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UNIVERSITY OF CALIFORNIA SAN DIEGO

The Healing Power of Sound in Theatre

A Thesis submitted in partial satisfaction of the
requirements for the degree Master of Fine Arts

in

Theatre and Dance (Design)

by

MaeAnn Ross

Committee in charge:

Robert Brill, Chair
Mark Guirguis
Natalie Griffith-Robichaux

2020

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The Thesis of MaeAnn Ross is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

Chair

University of California San Diego

2020

DEDICATION

To my parents, Scott and D'Ann Ross

To Holden, Andrew and Mona

To my lifetime colleagues and collaborators

To all the educators, mentors, and collaborators who put me down; who's laughing now?

To my sweet kitty Ireland; momma loves you. Thank you for always being by my side.

TABLE OF CONTENTS

Signature Page.....	iii
Dedication.....	iv
Table of Contents.....	v
List of Supplemental Files.....	vi
Acknowledgements.....	vii
Abstract of the Thesis.....	viii
Thesis : The Healing Power of Sound in Theatre.....	1
Bibliography.....	10

LIST OF SUPPLEMENTAL FILES

File 1. *An Iliad* Photo 1, Ross_Iliad_Photo_1.jpg

File 2. *Man in Love* Photo 1, Ross_MIL_Photo_1.jpg

File 3. *Revolt. She Said. Revolt Again.* Photo 1, Ross_Revolt_Photo_1.jpg

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ABSTRACT OF THE THESIS

The Healing Power of Sound in Theatre

by

MaeAnn Ross

Master of Fine Arts in Theatre and Dance (Design)

University of California San Diego, 2020

Professor Robert Brill, Chair

In my time at the University of California, San Diego, I have experimented with how sound physically affects the human body. There has been a swarm of research that not only suggests that sound therapy re-aligns your brain and helps with mindset changes, but that the sound waves and vibrations can alter your body physically.

The same concepts used in sound healing and therapy practices, such as sound baths, intention focus, and low frequency sound stimulation, can be translated into theatrical practices. This dissertation will lead you through a few practical applications of using sound healing ideas in theatre, but also examples of how and why sound is not just an aural based medium.

THE HEALING POWER OF SOUND IN THEATRE

In February 1988, the Science section of The New York Times printed the headline “Sound Is Shaped Into a Dazzling Tool With Many Uses”(Goldman). As a sound designer, I have always been fascinated with how sound makes a person feel on an emotional level. Quick tempo music accompanied with dramatic action onstage can make an audience member feel tense or anxious. A soft piano melody accompanied with a sweet tender moment between two characters can make the audience feel warm inside. For most people, the emotional side of what we experience while watching a play is what we remember most, or have the strongest feelings about.

But what about the physical way that sound affects our bodies? When you go to a rock concert, more often than not, the music is loud, the people attending are loud and you usually know the lyrics so well that intelligibility doesn’t quite matter at that point. But what makes a good concert is the way the music makes you feel within your body. The bass thumping through the speakers that keeps you in rhythm, pulses through your body and leaves an impact on your experience more than “Can I understand every word of every song?”.

Much of what we hear is dependent on the surfaces that the sound waves are bouncing off of. Depending on bodily attributes, like age and ear health, in tandem with other external stimuli, such as acoustic environment, the same sound can be perceived differently by a group of people. The human ear can nominally hear sounds in the range of 20 Hz to 20,000 Hz. But tones under 20 Hz can mostly only be perceived via the body's sense of touch.

Imagine this; your heart starts to race, the hair on the back of your neck stands on end, you feel a little sick to your stomach. We've all heard of the "fight or flight" response, also sometimes referred to as an evolutionary response. In the same way that some animals know when there is about to be a natural disaster or when the weather is drastically changing, humans also have a sensory reaction to their environment. There are certain situations and stimuli that seem to make everyone's hair stand on end; scratching on a chalkboard, a cold gust of wind, the power suddenly going out. These same phenomena that affect everyone on a physical level, also translate to sound.

The first show I designed in my time at University of California, San Diego was a production of *Revolt. She Said. Revolt Again.* by Alice Birch directed by Sean Graney. By way of our mentor at the time, we were able to bring down two Meyer VLFC (Very Low Frequency Content Element) subwoofers. These subs only emit frequencies between 13 and 30 hertz. At those frequencies, the human ear can't detect the actual sound being made. Your body can only hear the vibrations the air and the encasing of the sub makes on the surrounding surfaces. So, if you run the VLFC's at a certain volume, you feel the vibrations in your body without actually hearing any sound. The play *Revolt. She Said. Revolt Again.*, gets more and more absurd as the show progresses. With each scene change, I increased the volume and frequency of the content coming through the VLFC's so that the air got "thicker" with low frequency content as we went; so that by the end of the show, the audience felt physically uncomfortable. This sensation and practice falls under the study of psychoacoustics.

Psychoacoustics is basically the study of psychological and physiological interactions with sound. Psychoacoustics essentially relies on the idea that sound waves produce unconscious activity within the brain. Sound is broken down by the brain into neural information. This process happens much faster than our conscious mind can perceive, meaning that we are involuntarily responding to the sound world around us, hence evolutionary responses (Agarwal).

There is an undeniable way in which the rhythms and noises in music and sound affect the way we feel and react physically. But what if we can take the fundamentals of psychoacoustics and use it as a healing tool? A great deal of psychoacoustic research is directly related to issues of hearing impairment. Many of the psychoacoustic procedures, data, phenomena, and theories have been developed to diagnose and treat hearing loss. Data from listeners with hearing loss often shed light on the mechanisms of normal hearing (Yost).

We have two tiny muscles in the inner ear, the hammer and the stirrup muscles. These two muscles play an important role in focusing and helping the ear to adjust to sound. Damage to these inner ear muscles occurs in almost everyone through life, stress or accidents. The result is that these ear muscles lose tonality. Fine tuning the muscles in the inner ear has many benefits and has been proven to assist in the following conditions; tinnitus, hearing loss, and Cocktail Party Syndrome, or the inability to distinguish background noise from conversation.

For a long time, there was no treatment for tinnitus. It's a very standard practice that most doctors and audiologists tell the client that nothing can be done for tinnitus and that you just

have to learn to live with it. Nowadays, the primary treatment, which has been most effective for many tinnitus sufferers, is sound therapy.

When you have tinnitus, the ear muscles are firing repetitively in the absence of sound. If that pathway gets stuck in the 'on position' and keeps firing repetitively without an external trigger, that's tinnitus. Sound therapy rebuilds normal neural pathways in the brain and trains the brain to hear things normally again, thereby allowing the ear to regain its function of focusing on sounds and discerning conversation from background noise. It distracts your brain from paying attention to tinnitus sounds, which can help it 'filter out' tinnitus over time, to the point that it no longer bothers you. This process is called habituation.

In theatre, we train the brain to do a lot of things over the span of about ninety minutes. In the same way that tinnitus treatments habituate the brain and ears, repetitive practices in theatre habituate the audience into the language we've created for the play. I've started to think of a sound design of show in terms of tethers, meaning "what is grounding us in this story and how do we move the audience through the play while keeping within the same themes?". By using repeated sounds or sounds that are similar in one way or another, be it instrument, tonality, rhythm, etc., you can bring the audience into the language you've created for the show and help them understand the world and how it works.

Besides hearing and balance, our ears have another really important role which is to stimulate the brain with high frequencies. High frequency sounds charge brain energy, whereas low frequency sounds discharge brain energy and tire us. When we hear high frequency sounds, they are bringing sound energy into different centers of the brain which enhances its functioning in many different areas (Sound Therapy International). A theatrical

example could be using high frequency tones in combination with or in contrast with low tones to keep the audience engaged and alert to the action on stage. In my final production at UC San Diego *Man in Love* by Christina Anderson directed by Stephen Buescher, there were a lot of split scene moments where a character would drag a “dead body” across the stage while another scene was happening across the stage. I used high pitched tones and string chords to punctuate those moments and bring the audiences attention to the action. These sounds also added to the ominous nature of the show and helped build tension as the main character continues his killing spree.

In addition to psychoacoustics, sound therapy has wide ranging indications for a number of different mental and physical illnesses. There are some studies that suggest that deep listening and meditation can help with anxiety and focus. Therapeutic sound on the other hand, uses sound frequencies to retrain the brain to think differently. Sound-based vibration treatment has been shown to help people with pain from arthritis, menstrual, postoperative, and joint replacement pain. Sound-based treatment has even been found to improve mobility, reduce muscle pain and stiffness, increase blood circulation, and lower blood pressure. One theory is that sound works through the vibrational tactile effects on the whole body. Sound could stimulate touch fibers that affect pain perception. One study of people with fibromyalgia found that ten treatments of low-frequency sound stimulation improved sleep and decreased pain, allowing nearly three-fourths of participants to reduce pain medication.

When we hear the word ultrasound, our minds automatically go toward fetal ultrasounds and ultrasound imaging, or sonography. Ultrasounds in the broader sense are used to measure distance and detect objects. Examples of ultrasound in nature include bats and whales.

Basically what happens when an ultrasound is done is that a transducer emits high-frequency sound, near 20 kHz and sometimes up to several gigahertz; frequencies the human ear can't detect. The echoes of the sound waves bounce back to determine the size, shape, and consistency of soft tissues and organs. This is how bats and whales know where other animals and objects are within their environment, sometimes across long distances. From an ultrasound imaging standpoint, those echoes are recorded and produced on a computer screen in real time, creating an image of the surfaces that the sound is reflecting off of. Ultrasound therapy on the other hand works in a different way (Sears).

Applications of ultrasound in medicine for therapeutic purposes have been an accepted and beneficial use of ultrasonic biological effects for many years. Low power ultrasound of about 1 MHz frequency has been widely applied since the 1950s for physical therapy in conditions such as tendinitis or bursitis. In the 1980s, high pressure-amplitude shockwaves came into use for mechanically resolving kidney and bladder stones. This technique, called "lithotripsy", soon replaced surgery and was the most frequent treatment choice (Sears). This treatment falls under the category of a non-thermal use of ultrasound. Non-thermal ultrasounds induce cavitation, which causes microscopic gas bubbles around your tissues to expand and contract rapidly. The expansion and contraction of these bubbles help speed cellular processes and improves healing of injured tissue.

The use of ultrasonic energy for therapy continues to expand, and approved applications now include uterine fibroid ablation, cataract removal, surgical tissue cutting and hemostasis, transdermal drug delivery, and bone fracture healing (Sears). A more non invasive use of ultrasound therapy is deep tissue heating. Ultrasound is often used to provide deep heating to

soft tissue structures in the body. Deep heating tendons, muscles or ligaments increases circulation to those tissues, which is thought to help the healing process. Increasing tissue temperature with ultrasound is also used to help decrease pain. Deep heating can be used to increase the "stretchiness" of muscles and tendons that may be tight. If you have shoulder pain and have been diagnosed with a frozen shoulder, your physical therapist may use ultrasound to help improve the extensibility of the tissues around your shoulder prior to performing range of motion exercises. This may help improve the ability of your shoulder to stretch (Sears). Heat therapy is used to treat many health complaints, including arthritis, muscle spasms, muscle sprains and strains, and even cancer, according to the American Cancer Society (Hughes).

Meditation and other forms of sound healing have also shown great success in re-aligning the body and putting people at ease. People claim that sound healing practices can improve sleep patterns, increase mood, aid in deep relaxation and stress alleviation, and can relieve anxiety and depression symptoms. A few physical reliefs people have experiences are fewer headache and migraine attacks, shrinking of ovarian cysts, reduced inflammation and improved joint function, modification of the heart rate, blood pressure, breathing depth and rate and enhances to the immune system (Meade).

While meditation can be a powerful tool, sound meditation is a form of focused awareness type of meditation. One kind that has become more popular is called "sound baths," which uses Tibetan singing bowls, quartz bowls, and bells to guide the listener. These practices highlight themes of how the experience of sound manifests not only through hearing but through tactile physical vibrations and frequencies. Some instruments used in sound

healing are water drums, talking drums, clay pot drums, ocean drums, the bodhran, tabla, cello, sound bed, singing bowls, crystal singing bowls, rain-sticks, and water-phones.

In UC San Diego's production of *An Iliad* by Denis O'Hare and Lisa Peterson directed by Juliana Kleist-Mendéz, we used a singing bowl, not only as a visual of a ceremonial instrument, but also to strike and highlight specific sound and spiritual moments. The whole show was full of live sound and other instruments, so by having a singing bowl played live onstage, not only did we have the activation of live sound, but also the physical experience and vibrations the bowl emits. Similarly, recordings of singing bowls have come up in my work quite frequently recently to help create beds of sound in underscoring. The oscillation of sound waves and frequencies that the bowls give off make for an undertone that has movement and keeps your ear engaged. *The Human Body Time Machine* dance show choreographed by Aurora Lagattuta, also benefited from "sound bath" type practices in sound to help create the serene, relaxing environment we were trying to evoke. In an interactive theatrical setting, sound bath type uses of sound coupled with calming visuals evokes an experience that audience members can settle into and feel like they can be a part of.

The American Heritage Dictionary defines healing as the act of restoring to health or soundness (cure), to set right (repair), and to restore to a spiritual wholeness. Jonathan Goldman's book *The 7 Secrets of Sound Healing*, outlines the equation for sound healing as frequency + intent = healing, meaning that without the intent to heal and restore balance, the healing is moot. He goes on to reference an experiment with Kinesiology, or the study of human body movement paired with Intent. Researchers went out and recorded the sound of the ocean. They then comprised a group of meditators to come in and meditate to the sounds

of the ocean. They then had the group focus on different things during each cycle of meditation. During the meditation, the researchers tested the group's strength and blood pressure. They first had the group just meditate to the sounds of the ocean without an intention. The group tested strongly, indicating that nature by itself can be grounding and healing. When the group focused on peace and love, the group tested even stronger, indicating that positive intention is more healing. In the final phase, the researchers asked the group to meditate and focus on anger and fear. The group tested very weak during this phase, indicating that negative intention can be harmful (Goldman).

Science is still catching up to understanding how sound heals, but the current research is promising. A review of 400 published scientific articles on music as medicine found strong evidence that music has mental and physical health benefits in improving mood and reducing stress. In fact, rhythm in particular, over melody, can provide physical pain relief.

All of these uses of sound can in some fashion be translated to theatre. Whether they be recorded or live, sound healing instruments can be used in live performance to achieve multiple effects depending on the moment. It's important to engage the audience physically as well as mentally into not only a production as a whole, but also the sound design.

Bibliography

Agarwal, Rajiv “Psychoacoustics : The Power of Sound”. *Medtech Acoustical*.

Goldman, Jonathan. *The 7 Secrets of Sound Healing*. Hay House, 2008, 2017.

Hughes, Martin. “What Are the Benefits of Hot & Cold Therapy?”. *LEAFtv*.

Meade, Bradley. *Sound Healing : Your Definitive Guide To Using Vibrational Healing for Health, Wealth & Happiness*. 2017.

Sears, Brett "Does Ultrasound Therapy Really Work?". *verywell health*. 5 Aug. 2016. 26 Jan. 2020.

Sears, Brett “Therapeutic Ultrasound in Physical Therapy”. *verywell health*. 19 Nov. 2019.

Yost, William A. “Psychoacoustics : A Brief Historical Overview”. *Acoustics Today*.

“Sound Therapy : A Treatment for Tinnitus and Hearing Loss”. *Sound Therapy International*. 1 Dec. 2017.