# Towards a Taxonomy of Electroacoustic Music: Dialectic Continuums as Compositional Tools

*Cormac Gould*
*Liverpool Hope University*
*United Kingdom*
*liamcormacgould@gmail.com*

## Abstract

Within electroacoustic music much attention has been paid to issues of dualism and categorisation. Two prominent examples of dualistic categorisation being: Simon Emmerson's creation of a language grid (1986) and Denis Smalley's spectromorphology (1986), with particular reference to its emphasis on gesture/texture. These discussions are a product of the view that the conventional notation and classification system used in traditional Western Art music is inadequate. Leigh Landy places spectromorphology with the language grid and many other prospective means of classification and analysis (including dualistic pairs) stating that: 'a more rigorous classification system is needed' (2008).

This paper seeks to enter this debate by highlighting the potential value of a taxonomy of electroacoustic music characteristics. My proposed taxonomic framework is composed of various dualistic continuums, incorporating and expanding on those explored by Emmerson, Smalley and others. These continuums are then grouped into 'family trees' such as language, performance mode etc. In addition continuums such as: live/fixed media, studio/field recording, abstract/abstracted language contain fluid movement between the two extremes and it is the centre point of such continuums that provide the material for my compositional output. This paper focuses on the fledgling taxonomy as well as my use of such a system as an aid to compositional decision-making. Furthermore, I will introduce how such a framework could be useful for analysis, pedagogy and composition.

# 1. Introduction

This talk contains:

- Inspiring research,
- Proposal for my classification system,
- Presentation of the system's development so far,
- Practical applications of the system and an outline of one of my works influenced by the system.

Furthermore, it is split into two halves (sections 1 and 2) involving theory and a brief practical overview respectively.

For those who don't know me, which I imagine is most of you; I am currently in the first year of a PGTA (postgraduate teaching assistant) post at Liverpool Hope University. I am undertaking a practice based PhD in electroacoustic music. My research and compositional interests lie in narrative/concept based work, dualisms and the wide variety of compositional strategies available to electroacoustic composers. As a result of this, my compositional work is produced in a variety of formats and sometimes styles. Within these works, narrative often plays a central role whether explicit to the listener or not. Dualisms and oppositional concepts also tend to feature heavily.

An area of dualistic thought I find particularly intriguing is Gnostic belief systems, in particular Manichaeism, from which we get the term. Manichaeism is an early Christian religion often defined by its reconciliation of the problem of evil through conceiving of God as non-omnipotent. In simplified terms, they believed in a pure good world, a pure evil world and man and earth in the middle, containing a mixture of the two. This vision of a dualistic world is somewhat more nuanced than the

term has come to represent, being black, white and a variety of shades of grey between, see fig. 1.



**Figure 1. A Manichean World View**

Furthermore, dualistic concepts permeate works of literature and philosophy for example: Taoism, Dr. Jekyll and Mr Hyde, Apollo and Dionysus etc. As noted earlier, I attempt to utilise dualistic concepts in my compositional practice. Each work I create must contrast the previous in an acceptably solid manner and in this way I feel confident of progress. As a result of this practice, I began forming oppositional pairs of musical characteristics and concepts. The formation of these pairs, and the great number of possibilities available to the modern composer, has lead towards the creation of a dualism based classification system for electronic music.

## 1a: The Field

Within electroacoustic music much attention has been paid to issues of dualism and categorisation. Dualistic pairs of Live/Fixed, Electronic/Acoustic and Noise/Signal are particularly prominent in the discourse, as well as more abstract pairs such as Man/Machine, Artificial/Natural and Simple/Complex. Simultaneously,

2          In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

there has been debate around the breadth of different music that can be considered as electronic/electroacoustic. Leigh Landy in particular has highlighted the ambiguity and variety of terms applied to electroacoustic music and has been a driving force in tackling some of the terminological issues (2007, in particular). I would argue that by classifying characteristics first, the specific genre terminology may be moot or perhaps more easily resolved. In other words if we agree that pieces x, y and z share certain characteristics then they are likely to fall under a similar banner, be that sonic art, electroacoustic music, electronica and so forth. Similarly we may see disparate works connected or perhaps connected through their opposing elements.

Simon Emmerson's "The Relation of Language to Materials" utilises dualistic pairs Aural/Mimetic and Abstract/Abstracted to classify different elements of the syntax of electroacoustic music, see fig.2 (1986).
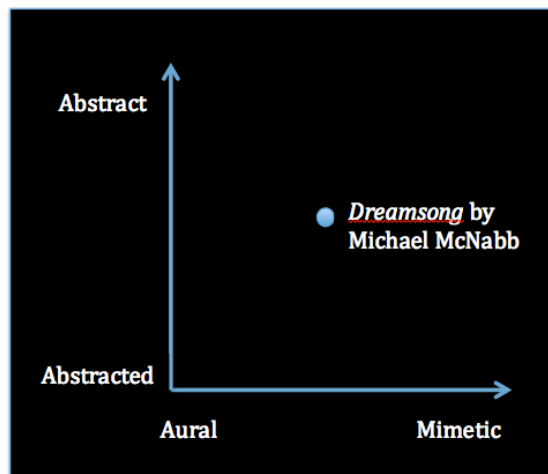


**Figure 2. Reproduction of Simon Emmerson's 'Language Grid' (1986)**

Emmerson's article in particular provided a significant starting point for my research. Denis Smalley's research into *Spectromorphology and*

*Structuring Processes* (1986) and in particular his use of gesture/texture has contributed another significant dualism. And in fact Emmerson has also developed from these the pairing "Local/Field" in his Paper: "Local/Field: Towards a Typology of Live Electronic Music", see fig.3. Smalley's and Emmerson's dualistic pairings are quite high profile but there are many other examples in discourse. When dualisms such as these are used to understand electroacoustic music, they tend to be defined as a continuum, a sliding scale between the two opposing points.
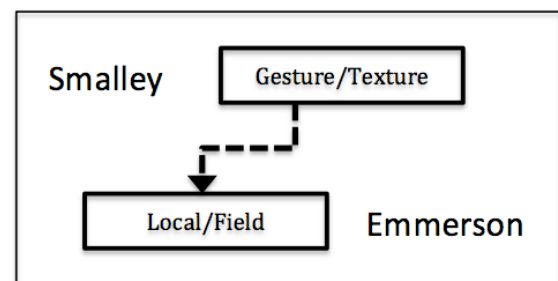


**Figure 3.**

In addition to these dualisms, various forms of taxonomy have also been explored in relation to electroacoustic music. The CNMAT (Centre for New Music and Audio Technology, University of California at Berkley) website contains one such example of a computer music taxonomy. Its implementation of a taxonomic system is mainly concerned with cataloguing terminology and disciplines, as well as techniques such as MIDI, algorithmic, networked composition and so forth. Similarly, in the mid nineties in the Computer Music Journal a discussion took place over several issues concerning the development of a computer music taxonomy/classification system.

## 1b: The Proposal

My research proposes a system that combines dualistic continuums, such as those set out by Emmerson and others, within a hierarchical taxonomic framework.[1] The system is based on a number of dualistic continuums (two opposed terms, which instead of being mutually exclusive, have a gradation of values from one to the other) related to electronic sound art.

Some common instances of dualistic continuums might be: good/evil, loud/quiet and hot/cold for instance (see figs.4 and 5 for examples of a simple continuum and taxonomy). These dualistic continuums are similar in concept to the worldview espoused by the Manichaean beliefs we saw earlier. This form of thinking is conceptually robust but flexible and hence is often used, furthermore it is easily understood and common to other means of understanding outside electroacoustic music. The dualistic continuums used in the system also relate conceptually to the philosophical notions of Thesis-Antithesis-Synthesis and Georg Hegel's use of Abstract-Negative-Concrete, see fig. 6. Generally a taxonomic system involves



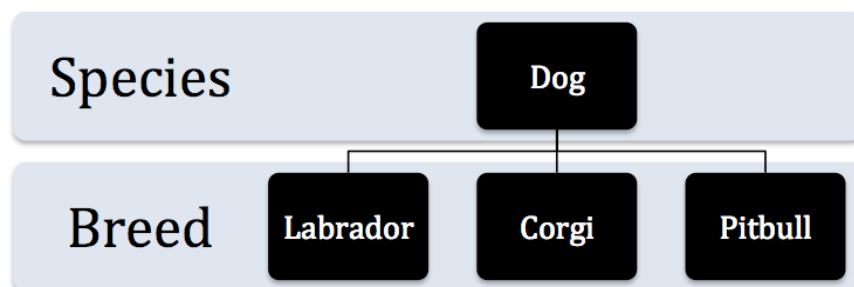**Figure 4. A Simple Continuum, Black/White**
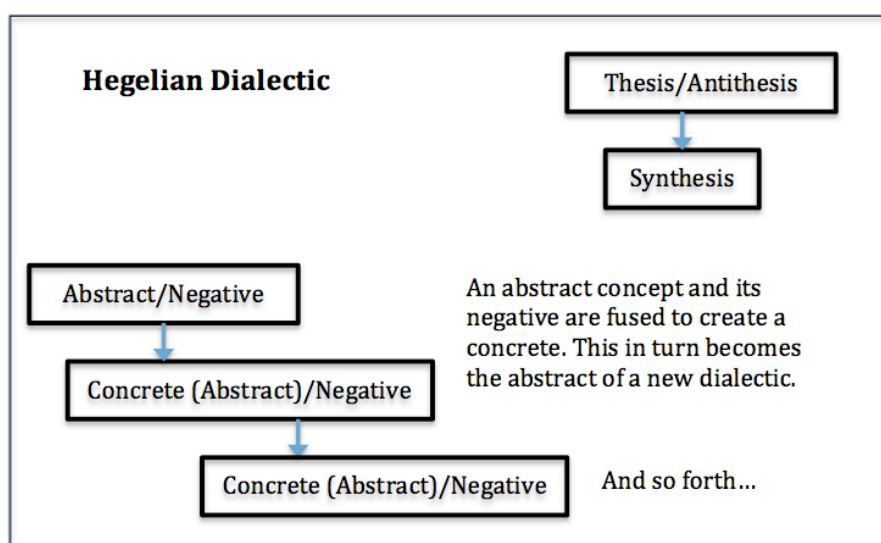


**Figure 5. A Simple Taxonomy**



**Figure 6. Simplified Hegelian Dialectic**

several levels of classification composed of different family groups. In this case my taxonomy is a set of musical parameters, or perhaps possibilities, that consciously or unconsciously are chosen by the composer.

Viewing pieces of sound art through this system of musical parameters allows for a broad spectrum of pieces to be understood in relation to each other. It also provides the possibility to create family groups of compositions that occupy similar places on a continuum, for instance: acousmatic music involves fixed media and thus occupies a similar position on the continuum Live/Fixed. In addition, many works are concerned with the same dualistic pairing while focusing on opposite sides and can thus be viewed through this opposition. Conversely, it may be that different works are simply focused on different continuums and so should not be compared with the same criteria. It is my intention that the system will eventually map the various meta-level choices involved in the composition of electroacoustic music whilst still retaining a sense of fluidity. The aim is for a map of possibility, loose delineation and association. Despite the difficulties in terminology, highlighted by Landy and others, I have aimed to use simpler terms when possible. Exceptions, to this focus on simpler terminology, occur where useful terms already exist in the literature.

From a compositional standpoint, which I should be clear was my main motivation for embarking on this process, I began to wonder what happens at the centre of these continuums (referred to earlier as concrete and synthesis) and what happens at the theoretical extremes. I believe attempts to create work at these theoretical points will prove creatively fruitful. Furthermore, these works may conflict with the system, requiring the creation of new segments and branches. For this reason, the system will probably be in a constant state of progress and revision as new, unusual or unexpected developments in electroacoustic music are made. I hope this is the case and that the system will be 'challenged' by and to incorporate them.

To reiterate, what I am proposing is a family tree of possibilities based on dualistic continuums. This 'tree' will frame relationships between broadly variant pieces whilst mapping the flow of decision-making. What I propose is essentially a visual representation of choice. The further research questions I am seeking to answer are: Is it possible to define electroacoustic works and practice through a methodology based on dualistic continuums? Will the system be useful as an aid to compositional decision-making? In particular, what happens at the edges and the centre points of these continuums? And can such a system be used pedagogically?

## 1c: The flow, the cycle, and the system so far

It is important to note that the system makes two fundamental assumptions, namely:

1. You are going to make a piece of art that involves sound.
2. The sound in this artwork will involve electronics/electroacoustic devices e.g. microphones, synthesisers, speakers/monitors, computers, DSP etc.

Currently the system charts a wide variety of characteristics associated with electroacoustic music. Generally however, it is designed to highlight macro decisions and as such is less focused on individual aural events and sounds (although there are crossovers).

The construction process for the system has entailed identifying trends and characteristics and then abstracting backwards to fundamental earlier decisions. Some of these fundamental continuums have then been followed forwards further down the tree to a higher level of specificity an example of this process can be seen below.
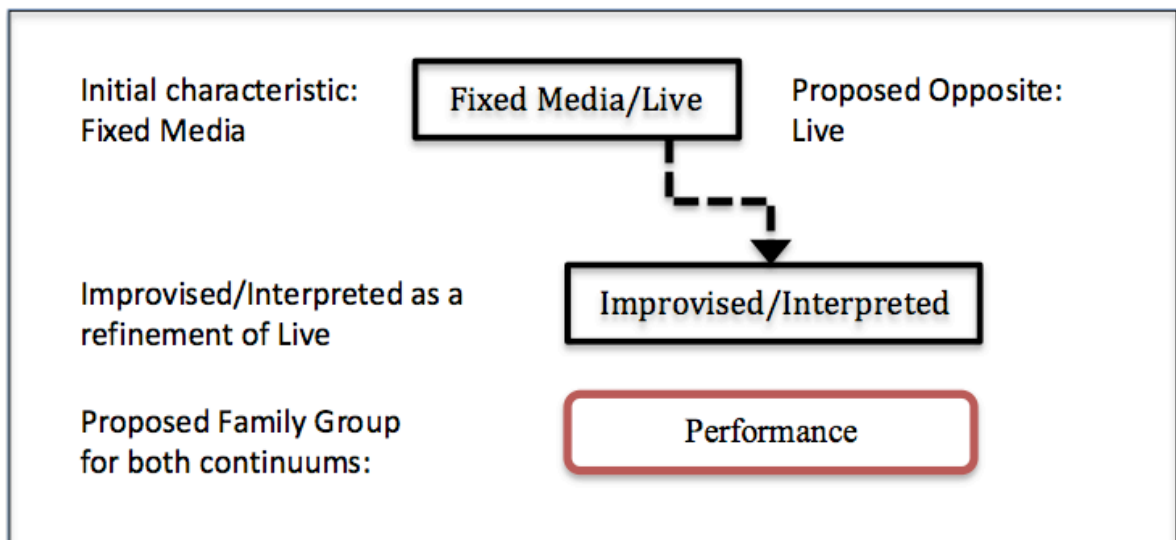
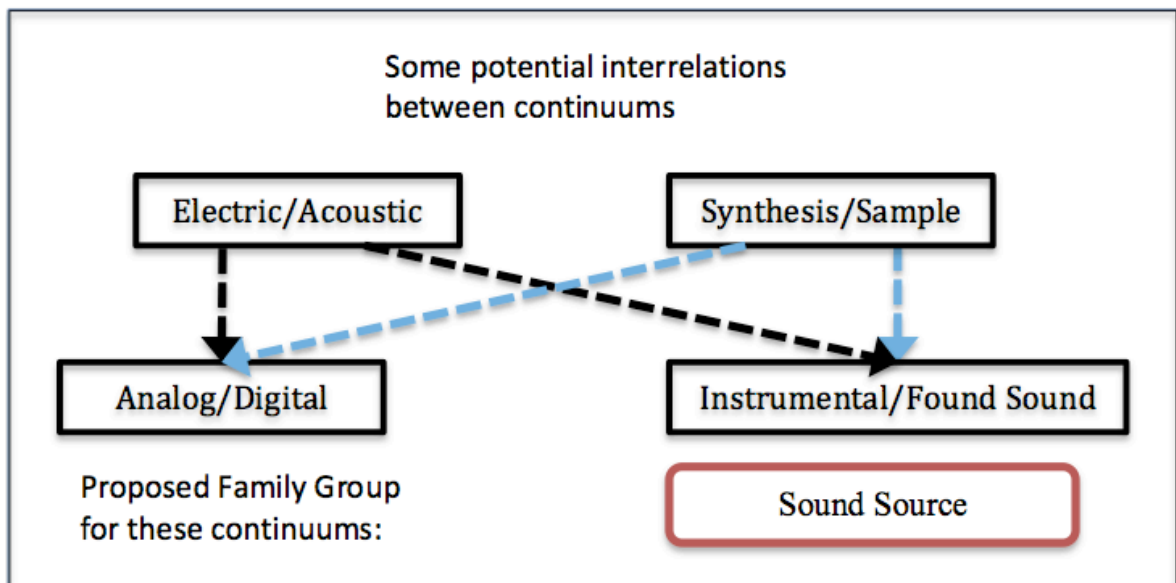**Figure 7. Abstracting a new continuum from a pre-existing one.**

**Figure 8. Interrelations between continuums**

If we take 'Fixed Media' (music that is unalterable in its presentation) we can surmise that 'Live' performance (music that is fully realised in performance) would sit at its opposite side on a continuum.[2] After abstracting the continuum of Live/Fixed, we may draw a new category more specific by one level from the live half of the spectrum. In this case I propose that such a continuum should be Improvised/Interpreted and because we have already defined the work as being broadly concerned with 'liveness', we can be more specific by one level. In this case, interpreted would involve working from a specific set of guidelines, perhaps a traditional score for example, whilst improvised would lean towards more freedom for the performer. Given that all of these continuums concern the performance of a work we would then collect these under a family grouping named, somewhat unsurprisingly: Performance, see figs. 7 and 8. Other researchers have emphasised the importance of looking at different aspects of a work and as Landy has suggested:

[…] one [should] look at three aspects of a work: 1) the context of a work (placement, how it is performed/presented/heard); 2) creative practice (how it has been constructed, composition intention); and 3) listening experience (which aspects of the music are easy to hold on to and how do we listen to the work [more focused on the sound sources, more focused on the sounds' musical qualities]). (Landy, 2012:18)

The system's currently designated family groups of continuums broadly conforms to Landy's assertion and consist of:

1. Performance – The mode of reception of a work (live aspects, performance space, speaker format, score).
2. Sound source – Sonic characteristics of the sound but primarily the sonic material initially used to create the work e.g. synthesis or field recordings.
3. Language – Tonality or otherwise of a work, whether it conveys extra musical meaning, its syntax.
4. Form – The structural elements of a work, whether it contains more than one type of media, movements, its duration.
5. Production – The technical and human aspects of a work's creation, for example: collaboration, stochastic (or chance) processes, whether it is composed by commission or not (a film score for instance), perhaps whether it is a manipulated recording of a live process.

It is worth noting that, through the incorporation of note based continuums within the language family group, the system attempts to take into account Landy's assertion that:

In a sense sound-based music can be found at the end of a continuum that has note-based music at its other end. Many pieces of music move along this continuum or can be found to focus on a point somewhere in the middle. (Landy, 2012:Xii [preface])
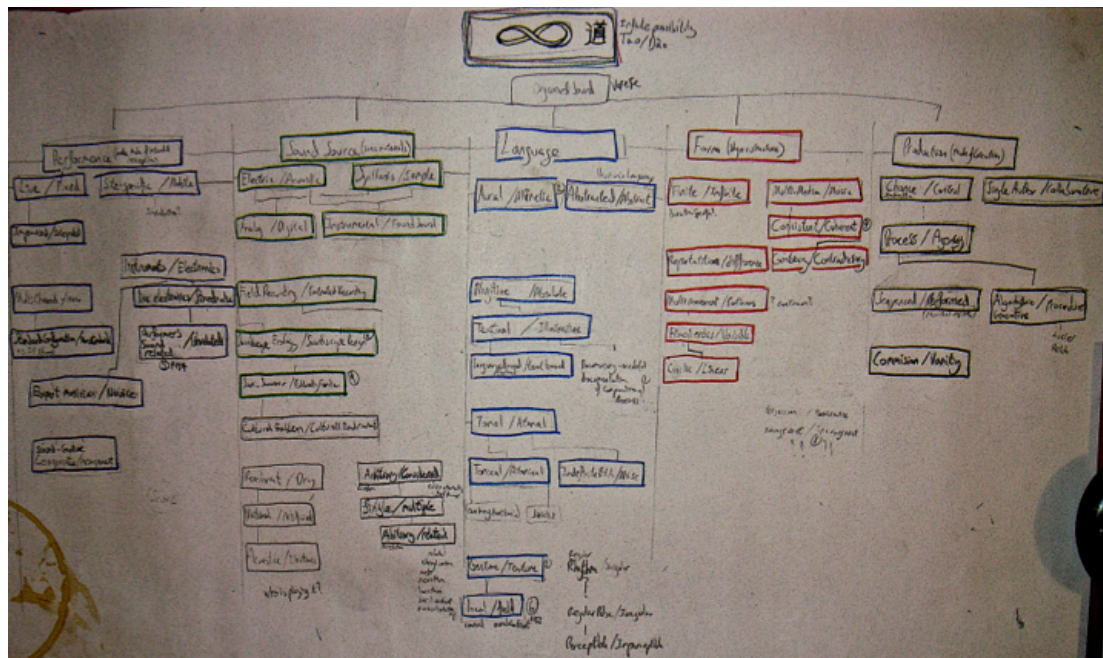
7    In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

**Figure 9. Initial sketch of the system's structure and family groups**

Within the system we find hierarchical flows of different choices. This allows the user to get from a broad-spectrum choice to a more specific one. It also helps to highlight choices that are related. These hierarchical elements should not be read as an implication of value but merely an indication that a decision higher in the tree must be made first. Furthermore, it is my intention that the system is used in one of two ways and this results in two directions of motion. Each direction of motion through the system serves a different function and as such produces different results: Forward motion (intention, practice) and backwards motion (reception, analysis) are represented by downward and upward travel through the hierarchies respectively. Below you can find the outline of the family group 'Language', see fig. 10.

## 1d: Problems, limits and intentional restraints

So far various issues have arisen through development of the system that will need addressed in future:

- Orphaned terms: Terms that have no obvious opposite. Some of these will need re-conceptualised so as to acquire an opposite, others may not be coverable within such a system.
- How to represent duration as a dualistic continuum - "Many sound art pieces do not have a start or an end, thus no fixed duration" (Landy, 2012:17)
- Where terms are contested which terms are appropriate to adopt?
- How to be inclusive through the use straightforward language whilst still being precise in order to aid pedagogy.

**Figure 10. Outline of the Language family group**

- Termination points of trees: in other words, at what point should other systems take over or more specifically perhaps understanding already in the discourse.
- Some dualistic pairings are seemingly self-contained having no obvious child continuums, for example: Site Specific/Mobile.

- The system can be used to highlight and direct towards other author's research and direct students fresh to electroacoustic music towards research related to their compositional choices.
- Switch dualisms: i.e. either on or off without grey areas, for example: single author/Collaboration.
- Subjective nature of some continuums.

9     In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

A significant point of discussion is that subjectivity is inherent in at least some of the categories. As Luke Windsor has stated in relation to acousmatic music: "[…] neither composers nor listeners are fully in control of what will be perceived." (Windsor, 2000:31). This is not so problematic when the system is considered primarily as a tool for composition and understanding and in fact the system does not attempt to be a quantitative, empirical one. It does however lead to questions over its use for analysis, something that should be explored in future. In regards to analysis, it is important to understand that the system is proposed as a framework or prism to look at works through. This means that lower level, or more empirical data, could be obtained from other sources and practices after an initial appraisal using the system. Furthermore, in relation to the nature of analysis Anthony Pople has stated: "The existence of empiricism as a *modus operandi* [mode of operation] is not in doubt, but the idea of its being 'untainted', […] cannot seriously be maintained" (Pople, 1994:109). Therefore perhaps a combination of empirical data and critical thought is the ideal and the proposed framework may help facilitate that.

At this stage of research into the system the specific methods by which one may decide where a piece lies on a continuum are not being suggested. It is my supposition that some of these choices will be evidently justifiable without recourse to too argument. In other words, stating that a work is acousmatic and thus on the far right of the Live/Fixed media scale should not require much debate. On the other hand, the level of noise in a work or not is much more difficult to define. In some instances we should seek recourse to more empirical analyses by using spectrographs, computer analysis of harmonic roughness and so forth, while for others personal, perceptual clues should be used. The analytical methods used to discern where a work lies on a continuum should be flexible and also appropriate for that continuum's characteristics. The system itself anticipates and allows for people's varying views of where pieces lie and it is hoped that this will make it a tool for starting discussion. It is hoped through such debate we might highlight unsatisfactory continuums for improvement or reformulation. Additionally, to help clarify some of these issues, the system will feature different types of continuums: on/off (switch) dualisms, subjective and objective and so on. Finally, I will be enlisting undergraduate students to test the terminology, ease of understanding and creative and pedagogical potential of the system.

To close this section of the paper I would like to mention a simple strength of the system. This is that it can be used to highlight and direct toward others' research, its inclusion of terms from: Smalley, Emmerson, Barry Truax, Blackburn, Landy and Tagg help to contribute to its robustness whilst also being useful for potential student users. In particular, this could be productive for engaging students fresh to electroacoustic music with research areas and resources related to their personal compositional choices.

**The second (concerning my use of the system)**

## 2a: In practice

10    In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

To start with a quote from Marion Guck: "music theory has always fed on new music" (Guck, 1994:85). Guck's quote here highlights the importance of practice informing theory and the use of the system in my compositional practice has been stimulating and beneficial. So far it has been most for making a statement must be made available for scrutiny and evaluation by the community to whom it is made" (Guck, 1994:60). Given that this approach is straightforward I would argue it is also practical for students approaching their electroacoustic composition. Within my own work
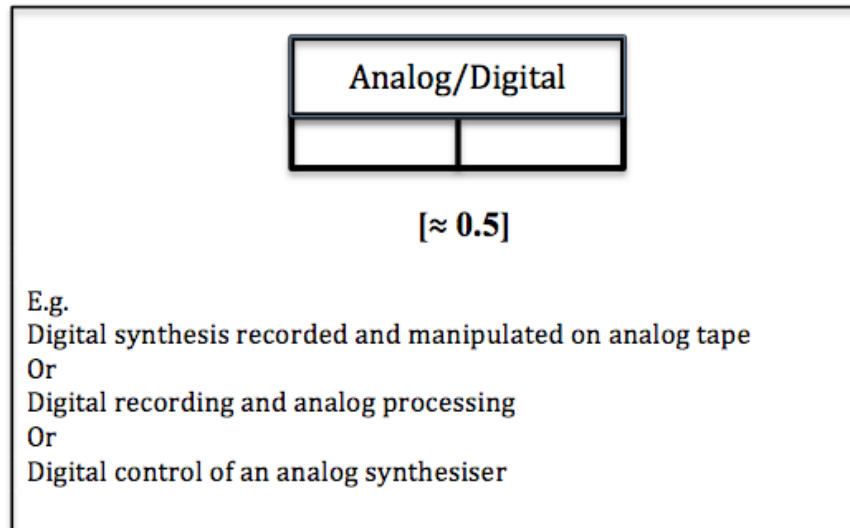
Analog/Digital

[≈ 0.5]

E.g.
Digital synthesis recorded and manipulated on analog tape
Or
Digital recording and analog processing
Or
Digital control of an analog synthesiser

**Figure. 11 Continuum with proposed position for a work and ways to achieve it.**

productive as a conceptual framework for my decision-making. In essence, a means for being clearly confronted with choices that are, or need to be, made for each work. Using the system for composing, usually takes the form of a visual representation plus accompanying notes for each continuum applicable to the current composition. One may for instance write Analog/Digital  [≈ 0.5] (the scale running from 0-1 with the left of the continuum as 0, the right as 1 and 0.5 as the centre point) with a line at the centre of a horizontal rectangle below the terms. This would then be accompanied by a brief explanation of how that value was to be achieved and if appropriate its conceptual justification, see fig. 11. Also, by providing the explanation for a decision in this way one can conform to Guck's assertion that: "The grounds these choices have been primarily concept-driven and not arbitrary, but that does not preclude others using the system and making arbitrary choices. Random choice may provide a useful thought exercise for composers/students, forcing them to think how they might achieve such a combination of characteristics. What follows below however is an illustration of assignment based on concept with a fictional piece entitled: *Maritime Hyperbole.*[3]

## *Maritime Hyperbole*
The title should give some clues as to the concept but the continuums this piece might be concerned with are as follows:
- **Narrative/Absolute ≈ 0.1 –** The piece will evoke ship imagery and soundscapes, contain maritime phrases and be nautically themed.

11          In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

- **Textual/Illustrative ≈ 0.25 –** The piece will be based on excerpts of Moby Dick expanded to ludicrous dimensions of hyperbole.
- **Language based/Text based ≈ 0.7 –** The piece is based on a text but is not primarily focused on its linguistic aspects such as sound and syntax of the language (English) but rather on the thematic and narrative aspects text itself.
- **Synthesis/Sample ≈ 0.9 –** Composed nearly exclusively of sampled voice and maritime associated objects.
- **Instrumental/Found sound ≈ 0.4 –** A nearly even split between sound material derived from the human voice and nautical objects.
- **Electric/Acoustic ≈ 0.7 –** Most sounds and voice samples will be relatively clean and identifiable.
- **Field recording/Controlled recording ≈ 0.5 –** The piece may contain some field recordings of beaches, waves, creaking of boats etc. Some of the spoken words will be delivered live at a harbour location.

As previously stated during my PhD my own work will be using the above system. The first work to engage with some of the ideas outlined above is *ColonEye* and what follows is a brief overview of it as a work in progress.

## *ColonEye*

The concept and driving principles of *ColonEye* are recycling, digestion and dualisms. The work is an algorithmic process realised in real-time that utilises a form of database matching. The sound materials are re-processed raw audio from each of my electroacoustic works to date. These sounds are analysed for a variety of sonic characteristics such as loudness, harmonicity, spectral centroid, fundamental etc. These characteristics are then scored throughout the duration of the work (10 minutes) and the algorithm attempts to pick the closest matches from the samples.[4] Various meta-characteristics are similarly scored including how many samples should be playing at any given time, panning position and distortion level. All of these parameters run along a decimal scale from 0-1 and are in effect finite dualistic continuums. This relates to my stated desire to explore the centre points of continuums and the piece contains a point in time where all of the parameters reach their centre point (0.5) simultaneously. Below is a brief statement of some of the dualistic continuums involved in the conception of this work:

- **Narrative/Absolute ≈ 0.25 –** The piece has a distinct theme revolving around recycling and digestion yet the sound output is relatively abstract.
- **Textual/Illustrative ≈ 0.9 –** The piece is illustrative of its narrative concept and contains no textual reference.
- **Synthesis/Sample ≈ 0.9 –** Composed nearly exclusively of pre-recorded, re-processed material used in my previous works, none of which contain synthesis as there sound source.
- **Instrumental/Found sound ≈ 0.3 –** A split between the majority of sound material derived from a variety of acoustic instruments and some found sounds (including a record player, pots and pans, the sound of eating etc.).
- **Field recording/Controlled recording ≈ 0.75 –** The piece contains some field recordings but

12
In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

these are far outweighed by studio recorded material.

- **Live/Fixed ≈ 0.5 –** The parameters and sound files used in the piece are fixed from performance to performance. However, there is a certain degree of randomness in the algorithm regarding how it selects a sound when it finds several matches.
- **Process/Agency ≈ 0.6 –** Each performance is the realisation of a process yet that process is governed by human agency in the programming and scoring. It is not completely free to unfold and attempts to be as close to the score as it is able.
- **Interpreted/Improvised ≈ 0.1 –** Given that the work is generated algorithmically from a score it seems likely that it is much more interpreted than improvised. The algorithm does not improvise on the provided material but tries to interpret the score as accurately as possible.

The main issue of the work would seem to be is it live? The process certainly happens in real time since and each performance is slightly different due to inbuilt elements of randomness. However, one could subsequently edit, sequence and mix these performances. This process would then create a fixed media version that had been initially generated algorithmically. This is something I hope to explore with the work after the live/installation version has been completed. Another issue is that perception of the score from moment to moment is variable. The more parameters that are changing at once the less the change in each individual element is perceptible. However, the perception of the score is more apparent between different

performances and after repeated listens due to sound material occurring within similar areas of the work in each repetition.

## 3: **Where to now?**

The system will need refinement and expansion, particularly in relation to developing further branches from existing continuums. Similarly, solid and concise definitions for each of the main family groups will be required. This will help delineate between and make the placing of new continuums into the system more straightforward. Additionally, the incorporation of other pre-existing research into the system will allow it to be used more extensively as a guide to other research. Related to this, the system will soon be presented to undergraduates for feedback on its utility and intelligibility. It is hoped that this will help new, and perhaps experienced composers, understand and interact with the many compositional choices available. To further test the system's plausibility as a framework for analysis existing compositions will need to be run through it (backwards motion). If enough works are analysed with the system there may be the potential to develop a dualistic analysis database (D.A.D.). This could also involve crowd source analysis by averaging the continuum values of multiple authors' analyses of the same works. This will of course only be possible if enough people engage with the system and enough continuum values are appraised. However, if students are able to find the system useful this becomes more plausible given that there are reasonably large numbers of them. Concurrently, as my PhD research practice progresses I will use the system to categorise and conceive of each of my own works and this will

13    In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

help test its use as a compositional tool.

## 3b: **Summary**

The characteristics of the system are relatively clear at this early stage and without denying the possibility of later development and amendment these characteristics are as follows:

1. It is a system for categorisation.
2. It allows the relation of musical characteristics on a scale (all be it open to subjective interpretation and discussion).
3. It presents compositional choices that are made by composers consciously or unconsciously.
4. It does not pertain to classify only one genre/medium/style of electronic composition with sound.
5. It provides a framework for developing ones own work through consideration of choices and their associated justification/method of achievement.
6. It provides a gateway into other research by incorporating different methods and critical thought surrounding electronic music into its structure.

Dualistic continuums are easy to understand and common in the discourse and exploration of the centres, and perhaps the extreme edges of such continuums, have great potential for compositional practice. Similarly, using a classification system based on dualistic continuums is a stimulating method for considering compositional choices. Furthermore, there are potential applications for analysis and pedagogy, which appear to be worth exploring given the wide variety of practices associated with electroacoustic music. Ambrose Field has stated in relation to electroacoustic music that:

> *[…] the medium of electroacoustic music does not discriminate against any methods. Ultimately, composers are free to choose the communication methods and structural designs appropriate to their music. It is the flexibility that electroacoustic music affords composers that makes the medium truly unique (Field, 2000:53)*

The dualistic continuum based system proposed above, encourages its users to engage with and consider this unique and broad variety of characteristics associated with the electroacoustic medium.

14         In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

# Bibliography

EMMERSON, S. (1986) Relation of Language to Materials. In: EMMERSON, S.
　　　(ed.) *The Language of Electroacoustic Music*. MacMillan Press: London.
EMMERSON, S. (1994) Local/Field: Towards a Typology of Live Electroacoustic
　　　Music. In: *Proceedings of the 1994 International Computer Music Conference*. International Computer Music Association: San Francisco.
EMMERSON, S. (ed.) (2000). *Music Electronic Media and Culture*. Ashgate: Aldershot, England.
EMMERSON, S. (2000). Crossing cultural boundaries through notation. In: EMMERSON, S. (ed.), *Music Electronic Media and Culture*. Ashgate: Aldershot, England, pp. 115-137.
FIELD, A. (2000). Simulation and reality: the new sonic objects. In: EMMERSON, S. (ed.) *Music Electronic Media and Culture*. Ashgate: Aldershot, England, pp. 36-55.
GUCK, M.A. (1994). Rehabilitating the incorrigible. In: POPLE, A. (ed.) *Theory, Analysis and Meaning in Music*. Cambridge University Press: Cambridge, pp. 57-73.
LANDY, L. (2008). *On the Paradigmatic Behaviour of Sound Based Music*. In: EMS08: Electroacoustic Music Studies Network International Conference - Paris 2008.
LANDY L. (2007). *Understanding the Art of Sound Organisation*. MIT Press: London.
LANDY, L. (2012). *Making Music with Sounds*. Routledge: London.
POPE, S. T. (1993). Editor's Notes: A Taxonomy of Computer Music. *Computer Music Journal*, Vol. 18, No. 1 (Spring, 1994), pp. 5-7 Published by: The MIT Press, accessed at: http://www.jstor.org/stable/3680511 [21/04/2013]
POPE, S. T. (1993b). Editor's Notes: A Computer Music Library. *Computer Music Journal*, Vol. 17, No. 3 (Autumn, 1993), pp. 3-6 Published by: The MIT Press, accessed at: http://www.jstor.org/stable/3680935 [27/05/2013]
POPLE, A. (1994). Systems and strategies: functions and limits of analysis. In: POPLE, A. (ed.) *Theory, Analysis and Meaning in Music*. Cambridge University Press: Cambridge, pp. 108-123.
POPLE, A. (ed.). (1994). *Theory, Analysis and Meaning in Music*. Cambridge University Press: Cambridge.
SMALLEY, D. (1986). Spectromorphology and structuring processes. In: EMMERSON, S. (ed.) *The Language of Electroacoustic Music*. MacMillan Press: London.
TAGG, P. (2013). *Troubles with Tonal Terminology*. Accessed at: http://www.tagg.org/xpdfs/Aharonian2011.pdf [march, 2013]

15　　In: David Holland, Louise Rossiter (Eds.) Proceedings of Sound, Sight, Space and Play 2013
Postgraduate Symposium for the Creative Sonic Arts
De Montfort University Leicester, United Kingdom, 5-7 June 2013.

WATERS, S. (2000a). *Musical Process in the Age of Digital intervention,* accessed
        at:
        http://ariada.uea.ac.uk/ariadatexts/ariada1/content/Musical_Process.p
        df [3/2/2013]
WATERS, S. (2000b). Beyond the Acousmatic: Hybrid Tendencies in Electroacoustic
        Music. In: EMMERSON, S. (ed.) *Music, Electronic Media and Culture*.
        Ashgate: Aldershot, England, pp. 56-83.
WINDSOR, L. (2000). Through and around the acousmatic. In: EMMERSON,
S. (ed.) *Music Electronic Media and Culture*. Ashgate: Aldershot, England,
pp. 7-35.

**Notes**

---

[1] In general throughout this paper I am trying to refer to this as 'the system' as I am still uncommitted at this point as to whether it truly conforms to the classic definition of a taxonomic system. It does however share a good number of similarities with one, given its hierarchical structure and family groupings. However each of the categories within the system are not exclusive and tend to be interrelated and interact with each other. However, given the common usage of the term taxonomy this is a discussion for another time.

[2] It is worth noting that often the centre and extreme ends of a continuum are purely theoretical in nature and not strictly/or often achieved by any given work. We may note, for example, that an acousmatic work, whilst being definitely fixed media, may utilise live diffusion. This would push its position on the continuum back from the extreme end of Fixed Media towards the Live end. Similarly, to be as live as possible a work would presumably need to be fully improvised without physical or mental score.

[3] Other potential titles for this exercise included: *The Kids in the Passenger Terminal*, *Strength of a Butterfly*, *Brittle Beeper* and *Radial Wheelwright Route*. If you ever get stuck for title sandwiching the titles of random articles from Wikipedia together can be interesting…

[4] The piece works by in effect using concatenative synthesis principles but for whole samples rather than grains.