Developing a Practice-Led Research Strategy for Investigating the Relationship Between Environmental Sound and Language.

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Abstract

Interdisciplinary research has led me to a hypothesis which proposes that without sound binding us in a dialogic relationship with our environment human beings would not have been able to develop inter-human sounds (i.e., language) in order to function as social beings. My reading further suggests that this relationship remains a primary force in the way that individuals, societies and cultures continue to evolve. While evidence for these observations is drawn from the literature of soundscape studies, ecological acoustics, philosophy, linguistics, ethnography and psychology, a practical strategy is required to test existing perspectives and deliver new research materials for further interpretation. Key to my inquiry is the interrogation of questions which seek to identify the nature of information that may usefully be extracted from environmental acoustic content and how mediation, manipulation and combination may serve to enhance or occlude our understanding.

This paper outlines and explores a three part practice-led strategy which includes:

- The development of wireless headphone installation techniques which use custom software to re-present treated field recordings at the same location where they were made – in order to influence participant's aural perception and explore the experience in terms of the rendering of objects, agents and processes into language;
- Participatory sound making events which employ role play, score/scripts and site-sound manipulation – to encourage new forms of listening and centres of reflection;
- An adaption of the medium of opera in which the soundscape is generated entirely through the interaction of the performers' voices with recorded materials and the live sound from the performance arena – in order to explore the dialogic relationship between performers, audiences and the soundscape in an imaginary and emotional context.

Developing a Practice-Led Research Strategy for Investigating the Relationship Between Environmental Sound and Language.

My research explores the relationship between environmental sound and language. Last year, the paper I gave here was mostly a reflection on how one particular Masters project, *The Sounding Shore*, helped me conceptualise a framework for the PhD inquiry. Today, I will start by outlining a more developed theoretical and contextual framework, within which I now locate my practice as an artist/researcher. The bulk of this session will be spent looking at my practical methodology and programme or works.

R. Murray Schafer (1994, p. 7) describes the soundscape as

> 'any acoustic field of study. We may speak of a musical composition as a soundscape, or a radio programme as a soundscape or an acoustic environment as a soundscape.'

It functions in a similar way to the term landscape from which it was adapted. A soundscape can be approached in terms of its individual acoustic features, it can be visually recorded using various mapping techniques. It can be recorded for analytical and artistic purposes. If we take one step back from the soundscape we find ourselves in aural space – which is the sonic characteristic of the natural, architectural or electroacoustic environment. This can be perceived in the moment when the wind drops in the valley, when we enter a deserted church or inside our headphones when the system noise becomes apparent as the music fades away. It is the product of distances, diffusion and reflection, topography, materials and technologies. And nested within this characteristic we have the human experience of the soundscape, all of our sound-making endeavours and forms of acoustic communication. My research suggests that our experience of aural space and the soundscape are so profoundly connected to our experience of the overall environment, and to what it is to be human that there is a direct relationship, established over millennia, between the ways in which we communicate, and the environment in which communication takes place. The research has led me to the following hypotheses:

- Without sound binding us in a dialogic relationship with our environment we would not have been able to develop inter-human sounds (i.e., language) in order to function as social beings.

And in formulating a question to focus the inquiry, we can see some areas where new knowledge might be revealed and applied:

- How might establishing and explicating a relationship between environmental sound and language further our understanding of aural awareness, cultural forms and the inter-relation between people and their environments?

The first problem we encounter is the near impossibility of pursuing a sonic relationship to a point of origin in prehistory; there is no acoustic artefact or ear-witness we can interrogate. However, cognitive science, ethnography, ecological acoustics and philosophy can provide material from which some assessments and projections may be made. During the 1960s James Gibson (1968) started testing aural perception using real-world sounds rather than laboratory-generated tones. This led James Howard and James Ballast (1987, pp. 91-113), building on the work of Albert Bregman (1978) and Nancy VanDeveer (1979), to the conclusion that unpacking complex environmental soundscapes into identifiable sub patterns is achieved through parsing operations similar to those that determine linguistic grammar, syntax and semantics. They also

established the importance of rhythm and repetition for recognition of both environmental sound and language. If the processing of environmental sound and language share common attributes, *in consciousness*, then an interdependent, evolutionary relationship becomes practical to propose. In 1837: Of the Refrain, Gilles Deleuze and Félix Guattari (1988, pp. 310-350) identify 'sonorous and vocal components' and the 'wall of sound' as important in the demarcation and organization of space and the establishment of territory. Psychologist Jane Lancaster (1975, p. 72) observes that the ability to name places suggests significant evolutionary advantage. The ability to form relationships between sound patterns used to name and environmental referents, 'lies at the heart of human language and differentiates it from other primate communication systems'. Support for this comes from Janis Nuckolls' ethnographic work, which suggests that language begins with

> 'the modelling of natural processes with sound by imitating the resonant, rhythmic properties of experiential phenomena.' (Erlmann 2005, p. 66)

For a sound-based, dialogic relationship to exist between people and their environments a two-way exchange is required. On first reflection this appears to lead us, at best, into a world of fantasy. Human beings, especially those in Western materialist cultures, have come to see themselves as being somehow separate from environment. We fail to identify ourselves as a deeply embedded aspect of the ecosystem and this fundamental schism influences both perspective and perception on many levels. Human made sound is an environmental phenomenon, and it is interpreted and acted upon, in context, in ways that flow back into the system and a cycle of sonic cause and effect is created. If we move the listener into the frame the self becomes an object of contemplation. This proposes a secondary, introspective focus. Traditional acoustics tells us that what arrives at our ears is the undifferentiated pressure wave. However, ecological acoustics informs us that the parsed outcome is unpacked, experienced and interpreted within consciousness: the environment sounds within us. Soundscape can therefore be modelled as an internal representation and consciousness itself becomes the location for a dialogic relationship between the sense of self and the soundscape. Daniel Dennett (1992), for example, suggests that a single self is an illusion – a result of the interpretation and elaboration of parallel narratives drafts created by probing the multi-track processing of sensory inputs at different points. Environment and its sounding aspect can represent a draft within this folio. For Herbert Hermans (2004) *I* represents the sense of continuity in time, separateness from others and volition; *me* is all that belongs – the body, intellect and feelings but also extending outward to encompass friends, family, possessions and phenomena. In the transition from *me* to *mine* aspects of the external world become self and the self extends into environment.

At the interstices between self-reflection and outward focus we find practice. Immersive sound works can be produced which creatively engage with participant awareness and comprehension of many soundscape variables. These encounters can be explored using questionnaires, interviews and discussions of the work. Approaching the familiar through a process of mediation can expose cognitive processes rendered unconscious by a lifetime of habituation.

There is general agreement in literature (Cox 2004, p. 74; Van DeVeer 1978, p. 2; Oliveros 2005, p. 7 and Barthes 1991, p. 246) that hearing is a passive activity, a faculty selected by evolution for its contribution to survival (Truax 2001, p. 18), location and orientation (Cook 1999,

p. 101 and Emmerson 2003, p. 41). However, listening has been the subject of greater speculation and theorizing. Roland Barthes (1991, p. 245) proposes three forms. The first, *alert listening*, is the survival form where all animals align with a set of indices that indicate danger or disruption. Barry Truax (2001, p. 21) divides the basic form in two: *listening in search* and *listening in readiness*. The former represents the search for detail and information, and the latter represents the processing of background sounds without conscious attention. Barthes' second form of listening is called a *deciphering*: an attempt to intercept and interpret established codes, is the beginning of human listening. His third form, which he refers to as 'entirely modern' (1991, p. 258), takes place in inter-subjective space where listening also speaks: listening is engaged with the flow of significance. Jean-Luc Nancy (2007, p. 7) draws clear distinction between 'to hear', as the search for sense (a bird, a plane, etc.) and 'to listen' as always an inclination towards the opening of meaning and that which is 'not immediately accessible'. And as musicians we are all aware that listening is a faculty that may be focused and trained.

At the core of the original *Sounding Shore* project was a process of abstraction that led from the presentation of untreated field recordings, and linear artist-structured soundscape compositions, to a site-specific installation built around a Max/MSP Patch designed to access a library of environmental field recordings and make random playback, treatment and combination decisions. This was presented to participants, via a wireless headphone system, in the same environment where the recordings were made. In this case, on the Kent coast at Whitstable during the 2008 Biennale. The level of recorded sound was balanced to merge with actuality, so the transition from the real to the mediated soundscape was as seamless as possible. This created an experience where expectations of acoustic behaviours were subverted and familiar modes of pattern recognition were challenged. The response from participants regarding the emotional, temporal and spatial effects of this collision between present-time experience and a disjointed, recorded past has become an ongoing investigation. A revised and updated version of The Sounding Shore installation has been scheduled for this year's Whitstable Biennale. I'll be talking more about this event a little later in this the paper, but first let's take a look at how my techniques have developed. *Urban Sounding*, which many of you experienced here (at this conference) on Wednesday, explores the second of three environmental categories: urban and built environments – and I conducted a trial for this in March with a group of MA students at the University of Wolverhampton's Walsall campus – by undertaking a sonic exploration of the sports complex. Along with the *Sounding Shore* that investigates human interaction in the liminal, transitory coastal environment and *Sound-Field Excursions* the study of rural, campestral and wilderness locations, it constitutes a tripartite investigation using the same installation methodology and tools.

Those of you who experienced the installation here will be aware that the system I have presents two audio programmes – this is a new development. One is for the audio output from the Max patch – Collidescope, I call it – and the other for a linear soundscape composition built from the same sound files using Pro Tools software. This has more of the character of an alternative 'soundtrack' for the exploration of space rather than an attempt to augment, subvert or enhance actuality. Each installation begins with at least one recording fieldtrip, and I was here in early May. The objective is to capture a broad sonic representation of

the study location: aural spaces, machinery, movements, weather, work and social interactions. Both Murray Schafer's classifications of sound marks, signals and keynote sounds (1994, p. 9) and the approaches of the Centre de Recherche Sur l'espace Sonore et l'environnement Urbain (CRESSON) to sonic identity (Augoyard and Torgue 2006; Hellström 2002) inform my exploration. I record with both standard stereo and binaural in-ear microphones; given that Collidescope output mixes itself a range of sound images leads to a more coherent and less cluttered sound stage. Recordings are edited down in the studio to identify the most sonically interesting and representative sections, coherent movements, sound objects, processes and interactions. There are ethical issues regarding the use of conversation, and my strategy is to remove any material that identifies people by name or reveals specific personal details. This particular trip to Leicester was characterised by the sound of construction work and intermittent heavy rain. This was challenging at the time, but both these factors serve as strong and dynamic aspects in the work.

As well as sound file choice the patch also makes random decisions about cutting in and out of files, the application of EQ, speed variations and loop functions – however a level of constraint is built in to ensure that sound remains clearly related to environment: soundscape rather than sound art. So we have an output featuring individual sound objects and randomly montaged audio, which breaks down the basic relationships between cause and effect and blends the acoustic characteristics of different spaces. The objective here is to access the brain's faculty that directs listening towards the search for meaning and present it with a set of experiences it must struggle to interpret. On returning to the world of everyday sound, we bring some of this new acoustic awareness with us.

So the patch is designed to creating a constantly evolving soundscape, which blends stochastic principles with consistent and familiar elements – essentially a model of environmental interactions – unconstrained by direct authorial interaction. Unfortunately, when I initially tried to trigger this sound world using a metronome or random event generator the result sounded less like an environment and more like a nightmarish cacophony. Principally, I needed to thin the information out and I had the idea of creating a timing score. Musical timing didn't seem appropriate so I started to experiment with text and speech triggering. Language has rhythm and if my inquiry proposes a relationship between environmental sound and language why not explore the consequences of introducing the underlying structures of language back into a soundscape? For the first Whitstable installation I developed a set of instructions that I recorded and built a grid of trigger delays in Max to coincide with the onset timings of each word. While I don't claim that this introduced a language-like character into the work it certainly engendered a manageable flow in the material and an intangible sense of structure. Since then I have been experimenting with different forms of score triggering, and much to my surprise, this has led me back to a spoken word practice that was once very important to me, but which I drifted away from about 15 years ago. So, here is the current stage of the research as evidenced by the score of this iteration of *Urban Soundings.*

Leicester -
I lived near here when I was a child:
Two to around five, left before starting school.
Close – my mother had already brought the uniform.

In later years, dad told me he hated the place;
As a brewery rep in Exeter he'd circled his area
Selling beer into country pubs:
Passed his time with jovial landlords,
Presented the darts prize,
Played a bit of cricket.

In Leicester, he pumped hogsheads into working men's clubs,
Worked evenings, worked weekends
And took busloads of shop stewards on seaside outings.

I remember an old house in Narborough,
A few childhood incidents, very few.
Nothing in the city evokes a memory.
And yet this place could be as familiar
As the soles of my feet:
Had the tide of his promotions
Not landed us further along the shore again.

How does this influence the work? The case for any direct mood or psycho-geographic imprint is hard to argue. I certainly cannot read this score and imagine its rendition as a soundscape. However, the work has a different pace and character to the original *Sounding Shore*, which is more than simply the effect of the different acoustic content. The execution of more, similar works, speculation and analysis may reveal deeper structural links. Technically, ASCII character group recognition is mapped to use key words to trigger for sounds, either of people or places. Other character groups, operating metaphorically, control processing. So words like 'circled' and 'familiar' are mapped to the loop function, 'childhood', 'promotions' and 'left' to EQ filtering to suggest changes of state.

This was the first time I've administered a questionnaire during an installation and its design reflects a wide-ranging attempt to assess the type of information that can usefully be collected. This was also the first trial of the dual A and B programme scheme – which demands considerable time investment on the part of participants. So thank you for your time. The next *Sounding Shore* iteration in Whitstable will feature a lower density, public-facing questionnaire and people will only be asked for a preference for the A or B programme as an attempt to identify whether the Collidescope output is more or less engaging than a linear, more familiar soundtrack structure. And the process will be refined through the year for events at the universities of Wolverhampton and Bournemouth.

Before moving on to the second aspect my practice methodology I think it's worth briefly addressing the limitations of technology. Headphone listening comes with a whole set of preconceptions concerning its relationship to recorded sound and cultural uses. However, in terms of a best-fit solution for delivering audio in outdoor public spaces – it is the most practical and cost effective solution I've been able to identify. I believe Bill Fontana had some success using parabolic speakers to define 'multiple zones of record sound moving dynamically in the space' for the *Falling Echoes* installation at the old Tobacco Warehouse in Brooklyn in 2002. *River Soundings* at Somerset House also achieves an immersive sonic experience using multichannel delivery as you move between indoor and outdoor locations. I look forward to commanding a suitable research budget in the future to conduct similar experiments. One may also reflect back on the multiple speaker arrays of the Phillips Pavilion at the World's Trade Fair in Brussels in 1958 or the development of the BEAST system at Birmingham University. However, these are examples of diffusion solutions for controlled architectural spaces and I am interested in exploring the sonics of pre-existing everyday environments. Certainly, there will be room to experiment with outdoor multi-channel delivery. Meantime, headphones have become a ubiquitous technology and since the 80s we have become used to their many mobile applications. Recent improvements in short-range FM broadcasting make a network very flexible and largely resistant to the vagaries of the wind and electronic interference. One observation I would make is that the more efficient the technology, the more the prosthetic recedes into the background of experience – so the quality of audio, production and delivery systems becomes an issue in the effective

manipulation of sonic reality. And on all these fronts I have made considerable improvements in the last couple of years.

In my abstract for this presentation I refer to the second part of my programme

> 'as participatory sound making events which employ role play, score/scripts and site-sound manipulation – to encourage new forms of listening and centres of reflection.'

Originally I envisaged a series of performative interventions coordinated by text scores not dissimilar to those found at the heart of many of Cornelius Cardew's works for combining trained and untrained performers. While I am not discounting this use of detailed scripts or scores in group practice, the research is currently taking a different direction and I am finding an adoption of the soundwalking process is yielding fascinating results. I recently helped coordinate a sound and environment symposium in Dorset for Labculture Ltd/PVA MediaLab and facilitated a walk on which participants were asked to seek out sounding objects and spaces and interact with them – both individually and in ensembles. This was an adaption of Dallas Simpson's solo recording approach, but applied to group interaction. The actual form of engagement was left up to the participants. The experience was intense and the ensuing discussion delivered many fascinating observations about the ways we engage with and talk about sound: ideas concerning choice, perspective and aural acuity. I recorded the walk and three of the participants have now completed edits. An interview and discussion session concerning production aesthetics, listening experiences and choices of material will be scheduled soon. As part of the Whitstable Biennale I facilitated another public soundwalk. Again, there was the option of interacting with the environment though found objects. Additionally, people could walk in silence and or they could simply discuss the sound experience and their conversations were allowed to become part of the acoustic environment and the recording of the walk. This practice was discussed during a symposium session I organised for the Biennale. I also talked about the Sounding Shore during this event and I identify this model of programming around my research themes with artist talks and listening sessions as a valuable aspect or my research programme.

Which brings me to the third and final part of this programme, which I aim to be exploring at the beginning of next year: the writing and production of the pilot section for the opera *Mary Celeste*. I admit I use the term 'opera' rather loosely but it does suggest to me the full spectrum of human vocal potential. This may sound obvious, but live performance is not screen-based fixed media, which has become the dominant paradigm for our era's engagement with the audio-visual. Live opera therefore offers participants and audiences very different opportunities for real-time engagement, and no two experiences are ever the same.

I started to experiment with voice control about three years ago when I was looking to develop a performative interface for Max. I had limited success using iListen, but enough to encourage me to explore possible scenarios if I could create a means of using speech content, rhythm and command potential in performance. At the time, the required level of accuracy appeared beyond the software I had access to. More recent experiments with DIY code proved equally frustrating and it is only in last few weeks, since my colleague Jeremy Keenan and I discovered the universal binary object aka.listen by Masayuki Akamatsu, that a way forward appear to be opening up. This uses Mac Speakable Items, seems far more accurate than any previous system and

less particular about specific voices – principally because it recognises the spoken word from a vocabulary loaded from text rather than by voice training. Tests suggest it will identify complete sentences, nonsense words and singing – if the text input is modelled phonetically to the vocal delivery. This makes it ideal for responding to a libretto, and it's a starting point for an interface. So here is a potential way to put the voice and language in control of every aspect of a performative soundscape – with triggers for playing sound files, initiating vocal treatments, controlling dynamics and processing live sound from the performance arena in real time. My purpose here is to engage the imagination of performers and audiences in an immersive environment where there is a tangible link between soundscape, action and language – again for the purpose of exploring aural perception.

Why place the real-life unsolved mystery of the Mary Celeste at the centre of the work? I have always been attracted to both the dramatic potential and the relationship to uncertainty that a well-crafted mystery explores. Resolution almost always lands us back in the humdrum world of a tarnished reality. No matter how well told, a fiction can never be more than a story. A genuine unresolved mystery resists the mechanisms of scripting, fails to conform to expectations and remains forever pregnant with possibility. What happened to the crew of the Mary Celeste in December 1872 will, most likely, never be explained. Why the ship was abandoned, suddenly and completely, while under full sail on a journey across the Atlantic has been a source of speculation for almost 150 years. Many possibilities, from the mundane to the fanciful and extraordinary, have been suggested and multiple interpretations may still be proposed. This fact itself will act as a metaphor within the work for the ambiguous nature of sound, which is highlighted by Paul Carter (2004, pp. 43-46) and taken up by Brandon Labelle (2010, p. 180).

Sonically, I feel the Mary Celeste theme offers huge potential and I am in the process of planning recording field trips to Chatham Docks in Kent to visit the Napoleonic-era rope works which still exists and HMS Garrett which was built in 1878. I also hope to be among the first to record onboard the newly restored Cutty Sark at Greenwich. *Mary Celeste* will, again, be structured using the application of random and chance procedures to deepen the sense of uncertainly, manipulate multiple narrative threads and disrupt temporal sequences. Project documentation, audience and performer feedback will be used in the final analysis.[1]

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[1] Editors note: The author would like to indicate that significant changes have been made to his research programme since the delivery of this paper. As the quantity and variety of research materials generated by sound installations, soundwalking and symposium events has exceeded expectations a decision has been made to focus the PhD on the discussion of these outcomes. Plans to conduct further performative events leading to the production of the opera pilot Mary Cileste have, in consequence, been removed from the programme, and are now under consideration for future post-doctoral research.