Theater:

- Acoustics emphasize what is onstage. Sound reinforcement systems allow even the quietest sounds to be heard clearly throughout the space.
- Low lighting helps the audience forget their environment and physical presence.
- The audience is stationary, in chairs, and expects to stay seated for a certain length of time.
- The experience starts and ends at the same time for everyone. The audience is passive and quiet for the duration.
- All of the above directs our focus to the work being presented onstage.
- Audience attention span = hours.

Gallery:

- The hard, flat walls and floors reflect sounds throughout the space while making it difficult to hear any one sound.
- The bright lighting increases visitors' awareness of their environment.
- The audience is standing or walking.
- The experience starts and ends at different points in time for everyone. The audience is active, moving and often vocal.
- Galleries must be configured to create (visual) focal points. Public spaces may not have focal points.
- Audience attention span = seconds. (There have been a number of surveys on the amount of time a gallery visitor spends looking at a work of visual art. While the results vary, all are measurable in *seconds*—single digits, even—and not minutes [5].)

Public spaces, of course, can be characterized by any combination of the above gallery or theater traits or none of the above. This brings us to Rule #4.

Rule #4: Survey the site before you create.

This rule borrows from architecture—survey the site, *then* design for it. When I am creating a new installation, I observe the site as much as possible. I sit quietly, take notes and consider questions such as:

- How long are people in the space?
- What do they do while they are there?
- Where do people focus their attention when they are there?
- What are people using their ears for?
- What are people using their eyes for?
- What impact does the space have on people moving through it?
- What sounds are already present? What aesthetic impact do they have?
- What sounds are repeated?
- What are the natural rhythms of the space? (These are not limited to the auditory. For instance, traffic lights at a crosswalk, and the pedestrian/vehicular movements that follow.)
- Are the sounds signals?
- How do people react to/interact with the sounds?

In my class, when we lack a designated space for installation, we install guerilla style. Each student selects a public space near our downtown classroom, surveys it with the above list of questions, then uses the answers as a guide while creating the sound piece.

For an installation, we park a portable amp in the selected public place, connect an mp3 player, and let it play for 15 minutes. A student loiters anonymously nearby to protect the equipment while the rest of us retreat to an unobtrusive distance. We can gauge our success by audience reactions—a slow, dawning smile, a thoughtful pause. Oblivious passersby indicate failure. The behavior of strangers is a powerful teacher.

References and Notes

1. For example, the British marketing research agency Morris Hargreaves McIntyre (MHM) surveyed visitor motivations at over 50 museums and art galleries, including Tate Modern, The British Museum and The National Gallery. They concluded that 48% of all museum visits and 30% of art gallery visits are social, intended as a way to spend time with friends and family. *Audience Knowledge Digest: Why People Visit Museums and Galleries, and What Can Be Done to Attract Them* (Manchester, U.K.: MHM and Renaissance North East, 2007) pp. 27–29.

2. Lou Mallozzi, "Eschewing Intelligence?: Why 'Ecology' Makes Me Nervous," talk originally presented at the conference of the American Society for Acoustic Ecology, Chicago, 9 July 2010: <loumallozzi.blogspot.com/2010/07/eschewing-intelligence-why-ecology.html>. Accessed 2 January 2014. Lou gave me further details on the incident in a telephone conversation in 2011: He has considered the possibility that the anonymous vandal was a squatter living on the site. While he initially saw the repeated vandalism as an attack on the art, in hindsight he realized that the sound installation itself might have been perceived as invasive. "Sound is inescapable and therefore inherently oppressive," he wrote in his blog.

3. See <cornfieldelectronics.com/tvbgone>. Accessed 2 January 2014.

4. For instance, I have used a Westek MLC12BC-4 Light Control for several kinetic sculpture installations.

5. James Elkins, "How Long Does it Take to Look at a Painting?": <www.huffingtonpost.com/james-elkins/how-long-does-it-take-to-_b_779946.html>. Accessed 2 January 2014.

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Sensation and Control: Indeterminate Approaches in Popular Music

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*Supplemental materials such as audio or video files related to this article are available at <https://vimeo.com/100523785> (*Willow*) and <https://vimeo.com/83867750> (*Kafka-Esque*).*

ABSTRACT

Indeterminate techniques borrowed from experimental music can be applied to the composition and performance of popular, song-based material. The author makes the case for treating computer-based systems as collaborators in creating works that are both sensuous and cerebral.

One of the distinguishing features of popular music is its sensuousness. Through the use of repetitive rhythm and accessible melody, listeners cannot help but participate, whether through physical or mental engagement [1]. When blended with techniques from experimental music, this sensuousness can be enhanced by a more cerebral quality [2].

While there exists a plethora of commercial software devoted to the practice of sound generation, sequencing and recording, there is little that focuses on the decision-making processes involved in organizing sound events in frequency and time. Perhaps this is due to the majority of musicians and music software programmers viewing machines as entities over which they exercise control in order to realize their ideas, rather than as collaborators with whom possibilities are explored.

Similarly, much of the literature on the use of technology in live performance of popular music discusses the use of smaller, more powerful computers to relocate recording studio processes to the stage [3]. Again, this locates the control with human performers, who demonstrate their prowess in manipulating these processes in real time to reproduce the official, recorded version of the work.

Throughout its history, electronic music has been characterized by the contrast between the desire of composers to have complete control over their creations and the relinquishing of control within the framework of a composition. John Cage and Roland Barthes teach us to let go by demonstrating how the meaning of a musical or artistic work is bestowed by the listener [4]. Relinquishing control and foregoing the notion of one fixed version of a composition allows composers and performers to grant computer systems the status of partners and collaborators, rather than just transferring recording processes to the stage. When conditions for unpredictable, real-time interaction between human and machine performers are appropriately set, compositions are afforded a satisfying element of elusivity [5], every performance is truly unique, and performers and listeners alike will be motivated to be fully in the moment [6].

Kafka-esque (2013)

Popular music perpetuates the cult of the singer: that the vocalist is the most important element of a musical performance. The roles of other band members and technicians are downplayed or even hidden [7]. I therefore aimed to create a performance that focuses on the text of a piece, rather than the person vocalizing it.

In *Kafka-esque*, a human performer controls the music and visuals by typing a Franz Kafka quote on a computer keyboard. The system recognizes certain words in the text, and responds by changing the states of a number of sound generators. The rhythm of the typing determines the rhythmic elements of the piece. The system also "sings" by playing back pre-recorded or synthesized vowel sounds in response to particular vowel combinations. The synthesizers step through a melodic cycle every time a word is typed, creating additional aural interest.

Willow (2013)

There are several benefits to using existing musical instruments to control computer software [8]. Elements of an audio signal such as pitch, noise content and amplitude can be effectively and efficiently analyzed in real time, and sensors can be mounted on the instrument to gather additional performance data.

In *Willow*, I used a variety of software techniques to analyze a guitar's audio output. I used a Wii remote to detect the guitar's position and movement. The data was then scaled and mapped to generative processes that created additional musical layers.

Borrowing an approach of modernist poets, I originally wrote the lyrics of the song with solely the sonic qualities of the words in mind [9]. My intention was to preserve the piece's musical integrity by prioritizing the musicality of the words above their meaning. However, I felt that in order to be able to successfully perform the piece I needed to be able to relate to it on an emotional level. I selected a theme and used an Internet search engine to delve deeper. Once I uncovered a satisfying narrative, I was able to rework the nonsense lyrics while maintaining their sonic suitability.

Conclusion

Exploring the use of indeterminate approaches in the composition and performance of song-based, popular music ties together innovations by such luminaries as John Cage, Steve Reich, Tristan Tzara and Roland Barthes. Furthermore, the use of voice, text and traditional instrumentation, as well as real-time computer systems, offers contrasting starting points in the search to create new music that appeals to both heads and hearts [10].

References

1. P. Wicke, *Rock Music: Culture, Aesthetics and Sociology* (Cambridge, U.K.: Cambridge Univ. Press, 1990).

2. E. Roebroeks, "Stage, A Final Frontier," *Leonardo Music Journal* **18** (2008) p. 41.

3. J. Knowles and D. Hewitt, "Performance Recordivity: Studio Music in a Live Context," *Proceedings of the 7th Art of Record Production Conference* (San Francisco State Univ., 2012), <eprints.qut.edu.au/48489/>.

4. J. Jeongwon and H. Song, "Roland Barthes's 'Text' and Aleatoric Music: Is 'The Birth of the Reader' the Birth of the Listener?" *Muzikologija* **2** (2012) pp. 263–281.

5. S. Emmerson, "Pulse, Metre, Rhythm in Electro-Acoustic Music," *Proceedings of the 2008 Electroacoustic Music Studies Network International Conference* (Paris, 2008).

6. S. Reich, *Writings on Music 1965–2000* (Oxford, U.K.: Oxford Univ. Press, 2004).

7. Wicke [1].

8. P. Tremblay and D. Schwarz, "Surfing the Waves: Live Audio Mosaicing of an Electric Bass Performance as a Corpus Browsing Interface," *Proceedings of the 2010 International Conference on New Interfaces for Musical Expression* (Sydney, 2010).

9. T. Tzara, *Seven Dada Manifestos and Lampisteries* (London, U.K.: Calder Publications, 2011).

10. Roebroeks [2].

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