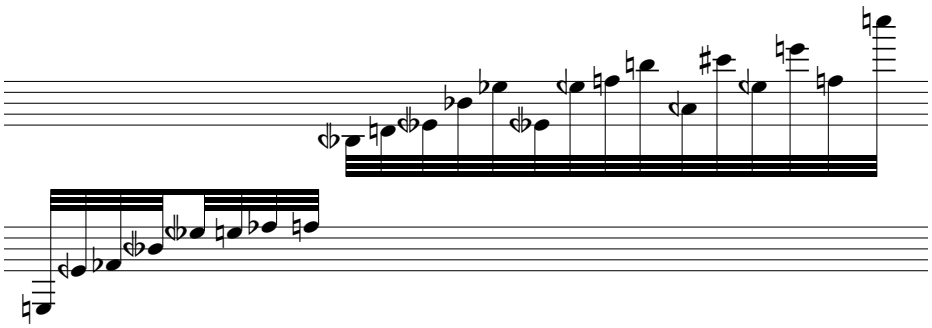

Fig. 8 *12-note Chord filtered through Scale A with notes from Scale A added.*

This is then played backwards (with one note altered), descending. The resulting ascending/descending pattern is played six times.

After a hiatus, this pattern is repeated, now descending/ascending (bars 23–30). The symmetry mentioned earlier can be clearly observed in the ascending (original) versus descending (retrograde) directions, and in the fact that the six iterations are played first ascending/descending, and then again descending/ascending.

A frequent technique used in my work is variation by 'octave transposition'. Since all notes contain harmonics at octaves (among other intervals), I see this as a logical extension (and amplification) of elements that are already present in the original sounds. Individual pitches are transposed up or down one or more octaves in a manner which disrupts completely the nature of the original passage and leads to something new. This can be seen clearly by comparing Fig. 9 and Fig. 10.

In the third section that now follows the piano plays music based on the above material in Fig. 8, taking first the 'right hand', then 'left hand' parts. (Fig. 9)

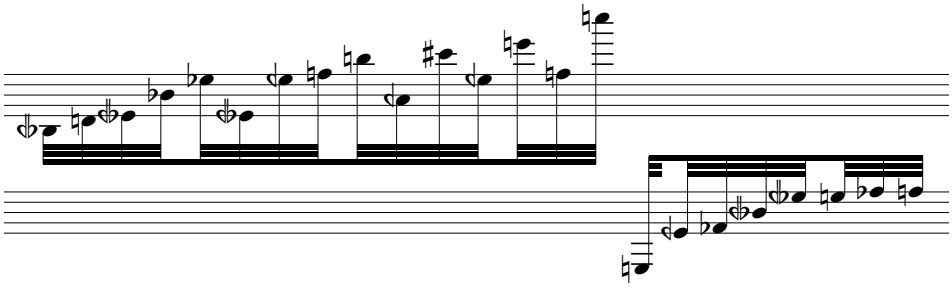

Fig. 9 *Music based on the above material, taking first the 'right hand', then 'left hand' parts.*

After the material has been subjected to 'octave transposition', the result is the following pattern, which is played five times (bars 35–39). (Fig. 10)

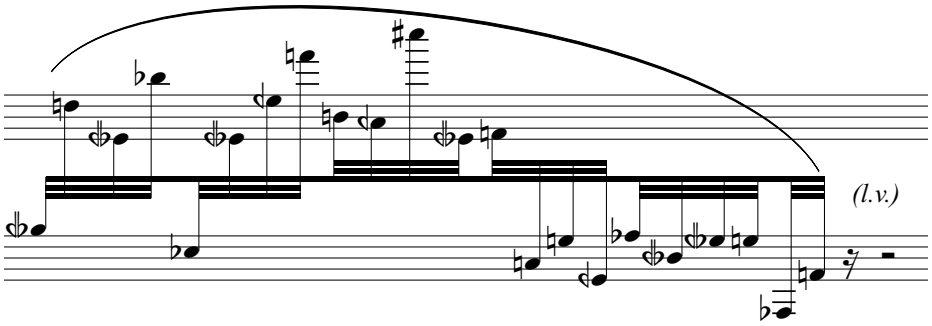

Fig. 10 *Bar 35*

After a hiatus, this pattern is then played in retrograde four times (bars 45–48).

It will be noted that the first section presented seven musical 'events', the second section presented the ascending/descending pattern six times (twice), the third section presents

the above pattern five times and then its retrograde occurs four times.[39] The numerical sequence, 7, 6, 5, 4, relates to that of the composition of the scales.

Regarding the use of scales in my music in general, as with my consideration, and justification, of the use of 'octave transposition' as a logical method of variation, I consider the use of scales as being connected with the very substance of our musical language. All Western music makes use of scales, be they modal, tonal, chromatic or quartertone. I do not simply accept this fact, I integrate it into the logic of my own work.

Scales *sieve* those notes that are to be part of the musical discourse from those that are not.[40] Since 1977 I have employed scales of various kinds as fundamental elements in the musical structure of most works. The first explorations resulted in 'irregular' scales in which the intervals were irregularly spaced according to various logical calculations. Later I became increasingly interested in scales of equal divisions. The chromatic and quartertone scales are already fundamental to the musical method using equal temperament (although, like Horaţiu Rădulescu and others, one might employ a completely different tuning system) and it seemed logical to me to explore other scales of equal divisions as well. So as well as dividing the octave into 24 and 12 notes, I then continued the idea by using scales of 8, 4 and 2 notes to the octave. Thus the octave was divided into quartertones (24 notes per octave), semitones (12 notes), 3/4-tones (8 notes), minor thirds (4 notes) and tritones (2 notes), these intervals logically integrated into the musical argument. In further explorations I used major thirds (3 notes per octave) as fundamental to a musical work.[41] Non-octave recycling scales, including one consisting entirely of major sevenths, were also explored.[42] *Untitled No.8* is an example of the use of expanding sequences of numbers and is therefore a new development in an investigation lasting forty years.[43]

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[39] The word 'Event' will later take on a more specific meaning, as explained on page 52.
[40] Xenakis *op.cit.*, p. 268.
[41] Clarke, *2003-Q* (2003).
[42] Clarke, *Pascal, pensée 206* (1993).
[43] Although there are precursors: *Försvinna* (1984) makes use of a scale using the Fibonacci series, and *Untitled No.2* (2006-2008) uses a scale related to the overtone series.

Another new development in this work is its use of rhythm. My work has been characterised by complex rhythms manifesting a constant change, ebb and flow of pulse, often multi-layered and polyphonic. The use of constant regular rhythm is uncommon. The final passage of *String Quartet No.3* (2014) (and, prior to that, aspects of *String Quartet No.1*) signalled a new use of regular pulse and this has come to fruition in the first part of *Untitled No.8*.[44] As a result, the scalic passages sound far more like scales in the traditional sense than note-conglomerations, which is mostly how they appear in other works.

The next section of *Untitled No.8* distributes notes across the range of the piano in an approach opposite to the rising and falling of a scale. The beginning of bar 54 is derived from Scale B 2, transposed up a 3/4-tone (note the parallel with the initial bar of the work) to start on the lowest note of Scale A. (Fig. 11)

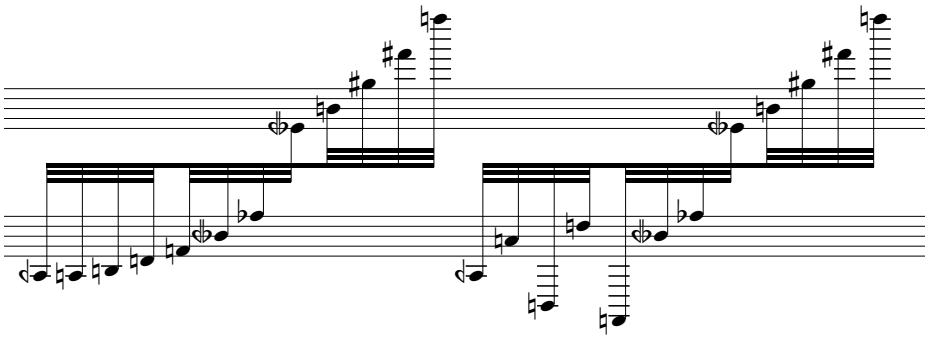

Fig. 11 *Scale B 2 transposed up to start on the lowest note of Scale A, followed by its partial transformation by 'octave transposition'.*

The notes are subjected to variation by 'octave transposition' and to reordering. The resulting fragment is then repeated, subjected to the process I call 'erasure'. This technique was first used in a work for percussion called *Acid* (1998), the last page of which shows a line played several times, each time with a number of notes erased.[45] In the following example from *Untitled No.8*, it can be clearly seen in the second bar, bar 55, which notes of the first bar, bar 54, remain and which have been omitted. The second part of bar 54 itself also shows this technique in use. (Fig. 12)

[44] See Appendix 2.
[45] See Footnote 13 and Appendix 3, *Clarke Acid p. 8.*

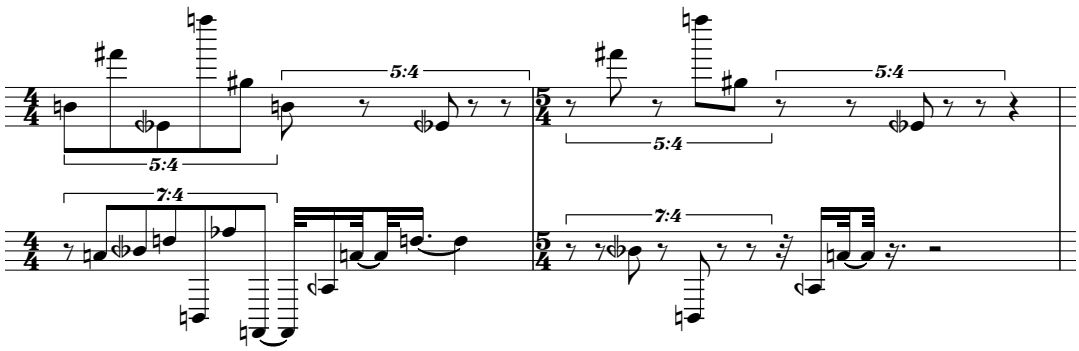

Fig. 12 *Bars 54–55*

The section continues using the same method, with scalic passages interpolated, in order to highlight the contrast between the widely-spaced distribution of notes and the scalic, running passages of previous sections. Bar 56 begins with a chromatic scale filtered through Scale A (resulting in two notes a quartertone flat). The Subject presented in bar 54, which in that bar was at MM=40, is now repeated, faster, at MM=60, with the second beat mostly erased. It is then played again, treated to 'erasure', leaving only five notes. (Fig. 13)

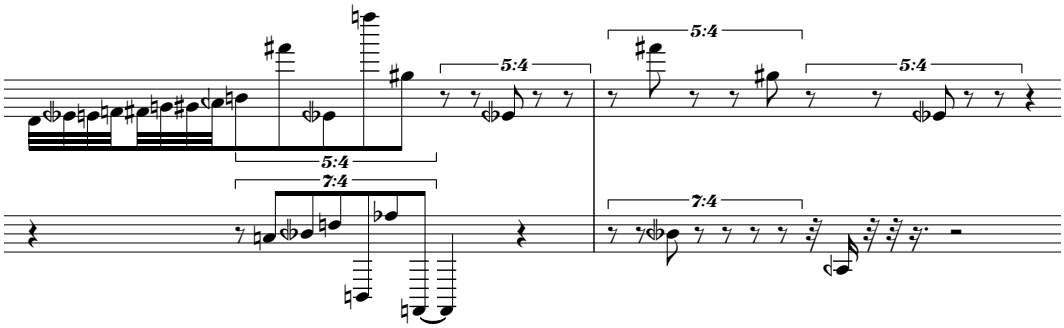

Fig. 13 *Bars 56 - 57 Chromatic scale (filtered); repeat of Subject (in new tempo); 'erasure'.*

Bar 58 replays this material with some reordering of the notes. It is followed by Scales A, B 1 and B 2 combined, a repeat of the first presentation of scalic material from bars 11–12. This process is repeated in bar 60 (again a few notes are reordered) and is followed by a fragment of the music from bars 45–48. The Subject begun in bar 54 has

been transforming by means of note-reordering and erased-repeats. It is now expanded, by internal repetition and the addition of notes from Scale A, to form a longer fragment of five beats in length. (Fig. 14)

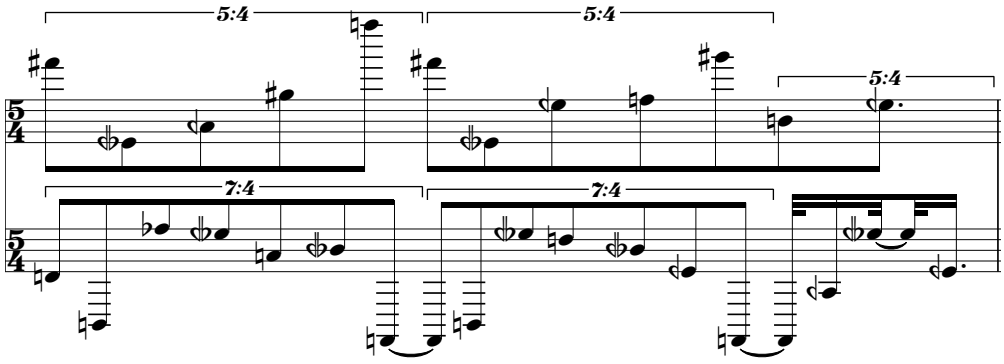

Fig. 14 *Bar 62*

This bar is played seven times, reminding us of the repeating patterns from previous sections.

It will be recalled that the third section of the work features the piano playing a combination of a twelve-note chord and notes from Scale A, subjected to variation by 'octave transposition', and played five times (bars 35–39). In the following example we see this music again (Fig. 15), with new calculations below. All the notes that resulted in bar 35 are now rearranged in order from bass to treble. This creates a new scale, Scale C. It can been seen in both original and retrograde forms. (Fig. 16)

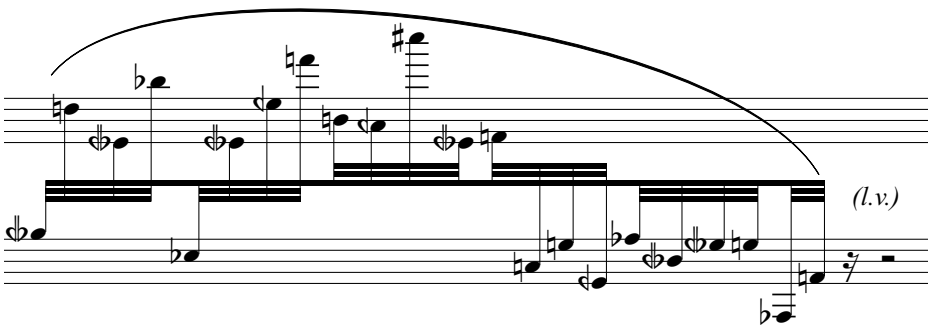

Fig. 15 *Bar 35*

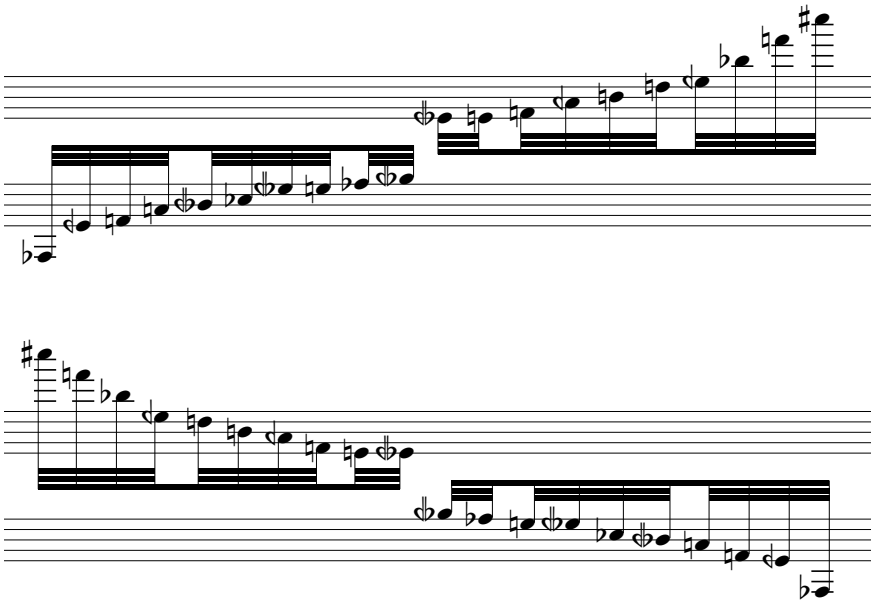

Fig. 16 *Scale C, original and retrograde*

I now take Scales A, B 1 and B 2, transposed one octave higher than previously, and in retrograde. This result I combine with Scale C, also in retrograde, giving the following notes. (Fig. 17)

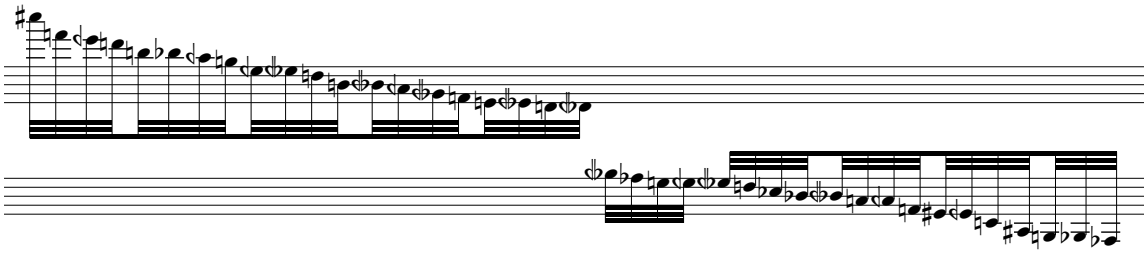

Fig. 17 *Scales A, B 1 and B 2 combined (retrograde, 1 octave higher) + Scale C (retrograde)*

These notes, a 'union of all the Scales', form the pitch material for the next event.

My analysis of *Untitled No.8* up to now has concentrated on the piano part and has not mentioned the orchestra. The orchestra's role thus far has been to emphasise, highlight and accompany the 'main voice' that is the piano. Patterns replicating the number sequence 7, 6, 5, 4 can clearly be seen in the various rhythmic parts accompanying the piano in Section 1. Now, however, the orchestra takes on a more foregrounded role,

presenting the 'union of all the Scales' in a downward-moving explosion (bars 70–71). The downward scalic movement can be clearly heard as a retrograde of the piano's earlier upward-moving scales. This 'explosion' is immediately repeated, subject to some reordering of notes in the brass, but otherwise unchanged, except for minor reorchestration (see the last three notes of the parts for harp and bell plates) (bars 72–73). The parts for harp and bell plates between the first three and the last three notes (taken from the scales) consists of extra notes which are freely composed.

There now follows more explosive material, formed by a texture of very rapid glissandi played by the strings.[46] It may be heard as many downward moving gestures, even scales, so fast that individual notes are obscured to the point of impossibility and imperceptibility (bars 74–92).

Another technique in my work is to allow harmonies to evolve as a natural product of logical decisions made in another compositional process. I call this technique 'linear logic'. Examples occur frequently in the work *2012-L* (2012), where this technique was invented, so I shall give an example from this composition. As I wrote in Chapter III, the work was written for 200 woodwind and brass players to be performed in the foyer of the Philharmonie in Luxembourg. The musicians were positioned in a long line and were divided into 23 groups, as follows: Trombones 1, Oboes 2, Flutes 2, Tenor Saxophones, Trumpets 1, Horns 2, Clarinets 2, Euphoniums, Flutes 1, Alto Saxophones 1, Oboes 1, Horns 1, Trombones 2, Clarinets 1, Trumpets 2, Alto Saxophones 2, Flutes 3, Flugelhorns, Soprano Saxophones, Bass Clarinets 1, Tubas, Baritone Saxophones, Bass Clarinets 2. Each group consisted of 1-2, 2-3, 2-4, 4-6 or 6-9 musicians, the numbers being determined by the performers available and by the need to maintain acoustic balance. The order of this spatial arrangement was determined intuitively with a view to having a balanced distribution of the various instrumental colours. In the score the groups appear in this order, in their positions in space, a fact that influences the resulting music.

Page 8 of the score consists of a Moment in which all the instruments play the same note, E♭, which is passed through the building by the groups entering one by one in the

[46] See Appendix 4 for a detailed analysis of the construction of this texture.

order above. The note passes down the line, from top to bottom, both literally (for the musicians were on a ramp) and visually in the score.[47] On page 9, beginning with Trumpets 1 (the fifth group in the line), a chromatic scale makes its way through the building. Following a brief pause, starting with Trumpets 2 (15th of the 23 groups), the chromatic scale fans out in two directions along the line. ('Octave transposition' is used freely.)

The reason for starting with Trumpets 2 is to echo the fact that Trumpets 1 started the original process. But this decision determines the nature of the chord that now appears and which forms the substance of pages 10–12. On page 10 smaller chords are extracted from the new 23-note chord (a further example of 'erasure'), determined by colour as much as by harmony. On pages 11–12 the entire chord is mostly present, although with many of the notes erased at times, until the final bars, which for reasons entirely of colour are played by Tenor Saxophones, Euphoniums, Alto Saxophones 1 and 2, Flugelhorns, Soprano Saxophones, and Baritone Saxophones.

The chord that they play – D♭, A, D♭, E, F, G, E♭ – is entirely the result of 'linear logic'. The spatial arrangement (determined by balance), the idea of playing a single note on all the instruments and passing it down the line of instruments, the idea of changing the single note for all the instruments into a chromatic scale (or cluster) and passing this down the line of instruments, the idea of starting this with Trumpets 1, the further idea of having the chromatic scale fan out in two directions starting from Trumpets 2: all these decisions result in a specific chord. The next decision, to have these last mentioned instruments – saxophones, euphoniums and flugelhorns – continue playing while all the other instruments stop, leads to a chord which would not have arisen otherwise. 'Linear logic' is where compositional details are the result of a series of logical decisions, where the results could not have been predicted at the outset but are a consequence of logical argument.

An example can now be found in the present context of *Untitled No.8*. The downward movement of notes uniting all the Scales used in the work is played by the full orchestra (without piano) (bars 70–73). The orchestration was determined by intuition and the

[47] See Appendix 5, *2012-L*, pp. 8–12.

practicality of instrumental ranges. The result is that certain instruments play certain notes, each note determined by these factors. Another set of decisions governs which instruments remain in the transition from bar 73 to bar 74. For timbral reasons I decided to have the bass clarinet, 1st trumpet and 1st and 2nd trombones play together with the strings. For different reasons, to do with the construction of the strings' glissando texture, some string parts are not used in the texture (most notably the double basses). The strings not involved in the glissando texture hold the notes they have arrived at in bar 73 into bar 74, as do the four wind instruments mentioned. The harmony thus created is a consequence of these logical operations, 'linear logic'.

This procedure is used to give new harmonies which must, however, receive my approval! Should they not be satisfactory as determined by my own intuitive understanding of how the work should proceed, they will not be employed. On the other hand the procedure might alight on fascinating new possibilities which would not have appeared except by this method. Adjustments can be made. My original idea for bar 74 of *Untitled No.8* was to have bass clarinet, 1st trumpet and one trombone sustaining notes at this point; the second trombone was added for harmonic as well as timbral reasons.

From bar 74 onwards the double basses hold the notes E and B♭ before separating into a six-part chord. The E becomes a chord of E, D#, D (both a non-octave recycling scale consisting major sevenths and a chromatic scale with 'octave transposition'); the B♭ widens to E and another B♭ (a tritone scale). The first trumpet plays a virtuoso passage constructed from seven transformations of material from the scales (the 'union of all the Scales'). (Note the recurrence of the number seven, both in the number of transformations and in the rhythmic relationships within the trumpet part.) The seven transformations are reordered, varied, transposed down by between one and seven semitones, and then subjected to extensive reworking to produce the final music.[48]

Bar 94 presents the chord from bars 70–71 as a loud unison, without staggered, scalic attacks. It is mostly unaltered but has been, as it were, 'infected' by the double basses'

[48] See Appendix 6.

continuing to play the six-part chord at which they arrived in the previous bars. This is another example of harmony being created by the 'linear logical' method described above. The harp and bell plates play material derived from earlier.

In bars 95–97 the piano plays the notes from all the Scales (in other words, this same chord) widely distributed by 'octave transposition' across the whole range of the keyboard. A pause, containing resonance, is introduced at a mid-point, reminding us of the passages with resonance in bars 35–39 and 45–48.[49]

In bars 99–101 the harp and bell plates play three 'erased versions' of bar 94. They then play an erased version of these three bars in bars 102–104. A further erased version of bars 102–104 is played in bars 105–107. The piano plays erased versions of its own previous material, filtered through Scale A, resulting in the material in bars 95–97, which is itself then subjected to numerous erased repetitions throughout bars 99–107.

A 2/8 bar delineates a pause in this activity and then the piano and harp / bell plates material of bars 99–107 is repeated twice exactly, in bars 109–117 and 118–126. The cellos play erased versions of the harp / bell plates material; the double basses play a chord consisting of all the six notes of this material (echoing their splitting into six parts during the string glissando texture which starts in bar 74). A twelve-second pause (again containing resonance) delineates the end of the first large-scale section of the work, twelve seconds because this takes the duration to precisely eight minutes.

We have now arrived at a point, eight minutes into the work, which is at the golden section of the composition's total duration of 13 minutes. In the above analysis almost all the pitches have been accounted for. For completeness I shall add the following. At certain times the string orchestra sustains some of the harmonies played by the piano, acting as a reinforcement of the piano's sustaining pedal, and creating additional resonance (see bars 40–44 and 49–53). At the beginning of the work the fluid and *legato* nature of much of the music is contrasted by staccato attacks in the woodwind

[49] This pause is at approximately the golden section. Use is not otherwise made of the Fibonacci series in this work, except for the fact that the overall form is also in two sections in this proportion.

(see for example bars 1, 3–4, and 8), an element that develops into short tutti attacks in bars 18–28.

Nothing, however, has been said about the general character of the work. This is determined not only by the pitches but also by the lengths of sections, the dynamics, the density of notes and of the numbers and kinds of instruments playing. It is also determined by decisions about when the piano is highlighted, alone, accompanied or silent. For example, the sense of rapid movement of the opening contrasts with the last mentioned section, which is slower (MM=40) and has a quite different atmosphere. These matters are intuitive. They rely on my using my own instinct and experience to attempt to communicate a statement. Rhythm in my music is usually determined by a purely intuitive sense of how the 'meaning' (as I understand it) is best made clear.[50] The same applies to form and other matters mentioned. The methods employed by a composer are there to *release* ideas, to find form and shape for them, almost as if they were trying to create or give birth to themselves. The force of ideas bursts out of constraints. The effectiveness of the statement depends on the directness of this force, the appropriateness of the constraints and the composer's ability to release the one from the other. It is this that Brian Ferneyhough so aptly demonstrated by using a title such as *Carceri d'Invenzione*, implying that by imprisoning invention, imagination's subsequent escape will be explosively powerful.[51] It is this that leads composers to restrictions and constrictions as methods (such as serialism and other techniques), because these will, if successful, unleash new ideas which might not occur otherwise. They also serve to block a regression to the familiar and combat a weakening of the imagination.[52] The balance between choosing the right method and achieving the most powerful result is a most important one and an imbalance weakens the result. For example, in my opinion, Peter Maxwell Davies was at his most successful when he used 'magic squares' the least. His earlier music, employing transformation processes (such as the *Second Fantasia* (1964) and *Worldes blis* (1969)) are vastly superior to much of his later work

[50] In contrast to Ferneyhough who begins with rhythmic structures before deciding upon pitches. See Richard Toop, 'Four Facets of "The New Complexity"', *Contact*, issue 32, Spring 1988), pp. 4–8.
[51] Brian Ferneyhough, *Collected Writings*, edited by James Boros and Richard Toop (London: Routledge, 1995), p. 290.
[52] Chris Dench once told me that if he did not use very strict constraints, he thought he 'would end up sounding like Puccini'.

because there is an imbalance in the later system, which (like total serialism) restrained both rhythmic and pitch freedom in too similar a manner, leading to the risk of too much constraint and a failure to release the strength of latent ideas.[53]

The second large-scale section of *Untitled No.8* begins in bar 128. It is relevant to mention here that in 2006 I wrote *Untitled No.1*, a work for small orchestra lasting 19 minutes, which takes a structure of some nine and a half minutes and then repeats it with some 'erasures'. In other works, which will be discussed in the next chapter, a similar process of stating material and then repeating it with alterations is employed. In *Untitled No.8* the music heard so far is now restarted, as if the work wished to repeat itself. The piano part is sometimes identical, sometimes transformed. But it is now dominated and swamped by the orchestra in a manner that has not happened up to now. The piano part is often fragmented (erased), aborted, or destroyed, as if by the orchestra's new power.

Bars 128–130 present a radically altered version of bar 1. Lines are superimposed; notes coalesce into chords, the first chords to appear in the piano part, for until now there has been none. The orchestra then plays a loud chord which is derived from the 'union of all the Scales chord' heard previously, and to which it now transforms by means of quartertone scales moving in different rhythms in a multi-part polyphony. This example of transformation relates to my earliest exploration of the technique and is here an example of the synthesis of this strand with the strands or ideas that have been introduced into my music since. Uniting this with the idea of repetition, this section will now be presented four times.

During the first presentation, the piano plays fragments from Section 1 of the work (bars 1–14), which are mapped exactly onto the new section (which has the same duration). This is followed, in the second presentation, by two simultaneous procedures. The string orchestra plays Section 1, bars 1–14, again, repeating the passage exactly

[53] See David Roberts, 'Review of Scores by Peter Maxwell Davies', *Contact*, issue 19 (Summer 1978) pp. 26–29, for an excellent explanation of Davies's technique, and Patrick Phillips, *Pathways in the music of Sir Peter Maxwell Davies: From precursor works to the first two symphonies*, unpublished PhD Thesis, University of Hull, 2011, which also draws on David Roberts' *Techniques of Composition in the Music of Peter Maxwell Davies*, unpublished PhD Thesis, University of Birmingham, 1985.

(except for some very minor changes); the wind orchestra plays bars 130–142 again, quieter now (*pp*), and at times 'infected' by the rhythmic activity played by the strings (see bars 151–155). The piano again plays an erased version of Section 1, bars 1–14, with some notes again coalescing into chords. This double, superimposed restatement is *preceded*, in bars 143–145, by the piano repeating bars 128–130.

In the next, third, section of the second part of the work (the third presentation of the orchestral transformation, bars 158–169), the piano plays music from Section 2 of the work's first part: the piano's bars 158–164 are identical to bars 15–21. The orchestra (now both strings and wind) repeats the first section of the work's second part, now *p* instead of *fff* (bars 130–142) or *pp* (bars 145–157), and now at the tempo MM=60 instead of MM=66.

The fourth and final presentation of the orchestral transformation starts in bar 172, preceded, in bar 170, by the solo piano, which plays an altered version of the material in bars 128–130 (again using 'erasure' and the coalescing of single notes into chords as fundamental techniques). This leads to the oscillation of two notes, Ad and A, a development of the use of oscillation in Section 1 of the work. The orchestra enters (*pp*). The following bar (bar 173) is an example of my technique of 'suspension', mentioned above and to be discussed in Chapter VI. The music is suspended in mid-flow – bar 173 is repeated fifteen times and lasts one minute – as if it were being examined under a microscope. The inner details, and, I would argue, complexity of the sound are revealed, as if, as I shall say in the next chapter, one turned one's attention from the whole forest to the ground within, teeming with life.

Chapter VI

Complexity v. 'Micro-complexity'

2016-E

Untitled No.9

In Chapter I I wrote, 'Starting in 2009 I reunited (synthesised) the wild complexity of the works from the 1990s, pushed to new extremes, with the apparent clarity of the works since 2006, focusing particularly on a concentration on listening to the details or inner life of held sounds'. I call these details 'Micro-complexity'. In order to clarify the expression I shall refer again to my work *2013-V*, for violin and ensemble, which has the synthesis of diverse musical strands as a central argument. As in other works, but in this one especially, the two extremes to which I have already referred and which would appear to be at opposite ends of a spectrum are being considered. One is densely detailed material consisting of a complexity of notes and other activity; the other consists of held sounds, looking on the page as if quite the opposite of the former. These held sounds may be 'traditional' long notes, played in a conventional manner (although always without vibrato) or noise-filled sounds, investigating a mixture of purity and distortion. However, if these extremes are at opposite ends of a spectrum it is not the most obvious one, for I maintain that an immense complexity of sound is present in held notes and chords, simply because of the physical means of production by human hand or breath. Every micro-second is different from the next. A held sound varies constantly, in a most complex manner. Compared to a passage containing many fast notes, it is the degree and quality of the complexity that varies; it is not a question of its presence or absence.

A similar scale can be established when considering the speed of change of musical material as it is presented in the form of a work. Again the two opposites that may be considered as thesis and antithesis may find a synthesis. A passage of extremely fast notes might 'move' at a fast or slow pace (in tonal music (especially) this is governed by a substratum of harmonic movement or the lack of it). But an interruption of one kind of material by held sounds highlighting the minutiae of detail – a single held note moving very slowly in a glissando, for example, or the prolongation of a single orchestral chord – is not one kind of music being challenged by its opposite, so much as a sudden

suspension of the flow of activity, in order to highlight the 'microscopic' elements within the music. This was observed in the previous chapter in *Untitled No.8*, bar 173. It is as if one were to contemplate a forest and then suddenly a small area of the forest floor, filled with tiny animals and the intricate shapes of leaves and moss.

The formal effect of suddenly interrupting, or rather 'suspending', the musical discourse is sometimes to jolt the listener into an awareness of almost but not quite falling over a precipice; at other times it is to pause, as if to take in some specific detail before, as it were, resuming the journey. It then becomes clear that this 'journey' is not a normal narrative; the musical progression might pause, turn back, repeat itself, become a memory or near-memory, make one question whether one has heard something already, and if so whether or not it was the same before. As I remarked in Chapter III, *2013-V* falls in the exact midpoint between, and synthesises the two poles of moment form and the kind of sectional form in which the progress from one section to the next has a certain directional intention.

In this work I introduced the idea of suddenly interrupting and, as it were, analysing a discourse, for example by stripping away ('erasing') the instrumental ensemble to leave a single solo violin note, slowly moving in a glissando. This glissando note first appears embedded in an instrumental texture, a single note lasting no longer than others surrounding it. Suddenly in a new context, one in which the section is being repeated, the note is suspended in time, stretched out to perhaps thirty times its original duration (in this example, if it was 0.5 seconds originally it now lasts 15 seconds). The other instruments have been removed and the single note is focused upon, as if one were to pause to examine an object under a microscope. And in *Untitled No.8* bar 173 I show this procedure applied to an entire orchestra, when the orchestral material, in its fourth appearance, is in this bar suspended in time to last one minute, 'a sudden suspension of the flow of activity'.

My interest stems from the visual parallels mentioned, in which I contrasted a forest with the forest floor, or referred to the simile of the microscope.[54] But a parallel with

[54] A most beautiful book illustrating the occurrence of complex textures in the natural world at all levels from whole landscapes to minute details is *A Tree, A Blade of Grass* by the Japanese photographer Shinzo Maeda (Tokyo: Graphic-sha, 1984).

techniques used in film would be equally apposite and leads to further implications. In *The Work of Art in the Age of Mechanical Reproduction* Walter Benjamin writes,

> By close-ups of the things around us, by focusing on hidden details of familiar objects, by exploring common place milieus under the ingenious guidance of the camera, the film, on the one hand, extends our comprehension of the necessities which rule our lives; on the other hand, it manages to assure us of an immense and unexpected field of action. [...] With the close-up, space expands; with slow motion, movement is extended. The enlargement of a snapshot does not simply render more precise what in any case was visible, though unclear: it reveals entirely new structural formations of the subject. So, too, slow motion not only presents familiar qualities of movement but reveals in them entirely unknown ones 'which, far from looking like retarded rapid movements, give the effect of singularly gliding, floating, supernatural motions.' Evidently a different nature opens itself to the camera than opens to the naked eye – if only because an unconsciously penetrated space is substituted for a space consciously explored by man. Even if one has a general knowledge of the way people walk, one knows nothing of a person's posture during the fractional second of a stride. The act of reaching for a lighter or a spoon is familiar routine, yet we hardly know what really goes on between hand and metal, not to mention how this fluctuates with our moods. Here the camera intervenes with the resources of its lowerings and liftings, its interruptions and isolations, its extensions and accelerations, its enlargements and reductions. The camera introduces us to unconscious optics as does psychoanalysis to unconscious impulses.[55]

In order to demonstrate the notion of an idea being extended or prolonged, of the flow or movement being paused for this, as it were, microscopic investigation, the original context is first presented. A section of the music is performed in its complete or unaltered state. It then returns at a later point (or perhaps occurs at an earlier point), either suspended in time – stretched out – or with some elements prolonged and some removed (such as the ensemble, leaving only the soloist, in *2013-V*). The removal of elements is another example of the technique of 'erasure'. This use of 'suspension' is united with the use of repetition.

The next work to be examined is *2016-E* for flute, clarinet / bass clarinet, violin and cello (2016). Here examples can be found of complexity and 'micro-complexity', of repetition, and of 'suspension'.

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[55] Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction', in *idem*, *Illuminations*, ed. Hannah Arendt, tr. Harry Zohn (New York, NY: Schocken, 1969 [1935]), pp. 15-16. Benjamin's quotation is from Sigmund Freud, *Psychopathology of Everyday Life*. The ellipsed text reads: 'Our taverns and our metropolitan streets, our offices and furnished rooms, our railroad stations and our factories appeared to have us locked up hopelessly. Then came the film and burst this prison-world asunder by the dynamite of the tenth of a second, so that now, in the midst of its far-flung ruins and debris, we calmly and adventurously go traveling.'

2016-E (2016) for ensemble

The use of 'micro-complexity' may simply prolong ('suspend') a chord for an abnormal length of time. In *2016-E*, bar 1 presents a chord based on C and G, with microtonal alterations and distortion of the sound by special playing techniques. The bar lasts 1 minute 15 seconds and is played *pppp*. The next three bars continue with the same idea, with alterations (especially of dynamics in bar 2) and, in bar 4, with 'erasure' (only two of the four instruments are present).

The chord evolves into more agitated and distorted material before, in bars 21–27, a passage of complexity, as opposed to 'micro-complexity', is presented. This passage will be repeated later, in bars 56–63, with the alteration that the dynamics are reversed. Two dynamic levels are employed here, *ppp* and *fff*. On the second occurrence, notes that were *ppp* are now *fff*, and vice versa; likewise *diminuendi* become *crescendi* and vice versa.

The same idea regarding dynamics is to be found in bars 29–34, which are played twice. The first appearance is very loud, the second very soft. Like 'micro-complexity', which encourages a type of listening that highlights what one might call 'the previously undiscovered', in that one hears new elements of that which makes up the sound (much like in the slow-motion of Benjamin's example), when a loud passage of complex music is played immediately afterwards softly, it sounds very different indeed.

Bar 62 is a clear example of 'suspension'. Bars 21–27 and bars 56–63 are identical, apart from the swapped dynamics, and apart from the fact that the first occurrence consists of seven bars and the repeat consists of eight. The extra bar, bar 62, is an insert of ten seconds' duration in which a high cello artificial harmonic is suspended and our concentration is focused upon it. This is exactly the same procedure as in bar 173 of *Untitled No.8* and other examples already mentioned.

A synthesis of repetition and 'suspension' is to be found in the penultimate bar of *2016-E*, which is repeated thirteen times. Here 'suspension' is of a different order: a fragment is repeated an obsessive number of times and one's perception of it changes as it continues beyond what one might regard as a 'normal' duration.

This short work is also an example of 'restatement'. It is based on a previous composition, *Untitled No.6*, for six musicians (2010), a work which is also restated, in extremely altered form, in *2012-S*, for two string quartets (2012). *Untitled No.6* itself includes fragments of material that are a restatement of ideas in earlier works, ideas which, from my point of view, return, intrigue, obsess or otherwise demand to be discovered anew.

If *2015-M* is non-narrative and in moment form, *2016-E* is narrative; the musical ideas flow and progress in a single direction and there is no question of the various subsections being equally valid in a different order, albeit that certain sections recur and in a sense mimic moment form in their self-sufficiency (they can be and are placed as independent Subjects within the form of the whole work). In this aspect *2016-E* exemplifies a synthesis of narrative and moments forms. *Untitled No.8* represents a further synthesis of the two procedures. It is narrative in the sense that the statement requires a narrative, directional presentation of its material, but there are sections that are restated (such as the four appearances of the orchestral transformation passage) and thus take on the characteristic of a moment, and therefore become in themselves non-narrative. We are again observing various degrees of synthesis of the two approaches.

Untitled No.9 (2017) for orchestra

Elements of both approaches, but with a concentration on the non-narrative, are to be found in the fourth composition to be discussed in detail here, *Untitled No.9*, which in places focuses particularly on the idea of 'micro-complexity', but which also introduces a development of my thoughts on the definition of the terms Subject and Moment, by presenting a synthesis of the two. I shall explain this shortly.

'Micro-complexity' may be divided into two sub-categories: 'microscopic complexity' and 'micro-scripted complexity'. The idea behind 'microscopic complexity' is primarily to pay attention to the qualities of sounds that exist and to listen to the minute variations that happen within them. However, to *compose* the sound by means of subtly sculpting and adding detail to the otherwise non-developing, non-narrative musical 'colour-fields', which are not concerned with any forward direction or progression but are defiant,

uncompromising 'sound areas' to be confronted in the same way as one stands in awe of a mountain or canyon, is here described as 'micro-scripted complexity'.

Untitled No.9 highlights both 'microscopic' and 'micro-scripted complexity', aiming in this latter category to take sound itself and, much like in a painting by Clyfford Still, to compose areas of colour (colour-fields) that are alive and moulded. They are blocks of sound which may last for one minute or more, different from one another and with a 'micro-scripted complexity' within each area of colour or sound. A huge and unyielding indifference is presented, a musical landscape or world that exists without leading anywhere, directing us in any way, without consoling or reassuring.

The chord blocks are constructed and then their inner detail is 'moulded', in other words it consists of a rough and detailed, ever-changing textural surface, much like the effect made by the palette knife strokes in creating textural variety in Still's paintings. This moulding of the sound might involve writing out the points at which breaths should be taken in wind parts, or bow changes should be made in string parts, and writing into the music other textural subtleties that can be introduced into the inner constitution of the chord or sound texture. Such subtlety frequently involves the previously mentioned techniques of 'erasure' and 'suspension'.

Of the two terms within the category of 'micro-complexity', 'microscopic complexity' refers to the naturally occurring inner life which is in all played or sung sounds, as discussed in detail at the start of this chapter. In a musical score they are invisible; a note or chord may be written as a semibreve with a fermata indicating the duration, or as many tied semibreves. On the page it looks as if nothing is happening other than the sustaining of a 'simple' note or chord. As discussed, this note or chord is in reality far from simple but in fact microscopically complex. 'Micro-scripted complexity' is where one *writes in* the microscopic details, minute alterations to the surface of the sound, much like the deliberate use of palette knife markings on the canvas just mentioned.

There are times when the two sub-categories of 'micro-complexity' meet: if a wind instrument sustains a very long note, it will probably be necessary to take a breath at some point (unless circular breathing is continuously employed). Similarly, on a string instrument bow changes will be necessary at various points. If these points are not

written precisely in the score, they fall into the category of 'microscopic complexity' (although I prefer to think of this term as referring to unintended alterations of the sound which occur naturally during the attempt to sustain it). If they are written in the score, they are here termed 'micro-scripted'. All methods of further enlivening the sound by writing in micro-details fall into this second category. A chord may be written and fine details then be added, such as gaps (short pauses in individual parts before the instrument or voice resumes, one of several methods of 'erasure'), or a change of technique such as the addition of flutter-tonguing or regular pulsation. Fissures, markings or explosions might then punctuate the fields of colour.

Untitled No.9 also introduces a development of my thoughts on the definition of the terms Subject and Moment, by presenting a synthesis of the two. I began the work by composing two sections which I decided to label 'Events' rather than Moments. Unprecedentedly in my work, these two sections were composed without any clear idea of where they would be placed within the form of the final composition. I labelled them 'Event 1' and 'Event 2', deciding to use this word to signify a union (synthesis) of my previous designations of Subject and Moment. The word Moment sounds too static and lacking in energy for material such as this, and while the material may be called a Subject, that word too is insufficient, implying something less wide-ranging than the complex and dense material being presented, which may comprise many small scale Subjects. A Moment implies a partial-Statement, a slice of time that is independent, whereas an Event may be superimposed upon, or may overlap with, another. Examples of this will be clear in the following analysis of *Untitled No.9*, which examines in detail the process involved in the composition of the work.

I began by composing a new version of a quotation from *Untitled No.8* (bars 74–93, a trumpet solo together with downward glissandi in multiple string parts). The strings' glissandi were revised and the trumpet solo was rewritten, altered by my technique of 'octave transposition'. This variation of the trumpet solo is distributed amongst the full complement of eleven brass instruments. The resulting 'Event 1' was later placed in *Untitled No.9*, bars 79–98.

The next Event was begun using my technique of 'linear logic'. It begins with the brass chord that had formed at the end of Event 1. The woodwind (with the exception of the

flutes) and the strings play the same notes as the brass. Both woodwind and strings 'fold into' their chords, their entries staggered, whereas the brass begin together on the first beat. Parts of the strings' chord are replaced by new material which is the sound of playing behind the bridge. The strings section is then repeated in retrograde, the staggered ending mirroring the staggered beginning, and the behind-the-bridge pattern reversed. Between the two (at the mirror point) my technique of 'erasure' is employed to introduce a 'fissure' of silence into the 'sound-colour-field'. As if a visual image on a canvas, the fissure cuts through the sound field from the bass upwards, narrowing towards the top, and slanting to the right (see bars 34–39 and 62–67). At this stage, the exact duration and articulation of the brass notes, and whether to employ 'microscopic' or 'micro-scripted' complexity, was left to be decided. These bars were labelled 'Event 2 (version 1)'.

Event 2 was rewritten to produce two further versions. Version 2 extends the brass chord to the full length of the (palindromic) section and alters it, in its entirety, by transposition up a minor third, a further minor third, and then back (a tritone) to the original (bars 51–78). Even more extraordinary is the fact that the trombones alter their notes by stepwise motion to form, together with the tuba, an F minor triad. This tonal triad becomes distorted during the minor third transpositions. The palindromic nature of the strings' material is matched by the stepwise motion in the trombones reappearing in retrograde at the end of the section, but again with some distortion. The combination of a quasi-tonal or consonant chord with distortion is a frequent feature of my recent music. (Fig. 18)

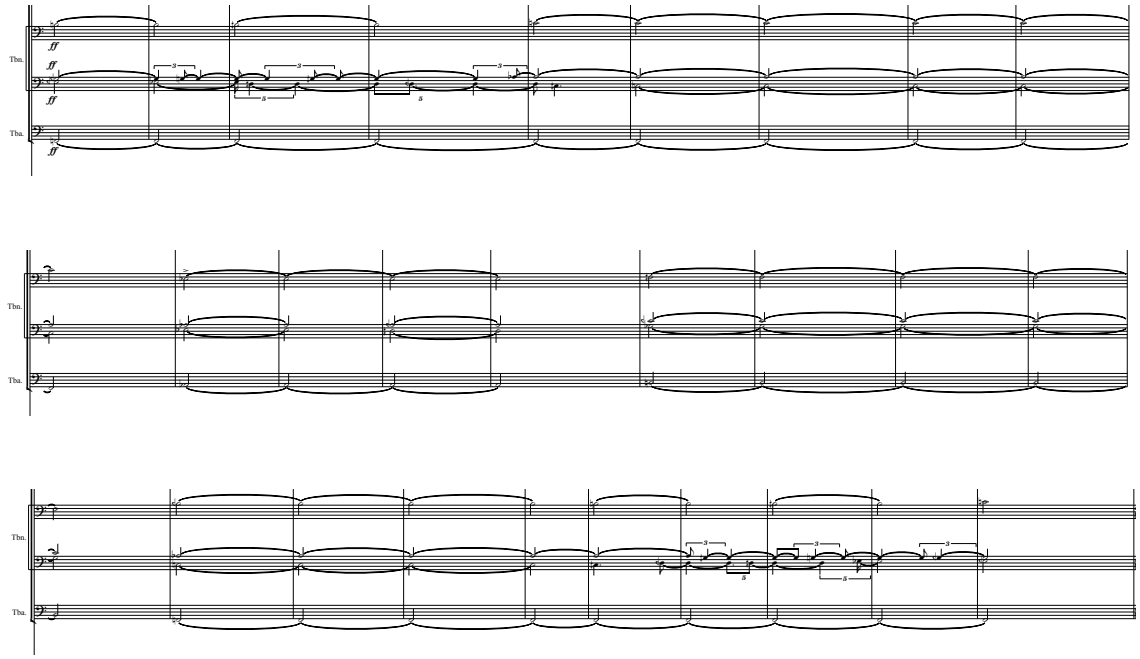

Fig. 18 *Bars 51–78 before later alterations were added.*

'Event 2 (version 3)' consists of the strings' material only, the brass being omitted, and is now *ppp* instead of *ff* (bars 23–50). However, an important alteration is made to the double bass parts. In both versions, the double basses hold continuous notes for the whole duration of the Event, with the exception of the aforementioned 'fissure'. In the first rewriting these notes are F, E and D#, major sevenths apart. In the second they are radically altered to a D♭ major triad (echoing the idea of the F minor chord played by the trombones in the first rewriting). (Fig. 19)

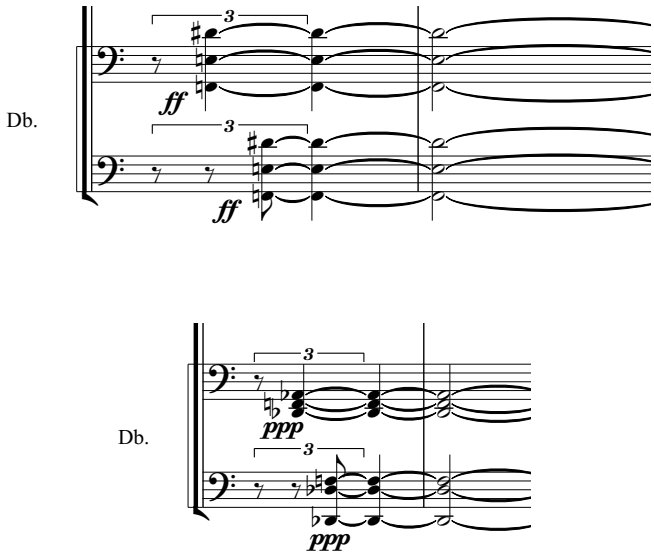

Fig. 19 *Bars 51–52 (above) and Bars 23–24 (below)*

Because of the aforementioned staggered nature of the entries and exits in the strings' parts in Event 2, three instruments, and in this case three notes, remain when the strings end the Event completely. These three notes, C3 (viola), Ed3 (cello) and F#4 (violin II) (bar 50), are to dictate the beginning of the next Event (a further example of 'linear logic'). (Fig. 20)

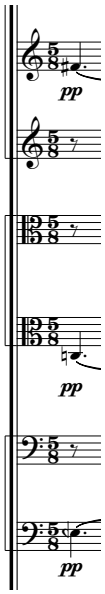

Fig. 20 *Bar 99*

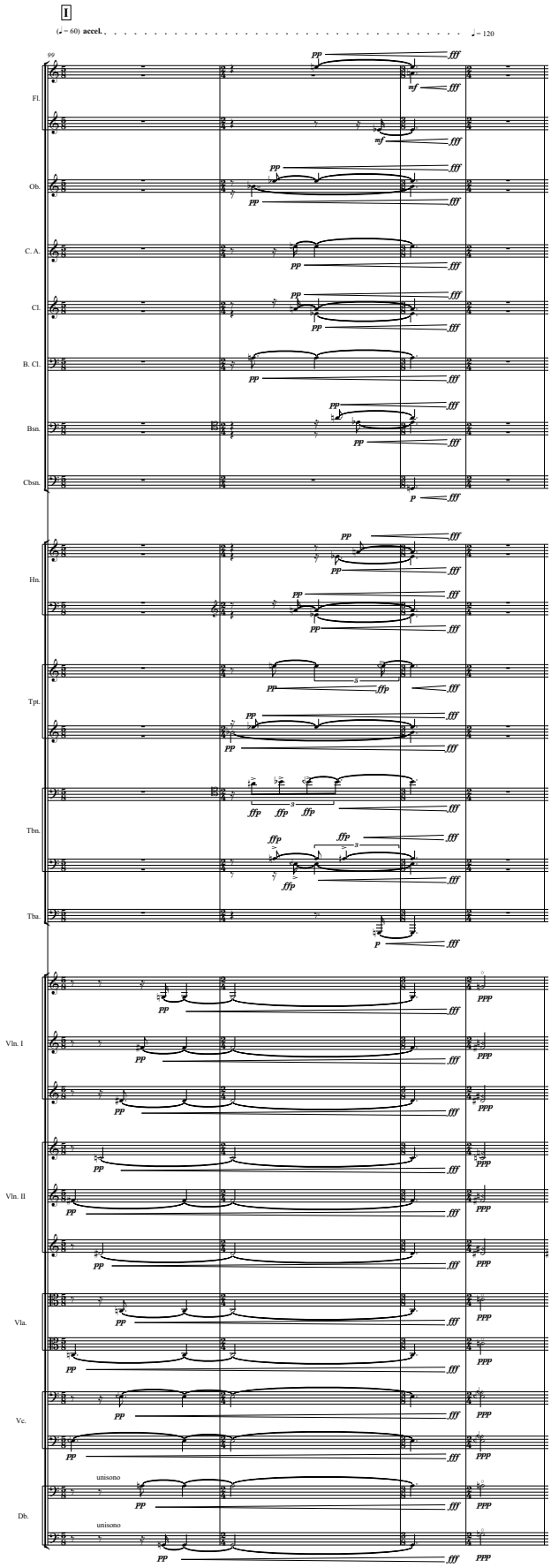

Fig. 21 *Bars 99–102*

Event 3 is a very short tutti crescendo to a loud point, created by expanding the three notes into a chord, which is then cut off abruptly, leaving an echo formed of harmonics played by the strings. The echo, in harmonics, transposes most notes up one or two octaves ('octave transposition'). This Event first appears in bars 99–101, followed by the echo in bar 102. (Fig. 21)

Event 4 was then composed. This starts from the one bar 'echo' at the end of Event 3 (bar 102) and extends it by stepwise motion, each note moving either upwards or downwards in quartertones. A total of thirteen bars means that each note changes to one a tritone below or above. This was labelled 'Event 4 material'. (Fig. 22)

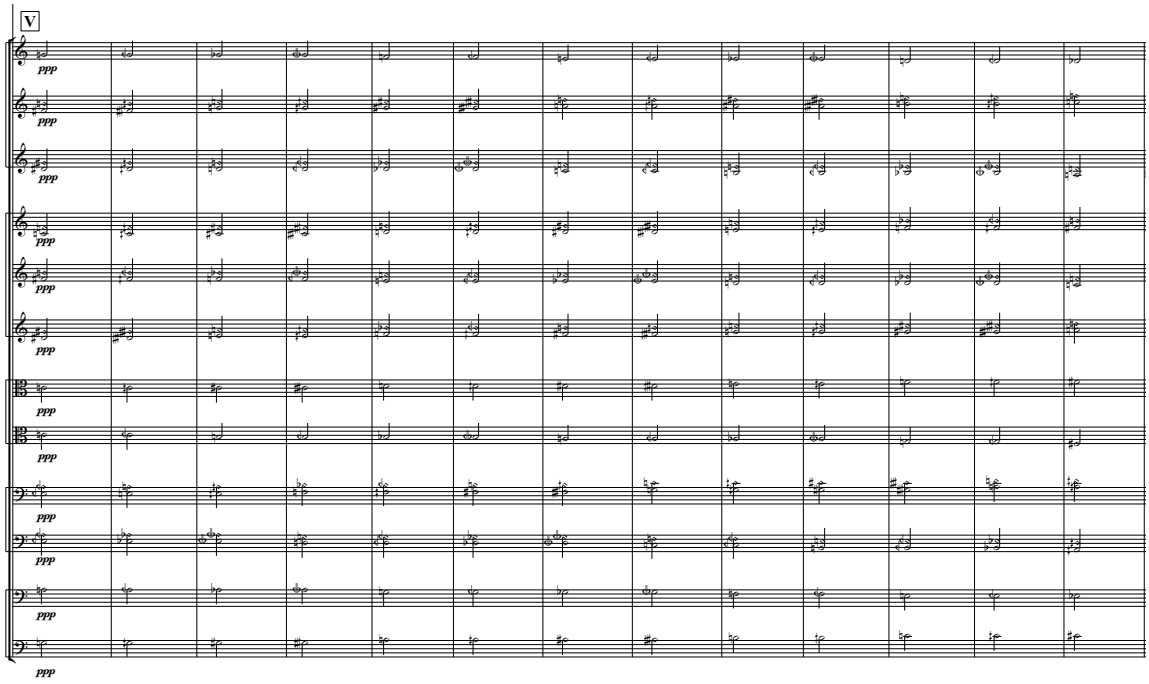

Fig. 22

It was then reworked into two versions. 'Event 4 (version 1)' takes each part in turn, starting from the basses and moving upwards, and 'suspends' the stepwise movement by sustaining the note reached (bars 102–114). (Fig. 23)

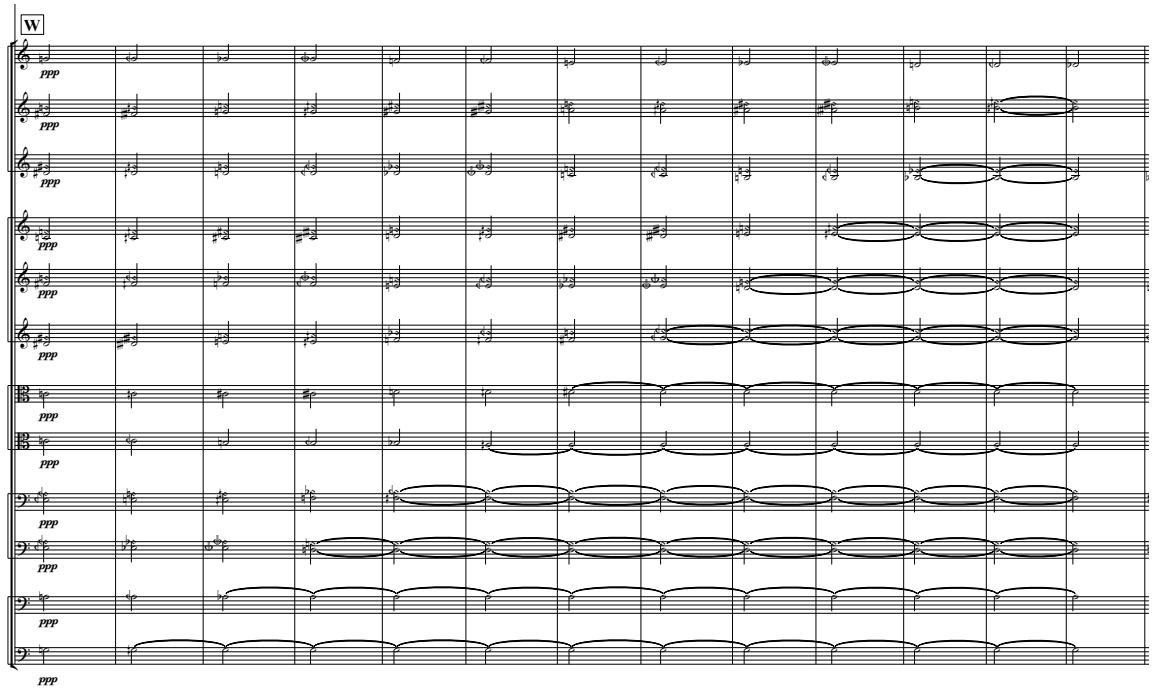

Fig. 23

Event 4, version 2, is an inversion of Event 4, version 1 (bars 213–225). (Fig. 24)

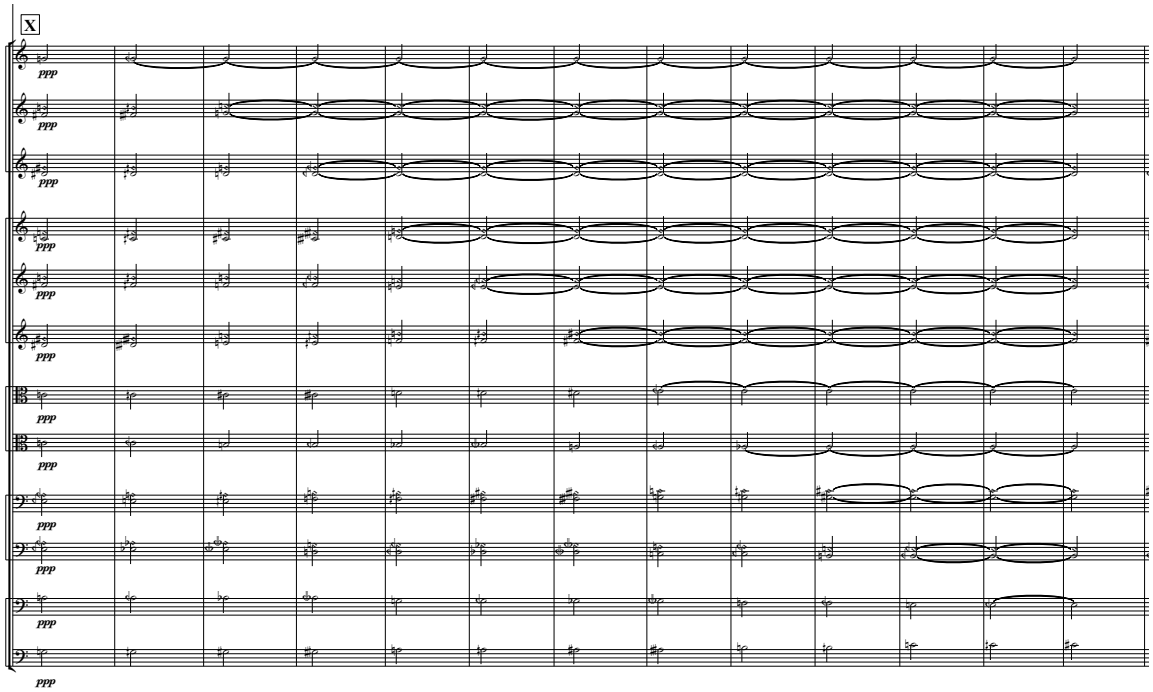

Fig. 24

Event 5 is based on the brass material from Event 1. Reworked for woodwind it becomes a new *non-legato* texture (bars 14–29). Event 6 is a chord made up of unusual natural harmonics (such as 5th, 6th and 7th partials) (bars 116–123 and 179–186). The strangeness and somewhat distorted quality of the sound here exists in an intermediate point between the passages of normal string playing and those passages played behind the bridge. It becomes a synthesis of the two.

Event 7 takes a four-part chord made up of perfect fourths and tritones, played by four violins, and repeats it (the entries staggered one semiquaver at a time) in all the other string parts, one semitone lower each entry. Some octave transpositions are made. As there are twelve string parts in total, all twelve possibilities of the chord are used. The resulting mass chord is then subjected to glissando alterations up or down one octave (another use of 'octave transposition') (bars 10–21). It returns in radically altered form shortly before the end of the work (bars 255–268).

Event 8 takes the four-part chords that constitute Event 7 and re-orchestrates them for the whole orchestra, filtering them where the number of instruments available requires this, and then radically distorting the result, introducing many quartertones in the process. I wrote in the sketch that I was considering what form this Event would then take: possibly long *fff*, very long *ppp*. It was also occurring to me now that this Event, with its massive chord, would begin the composition. (Fig. 25)

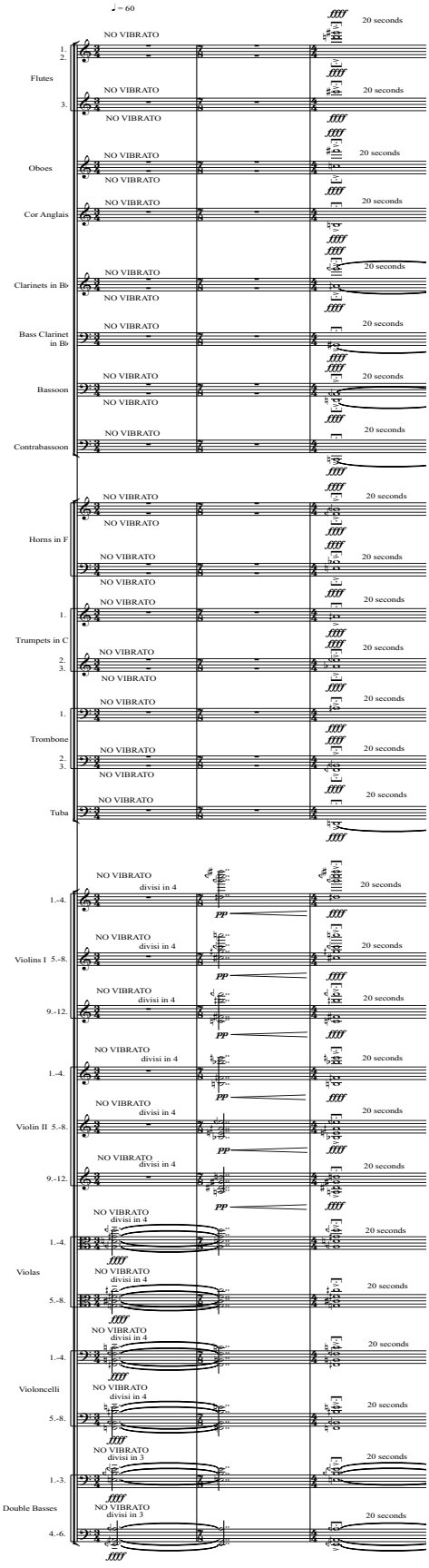
♩ = 60
Flutes
Oboes
Cor Anglais
Clarinets in B♭
Bass Clarinet in B♭
Bassoon
Contrabassoon
Horns in F
Trumpets in C
Trombone
Tuba
Violins I
Violin II
Violas
Violoncelli
Double Basses
NO VIBRATO
divisi in 4
divisi in 3
20 seconds

Fig. 25

It was only at this point that the actual *composition* was started, in the sense of putting the Events together into their final positions within the form of the work. The order of the Events in time was now to be decided.

The work starts with Event 8, presented as a twenty-second-long chord *ffff*, followed by very long *ppp*. The chord is played by the entire orchestra in bar 3, preceded by low strings alone, *ffff*, in bar 1, joined in bar 2 by the higher strings, *crescendo* to *ffff*. For reasons of timbre, the clarinets, bassoons, tuba and double basses sustain their notes into bar 4. In bar 5 other instruments join; those from bar 4 exit. In bars 6–9 the chord is suddenly played *ppp*, various instruments sometimes being omitted ('erasure').

Event 8 is followed in bar 10 by Event 7. In bar 14 Event 5 (woodwind, *non legato*) begins, overlapping with the end of Event 7, notes from which are sustained. Notes relevant to Event 5 are also sustained by the brass as the passage progresses. Just over half way through Event 5, Event 2 (version 3) begins (the second rewriting of the original material, for strings, including playing behind the bridge, *ppp*).

Event 2 (version 2) follows, *ff*. In the sketch at this time both the woodwind and brass notes were written as being held continuously, and had this remained the case it would have been an example of 'microscopic complexity'. (It is part of this sketch that can be seen in Fig. 18.) Later, however, I wrote in precise details of all the attacks (and I also altered pitches in places) making the passage instead an example of 'micro-scripted complexity'.

The work continues with Event 1, Event 3, Event 4 (version 1) and Event 6. This is followed by Event 2 (version 1), with some pitches altered. By a process of transformation, the pitches of Event 2 (version 1) (some of which have already been altered) change to those of Event 8 (also altered). This concerns the woodwind and brass; the strings play chords which come directly from Event 8. This Event extends to approximately 1½ minutes, making it the longest. It is also a synthesis of 'microscopic' and 'micro-scripted complexity': details of the notes held are articulated by the players, rather than being written precisely in the score, the indication being 'breathe where necessary but randomly, infrequently. Re-attack *sfffz*'.

Event 9 follows this. Continuing my life-long interest in scales, particularly scales that divide into equal intervals, here a 7/4-tone scale is used (bar 147). This synthesises the major and minor triads that have been employed earlier into a triad of equal intervals. Passed among brass and strings this triad slowly ascends in quartertone steps. Event 10 uses both the 7/4-tone scale and a 5/4-tone one, and features clarinets and bassoons (some of the instruments focused upon in bar 4 of the work). It lasts only three bars and is followed by a reappearance of Event 3 in woodwind and brass superimposed onto a form of Event 10 in the strings. Event 6 follows (its second appearance) and then Event 10, and Events 3 and 10 combined, as before, but with pitches considerably altered.

The work's final form is as follows:

bars 1– 9: Event 8
bars 10– 21: Event 7 (including sustaining of the final notes)
bars 14– 29: Event 5
bars 23– 50: Event 2 (version 3)
bars 51– 78: Event 2 (version 2)
bars 79– 98: Event 1 (overlapping starts at the end of bar 77)
bars 99–102: Event 3
bars 102–114: Event 4 (version 1)
bars 116–123: Event 6
bars 124–146: Event 2 (version 1) (pitches altered) transforming to Event 8 (altered)
bars 147–171: Event 9
bars 172–174: Event 10
bars 175–178: Event 3 with strings Event 10
bars 179–186: Event 6 (slightly altered)
bars 187–189: Event 10 (altered)
bars 190–192: Event 3 with strings Event 10 (altered)
bars 193–194: Event 10 continued
bars 195–212: Event 10 continued combined with elements of Event 9
bars 213–225: Event 4 (version 2) (strings) combined with elements of Event 10 (wind)
bars 227–246: Event 1 (db transposed down a minor third; harmony altered (tbns, tba))
bars 247–257: Event 8 (radically altered)
bars 255–268: Event 7 (radically altered)
bars 269–284: Event 2 (version 1) (pitches altered)

The unusual scales, consisting of 7/4-tones and 5/4-tones, as well as others, will now germinate in the next work under consideration, *String Quartet No.4*.

The title of this thesis is 'The synthesis of diverse musical strands' but as I stated at the outset it is possible to extend such synthesis even further, through the input of ideas from elsewhere, such as the visual arts, theatre and film. I referred to theatre and film earlier and have shown parallels with the work of Abstract Expressionist visual artists. My own practice in visual art here begins to be synthesised with my music. In both *Untitled No.8* and *Untitled No.9* a texture of very rapid glissandi played by the strings, a mass of downward moving gestures, appears. This was directly inspired by its correlative in my own visual work. The *act* of engraving lines, quickly, into paint led me directly to the idea of the string glissandi.[56]

I also referred to my aim in *Untitled No.9* to take sound itself and, much like in a painting, to compose areas of colour (colour-fields) that are alive and moulded, blocks of sound presenting a huge and unyielding indifference. My own attempts to create such visual results have, more than my observation of others', led me to synthesise the ideas and, thereby, aspects of the two art forms. Guy Dammann, writing in The Guardian about my work *Untitled No.2*, for orchestra (2006-2008), observed, 'Reflecting Clarke's second career as a painter, the concerto is labelled simply Untitled No. 2 and, rather in the manner of an abstract painting, explores a limited number of harmonies and the relation between them. Despite this essentially static framework, the piece unfolds a beautifully balanced, dynamic structure.'[57] I believe that my continuing research into the matter of synthesis has further deepened the relationship here described and that in *Untitled No.9* parallels with visual colour fields, and a non-linear attitude to the 'sound-areas', are clearly audible. A colleague commented to me, 'You're composing like you're painting now, in bold, broad strokes, with room for intimate detail.'[58]

In Chapter I I described my early music from the 1980s as being concerned with transformation, and in particular with connecting aspects of the music in such a way that

[56] See Appendix 7.
[57] Guy Dammann, The Guardian, Tuesday 3 May 2011.
[58] Email from Don Davis, 13th May 2018.

(to take my earlier example) a *crescendo* might connect directly, from the point of view of logic, with a *glissando* or with a transition from sparse music to dense. To quote Chapter I, 'a transforming idea such as the metamorphosis of a single note through various intermediate stages into a melodic theme could thus be clearly related to other transformations such as a *crescendo* from *piano* to *forte*, or a transformation from sparse textures to dense ones, or from a high register to a low register (to take just three possibilities), in order to result in a unified and coherent structure'. If one observes the opening of *Untitled No.9* (Fig. 25), it will be seen that the first three bars are 3/4, 7/8, 4/4. Much use is made of accelerandi and rallentandi in the tempo structure, which, on a macro-level, relate to the gradually lengthening nature of these first bars. In *Untitled No.8* the use of a similar number sequence – 7,6,5,4 – was similarly integrated into many aspects of the work. Such connections, even at the level of small details such as these, are a vital component of my music, which, as in my already mentioned simile of a forest, is a complex network of interrelationships and interconnections. My earlier attempts to integrate all parameters through the use of transformation in each was an early stage on the path to the present research, which goes beyond integration to arrive at synthesis.

Chapter VII
The Magnification of Scales
String Quartet No.4

The next work to be considered, *String Quartet No.4*, (2017) is based on various new pitch scales, some of which were hinted at in *Untitled No.9*. Interconnections are paramount here too, for in this work we will see music played in different versions in different scales, each of which is a magnification of the other. For example, a melodic fragment might appear in a quartertone scale and then re-occur in a semitone scale, with all the intervals twice the size of the original. It might appear in a three-quartertone scale, wherein all the intervals are now three times the size of the original. This idea of different magnifications is exactly the same principle as the notion of complexity and 'micro-complexity'. In the first, one's attention is at a certain focus; in the second the focus is adjusted as if magnified by a microscope and the object viewed is made, not necessarily more visible but, differently visible. The methods of generating pitch material and the general concept of different types of complexity both stem from the same root, that of magnification, and are thus connected and united. This is yet another synthesis of two strands.

In Chapter V, I discussed my use of scales, an investigation lasting forty years, starting from the first explorations of 'irregular' scales, and going on to scales which divide the octave into equal parts, such as 8, 4, 3 or 2 notes to the octave (which relates to the constantly used 24 and 12 note scales and is an example of another synthesis). I also explored the possibilities of non-octave recycling scales, and, in *Untitled No.8*, of expanding sequences of numbers. In *String Quartet No.4* the equal division of the octave into 24, 12, and 8 (quartertone, semitone, three-quartertone scales) finds a synthesis with non-octave recycling scales. The new scales which were briefly 'announced', as it were, in *Untitled No.9* are here developed further. These are 5/4-tone and 7/4-tone scales, to which are added other magnifications: 9/4-tone and 11/4-tone. (Fig. 26)

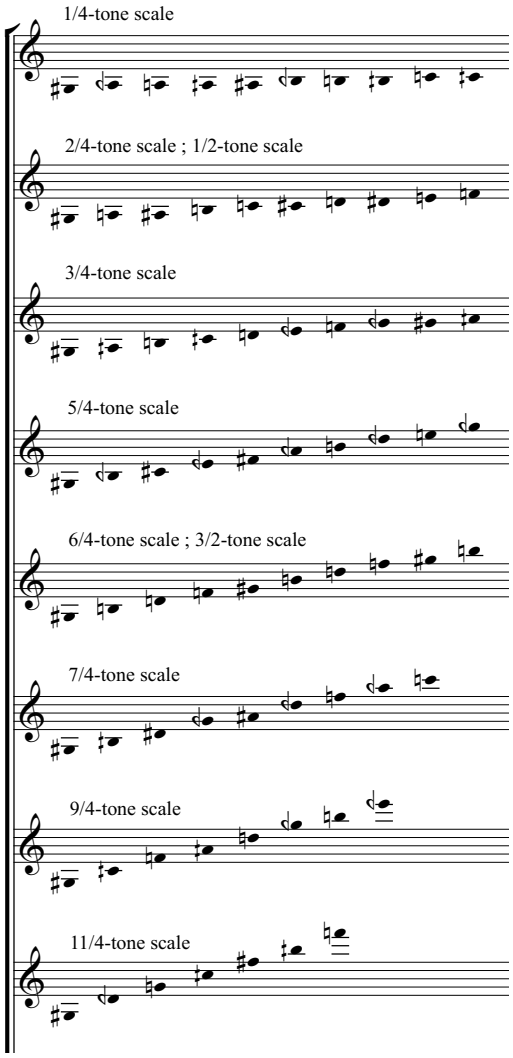

Fig. 26

A melodic or harmonic idea might now appear variously in quartertone, semitone, three-quartertone, five-quartertone, seven-quartertone, nine-quartertone or eleven-quartertone scales. The same pitch material is presented in different magnifications. Four-quartertone (the whole tone scale), six-quartertone (a scale of minor thirds), and other scales are of course equally possible. Add to this the possibility of irregular scales (such as the tonal major and minor scales) in various new manifestations and the possibilities are infinite.

Complexity and 'micro-complexity' are different magnifications, and one could argue that they are limitless in their scope, with the potential to become infinitely complex at a macro-level and to become similarly infinitely complex at a micro-level, in the

investigation of the minutiae of sounds. The potential for generating interconnected pitch material in different magnifications is equally limitless.

From the infinite possibilities that have now presented themselves, I, as composer, must now make choices about what language to use, by restricting myself to a set of grammatical rules. These have to do with an intuitive sense of how the music should sound which can be explained by logic and by context. I could, for example, use odd-numbered scales only (quartertone, three-quartertone, five-quartertone, seven-quartertone, nine-quartertone and eleven-quartertone scales). This is logical in the sense that it is consistent. Context leads me to be wary of a whole tone scale, as another example, because it sounds quite different from other scales and invariably reminds us of Debussy. Tonal and pentatonic scales fall into a similar type of category. The quality of sound desired will determine a composer's next step.[59]

String Quartet No.4 opens with one-minute-long chord played *crescendo* followed by a complex 'Event' stemming from four of the aforementioned scales (5/4, 7/4, 9/4 and 11/4-tone) combined, developed, elaborated and varied (with much use of 'octave transposition'). The Event is played very loud, four times. Immediately afterwards it continues to be repeated, another four times, this time extremely quietly except for punctuations of loud material. The idea of playing a loud passage of complex music and then repeating it softly was already observed in *2016-E*, where I described it as encouraging a type of listening that highlights what one might call 'the previously undiscovered', and observed that at the new dynamic the passage sounds very different indeed. Here the matter is developed further. The quiet repetitions of the Event are almost inaudible, except for the loud punctuations, which are 'memories' of the Event's previous state. Fragments in the original dynamics appear in the otherwise extremely quiet context. Increasing use of the technique of 'erasure' is made; notes are left out and certain notes are held ('suspended'). In the opening of this work we find a synthesis of several of the techniques discussed in this thesis: repetition, 'erasure', 'suspension', 'octave transposition', and the use of scales.

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[59] This does not mean that any one category of pitches is necessarily to be excluded and that it cannot be integrated with others, however. The use of pentatonic scales in Mathias Spahlinger's *Akt, eine treppe herabsteigend* (1997-98) is a startling example of what is possible.

The second Event develops from the chord which ended Event 1. The low cello perfect fifth in bar 22 is a precursor of the chord which opens Event 2 (bar 23). This Event is in the 7/4-tone scale but both in pitch and in method of playing features distortion. It also features 'octave transposition'. The first chord begins on the lowest C of the cello, a quartertone lower than the previous chord's lowest note, thus a transposition of harmony by the smallest step possible (in the 24-note scale). The 7/4-tone scale used actually starts two octaves higher, on C4. The use of 'octave transposition', which usually refers to changing the register of single notes, here involves adding notes at lower octaves. The scale can be observed in violins 1 and 2 (C, Ed, G, Bd, and then, rather than progressing to D and F†, which should have been next, a note halfway between D and F†: E eighth-tone flat).[60] The C, Ed and G are repeated an octave lower in viola and cello, emphasising the consonance plus distortion idea which I have used elsewhere. The C and G in violin 2 are then distorted by alteration by a quartertone (bar 24).

Repeating the idea in Event 1 of loud versus soft, after an initial crescendo to *ffff*, the major part of Event 2 is a diminuendo to *pppp*, over 60 seconds. This is followed in bars 27–28 by the 7/4-tone scale continuing its upward movement, notes in a 5/4-tone scale being introduced, and a combination of the two scales. Bars 29–34 are three variations on bars 27–28, making a total of four six-second fragments (bars 27–34), each of which is written for a different trio (a further use of 'erasure').

Event 3 follows (bars 35–41). The aforementioned use of 'octave transposition' to add, not simply to change notes, finds an extreme form in which all the instruments play in octaves. Each bar has a different duration and is in a different scale: 5/4-tone, 7/4-tone, 9/4-tone, 11/4-tone, 7/4-tone, 9/4-tone and 5/4-tone. This Event is played unaltered three times.

Event 4 (bars 42–61) is a viola solo over a three-part chord played (again with octave doubling) by the other instruments. Bars 42–45 are in the 7/4-tone scale. The chord is again the synthesis of major and minor triads (G, Bd, D), as in *Untitled No.9*, Event 9, bar 147; the viola melody is also entirely in this scale, apart from a repeat of the C, C†

[60] As before, accidentals are designated as follows: d = quartertone flat, db = three-quartertone flat. † = quartertone sharp.

interval (mentioned before, in the cello, transitioning from Event 1 to Event 2) and for 1/4-tone 'filling in' at the end of bar 42. Bars 46–48 are a development of the previous melodic material transposed into a 5/4-tone scale, and the accompanying three-part chord is also altered to be in this scale (G†, Bb, C†) (again a quartertone transposition of harmony, G to G†)[61]. Similarly, bars 49–51 explore the three-quartertone scale, and bar 52 the semitone scale. Bars 53–60 repeat the chords and scales, the viola solo being a development and variation of bars 42–52. Bar 61 is silent.

Event 5 (bars 62–74) is an extremely complex development section, using various different scales (predominantly 5/4, 6/4 and 7/4) and a related set of transpositions which alter material by intervals connected to these scales. Event 6 consists of one bar (bar 75), in which the cello plays (in the 6/4-tone scale) notes reaching an extreme of the pitch range. This bar serves to lead into a variation on Event 4, this time featuring the cello as soloist rather than the viola (bars 76–97). The three-part chord is now in the 8/4-tone, 5/4-tone, 3/4-tone and semitone scales, and is, as before, played twice. This repetition of chords is to appear as a major feature in Event 7.

A variation on Event 5 begins in bar 99 as an explosion of *pizzicato*, and develops into a solo for the first violin, beginning in bar 104. Event 7, which also begins at this point, develops the repeating chord idea, beginning by sustaining the notes arrived at at the end of bar 103 ('linear logic'). These are a mixture of the 7/4-tone and 5/4-tone scales (Gd, Bb, C†) and provoke a complex combination of scales to produce the three chords that follow, which are now heard ten times, with various forms of alteration and 'erasure' and with the addition of further notes (in the first violin). The 'erasure' here is caused by the superimposition of a fragmented version of Event 1, heard one instrument at a time. The solos are in the reverse order of the pattern heard in the work so far in Event 4, Event 4 version 2, and Event 5 – violin(s), cello, viola.

The work continues in bars 138–140 with a second version of the beginning of Event 2, followed by a second version of Event 1 (bars 141–145). This latter takes the notion of

[61] The scales are rooted in particular notes, just as tonal scales, and sometimes modes, are. In Event 2 this was C; in Event 4 it is initially G. The perfect fifth is two steps in the 7/4-tone scale and fundamental to it. The same role is played by the perfect fourth in the 5/4-tone scale and by the diminished seventh chord in the 3/4-tone scale.

'octave transposition' to a radical new extreme by condensing the music into the lowest octave of each instrument's range. In bars 146–155 the same procedure is applied to Event 5, with the exception that the music leaps upwards, and out of this constraint, in bars 151 and 153–154, reaching in the latter an extreme at the opposite, upper end of the pitch range. A logical consequence of this is to introduce a reference to Event 6 (the one bar cello solo in an extremely high register), so a second version of this Event follows in bar 155, and in bar 156 the first bar of Event 4 version 2 (cello solo), which previously followed Event 6, is, as it were, 'mentioned', in altered form.

Bars 156–185 present a new version of Event 3, which appears four times in different transpositions, sweeping from high register to low. Bars 186 to the end are formed of Event 5 version 2, the music played mostly *pizzicato*, again confined to the lowest octave of each instrument. Much use of repetition is made, including the 'suspension' of individual bars, which are repeated a number of times (the same technique as already seen in *Untitled No.9* and *2016-E*), and throughout, the density of the music is gradually thinned by use of 'erasure'.

Chapter VIII

2017-V

The art of composition, if it is not on the most simple level of assemblage, involves a working and reworking of the details within a composition. The details are refined and altered, expanded in layers of meaning. Variation, transformation and similar techniques are employed and then re-employed. That which was varied is varied further, and then again altered, for reasons that are logical and the result of interconnections being made and then new ones forged. The more this is done, the more complex the work will be and consequently the more difficult to analyse. Brian Ferneyhough once remarked, 'I'm good at covering my tracks'.[62] Layers of complexity are the result (especially in his case) of dozens of procedures and many superimpositions, or indeed perhaps 'erasures', so that the end result is the rich tapestry that it is, and one would be hard put to discover why.[63] It is here that the ineffability of music is matched by the unexplainable complexity of its constituent techniques, unexplainable because in the white-hot activity of composing the work the composer will make decisions in a flash of inspired concentration and it is impossible afterwards to remember them all. Each increase in complexity is a new layer of thought leading to new alterations of the material being considered. The synthesis of many different strands of thought and opposing ideas will, I contend, lead to the richest result.

2017-V (2017) is a work for solo violin lasting 21 minutes. It is the result of a very large number of variations and alterations of material, a constant reworking, and, as in Ferneyhough's remark, the tracks to the finished result are covered, in this case almost obliterated. I have discussed the process by which I have used material from earlier work as source for further consideration. Here elements of music written earlier, and for other instruments, find their way, thoroughly transformed, into the musical argument of the current composition. Harmonies and harmonics derived from possibilities given by different tunings, later discarded, the new harmonies revised and altered again, together with three magnifications of a scale (in quartertone, semitone and three-quartertone divisions) are the basis for a complex elaboration of material. This is worked and

[62] Personal conversation.
[63] See Ferneyhough, *op. cit.* and Toop, *op. cit.*

reworked so extensively that, as I say, the original sources are completely obscured. All the techniques discussed hitherto are employed, but most especially variation, 'suspension' and 'erasure'. These have featured in the other works discussed but in *2017-V* they are prominent to an even greater extent than previously. We find material generated by taking a thematic idea, or Subject, which is itself a set of variations, and employing a synthesis of 'suspension' and 'erasure' in order to alter it. The Subject in question is made up of twelve variations, each three or four bars in length (bars 61–100).

The opening of the work uses an expanding numerical sequence (as did *Untitled No.8*) here to 'erase' notes, leaving the remaining ones 'suspended'. A sketch for this, actually written for cello and not violin, shows the process clearly. The following three-bar fragment of the Subject is the source for bars 61-63 of *2017-V*, prior to its being recomposed and greatly altered in the final (violin) version. (Fig. 27)

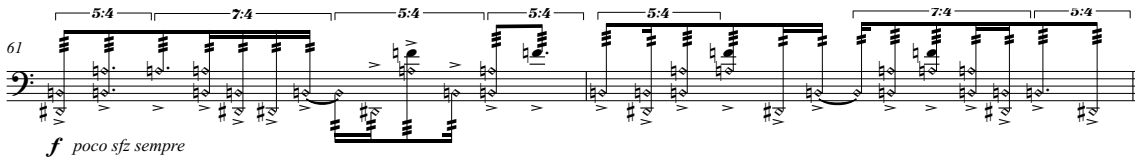


Fig. 27

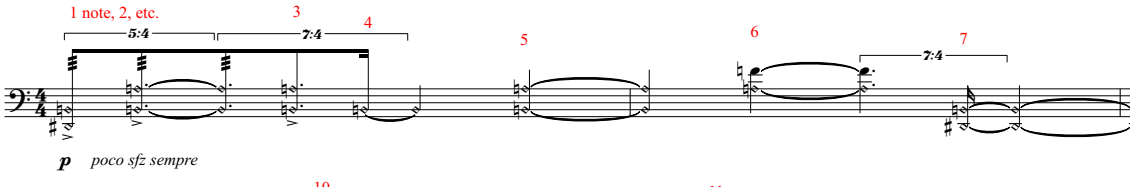


Fig. 28

In Fig. 28, attacks are 'erased' according to the numerical sequence, 1, 2, 3, 4 ... 15, and then in reverse. This process is repeated with an expanding sequence from 1 to 8 and back to 1, and then repeated several more times, each time reaching a slightly different upper number before returning to 1. The first section of *2017-V* (bars 1–60) is a rewriting of this earlier sketch, so greatly altered that the original connection between opening section and Subject is no longer analysable, the tracks well and truly covered.

Subsequent sections of *2017-V* expand, develop and vary material in a similarly complex manner, highlighting register and wide glissandi (bars 101–122), harmonic matters (arpeggiated four-note chords) and melodic lines in the three magnifications of the scale employed (bars 165–216), or variations on the material already presented (bars 123–164). The final section (bars 217–279) becomes more extrovert melodically, uniting the previous ideas in a virtuosic and melismatic manner.

Conclusion

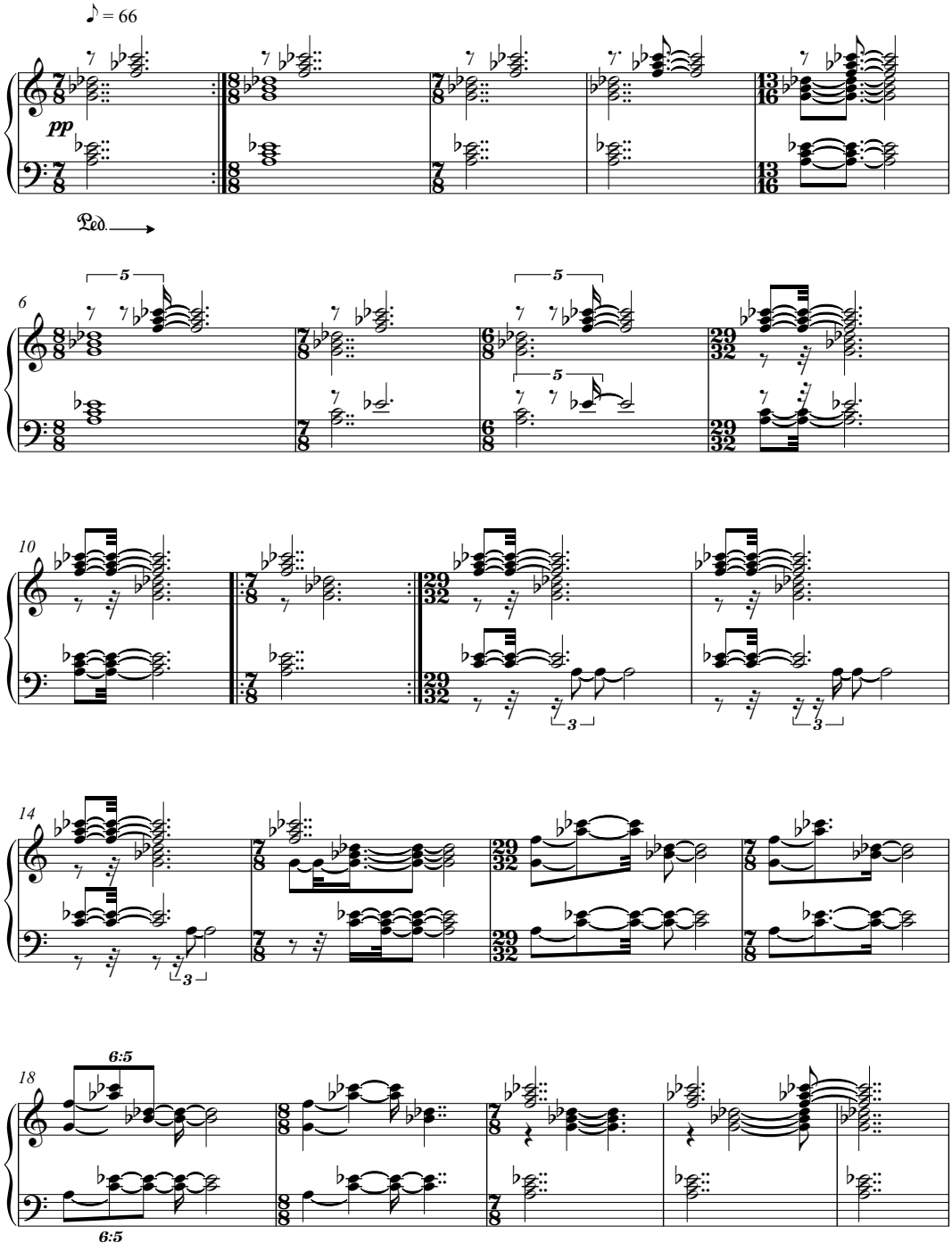
Enrichment in the form of an extension of knowledge and awareness through the medium of music has been an aim of the work presented here and my method is that of the broadest possible exploration and investigation, going to extremes and transgressing limits, followed by the synthesis of the many strands that result. The interconnections and complexity that are discoverable in the finished results are, I hope, rewarding and conducive to this aim. My work has consistently posed questions of itself, by challenging and opposing anything that attempts to establish itself as a thesis. The questioning results in antithesis, and further work and contemplation result in a greater understanding of both. This then leads to a synthesis of the most positive aspects of each. Since focusing on transformation as an over-arching unifying principle, and then opposing this with its opposite, I have, at all levels in my work, attempted to find ways of synthesising the most powerful elements that appear to me to be worthy of further exploration.

The aim is always, in Xenakis's words, 'to catalyze the sublimation that [music] can bring about through all means of expression'. It is also to be aware, and be further enriched by this awareness, of the intelligence that has led to complex detail. Just as one may observe a forest from afar or from inside and close, it is our knowledge and awareness of the subtlety of these different magnifications of complexity that enrich our musical experience. My aim is to synthesise these different aspects, relate them together and integrate them in a statement that is, in each finished composition, a musical 'world', independent and defiant.

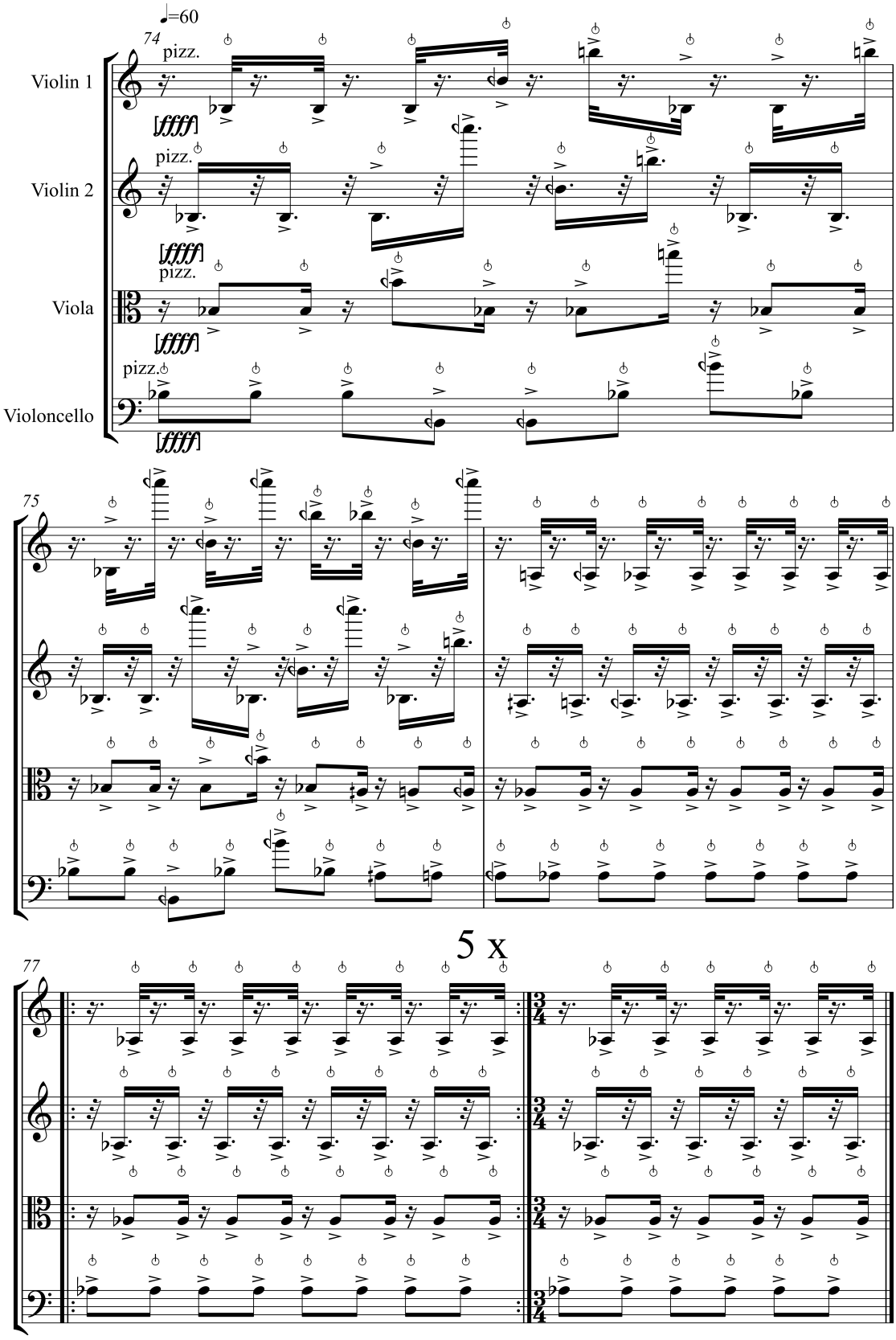
The different methods that one can use to make the statement include, in form, the linear and non-linear and a synthesis of both. Sound can range from precisely written pitch to noise, and random clouds that are unpitched, and to a synthesis of both that leads to new discoveries and ideas. A constant rethinking and reassessment of one's own previous work can lead to that too being synthesised with one's later concerns, resulting in enriched and more profound possibilities.

Complexity has to do with the greatest number of interconnections, a synthesis of different elements. The idea of different 'magnifications' of ideas can itself be synthesised in a rich tapestry of methods of logical interconnection: from the 'complexity' of dense networks of notes to the 'micro-complexity' of single notes or chords; from notes in one scale connected by the idea of magnification to other notes in other scales. In addition to this, one may invent new techniques, or extend old ones, such as 'erasure', 'suspension', new kinds of 'octave transposition', and the new types of scale mentioned, all linked by a central principle of taking diverse ideas and synthesising the results of one's questioning. One can trust one's judgment and use 'linear logic' to produce unpredicted new possibilities, which are themselves then questioned. To challenge a thesis with an antithesis is fundamentally to question. It is this questioning that leads to understanding, knowledge, awareness. The richest and most profound results are to found through the synthesis of those diverse strands of thought produced by our investigations and explorations.

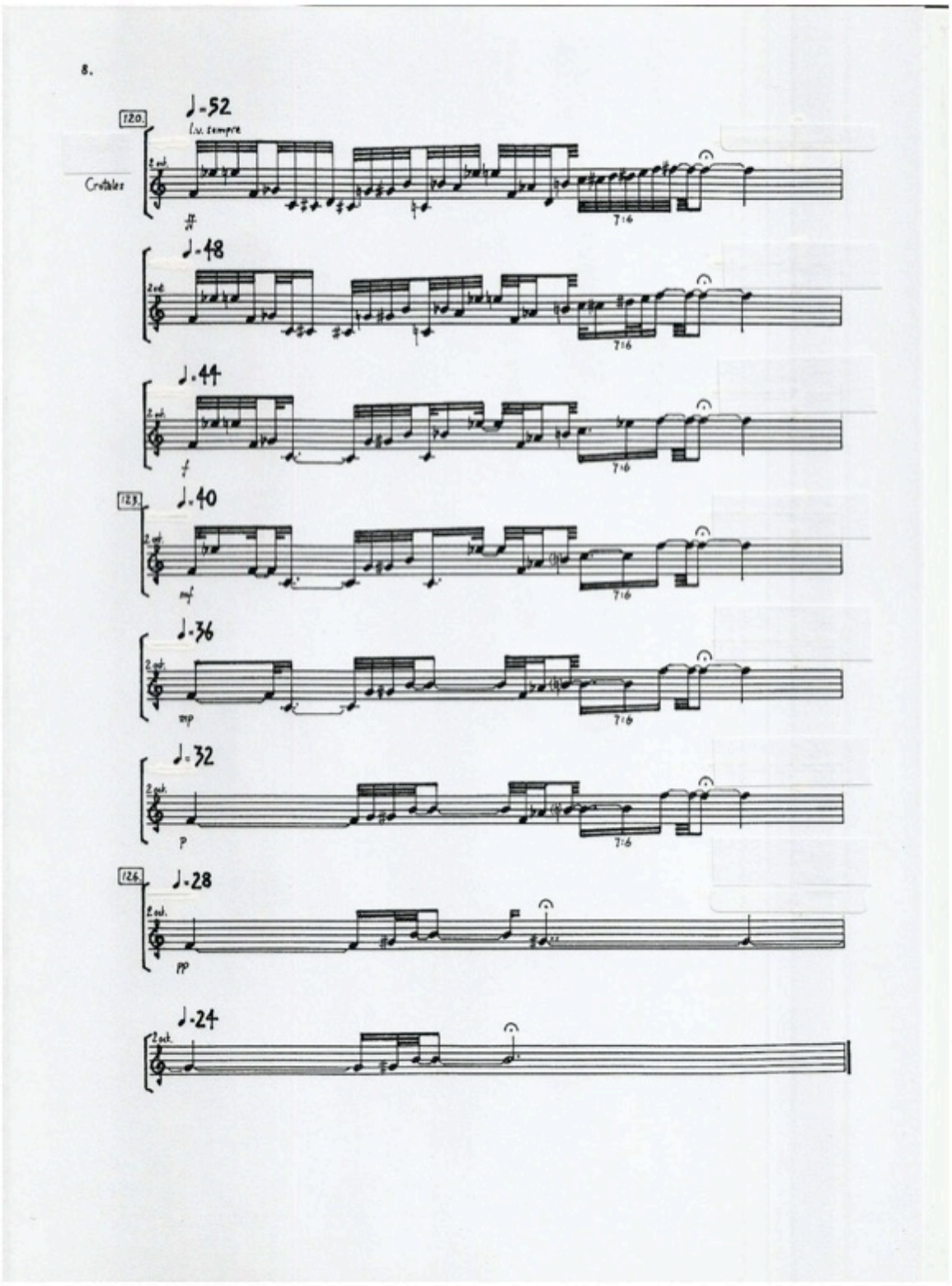
Appendix 1 The first page of *Untitled No.3.*



Appendix 2 The last bars of *String Quartet No.3.*



Appendix 3 The last page of *Acid* for solo percussion (1998). Photograph of the original manuscript, showing the process of 'erasure' clearly.



Appendix 4

The following diary entry helps to explain the construction of the string glissandi section.

Glissando texture original parts: 2 vln I, 2 vln II, 2 vla, 2 vc.

Expanded to whole string section.

Bars
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Vlns I desks 3 and 4 ; Vlns II desks 3 and 4 :

17 10 11 7 14 19 1 18 2 4 16 5 15 6 13 9 3 8 12

Same procedure for Vlns I desks 5 and 6 ; Vlns II desks 5 and 6

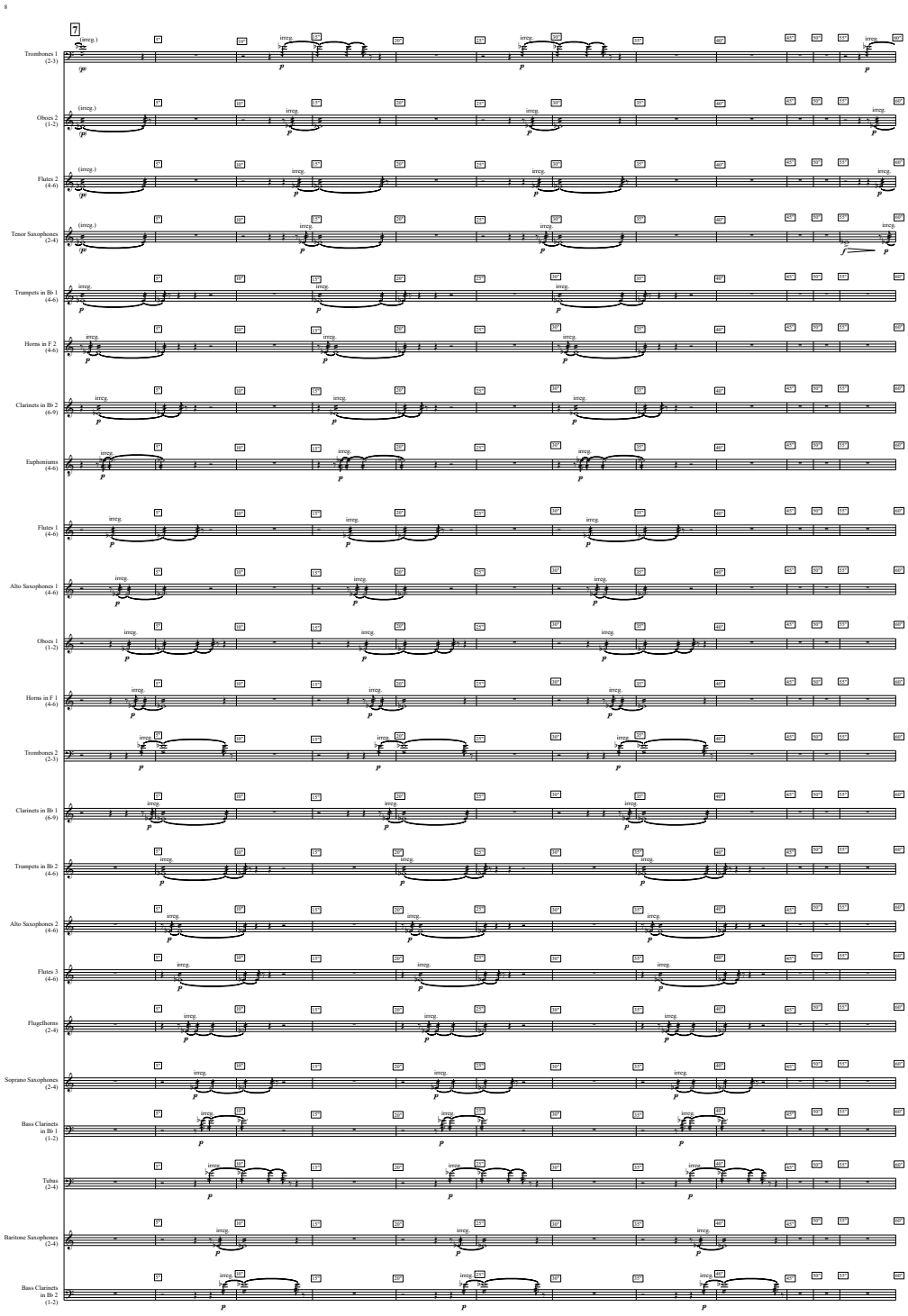
Violas desks 3 and 4:

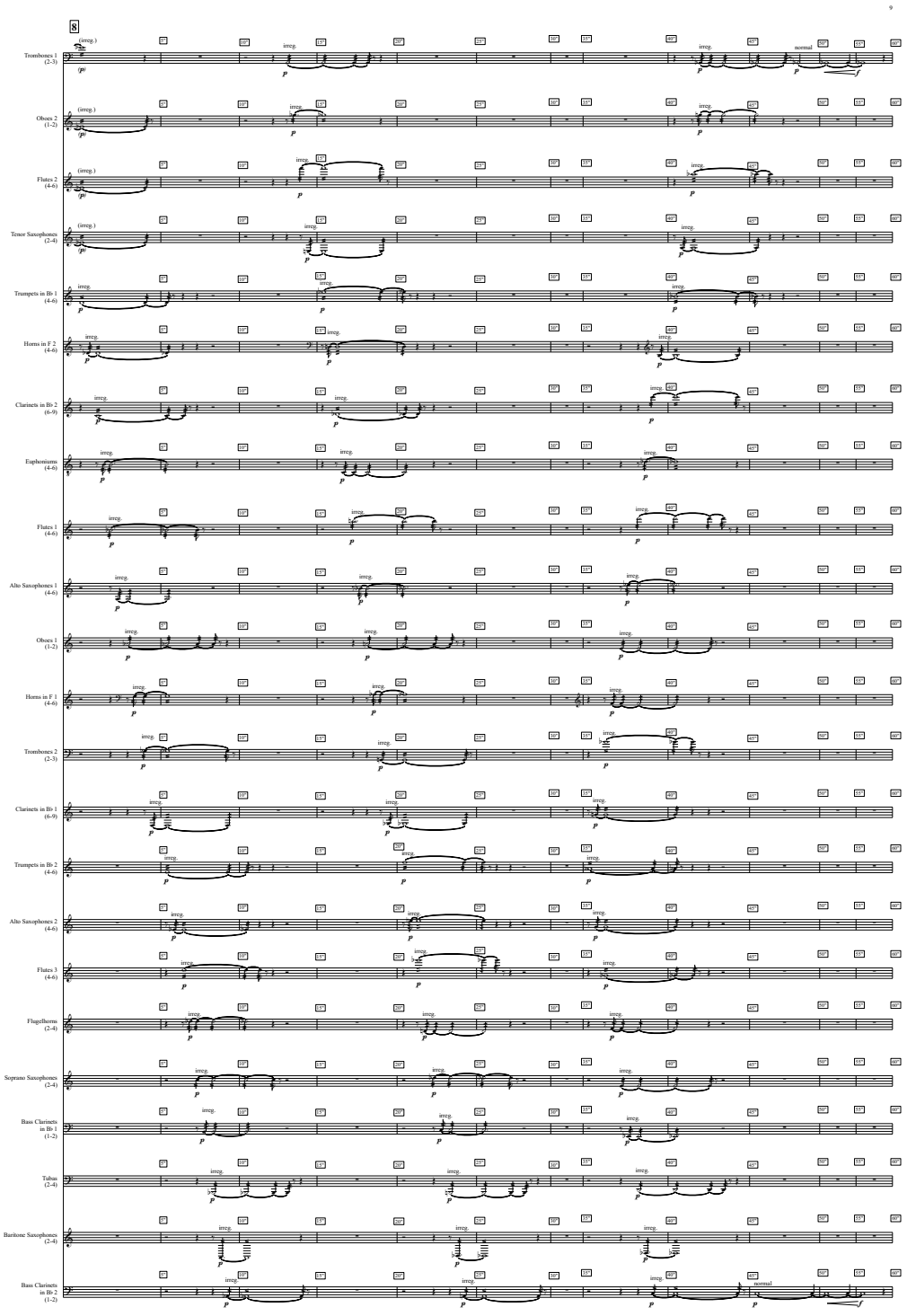
8 9 13 14 1 2 15 16 3 4 5 6 7 17 18 19 10 11 12

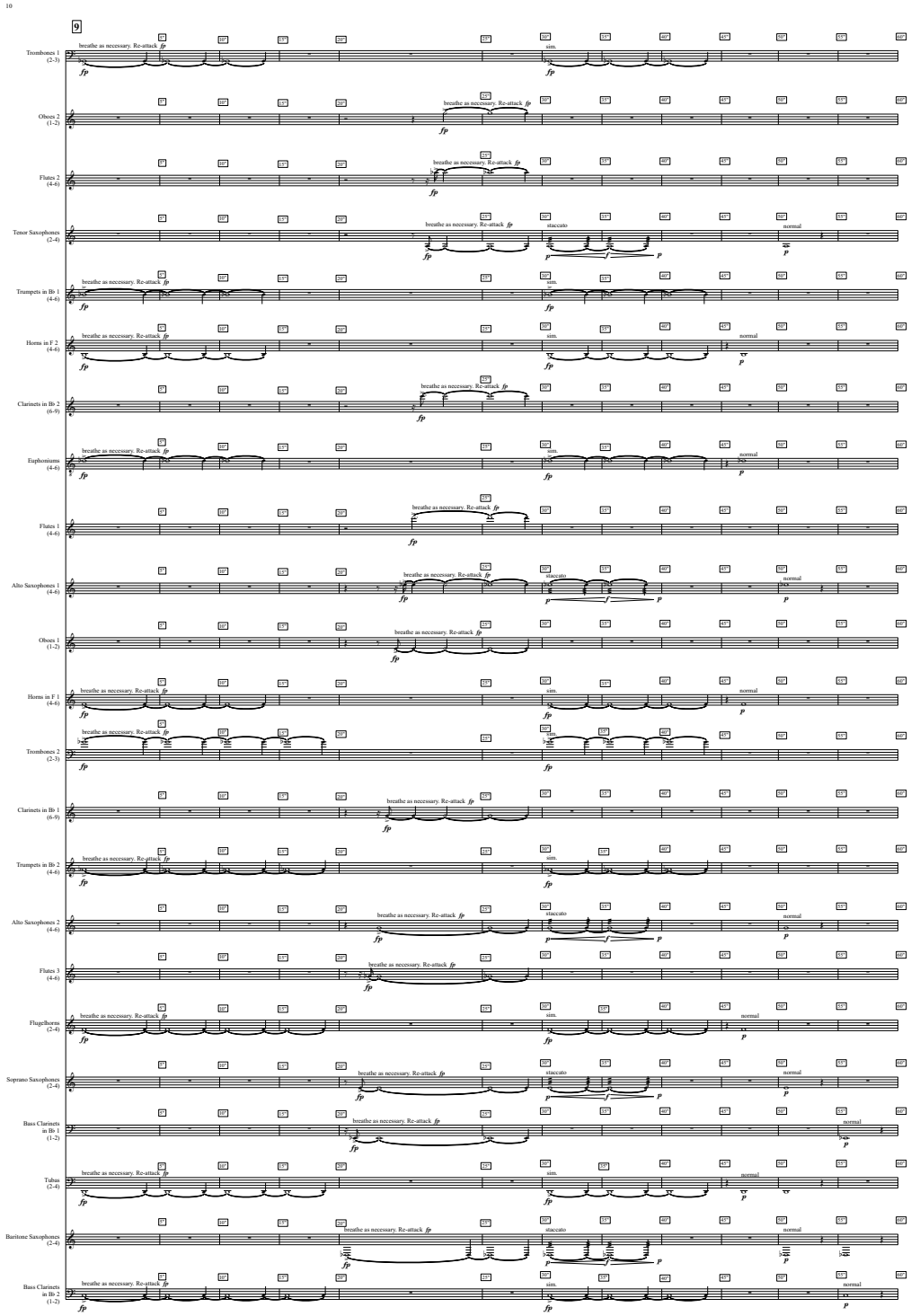
Celli desks 3 and 4 (from first transformation but last bar, 12, now starts)

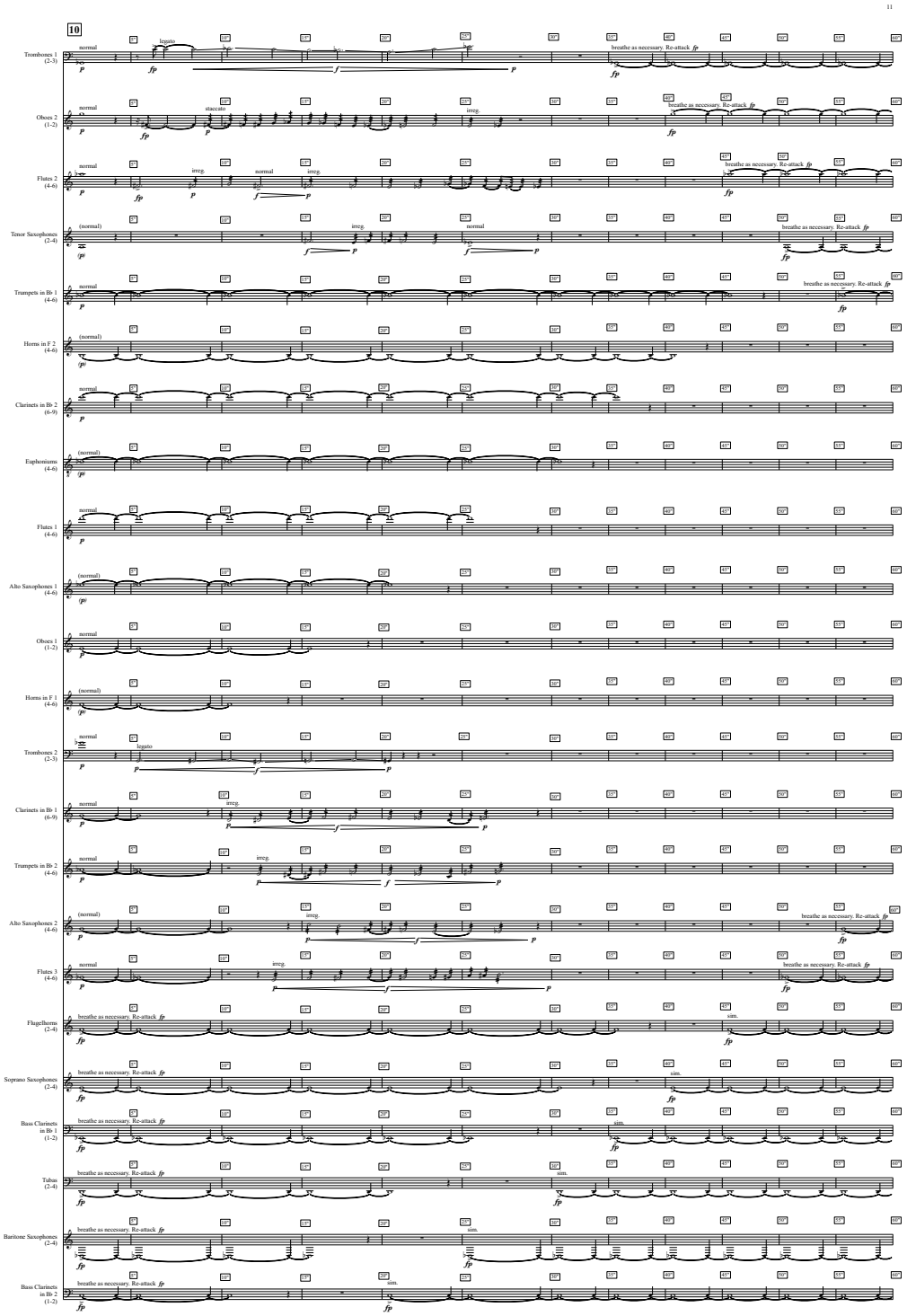
12 17 10 11 7 14 19 1 18 2 4 16 5 15 6 13 9 3 8

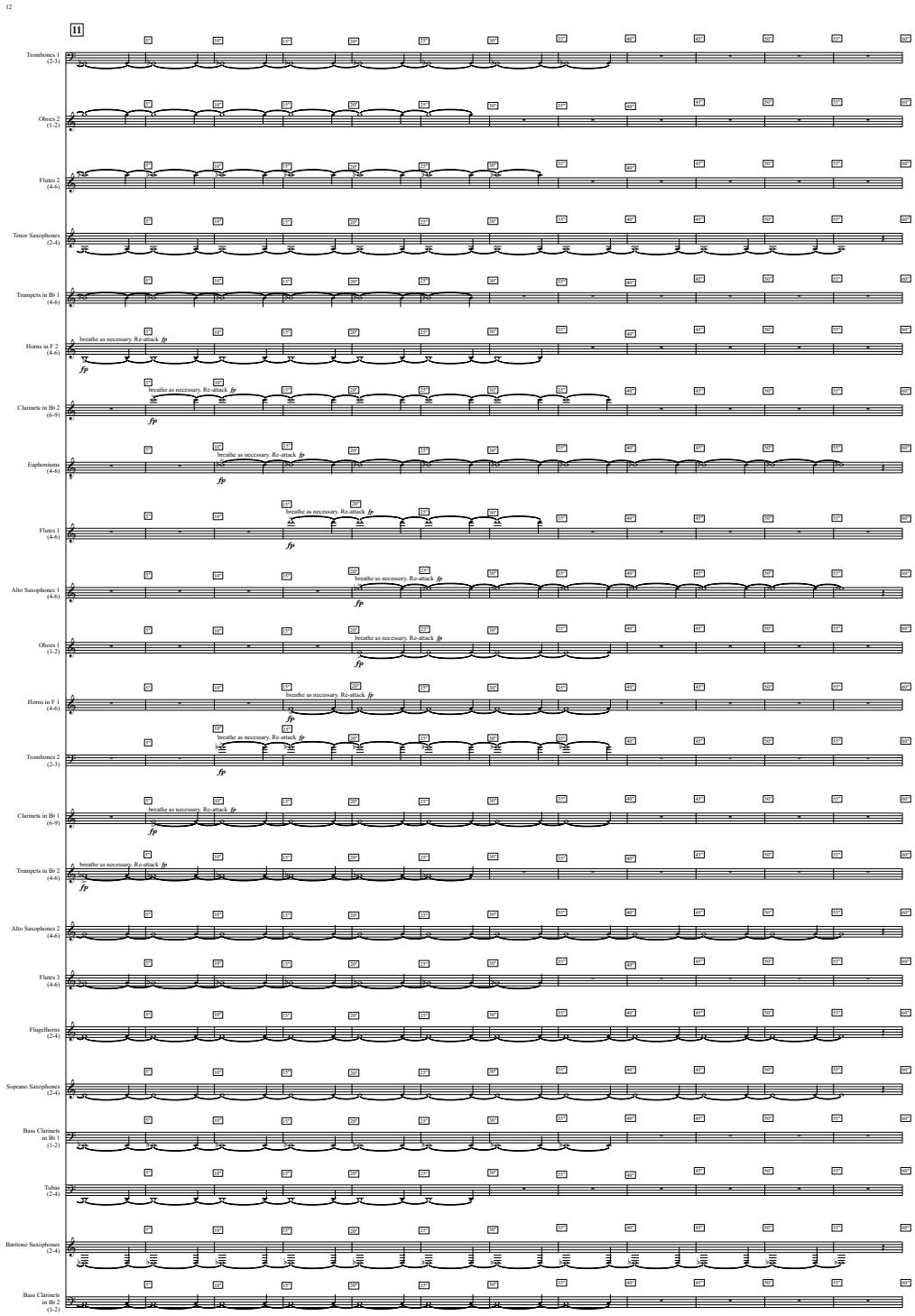
Appendix 5 *2012-L*, pages 8-12.



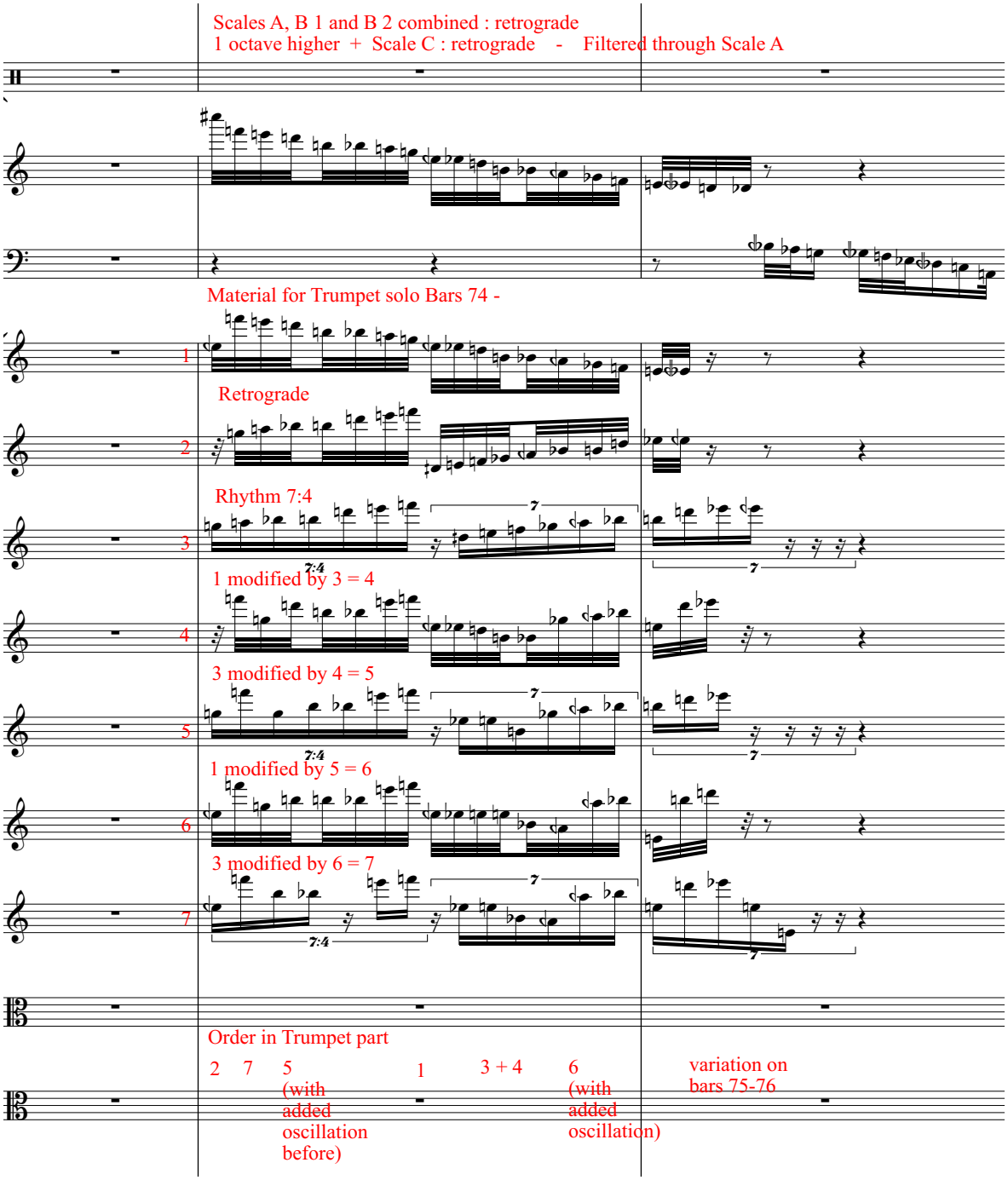

8
Trombones 1 (2-3)
Oboes 2 (1-2)
Flutes 2 (4-6)
Tenor Saxophones (2-4)
Trumpets in Bb 1 (4-6)
Horns in F 2 (4-6)
Clarinets in Bb 2 (6-9)
Euphoniums (4-6)
Flutes 1 (4-6)
Alto Saxophones 1 (4-6)
Oboes 1 (1-2)
Horns in F 1 (4-6)
Trombones 2 (2-3)
Clarinets in Bb 1 (6-9)
Trumpets in Bb 2 (4-6)
Alto Saxophones 2 (4-6)
Flutes 3 (4-6)
Flugelhorns (2-4)
Soprano Saxophones (2-4)
Bass Clarinets in Bb 1 (1-2)
Tubas (2-4)
Baritone Saxophones (2-4)
Bass Clarinets in Bb 2 (1-2)
(irreg.)
irreg.
normal
p


10
9
Trombones 1 (2-3)
Oboes 2 (1-2)
Flutes 2 (4-6)
Tenor Saxophones (2-4)
Trumpets in Bb 1 (4-6)
Horns in F 2 (4-6)
Clarinets in Bb 2 (6-9)
Euphoniums (4-6)
Flutes 1 (4-6)
Alto Saxophones 1 (4-6)
Oboes 1 (1-2)
Horns in F 1 (4-6)
Trombones 2 (2-3)
Clarinets in Bb 1 (6-9)
Trumpets in Bb 2 (4-6)
Alto Saxophones 2 (4-6)
Flutes 3 (4-6)
Flugelhorns (2-4)
Soprano Saxophones (2-4)
Bass Clarinets in Bb 1 (1-2)
Tubas (2-4)
Baritone Saxophones (2-4)
Bass Clarinets in Bb 2 (1-2)
breathe as necessary. Re-attack
fp
sim.
staccato
normal
p
f


11
10
Trombones 1 (2-3)
Oboes 2 (1-2)
Flutes 2 (4-6)
Tenor Saxophones (2-4)
Trumpets in Bb 1 (4-6)
Horns in F 2 (4-6)
Clarinets in Bb 2 (6-9)
Euphoniums (4-6)
Flutes 1 (4-6)
Alto Saxophones 1 (4-6)
Oboes 1 (1-2)
Horns in F 1 (4-6)
Trombones 2 (2-3)
Clarinets in Bb 1 (6-9)
Trumpets in Bb 2 (4-6)
Alto Saxophones 2 (4-6)
Flutes 3 (4-6)
Flugelhorns (2-4)
Soprano Saxophones (2-4)
Bass Clarinets in Bb 1 (1-2)
Tubas (2-4)
Baritone Saxophones (2-4)
Bass Clarinets in Bb 2 (1-2)
normal
(normal)
legato
staccato
irreg.
sim.
breathe as necessary. Re-attack


12
11
Trombones 1 (2-3)
Oboes 2 (1-2)
Flutes 2 (4-6)
Tenor Saxophones (2-4)
Trumpets in Bb 1 (4-6)
Horns in F 2 (4-6)
breathe as necessary. Re-attack fp
Clarinets in Bb 2 (6-9)
Euphoniums (4-6)
Flutes 1 (4-6)
Alto Saxophones 1 (4-6)
Oboes 1 (1-2)
Horns in F 1 (4-6)
Trombones 2 (2-3)
Clarinets in Bb 1 (6-9)
Trumpets in Bb 2 (4-6)
Alto Saxophones 2 (4-6)
Flutes 3 (4-6)
Flugelhorns (2-4)
Soprano Saxophones (2-4)
Bass Clarinets in Bb 1 (1-2)
Tubas (2-4)
Baritone Saxophones (2-4)
Bass Clarinets in Bb 2 (1-2)

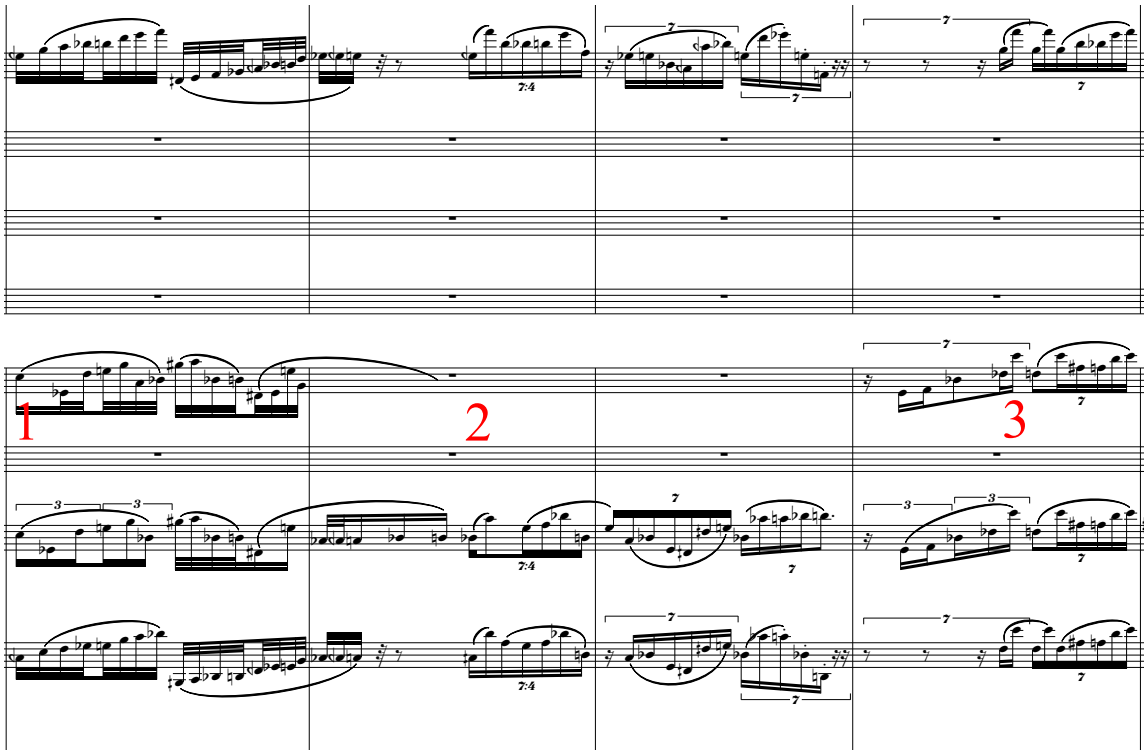
Appendix 6 Construction of the 1st Trumpet solo, Bars 74 - 90.



The astute reader will see that Transformation 7 ends with Eb, E and then E an octave lower. This last E is revised to F, giving the (octave transposed) chromatic scale Eb, E, F. Some other minor alterations are made.

These fragments are then renumbered one to seven. Working backwards they are each transposed down a number of semitones, from one semitone to seven. This gives a gradual rising movement over the course of the passage, and is scale-like in its use of the chromatic scale for transpositions. Thus fragment 1 is transposed down seven semitones, fragment 2 down six semitones, and so on until fragment 7 which is divided into two parts, the first of which is transposed down one semitone and the second is not transposed. I then revised the resulting music extensively, altering it, adding notes to link the fragments together, and generally moulding it and refining it, much like working on a sculpture.

In this second example we observe Transformations 2, 7 and the beginning of 5 (taken from the previous example), renamed and numbered Fragments 1, 2 and 3. The top line shows the Transformations (note that a few extra notes have been added, including an 'oscillation' at the beginning of the third fragment, and there is one octave transposition). The bottom line shows these fragments transposed down by seven, six and then five semitones respectively. The line above this one is the revision and extensive reworking, which is the final result. (The line above that, the third from the bottom in this example, contains some sketches showing a stage just prior to the final result.)



Appendix 7 Painting: '2009-A-No.4'

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