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New Possibilities for Electroacoustic Music Performance

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ABSTRACT

Western Australian new music ensemble Decibel has an ongoing research project dedicated to performing music that combines acoustic and electronic instruments. In the process of revitalising pieces that have been considered un-performable due to limitations in technology at the time of composition, or certain technologies becoming obsolete, Decibel has developed a unique approach to new music performance involving electronic and acoustic instruments. This has also involved the reworking of electronic pieces not intended to be performed live, works that have previously proved difficult to perform, and the 'electroacoustification' of acoustic works. The ensemble combines old technologies such as reel-to-reel tape machines with newer approaches to music making using interactive programming and networked environments.

This paper investigates possibilities for the configuration of electronic devices in chamber music with acoustic instrument performers, arguing that through the development and implementation of a series of methodologies for performance, Decibel is able to create a new kind of pure 'electroacoustic music' where electronics and acoustics are truly blended on a live concert platform.

1. INTRODUCTION

> *Everywhere we remain unfree and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the worst possible way when we regard it as something neutral; for this conception of it, to which today we particularly like to do homage, makes us utterly blind to the essence of technology* [1].

In the article 'Electroacoustic Performance Practice', created from a lecture given in 1961, German composer Karlheinz Stockhausen attempted to define different areas of electroacoustic performance practice. He described six different techniques; recording, transformation (understood as amplification), pre –formed (or prefabricated) music, electronic instruments and combinations of all electroacoustic possibilities known [2]. This list describes the different ways in which electronics may be employed in performance environments and it is remarkable how, despite the many developments in the nature of electronic technology, these categories still hold fast. Many developments in electronic technologies have meant that music only be experienced using playback can now be adapted for live performance. This applies particularly to works using magnetic tape. The physical splicing of analogue tape is now replaced with digital audio editing, and playback no longer needs the linear medium of tape to be unspooled. This opens up possibilities for the recreation of tape works though digitisation. But there is an important question that arises here, what if the timbral qualities of the original mechanisms, such as tape, are an important part of the composition? These are not unlike the practice of 'authentic performance' for early music instrumentalists. It seems we are entering a new era of period performance; that of 'authentic electronic instruments'. As with other early music performance, research must be done to uncover each composers intentions with the technologies employed. And, unlike other types of period performance (such as Baroque), electronic technologies are not always employed for their timbral qualities, but also for their ability to facilitate certain details of a composition. Once this distinction has been made, the process is somewhat demystified. Electronics can be employed as an instrument; with its own colour, controls and characteristics - or as a facilitator, a mechanism to enable a compositional process. If this distinction is made, the approach to any revisioning of technologies becomes somewhat demystified.

2. PREPARING WORKS FOR PERFORMANCE

Most extant works using electronic components require some degree of revision before performance. This can be because:

1) The electronic apparatus or media is no longer available or very unreliable due to its age;
2) Software programs are unreadable by contemporary versions, media players or hardware;
3) There are improvements to the electronic technology that can provide a better service to the piece;
4) The piece needs to be arranged to suit the group lineup.

Apart from elements of reliability, convenience and ease, how do we measure if new technology improves on old?

When it is appropriate to adopt new mechanisms, and when is it appropriate to use original ones? If the categorization proposed above is applied, where the electronic component is identified as an instrument or a mechanism, it becomes somewhat easier to fathom.

Many composers have written about the use of electronics in their works, describing the reasons why they chose electronics at all, especially in earlier works from the sixties and seventies. So preliminary background research often provides fruitful insights to understanding the reason electronic mediums were employed at the composition stage. It may be for timbral reasons: the different sounds electronics generate or effect – in which case, the electronics are being used as an instrument in their own right, in the case of synthesis or electronic instruments. But it is also possible that electronics are used as a mechanism, the facilitator of a compositional idea.

Works such as Alvin Lucier's seminal *"I am Sitting in a Room"*(1969) exemplify this division. The score suggests live performance, which would have been very difficult at the time of its composition [3]. Using tape to record and rerecord, the splicing or even rewinding of the recording would create a dead space in the performance of the work that does not exist on any of the recordings. However, the availability of digital – non linear - tools facilitate this compositional process as proposed by Lucier. When Decibel prepared this piece for live performance, MaxMSP offered a simple solution for the 'mechanisms' of the piece, that is, the playing back and re-recording of the original spoken text used in the work. But the question that arose regarding the employment of tape in this work was it's timbral quality integral to the sound world of the work, or is it employed simply as a 'facilitator' of a compositional idea? The sound of a recording on tape has a more significant noise floor, and the sound quality is very different from that reproduced from a computer sound card. Lucier has commented about how he used tape in this work:

> I *didn't choose to use tape, I had to, because in order to recycle sounds into a space, I had to have them accessible in some form. Tape then wasn't a medium in which to compose sounds, it was a conveyor, a means to record them and play them back one after another in chronological order [4].*

This comment above implies Lucier is not particularly interested in that timbral quality difference, and the focus of the work is the way the acoustic of the room overcomes the original piece of text spoken in it, rather than the quality of the original recording or its playback. The work was originally created in mono, and Decibel kept this element of the work in tact; using one speaker and one microphone, each re-recorded iteration appearing immediately after the last.

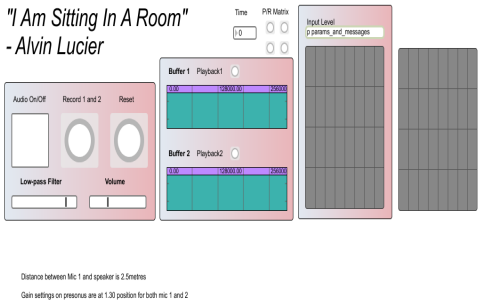

Figure 1: MaxMSP patch for Alvin Lucier's "*I am Sitting in a Room"*, developed by Stuart James, 2010.

Yet Lucier often specifies his electronic instruments. In his work "*Ever Present'* (2002) for three instruments and 2 sine waves, he includes a recording of the sine waves with the score, expressing concern for the quality and accuracy of the sine tone in performance [5]. But even since Material Press published this work, things have changed. Corresponding with the publisher about this works performance; Daniel Wolf remarked, "MaxMSP can create an equally good quality tone nowadays [6]. In this case, this 'upgrading' of technology has opening other possibilities for the work, namely the performativity of the tone. By creating a simple MaxMSP patch for the work, a performer may control the tone as part of the chamber ensemble, rather than as an audio engineer on the periphery of the stage. This has also meant that the tones could be 'performed' on laptops, in the performance space. This way, the 'instrument' keeps its sonic integrity whilst being introduced into the ensemble as a bone fide instrument in the performance space. To facilitate this process, Decibel created a MaxMSP score reader integrated into the sine tone player, as seen in Figure 6. On Lucier's original score, the tones are notated using a series of note heads with glissando indicators between them, indicating a more inclusive, musical inclination for the electronic instruments. The new 'screen score' contains the sounds for the sine wave parts, and enables the musicians to play these tones whilst reading the score. The acoustic instrumentalists may locate and interact with the tones as they do with each other, communicating with the performers, blending amongst the colours of more traditional instruments. In this way, the electronic components become true instruments as part of the ensemble.

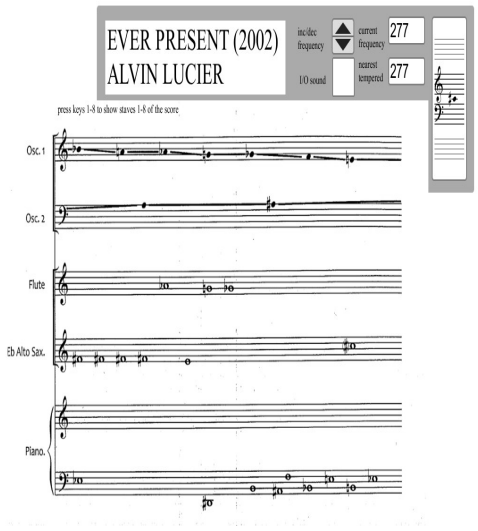

Figure 2: A page from the "*Ever Present"* score on a MaxMSP patch showing the notated sine tone parts (top two stave), and a simple sine tone player operated manually by a performer, relating pitch to noteheads and the tempered scale. Max/MSP patch by Lindsay Vickery.

3. SITUATING ELECTRONICS IN THE ACOUSTIC SCENE

At the end of Stockhausen lecture, he is asked, "Would you also find it an acceptable solution to perform traditional music with amplification and sound projection through loudspeakers?" [7]. A good question, considering the amount of words dedication to sound projection in the article. Stockhausen asks where is the line drawn, and goes on to discuss the qualities projected sound can offer a chamber music performance, noting "I would in every case bring out subtleties, project them with vivid transparency, bring them into a physically perceptible proximity, and strive for the audibility of the musicians [8]. Whilst the above two examples demonstrate the value of real time processing to works with electronic parts," and the value of electronics as performable instruments with their own unique sound output in the concert space, it does not necessarily explore the possibilities of electronics for acoustic works. The potential of electronics is not always manifest in this 'single voice' approach – one characteristic of electronic instruments such as the laptop is the ability to diffuse sound far from the source and to multiple outputs. To this end, Decibel adapt acoustic works with spatial qualities into the electroacoustic realm.

One of these was by Australian composer, Rainer Linz, entitled "*Walk on Parts*" [9]. This work was written for a number of clarinetists, who would walk about the stage and play parts of the score as soloists, in duos, trios and other configurations depending on the size of the group, and decided before the commencement of the performance by noting combinations in a box above the stave (Figure. 3). After consulting with Linz, Decibel decided to perform this piece with one clarinetist, performing a number of different kinds of clarinet – the Ab, Bb, Eb, bass and contrabass clarinets. The score is for 'solo or reed ensemble' and terms such as 'soloist and ensemble' "group parts' or 'tutti' appear throughout. Decibel replaced many of the live instruments with pre-recorder ones, sending them to different speakers placed in different parts of the auditorium. The parts were pre-recorded in a dry recording studio and then diffused throughout 5 speakers in the space by a laptop operator during the live clarinet performance, according to predetermined combinations decided by the performers. In this way the performer himself reappears around the room in multiple locations - but only sonically. He must cue his performances with the computer operator, who triggers the pre-recorded material. Whist the clarinetist walked from one clarinet/music stand to the other, the recordings of himself playing other parts appear somewhere else, and often join him in the duo's and trios as suggested on the score. In this way the acoustic work was re structured to become electro acoustic, with a single computer operator on stage 'performing' the different clarinet parts around the space, making decisions in real time where to send sounds in relation to the clarinetists movements. The laptop operator controls the selection and diffusion of the other parts, without being the creator of them, yet he is an integral part of the duet on the stage. Here the electronics create a new dimension to the piece, without interfering with compositional processes in any way.

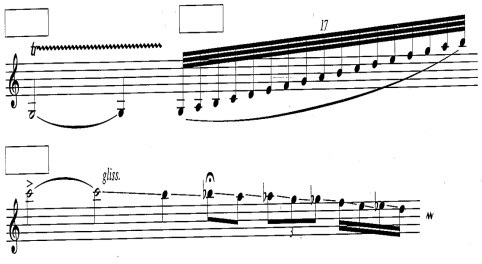

Figure 3: An excerpt from Rainer Linz's "*Walk On Parts",* showing the boxes that indicate what combination of instruments should be used for each phrase.

4. RE-CREATING ELECTRONIC COMPOSITIONS AS ELECTROCOUSTIC WORKS

One kind of electro-acoustic music that Stockhausen does not include could be the adoption of 'pre formed' electronic works to live performance. He claims that the attitude to the creation of preformed electronic music is radically different from that of live performance, claiming that such works can "never again be made-not corrected, repaired, or made over again"[10]. Many preformed compositions are created as such because this was the only way they could exist, not only because they required the high level of refinement Stockhausen proposes. Complex layering procedures, room sized computer processors, unwieldy instruments or mechanisms are just some of the

reasons pre formed works exist that way. But in addition to a simple re-creation of electronic works for the stage, as in "*I am Sitting in a Room"*, or the 'electroacoustification' of works such as "*Walk On Parts"*, pre formed works can also be adapted with a combinations of electronic and acoustic instruments and mechanisms.

This was the process undertaken in Decibel's adaptation of Brian Eno's "*Music For Airports*", track 1/1, for live performance [11]. Decibel are not the first to arrange this work, it has been performed and recorded by US new music ensemble Bang on A Can, who created a literal transcription of the electronic score for four instruments and choir, done in consultation with Eno and released as a CD of the same name, and others [12]. Whilst a 'score' was reproduced on the original LP release of this work, it seems little more than an idea of the work; it in no way 'instructs' on how to perform the piece. Unlike for *"I am Sitting In A Room*", the qualities of tape seemed integral to any rendition of this work, since it was the very fragility of the medium that was a key compositional component to the work. Long tape loops speeding up and slowing down ever so slightly gave this work the qualities it is famous for, and have been a corner stone of Eno's compositional career. The work, initially collaboration with Eno, Robert Wyatt and Rhett Davies, was designed to be continuously looped as a sound installation in an airport. As Eno was defining ambient music as something "like an atmosphere, or a surrounding influence or a tint…suited to a wide variety of moods and atmospheres" [13]. It was obvious his interest in music rotated around sound, texture and noise, rather than melodic structures [14]. These would need to be key components in this work.

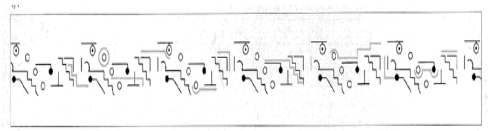

Figure 4: The 'score' to Brian Eno's "*Music For Airports 1/1",* as it appeared on the LP cover.

As such, Decibel wanted the sonic and mechanical qualities of tape to be part of the ensemble. Both the facilitation (mechanism) and sound quality and fragility of tape seemed imperative to any presentation of the work. So, in addition to four acoustic instruments, three reel-to-reel tape players were situated on stage, each playing a tape loop of around sixteen meters, containing around 2 minutes of audio each. As with the Linz, these were pre-recorded, but then transferred to the tapes as loops. Each reel-to-reel tape machine had its own loud speaker placed below it, and was tuned carefully using variable speed control to maintain tuning. The directional nature of speakers in this and the aforementioned works was taken into consideration as a characteristic of the mechanism, and situated in the space accordingly, for an optimum mix with the live, unamplified players. The phasing of tape loops of a slightly different length is a key to this work – they come in and out of synchronisation due to the slightly different lengths of the tape and the natural movement of the medium. By using tape players on the stage, this characteristic was maintained as a kind of live, aleatoric compositional element. The tapes were pre-recorded by the same performers featured in the live performance - alto flute, piano, and cello- using three transcribed musical excerpts from the work. These performers started the tapes as they walked on stage. A violinist was also featured, as a soloist around half way through the work, a characteristic of the original recording. The performers improvised around the themes and keys of the original, weaving in and out of the tape parts over around fifteen minutes.

Figure 5. Putting Tape machines in place for a performance of Brian Eno's "*Music For Airports"* for a performance in September, 2009. Photograph by KFord.

The result was a particularly moving and sensitive rendition that remained faithful to the spirit of the work: the fragility of the original tape technology combined with compositional elements inherent in the work, not only from the harmonic and melodic materials, but also from the tape loop movement and audio quality.

5. CONCLUSION

Through a process of practice as research, Decibel has created methodologies that permit a clearer and richer involvement of electronics in chamber music performance. Through the development of their own assessments for the role of electronics in different works, Decibel has revitalized and refined the electroacoustic chamber music concept. Defining electronics in electroacoustic works as facilitators or instruments assists in prioritizing the behavior of different members in the ensemble and ultimately results in a more integrated electroacoustic music presentation. Through a performance practice informed by musicology and new electronic media developments, Decibel have revitalized key works in the electronic music oeuvre, but also welcomed new ones into it.

The personification of electronic instruments such as laptops, speakers and tape players with individual performers enables them to be more musically involved in the chamber music performance experience. Connecting each performer directly to their own sound output also assists in this relationship, handing the responsibility of

sound quality directly and volume to the performer, something acoustic instrument performance have controlled for years. By avoiding the default to stereo public amplification and external operators for sound Decibel create performers that are characteristically personal and musical.

Using Stockhausen's categories declared in 1961 has illustrated the potential for electro acoustic music to fold and integrated these areas into each other. The adaption of pre-formed electronic as well as acoustic music works galvanise electroacoustic performances, attracting new audiences for electro-acoustic music performance.

Note: Decibel is a new music ensemble directed by the author. Performers and programmers include Lindsay Vickery (reeds), Cat Hope (flutes), Malcolm Riddoch (electronics), Stuart James (piano, percussion), Tristan Parr (cello). More information on them can be found at http://decibel.waapamusic.com

6. REFERENCES

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