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A Portfolio of Original Compositions (Andrew Dolphin)

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1.1 Introduction to key compositional themes

Christopher Small has added a word to our music vocabulary, *musicking*: “I [use]...the verb ‘to music’ ... and especially its present participle, ‘musicking,’ to express the act of taking part in a musical performance” (Small 1987, 50). He includes not only composing and performance but also listening and dancing as pertaining to the musicking experience. Yet, is it not true that the installation and computer game also form new ways of musicking?¹

The artefacts presented in the portfolio reflect a broad approach to composition and creative research. The portfolio explores both multichannel fixed media electroacoustic composition, and a range of approaches to the creation of open form non-linear interactive works, or sound toys.² Cross-pollination of aspects of both aesthetic and technical concerns of each discipline are investigated, and in some respects these fields have been allowed to *feed* each other.

Throughout this document interrelationships relevant to the themes, aesthetics, processes and techniques applied in the composition of the fixed media electroacoustic pieces and the open form sound toy works are discussed. The concurrent design and composition of open form sound toy projects and fixed media electroacoustic pieces allows research and investigation in each medium to inform the other throughout. Electroacoustic composition provides a particular creative perspective on working with electroacoustic themes, aesthetics, musical/sonic structures, sound materials, and studio and synthesis techniques or processes, and this perspective informs the design of the sound toy works. Some of the sound toy systems are then subsequently used to generate sound materials for fixed media pieces.

It is suggested that an electroacoustic composer’s experience and insight into musical and sonic concerns, as well as an understanding of key concepts in sound design and synthesis, and their creative application may enrich perspectives on the development of sound toys and software designed for compositional purposes. The portfolio is the product of this approach, and to some degree reflects ideas articulated by Alain Thibault, and discussed by Leigh Landy.

¹ Landy (2007), pp. 8 refers to Small (1987), pp. 50.

² The term *sound toys* is considered relevant to the open form works, and the relevance of this term is discussed later.

Thibault's alternative is for electroacoustic music to see itself as part of the wider scheme of media arts. "This medium does not escape from cross-overs with other disciplines, leading toward the birth of transdisciplinary and multidisciplinary works integrating music, video, digital animation, robotics, performance, etc."³

Motivations for the exploration of multidisciplinary composition approaches can also be related to comments made by Trevor Wishart. Wishart identified five key questions he considers to be of particular value to the field of computer music in his keynote speech at the *International Computer Music Conference 2008*.⁴ Two of these questions are particularly relevant to personal motivations for developing the sound toy projects, these being questions of access and the question of who listens?⁵ A particularly resonant viewpoint discussed by Wishart in this same speech is the acknowledgement of the importance of making, the doing, (or 'musicking') as a socially and individually valuable action or process in itself. Many of the sound toys, whilst exploring electroacoustic themes, are presented in a medium in which the listener is involved in making, and may access the works outside of an academic or specialist arts performance/presentation environment.⁶

Digital music has undergone fundamental shifts – it has gone real time, it has become interactive, it has become miniaturized, and completely democratized.....These are not just technological changes, but changes that bring about shifts in musical approaches. Form factors change, analogue is reconciled with digital, and new directions in Open Source and DIY culture continue to challenge our assumptions on what it means to be an artist, composer, performer, participant, in these evolving musical/technological landscapes.⁷

³ Landy (2007), pp. 179 discusses the views of Alain Thibault. Landy cites Thibault (2002), *Culture numérique et électroacoustique*.

⁴ Hosted at Queen's University, Belfast, Northern Ireland.

⁵ Access in Sonic Art appears to be of notable importance to Wishart. Landy (1999) refers to a previous keynote speech: "The example concerns a keynote speech that Trevor Wishart gave at the 1994 International Computer Music Conference in Aarhus, Denmark. He played a sound example of a piece and asked whether anyone could guess who had made it. The fragment demonstrated inventiveness. Many people inevitably thought that the piece had been made by 'one of us'. In fact the piece had been made during a community residency with the elderly, people who would have never heard this type of music before". Landy's use of the phrase 'one of us' is particularly striking, and seemingly implies an 'us and them' attitude.

⁶ Contrasting with the multichannel fixed media pieces presented, which require a specialist performance space, often found within an academic environment.

⁷ Tanaka (2010), "Music One Participates In: Performance from Stage to Street to Pocket". Seminar abstract.

Concepts of play⁸ and exploration are central to the creative ideology and motivations that are at the foundation of many of the works presented in the portfolio, and are most clearly evident in the sound toy projects. The language used to describe these open form works (as 'sound toys') suggests playful experiences, and without a player playing they are inanimate.

Research Questions

The works presented explore a number of different avenues of interdisciplinary practice. Research questions that are deemed fundamental to the development and range of the portfolio works are now outlined.

- What opportunities do sound toys offer as a medium and tool for composition?
- How may aesthetics, processes, perspectives and techniques familiar to the field of electroacoustic music inform the conception and development of interactive systems designed as sound toys?
- How might the sound toy medium encourage wider access to experimental sonic centric works, through 'player' access to, and exploration of compositional parameters of an open work?
- In what contexts relevant to the fields of sound art and electroacoustic composition can game engine technologies be applied?
- How may simulated virtual physics systems be utilised as a means of kinesis in a sonic centric context?
- How might original sound toy systems assist in the realisation of multichannel fixed media works?

Aesthetic Implications

The fixed media multichannel works are intended for performance using only loudspeakers, with no visual reference relating to the source of the sounds heard.⁹ The lack of any visual stimulus during their performance allows a composer to explore varied perceptual representations and abstractions of the source materials, playing with degrees of ambiguity. Referential uses of sound may coexist with more abstract materials, creating evocative

⁸ "Play, we found, was so innate in poetry, and every form of poetic utterance so intimately bound up with the structure of play that the bond between them was seen to be indissoluble. The same is true, and in even higher degree, of the bond between play and music." Huizinga (1950), pp. 158.

⁹ In keeping with the acousmatic tradition.

imaginary sound worlds. The lack of any visual elements in the performance of these works is fundamental to their central aesthetic interests. Here lies a primary distinction between the multichannel fixed media compositions and the open form sound toy works, as the sound toys have visual and interactive components, and interactive audiovisual relationships are therefore established. This evidently has an impact on wider aesthetic issues. There are clearly also temporal distinctions, as time is treated as a rigid structure in one form, and a flexible non-linear “field of possibilities”¹⁰ in the other. These distinctions are acknowledged, and it is not argued that every primary aesthetic concern of each work in the portfolio is shared. Instead, it is suggested that there are many potential crossover points of creative and compositional endeavour. This idea has significantly influenced the conception and development of the range of works presented.

The fixed media electroacoustic works often explore concrete themes and continuums between the real and surreal, through abstraction, transformation and context. The open form compositions, or sound toys differ in this respect in that the sound materials in these works could often be described as being within a more abstract perceptual domain. The origins of the sound materials are generally more ambiguous and therefore less likely to directly reference the concrete and real. Explicit use of concrete sound objects within a virtual visual environment is largely avoided in order to diminish listener/participant expectations relating to literal source-cause relationships, and avoid overly literal representation of the virtual visual environment. In the open form sound toy works there is little attempt to represent or simulate real concrete objects or environment behaviour in the virtual visual domain. Concrete referential audiovisual links are largely avoided, and a more abstract and symbolic approach is adopted.

The visual and interactive components of the open form sound toy works affect the nature of the listening experience for the participant.¹¹ Audiovisual relationships are discovered, and these influence the player’s mode of listening, and style of interaction with the work. Symbolic representations of the framework for composition in the visual interface exhibit abstract causal behaviours, as symbolic events in the visual domain instigate imaginary events in the sound domain.¹² This approach to synchronisation between the visual interface

¹⁰ See 2.1.

¹¹ In contrast with the types of listening often encouraged in the acousmatic tradition. For example *Reduced Listening* as identified by Pierre Schaeffer.

¹² Causal behaviours in symbolic visual space do not attempt to represent the original sound source or literal cause of the sound materials.

and resulting sonic materials is a frequent feature of the sound toys. Specific relationships between symbol and sound are often not made clear, resulting in an exploratory framework for composition, or 'musicking'.¹³

Interrelationships and Distinctions

Aesthetic concerns and techniques related to electroacoustic composition are explored in the playful open form sound toys. Interrelationships are perhaps more explicitly evident in works such as *Cyclical Flow*, as the output of the sound toy is used for the creation of

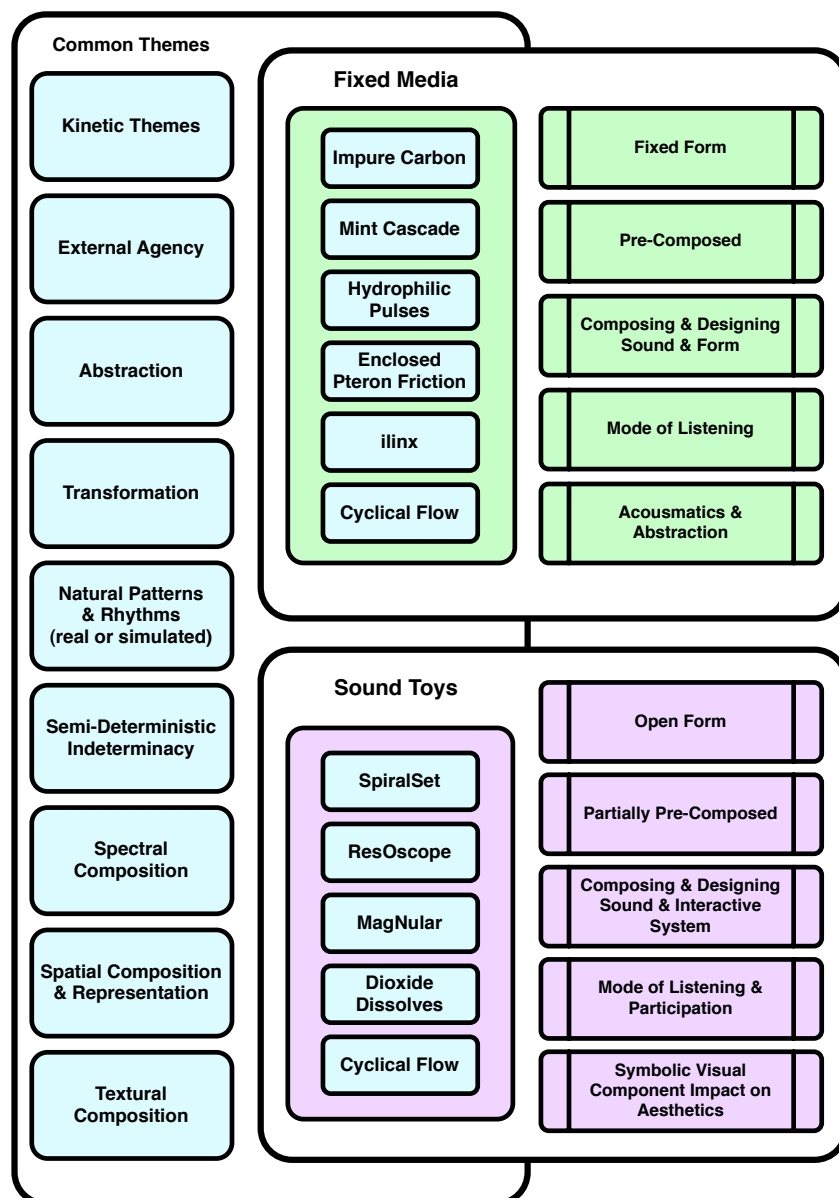


Figure 1. Media & Themes

¹³ Causal listening is evidently distinctly different in each medium. In the sound toy works the symbolic cause is significant. In the fixed media pieces the real origin or source is frequently compositionally significant. See Chion (1994).

materials for multichannel fixed media pieces. In *Dioxide Dissolves*, pre-composed fixed media is presented within an open form virtual environment in which aspects of structure and perspectives of the work can be determined by the end user.

Figure 1 represents and categorises the works, defining shared themes and form specific distinctions.¹⁴ What are perceived to be common themes in the works presented are represented in the left column, illustrating the crossover and influence of broader compositional, thematic and aesthetic concerns. Whilst all of the common themes identified do not necessarily relate to every piece presented, these themes recur in works in each medium. In the right column, what are considered to be key differences between works in each medium are highlighted. The terms introduced here are considered to be relevant to the works contained in the portfolio, and the areas defined frequently relate to the wider concepts, ideas and techniques discussed throughout this document. It should be noted that Figure 1 is not comprehensive, and simply represents distinctions relevant to the composer's perspective. An exhaustive discussion of inter-relationships and distinctions is not intended, with the themes identified and outlined here considered to be significant to the artistic thinking that influenced the conception, development and realisation of the range of works presented.

Notes on Techniques

Cross-fertilisation of techniques and tools for sound creation, transformation, and composition occurs throughout. Systems originally designed for creating materials for the composition of fixed media pieces are explored and informally evaluated, subsequently influencing their development and application within a sound toy context. Some of these sound toys are then used to create materials for fixed media works. Technical approaches to techniques such as spectral transformation, granular processing, spatialization and synthesis are often common to works in each medium.

...as programming and software design are in themselves creative activities, yet across these must be a core business of *compositional* technique that drives the construction, articulation and sensitivity to electroacoustic sound and its resulting formal designs.¹⁵

¹⁴ These themes are introduced and discussed throughout the document.

¹⁵ Young (2007), Editorial, *Organised Sound* 12(1), pp. 1.

Kinesis and kinetic energy as a compositional agent

External Agency for Composition

External agency as a compositional device is familiar in contemporary music composition and sound art.¹⁶ The external agency could be an object (musique concrète), environment (soundscape), mathematical equation (algorithmic composition), data (sonification), or an end user (interactivity). The works presented in the portfolio touch on a number of these categories of external compositional influence. However, it should be noted that the external agent is treated as a component part of the composition process. Human organisation, intervention, and interaction with the materials and structures is also considered a fundamental component of composition, with works exploring the coexistence and interplay between external agency and human reaction, creative intention and control.

A number of the open form sound toy works introduce two key external agents for composition. These are the end user interacting with the work, and a simulated physics system, with both influencing the resulting sonic structures. In many of the sound toy projects co-dependencies and interrelationships exist between these two agents that determine the end result, or sonic output of the work.

Kinesis and Kinetic Agents

Central to many of the works in the portfolio is the varied exploration of kinesis and kinetic agents as an element of composition, in both fixed and open forms.

An agent is generally understood as somebody or something that acts on behalf of another in a process.¹⁷

The term kinetic is considered to be particularly appropriate as it suggests that aspects of motion (which provides compositional agency) are controlled or influenced by an external agent. In the works presented, complexity often emerges from natural kinetic phenomenon, or kinesis achieved using simulated physics technologies. In the fixed media works the external agents differ, but often these are derived from naturalistic events, and in many of

¹⁶ Whalley (2009) discusses a number of perspectives, and contextualises artistic application of agents and agency primarily in a software-based context.

¹⁷ Whalley (2009), pp. 156.

these scenarios there is an element of what is referred to as *staging*.¹⁸ Prior preparation of the kinetic scenario or events is considered as being an element of the compositional process.

In each work an aspect of composition is controlled or influenced by external agents, and an external force plays a part in the structure and form of the materials.¹⁹ In works such as *Impure Carbon*, *Phase Transitions*, *Deluge* and *Dioxide Dissolves*, naturalistic processes²⁰ dictate elements of form, structure, rhythm and intrinsic features of the source materials. Materials used for the composition of *Enclosed Pteron Friction* are derived from a staged scenario in which the source is captured and enclosed. The resulting behaviours, patterns, intensities and trajectories of sound are dictated through the movements of the insect, which in this piece could be considered as the primary external agency.

Mint Cascade also explores kinetic energy and kinesis as a form of external compositional agent, however a key distinction between this work and the pieces mentioned previously is the introduction of a performative action in the sound generation process, not merely the staging of a naturalistic event. External forces are integral to the primary materials in the work, however the performer instigates object motion, choosing how many objects are set in motion, in which direction, and at what velocity. The exact patterns of motion cannot be fully predicted and are subject to indeterminate factors, such as changes in direction due to undulations in the surface of the performance space, angle of object, and any resulting collisions of objects causing obstructions for other objects, causing a chain reaction of changes in trajectories, collisions, and motion patterns. The performer has significant influence over the patterns of motion that are instigated, and when they are initiated, but the resulting trajectories and collisions cannot be fully predicted.

One way to avert a possibly disruptive collision between indeterminacy and control is to develop appropriate models for structured uncertainty that can be used interactively in a performance setting. The structure in these models may be formed by design, through a process of variation, or spontaneously, emerging out of a state of apparent disorder.²¹

¹⁸ The term 'staging' is used to describe that the event, object and/or environment is staged, with certain conditions often being prepared for the purposes of sound acquisition (recording).

¹⁹ Albeit using differing approaches.

²⁰ Often staged.

²¹ Visell (2004), pp. 151.

It could be argued that *Mint Cascade* therefore shares some compositional interests with the non-linear open form sound toy works *MagNular* and *SpiralSet*. Whilst these are in many respects very different works, the idea of naturalistic motion (which in these sound toys is simulated), influence and instigation by a performer contribute significantly to the larger compositional structures. In these sound toys, a simulated physics engine is used as a form of compositional agency.²² The performer (or player) interacts with the simulated physics system, resulting in influential interactions that cannot be fully predicted. Personal interaction styles of individual players could also in themselves be considered as an indeterminate compositional element.

Concepts of both deterministic behaviour and indeterminacy are evident in each of the works presented. The composition techniques explored are considered to be neither purely deterministic or indeterminate. Unpredictable complex behaviours may emerge, but there is some degree of composer or performer control (or influence) determining the indeterminacies. In the open form sound toy works the user influences behaviours in real-time, determining sonic spectra and events. Whilst in the fixed media works, the composer shapes, edits, layers and filters recorded semi-indeterministic sonic events to create determined larger structures.

²² "The generation of patterns with perceptually natural qualities is closely related to the problem of producing synthetic signals with the nuances that are required to make them seem realistic." Visell (2004), pp. 152.