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Externalising the internal musical dialogue. PhD thesis.

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'... AND BEING GUIDED, SO TO SPEAK.'
Externalising the internal musical dialogue.

by

CHARLES ROSS

A commentary submitted to the University of Glasgow
in partial fulfilment for the degree of

DOCTOR OF PHILOSOPHY

University of Glasgow

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AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award.

Signed.....

Date.....

'... AND BEING GUIDED, SO TO SPEAK.'

Externalising the internal musical dialogue.

1. Introduction

D. Sudnow on his own piano improvisations:

*... a single voice at the tips of the fingers, going for each next note in sayings just now and then, just this soft and just this hard, just here and just there, with definitions of aim throughout, taking my fingers to places, so to speak, **and being guided, so to speak.***
(Sudnow, D 1978, p.152. [My emphasis])

In his book, "Ways of Hand, the organisation of improvised conduct." Sudnow recorded his progress at learning jazz improvisation. His writing provided a detailed exposition of his experiences at various stages in his development. The excerpt above seems to have an almost stuttering vagueness about it, an inadequate surfacing of verbal language around a musical phenomenon, quite different from the precise meta-languages that have grown up around harmonic analyses, in fact any form of analysis which reduces music to its lattice-based components. Musicians like Sudnow often find themselves inhabiting holistic sonic landscapes, reacting intuitively to the nuances of their peculiar topographies with expansive, reflexive musicalities. This kind of musical fluency does not readily translate itself into a verbal surface of analytic discourse.

Defining the study

The proposed study attempts to address what I perceive to be a dichotomy that exists between music as an internal real-time conceptual process and the step-wise externalising process of musical composition. This growing conviction stems from my work as a composer and musical improviser and also through my studies of field recordings of irregular-iterative music that provided the impetus for my M.Phil thesis "Non-Linear Music, Impressions of chaos" (Ross, C.W.M. 2006).

As the creative musical mind works through from the first intuitive impulse to the intellectual extension of it in notation, it travels from "internalization" to "externalization".
(Mclean, B. 1981)

In his article 'Symbolic Extension and its corruption of music,' Barton Maclean outlines the strengths and weaknesses of externalised composed music and internalised improvised music:

Musically speaking, comparing a contemporary abstract piano sonata (externalized) with an improvised piano jazz solo (internalized) may be fruitful. Although both employ the same

medium and perhaps even the same performer, a substantially greater amount of detail is externalized, i.e., written down, in the former instance, whereas in the latter idiom the external element may consist of only the basic pitch-metric structure, leaving the soloist to internalize the specific melodic-rhythmic-gestural material. That which is externalized (or extended) in a culture can easily be communicated, evolved, changed, and manipulated. That which is internalized must, by its very nature, be a prisoner of the great difficulty of its transference from one individual to many, due to its oral character and its direct tie-in with a complex personalized gestural mode of performance. And it seems that, by their very nature, a fundamental difference exists between the two musics. Highly externalized music (a Beethoven symphony for example) is strong in vertical-contrapuntal sophistication and complexity, and relatively weak in melodic-gestural nuance; in comparison, an internalized improvised African flute melody lacks the ability to sustain large abstract pitch-rhythmic structures but, being closer to the individual, is stronger in gestural-melodic-rhythmic nuance. (ibid)

In a piece of modern composition, musical inspiration is often treated (by composers and analytical musicologists alike) as subservient to the subsequent structural inventions of the composer. These inventions rely heavily on symbolic extension systems, whether in traditional staff notation, graphic forms or otherwise. The systems (predominantly diagrammatic) are often profoundly modular in character creating autonomous forms of logical construction that run the danger of amputating themselves from intuitive musical thought.

In a way, it is this overwhelmingly rational aesthetic dominating Western culture that dictates a necessarily rational working methodology on the part of the composer. The extension systems used are those of the deliberative thinking mind regardless of the reflexive, often irrational nature of the initial inspirational impulse. However, in following this highly analytical way of thinking, the modern composers run the risk of divorcing themselves from the core mental state(s) of, what we traditionally perceive as the traditional artistic archetype.

Commenting on research into the roots of artistic thought (primarily in connection with ancient cave paintings), archaeologist David Lewis-Williams writes:

Intelligence is what researchers use when they study human origins and all other puzzles of science. Whilst they allow intuition and unexplained flashes of insight a role in the solving of scientific problems, ideas so acquired must, they rightly insist, be subjected to rational evaluation. As a result of this essentially Western view, ...they regard rational intelligence, as they themselves experience it, as the defining characteristic of human beings. ...This is what we may call "consciousness of rationality".

The problem here is that the emphasis on intelligence has marginalized the importance of the full range of human consciousness in human behaviour. Art and the ability to

comprehend it are more dependent on kinds of mental imagery and the ability to manipulate mental images than on intelligence. (Lewis-Williams, D. 2002, p.111.)

The Belgian philosopher Henri Bergson also had some cautionary remarks on the subject of the intellect, this time on its ability to distort our perceptions of reality itself:

The prime reality is referred to as 'the perpetual happening' or 'duration'. The mind of man, according to Bergson, is shielded from the perpetual happening by the intellect, which imposes 'patterned immobility' on prime reality, distorting, immobilizing, and separating it into discrete objects, events and processes. In the perpetual happening itself, all events, objects, and processes are unified. (Westcott 1968, p. 8.)

Bergson fuses intuition with the ongoing flux of the perpetual happening. In so doing he highlights one of the chief paradoxes of the composer. A piece of music whose real-time duration might be ten to fifteen minutes long, can easily occupy weeks of step-by-step composition, its component sections perhaps written in a different order than they appear in the piece's actual performance. This temporal separation of the composer from the music (s)he creates is a problem alien to the improviser who engages with music in the reflexive context of real-time action.

However, practically every composer must be an improviser to a certain extent even if the improvisation exists in the form of an internal musical dialogue. Composers by their very nature are people who think a great deal about music and engaging with high level aural-imagery can take up a significant portion of their daily thought processes. The present research addresses this central question: Can the modern composer, rather than employing extensional compositional techniques that run the risk of moving counter-intuitively to musicality, instead develop an empathic awareness of internal generative musical processes with the goal of manifesting these processes into the external sonic world?

Structure of the commentary

In this research I primarily address the topic as a composer using compositions to explore the topic's many facets. The outcome of the research degree is primarily the portfolio of creative work. This thesis is an accompaniment to the portfolio and serves as a way of explaining and clarifying the methods used and their relation to the research topic.

Rather than present a commentary on each piece in chronological order, the commentary will instead consider broader themes arising in the portfolio looking at how those themes articulate different aspects of the enquiry.

The sequential structure of the thesis can be summed up as follows:

- A discussion of research concerns that have led me to the current research topic.
- An outline of my own compositional grammar as I commenced the present research.
- Methods of *audiation* utilised within the research and how this influenced its course.
- Compositional techniques and developing methodology utilised within the research.
- Conclusion. Summing up of present research and its relevance to modern composition.

The following key research themes will be discussed throughout the thesis:

- The creation and sustainability of complex musical forms through intuitive processes.
- The relationship between improvisation and composition.
- Emergent musicalities.
- Preservation of cognitive flow.

* * *

2. Compositional Grammar

Early Influences

It is impossible to talk about my own music without acknowledging my debt and gratitude to Frank Denyer who was my composition tutor and principle teacher of world music when I was an undergraduate student at Dartington College of Arts in the 1980s. Frank basically rewrote my conception of what music was by introducing myself and others to Japanese, middle Eastern and East-African musical forms and introducing me personally to the music of Scelsi and Feldman as well as to his own highly remarkable compositions. Frank, like Scelsi, writes in a world of microtonal contours, and once shown the melodic and harmonic potential of writing outside the equal tempered Western tradition, I was hooked on the greater melodic freedom that micro-tonality offers.

When he lent me a recording of Scelsi's complete string quartets (*Scelsi & Arditti 1983*) I was struck by the "earthy" quality of the works (from the second quartet onwards). It was as if Scelsi, by throwing away conventional formal techniques and concentrating on the growth of music from a single pitch, had captured a sort of micro-dynamism, an eternal musical truth, common in all music but here removed of all its cultural trappings and offered unadorned as a pure intense sound-world. It seemed to me that the implication of Scelsi's music was that the role of contemporary music, rather than looking forward, could rather be about digging deeper, unearthing forgotten musical atavisms. This definitely concurred with my new-found interest in world music which was becoming more and more preoccupied with musical cultures where such atavisms might still exist: surviving hunter gatherers, herders and primitive agricultural societies.

Around this time I was also fortunate in attending a two-week series of lectures by Morton Feldman about a year before his death (*Dartington Summer School 1986*). During the lectures Feldman discussed his "pattern pieces" (his last compositional phase) relating that as a rule he never allowed himself to look back over the pages of the work he was composing. As well as this, he never constructed a compositional overview; rather he would compose rapidly for long periods and then pause for a while, meditating on the direction of the music before continuing. Feldman also used the analogy of a deck of cards for his compositional procedures. Working within a reductive gamut of finite compositional ideas, Feldman found, as a piece progressed that he would discard the ideas from the gamut and

pick up new ones, perhaps retrieving and reusing some of the discarded ideas later on. Rather than concrete strategies, it seemed to me that Feldman was using flexible, intuitive tactics to compose his extraordinarily long, intense works. These ideas had profound structural repercussions for my own music. I was already assigning a greater significance to intuition within my compositional processes and setting off down a path that would eventually lead to the present study.

Lift-up-over sounding

In the early nineties I bought a recording of the *Kaluli* tribe from the central highland of Papua New Guinea, recorded by ethnomusicologist Steven Feld (*Feld & Hart 1991*). I became obsessed with the recording which presents the music of the tribe within the acoustic soundscape of the Papuan rainforest. The antiphonal phasing effects present within the songs and drumming of the *Kaluli* people share remarkable similarities with the sound-world of the rainforest that surrounds them. The tribe uses the term “*dulugu ganalan*” as a cognitive description for this particular acoustic phenomenon. In his book, “Sound and Sentiment” Feld writes:

*For example, **dulugu ganalan** “lift-up-over-sounding” is an important concept in Kaluli song form and performance. It also turns out to be the most general term for natural sonic form. Unison or discretely bounded sounds do not appear in nature; all sounds are dense, multilayered, overlapping, alternating and interlocking. The constantly changing figure and ground of this spatio-acoustic mosaic is a “lift-up-over sounding” texture without gaps, pauses or breaks. The essence of “lift-up-over sounding” is part relations that are simultaneously in synchrony while out of phase.* (Feld 1982, p.265)

This paragraph became a sort of compositional touchstone for me and strongly influenced my ensemble writing and approach to rhythm in general. By utilising the aesthetic of “lift-up-over sounding” in a compositional context I began using temporal consonance and dissonance as a tension and relaxation principle.

Along with the recording of the *tinbuk* idiophone mentioned earlier, Feld’s (the *Kaluli*’s) concept of musical ecology formed the impetus for my research into the cognition of environmental complexity and its manifestation within the music of animistic cultures. This formed the written thesis for an M.phil that I undertook through Plymouth University. The other half of the degree consisted of a portfolio of compositions that loosely tackled some of the issues thrown up by my research

Deconstruction

Initially I had been interested in working in a similar vein to Christian Wolff, creating rule-sets for guided-improvisation that would then create or re-create the sort of primal sound-worlds that were fascinating me at the time. However it soon became apparent that the rule-sets were stifling the improvisers and that they were not at all interested in continuing in these experiments. Also I was definitely beginning to feel that my compositions were starting to sound uncomfortably close to the Papuan field recordings and that I should try a different approach.

I returned to writing in conventional notation. I wrote about imaginary musicians who, for some reason or another were unable to play the pieces they were attempting to perform, whether from loss of memory or inability to play the right notes. At first this produced novel works which got me out of the creative rut I was in. However the music was essentially deconstructive and nihilistic with the imagined performers having little or nothing to say without the badly played or badly remembered musical material that they clung on to. Eventually one real performer refused to play a work because it created the impression that she was insane. As a composer I was also finding that writing was no longer a creative fulfilling experience and that I missed the positive act of synthetic creation. Luckily environmental complexity and an aesthetic term from flamenco rescued me from this nihilism.

Emergence and *Duende*

I had been musing over the flamenco aesthetic ideal of *duende* (lit. "elf"), where all participating elements of a performance achieve an unspecified yet total communion with the audience (Martín J. 1978). Could *duende* exist in the context of a pan-idiomatic musical event? Breaking the concept of *duende* down, I reasoned that it could represent an aesthetic term for musical emergence, the whole creating something far greater than the mere sum of its parts (e.g. towering termite nests from a colony of tiny insects, the complex interdependent ecosystem of the Great Barrier Reef from coral polyps etc.). Cornelius Cardew (1971) writing about his experiences with the AMM ensemble:

With the new equipment we began to explore the range of small sounds made available by using contact microphones on all kinds of materials -glass, metal, wood, etc. -and a variety of gadgets from drumsticks to battery-operated cocktail mixers. At the same time the

*percussionist was expanding in the direction of pitched instruments such as xylophone and concertina, and the saxophonist began to double on violin and flute as well as a stringed instrument of his own design. In addition, two cellos were wired to the new equipment and the guitarist was developing a predilection for coffee tins and cans of all kinds. This proliferation of sound sources in such a confined space produced **a situation where it was often impossible to tell who was producing which sounds -or rather which portions of the single roomfilling deluge of sound. In this phase the playing changed: as individuals we were absorbed into a composite activity in which solo-playing and any kind of virtuosity were relatively insignificant.** [My emphasis]*

Also James Fulkerson (1995) writing about Morton Feldman:

At a point early in his career, Morton Feldman settled on composing a music which was characterized by very soft sounds (Instructions were often: Dynamics are very low or Dynamics are exceptionally low, but audible.) Almost always, he demanded: Each sound with a minimum of attack.

*What do these indications about dynamics and how a note is drawn into life really indicate? Unquestionably, they indicate an **attitude** to performance, to making sound, from which many other musical details follow. Attempting to play with a minimum of attack means that there will not be aggression in this music, fundamentally, **it is a fragile, tenuous sound world in which exactly which instrument is playing a sound is often ambiguous. Is the instrument playing a muted trombone or an alto flute, a soprano or violin?** [My emphasis]*

Both passages would seem to suggest a similar aesthetic ideal, the sacrifice of the individual personality (whether literally as performers or metaphorically as instruments) for the greater homogeneity of the ensemble. Again the totality is perceived as being greater than the sum of its parts, a possible translation of the idiomatic concept of *duende* into a pan-idiomatic context.

Duende, as a form of musical emergence, seemed to offer the possibility of a positive creative force arising from the negative debris of deconstruction. How would this emergence occur though? In order to cultivate the concept of *duende* I felt that I had to find out a lot more how improvisation and the real-time streaming of the internal musical dialogue actually worked. In preparing for the present study, I read Jeff Pressing's "Improvisation: methods and models" (Pressing 1988). In it, Pressing proposes that improvisations are built up in a sequential and cumulative series of "event-clusters" based on contributing arrays of objects, co-related features and processes and relying on associative or interrupt generation in their continuation. His models provided me with an analytic framework for me to

interpret my own questioning on improvisation and also new ways of thinking of my own evolving compositional grammar within the context of present study.

In order to prepare myself for this new way of composing, I began an intensive program of internal listening. The nature and implications of the listening processes I employed are discussed in the next chapter.

* * *

3. Developing Audiation

Audiation is a term invented by Edwin E. Gordon in 1975:

... to describe the ability to recall or create a mental image of the sound in the mind's ear in response to remembered musical patterns and, later, in response to printed notation.
Gordon (1977, 1989)

It is a cognitive process, involving mentally hearing and comprehending music on a semiotic level, analogous to thinking within a language. The term includes active forms of “auditory-imagining”, the subjective (often involuntary) experience of hearing in the absence of auditory stimulation. (Kraemer, D. J. M., Macrae, C. N., Green, A. E., and Kelley, W. M. 2005)

Gordon subdivides the auditory process into seven types:

- 1) listening to music.
- 2) reading music.
- 3) writing music in dictation.
- 4) recalling music from a performance.
- 5) writing music from recall
- 6) creating or improvising music.
- 7) writing music as it is created or improvised. Gordon (1985)

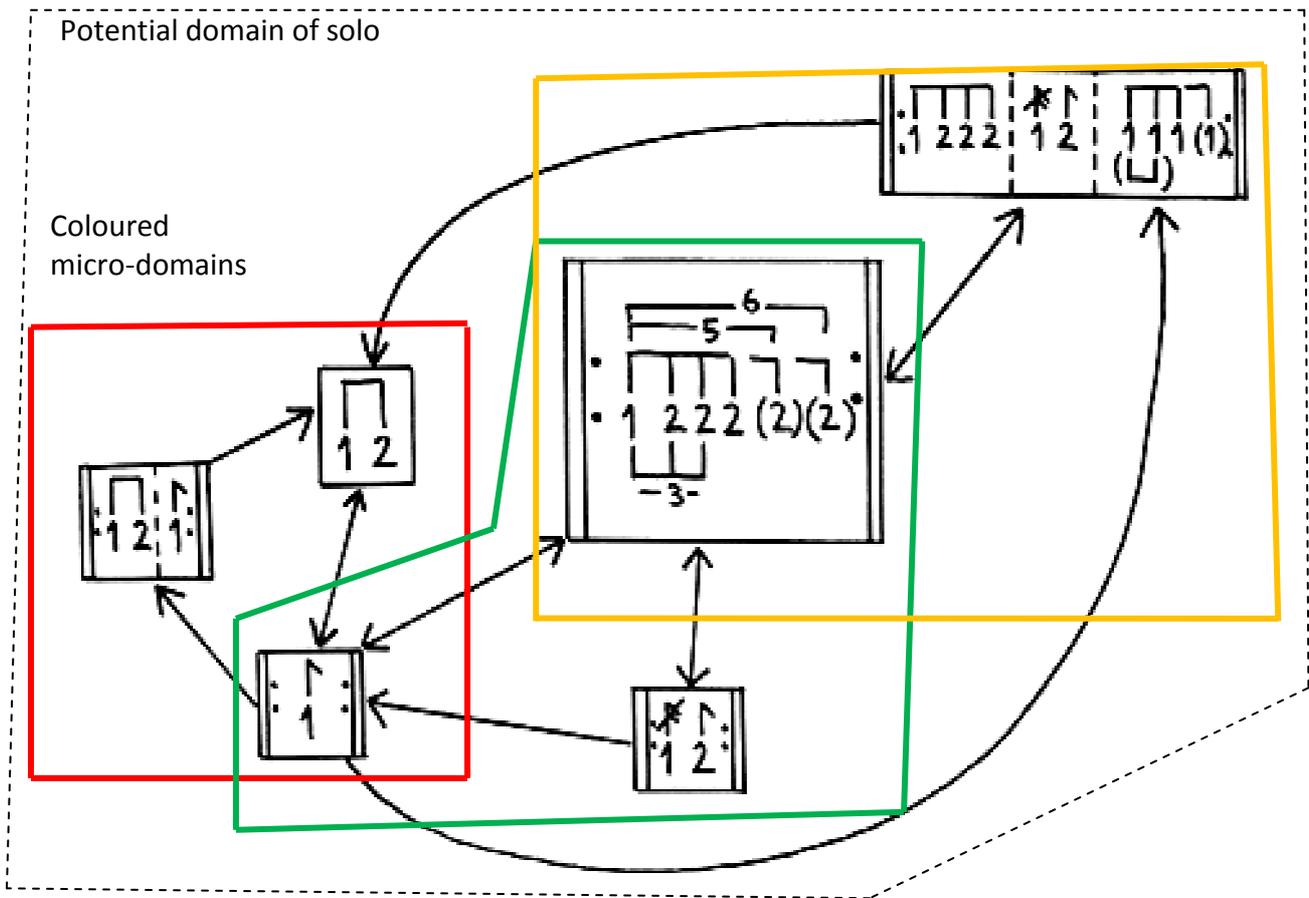
To quote William Trusheim:

*Gordon's Type 4 and Type 5 audiation involve the recall of memory images from past experiences with the musical material. **Imagination imagery** can be differentiated from **memory imagery** by the qualities of novelty, substantiality, and color. Imagination images can arise from novel recombinations of memory images and can differ in detail and vividness from the simple recall of a past sensate experience. Composers and performers engage in imagination imagery as they create music in their minds through composition, improvisation, and interpretation. Gordon would classify these imagination imagery experiences as Type 6 and Type 7 audiation. (Trusheim, W. H. 1991 [my own emphasis])*

In order to develop my cognisance of what I perceive to be an internal musical dialogue, I began training my own powers of audiation, more specifically in the types of audiation responsible for “imagination imagery”. Long before I began the present research, I discovered new ways of utilising the relationship between “imagination imagery” and “memory imagery”, inextricably linked to the auditory phenomenon of “Earworms”,

The term earworm originally comes from a translation of the German word 'Ohrwurm'. It refers to the experience of having a tune or a part of a tune stuck in your head. Often a

fig. (i), Matrix of Tinbuk Solo.



In this simplified diagram of the *tinbuk* solo, a two-toned idiophone from Papua New Guinea (*sound ex. (i)*), “1” indicates the low tone and “2” the high tone. Motivic elements and compounds are enclosed in boxes. Repeat marks indicate that the segment may be repeated without moving to another segment first via the bi-directional or mono-directional vector lines. The dotted line around the perimeter of the diagram represents the entire potential domain of the solo. However the performance does not travel rapidly around this domain. Instead the *tinbuk* dwells for extended periods within micro-domains (red, green and yellow in the diagram) creating small motivic variations within each subset before moving on to a new micro-domain.

Similarities/Differences

The music of the *tinbuk* solo and the active earworm I described earlier share a great deal of generative attributes. For example, the synthesis of compounds from primary elements is clearly recognisable even within the context of this highly simplified motivic

diagram where the three elements of the green micro-domain become fused as the recurring compound segment at the top right-hand corner of the yellow micro-domain (this occurs towards the end of the solo).

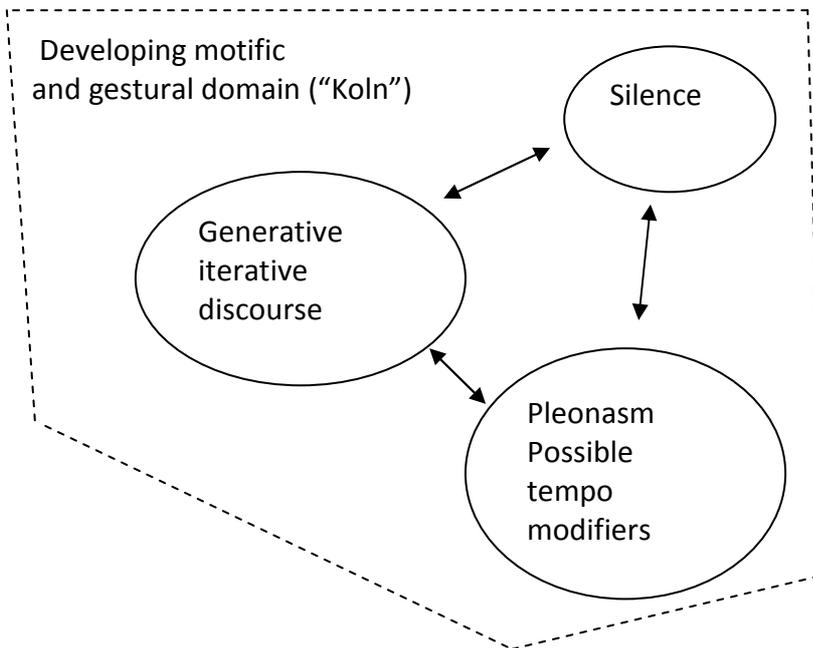
Another shared aspect between the given field example and my own internal musical dialogues is the islands of motivic immobility which lie within both music's generally turbulent character. In the *tinbuk* solo, the compound segment to the far right of the red micro-domain repeats twenty seven times without a break before the *tinbuk* resumes its eccentric motivic wanderings. These repetitions have an inactive "beating-time" quality about them, almost like a pause for breath or thought; I will subsequently adopt the ethnomusicological term, "pleonasm" to describe this phenomenon; specifically Michael Hauser makes use of the term to describe repetitive tones heard between the stanzas of Polar Eskimo drumsongs. (*Hauser, Michael 1977, pp. 36-37*)

Although common to both kinds of music, the pleonasm of my active earworms and those found in the *tinbuk* solo and other field examples are significantly different. The point of departure is a temporal one. All the irregular-iterative field examples I studied had constant tempos (allowing for slight fluctuations) whereas pleonastic sections within my own internal dialogues often form platforms of temporal change; retardations or accelerations that end with a resumption of the preceding tempo or a levelling out of the temporal change to a new stable tempo. As well as temporal change, another significant difference in the two respective music types is the role of silence.

One of the most striking things I found while listening to the field examples was the absence of any kind of pause within each performance (all at characteristically fast tempos). Instead the overall impression was of listening to continuous streams of musical information. My own internal music does contain silence however. Like the pleonasm mentioned earlier, this can exist as an ill defined mental pause for breath; or the silence can have a geometric significance (as the short silence in *example 1*), in this role, silence can take on a generative aspect as a sort of motivic element expressed in negative space.

Taking this information into account, a working diagrammatic representation of an active earworm could look like this:

fig. (ii), Anatomy of an active earworm.



Unlike the *tinbuk* solo, which established a fixed gamut of motivic elements early on in the performance, the earworm's anatomical elements constitute a "floating gamut"; new elements may be picked up, old ones discarded. "Pleonasm", which is also present within the *tinbuk* solo, contains the additional generative possibility of tempo modification. Finally, "Silence" completes a three-way feedback loop between the earworm's structural agents.

The combination of these agents creates a developing motivic and gestural domain which differs significantly to the dogmatically fixed domain of the *tinbuk* solo. However, as mentioned earlier, at any point in the earworm's perception, the domain will contain a marked degree of motivic (and gestural) unity. The stability/instability of this unity relies, to a large extent, on my position in the spectrum of awareness as creator/perceiver of this imaginary process; its structural integrity a product of my own intent – again, in various levels of cognitive awareness. It is this important aspect of intent that leads me to refer to the earworm's motivic gestural domain as a "Koln".

Taken away from its Zen Buddhist sense and used as a musical term, The “Koln” finds its origins in the “Postcard pieces” by Composer James Tenney; more specifically to the piece for solo violin within the set, entitled “Koln” although, later on, Tenney would refer to the entire set and other related pieces as “Koln” pieces. Typically a Koln piece represented a single musical idea (one which could fit easily on to a postcard). These ideas formed theoretical genotypes which would (usually) produce a recognisably unique phenotype when externalised in a performance. George Brecht’s “Drip Event” can also be seen as a proto “Koln” piece while other composers (Wolff, Lucier) wrote pieces in the same vein in the late 60s and early 70s. It is the discrete domain of the “Koln”, defined by process and intent, that has led me to borrow the term.

Intent

I have already remarked on the role of intent on the stability/instability of an earworm, but now I feel the time has come to give an example of a typical audiation session which illustrates the interactive nature of the earworm’s auditory streaming and my own audiatory intent. Early on in the present study I sent my Supervisor, Nick Fells, a description of an audiatory “tune-walk”, here is an abridged version:-

(example 2: “Taking a tune for a walk”)

TAKING A TUNE FOR A WALK

This evening, on this particular walk, I have a relatively regular tune on my mind, one that goes: fe me ... re soh ... re doh ... and then begins again. Again and again round and round. I had been hoping for an irregular-iterative melody, one that was constantly shifting its melodic components (let’s say, for example, fe me ... re soh ... soh re ... me re re ... fe soh fe soh ... re doh ... fe me ... fe me me). Then, perhaps I could make some kind of parallel between the chaotic impulses of a neural net and this melodic dialogue but, if this is the case, my neural impulses are behaving in a remarkably ordered way today.

A disturbingly ordered way, about as boringly predictable as the first scalextric track I ever got, with the cars going endlessly round in a tiny oval circuit. Ahh, maybe that is something to think about; the dodgy hand throttles with their fluctuating voltages - the cars going ever-so-slightly faster and slower. Now, when I listen to the tune carefully, the gaps between the little phrases are not as regular as I first thought.

“fe me resoh ... re doh .. fe me re soh ... redo ...fe me re so .. re doh ..”

Well this is a little more like it, the tune “re soh” motif seems to be gradually retarding behind the “fe me” motif and the discrete little binary bundles have a short and a long form. However I can’t really be sure that any of this was happening before I started thinking about the scalextric track and its fluctuating voltages.

Can it be that, by focusing on an aspect of the tune, I begin to affect change in that area of the tune? If so, what other changes will I perceive?

I have memorised the melody in solfa, and, as such, it resembles a diatonic melody in the Lydian mode. However, again as my inner hearing zooms in on the tune, I hear this is definitely not the case. As well as temporal fluctuation, the melody fluctuates microtonally as well. The re in “resoh” is appreciably sharper than the re in “redoh”, but more than this, the contours between the pitches seem to be in a constant state of flux especially in between the binary bundles. For now the structural integrity of the tune remains but surely it is only a matter of time before something gives and, yes, here it comes.

“fe me resoh ... re doh .. fe me resoh ... mara, te”

This time the resoh was slightly flatter than usual and the melody seemed to rebalance itself by sharpening the next re into a sort of half “ma” which left a hole where the doh was supposed to be. This was filled up with a compensatory out-of-tune “ra,te” and now, suddenly, the whole tune begins to destabilise.

“fe me ... mara, te femeresoh .. mara . fe me ... re soh ... redo mara, te feme . mara . fe me ... re soh famesoh ... redoh ... famesoh .. mare, te ... famesoh ..mare,te ... feme ... resoh ... mere, do ... feme ... resoh ... rate ...”

The period-three sequence seems to be nicely breaking up now into a sort of revolving wind-chime mode; but so far all we have is melody, is there no rhythm or harmony underpinning the tune?

Apart from the solfa, the only other information I am giving concerning the character of the tune are some cryptic little dots and commas that are supposed to indicate rough durations. What happens if I let the melody go out of focus and shift my attention to the durations between the notes?

“famesoh _ _ .. mare, te _ ... famesoh _ _ .. mare, te _ ... feme _ _ resoh _ _ ... mere, do , - _ _ ... feme - _ resoh - _ rate - _ ... redo _ _ .. mara, te _ _ .. redo - , mara, te -, mere, do , - _ _ ...

To begin with, the short percussive bursts (_) are like a hiss or the rasp of sand paper. Gradually though, some of the rasps become shorter and more defined (-), closer to a dull tapping on pottery. As soon as I perceive the shift in timbre, the longer rasp also changes to a close approximation of a wire brush on pottery and overtones are added to the percussiveness. A primitive harmony gradually comes into focus.

At this point, I pause in my walk (I actually have stopped at the end of a dirt track as it faces a rapidly flowing river) and take some time to recap over some of the internal paths and junctions that have got my tune to the point it is at now. I am careful to let the tune continue in unsupervised “ticking-over mode”.

- *To begin with I had a repetitive, 3-period melody made up of discrete binary segments.*
- *Focusing on voltage fluctuation led to...*
- *The segments developing shorter and longer spaces (externally and internally).*
- *Focusing on pitch...*
- *Led to fluctuating microtonal contours.*
- *Focusing on destabilisation...*

- *Led to a break-up of the binary segments into a compensatory tertiary segment which then created forking paths within the melody.*
- *Focusing on pulse.*
- *Led to the formation of practically inaudible rasps between segments (with sometimes an overlap onto a segment's last note).*
- *Focusing on timbre...*
- *Led to the rasps becoming "pottery-like" and their polarisation into shorter, rhythmic taps and longer, harmonically rich, rasps.*
- *And focusing on harmony gets me to where I am now.*

Picking up my walk again, I return to the tune fully expecting it to have generated a full-blown harmonic structure during my temporary absence and, sure enough the "rasps" have formed accompanying hollow undertones that roughly follow the melodic line. The taps, on the other hand, have formed high pitched overtones that alternate between two bell-like clusters. As I focus my attention, the clusters seem to be moving across the melody with a life of their own having little or nothing to do with the rest of the tune.

Coming out of my reverie I realise I am, in fact, listening to a sound, not from my own head, but from the physical world instead.

A pair of small pellet bells are attached to the torch that I wear as a pendant. As I walk along the track (now heading back home), the bells knock against the torch in waltz time "tip tap tap tip tap tap". At the same time my footsteps on the gravel interlock in 6/8 "drag left, drag right, drag left, drag right".

For a while I let the sound continue like this before wondering if, like the tune in my head, I can influence the unchanging monotonous rhythm by? ... well let's say, speeding up my footsteps. Unfortunately doing this has the effect of silencing the little bells. What's more, when I slow down my footsteps, the bells refuse to recommence chiming again.

Instead I decide to operate them manually and start tapping them (and the small square torch) with my fingers.

"tip tap tip tap chk tip tap chk chk chk chk chkachk chk chk tap chk tap chk tap chk chkchk tap tip tap chik chik chik chik chik chik chkachk taptaptaptaptaptaptaptap ... tiptap...tiptap...tiptap...tiptap chk, tiptap chk, tiptap chk, tiptapchkkiptak ..chk ..."

My walking and breathing quicken, and I start to feel, what could almost be described as anxiety. I stop tapping and try to return to my original tune. But it is like trying to return an item of furniture back to its original position in a room when you have moved everything else along with it. There is a tune, but it is no longer like the one I was imagining earlier on in the walk. This one does not even seem to want to fit into a convenient mnemonic like solfa. Instead only a meaningless, demented mouth-music, more birdlike than human, seems to capture its essence.

"ija tok ija na no ijajajajajaonoi sh' noi sh' ijanoinoi ijanoikh noikh noikh kh jaijaijaijaijash sh sh sh tk ptk tk ptk ija tok ija no noinoi sh sh tk ptk tk ptk aaaaaaij ijaoi ijanoi tk sh' tk tk sh' tk tk sh' tk tk ptk tk ptk ija tok ija no noinoi sh sh tk ptk tk ptk noikh noikh kh jaijaijaijaijash sh sh sh tk ptk tk ptk ..."

The “mouth-music” referred to at the end of the passage illustrates the technique of “phonemic analogy” that I was beginning to use at the time as a mnemonic aid and a transcriptional method (*see Wishart 1996, pp.289-293*). The technique was also used to generate the text for “Honey” (see portfolio). I will review this and other compositional methods more fully in the next chapter.

The above text served as a vehicle to demonstrate (somewhat flippantly) how focus of intent was able to effect change on my internal musical flux. I also picked the example because it highlights some other important attributes of the active earworm.

1) To get the best results, i.e. a responsive, natural flow, I usually found it was best to walk, ride or drive. I have no real idea why this should be but wonder if travelling through a real landscape creates correlations with a mobile inner soundscape. Also, as mentioned in the above text, external environmental sounds (footsteps, jingling bells) could effect change in the flow. A good example of this is the role of whooper swan calls in “Dogger” (*see port.*) which created the sonic bedrock for the music of an imagined tool-age culture. 2) It might seem strange that I did not just direct the musical flow to go the way I wanted it but this, I felt, was really the only way to work with the flux. In these internal dialogues I was able to coax new material or greater depth of material by thinking through and with the musical flow, rather like placing obstacles in front of a stream of water and seeing what would become of the intrusion. If I started to take control and just use my powers of audiation to make the music do a certain thing, the earworm would usually go sulky and all I would be left with was a two-dimensional aural snapshot which refused to do anything or go anywhere. 3) And probably most importantly, the above passage refers to a comparatively early stage in my audiationary process where I was only able to think in terms of melodies or, at least, music whose composite parts (melody, timbre, rhythm, harmony) were closely linked to strongly horizontal nature of the musical flow.

Early pieces written during this study, “Learning #1” (*port.*) and “Writing” (*port.*) do not really stray outside of this horizontal simplicity. However, while writing “Petteia” (*port.*), I became increasingly aware that, although the principal part (the piano) had been realised in real-time bursts of writing/playing, the two support parts were derived from this part following a slower step-wise process a lot more akin to conventional compositional praxis and in violation of the compositional constraints (see chapter 4) that I had given myself. More-to-say I had felt it necessary to violate these constraints in order to produce a more

three-dimensional musical work. It became clear that, if I wanted to create more complicated pieces, then I would have to find a more visceral methodology of tackling complexity itself. Again field examples from Papua New Guinea provided me with a direction I could pursue.

“Koln-space”

(sound ex. (ii) Tinbuk and male singers. Duvelle 1977)

(sound ex. (iii) Wundubu Bangu Ceremony. Fanshawe 1998)

I have already shown the similarities between the limited domains (“kolns”) of the active earworm and the *tinbuk* idiophone. This can be said of a lot of instrumental music from Melanesia where the reductive sound-world of a particular sort of music becomes idiomatically fused to a specific instrument; moreover the instrument in question may well only ever produce that one kind of music and no other. In the *tinbuk* solo (*sound ex. (i)*) the performer has the characteristic freedom of the soloist, uninterruptedly engaging in a dialogue with the elemental micro-gamut that defines the *tinbuk’s* koln. However, put into the context of playing in a larger musical group (*sound ex. (ii)*), the *tinbuk’s* music does not seem to be compromised by the ensemble dynamic (actually the biggest difference is in the central element of *fig (i)* which loses virtually all of its irrational semiquaver tuplets). Instead the *tinbuk* roughly keeps to the same tempo as the singers, making no obvious attempt to interlock with their melodies; my overwhelming impression is of listening to two forms of music played simultaneously.

The *Wundubu Banga* Ceremony takes this sonic phenomenon a stage further. Here several types of music are heard simultaneously. Sometimes they seem to act independently of one another; at other times an undefined musical interaction seems to take place within the disparate musical groups included within the ritual. The long drums, for example, create a pulse referent that carry the flutes along for a time but, after a few unison beats, the flutes break away from the pulse and re-establish their own musical koln within its own particular tempo. What is happening and how it is being accomplished is, unfortunately, beyond the scope of this study. What was important to me was that both examples seemed to represent a meeting of kolns, a sort of interactive koln-space which suggested a highly sustainable, intuitively-based harmonic language, simultaneously simple and complex.

fig. (iii) A meeting of three kolns.

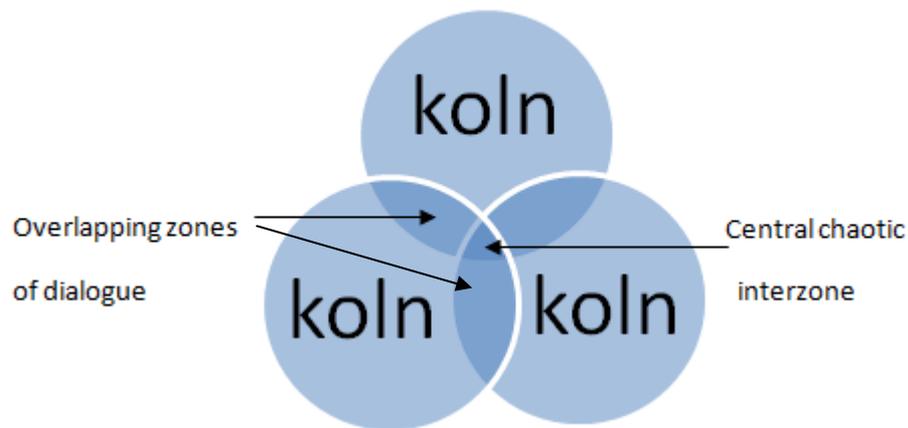


Fig. (iii) is a Venn diagram showing a possible three-way musical interaction. Three types of music form their own limited koln-domains. The overlapping zones of dialogue are areas where koln identities become modified through mutual interaction. The central chaotic interzone is an area of non-linear interplay with a high potential for creating unexpected emergent musical forms.

Thinking into this “koln-space” idea immediately prompted a lot of new questions. What would happen if a contour-based music met a music strong in fixed-pitches and geometric rhythms? Which music would dominate? What would an integration of both values sound like? However, by far my most pressing question was how to train my audial abilities to be able to imagine the sort of complex multi-earworm dialogues that I wished to portray in my music?

Inductive ensembles

One of the first exercises I tried was to listen to two or more recordings of solos simultaneously and then try and recall the experience in my mind’s ear. I found that by blurring my inner sound-world I could hear the participating elements of the sonic array. However single elements would continually push themselves into focus and dominate the array but by intentionally reblurring those elements I found that I was able to sustain an internal musical heterarchy with continual in-and-out-of-focus events. Another thing I did was to re-listen to recordings of improv sessions that I had made over the years. One of the things that struck me was the high level of extended techniques and outsider techniques that musicians in the sessions were using. These, again, tended to create a sense of highly

particular music domains interacting within the larger frameworks of the sessions. More often than not the recordings were of individuals that had never met before the sessions and here the improvisations would seem to hover in a cloud of mutual probing with each participating member of the session trying to guess at the others' musical syntax while expressing that inductive process through their own idiosyncratic kolns. Again, after listening to the recordings, I would replay the material internally which resulted in the same sort of auditory-imaging mentioned above; the more basic and two-dimensional the kolns, the easier I found I could think into them and shape the koln-space interplay.

By now my audiation had taken on a far more active trajectory. Instead of going out for a walk and passively waiting for earworms, I was now consciously employing media to trigger multi-earworm interplays. By now I had also become aware that particular earworms were recurrent although they might have changed over a period of a couple of weeks or so. However it was only because I had developed ways of transcribing my internal musical dialogue that I was able to recognise these returning forms, otherwise I would probably have missed their recurrence. These transcriptional methods were also becoming more complicated, reflecting the growing complexity of multiple kolns and this, in turn, profoundly affected how I translated my internal audiation into externalised musical compositions. The next chapter will discuss these transcriptional and compositional processes in detail.

* * *

4. Compositional Methods and Models

Dogger

The central work of this study is my electro-acoustic piece “Dogger”. It was the first piece that I conceived at the start of my research and it is the last piece to be completed. The other works of the portfolio, more often than not, originated from compositional concerns that stemmed from “Dogger”. As they separated from the central work, they developed their own unique compositional lives and concerns. However these satellite pieces remained useful as testing grounds where ideas were played out, rehearsed, listened to and ultimately fed back into “Dogger’s” own compositional processes.

At the outset, “Dogger” had presented me with a single idea and this idea had come about while walking at night along an iced up road under the shimmering northern lights. The ice along the road had melted then frozen again, forming organic scalloped shapes translucent in the light of the aurora. These shapes continued as a shifting, snaking meander along the length of the road. The thought came: “What sort of people would look at the aurora and create its frozen likeness in the forms under my feet?” Perhaps I would be looking at the residue of a much larger cultural process where the working of these scalloped shapes would have been accompanied, not only, by the sound of scraping and polishing but also by the sound of talking and singing; all of which would follow the sensual contours of this frozen construction. Using the audiatonal techniques outlined in the previous chapter I found that I could “listen” to the complex musical sound-scape that would be created. However, this music existed as a rich layered totality and when I tried to focus on the individual strands and elements that made up this totality I found that I was unable to do so; instead the internal music would disappear.

In his article, “Issues on the representation of time and structure in music”, Henkjan Honing (1993) touches on similar problems encountered when trying to reduce music to its constituent building blocks.

Continuous or discrete?

By way of illustration, imagine Billie Holiday singing “I cried for you”. How can the sound be represented in such a way that all expressive and structural information is incorporated? What is the relation between the actual perception and the notes originally notated in the score? Consists the sentence as sung of several discrete entities, or should it be described in a continuous way? Or a combination of both? For example, discrete phonemes syllables or notes, continuous fluctuations of pitch and amplitude within them, etc. combined into several layers of discrete and continuous types of information that are closely related.

And

Decomposability

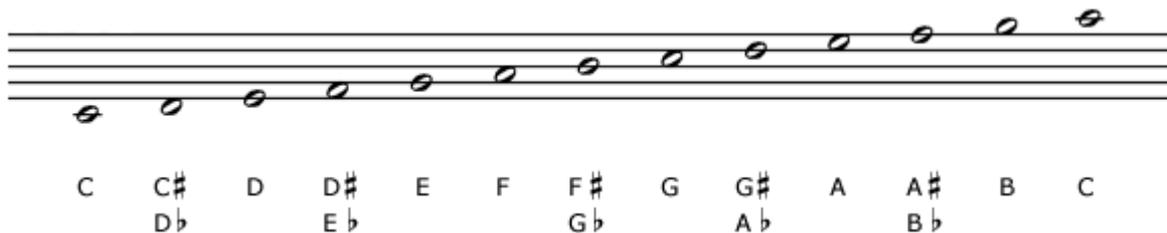
How to decompose a representation of music into the appropriate parts? What are the building blocks, the primitives of such a representation? As described earlier, this decision is essential and has implications on what kind of information will be lost and what information will clearly be represented. (Honing, H. 1993 pp. 226-7)

When I began to transcribe my own internal musical dialogues I confess I took the easy way out, defining my representational “primitives” as first and foremost pitch and rhythm.

Early transcriptional methods

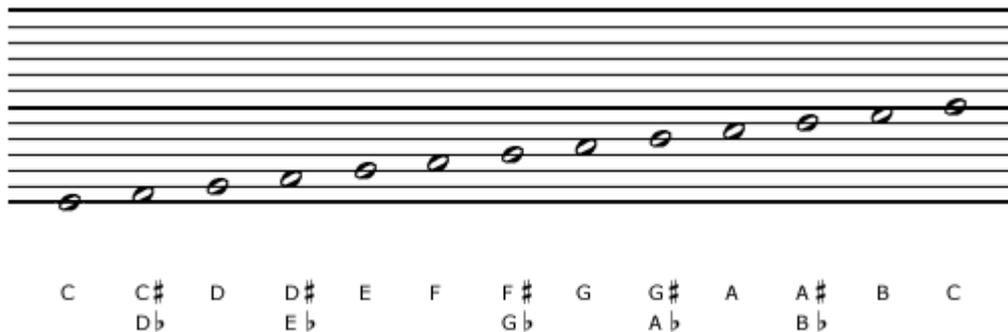
Before attempting to transcribe the complicated sound-world that I envisioned in “Dogger”, I concentrated on transcribing the comparatively simple “earworms” described in the previous chapter. After some experimentation I began using a notational system based on a five line chromatic staff.

fig. (iv), Basic 5-line C-chromatic staff showing one octave.



Bearing in mind that the staff can be transcribed to any pitch, the chromatic staff has the advantage of dispensing with accidentals. However it has a much narrower range of pitch than a conventional music staff. To overcome this I joined two staves together replacing the ledger lines above, below and between the staves with bold lines (**1+5+1+5+1**).

fig. (v), Double C-chromatic staff showing one octave.



The pitches of the chromatic scale always correspond to the same line or space of each staff, staves stacked above or below the first staff represent octaves above or below the original octave.

In practice I would use normal lined paper and draw in the bold lines. This gave large spaces between each line which gave the additional advantage of enabling microtonal pitches and contours to be written, again without accidentals; e.g. from the lower line moving up to the upper line, the interval spacing would read as follows:

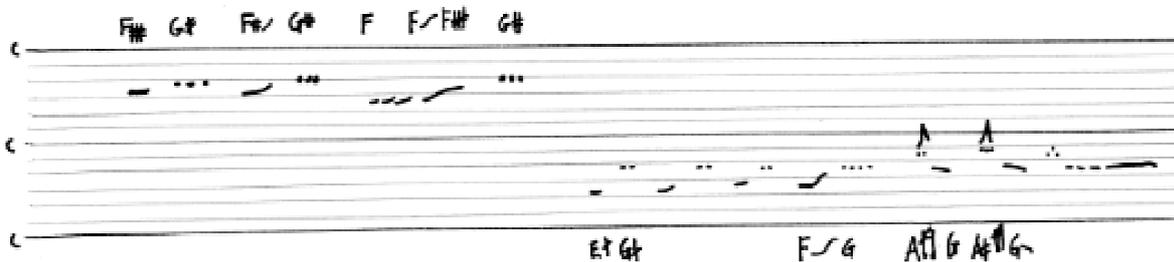
fig. (vi), microtonal positions between lines.

| Intervals | staff position | from C to D |
|-----------------------------------|-------------------------------|-------------------------------------|
| whole tone | on line | D natural |
| three quarter tone flat | below line | D quarter- |
| half tone quarternote | middle of space above line | C sharp C quarter- |
| sharp | | |
| Root | on line | C natural |

I then applied an abridged form of proportional notation to the staff system. This only really applied to note durations longer than the “earworm’s” implied pulse referent; these were written in the form of lines of varying lengths. Notes that were the same length as the pulse were written as dashes, shorter notes as dots. If the notes were very short, or ornamental grace-notes, I would use an inverted V above the group; also if the short note groupings were obviously in triplets I would put a number over the group. If a section obviously repeated itself I would draw a ring around it with a number denoting how many times the

figure repeated. This graphic hybrid of proportional and mensural notation enabled me to negate small rhythmic mistakes in real-time graphic transcriptions (see *fig.(iv)*)

fig. (vii), short example of transcriptional notation



This transcriptional system (with various add-ons and modifications) was utilised throughout the present study. Early on I used it to compose “Learning #1” and found that I could write an additional rhythmic part with my other hand. Rather than walking and transcribing (something I did quite a lot), I wrote the piece indoors sitting at a table. Now and then I paused in the transcription. This seemed a natural process for this particular piece which had a sense of breath to it rather than the constant stream that was typical of the earworms I notated while walking. I would then hum and tap over what I had written before starting again, the breaks notated as pauses in the score. This sense of a breathing line at the time seemed of little importance. However as my research continued it was to gain considerable significance - this I will outline later in the chapter.

An obvious limitation of this transcriptional system is that it was impossible to notate more than two parts at a time, one for each hand. As I developed the audiaton process, I became aware of the possibilities of looking into the melodic streaming and discovering ghost harmonies and resonances which I wanted to represent in the transcriptions. Generally these secondary voices followed the central line of the “earworm’s” tune so, rather than attempt to accurately transcribe the secondary voices, I began to create shorthand symbols that suggested their behaviour in relation to the central line. In “Reading” (see portfolio) the symbols and their meanings were as follows:

% create an interlocking part with the subject.

\$ create a part which implies or shadows the subject following the subjects pitch or with harmomelodic variation.

= create, as closely as possible, a mirror image with the subject.

O a circle around a note or group of notes of the subject means play as a drone.

* play an interruptive musical gesture

+ stop playing.

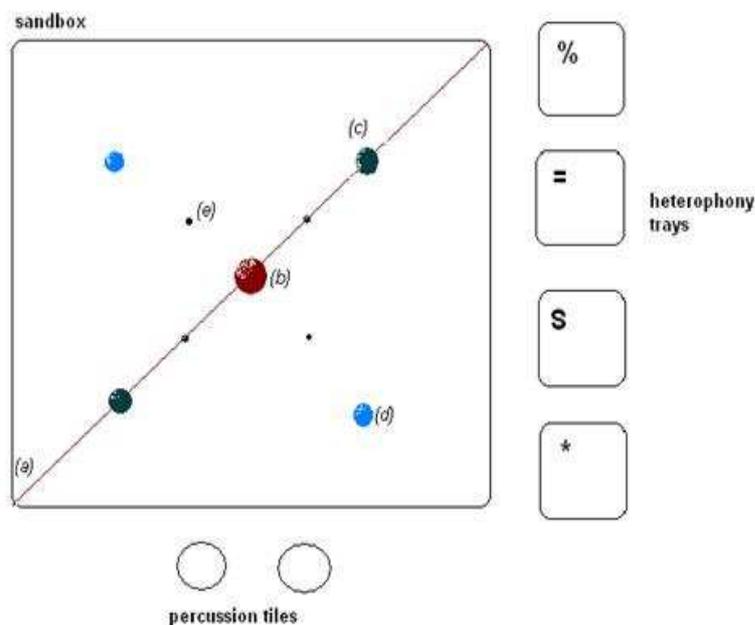
In “Reading” the symbols were written for two “heterophonic” accompanying instruments in colour-coded ink over the melodic line or under the percussive line, both of which were also written in real-time during the performance.

The main problem with “Reading” was the time delay between what I was writing and the musicians that followed my written instructions. It meant that listening to what they were playing became a distraction and that, instead of interacting with them, I tended to try and shut them out of my head as I wrote onwards. Although my transcriptional system worked for my own personal use, it was practically useless as a live “comprov” tool.

Enter Sandbox

The idea of creating a method for musicians to immediately translate my internal musical streams into music was something that had occurred to me at the beginning of my research. I now began to develop this idea and came up with a “comprov” array that that could produce the same performance elements as “Reading” but with greater potential for real-time interplay with other musicians. The result was “The Sandbox” (see portfolio for full instructions).

fig. (viii), sandbox array Mk 1



The first “Sandbox” array (*fig. (viii)*) used a tray of sand for the melodic player with stones for various pitch nodes. With one hand I was able to trace melodies in the sand while tapping rhythms for the percussionist on the two percussion nodes with the other. A counter for each of the accompanying musicians could be placed in the various heterophony trays or on the node stones to recreate the symbolic information mentioned above.

As the sandbox developed through the course of this study, my own internal musical streaming was de-emphasised. Rather, interaction with the other participating musicians’ own internal streaming was what I sought to achieve, creating a musical heterarchy albeit one I had the option of overriding (further information presented in “The Sandbox” score (*port.*)). To accommodate this and my ideas of an inductive ensemble mentioned in the previous chapter I developed hand signals and objects that would allow musicians to develop the music independently. The sandbox could then follow these developments resuming and relinquishing control as I saw fit. I also began adding elements to the array that I had not explained to the musicians prior to a session to see how they would interpret the novel information in a musical form. “Earworm” maps which I called “dynamicals” were

also added to the “Sandbox”; these came about as a direct consequence of the transcription process.

Dynamicals

As well as transcribing my internal musical streaming with pen and paper, I also used a Dictaphone to record myself attempting to externalise the streaming through singing, whistling softly between my teeth, or playing an instrument or sound object. Each method seemed to effect change on the original streaming as motor patterns took over and began to develop the streaming through the media of their own idiosyncrasies (whistling through my teeth seemed the least intrusive of all methods which is probably not surprising since I realise I do this involuntarily when I transcribe on to paper).

“Petteia”, “Horses”, “The Waterwheel at GADGAB” and the written sections of “Swimmer” (see portfolio) were all partially composed from such recordings. With “The Waterwheel at GADGAB” and “Swimmers” I tried to emphasise the motor pattern effect on streaming by devising *scordatura* for the instruments that I was improvising with. This immediately had the effect of removing the familiarity from the externalising medium and, by the act of playing, suggested novel directions for the streaming to take or adapt to. My playing would adapt itself to the unforeseen koln-domains which seemed to hold a hypnotic attraction for my fingers. In “The Waterwheel at GADGAB” I simply transcribed the recordings onto paper and wrote the piece that way, going over what I had written each morning before continuing on a new recording session. In “Swimmers” I used a different tactic. By analysing the data from the recordings I was able to diagrammatically draw flow-charts of the koln-domains.

fig. (ix). "Dynamical #1" from "Swimmers".

- DYNAMICAL #1 -

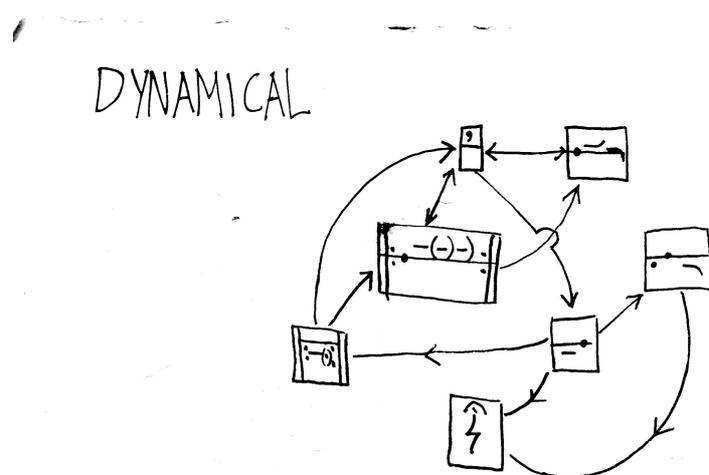
Fiddle Sandboxes D d a d'
Fiddle Guitar Sandboxes DA d g b d'

DEFAULT FINNER
SPACING ON FIDDLE NEUTRALIZING
+ + > * < f
- - > * < f
LEFT HAND POSITION ON FIDDLE
NEUTRALIZING THROUGHOUT
UPPER INSTRUMENT LEADS

-charles voss-

These could then be fed back into a performance context as semi-deterministic scores. The "dynamicals" I wrote for swimmers were complex with sub-domains existing within the koln-space. Those written for the "Sandbox" were relatively simple.

fig. (x). Simple Dynamical from the Sand-box.



The two-part "Dynamicals" from "Swimmers" were produced using a recording of a single part Dynamical and then working out accompanying fragments on the secondary

instrument. These were then added to the original “Dynamical”. In the performance of “Swimmers”, the guitar player endeavours to follow the fiddler around the score. However because of the unpredictable directions that the fiddler can take, the guitar player continually loses and regains the flow of the dynamical. This heterophonic uncertainty is rendered even more complex by the addition of third musician with vague instructions to try to follow the flow of the dynamical but with no indication of which instrument s/he should follow. When I listened to the recording of the performance of “Swimmers” I felt that I held the final piece of an interlocking puzzle that would enable me to tackle the sort of complex sound-world that I had envisioned in “Dogger”.

To recap, I had started with transcriptions of irregular-iterative “earworms” which defined their own “koln-domains”. I had then envisioned several kolns playing simultaneously. Imperfect information shared between these kolns would lead to inductive ensembles. The “sand-box” had led me to explore the possibility of shifting heterarchies within these ensembles and now I could actually hear the music of a koln played by three, musicians working as an inductive ensemble (admittedly in a definite hierarchy) with each member of the ensemble in dynamic relations with the other two parts. Combining all these ideas gave me all the compositional and inner listening tools needed to create the sort of complex music I envisioned for “Dogger”, “Stigmergic” music

Stigmergy

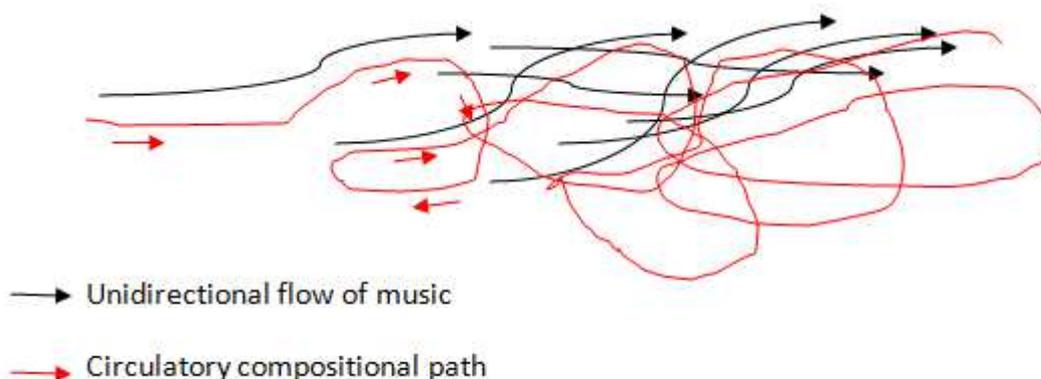
“Dogger” is a fictitious piece of music-dialogue between musicians of the present and an imagined Mesolithic tribe. It is a metaphor of the relationship between the deliberative conscious side of the creative mind and the essential otherness of its reflexive, subliminal side, the underlying musical dialogue that has effectively defined this research. Each side of the creative membrane works within a vocabulary of kolns creating a pseudo-topographic musical structure by the accumulative process of their mutual interaction. The term for an emergent structure created through the interaction of agents (intentional or otherwise) is known as stigmergy.

• *The term "stigmergy" (στίγμα stigma "mark, sign" and έργον ergon "work, action") was introduced by French biologist Pierre-Paul Grassé in 1959 to refer to termite behavior. He defined it as: "Stimulation of workers by the performance they have achieved. "*

- *It captures the notion that an agent's actions leave signs in the environment, signs that it and other agents sense and that determine and incite their subsequent actions.*
- *The principle is that the trace left in the environment by an action stimulates the performance of a next action, by the same or a different agent.*
- *In that way, subsequent actions tend to reinforce and build on each other, leading to the spontaneous emergence of coherent, apparently systematic activity. (Huang, S. 2011)*

Stigmergy seemed to be an aggregation of the compositional methods and models I had developed within the course of the study. The concept was directly used in five portfolio pieces: “Honey”, “Esplanade”, “The Ventriloquist”, “His Master’s Voice” and “Dogger”. While writing these pieces I developed a compositional methodology that enabled me to effectively break-down and manage the elements of stigmergic ensemble writing yet still maintain the reflexive, intuitive approach to composition that I had used throughout the present study. This methodology took me back to the beginning of my research and to the sense of a breathing line.

fig. (xi). Stigmergic model.



Heterophonic structure built up by successive horizontal, periodic waves.

The model above shows a typical piece of stigmergic music built up by a successive layering of horizontal melodies. In practice, to do this I would use the measure of breath to create these melodic “waves” sometimes slow relaxed breaths, other times fast and agitated

breathing or, to greater extremes, the long, trance-like breaths of a free-diver, or the hyperventilation of a terrified victim. I would then return to that breath, relive the melodic line and from it create a new melodic breath, beginning before the last breath had ended. This overlapping process could be repeated again and again enabling me to build complicated structures from comparatively simple building blocks.

Each of the five pieces mentioned above explored Stigmergy in different ways, from a two handed simplicity in “Esplanade”, to the complexity of a smart-swarm in “His Master’s Voice” and the heavily textured stratification of “Dogger” itself (“The Ventriloquist” and “Honey” fit somewhere in between these polarities). The difference in these stigmergic approaches were not only accentuated by the various media for which I composed the works but, more importantly, by the media that I composed the works on to.

Medium and Texture

“Esplanade” and “His Master’s Voice” differ from other portfolio pieces in the fact that they were both written on the “Sibelius” engraving program, a compositional tool that I experimented with as a medium for accelerated writing. I wrote both pieces directly into the computer using the computer keyboard (no midi) with no prior notes or transcribed material from other media. The major difference here with my other transcriptional or compositional systems was the program’s ability to polyphonically play back what I had written and its ability to retrieve and recycle music. Typically, I would find myself myopically tapping in music for hours, pausing and playing back the bars I had been writing or playing the whole piece from the beginning. I might then hear a small section that I thought had additional compositional possibilities and copy/paste it on to the section I was working on, perhaps as an additional element to the micro-motivic material I had currently been using or as an interruptive element that would take the music into new, previously unforeseen territories.

My biggest reservation in working in this way was the great deal of time needed to take the music out of Sibelius’s four-square box and into the more chaotic rhythmic-melodic realms that I am used to dealing with. By continually having to tinker with bar lengths and irrational note values, I ran the risk of losing the flow of the music. Again, the program’s ability to playback partially compensated this fault.

Like the majority of pieces in the portfolio, “Dogger” and “The Ventiloquist” were written conventionally with pen on to paper. However both scores have a sketchy unfinished look about them with instrumental lines often petering out into unreadable scrawls. This was a very intentional act on my part, prompted by my concerns about the two-way relationship between what the composer writes onto the page and what the page reflects back up to the composer, how the act of reading and re-reading this primarily visual data can effect change on deliberate and visceral levels.

Looking at some of the sketches Stravinsky made for “*Le Sacre du Printemps*” (Sloboda, J.A. 1985, p.110) I was struck by the overwhelming sense of continuous potential that these wet-paint images convey. In this unfinished form, Stravinsky’s writings give the impression of a constantly renewing or renewable creative resource, a construction forever locked within the process of being constructed. For this reason, after a certain amount of experimentation, I decided on a similarly sketchy calligraphy that would continually reflect the “wet-paint” nature intrinsic to the pieces that I wanted to write, back into myself, creating visual feedback loops that would compliment and cross-pollinate the aurally/tactilely produced source material of each piece.

This “wet-paint” aesthetic is extended to the performer as s/he reads the score, especially in the sections of “fog-notation” where I want the performer to reproduce musically the uncertainty of being unable to make out what notes have been written on the page (see instructions in scores for “Dogger” and “The Ventriloquist”).

fig. (xii). A page from “The Ventriloquist” score .

The image shows a page of handwritten musical notation for 'The Ventriloquist'. It features several systems of staves. The top system includes staves for VI (Violin I), VI (Violin II), and C (Cello), with a 'MICRO MASSO' section below. The notation is dense and includes various markings such as 'phase to', 'p', 'mf', and 'pp'. Above the staves, there are time signatures and measures: 5-7 [E], 4-5 [E], 4-6 [E], and 6-9 [E]. A large bracket spans the first four systems. Below this, there are more staves for VII (Violin III), VIII (Violin IV), C (Cello), H (Horn), and Mel (Melodica). The notation continues with similar density and markings. At the bottom, there is a '- five -' marking.

When I performed “the Ventriloquist” I wanted a visual mnemonic of the written score to help me orient myself with the free “Sandbox” sections. I decided on a painted picture with various symbols and textures representing the sections of the work (the “Sandbox” sections were painted in blue for easy reference). While painting the picture I realised that I was able to project textural information far more effectively than with pen and paper, something I was attempting in the “Dogger” score. This led me to paint a series of mixed media paintings which I grouped together as open musical score, “Aesop” (see portfolio).

I had been tutoring the University of Glasgow Contemporary Music Ensemble and introducing them to various kinds of open scores. Some of them had daunting amounts of rule-sets to digest, others practically none. In Aesop I wanted to create an interconnected series of complex looking painted scores with the suggestion of recurrent symbolism appearing throughout the set. A complicated graphic score in which the rule-set had been lost, leaving performers and musicologists alike perplexed as how to interpret the score. Sometimes I painted conventional notes but these would change into more abstract symbols and sometimes animal like figures (hence the title) or dissolve themselves into muddy textures of ochre and burnt sienna (further information presented in “Aesop” score (*port.*))

In “Aesop” what I wished to convey was the mind in a pre-musical state. The “primitive” building blocks of musical comprehension intermingled with other cognitive areas: pattern recognition, tactile empathy, abstract semiotic understanding – all blended into a continuum of potential musical thought - projecting an unknowable gestalt from within the cave in the mind.

Performances of the work have, so far, produced quiet sporadic textures - a sense of waiting - there is still a lot of work to be done.

* * *

4. Conclusion

Overview

This study has been principally concerned with different levels of consciousness and how they affect, and are affected by the compositional process in music. For the purposes of my research, I was initially interested in emphasising and developing what cognitive psychologist Colin Martindale (Lewis-Williams, D. 2002, pp. 111-112) refers to as "autistic reverie" (irrational) while marginalising those of "waking, problem orientated thought" (rational).

In order to inhibit rational thought, I deliberately accelerated the compositional process to the point where conventional rational thought became difficult or impossible. Musical decisions, generally dealt with in the rational end of the "Spectrum of consciousness" were then pushed into the autistic domain of the spectrum, creating feedback loops between inspirational creativity and note-to-note musical evolution. This was embodied in the internal musical dialogues that I attempted to transcribe in the ways discussed in this commentary.

Accordingly, secondary compositional restraints grew out of this compositional process. For example, I felt that the recorded split second decisions I made while composing represented a documentation of reflexive composition and were, therefore, unalterable (except for the occasionally obvious mistake). Further restraints were imposed upon harmony. To allow for vertical development while maintaining the integrity of the tenets of the study I allowed material to be revisited and reworked through a series of horizontal washes over the original material. Again, these washes had to be composed in real-time.

As the study progressed, this harmonic restraint was transformed from a hierarchy of melody and accompaniment to the heterarchy of "stigmergy" outlined in the previous chapter.

To allow corroboration from different perspectives, three strands of compositional investigation were instigated and developed:-

#1 Real-time writing - began with "ear-worm" transcriptions on to chromatic staves which developed into "sandbox" arrays and the possibility of tactile and textural projection through interaction with of the plastic materials of the array. This discovery of texture was

also manifested and developed in the “Aesop” series (*see port.*), essentially a form of non-linear, real-time writing (painting).

#2 Accelerated writing – was developed from real-time writing as a more practical and realisable method of composing conventionally on to paper. Scores were typically written through bouts of real-time composing, working through vectors of “event clusters” but with the ability to pause at the nodes of these clusters as new intentions developed within the music. This way of composing also allowed me to develop the “stigmergic writing” of the later pieces.

#3 Recorded improv - begun with recordings of myself attempting to sing or play my internal musical dialogues. These were obviously modified by motor-patterns. Later I recorded “comprov” groups (e.g. “Sand-box” “Swimmers” (*port.*)). The recordings provided me with an invaluable listening grammar that was fed back into my own compositional grammar, allowing me tackle more complex compositions. Also recordings taken outside tended to blur the distinction between music and the environment. This blurring became a key element in envisioning and writing “Dogger” (*port.*).

Achievements

In his article, “Cognitive constraints on compositional systems”(1988), Fred Lerdahl writes: *Our musical culture is too fragmented and self conscious for a natural grammar to emerge.* I feel the present study refutes this; however fragmentary, an individual’s own internal musical dialogue is, it is, by its very existence, a natural musical grammar. In addition, when I find myself in the context of an improv session, perhaps playing with musicians I have never met, I find myself able to musically converse in, again what must be, a shared musical grammar or at least the intersection of several musical grammars. The core of the music I have produced in the present study is about this musical exchange.

During the course of my research I was often asked about the relationship of my composed music to improvised music; was I solely interested in producing a form of guided improvisation? If so, why was I writing so many notes? For me, the improv session represents the state of musical reality in contemporary music; i.e. when “Western art” musicians come together and play then this is the reality of the sound that is produced. An orchestra playing from a score is, in comparison a far more artificial form of music, a musical fiction perhaps. I feel my research to have been comparable with the way a playwright studies the reality of human conversation or the internal verbal dialogue and how then

externalises this in the form of a play or film. What I attempted to do in my own compositions was to take the listening grammar of improv sessions and my own internal musical dialogue and channel it into artificial contexts that, nevertheless, behaved (or attempted to behave) as naturally occurring musical events. In my opinion, the core achievement of this research has been to offer various directions and methodologies for composers interested in working in a similar vein - I wish them luck.

* * *

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