Sculpting Sound

An Exploration of Aural Perception and Relationships

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Section 3

From the most cacophonous clattering of instruments to the simplest note whispered by a single pluck of a string, music is a constant shuffle of reinvention. Within this vast expanse of blending sound, even the slightest change in tempo or pitch can generate an entirely different piece of music. Though despite the endless possibilities for music itself to manifest, technology still only provides a few standard ways in which to experience music.

Sound is like any medium. It can be sloshed across bodies like paint on a blank canvas, or seep into minds like silicone methodically pushed through a syringe to fill a mold. Sound can be bent, bifurcated, and tortured like a scrap of metal or softly molded and compressed like a clay vessel. Using speakers alone is to suggest that sound is not a malleable medium, capable of being formed into whatever the artist imagines. The intangible is only limiting if we do not allow ourselves to experience it for fear of what we cannot see.

For my Integrative Project, I created vessels that enhance the processes of a simple speaker, and change how sound is perceived. My hypothesis was that using similar shapes and solutions applied to musical instruments and acoustically driven spaces, I can affect the listening experience of the audience. I built three ceramic vessels that change the acoustics through natural processes, texturing the sound differently in each. The hollows of each vessel are crafted to change the way the sound moves from speakers hidden in the bottom of each form to the ear of the listener.

The outer surfaces of the vessels are equally as important as the interior shapes. The physical textures on the outside of the forms serve a different

function. They inform the viewer of the relationship between the auditory and visual structures. At the same time, the carvings are ambiguous, allowing the audience to make their own inferences about these relationships, as well as the nature of the sound itself.

Air blown through the bell of a trumpet births a completely different tone than that very same air blown through the hollow of a flute; however, when we filter those tones through various sets of speakers the resulting sounds are similar, varying only on a scale of low to high quality. The true difference in how the sound is perceived is discovered only when one plays the sound in different settings—an echoic cathedral versus a small, confined space, for example. These acoustic-specific spaces placed around the speakers, create a similar perceptual difference, only more deliberately, and on a scale that allows the listener to experience multiple variations at once.

After researching a variety of physical spaces that provide different acoustics, I decided on three different internal shapes for these experiments. The first is based on the physics of a horn or trumpet. A hollow cavity in the bottom tapers upwards into a long tube, which then widens into a bell shape at the top of the sculpture. Vertical groves within the interior (fig. a) help absorb some of the echo. The resulting sound is semi-echoic and open. Conversely, the second sculpture is meant to generate perfect acoustics. Based on anechoic chambers (rooms designed specifically to eliminate echoes), the sculpture is built on a dome filled with multi-directional, beveled strips (fig. b). The opening to the sculpture is just small enough to be covered by the listener's ear (fig. c), providing a very clear, crisp, and intimate experience. The last sculpture of the three takes the

opposite approach. A completely hollow and enclosed vessel with only small holes to allow sound out will create a very echoic and somewhat distorted version of the sound. Thinner walls will allow the sound to resonate around the space, and take full advantage of the ceramic surface (fig. e).

There are a number of issues that I had to overcome in order to make this project successful. The first of my concerns is aesthetics. The wiring for the speakers will need to be inconspicuous, or aesthetically interesting. Allowing the pieces full functionality without compromising on the overall visual appearance is a challenging feat. To solve this issue I built a pedestal with three holes in the top through which the wires are run. All of the wiring, chargers, and MP3 players are stored within the pedestal, and the sculptures fit snugly over the top of the speakers. All the electronics are plugged into a strip, allowing only one inconspicuous plug to exit the back of the pedestal.

The second concern is testing and experimentation. Due to the lengthy process of creating ceramics, it was difficult to test speakers inside of their respective structures until far along in the process of each one. I am viewing these sculptures as experiments in sound manipulation, rather than perfectly tested works. Listening to the final pieces, I was pleased with the variations in sound, and simultaneously satisfied knowing that these are only some of the first of many iterations to come for which improvements will be made.

For the sculptures, I chose to use clay. I wanted a material that was a malleable in nature as sound. I needed something that could be molded and shaped into any texture on both the outside and the inside, and something that would provide an interesting resonance and variations in timbre when combined

with amplified sound. No two marks are alike when working with clay, which is essential to making the textures flow around each vessel, parallel to the sound flowing between them. The clay surfaces provide a level of depth and detail, which both lend themselves to a story, and also keep the viewer's intrigue for as long as the sounds do (fig. d). The textures allude to the nature of the sound, but they do not mimic it. This allows for the audience to follow the flow of the sound, while still forming their own opinions of its meaning.

For the sound itself I wanted to create a dynamic and ambient piece of music that both resonated well within the forms, and also intrigued the listener. I worked with three talented musicians to gather the sounds. A violin, an electric guitar, a keyboard-made synthesizer, a saxophone, and my own singing voice were the components I layered in the final iteration. To collect these sounds, I used a H2 Zoom recorder in a quiet space to get clear recordings. I wanted the sculptures to be the main source for the differences in sound, rather than using lots of effects in post-production, so clear sound was key.

The vision I had for the sound is a progression from soft and subdued to quicker and layered. I prompted the musicians to envision wading in an ocean, feeling the crash of the waves, then emerging into an open forest, and picking up speed as they whisked past the trees, and finally blasting into outer space, a limitless expanse where logic took a backseat to exploration. They listened to each other's music over a set of headphones as they improvised along. Later I mixed all of the interpretations together to make a piece with moments of both calm and excitement. The final piece was about five minutes long. I looped it once to make the run time about ten minutes and created three separate tracks, one for

each sculpture. I faded the sound in and out at different points on each track, allowing some time for all three to play together as well. The result was a piece that was synchronized between the three vessels. (The sound can be experienced on my website at http://www.elianagershon.com/#!thesis/cus2.)

The surface treatments for these sculptures I chose to do in acrylic paint. I chose paint over glaze because I enjoyed the finish of the medium and the control I have over the end result. Some of the colors I chose reflected the sound "journey" I explained to the musicians, such as the deep blues and purples for outer space or the soft grays and light blues for the waves of the ocean (fig. f). The bright blood orange hue used in all of the orifices of the pieces was to highlight the continuity and emphasis of the sound in the installation.

Though my materials seem disparate, I worked symbiotically, weighing the form of each object with the sound it encases. My process was both intuitive and methodically planned. I started with a series of sketches, which outlined how and why a sound would play out from each vessel in a particular manner. Next, I started working on both the vessel and the sound, allowing the textures to influence each other throughout their construction.

Sculpting the clay has three distinct phases. The first is to form the functional interior. I constructed a hollow structure designed to mimic the acoustics of a musical instrument, and fit the necessary dimensions of the speakers. After filling the open space with newspaper for support, I am ready to begin forming the exterior form, a rounded and simple shape, in order to provide a blank canvas for sculpting textures. Finally, I apply the textures, adding and removing clay, pushing, carving, and scraping away at the body of the sculpture. I

am sure to incorporate the texture around the necessary cavities for the sculpture to maintain a fluid design. After the sculpting is completed, a monitored drying process allows the clay to solidify without cracking. Once the clay is bone dry, it is ready to be fired.

After the firing, I had another obstacle to overcome. Two of my sculptures broke into large pieces in the kiln. As I knew this was a risk when undergoing this project, I did not waste a moment, and found a way to rebuild them. I used a two-part epoxy to adhere the pieces back together, and then used East Valley Epoxy, a pliable, clay-like adhesive to fill in the cracks and rebuild pieces of the broken forms. Sanding and priming made the breaks non-existent (fig. g and h). Though this took some extra time, the lesson in repairing ceramics was valuable.

Finally, the paint was applied using a variety of techniques. Dabbing and brushing paint on with a small paintbrush created the surface of the first sculpture (fig. d), while a process of brushing on and wiping away watered down paint with a paper towel was used for the third (fig. i). The differences in techniques gave the sculptures each their own unique aesthetic, while still being drawn together through color in addition to the sound.

My interest in this work began in my sophomore year, when I became fascinated a the notion of weaving sound together so as to trick the ear into hearing a traveling pattern of sound from space to space. A process of easing one sound out of one set of speakers as it crescendos out of a second pair created a haunting effect that. I used the technique, improving it along the way, in short headphone-based pieces (moving the sound from right to left) and larger installations. For instance, a piece I created called “Publicity” used this technique

to make it sound as though people were walking or running between two sets of scenery, using only two sets of speakers.

I soon realized that the space around the speakers themselves was affecting the outcome of the sound. Rather than work around those limitations, I decided to create my own, by sculpting two ceramic vessels that textured the sound intentionally. One produced a loud, ethereal echo, while the other produced an eerie and subdued sound. Making these intangible sounds feel real and tactile was thrilling and rewarding. Doing something that was rarely explored in the art world was exciting, and prompted my further investigation for my Integrative Project.

Though work of this nature is not easy to come by, I was very inspired by many sculpture and sound artists. Their aesthetic choices and compositions were influential for my both my IP and also my overall approach to the artistic process. One artist whose work I find inspiring is Mehmet Ali Uysal, whose large, site-specific installations challenge the viewer to redefine ordinary objects. My sound sculptures work in a similar way, asking the viewer to reinterpret how sound is supposed to be experienced. Another inspiring artist is Janet Cardiff, whose sound work is captivating and dynamic. I strive for my work to mimic her ability to create an atmosphere and evoke the feeling of a space through sound alone.

My goal is for the listener to take a journey along with the sound. I want them to approach the piece with an idea of how he or she can experience sound, and leave with another. One should be able to walk up to the sculptures at any given time, and experience a fluid progression of sound.

Moving forward, I foresee this project coming a long way. I hope to continue to research and experiment with different ways of listening and experiencing a piece of sound. In the future I would like to pay even more attention to how a listener will approach a piece, and how he or she will interact with it comfortably. It is impossible to sum up all I have learned on this journey. My artistic process has been altered as much as my understanding of myself as a creative thinker. I feel that I have not gained all of the tools I will ever need, but rather I have gained the drive and the zeal to continue learning, exploring, and creating wherever life takes me.

Figure A

Figure B

Figure C

Figure D

Figure E

Figure F

Figure G

Figure H

Figure I