SITE IN SOUND: A REVIEW OF FOUR MUSICAL WORKS THAT INTERGRATE SITE INTO SOUND

Mr Mace Francis
Music Research Group
Western Australian Academy of Performing Arts
Edith Cowan University
mace.francis@ecu.edu.au

Dr Cat Hope
Music Research Group
Western Australian Academy of Performing Arts
Edith Cowan University
c.hope@ecu.edu.au

ABSTRACT

Unorthodox performance sites offer the opportunity to provide unique creative input into music composition and performances. Rather than resist the acoustic and design features of performance spaces, these features can become part of compositions and their performance making them site specific. Is it then possible to successfully integrate the acoustic characteristics of a specific performance site into the early compositional process, and can the performance site be just as integral to the ensemble as musicians are considered to be?

Composing music this way proposes a very different creative process to what composers generally follow when creating music for traditional performance sites. This paper will review four musical works that explore site-specificity and the performance site as integral to the compositional process. It will also examine the way these works are linked to their particular performance site through a scale of specificity developed by British academic Fiona Wilkie.

1. INTRODUCTION

Every room has its own melody, hiding there until it is made audible. (Lucier, 1995, p. 92)

When composing music which will ultimately be presented in traditional performance venues, most composers rarely consider the performance space and how the music will interact within it. It is usually only when there are problems with the acoustics or the design of the space that we ask ourselves – 'why did we try to perform this music in this room'? It was a situation like this that prompted me to reconsider the role of performance spaces and what they may have to offer my music, starting from the composition stage.

In 2007 I was performing with my fourteen-piece jazz ensemble The Mace Francis Orchestra (MFO) in The Perth Convention and Exhibition Centre. The performance site was a large open indoor space with a high ceiling and hard reflective walls made of cement and sheet metal. This created a highly reverberant site which proved less than ideal for live music performance as the sound bounced repeatedly off the walls, creating a chaotic echo for the majority of the performance. This resulted in a blurring of melodic lines and difficulty for the players to hear and understand each other. One of the pieces performed by MFO, 'Ice Breaker' composed by MFO ensemble member Andrew Murray (2007), featured a straight semi-quaver rhythmic groove. As the conductor of the ensemble, I noted that the bounce back we were hearing from the room was in exact triplets. While this was very confusing and frustrating at the time, it did instigate interest in the possibilities of working with these acoustic 'problems,' rather than against them. I began to wonder if site-specific music could be composed to integrate the acoustic qualities of a performance site, and what the results might be.

2. SITE-SPECIFIC

The term 'site specific' is not a new one in the realms of multi discipline art-forms. It has been defined as

> practices which, in one way or the other, articulate exchanges between the work and the place in which its meanings are defined. (Kaye, 2000, p. 1)

and to demonstrate the diversity of site-specificity;

> acts of theatre and performative events at landscape locations, in village streets, in urban situations. In houses, chapels, barns, disused factories, railway stations; on hillsides, in forest clearings, under water. (Pearson, 2010, p. i)

British academic Fiona Wilkie has published extensively on site-specific theatre in Britain. She argues that there are varying degrees of site-specificity for a work. Just because you perform a piece of music in a park does not necessarily mean it is site-specific to that park. The same piece of music could quite easily be performed in a barn with equal success and similar effect.

Wilkie's paper entitled "Mapping the Terrain: a Survey of Site-Specific Performance in Britain" (2003) asks the question "Does site-specific imply site-exclusive?" (p. 149). It also provides useful definitions

for when an art work is truly site-specific, by offering a scale of varying degrees of site-specificity.

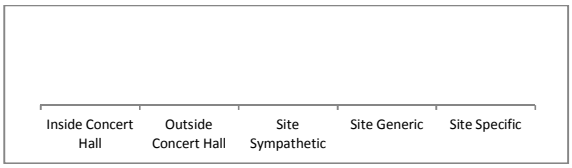

Figure 1. Degrees of site-specificity adapted from Fiona Wilkie's diagram in relationship to theatre (Wilkie, 2003, p. 150)

Figure 1 shows five degrees of site-specificity from 'Inside a Concert Hall', which in this case refers to a traditional performance situation. The next degree 'Outside the Concert Hall' refers to a similar traditional performance situation but in a different location, for example 'Symphony in the Park'. 'Site-Sympathetic' refers to placing an existing work in a site that is sympathetic to the essence of the musical work, for example performing Duke Ellington's 'Take the A Train' in a train station.

The last two degrees are those that most 'site-specific' works fall between. Wilkie's definition of 'Site-Generic" refers to works that are composed for a series of like sites such as tunnels, car parks or swimming pools for example. This could also be referred to as sites having similar acoustic characteristics. The definition of 'Site-Specific' goes further again, to a performance or work that is specifically generated from (or for) a selected site. Wilkie also goes on to state that for a work to be truly site-specific it must reference deeper layers of the site such as historical, social and physical characteristics such as found objects or sounds.

Wilkie's scale provides a useful tool when discussing degrees of site specificity in any art form. To adapt Wilkie's scale to musical works, I have chosen four examples that interrogate the performance site using a range of different methodologies. The manner in which the composer and the performers interact with the site will be explored in the context of Wilkie's degrees of site-specificity. These are works by Paul Horn, Alvin Lucier, Meredeth Monk and Oscar Edelstein.

3. INSIDE THE TAJ MAHAL

In 1968 while on his second trip to India, [American] jazz flautist Paul Horn (1930-) recorded a series of improvisations in the iconic Indian structure, the Taj Mahal, which later became the LP "*Inside the Taj Mahal*" (Horn). Horn used the acoustics he found inside the Taj Mahal to naturally alter and manipulate the sound of his solo flute improvisations through the use of the reverberant acoustics of the main dome, which Horn comments "is solid marble, sixty feet in diameter, eighty feet high. Each tone hung suspended in the space for twenty-eight seconds" (Horn & Underwood, 1990, p. 71).

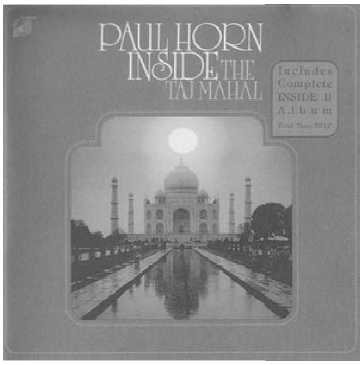

Figure 2. Record cover of Inside the Taj Mahal (Horn, 1968)

The recording of these improvisations captures the natural reverberation, unique to this particular site and is "made without any kind of electronic enhancement at all" (Schaefer, 2008). The reverb created by the buildings acoustics creates a long reparative delay of what is just played. Horn interacts with this delay by stating short melodic phrases, usually diatonic and consonant melodies, followed by short moments of not playing – allowing the echo to repeat what is played until it finally decays naturally. This creates what seems to be a "call and response" effect between Horn and the space. "I listened and responded, as if I were playing with another musician" (Horn & Underwood, 1990, p. 200).

Horn's response to the site in this situation is very much a performance 'with' the site, much like in a musical duet, rather than performing his improvisation 'at' the site. He studied how the site reacted to his musical input and then engages with it musically by allowing the building's response into his compositional process. After a while Horn starts to play longer musical phrases that overlap each other, building harmonic structures which pulse at different rates. This pulsing is created by the resonant frequency of the space which can be sounded depending on the pitches chosen and the volumes they are played at. The first example of this can be heard twenty-eight seconds into the first track, called *Inside*, when Horn plays a rapid ascending arpeggiated phrase. Each note of the arpeggio is sustained by the site forming a pulsating harmonic structure which could not have been created individually by either Horn or the site, but rather the collaboration of the two.

These techniques of call and response, building harmonic layers and creating rhythmic pulses are all useful compositional tools that could be utilized in creating compositions for similar reverberant performance sites. The difficulty with performing in this 'duet' is that the degree of reverberation is not variable – it has no 'off switch'. Whilst providing challenges, this characteristic could be seen as a compositional devise called restriction. American composer, William Russo, in his book *Composing Music: A New Approach* (1980), believes compositional restrictions "lead to creativity and expansion" (p. 3). They make the composer think much more creatively about the musical gestures he/she

presents to the site as they have a restricted musical framework to create in.

While Horn's recordings are specific to the Taj Mahal in this case, it must be noted that he has recorded similar solo flute improvised recordings in other reverberant buildings around the world, as can be found on *Inside the Great Pyramid* (1976) and *Inside the Cathedral* (1983). This points to a site-generic practice rather than a site-specific one, in reference to Fiona Wilkie's scale.

4. I AM SITTING IN A ROOM

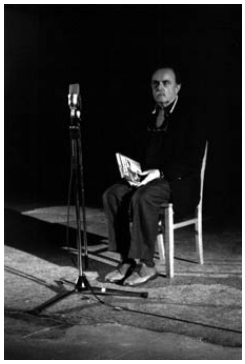

Figure 3. Composer Alvin Lucier. Photographer unknown, (Zlatar, 2003)

American composer Alvin Lucier's (1931-) seminal piece *I Am Sitting in a Room* (1970) uses the performance site [room] itself as an instrument. The performer, through the means of two tape recorders and a microphone, recycles a single iteration of read text by a repetitive process of recording and replaying the recorded text in the room where it is read. This process gradually reveals certain resonant frequencies that are specific to the room, and their interaction with the recorded voice. In the composers own words;

> As the repetitive process continues and segments accumulate the resonant frequencies are reinforced, the others gradually eliminated. The space acts like a filter. We discover that each room has its own set of resonant frequencies in the same way that musical sounds have overtones. (1995, p. 418)

This work uses the physical architectural characteristics of the performance site as an instrument itself, very much like a solo improvising musician. The text given in the score of the work is not the work itself, but rather a starting point for the room to develop upon, just as an improvising musician may start with a thematic idea. Lucier reinforces this element in his score instructions for *I Am Sitting in a Room*.

> Choose a room the musical qualities of which you would like to evoke.
>
> Use the following text or any other text of any length. (1995, p. 312)

As the exact text is not crucial to the work itself it can be argued that any sounds could initiate this work within the physical site as it is the relationship between the sound source and time and space that informs the work. This work amplifies itself through repetition, creating a kind of feedback loop, and will develop, albeit at different rates, in any site or room. This characterises *I am Sitting in a Room* as site-generic in Wilkie's scale, yet it is very different to Horn's *Inside the Taj Mahal* as the centre of the work is the nature of the site itself slowly revealing over a period of time, rather than interacting with the immediate reaction to a sound source in the site.

5. SONGS OF ASCENSION

American composer Meredith Monk's (1942-) *Songs of Ascension (2009)* is described, in the liner notes of the 2011 recording, as having "rather site-specific origins" (Gann, p. 12). The work, composed for voices, strings, woodwinds and percussion, was performed in a tower designed by visual artist Ann Hamilton. The tower itself is an eight-story building in the form of a double helix, "two staircases each spiraling up the interior of the structure opposite each other, only intersecting at the top (Gann, 2011, p. 12)."

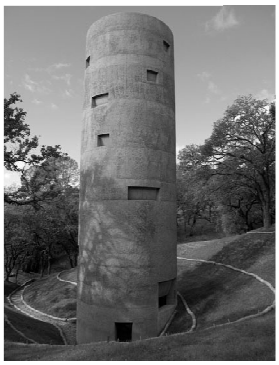

Figure 4. Ann Hamilton's concrete tower. Photo by Stephen Vincent

Figure 5. View from the inside, looking up, of Ann Hamilton's tower. Photo by Stephen Vincent

The bottom of the structure is partially submerged in water and is open at the top. The spiraling stair case moves upwards "in a spiritual-like journey toward the light" (Gann, 2011, p. 12). It is this physical design feature and metaphor of the building that Meredith Monk interacted with in her composition.

Songs of Ascension musically explores the physical and metaphysical "imagery associated with spiritual quests, including the circular symbols of Buddhism, and the sense of spiritual ascension common to many religions" (Kozinn, 2009).

The religious passage of ascending into heaven toward the light is represented in the tower by the musicians travelling up the stairs while performing. The sound of the singers travels up the concrete cylinder and out the top of the tower like spirits leaving the earth.

Because of physical restrictions of the site (stairwell and no power) this impacted on Monk's composition, not unlike the ongoing nature of the reverberation in the Taj Mahal.

> The staircase placed limitations on the type of instrumentation – there could be no keyboards or mallet percussion, only instruments that could be carried up the stairs. (Gann, 2011, p. 12).

While the conceptual connection of the music and the site are strong, the piece is not site-specific. When listening to a recording of the music (Monk, 2009), it sounds like it utilizes the acoustics of the tower to some degree but the level of site-specificity appears to be more conceptual, than actual.

To strengthen this point further, *Songs of Ascension* has been performed by Monk in orthodox performance spaces, like standard theatre venues, across America since the premiere in Ann Hamilton's concrete tower. This leads me to conclude that *Song of Ascension* could be considered site-sympathetic on Wilkies scale. The metaphysical characteristics of the site fit the music rather than the music being composed specifically for that site.

6. SONIC CRYSTALS

Argentinean born avant-garde composer, pianist and researcher Oscar Edelstein (1953-) is developing a way to interact and control the acoustic properties of a performance site by manipulating the physical space with what he calls *Sonic Crystals*. These *Sonic Crystals* are physical objects built in the formation of crystal shapes and are made up of individual cylinders and tubes (Figure 6) constructed from various materials including metals and plastics. These objects are built into a space to control the acoustic characteristics of the performance site.

> A typical crystal can occupy about three cubic meters and employ several tens of tubes. (Edelstein & Eguia, 2007, p. 8)

For Edelstein, musical elements exist only in space, and our perception of music is determined by how sound exists in this space. Edelstein is creating a new system of composition by controlling and notating the acoustic space with only the use of acoustic instruments.

Edelstein's sonic crystals are a theoretical idea (no art works have been produced to date) tested by specialised simulation software using scatter theory. Scatter theory was first investigated by Lord Rayleigh in his book "That Theory of Sound" (1945). This theory deals with the way sound disperses [scatters] after coming into contact with a solid cylinder and is derived from how sound reacts in a similar situation, but in water, making it visible for analysis (Faran, 1951).

A typical sonic crystal, as developed by Edelstein, is "about three cubic meters" and is made up of solid cylinders usually in a hexagonal formation as seen below in Figure 6. What Edelstein's research team of musicians, composers, scientist and physicist are trying to develop is a way of

> utilizing new materials based in the principal of sonic crystals to modulate the architecture of the acoustic space so as to add a new real-time parameter of control in a musical performance. Their research will make the space itself an instrument for the contemporary composer. (Unknown, 2012)

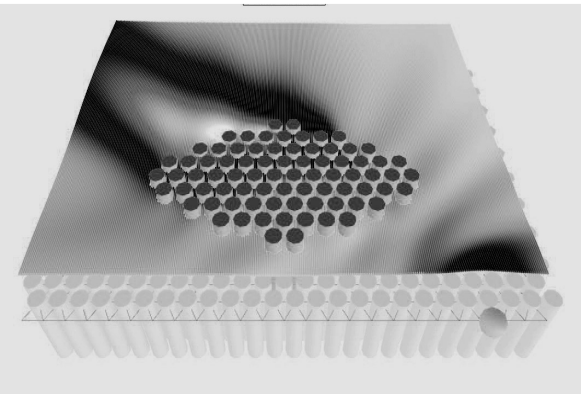

Figure 6. Computer generated simulation of a Sonic Crystal formation. (Edelstein & Eguia, 2007, p. 8)

The concept is that acoustically produced sound can be manipulated by the sonic crystal system of multiple diffractors in the purpose built performance site. Figure 7 shows one of Edelstein's visual representations of the sound simulations.

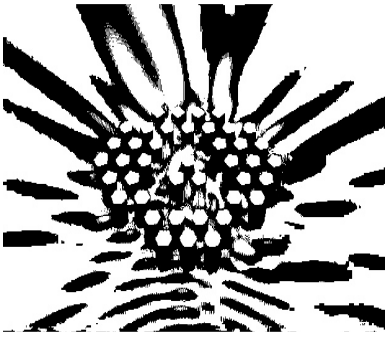

Figure 7. Computer generated simulation of Sonic Crystal effect on sound waves. (Edelstein & Eguia, 2007, p. 10)

It is hard to imagine what these theoretical concepts will sound like but Edelstein has a plan for what he calls a sonic crystal room or *Acousmonium*. This will be developed by

> Completely covering walls and ceilings of an auditorium with cylinder diffractors, for example, it is possible in principle to get rid of some volumetric and surface attributes of the enclosure, and to immerse the audience in a complex but highly controlled acoustic environment, similar to that occurring inside a sonic crystal. (Edelstein & Eguia, 2007, p. 11)

Edelstein's compositional approach to site is different again to the others in this review. His manipulation of the physical performance site, using his sonic crystals, informs and directs the compositional process and controls the final musical outcome. This grounds his practice in the site-specificity defined by Wilkie, as the composition process will evolve from the creation of the physical architectural space.

7. CONCLUSION

> *What we call musical space is the perceptive consequence of the overlaying that the notions of pitch, rhythm, timbre, dynamics, density, and so on, have as a common factor acting on a field delimited by distances and times. (Edelstein & Eguia, 2007, p. 1)*

Each of these four musical works contributes a unique approach to the repertoire of what might be called 'site-specific music'. Each composer has considered the site or space in which they are creating or performing in a very different way to a composer of music that is destined for an orthodox performance space, such as a concert hall or a jazz club.

Wilkie argues that there are degrees of site-specificity with the definition of site-specific reserved only for those works that involve a deep connection with the performance site. This connection must begin with the site informing the compositional process of the piece, and created so that the physical site is part of the work, just as a musician, is part of an ensemble and that the music could not function as it should without that specific kind of musician.

Meredith Monk's site-sympathetic work *Songs of Ascension*, while performed in an unorthodox performance site, did not deeply connect to the site. This is evidenced by ongoing performances away from the site at orthodox performance spaces, to rave reviews.

Both *Inside the Taj Mahal* and *I Am Sitting in a Room* are both site-generic in so far as they do not need to be presented in the exact same space to be successful. Both apply a technique to a space, rather than engage with a specific site as such. Both of these show technique brings out characteristics of the composition in each iteration, but the composition does not need any one particular space to identify it. They can be performed in performance sites with similar acoustic characteristics and while they will not be exactly the same they will work due to the way they interact with the physicality of the architectural design of the performance site. The main defining difference between these two works by Horn and Lucier is related to compositional process and performance of these works.

I Am Sitting in a Room exists as a score that maps the technique so it may be applied by others in different sites. *Inside the Taj Mahal* however, exists only as a recording of a group of improvisations which captured the artwork to the space in a moment of time. The artwork exists as the rendering of relationship between Horn, his flute and the space.

Oscar Edelsein's sonic crystals work is the closest to site-specific in this review. Like Lucier's composition, it is a technique. Yet it is the way the compositional process and the modification of the physical site comes together to create a work that could not be performed anywhere else. The compositional process is itself the creation of a new performance site.

The review of these four site related works demonstrates that it is in fact possible to integrate the

characteristics of a specific performance site into the compositional process of a musical work. These characteristics do not always have to be acoustic ones, as in Monk's *Songs of Ascension,* but to integrate the site into the ensemble and make it just as important as the musicians are considered to be. It is important to consider or even construct the acoustic characteristics of a space, and examine how these can be utilized in a compositional process that is specific to a particular site.

8. REFERENCES

Edelstein, O., & Eguia, M. (2007). The acoustic grid. *Insert*.

Faran, J. J. (1951). Sound scattering by solid cyliders and spheres. *The Journal of The Acoustical Society of America, 23*(4), 405-418.

Gann, K. (2011). Songs of ascension [CD Liner Notes]: ECM Records.

Horn, P. (1968). Inside the Taj Mahal. Canada: Inside Music Inc.

Horn, P. (1976). Inside the great pyramid: Inside Music Inc.

Horn, P. (1983). Inside the cathedral: Inside Music Inc.

Horn, P., & Underwood, L. (1990). *Inside Paul Horn : The spiritral odyssey of a universal traveller*. New York, NY: Harper Collins Publishers.

Kaye, N. (2000). *Site-specific art: performance, place and documentation*. London: Routledge.

Kozinn, A. (2009). Bending melodies on the way to an otherworldly quest. *The New York Times*. Retrieved from http://www.nytimes.com/2009/10/23/arts/music/23monk.html

Lucier, A. (1970). I am sitting in a room: Residuum.

Lucier, A. (1995). *Reflections: interviews, scores, writings,1965-1994*. Cologne, Germany: MusikTexte.

Monk, M. (2009). Songs of ascension: ECM.

Murray, A. (2007). Ice breaker. Perth: APRA.

Pearson, M. (2010). *Site-specific performance*. Hampshire: Palgrave MacMillan.

Rayleigh, L. (1945). *The theory of sound*. New York: Dover Publications.

Russo, W. (1980). *Composing music: A new approach*. Chicago: University of Chicago Press.

Schaefer, J. (Writer). (2008). Site-specific music [on line], *New Sounds*. USA.

Unknown. (2012). Oscar Edelstein. Retrieved from http://en.wikipedia.org/wiki/Oscar_Edelstein

Wilkie, F. (2003). Mapping the terrain: a survey of site-specific performance in Britain. *New Theatre Quarterly, 18*, 140-160. doi: 10.1017/S0266464X02000234

Zlatar, M. (2003). I am sitting in a room. Retrieved from http://a.parsons.edu/~mateo/thesis/background.html