

## **Becoming, Collaboration and other Alchemy: A descriptive study of a creative work that uses process-relational philosophy to illustrate how music creation can be viewed as research**

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### ***Abstract***

*This paper is a descriptive study of the creation of a new work that used practice-based and practice-led methodology, birdsong, electro-acoustics and philosophical argument to explore the theories of becoming as representative of the concept of 'bring forth' new truth. The composition which was the focus of the study employed electro-acoustics, live performance and Malaysian avian motifs. Electro-acoustics: to create an accompanying soundscape of bird-calls, and to manipulate particular calls in interplay with the live performer; Live performance with two extra dimensions: extended flute techniques and the application of digital signal processing to create a 'more-than-flute' timbre. The Malaysian avian songs were transcribed into common notation to derive motif material from which some of the melodic, harmonic and rhythmic elements of the composition were created. Based on the case study, it will be argued that the becoming (coming into being) notion of process-relational philosophy validates the creative act as a valid research into 'cultural' truth. That the Heideggerian notion of 'bringing forth' art supports this premise as does Nietzsche's thoughts "that what mattered in existence lay in the dynamic and energetic qualities of becoming" (Lines, 2003, p. 11).*

**Keywords** *Birdsong, becoming, meta-flautist, electro-acoustic composition, transcription, process-relational philosophy, panexperientialism, practice-based and led research, Whitehead*

### **Introduction**

This article is about a practice-based and practice-led enquiry and research process instigated at the invitation of flautist Dr. Jean Penny for the author to compose a new work for flute and the digital signal processor (DSP) Alchemy. The four main elements of the project are discussed, namely, the methodology, the philosophy, birdsong in music composition, and, finally, the artistic collaboration. The project brought together Penny's expertise in extended flute techniques and the integration of Digital Signal Processing to create a meta-flautist, a 'more than flute' sound experience, and the composer's interests in birdsong, process-relational philosophy and its concepts of becoming as well as Heidegger's notion of 'bringing forth' (Lines, 2003).

The resulting composition, Taman Malim, was named after the area of Tanjung Malim, in Perak, Malaysia, where the birdcalls were collected, the piece composed and premiered. Taman means ‘area’ and ‘garden’; Malim means a ‘pilot’ and a ‘junction of two rivers’. The composer of the piece, and author of this paper, thought of the work as the area where two streams meet, a place of confluence creating a garden of flowering possibility; the performer and the composer coming together to unite their strengths into a greater current, a stronger flow of consciousness. Taman Malim could probably have the subtitle *The Garden of Confluence*. During the previous year the author created a work which took various calls and motifs of the Australian Pied Butcherbird, upon which were created a duet to be performed live with the pre-recorded and altered birdcalls (See <http://www.youtube.com/watch?v=Tl0kV7-phuo>). The Taman Malim research project was, thus, a natural extension of previous investigations.

### **Methodology**

The methodology utilized for this project was practice-based and practice-led research. There is a problem with these methodological terms in that they are not always clearly defined as separate methods and indeed they overlap and invade each other territories. Some theorists emphasize the ‘doing’ side of the methods. Niedderer and Roworth-Stokes (2007) in *The Role and Use of Creative Practice in Research and its Contribution to Knowledge*, state that these methods are “research process[es] based on or rooted in practice, or where practice plays a lead role in the investigative process ... experiments are ‘framed’ [to] investigate how practice can be enhanced or improved”. These authors continue to state that the purpose of the research is to “make direct contribution[s] to, or are of direct relevance for, the advancement of practice ... [the] practice informs theory building within research to gain new insights, knowledge or understanding”. Clearly, the authors see the two as one method and their emphasis is on the contribution to knowledge found through the ‘advancement of practice’ methods.

Other writers bring out the ‘creating a product’ side of the methods. Brad Haseman (2006) states, “Practice-led research is intrinsically experiential and comes to the fore when the researcher creates new artistic forms for performance” clearly associating a ‘new artistic form’ with a ‘performance’. The author of this article, primarily because he is a composer, associates a new ‘artistic form’ with the production of a music score, either in manuscript or electronic form. An object, like a statue, painting, or novel; it exists of its own without being performed. Unlike a temporal performance, which is a ‘moment in time’, the score is an object, like an academic paper which can be analysed, deconstructed and pored over for insightful understandings, novel procedures and intellectually rigorous procedures. The score is a map of the procedures utilized, a method record logbook.

The Sydney University of Technology’s definition of the methodologies, as presented on their ‘Creativity and Cognition’ site, clarifies the differences: “If a creative artifact is the basis of the contribution to knowledge, the research is practice-based. If the research leads primarily to new understandings about practice, it is practice-led”. This is a clear delineation – however, life is never that simple. Within the flux and flow of the practice of bringing into being a new musical score, there is the becoming aspect

of the development of the artist. In both aspects of the research methods there is the contribution to the advancement of knowledge. This is what occurred in the Taman Malim project.

Most people do not view music as a concrete object. With Hegel, they align with its ephemeral nature, as Ford (2010) explains,

Hegel proposed that music, because of its temporal nature, does not stand over and against us as a something concrete and fundamentally other ... rather music is ephemeral, and so “volatilizes its real or objective existence into an immediate temporal disappearance.” (Hegel in Knox, 1975, p. 3).

Although the author views the score as an object, it is not realized until it is brought to life as a performance. Now the work is integrated with time and its forward thrust. Practice-led methodology was used by the performer in the practice of developing the performance. Here, as in the practice of developing the objective (the score), new contextual knowledge was uncovered in the practice of rendering the work playable. There was the component of the collaboration between the composer and performer. The former asking, “Is this possible? How do you feel about this passage?” and the latter asking, “Could this section be quieter? Could this run be slower? Could there be more time to articulate the multi-phonics?”

There is some research which is quantitative, and some that is qualitative and those that are neither, what Walliman calls ‘cultural’ (Clark, 2005, p. 36), yet all research methods “have established practices focused on the production of new knowledge and understanding” (Scrivener & Zheng, 2012) however,

Practice-led research has practically no relationship with the positivist tradition or with classical empiricism. Although practice-led researchers frequently both produce and draw on concrete observations and measurements, the starting point is usually an idea; and the attitude is more often a concern with how humans construct the world through ideas, images, narratives and philosophies, than a generalizable ‘truth’, or understandings of cause and effect (Webb, 2008, p.1).

To the author “the creative process is the key element worthy of attention” (Lines, 2003) over whether one’s method is practice-based or practice-led. Lines (2003, p. 4) makes distinctions between what Heidegger calls the *werk* and the *arbeit*. The first is the ‘hands on production’ and the second is the manner in which the art influences (works on) culture. Lines asks,

“What, then, are the dimensions of poietic [coming into being] creation of art? Heidegger’s artistic ‘circle’ explores such dimensions, a circle where the elements of art making are understood as [1] art, [2] artist, and [3] artwork in mutual existence. Such a concept of the art experience affirms what is in the moment, what exists in the temporal movement of art making, and it affirms the way of thinking where one is aware of existing elements in the art process” (Lines, 2003, p. 4).

### Reality in Process: The Philosophy and Birdsong

The underpinning philosophy of this research is that of the mathematician and metaphysical theorist Alfred North Whitehead (1861–1947), whose work on process and reality (a reconciliatory position that brings together science and philosophy) postulated about the existence of a dynamic order that is manifest in reality in the action of process (Epperley, 2011). Whitehead described its function as a creative lure, drawing everything towards greater sophistication and aesthetics evidenced in the ‘coming into being’ of new actualities. Some of Whitehead’s notions have parallels with Nietzsche’s concepts of becoming as Lines (2003) explains,

“For Nietzsche, a new conception of being was found in the dynamism of process and transformation. Inspired by the unseen, ephemeral art of music ... Nietzsche thought that what mattered in existence lay in the dynamic and energetic qualities of becoming ... indicating a notion of existence as a moving dynamic flux of directional energy”. (italics in the original)

Keeping in mind Hegel’s concept of music in time, Mesle (2008) articulates becoming in the context of time,

We are always on the verge of falling forward into nothingness; but, in each moment, the world becomes anew, and the creative advance continues ... the future does not exist ... decisions must be made; the future must be created. The creatures of the present must decide between many possibilities for what may happen, and their collective decisions bring the new moment into existence.

This process-relational philosophy, which Griffin (2007) describes as a ‘radically different postmodern philosophy’, influences the methodology of this research through its tenants of the coming into being of novel entities. In music creation there is a constant process of becoming; new things come into existence.

Taking a small but, related tangent, David Rothenberg (2005), a professor of philosophy, brings birdsong and philosophy together. Rothenberg is a composer and avant-garde clarinetist who has recorded his own improvisations in ‘real time’ while directly interacting with birds as they sing. Rothenberg advances the tenant that birds sometimes sing purely for the experience of making music:

What fascinates me most about this question is how it illuminates the disparities among the many human ways of knowing. Information does not really touch experience. ... Birds certainly sing to find love [procreate] and to find home [territory], but these reasonable purposes do not deny joy. If science is to comprehend happiness, then it should employ the skills of musicians and poets, who have used different human abilities to find meaning in the natural world. (italics mine)

Rothenberg’s speculations about avian freewill, the choice to sing purely for the joy of calling are not insignificant. This aligns with Whitehead’s view of experience

and feeling. His panexperientialist notion (the idea that all entities have experiences and that these entities range down from humans to quarks (Dorrien, 2006, p.239–244)) allows for a degree of self-determination (human or otherwise) that reflects an underlying order in all things; a rising towards beauty and greater sophistication. This in part answers the quandary of the physicist's 'arrow of time' and entropy, which moves all things towards disorder and the apparent contradictory theory of evolution, which posits that things evolve.

In a discussion on the upward trend of the evolutionary process, Griffin (2001) argues the Whiteheadian case, which purports that value implies order and order is towards aesthetics:

...the laws of physics, as he [Whitehead] understands them, reflect an aim toward value...[Griffin quotes Whitehead]"All order is therefore aesthetic order" (RM 101). The laws of physics reflect the fact that the endurance of individuals such as electrons, atoms, and molecules involves the repetition and intensification of a certain kind of value..."The endurance of things has its significance in the self-retention of that which imposes itself as a definite attainment for its own sake"... "What is inexorable in God, is valuation as an aim towards 'order': and 'order' means society permissive of actualities with patterned intensity of feeling arising from adjusted contrasts" (PR 244) God's aim...is at the aim of the creation of societies that give birth to higher-level actualities capable of greater intrinsic value..."the purpose of God in the attainment of value is in a sense a creative purpose" (RM 100) (p. 182).

The call of a bird has value. It has aesthetics and though it may have a function, sometimes it may be just for the joy of it too, as Rothenberg (2005) suggests. He notes that Immanuel Kant remarks on birdsong in his manual of aesthetics, *The Critique of Judgment* (1790), questioning why this genre has such beauty, and it creates a transcendental outcome:

Why, wondered the great rationalist, do we never tire of listening to the simple melodies of birds, whereas if a human were to take two or three notes and repeat them endlessly, we would soon get fed up with it? Birdsong, Kant decided, was not really beautiful, but sublime...He surmised there is something most powerful about the pull of nature's shapes and sounds; they are wild, irregular, bold, shocking and able to take us somewhere far beyond our merely human arts (p. 11).

This may account for the presence of birdsong in music over the centuries, and is discussed in more detail further into the article. To the process philosopher, the music inherent in creation is part of the process of becoming. As Whitehead said shortly before his death in December of 1947:

God is in the world, or nowhere, creating continually in us and around us. The creative principle is everywhere, in animate and so-called inanimate matter, in the ether, water, earth, [and] human hearts. But this creation is a creative process, and the process is itself the actuality (Epperly, 2011, p. 232).

In this practice-led enquiry and research project the author hoped to ‘be in’ this actuality. By collaborating with Jean Penny, collecting birdcalls, transcribing the calls, crafting (through compositional techniques) these transcribed motifs into a musical composition, mixing the music score with electro-acoustics, consciously engaged in the process of creativity. It was hoped to evidence the philosophy of the process of becoming in the Taman Malim project.

### **Birdsong: The Provocative Operative and Panexperientialism**

Birdsong was used as a provocative operative (Po), an external source of influence, to provoke the composer to write music beyond his own reckoning, from outside of his own consciousness. This Po is much used in creative thinking processes in industry and is often associated with lateral thinking or thinking outside the square. These ways of creative problem solving can find their roots in the ‘Thinking Systems’ of De Bono (2002).

Panexperientialism is a term used to describe Whitehead’s notion of all entities having experiences and these experiences contributing to the process of reality (Dorrien, 2006). In this context, birdcalls are viewed as another aspect of the experienced world, a contribution to the process of becoming: the activity where an actuality (a real occurrence) becomes another actuality (another happening). In this study, the call of a Common Iora became a motif in a musical composition, which in turn became a performed art form, which in turn was experienced by an audience, who in turn were influenced, touched, so that their perception of reality was altered. A new cultural understanding occurred; a new truth was discovered.

### **Birdsong in Music: A Brief History**

The use of birdsong in music is a well-established tradition with an early example to be found in the 13<sup>th</sup> Century British song *Sumer is icumen in* (where the text and melody imitates the call of the Cuckoo “cuccu cuccu, wel sings thu cuccu”); the birdcalls in Vivaldi’s *Spring* (Four Seasons) and Beethoven’s *Pastorale Symphony*; as well as in Messiaen’s *Catalogue d’oiseaux*, to name a few examples. The study of birdsong in itself is a fascinating area of biology and neurobiology with links between the human linguistic ability to imitate and the learned calls of some species of bird (in particular the Australian Zebra Finch). The gene *FOXP2* and its roll in human speech and parallels with Zebra Finches learning calls from their parents has many evolutionary scientists and geneticists excited (Zimmer, 2011, p. 1). Taylor (2011) observes:

The study of birdsong, like that of the origins of music, resides outside the hands of musicologists, composers and performers. The field of behavioral neurobiology, bioacoustics, biomusicology, cognitive neuroscience, ethological zoosemiotics, evolutionary aesthetics, and biological anthropology are just some of the hybrid domains in which the biological basis of music in humans and/or birds is investigated. Clearly, not all can be cast as music, ‘music’, or even proto-music, let alone that that is where the origins of music may lie. Nevertheless, birds have been muses to composers throughout the ages (p.1).

Birdsong and its influence in this study had multiple expressions; the aforementioned Po (de Bono's (2002) provocative operator), as a muse, an external source of inspiration, utilized as a direct quote before being developed through traditional compositional techniques into the whole work. Many composers have used birdsong in this way. Tchernichovski (2012), in *Nova-Science Now*, in their article on 'Bird Brains' and the correlation with language and music suggests evidence that the call of the [European] Wood Wren is the same motif as that used by Beethoven for his famous 5<sup>th</sup> Symphony.

The Taman Malim project began in the field, with the collection of the hard data in and around the University Pendidikan Sultan Idris' two campuses at Tanjung Malim and Proton City, Perak, Malaysia. Like empiricist researchers, composers and performers, especially improvisers, are great collectors of data. They are alert to any new musical motif, rhythmic pattern, harmonic event, polyphonic phenomenon and any mix of these. Most musical expressions are a combination of rhythms and intervals, with many displaying harmonic implications, hence my fascination with birdcalls. Songbirds, like the Oriental Magpie Robin and the Satin Starling, have the capacity to produce more than one note at a time, as well as employing performance characteristics such as trilling and flutter-tonguing. Composer David Lumsdaine (1996) mentions these performance characteristics in his writing about the Pied Butcherbird:

The Pied Butcherbird is a virtuoso of composition and improvisation: the song develops...through varied repetition...[and] it articulates the harmonic course of its song with microtonal inflexions, or places of cadence with a bird's equivalent of tremolandi and flutter-tonguing. (Australian Sound Scapes CD, p. 1)

Therefore, it was appropriate to include flutter-tonguing, development through repetition, harmonic implications and microtones into Taman Malim. Hollis Taylor (2008) notes that songbirds "enjoy antiphonal calling from one territory to another, yet others will group together and overlay their calls to create a semi-polyphonic duet". Consequently, interplay between the collected birdcalls and the music score was created to emulate this phenomenon.

The other form of hard data collection is direct aural transcription. Writing down what is heard. This is difficult and requires advanced musicianship. Most often the birdcall is in the upper echelons of the human aural range and has to be lowered two or more octaves to be documented in common notation. Olivier Messiaen, composer and transcriber of birdcalls, relates the difficulties of the task:

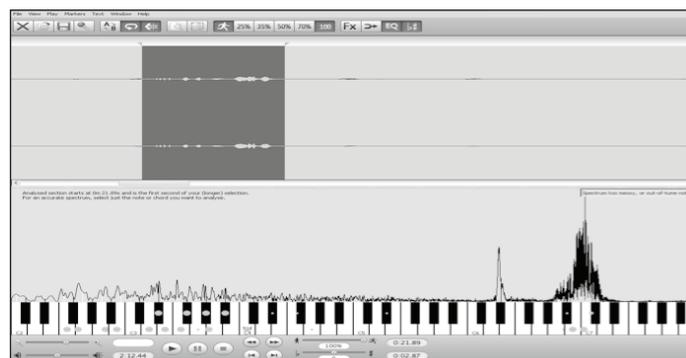
The bird...sings in extremely quick tempi which are absolutely impossible for our instruments; I am therefore obliged to transcribe the song at a slower tempo. In addition, this rapidity is allied to an extreme acuteness, the bird being able to sing in excessively high registers which are inaccessible to our instruments; I transcribe the song, therefore, one, two, three, even four octaves lower. And that is not all: for the same reasons, I am obliged to suppress the very small intervals, which our instruments cannot play. (O'Donnell, 2004, p. 1)

An example of the complexity of the task of transcription is shown in Figure 1, where the transcription is documented two octaves lower than the original call. The transcribing process was interwoven with the analysis process and both came together to contribute to the sophistication of the music. The hard data influenced the findings of the research although the ‘writing up’ (which was in music notation or digital audio recordings) had not yet occurred. This was another example of the tenants of phenomenology and process-relational philosophies notion of the inter-relatedness of all things (Epperley 2011). The knowledge derived from the data and the very act (phenomenon) of capturing it and transferring it into a medium understood and readable by humans had been absorbed and integrated into the transcriber’s psyche, altering their perception.



**Figure 1** Transcription of a Willy Wagtail call made by the author in 2010

To assist in making the transcription process accurate, the computer software program Transcribe was used, and, although it was designed for musicians to determine what other musicians were performing on recordings (for which a score was not available), it was of assistance in fully understanding the detail of the recorded birdcall. The program does not transcribe the call literally. Figure 2 shows a screenshot of the program.



**Figure 2** Example of birdcall in the program Transcribe

The program allowed slowing of the performance without altering the pitch, and the entering of possible meter indicators (hit points) to assist in determining the rhythm of the excerpts. As indicated in the example above, the program allowed the transcriber to ascertain the approximate pitch of the calls. A number of pitches and overtones are present; dots (over the keyboard) indicate in-tune notes and notes that are either sharp or flat. This extract (blocked area) clearly shows the plethora of notes and polarity of range within a fragment of recorded sample, thus highlighting the difficulty of the task.

### In the Lab: Transcribing the Birdcalls

The task of transcribing birdcalls is onerous and aurally complicated, because, in general, birds do not sing within our human understanding of tonality or modality. Added to this, is the virtuosic nature of their renditions which add rhythmical and metrical considerations to the complexity of the task. Figure 4 is the transcription of the call of the Common Iora, which was collected in August 2012, at Proton City. It is one of the calls used as a compositional motif in the Taman Malim project. It begins simply, but quickly becomes complex with the addition of crushed notes to the rising augmented second, major second, minor third that climaxes on a chromatic scalic descent from a high C through semi, hemi-semi and demi-hemi-semiquavers; this last being performed in half a second.

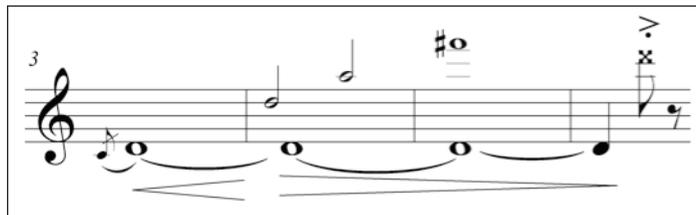


Figure 3 Transcription of the Call of the Common Iora

As Messiaen stated (O'Donnell, 2004, p. 1), many of the calls are at the extreme ends of the upper register and must be brought down many octaves before they can be transcribed. Once transcribed, they can then become motifs that the composer employs to create a musical work. The transcribed data becomes another form of hard data that the researcher, through trial and error, experience and chance, begins to develop into a product. The motif is imbedded with melodic, rhythmic and harmonic potential and the composer develops these in their research and developmental stages. Figure 4 is an example of the transcribed motif of the Common Iora (see Figure 4), as it appears in the flute part of the score of Taman Malim. At a glance, one can see that it is very close to the original call except that the tempo marking is now crotchet equals 96, not 120, and the augmented second has become a minor third, the major second an augmented second the flowing minor third is raised a semitone, and the dynamics altered. This is quickly followed by a presentation of the first fragment of the call (Figure 5).



Other more illusive and transcendental developments occurred. The opening statement of the flute employs harmonics and these are all derivatives of the fundamental tone D (Figure 8). At first glance, there seems to be very little to tie this opening to the transcription of the Common Iora (see Figure 4) yet it is derived from this source. The original rising tones are, through interval augmentation, made to be partials of a fundamental, and what were previously quavers with crushed notes are now, through hyper-rhythmic augmentation, semibreves and minims. Note that the first note retains its crushed note, but the others have had theirs removed. This was influenced by the collaboration with Jean Penny.



**Figure 8** Harmonics from D note, another Expression of the Call of the Common Iora.

### Becoming in Process

In the studio the hard data was entered into a Digital Audio Workstation (DAW) to create two initial outcomes. Firstly, to transcribe the motif-like birdcalls into common notation for re-use as melodic source material in the development of the composition, and secondly to use as audio accompaniment for the live performance.

The DSP Alchemy was to be applied to the performance of the flute to alter its timbre. The concept underpinning this was that whilst everything can be predetermined, and written and organized, there would always be an element of randomness in how the DSP would alter the final performance outcome. It was decided to leave the inclusion of the DSP until the end because it was considered better to craft the whole work first and then add this extra element last. After placing the hard data into the DAW, the first task was to shuffle these about to create a sound-scape to serve as an accompaniment to the flute, as well as contributing to the elements of melody, harmony and rhythm that interplay and interact with the live flautist.

Figure 9 shows a working window of the DAW and the various digital audio tracks of birdcalls. In Figure 9 one can see the following birdcalls: The Satin Starling (tracks 1 and 2); Zebra Dove (tracks 3 and 4); Common Iora (track 8); Pied Wagtail and Oriental Magpie Robin (tracks 11 and 12) with tracks 5-7 and 8-9 being unidentified general bird 'twittering'. The placement of these calls and their alignment with each other, as well as that of the midi file represents an intensive and time-consuming element of the research. The number of variables is considerable, a quick glance at the above photograph of the DAW shows that most of the tracks have been 'cut' and fragmented, and this is after they had been edited to remove unwanted background noise, and accidental disturbances such as clunks arising from the recording process.

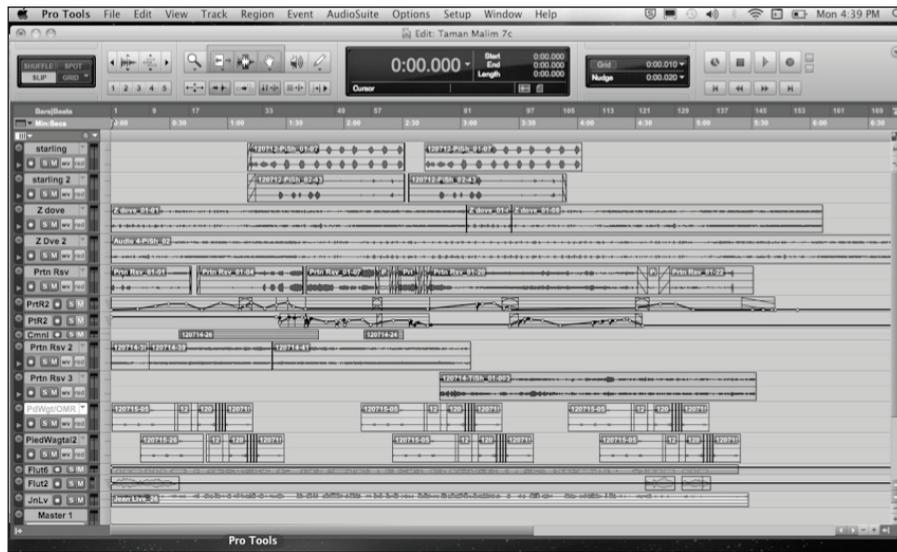


Figure 9 Picture of DAW

## Collaboration

Working with Jean Penny on this research project, exposed the author to elements of extended flute technique that they had known about for many years, but was not inclined to use in composition. The act of collaboration broke this fear and ignorance, as Penny's presence and knowledge overcame the previously misconceived notions that 'extended technique' was just the result of modern composers wanting to be deliberately difficult and obtuse. The example given in Figure 8 is an exemplar for this process; it only came into being because the author wanted to do something with the motivic fragment in a more transcendental state, and as the performer was present her specialist feedback was sought. Her response that harmonics are "highly evocative, sonic tools", followed by some examples, immediately brought the two together. The motif fragment and the harmonics merged, so that later a sketch of the initial idea for the opening statement could be framed, and tied back to the birdcall.

Penny introduced the author to the work of other composers using extended techniques and computer driven timbre alterations, such as Russell Pinkston and Kaija Saariaho. This latter element (timbre modification) and its contributions to the project were described in a different context in Penny's paper *Concurrent Realities: Performative Readings for Flutes with Digital Technologies* (2010). In this paper Penny additionally discusses the concept of the meta-flautist, and the shift that is generated in the performer when working with computer technology.

The continuum of change and new encounter generated through electronic/digital technology has further re-shaped the player into a new entity, if you like, a meta-instrumentalist – defined as a fusion of performative elements – a symbiosis of performer, instrument, equipment, computer, technologist, space and new

performative relationships. This symbiosis creates a new ensemble of machines, spaces, sounds and musicians. Relationships and hierarchies shift, and specific technologies and locations influence the interconnections of self, other and context. The meta-instrument expands roles, and generates an extended sphere of performance action, where the body, instrument and electronics evolve new performance practices incorporating new performative patterns in the body and new cognitive processes and responses...Self-awareness and self perception changes occur, new presentation styles and soundscapes develop, and an extended sense of one's performance persona emerges. (Penny, 2010, p. 2)

It is similar for the composer. The author found that writing a work in traditional notation, while recognising that it was going to be fed through a DSP and become 'something other' than what was being generated, was a challenge to composer securities. The author was more accustomed to trying their best to bring everything under control prior to releasing the score to the performer. To write knowing that the final outcome may be 'something other' proved to be an act of faith.

The collaboration developed places for multi-phonics, microtones and percussive elements. Extended discussions about the details of how best to notate and perform these extended techniques occurred. Penny kindly lent the author an extended technique text with many practical guides and this was of immense value in creating a composition that worked.

### **Flux and Flow**

The next stage was to bring together the various elements into a whole. In a simple composition and at a basic level, a composer may craft a melody with some form of accompaniment. For this work we wanted the flute to be the prime source of melodic expression and the accompaniment to be a soundscape of forest birdcalls, some of which would be melodically distinctive though subservient to the flute. Therefore the selected birdcalls had to be transcribed and analyzed so that their interplay with the flute was musical and made artistic sense. The aim was for a mild polyphonic heterophony.

The details of the process of experimentation, trial and error, test and retest is difficult to document, firstly, because it is uncomfortable to recall and, secondly, because of the nature of scoring in a computer program. The first is painful to recall because one has spent hours, days, working a tiny melodic motif until it has the inevitability that one strives for. This is such a focused and obsessive act that one is reluctant to admit to it. It has the smell of dysfunctionality about it, but it is absolutely necessary, like the paint thinners in the artist's studio. The second is more a product of our time. The notebooks of Beethoven's sketches reveal the extent to which he crafted and re-crafted his ideas, but, in this day of computer technology, composers often write and rewrite over what has been written, covering the trail of artistic development because they work in a virtual place, not on paper. This is not intentional, but rather because they can 'write over' an idea to test another against its contextual background. If the second idea is not as good as the first, then they can 'undo' and return to the original, but if they think of another possibility prior to going back, and test it, and continue to

do this a number of times, the subtle permutations begin to blur and the process is so absorbing that the composer's memory can not recreate the process. There is no paper trail, the evidence has been deleted or written over.

In this sense, the research differs to that of the rigorous empirical scientist, who documents and tracks every ingredient in a test. Creative work is more a state of flow, a flux from one thing to the other. In this sense it is practice-based and led and an expression of the fluidity of process as posited by Whitehead, Hiedegger and Neitzsche. Taman Malim is a product of this process of creative movement from one actuality to the next, which results in a new creation. Contrary to the laws of physics as expressed in 'the arrow of time' and entropy, new things do come into being, springing from the recently reiterated past and expressing themselves in the present, to become the recent past from which another entity springs, thus evidencing great potentiality; hope in the future (Epperley, 2011).

This is the place in which music composition occurs. It moves from actuality to actuality, within the turmoil of flux and flow, of interrelated events that contribute to the whole, searching out the truth of the music, the findings of the research. Tracking these, keeping a record of decisions made, is like catching water with a net. In the frenzy of the creative act, one fears stopping to capture the process, lest it (the art, the truth) slips away, as some illusive, half glimpse exotic avian, flitting through the forest canopy. Everything keeps moving in this state of flux.

In the Taman Malim project the written score, once complete with all its traditional compositional manipulations, was made into a midi performance and placed in the DAW with the soundscape. Here the soundscape and the flute midi file were fine-tuned, seperating phrases of the score and moving them about to arrive at a suitable interplay with the soundscape. Taking the distinctive birdcalls that interact with the flute part and moving and placing them to sound inevitable, as if that is exactly where a bird might call. At this stage, the DSP was to be introduced: the previously unknown factor. Unfortunately, the program would not run in the computer. With the scheduled first performance only days away a compromise was sought and so another DSP that did work in the computer was employed. This was not as versatile as the Alchemy program, but it did offer the extended sound we desired.

### **The Test Run**

The work had its first performance at the Faculty of Music in the University Pendidikan Sultan Idris, at the 'Talk, Play, Think' Forum on 6 November 2012. Penny's discussion on *Playing Research: Flutes, Computers and Phenomenological enquiries* culminated in a live performance of the work Taman Malim with the soundscape being performed by computer and with the author driving the DSP manipulations. The audience of undergraduates, academic staff and general populace were seemingly intrigued by the work. The concepts of the philosophy as well as the research process were discussed in the forum environment. "Why birdsong?" was addressed and the function of a Po expanded upon. Penny discussed multiple aspects of performative phenomenology and research; the author posited that the audience had heard the findings of his research; that a new truth had been presented; another fragment of knowledge had been contributed

to the wealth of the nation. At the end of the forum many of the audience were keen to view the workings of the DAW and DSP.

## Conclusions

Music is research. Performing music is research. Writing music is research. Practice-based and practice-led enquiry brings new understandings and ways of perceiving the world. New comprehensions are made, fresh insights uncovered. Taman Malim is evidence of these claims. Through process-relational philosophical understandings one can clearly track a process of becoming, where an idea coupled to hard data (birdsong) proceeds from one state (digital recording) to another (notated transcription) to become another (musical motif) which in turn is developed into a phrase, which becomes a series of phrases, which evolves into a complete musical score. This score is then placed in a new medium, a DAW, where it becomes a part of another aspect of the research, the soundscape of collected birdcalls. Here it undergoes a metamorphosis as it is fragmented and moved about in relation to the soundscape/accompaniment.

Taman Malim, in the next phase on the road of discovery, was given to the performer who brought her contribution to the research through a realization of the score with the inclusion of extended techniques. Further sonic alterations occurred with the application of the DSP, and Taman Malim became subtly changed – the meta-flautist and the tone and timbre of the flute becoming ‘something other’. The evidence of the process of becoming, the coming-into-being, into reality, something that did not previously exist is apparent in this project.

To reiterate, the creating of new musical works is research. It has parallels with how any new discovery is made. It begins with a team of experts collaborating, the collection of hard data, the recording and notation of the initial findings, the initial experimentation phase of trial and error to arrive at primary concepts, the development of the initial elements into a sophisticated series of complimentary findings, the development of a delivery system (ensemble, solo, electro-acoustic) and an end product.

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