SHATTERED DREAMS

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BY

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Shattered Dreams

Shattered Dreams is an Electro-Acoustic work composed by Jeffrey David Nellans using the techniques of *musique concrète*. Blending the original mid-twentieth century art of capturing natural sounds with a microphone and the modern use of a Digital Audio Workstation (DAW), this piece explores the many possibilities of sound manipulation without the use of pure electronic generated sound. While use of the DAW might be considered as an electronic source, great care was taken to utilize only those processing methods which could be physically achievable. In other words, the DAW was able to be the tape machine, the reverberant chambers, the mixing console, and the storage room for all the audio material. This coalition of devices in such a small package allows for maximum expression without a large expenditure of resources.

In order to fully grasp the foundation of this piece, one must possess a general knowledge of *musique concrète*. In 1948, Pierre Schaeffer and Pierre Henry, both working at the *Club d'Essai* studio at *Radiodiffusion-Télévision Française* (RTF) in Paris, France, utilized their many resources to capture and manipulate the sounds of natural or "concrete" objects. They coined the term "*musique concrète"* and heralded it as the proper way to create new sounds. This was in stark contrast to the German method of building sounds from the ground up using electronic voltage oscillators and static noise generators, which Schaffer and Henry viewed as being too mechanical and non-humanistic.[1]

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[1] Wikipedia contributors, "Pierre Schaeffer," Wikipedia, The Free Encyclopedia, http://en.wikipedia.org/w/index.php?title=Pierre_Schaeffer&oldid=332085116 (accessed December 16, 2009).

The microphone was and is the primary source of sound acquisition. Manipulation of the sounds could be done in multiple ways. High and low pass filters, as well as 1/3 octave filters were used to enhance or remove certain frequencies. Reverberation could be added to a single sound or a blend of sounds. This was accomplished with a metal plate or a group of springs. Tape playback speeds could be made faster or slower, the tape could be played in reverse, or physical loops could be created. The blending of sound was done using a mixing desk, and the output could be sent to a filter, reverberation mechanism, or a recording device. New sounds could also be made by taking tiny splices of tape and connecting them to many other splices. Shellac record players were originally used instead of tape machines, but by the time that tape machines functioned correctly, they were the preferred device.

Schaeffer was a pioneer in his sampling and recording techniques. Despite having been trained as a musician in his childhood, his parents forced him into a career as an engineer. After landing a job in French radio at the RTF, he began tinkering with the phonographs by having them play backwards, faster, slower, and in combination with each other. He went on to assist in developing numerous electronic instruments, including Francois Bayle's Acousmonium and some of the earliest tape machines. Schaeffer founded the *Groupe de Recherche de Musique Concrète* in 1951 at the French Radio Institution. It was here that he was given a fully functional tape recorder and became the first composer to make music using magnetic tape.[2]

[2] Wikipedia contributors, "Pierre Schaeffer,"

Percussionist-composer Pierre Henry was better known in the art of composition. In 1950, he wrote *Symphonie pour un home seal* in cooperation with Schaeffer. He is also the composer for the 1952 short film *Astrologie ou le miroir de la vie,* containing the first *musique concrète* to appear in a commercial film. Henry is best known for his 1967 album, *Messe pour le temps present*, which includes the song *Psyche Rock.* The concepts of *musique concrète,* originally devised by Schaeffer and Henry, undoubtedly had a significant impact on this thesis, for it was always this strict adherence to the natural creation and manipulation of sounds that underlie all decisions made in this work.[3]

The ecological composer R. Murray Schafer and his *World Soundscape Project,* along with Barry Truax, are also influences in this thesis. By recording sounds of non-human-inhabited areas, they took what might be looked at as "found art" and made it recognized as music in its own right. Hildegard Westerkamp (*Beneath the Forest Floor)*, is another example of a composer who looks at the naturally occurring sounds in life as music. While *Shattered Dreams* goes far beyond the simplicity of a natural outdoor setting, the style and techniques of these three have heavily influenced other works by Nellans.

Steve Reich's *Come out* helped shape several moments in this piece by illustrating the effects of two identical sounds slowly drifting apart. This technique shows the influence of minimalism. Without paying close to attention to the minute details of slowly changing sound structures, some music would be perceived as unmusical noise. Jonty Harrison's *Klang* and *Hot Air*, along with Michael Pounds' *Blowout (expanded)* are

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great examples of how a themed opening to a piece can be developed over time with aesthetic success in the electronic world.

The sound sources for *Shattered Dreams* were chosen to be of similar origin, but on opposite ends of the sound spectrum. Concrete cinderblocks and a variety of glass objects were utilized. Both of these substances have a foundation with sand and other granular matter; however, one is rough, noisy, and compiled through a chemical process, while the other is melted and formed back into a smooth quasi-solid with more pure, resonant tones.

The cinder blocks sounds were recorded by placing one on the ground and another directly on top of it. A pair of Neumann km184 microphones were placed approximately one inch away from the edge of the two blocks in a standard "XY" pattern and the top block was dragged across and knocked into the bottom block. This created a very noisy and gritty sound allowing for a granular source similar to white noise, but with evidence of certain resonant pitches unique to the cinderblocks.

The glass sounds were captured in a more complex manner where a large cardboard box was lined with a cotton blanket and a single, solid brick was placed in the bottom center of the box. A solid brick was chosen instead of a cinderblock to minimize the tainting of the glass tones with the cinderblock's own natural resonance. Two Neumann km184 microphones were again used in a standard "XY" pattern approximately two feet above the striking point of the glass and brick. The blanket was there to abate the sound of the glass shards striking the sides of the box and to simulate a moderately anechoic chamber. A variety of glass objects were utilized including bottles of diverse sizes and shapes, lamp shades, dinner plates, and ornaments. Each piece of

glass was thrown onto the brick and shattered. If the object was not destroyed, it was removed and thrown again. Every glass sound had many similarities, but they also had their own unique array of pitches depending on how they broke apart.

Problems that occurred during the recording process were mainly found in the glass section. Because the cinderblocks were sampled in a very controlled fashion, the only real negative artifacts that were encountered were room noise and the hiss of the noise floor within the recording devices. While recording the glass breaking, there was significant wind noise from the motion of the glass objects past the recording point. At one time, an alternate recording location was attempted and the microphones were placed closer to the breaking point in a hole cut out of the side of the box. Unfortunately, the high-frequency pitches were shielded by the blanket and that dampened many of the tones emitted from the glass. It was decided that it would be easier to cut or filter the low-frequency wind noise than it would be to enhance the loss of high-frequency data. Some problems actually lent themselves to become useable sources. For example, when a bottle did not break, the bouncing glass sound could still be used, as it had similar resonant properties to the broken bottles.

Shattered Dreams was composed using Cubase 4 by Steinburg. The initial editing and trimming of the sound source files was done using Sound Forge 6.0 by Sonic Foundry. This is also where the reversal and layering of sounds was done. Some pitch-shifting was done in sound forge, but most of it was done in Cubase. The reverb plug-ins used were RoomWorks and RoomWorks SE within the earlier VST plug-ins section of Cubase.

The compositional methodology chosen was firmly based in *musique concrète,* therefore guiding the processes used to alter the original sound sources. Pitch shifting without time shifting reminiscent of speeding up or slowing down a tape machine was a primary element. Higher pitched glass explosions could be slowed down to a point where individual glass shards could be heard ringing out for extended periods of time. This ringing had very bell-like qualities and was the pure tone sound that was intended to be the antithesis of the scratchy cinderblock. Shifting the cinderblock sounds down conjured up sounds which mimicked that of large snow plows in the street, the creaking of a large cargo ship, or even the rumble of an earthquake. This allowed for the expansion of the perceived environmental depth within the piece.

Playing a sound backwards also opened up new possibilities. The cinderblocks, being of a noisy origin, were affected only slightly. In reverse, the main difference was that of the reverberation in the original recording room seemed to be drawn back into the block. The glass breaking, in contrast, presented a sense of the object being sucked back together and becoming whole once again. Pairing this reversed sound with the original sound created a well-received coming to and re-exploding of the object. To remove some of the harshness associated with a reversed sound, a small amount of reverb could be added to help blur the abrupt stopping of a reversed attack transient. Likewise, the addition of reverb helped to add depth to otherwise small sounds and broaden the spatial field of larger ones. The reverb used in this piece can be generally lumped into two categories: First would be the plate reverb, where, if performed in reality, would consist of a small speaker being affixed to a metal plate and a contact microphone being placed somewhere else on the same plate. As the sound travels from the source point, some of

the sound waves reach the microphone right away and some of them take a longer, more diluted route. This creates multiple echoes of the original sound and generally tends to warm it up. Second would be a large oil tank, wherein a speaker is placed at one end and a microphone placed at the other. The sounds emitted take not only direct paths to the microphone, but are also diffused wildly around the tank creating a long decay time as well as acquiring certain reinforced frequencies that are part of the tank's natural resonance. By adjusting the size of the tank, one can alter the basic resonant frequencies as well as how long they take to completely decay. Other sound creation methods include the use of cut-and-splice editing, where the beginning of one sound is coupled with the end of another, allowing for an unpredictable change in logical sound progression. Amplitude envelopes were also used to mask the attack of a sound and slowly fade in the sustained tones.

The basic concept behind the piece is that of contrast and transformation. The rough cinderblocks and the smooth glass lead to a stark difference in timbres. The use of panning and global placement allowed for a richness of spatialization. Sounds could be perceived in the far distance or up close and in your face. Also, the different playback speeds helped facilitate the range of high and low pitched sounds. The beginning of the piece exposes many of the original sounds coming in from all directions. Blocks moving, glass shattering, and a general rumble of destruction. As these sounds interact, they slowly transform into more diluted and distant versions of the original. Eventually, what is exposed is that both the cinderblocks and the glass object tend to share many of the same inherent resonant frequencies. As they develop, these become more and more

evident in their presentation. What results in the end is a complex harmonic series that all the sounds seem to feed off of and, in turn, reinforce.

Shattered Dreams opens with the deep grinding sound of the concrete blocks, several glass objects are shattered amongst this ambiance and the two main ideas are exposed. Within the first few minutes, you can hear several different versions of the cinderblocks at many different speeds or pitches. Dotting the landscape are different pieces of glass being broken, some of which enter in a reversed format and are coupled with the original sound. Around 4'00", some of the glass sounds are pitch-shifted down far enough to expose individual shards of glass ringing amongst the aftermath of a violent explosion. This is enhanced by several reverse-forward shatters that have been heavily reverberated. These reverberated sounds take on a very distinct resonant pitch and highlight some of the pitches that the cinderblocks and glass have in common. At 5'20", there is one more lone cinderblock scrape and a brief pause. The cinderblocks emerge as the opening for the second section, except this time they are off in the cavernous distance and the glass takes a front and center role with a barrage of explosions from 6'00" to 6'30". The texture settles back down a bit after this and once again the ambient crumbling takes hold. At 7'45", the concrete sounds start to layer and the resonant glass sounds reemerge. Many more reverberant sounds start to join in and the piece works toward the climax around 10'00". At this point, there are several deep glass explosions and three cinderblock sounds that take part of the center stage. These three cinderblock sounds are all the same, except for the fact that they are pitch shifted differently. One is only slightly lower than the first, and the other is far lower. They are also arranged so that the slower ones start earlier. Right at the climax of the piece, the three sounds all reach

the exact same point in the original sample and then slowly drift back apart. After the climax, the texture thins out and the resonant glass pitches ring out, accompanied by a few scraping cinderblock sounds reminiscent of the beginning. By 12'00", the distant crumble is starting to fade and the pitch of the glass ends the piece.

This thesis is composed by Jeffrey David Nellans, a Master's student at Ball State University in Muncie, Indiana, under the primary guidance of Michael Pounds, along with Keith Kothman, and Jody Nagel. It reflects the knowledge and mastery gained of the electronic music world as an undergraduate as well as a graduate student of the Music Technology Program. While attending Ball State, Nellans has studied composition directly under Cleve Scott, Michael Pounds, Keith Kothman, Jody Nagel, Eleanor Trawick, David Foley, and Joseph Harchanko. All of whom have helped inspire, shape, and direct Nellans' style and individuality as well as vastly improve his skill as a modern composer.

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