Making choices in electroacoustic music: bringing a sense of play back into fixed media works.

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For many, the process of composing electroacoustic music with the computer begins with free exploration of materials. Somewhere within this experimentation, seeds are sown and specific directions are taken. However, there comes a time when, and for myself this is most important part of the composition process, sounds are set, usually in some form of mixing program. This presentation will highlight the significant moment where a composition moves from experimentation to implementation, taking examples from my new work for fixed media 3 pieces to show how sounds are selected, refined and, where necessary further modified. It will also suggest a way in which this moment can be offset yet further, by incorporating controllers and creating more refined composition environments in Max/MSP to perhaps generate more of the fixed composition in real-time.

1 Introduction

The rather brief title alludes to possible problems in so-called fixed media electroacoustic music (stereo pieces on CD, 5.1 works played from DVDA or multichannel works played from hard-disk). I am not suggesting that fixed media works lack a sense of play. However, I am interested in extrinsic as well as intrinsic change in compositional process and wish to consider a number of interesting theories that may (or may not) lead to new creative output. I am particularly interested in performance intervention, a middle-ground between pre-composed continuous composition and more freely improvised work.

The vast majority of my compositional understanding has come from practice-led research: creation of musical objects in the first instance but after that, attendance at concerts listening to and watching electroacoustic performances and analysis of electroacoustic pieces (often completely fixed to CD). I have drawn only briefly from theoretical writings on performance practice in electroacoustic music and less still on writings concerning the meaning of such performance interventions or the psychological differences between composition, performance and improvisation. This intersection between improvisation, composition and performance is a research topic that my future practice might shed light upon. My recent work, 3 Pieces: Piano/Horn/Violin has led me to think differently about my compositional practice and has set out a number of questions that future work may examine. I have developed a prototype Max/MSP improvisation environment which has produced results which, I hope, can take my work in a new direction.

It is clear from the current state of the art that performance aspects of electroacoustic music will grow in all genres. I am however particularly interested the increased role of the performer in the genre of acousmatic fixed media works.

In the editors notes to vol. 18, No.3 of Computer Music Journal, Stephen Travis Pope reflects upon the question Why is Good Electroacoustic Music So Good? Why Is Bad Electroacoustic Music So Bad? [1]. He ignites the debate about where improvisation ends and composition begins but remains firmly on the fence when it comes to a composers relationship with technology and his/her relationship with musical history. The live-laptop remains ubiquitous in American computer music yet its sense of tradition seems unsteady. Conversely, the relatively strong tradition of acousmatic music in the UK fails to attract a wider audience primarily because it is perceived as being rather clinical. I would argue more that it is the genres failure to realise how important the relationship between improvisation, composition and performance actually is that creates numerous barriers.

2 Improvisation, composition and performance

How we describe these words depends quite heavily upon our creative relationship with technology. The technology we use today fits neatly onto our laptop: thus the effort that is required to produce musical sound in traditional instruments may well be hidden both physically and musically in computer based performance. Good electroacoustic music makes this effort audible through clear articulation of time and space and attention to detail. However, this music often requires very active listening and although one must not overlook the power of the sound diffusion artist, one really has to work very hard to break into this fixed time-frame and begin to understand the composers intentions. Might there be grounds for creative research into the area between carefully mixed and montaged sound objects that form one continuous time-flow, and activity that sacrifices this perfection for a greater sense of live performance interaction.

I am most concerned with Composition and improvisation. Performance, whilst part of the equation is the appropriate rendition of the work to an audience. In this paper, I suggest that improvisation plays a major part in my compositional process and will take a fuller role in performance.

It is paradoxical that electroacoustic composers write themselves into and at the same time out of their work. In instrumental music, performers provide a link between score, sound and audience. In fixed media electroacoustic music the phrase end is closed, a breath is taken and wham a new sound appears. This is the ideal tension-release moment, placed and set for all time. However it fails to offer any chance of adaptation to circumstances. My own work has for a long time been based around this method of concretizing sounds directly to disc; beginning with a proliferation of materials through experimentation, leading to non-real-time assembly with creative feedback and feedforward forming a cyclical process.

3 The search for a middle ground

It is clear that through fracturing the composition and diffusion processes we can generate positive musical results as well as offering the possibility of improvisation with materials. We may need to make the problem of diffusion more complex in order to find new solutions, even to current issues.[2]

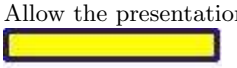
Through the search for greater performer control over multichannel spatialisation of stereo works I began to think about how the work itself might also breakdown into moments that require effort from the performer in order to recreate the music. It should be noted that whilst the composer is quite often the performer in electroacoustic

music, should aspects of live performance be incorporated into fixed media music and the composer not be the performer, careful consideration needs to be given to both interface and scoring and indeed, the overall design of the piece.

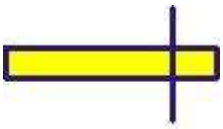
So perhaps similar to the half-way house Richard Orton ascribes to published compositions which retain an element of incompleteness [3], I am searching for a middle-ground between the acousmatic-continuous work (of closed, fixed time-frame) and a laptop school of improvised electronic pieces (based around repetitions of small fragments, often mirroring instrumental paradigms, and often severely limited by the immaturity of the interface).

My theory is that this middle ground will:

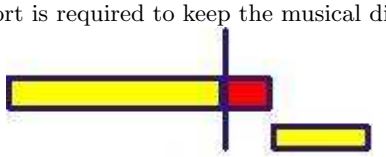
Allow the presentation of pre-composed passages of electroacoustic music;



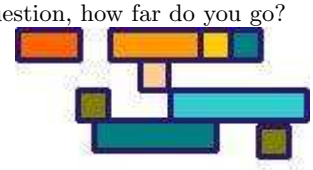
Allow for direct intervention into these passages;



More importantly, allow for the extension and adaptation of these passages so that they may, in real-time, be joined to other passages (of varying size) such that sustained effort is required to keep the musical discourse going.



These aspects of improvisation or heightened performance opportunity beg the question, how far do you go?



Clearly, it would be all too easy to ruin pre-composed sections with a major error in a free moment. On the other hand, this aspect of the process requires a certain degree of danger in order to remain flexible and sustain physical and emotional drive. It may well be the case that pre-composed sections are edited versions of free improvisations and the same tools could equally be used live.

This leads to two further questions:

1. Why not improvise the whole work? The answer to this question is simple because you can only go forward in time. In the studio you can revisit. To avoid any problems in performance the degree of risk would have to be minimal. There is nothing wrong with improvising a complete work; it will just be a different piece.

2. Why not fix the whole work? One could well mention the ability to react to new events, to enjoy free exploration of materials and to discover more about the process of composition (especially if one sees it live), not to mention an additional visual interaction between performer and audience. There is nothing wrong with fixing a complete work; it will just be a different piece.

Clarke [4], in criticising Johnson-Lairds models of creativity in improvisation argues that instrumental improvisation does not adopt an atomistic approach. He suggests it takes place at a higher level of patterns, phrases and gestures. One final question relating to my own theory is this: Just how atomistic do you go? In, 3 Pieces, written between 2006 and 2007 the sounds I improvised upon had already been heavily processed and edited to contain sufficient variety and opportunity for exploration - construction through destruction (of pre-construction)

4 Improvisation in 3 Pieces

Improvisation in 3 Pieces

I can only speculate as to how one might achieve a full solution to this theory but, given that it might be achieved, using software tools such as Max/MSP, I began to create a patch which would allow me to work with a limited number of processes in such a way as to generate an audible (and visual) sense of performance.

Firstly I assembled two simple pieces of equipment: a fader controller sending data to Max which could be scaled and converted to control parameters; secondly, a graphics tablet for which Olaf Matthes had written an external object (http://www.akustische-kunst.org/maxmsp/) providing data from all possible outputs of the tablet and pen.

Sounds were laid out over the tablet and the tablet itself could be divided into regions.

As the pen is moved into one of the boxes, material from a relative point in the soundfile is played. Quite clearly there are a number of problems raised by this method of sound production but I was more concerned with achieving a montage of sounds (one sound after the other) and a mix (one sound at the same time as another) through dragging the pen over the tablet (with pen pressure controlling the duration of each sound). This can be seen as a kind of granulation across multiple soundfiles and is reminiscent of a brassage program contained within the Composers Desktop Project called simply, sausage.

After this a number of other transformations could be applied.

Pitch transposition of the whole tablet was enabled by toggling the effect of the pens Y-axis position using one of the mouse buttons on the pen. Panning in a quadraphonic space was implemented in two ways:

- Angle of the pen. This actually had a desired effect of mapping the effort needed to move the pen directly to a sense of movement. As the pen moved, one noticed more the change rather than the transition and this more obvious motion seemed to sound more performed. (Whilst it doesnt sound like a poor-mans transition either it has an element of failure which makes it all the more human).
- Amplitude-modulation (a process which could be automated if necessary) afforded a CPU-lite means of generating undulations across four channels.

There are very few instances in 3 Pieces where the panning is user defined. As with previous pieces (especially Dreaming of the Dawn for stereo playback), sounds, especially textures tend to move relatively randomly within confined regions.

Thus in the privacy of my own studio each improvisation with materials involved a range of motion, from constrained to wild, fast to slow and big to small. With these actions I was (for the most part) expecting results that exhibited these characteristics. One can see this physical reaction to sound when watching a sound diffuser. Their response tends to relate to the acousmatic properties of the music such as speed, dynamics, tessitura and space (and quite often including a differentiation between gesture and texture). In the same way that someone may whisper when describing a tranquil scene, or a solo violinist will grimace when playing extremely quietly as though tip-toeing over the sound, so a physical reaction to and upon sound clearly identifies characteristics or meaning. There is an abundance of research based around instrumental performance but very little on electroacoustic performance.

Having defined the need for effort, automation of the motion of the pen was built in so that pseudo-rhythmic passages could be created and to allow access to the fader-controller with two hands! Other effects controlled by the faders included equalisation across four channels, reverberation and live-recording of results (either to file or directly back into a buffer and back onto the tablet).

5 Approaching the middle ground

My work between Easter 2006 2007 was focused in part towards the Crossing Continents project and involved writing three short interludes focusing around a horn trio. Possible sources and compositional methods included taking three different routes of composition through recordings of the full ensemble, or a more conventional instrument-focused set of studies. I chose the latter with the view that there would be some cross-fertilization of sounds during the development and mixing stages of each piece. The major change between my initial plan and the finished result was the size of the project. 3 Pieces:Piano and Violin are 9:30 and 3 Pieces:Horn is 11:15.

My research into this proposed middle ground of performance activity occurred at two levels, one extremely simple, one slightly more involved.

Level1. 3 Pieces:Violin comprises two phrases of roughly five minutes. In previous performances (where the piano and horn pieces had already been given), it was useful to play just one of the violin phrases. To make the full version of the work I overlay phrase A and B by just a couple of seconds. (One would only ever play phrase A or phrases A + B and no other configuration). Phrase B could clearly be a triggered event (and whilst this is simplicity bordering on the futile, I now have a taste for further subdivision of readymade soundfiles though obviously not with the outcome of making a work half its original duration). *Level2.* I made a conscious attempt to create and use increasingly larger portions of improvised material using my Max/MSP patch. This gave rise to slightly denser textures and the problem of shaping form over time (my improvisations were lasting between 10s and 4 minutes). I would like to think these improvisations have a more human involvement than my previous experimentation with effects, which were often just the search for transitional material. I would also like to think (perhaps somewhat naively) that my effort (physical motion, focus of listening) translates through this material.

The density of some of the improvised textures is, in this project offset by the instrumental nature of the sources and transformations, a growing familiarity with granular textures and the distribution of said textures in the quadraphonic space. In many respects 3 Pieces does not attempt to articulate space in a rigorous fashion. Rather, textures and gestures inhabit a main focus (stereo FL, FR) or the environment (surround). The centre loudspeaker makes an appearance as a soloist and the LFE

channel allows for real-time balance of low frequency at a more discernable level than mere volume control of sub-woofers.

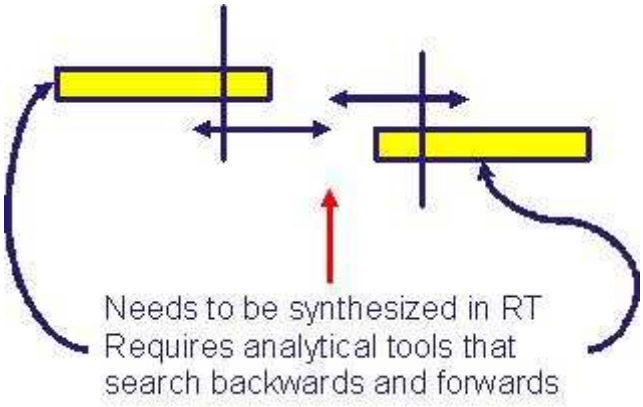
6 Manageable Musical Units and the Middle ground

The Manageable Music Unit is a soundfile containing pre-composed material which may be interrupted, adapted and extended. It may also be used as the basis for improvisation. Are they the lobject sonore of Pierre Schaeffer? I would suggest not, if only for the fact that they could be interrupted and/or extended.

It is highly conceivable that each MMU would have an associated spatialisation method which might dictate how other performance controls work.

Acousmatic Fixed	?	Laptop Live
MMU Large to Small	?	Small to Large MMU

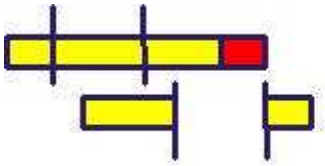
7 The creative overlap



Simply put, the performer needs to adjust the crossover between unit A and unit B. I would maintain that interventions at this stage require real-time synthesis based upon analysis that searches backwards into the past and forwards into the future. I have yet to investigate this (either theoretically or practically) but reverberation / granulation / convolution transitions might well offer a way forward. Perhaps a more subjective auto-composer that works on meta data attached to each unit and draws upon both units with a variety of techniques would be possible. At a very basic level, Id like to be able to create a pause at the end of a phrase and adjust the entrance of the new phrase accordingly. If the phrase end were synthetic (and therefore represented in something other than sound) continuation of the unit probably wouldnt be a problem. When the unit is closed, continuation implies further creation.

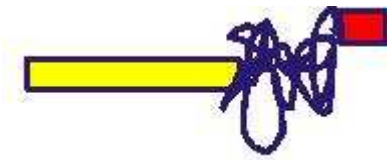
8 Destructive intervention

We ought to be able to align units horizontally and vertically though I can see more reason to work towards a horizontal solution than a vertical one. Again, some sort of meta-data attached to each unit perhaps describing additional soundfiles or possible effects that might be added could be used



Appropriate manufactured
transitional material
(be it gesture or texture)

9 Composed + Improvised = Performance



It ought also to be possible to switch out of a pre-composed passage directly to a stage that requires improvisation. Im not suggesting an electroacoustic minus one here though an immediate test would be to fix a transition between a highly composed section fading to a background drone whereupon one would set loose on an improvisation. This electroacoustic pedal point is commonplace in many compositions (including my own) and used even more so for live electroacoustic music.

But these ideas are not new. The Conductor Program of 1976 written by Max Mathews used a methodology of pre-composition and final touches, and then handed over control to the performer, with little room for manoeuvre there are roads, there are constraints, you cant go wherever you like, and you cant decide from moment to moment where you want to go next. [5]

I think that one would want to decide where to go next, maybe in a manner similar to Boulezs Third Piano Sonata or even Eclats, where choices are constrained and the direction of travel remains under the composers / performers control. Joel Chadabe, in the Companion to Contemporary Musical Thought [5], describes the computer-assisted composition software M developed by himself, David Zicarelli and Antony Widoff at Intelligent Music in 1986. M was the first realtime software for interactive composition. It worked on the most manageable musical units at that time (or non-musical units if you see it that way), MIDI.

The IRCAM school of score following came out of extensions to the original Max program using the object explode (now called detonate) and developed through works such as Explosante-fixe (Boulez), Pluton (Manoury) alongside many of Cort Lippes Music for ISPW and ¡instrument¿ works. This approach has blossomed with the rise of more powerful laptops and developments in this area are bound to aid this research.

However, Im not concerned with computers listening or emulating our listening. I am concerned with them responding creatively to a performers commands be they at a macro or micro level and am looking for interfaces and working methods to give me a more dynamic role in the presentation of my own work.

10 Conclusion

Trevor Wishart reminds us that it is very important to develop categories of analysis and criticism based on perceived phenomena (the music as sonic experience) and separated from the technicalities of production. (Wishart, 1992: 579)

Having outlined possible performer intervention in continuous acousmatic music and my initial experiments in this area I should point out that I do not get up and improvise during 3 Pieces for a number of reasons.

- I have enough to do monitoring the levels to provide a safe and acceptable playback.
- The improvisations that I made all contained errors that I would have regretted being in performance and for sure, most of these are edited out.
- My software tool requires further development and,
- Even with the instrument as it is, I am not sufficiently practiced at playing it.

However, I can see a way forward and hope to investigate live performance that contextualises sections of improvisation within passages of heavily pre-composed material under dynamic control.

References

[1] Stephen Pope. Editor's notes: Why is good electroacoustic music so good? why is bad electroacoustic music so bad? 1994. *Computer Music Journal*, 18(3): 5-6).

[2] James Mooney Adrian Moore, Dave Moore. M2 diffusion - the live diffusion of sound in space. 2004. *Proceedings of the International Conference on Music and Computers*, 317-320.

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[4] Eric Clarke. 1992.

[5] Joel Chadabe. Flying through a musical space: about real-time composition. 1992. *Companion to Contemporary Musical Thought*. (454-466).