

**Composition-as-research: *Connecting Flights II* for
Clarinet Quartet – a research dissemination
methodology for composers**

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ABSTRACT: In this article I consider the relationship between the making of a composition and the dissemination of its research insights for composers developing practice within academia, in the context of the UK Higher Education Funding Council for England (HEFCE)'s position on the dissemination of practice-led research. I reflect briefly on current practice in the arts in Higher Education more widely before going on to discuss the practice-as-research (PaR) initiative as a potential model for composer-researchers to develop methodologies for the dissemination of their work. Finally I discuss my recent composition, *Connecting Flights II* for Clarinet Quartet in an attempt to draw out the research insights emerging from the making of the work.

KEY WORDS: Research dissemination, practice-as-research, practitioner knowledge, contextual framework, critical reflection.

The 1st International Meeting for Chamber Music¹ initiative that took place at the Unidade de Investigação em Música e Musicologia (UniMeM), at the University of Évora, Portugal, provided an exciting opportunity for composers and performers to meet, within an academic Forum, to disseminate and discuss recent activity in a variety of compositional practices. However, how and what composers are to disseminate and discuss within their research communities, at meetings of this kind (and other research dissemination opportunities) has become an issue for consideration. For some, a musical composition may

¹ An earlier version of this paper was presented at the 1st International Meeting for Chamber Music in January 2012.

stand alone as evidence of a research inquiry, with its research imperatives clearly articulated through the practice, through the production of a notated score and/or a performance of the work. For others, as suggested by Robin Nelson, “it may be helpful, particularly in an academic institutional context where much rides on judgement made about research worthiness, for other evidence to be adduced” (Nelson, 2006, p. 112). Here, there is a suggestion that, for Nelson, the production of new knowledge and/or substantial new insights within a research inquiry, may not only be an outcome as evidenced within the product, but may also reside in the processes that have led to the making of the work.

This article therefore considers the relationship between the making of a composition and the dissemination of its research insights, for composers developing practice within academia. It will provide a context for the discussion by considering the position of the UK Higher Education Funding Council for England (HEFCE) on the dissemination of practice-led research. It will briefly reflect on current practice within the wider context of the arts in Higher Education, before going on to discuss the practice-as-research (PaR) initiative as a potential model for composer-researchers to develop methodologies for the dissemination of their work. From this position, I will then discuss my recent composition, *Connecting Flights II* for Clarinet Quartet in an attempt to draw out the research insights exposed through the making of the work.

Research Context

As the UK Higher Education research communities prepared for a research audit in Autumn 2013, HEFCE published criteria for its Research Excellence Framework (REF) on the articulation of practice-led research. These include the statement that research outputs (this includes music composition) “may include a statement of up to 300 words in cases where the research imperatives and research process ... might further be made evident by description and contextualising information” (REF, 2012, p. 87). Whilst this statement is welcomed and offers some guidance to composers on how to make the results of a research inquiry explicit for the purpose of the REF exercise, it only partly addresses the issue of how composers working within an academic institutional context can best disseminate their research insights for the benefit of their respective research communities. At a time in the UK when HEFCE has made the decision to bring together the research communities of Music, and the research communities of Drama, Dance and the Performing Arts for the REF process, I would suggest that it is pertinent for composers working within academia to consider the relationship between arts PaR and methodologies for research dissemination.

Whilst there have been initiatives within the music academic community to develop methodologies for practice-led research, much has centred around performance practice² and the community has not dealt specifically with the development of appropriate methods for the practice of composition.³ In England, within the wider context of arts practice, the

² In 2007-2009, the University of London ran a project: Practice-as-research in music online (PRIMO). One of the outcomes of the project was to provide a resource for “capturing and disseminating what was once an ephemeral event”. It also, however, made the assumption that “traditional modes of dissemination, for musical scores...are well developed” (www.jisc.ac.uk/whatwedo/programmes/reppres/sue/primos.aspx).

³ Composers do have the opportunity to present their work at national and international conferences although I am unaware of any attempt to develop research dissemination methodologies in the area of composition-as-

PaR initiative over the last two decades has begun to establish new practice-led methods for research practitioners across the arts communities.⁴ More recently, an AHRC project: Practice-as-Research Consortium North West⁵ (PARCNorthWest) has invited postgraduate research students, project partners and other interested parties to share experiences and exchange knowledge and to explore the development of appropriate methods for the dissemination of research where practice remains a substantial element of the research inquiry. This has resulted in arts practitioners from across a wide range of arts disciplines coming together to share their research insights and to discuss issues in research dissemination.

At the core of the PaR initiative, debates have focused on what constitutes knowledge in arts research where practice is used as the dominant methodology, and how what is understood as knowledge can be captured and disseminated within academically established research methodologies.⁶ Of course, this debate is ongoing, continues to challenge the dominant research methodologies established within the sector, has generated a variety of bespoke approaches and is discipline specific. Brad Haseman has challenged established quantitative and qualitative research methodologies as being inappropriate for what he describes as ‘practice-led research’, using Carole Gray’s term for “research which is initiated in practice, where questions, problems, challenges are identified and formed by the needs of practice and practitioners” (Gray, 1996, p. 3), and suggests that this approach “captures the nuances and subtleties of their research process and accurately represents that process to research funding bodies” (Haseman, 2007, p. 147); his use of the term ‘practice-led research’ suggests something very similar to the concerns of the PaR initiative. Haseman suggests that the established research paradigms of quantitative and qualitative research do not resonate with practice-led research and therefore new methodologies are required. He points out that practice-led researchers normally construct “experiential starting points from which practice follows” (Haseman, 2006, p. 100) and that this conflicts with the established positivist research paradigm whereby researchers begin their research inquiry by first constructing a ‘problem’ and then working through that problem towards a solution; in practice-led research, problems (or what might better be described as research questions) normally emerge after the practice element has begun. From this position Haseman suggests that a third paradigm is emerging, which he calls ‘performative research’, whereby practitioner-researchers develop research methods appropriate to the individual needs of specific practices. Although these methods are likely to be project specific, Haseman has suggested that these might include a reinterpretation of some of the practices currently exploited within qualitative methodology such as: “reflective practice, participant observation, performance ethnography, ethnodrama, biographical/autobiographical/ narrative inquiry, and the inquiry cycle from action

research. If the reader is aware of any developments in this area, I would be grateful to receive information.

⁴ Practice as Research in Performance (PARIP) was a 5-year AHRB project that ran between 2001 and 2006 aiming to “develop national frameworks for the encouragement of the highest standards in representing practical-creative research within academic contexts” (<http://www.bris.ac.uk/parip/introduction.htm>).

⁵ See <http://parcnorthwest.miriadonline.info/>.

⁶ For a full discussion of this topic see Nelson (2006, 2013).

research" (*ibid.*, p. 104). In performative research, practice is seen as the principal activity for the research, and researchers desire to express its findings in "forms of symbolic data other than words in discursive text" (*ibid.*, p. 103). For Haseman both the process of creation and the final product are positioned as research.

Barbara Bolt offers a different perspective: she suggests that arts researchers can "demonstrate a very specific sort of knowing, a knowing that arises through handling materials in practice" (Bolt, 2007, p. 29). For Bolt this form of knowing occurs when materials and processes of production "come into play in interaction with the artist's creative intelligence" (*ibid.*, p. 30). Bolt uses Paul Carter's terminology when she calls this process "material thinking" (Carter, 2004, p. xi) and suggests that this process is pivotal to the creative process. Drawing on the philosophy of Heidegger she states that "we come to know the world theoretically only after we have come to understand it through handling" (Bolt, 2007, p.30). She suggests that the resulting 'praxical knowledge' that this approach may produce is likely to take a number of different forms and it is the teasing out of the subsequent knowledge forming relationships exposed through the handling of materials and processes that gives 'practice-led research' its distinctive quality. Again, this author's use of the term 'practice-led research' resonates with the concerns of the PaR initiative. Of relevance to our discussion, Bolt regards the articulation of praxical knowledge exposed during the process of creating practice as an essential element of the research inquiry. Whilst she believes that an artwork can be "imminently articulate and eloquent in its own right, tacit knowing and the generative potential of process have the potential to reveal new insights" (*ibid.*, p. 31), and she concludes that these are best articulated through written text. Furthermore, she sees the articulation of the research processes that have been exposed through material thinking as being of significant benefit to the wider community. When relating her argument to postgraduate research study, for example, she argues that "research can disable practice-led research by confusing practice with praxical knowledge and severing the link between the artwork and the work of art" (*ibid.*, p. 34).

Hazel Smith and Roger Dean suggest that "[arts] knowledge can take many different forms and occur at various different levels of precision and stability" (Smith & Dean, 2009, p. 4). In an attempt to tease out these forms and give a general overview of the potential for the PaR methodology within the academy, Smith and Dean have developed the iterative cyclic web.⁷ The model presents as a map of potential starting points for developing ideas. The model suggests that arts research has the potential to move between, and be located in, three specific areas of activity: practice-led research, research-led practice, and more traditional forms of academic research. In this particular model practice-led research is defined as practice that generates "research insights which might then be documented, theorised and generalised" and research-led practice is defined as "scholarly research [that] can lead to creative work" (*ibid.*, p. 7). As the name suggests, the iterative cycle web offers the practitioner-researcher a complex network of pathways, potential methodologies and subsequent opportunities for constructing a research inquiry; of course, it is important to emphasise that a research journey for arts practitioner-researchers must be led by the concerns of the project under consideration. However, the iterative cycle web is a useful

⁷ For a full articulation of the model see Smith and Dean (2009).

tool for locating practice within the wider context of research. In an attempt to unpack the complexities of the model we might consider the three dominant strands embedded in the structure. The cyclic construction of the model suggest that arts research has the potential to alternate between practice and research and that the two states are interconnected; the web formation of the model suggests that there are “numerous points of entry, exit, cross-referencing and cross-transit within the practice-research cycle” (*ibid*, p. 8), where a research inquiry might be further developed and exposed; and the concept of iteration within the cycle is offered as a way of developing and refining the work and is seen as “fundamental to both the creative and research process” (*ibid*, p. 19).

The model is useful for our discussions as it gives some indication as to how a creative/research journey might begin by offering potential starting points within the cycle; how the work might progress within the network of potential development points; how particular aspects of the work might be developed by suggesting further iteration cycles; how both process-driven and goal-orientated practices might work within the structure; and how the resulting forms of knowledge might be identified and captured for dissemination. In relation to navigating the model Smith and Dean state that:

...a creative arts practitioner may start...with an idea or play with materials to generate ideas. This process is followed by the selection of ideas (which may be sounds...) which are pursued through investigation or research. These ideas are then developed and released through publication or other public outputs. If we advance round the circle clockwise we note that publication may be followed by formulation and theorisation of the ideas, processes and techniques which have developed through the creation of the published artwork. These formulations and theorisations may, in turn, also be published and/or applied to the generation of future creative works. However, at every stage of the cycle it is possible to go back to previous stages (Smith & Dean, 2009, pp. 19-21).

On reflection, my own creative journey resonates with the suggested pathway described above. This includes generating, selecting and refining ideas through a process of iteration; developing documentation relevant to the creative process and final product; publishing outcomes through performance; and developing contextual and analytical formulations of the ideas, processes and techniques at play in the work. These are important stages within the research journey and are located on the iterative cycle web at the point of intersection between practice-led research and research-led practice. My working processes incorporate these areas of activity and freely (if at time randomly) oscillate between each of these states of inquiry and practices as I explore my compositional practice. The Smith and Dean model is ambitious and comprehensive in its representation of the arts practice and research process and, in addition to offering a potential starting point for me to consider the process of how and what to disseminate as part of the research inquiry, has also raised awareness, for me, of how other points on the model and alternative research pathways might be established for arts research into compositional practice in the future.

Reflecting on these formulations of practice models, and in particular when considering my own approach to the dissemination of compositional research, I am drawn to the dissemination model proposed by Nelson (2006). When considering the notion of a PaR inquiry he suggests that:

Poststructuralism fosters a sceptical and radical mode of thought which resonates with

experimentation in arts practices insofar as *play* is a method of inquiry, aiming not to establish findings by way of data to support a demonstrable and finite answer to a research question, but to put in *play* elements in a *bricolage* which afford insights through deliberate and careful juxtaposition (Nelson, 2006, p. 109). [Italics are mine, except *bricolage*.]

Nelson's point is well made and certainly resonates with my own compositional thinking. From this position, Nelson offers a model that combines three specific areas for consideration: practitioner knowledge; conceptual framework; and critical reflection. This tripartite structure encourages the practitioner-researcher to move freely between these positions as the research unfolds and suggests that the model may encourage the production of new knowledge and/or substantial new insights through the interplay of encounters exposed throughout the research inquiry, what Nelson refers to as "Praxis (theory imbricated within practice)" (Nelson, 2006, p. 115). Nelson's triangulation is conceived within a larger portfolio of evidence. For Nelson, "a PaR submission is comprised of multiple modes of evidence reflecting a multi-mode research inquiry" (Nelson, 2013, p. 26). This is of particular significance for a composer exploring approaches to the dissemination of compositional practice to both specialist and non-specialist audiences, as it requires him or her to go through the process of selecting, exposing and refining key moments from the inquiry. It should include a product (score or performance) providing a durable record for further reference,⁸ and a contextual document that draws out and further articulates the insights present in the product. Nelson suggests that PaR dissemination is also likely to include some documentation of the process. The presenting of documentation is also inferred from the dissemination models suggested by Haseman (2006, 2007), Bolt (2007), and Smith and Dean (2009).

Whilst the inclusion of documentary evidence in the form of composer sketchbooks, audio and/or video documentaries of rehearsal sessions and other forms of evidence may be of benefit to some researchers within the community, I am keen to reject this suggestion. I am not convinced that offering raw data (without explanation) as evidence of a research inquiry is that useful. I am keen to promote dissemination practices that expose a composer-informed position; materials that are presented need to be contextualised and made significant to the inquiry. This raises the question as to what additional researcher skills a composer should be required to develop to aid the dissemination process. My approach suggests that a composer working in academia, looking to develop appropriate critical frameworks to disseminate their practice within a research context, will draw on a variety of researcher skills that may include, but is not limited to, specialist areas such as analysis, critical theory, philosophy, and so on. However, it is important to remember that the specialist research area under consideration here is the compositional process and product and that the supporting evidence articulated through a variety of contextual frameworks is offered to support a personal compositional approach; I see the use of a variety of contextual frameworks as being pivotal for the composer-researcher to expose the material thinking embedded within the creative practice using an insider's perspective on the work.⁹

⁸ A score and recording of *Connecting Flights II* is available at <http://www.martinblain.co.uk/>.

⁹ I am not suggesting that composers should be required to develop the specialist skills associated with other

When considering my own research journey I am particularly drawn to Nelson's triangulation model. Through my experiences as a composer, I continue to develop a variety of skills (what Nelson might refer to as practitioner knowledge). These may include, but are not limited by, an understanding of proportion within the musical structures I generate; how melodic and harmonic material can work within my developing musical language; and how musical textures can be manipulated within my soundscapes. These skills have been refined over time through a process of play and encounters within my compositional practice. They are now embedded into my practice and although at times may appear to be working at an instinctive/sub-conscious level during the process of composition, and possibly hidden from view in the musical score or at the point of performance, could be made visible at the point of research dissemination.

As part of a research journey it is important for a practitioner-researcher to be able to position their practice within the wider context of a research community; Nelson defines this area of exploration within his model as the conceptual framework, and suggests that "one way in which creative practice becomes innovative is by being informed by theoretical perspectives, either new in themselves, or perhaps newly explored in a given medium" (Nelson, 2006, p. 114). Here, both the researcher (composer) and the research community (other composers), I would suggest, have a responsibility to each other to disseminate the results of research, allowing the community to engage fully with current thinking in compositional practice. Whilst the 300-word statement required by the assessors for the REF exercise, to draw out the "research imperatives and research process" (REF, 2012, p. 87), may provide sufficient information for the panel to make an informed judgement regarding the quality of the research, I would suggest that this particular method of research dissemination may not be of significant benefit to the wider compositional research community. Here, this is where elements of Nelson's model may be of value, and I would suggest that practitioner-researchers consider alternative ways of disseminating their research to the research community. Exposing compositional processes could also be helpful for musicologists taking an 'outsider perspective' when studying a composer's output.

Critical reflection in the form of attention to the processes that have contributed to the making of a work is an important element of the research journey. This may include reflection, using a specific conceptual framework drawing on the sub-components of the practitioner knowledge element of the model. However, it is important to stress that in Nelson's model the triangulation and the relationship between each element remain fluid. What I have found particularly exciting and useful about Nelson's model for the development of a PaR methodology is that it is not suggesting that I do anything very much different from what I have been attempting to do as a composer. As a composer, I have continually reflected on my working methods and at times have gained insights into developing solutions to specific compositional problems; I work with, and react against a variety of compositional practices and traditions and see my work as developing within a

specialist areas of musicology, although this may be possible; I am suggesting that composers draw on these areas as contextual frameworks to articulate a composer-informed position, or material thinking through practice.

lineage of influences; and I am hopeful that these experiences have in some way become embedded within my compositional practice. However, for me, Nelson has exposed and brought into focus the research processes at play in my practice and has suggested that new knowledge and substantial new insights are likely to occur, and be made evident, not only within the final product (the composition), but also at a variety of points along a research journey. This, I would suggest, can only benefit composers within the research community. So how does it work for my own method of dissemination? I now consider my own research journey, using Nelson's model, through my recent work *Connecting Flights II* for Clarinet Quartet.

Connecting Flights II

Connecting Flights II for clarinet quartet is part of a portfolio of compositions concerned with the development of rhythmic and harmonic structures within a post-tonal framework. The portfolio aims to develop individual works that are a practical exploration of the possibilities and tensions for the contemporary composer in a postmodern environment working in what is essentially a modernist tradition – here, I am particularly interested in the work of Berio, Boulez and Ligeti and see my work as continuing/developing within this tradition. Consequently, each work examines the relationship between modernist concerns of unity in relation to postmodernist notions of fragmentation and its impact on the development of musical structures. At the local level, rhythmic and harmonic structures are explored through a variety of conceptual and compositional frameworks – I discuss these in more detail later. To date, the portfolio of work includes: *Fiver Pitch* (1999) for Large Orchestra; *Connecting Flights* (2001) for Wind Quartet; *Therapy* for Clarinet, Violin, Cello and Piano (2002); *Percussion Quartet No 2* (2009); and *Connecting Flights II* (2011); two further compositions are planned: one for Piano and Laptops; one for Chamber Orchestra. However, in this article, my focus of attention is *Connecting Flights II*.

Connecting Flights II is a three-movement work that takes about 15 minutes to play and takes its name from an observation made by Robert Lepage, a theatre maker, reflecting on his own creative practice. In conversation with Rémy Charest, Lepage described his own process of making theatre as something that “takes shape in flight, when its meaning and direction escape us, when it becomes a rebellious beast that we're unable to cage” (Charest, 1995/1997, p. 159). This process resonated with my own experience of generating and developing materials for the portfolio, so it became an *aide memoire* for my thinking through my own process of making, and has subsequently informed the titles of some of the works in the portfolio.

The research questions posed by *Connecting Flights II* emerged as I was composing the work and are concerned with the technical development of harmonic and rhythmic procedures and their subsequent structural implications for each of the three contrasting movements. Discussing musical syntax, Boulez argues that:

It would surely be illusory to try to link all the general structures of a work to one and the same global generative structure, from which they would necessarily derive in order to assure the cohesion and unity, as well as ubiquity of the work. This cohesion and ubiquity cannot, in my opinion, be obtained so mechanically; the principle of allegiance of structures to a central authority seems rather to resort to Newtonian 'models', contradicting the development of present-day thought (Boulez, 1963/1971, p. 99).

I would suggest here that Boulez's insight into the principles underlying his use of musical structures is supported by his own practice – his practitioner knowledge. Conceptually, Boulez withdrew from the “mechanically”-driven world of total serialism he had created for himself in *Polyphonie X*, now withdrawn, and *Structures Book 1a*, to a position where his working method embraced creative insight and musical experimentation, which from then on played a more significant role in his decision making. Here, Boulez anticipates Nelson's observation of the poststructural condition in relation to current arts practices: his working method is thus, in principle, close in its conceptual approach to the way Lepage describes his own practice. In short, Nelson, Lepage and Boulez clearly share the desire to allow practice to develop through the calculated, but experimental and playful juxtaposition of materials.

Boulez began to challenge modernist notions of unity through his practice. Anton Webern had suggested that unity “is the establishment of the utmost relatedness between all component parts [of a composition]” and by implication he suggests that it is the responsibility of the composer to “show how one thing leads to another” (Webern, 1960/1963, p. 42). For Webern, this approach to unifying musical structures was refined through the construction of a ‘generative’ 12-note row. Webern's obsession with relating all the component parts of his practice to a single row can be seen in the Symphony, Op. 21 where “not only do the forms used in both movements approach the perfect symmetry of literal palindromes, but the work's basic series is also symmetrical to the extent that the interval classes of the second hexachord mirror those of the first” (Whittall, 2008, p. 95). Within a postmodern ideology such notions of prioritising organic unity might be considered as a grand narrative. Grand narratives might be seen as those human constructs that are received and accepted without question. Kramer has commented that “the religious belief in the power, utility, and necessity of musical unity starts young and dies hard” (Kramer, 1995, p. 11). One of the characteristics of postmodernism is to challenge the function of grand narratives. As identified by Boulez the “principle of allegiance” to a central structuring process seemed to be out of fashion with current thinking at that time. Postmodern thinking, as presented by Kramer (1995, 2002), suggests a different understanding of unity within the development of musical structures. Here the Newtonian view of the world is replaced by chaos theory, which proposes ordered patterns within what appear to be chaotic structures. Chaos theory has shown how natural the unpredictable can be within orderly dynamic systems.¹⁰ In addition, postmodernist thinkers are suspicious of the notion that composers define unifying processes, that listeners identify them and that analysis can be used to decode them. Kramer defines “perceptual unity” as representing a shift in emphasis: the personal unifying experience of the listener is independent of what the composer may have intended. He concludes that perceptual unity “resides in relationships – but not among aspects of the music-out-there but among music-in-here” (Kramer, 1995, p. 14). The so-called active listener, making sense of apparently unpredictable musical structures, may have novel responses. My experience of listening to recordings of the

¹⁰ For an understanding of how Ligeti's *Piano Etudes* have been analysed from the position of chaotic structures see Steinitz (1996).

fragmentary structures within the music of John Zorn¹¹ is that after repeated hearings I become familiar with the work and begin to find my own way through the music, which thus becomes unified for me. However, as Kramer suggests “the problem of definition becomes particularly acute when we understand postmodernism to be neither a straightforward rejection nor simply an exclusion of modernism, but rather as having aspects of both” (*ibid.*, p. 20). This I have found useful when juxtaposing and developing materials and processes within my own work.

Development of harmonic material

One compositional framework I have found useful for the development of harmonic material in my own work using a post-serial¹² framework is the Boulezian concept of chord multiplication. While Boulez has only hinted at the concept of chord multiplication in his writings, Lev Koblyakov has attempted an analyst’s articulation of the technique and Stephen Heinemann has uncovered many of its secrets.¹³ Put simply, Heinemann suggests that the process of using the technique to develop pitch material “can be understood informally as the construction of one set [of pitch classes, transposed] upon each element of another [pitch class set]” (Heinemann, 1998, p. 73), resulting in a complex array of pitch-class clusters that can be manipulated within a variety of harmonic and textural settings. This approach to developing an array of harmonic material appeals to me for its potential to develop and shape harmonic structures. Unlike traditional tonal structures where pitch and triadic structures are organised into hierarchical relationships, here, pitch relationships and harmonic organising principles are determined by the intervallic structures of the initial pitches. Whilst composing the work, I was particularly interested in developing non-functional harmonic structures as a way of moving away from traditional practices and a procedure based on the Boulezian concept of chord multiplication (or nested transposition) provided a useful starting point. Of course, through the process of developing harmonic materials for the work, other processes were developed and have contributed to the work. Whilst a full analysis of the harmonic material used in *Connecting Flights II* is beyond the scope of this article (if in fact a full analysis of any material is possible), I now offer a brief analysis of two types of harmonic material used in the work.

I established a sequence of 24 pitches (see Figure 1(i)). The first 8 pitches were established at the piano as two 4-note chords through a process of improvisation, and the remaining 4 pitches in the first twelve-note collection, to my ear, appeared to work well together, so were added to the collection. However, I did not want to work within strict serial procedures so decided to extend the pitch sequence to allow a wider network of pitch relationships to develop, and this was established through a process of experimentation – I was guided by my practitioner knowledge, developed through the process of working with

¹¹ For an example of a fragmented musical structure listen to John Zorn’s work *Forbidden Fruit* (1987).

¹² The term post-serial is used to define a compositional approach that combines serial procedures from the modernist tradition with postmodern notions of structure. My starting point here is in using serial procedures to expand materials at the local level but to allow the global structure to fragment and rupture as suggested by the material.

¹³ For an introduction to the concept see Boulez (1963/1971) and for a more detailed analytical understanding of the concept see Koblyakov (1990) and Heinemann (1998).

non-tonal structures in previous works, both within the portfolio as well as for other projects. From this collection of pitches I developed two forms of harmonic material: one based on the serial procedure of pitch rotation; the other developed from the Boulezian concept of chord multiplication. Here I used the technique of nested transposition to produce a collection of distinct chords.

Harmonic material – Type 1

Pitch rotation of the original 24-note pitch sequence produces twenty-four forms of the original pitch sequence and Figure 1(i) shows the collection of 4-note groupings from which the first six 4-note chords are produced. Figure 1(ii) shows the pitches as harmonic material. During the process of developing this type of harmonic material, I was aware that my positioning of pitches within each chord was being directed by my experience of working with traditional voice-leading techniques in past projects – the outer voices conform to established practices of contrary and similar motion and the inner voices move, where possible, by step or to the next available pitch. I find this method of developing non-tonal harmonic progressions works well in my compositional practice.

Figure 1 consists of three parts of musical notation. Part (i) is a single staff showing a 24-note pitch sequence. The notes are grouped into six sets of four, labeled 'a' through 'f' above the staff. Part (ii) shows six 4-note chords, labeled 'a' through 'f' above each staff. Each chord is represented by four notes on a staff, with some notes having accidentals. Part (iii) shows an elongation of chord type 'a', consisting of a sequence of overlapping 4-note chords on a single staff.

Figure 1. *Connecting Flights II*, pitch and harmonic material – Type 1: i) 24-note pitch sequence; ii) 4-note chords constructed from the 24-note pitch sequence; iii) example of elongation of chord type a.

On working with the resulting chords shown in Figure 1(ii), and exploring the potential to develop the voice-leading aspects of the work, other opportunities for the future development of the chords began to emerge. Figure 1(iii) offers an example of extending the voice-leading of one chord type. Whilst this works well within the 4-note structure, the harmonic designs resulting from the use of this technique produced static harmonic material. I knew that it would be useful for some aspects of my composition but I also wanted to develop the technique so that the harmonic designs could also produce dynamic structures. My intention here was to develop a diverse range of material that could be juxtaposed within a complex structure beneath surface disunity.

Harmonic material – Type 2

Through a process of experimentation I explored and applied aspects of the Boulezian technique to the initial 24-note pitch sequence. This allowed me to develop different pathways through the material. Here, I was particularly interested in developing chord structures that were built from the intervallic relationships embedded within the initial 24-note pitch sequence I had created and one approach that I found useful was to establish a sequence of 3-note pitch sets from the initial sequence of notes and to combine and manipulate these pitch sets through a process of addition. I divided the original form of the pitch sequence into 3-note groupings (see Figure 2(i)).

Figure 2 consists of three parts: i), ii), and iii). Part i) shows a 24-note pitch sequence on a single staff, with notes grouped into 3-note sets labeled a through h. Part ii) shows two 3-note groups, 'a' and 'b', being added together to form a 6-note chord structure, with an 'etc.' indicating further combinations. Part iii) is a matrix of 6-note chords, with each chord labeled by two 3-note groups (e.g., 'ab', 'ef', 'eg*', 'eh*', 'fg', 'fh', 'gh'). The chords are arranged in two columns of six. A note in the 'eh*' chord is marked with an asterisk, indicating it was changed to avoid octaves.

Figure 2. *Connecting Flights II*, harmonic material – Type 2: i) 24-note pitch sequence; ii) example of 6-note chord construction from the 24-note pitch sequence; iii) matrix of 6-note chords.

Groups a and b were then combined to produce a 6-note chord and my voicing of the pitches was guided by my ear. The resulting 6-note chord pattern was then transposed onto each of its five other pitches (see Figure 2(ii)). This procedure was repeated for the combination of groupings a-d and e-h to produce a chord matrix (see Figure 2(iii)). This process demonstrates the technique of combining pitch-class sets; it created 72 6-note chords. The challenge now was to use the material creatively and expressively through a process of experimentation. For *Connecting Flights II*, my chosen pathway through the material was to move through the matrix diagonally, from top-left to bottom-right for the groupings a-d, and then from bottom-left to top-right for the groupings e-h; of course, many pathways are possible and would be likely to produce a rich variety of harmonic material for further exploration in later works, on the basis of the experience of working within this particular harmonic system. Seventy-two 6-note chords and their many potential harmonic pathways were far too many to generate for *Connecting Flights II*, so the process was used to create 12 6-note chords that are presented in Figure 3, having been considered and some of them re-voiced in response to the insights exposed during the development of Type 1 harmonic material; I expected this kind of harmonic construction to work well in my piece. The creation of a 24-pitch sequence together with two initial harmonic pathways through the material thus created a rich variety of pitch-based material for me to explore and consider through the process of play. In order to discuss how my harmonic material unfolded in *Connecting Flights II*, I now consider how the rhythmic material in the work was conceived and developed.



Figure 3. *Connecting Flights II*, twelve chords developed from one possible pathway.

Development of rhythmic material

The rhythmic material developed in *Connecting Flights II* is closely aligned to the harmonic relationships unfolding within the work, and at times it is difficult to tease out the complexities of construction of both the rhythmic and harmonic devices at play. On reflection, my approach to the development of rhythmic material was articulated through the harmonic material, which I hear as specific textures at the surface level of the composition, although others may hear it differently. Whilst it may be difficult (even unnecessary) to distinguish between the rhythmic and harmonic elements of the work through listening alone, for the purposes of this article I attempt to draw out some of the rhythmic devices used in the work through composer-analysis and critical reflection.

Connecting Flights II is in three contrasting movements. The first movement was built on five short rhythmic (motivic) gestures that expand and contract throughout the duration of the movement (see Figure 4 for a visual representation of each gesture). Gestures 1 and 2 were used for harmonic exploitation; Gestures 3 and 5 were used to provide irregular

rhythmic activity; and Gesture 4 was used to explore texture through timbral variation. In the first movement, the gestures were woven together into a fragmented musical fabric controlled, at the global level, by a combination of palindromic structuring and, at the local level, deliberate and careful juxtaposition of materials derived from one or more of the five rhythmic gestures at any one time. In addition, a 10-bar sequence of apparently unrelated material was placed within the structure at two locations to further disrupt the flow of the work; I discuss the implications of this approach in more detail later.



Figure 4. *Connecting Flights II*, five rhythmic gestures used in the 1st movement.

I found it useful in the development of this approach to consider the relationship between the rhythmic gestures notated as visual images and the work of Paul Klee. Klee's *Pedagogical Sketchbook* has been a resource for many composers.¹⁴ Sibyl Moholy-Nagy's insightful introduction to the work explains that Klee's

creative life ... derived almost equal inspiration from painting and from music. Man painted and danced long before he learnt to write and construct. The senses of form and tone are his primordial heritage. Paul Klee fused both of these creative impulses into a new entity (Klee, 1925/1953, p. 7).

Pedagogical Sketchbook is rich in musical metaphor so it is little wonder that composers have found the work of value when searching for contextual frameworks to aid the development of musical material. From Klee's opening suggestion on taking "an **active** line on a walk, moving freely, without goal. A walk for a walk's sake" (Klee, 1925/1953, p. 16), to the final section where he suggests how the visual arts student (or a student from another discipline, for that matter) might address issues of balance and control in their practice (*ibid.*, pp. 51-61), there is much to explore. So how does this suggestion inform *Connecting Flights II*?

First movement

At the beginning of the first movement, shown in Figure 5, we see four of the gestural fragments working within a post-serial harmonic framework. Gesture 1 unfolds in Bar 1 within each voice of the quartet, its pitch content taken from the first section of the pitch sequence shown in Figure 1(i), and this is juxtaposed against rhythmic material taken from Gesture 2 in the following bar. Here, the quasi-serial procedure explored in Bar 1 is replaced by a fixed-pitch harmonic field, and this is replaced by something different at Bar 3, to maintain the fragmentary nature of the structure. Notice how the gestural fragments, when they reappear, are changed in some way – this is what I call repetition within variation. Gesture 2 in the second bar maintains its shape when repeated at Bar 6 and is voiced within

¹⁴ See Hall (1984) for further information on Birtwistle's obsession with Klee's *Pedagogical Sketchbook*.

a fixed-pitch harmonic field but its surface detail has been changed: an example of Klee's instruction to consider "an **active** line, limited in its movement by fixed points" (Klee, 1925/1953, p. 18).

Connecting Flights II
I

Martin Blain

♩ = 90

1 Clarinet in Bb
2 Clarinet in Bb
3 Clarinet in Bb
4 Clarinet in Bb

Cl.
Cl.
Cl.
Cl.

Cl.
Cl.
Cl.
Cl.

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Figure 5. Connecting Flights II, Movement 1, Bars 1-8.

One of the devices I explored when attempting to fuse together disparate and fragmentary elements in the score was to allow the start and end points of similar fragments to be controlled by the principles of traditional voice-leading techniques. This works well particularly when the fragments to be joined are not adjacent in the musical structure. In Figure 6, at Bars 15-16, the second, third and fourth clarinets develop Gesture 3. I reintroduced the gestural fragment at Bar 20 having interrupted the flow of the music by re-voicing Gestures 1 and 2 at Bars 17 and 18 respectively; these gestures are connected not only by the similarity of their rhythmic design but also by their voice-leading.

Figure 6. *Connecting Flights II*, Movement 1, Bars 15-20.

Throughout this movement my concern was to develop disparate layers of material connected through implied voice leadings and this can be seen working in Figure 7a, in relation to the development of Type 1 harmonic material in its inverted form – see Figure 7b, as this will help the reader to identify the distribution of the pitch material in this example. Here the 6-note chord structures provide a template for the gestural fragments as they unfold over time, as not all the selected pitches were used in the eventual solution.

Notice how the first clarinet’s melodic line uses the pitches over a four-bar time frame to expand and develop the visual shape of Gesture 1. Eagle-eyed readers will notice an E natural in Bar 39 in the fourth clarinet part; this pitch change was necessary to fit within the range of the instrument as well as the musical demands of the phrase.

Figure 7a. *Connecting Flights II*, Movement 1, Bars 39-42.

Figure 7b. *Connecting Flights II*, harmonic material developed from the inverted form of the pitch sequence – Type 1.

The interjection of two 10-bar sequences of apparently unrelated materials to further disrupt the flow of the work are of particular significance for the listener’s experience of the first movement as a postmodern structure. One aspect of chaos theory that I have considered in relation to how harmonic systems could work is through the “strange attractor” (Gleick, 1987, p. 140). Chaos theory challenges the Newtonian world view that we operate within a deterministic/clockwork universe. The way that dynamic systems work in practice suggests that, while some aspects of the system under investigation may appear to display clockwork-like operations, the Newtonian world view does not account for irregularities within complex systems. Chaos theory, however, attempts to explain the operation of dynamic systems. When developing weather prediction models Lorenz (1962)

discovered that his mathematical models demonstrated specific patterns of order within what appeared to be random events and that these patterns of order appeared to be determined by the system's 'natural' order – the controlling force being the strange attractor. So, when expected conditions deviated from the ordered patterns of chaos the system was temporarily destabilised before returning to its natural state of disorder; this may explain why if it snows in the summer or if there is a heatwave in the winter then such conditions do not last as the system fights to return to its natural state of ordered chaos.¹⁵ When listening to Ligeti's *Continuum für Cembalo* (1968, 1970) I experience it as a movement away from, and a return to a stable harmonic structure. Each of the four sections of the work deviates from a different location on the strange attractor path to an unstable harmonic area and then returns to a location on the strange attractor path. My approach when composing the first movement of *Connecting Flights II* was to disrupt the normal flow of the harmonic design by fragmenting the structure. Some aspects of the design were unified by voice-leading techniques while others explored the notion of connecting sections by the force of the strange attractor.

Second movement

The second movement offers a temporary harmonic resolution to the apparent chaotic rhythmic and harmonic construction of the first movement and because of its relatively short duration (it takes c.2' 20" to play) can be experienced as a structural upbeat to the virtuosic third movement. One of the research questions that materialised for me as a consequence of elongating Chord type a, shown in Figure 1(ii), was to consider how the unfolding of a repeating melodic line could interact with a non-repeating harmonic structure. The rhythmic material used in this section is simple in design and provides a platform for the harmonic progressions to unfold at a much slower pace than in the first movement. In Figure 8, we see the melodic line developed from the chord sequence first shown in Figure 1, but now the melodic line includes the additional pitches from the elongated chord experiment. The elongation of chord a was developed to enhance the melodic line for this section in response to Klee's direction concerning "**the same line, circumscribing itself...**" (Klee, 1925/1953, p. 17). The melodic line, first heard between Bars 181 and 188 is repeated between Bars 190 and 195 with some rhythmic variation. The seven chords that were generated as part of the harmonic development process and shown in Figure 1 are now used to re-harmonize the repeated version of the melodic line. The intervallic relationship within each chord type was maintained and through a process of play and experimentation, the chord shapes were transposed onto different pitches within the melodic line. For example, Chord a(4), in Figure 9(ii), has its highest pitch at G5 (where Middle C is identified as C4); the intervallic structure of this chord type is re-positioned as the sixth chord shown in Figure 9(iii), with its highest pitch as F sharp. The final decision on what chord structures would be used to re-harmonise the repeated melodic line was made through a process of experimentation and personal judgement.

¹⁵ See Gleick (1987) for a general explanation of strange attractors; see Lorenz (1963) where his initial work on weather prediction led to the formulation of the Lorenz attractor – a type of strange attractor.

Figure 8 shows two systems of musical notation for Clarinet I (Cl.).

The first system (bars 181-195) is marked with a box 'P' at the beginning and a box 'Q' at the end. It features a repeating melodic line in the upper voice with dynamics *mp*, *p*, and *mp*. The lower voices provide harmonic support with dynamics *mp* and *p*. The tempo markings are *rit.*, *A tempo*, *rit.*, and *A tempo*. Below the staves, the notes are labeled as a(1)-----(2)-----(3)------(4) and b c d.

The second system (bars 189-195) begins with a trill in the upper voice. The dynamics are *p* and *mp*. The tempo marking is *rit.*. The time signatures change from 5/4 to 4/4 to 3/4. Below the staves, the notes are labeled as a(2)------(3) c d c a(4)-----(1).

Figure 8.
Connecting Flights II, Movement 2, Bars 181-95.

It is useful to consider the unfolding of a repeating melodic line within a non-repeating harmonic structure in more detail. Klee's instruction suggested that the original line (in this case the repeating melodic line) be viewed differently from each position on the accompanying line. This suggests a resulting musical texture that can appear as both static and dynamic: the repeating melodic line presented as a static element but was given a dynamic structure to work within that is constantly changing. Reflecting on my initial sketches for this short movement, I was aware that my approach to developing this section of the work was to fragment the material into irregular short phrases. As in the first movement the structure was controlled at the local level of operation by juxtaposing fragments within the global structure. This movement further explored the notion of

fragmented structures controlled by the strange attractor. Each fragment can be seen as a moving away from a position of harmonic stability towards an unstable harmonic condition and returning to a location on the strange attractor's (un)stable path. The use of a continuously transforming harmonic design that is abstractly connected to the intervallic relationship between the original chords provided the resulting textures with some consistency so that they serve as non-functional chords directed by their voice-leading qualities. The resulting irregular phrase lengths were not anticipated and their lengths were determined at the local level of operation.

Figure 9 consists of three staves of musical notation. Staff (i) shows a sequence of seven notes: #e, b, #e, b, e, #e, b. Staff (ii) shows original chords for each note, labeled a(1), (2), (3), (4), b, c, d. Staff (iii) shows transposed chord shapes for each note, labeled a(2), (3), c, d, c, a(4), a(1).


Figure 9: *Connecting Flights II*, Movement 2, bars 181-95: (i) pitches used for the repeating melodic line; (ii) original chords shown in Figure 1; (iii) chord shapes from (ii) maintained and transposed to new position in the sequence.

Third movement


In the final movement I attempted to re-work the rhythmic and harmonic material from the first movement. The structure was built on the juxtaposition of three contrasting musical textures, with the addition of a coda that references sections from the first movement. The three textures are dynamic and develop in different ways. In this article, I focus on one texture within the movement that explores the notion of complex layering. Here, I was particularly interested in developing a framework for this section that incorporates the pitch, rhythmic and harmonic materials generated for the work.

In Figure 10, we see the three layers of activity used to further develop each repetition of this particular texture. At Bar 223 we hear an unfolding of the 24-pitch sequence that is controlled by a motor rhythm that is generated through the repetition of small irregular rhythmic cells. After developing the rhythmic patterning of the pitches as seen in Figure 10(i), through a process of experimentation, I used the resulting semi-quaver number pattern to generate the rhythmic activity for each repetition of this section.

FIRST TIME: Rhythmic pattering 3-2-3-2-4-2-3-4

i) 

SECOND TIME: Add fragments of the following rhythm to the texture on each repetition - use 24 pitch note row

ii) 

THIRD TIME: Add harmonic structure to the texture

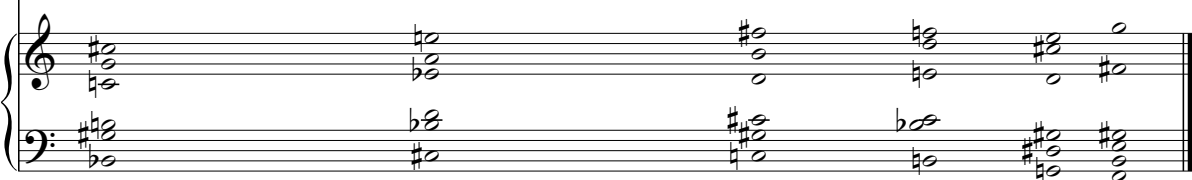
iii) 

Figure 10. *Connecting Flights II*, Movement 3, layering of (i) pitch; (ii) rhythmic activity; (iii) harmonic content.

I worked with the number pattern 3-2-3-2-4-2-3-4 and allowed the sequence to repeat with variations by re-sequencing the number pattern for as long as necessary; this gave a consistency to the rhythmic language and we can see this in operation in Figure 11. In addition, the accented first note in each sequence of numbers provided a spatial dimension in performance as the accents create the illusion of moving the sound around the performance space. Harmonically, the individual lines weave their way through the path established by the original 24-pitch sequence.

T

223

Cl. 

Figure 11. *Connecting Flights II*, Movement 3, bars 223-5; development of pitch material.

At Bar 259, shown in Figure 12, an additional layer of rhythmic activity was introduced into the texture. The rhythmic pattern identified in Figure 10(ii) was gradually introduced into the score through a process of transformation. In addition, the layered rhythmic activity was explored further through the introduction of pitches taken from the 24-pitch sequence developed in Figure 1(i).

The image displays a musical score for four Clarinets (Cl.) across two systems of staves. The first system covers bars 259 to 260, and the second system covers bars 261 to 262. Each staff is labeled 'Cl.' on the left. The music is written in treble clef. The first system begins with a dynamic marking of *f* (forte) in the first three staves. The notation is dense, featuring a variety of rhythmic patterns, including eighth and sixteenth notes, rests, and accents. The second system continues this complex texture, with some staves showing more rests and others showing active rhythmic lines. The overall impression is one of a highly textured and rhythmically active passage.

Figure 12. *Connecting Flights II*, Movement 3, Bars 259-62; development of rhythmic material.

A final layer of activity was added to the texture at Bar 270, as shown in Figure 13. Here, the harmonic structure of the texture was transformed to combine both sets of harmonic material devised for this work (Type 1 and Type 2). The layers now included the original 24-pitch sequence generated through a non-repeating motor rhythmic pattern; a second layer of rhythmic activity that was controlled through the unfolding of the original 24-pitch sequence although at a faster rate than the first layer; and now a final layer of rhythmic and harmonic activity voicing the chords shown in Figure 3, developed through the chord multiplication technique illustrated in Figure 2. The musical texture created through this interplay of encounters between disparate elements is one of controlled chaos.

Figure 13. *Connecting Flights II*, Movement 3, Bars 270-75; development of harmonic material.

Conclusion

The recent emergence of PaR within the academy, particularly within the performing arts tradition, has for practitioners working in institutional contexts brought into question the relationship between the making of a work and the means by which its resulting production of new knowledge and new insights can be disseminated within and beyond the academy. Nelson's observation that play has become a legitimate part of a research methodology that is now better understood within the wider research community represents a shift in emphasis in practice-led arts research from one of scientific rigour to artistic rigour. Boulez's understanding of how musical structures may work and the way Lepage experiences the process of making theatre would suggest that play and experimentation are important elements in the act of creating work.

At the beginning of this article I suggested that composers may want to consider that 'how' and 'what' need to be disseminated and discussed when they are invited to talk about their work in academic contexts. I have found the PaR methodology and its related methods

especially useful, as they are explored within the wider context of arts practices and particularly in the academic drama, dance and performing arts communities. They have provided me with a framework for considering how to disseminate research in musical composition. Arts practitioners developing work in the institutional context do not dispute the notion that new knowledge and/or substantial new insights can occur through practice. However, where and when the insights occur and what we might mean by new knowledge as a consequence of conducting research as a composer are still contentious for many people. Nevertheless it has been useful for me to position my compositional practice, when thinking about how to disseminate it as research, within Nelson's classifications of practitioner knowledge, critical reflection, and conceptual framework. Most useful for me, however, has been the opportunity to undertake a PaR inquiry and thus begin to understand my own working processes better.

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