

# **AN ACOUSTIC EDUCATION**

EVALUATING SOUNDWALKS AND LISTENING EXERCISES IN PROMOTING AURAL AWARENESS  
AND SENSITIVITY IN LANDSCAPE ARCHITECTURE EDUCATION

by

SAMANTHA M. JARQUIO

A THESIS

submitted in partial fulfillment of the requirements for the degree

## **MASTER OF LANDSCAPE ARCHITECTURE**

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Approved by:

Co-Major Advisors  
Alpa Nawre & Anne Beamish

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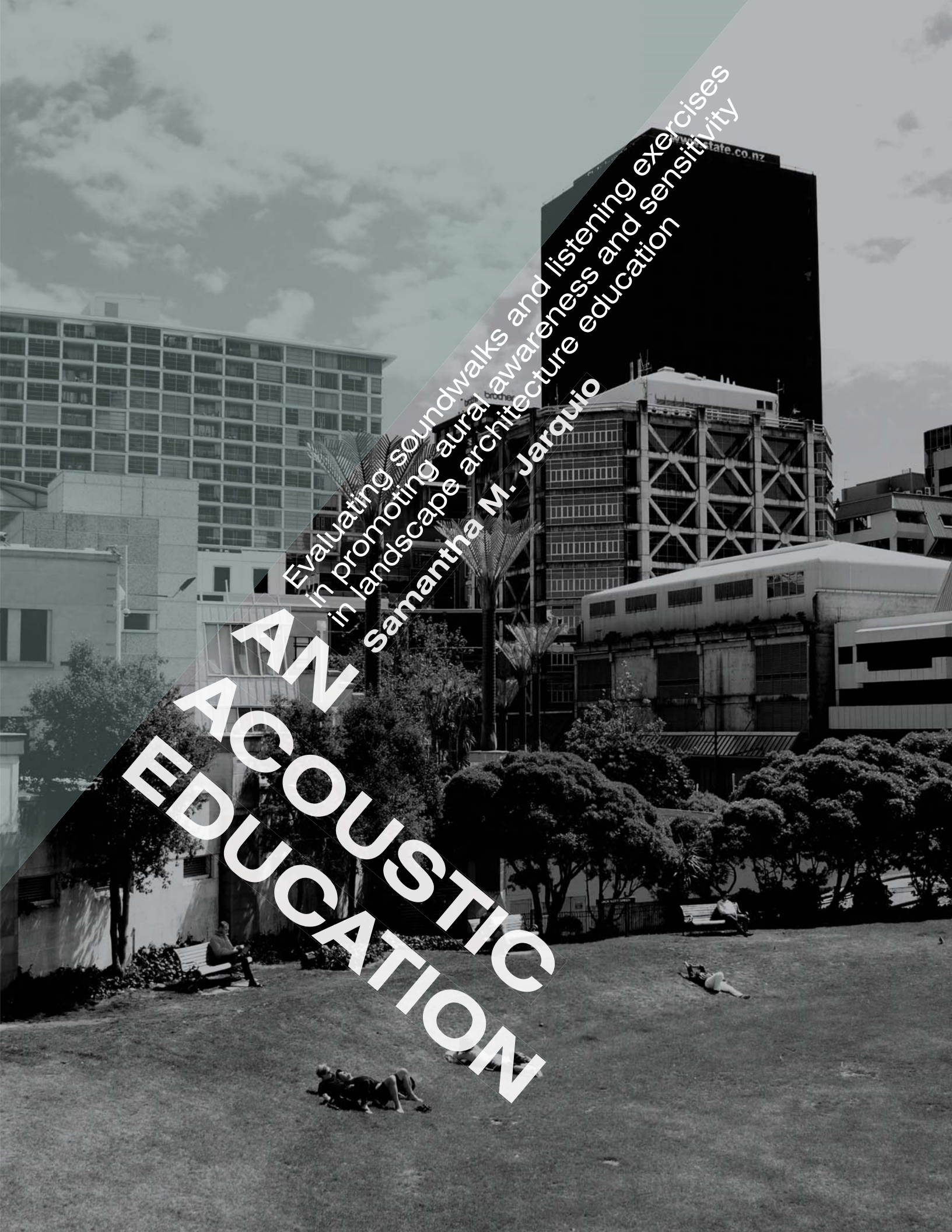
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## **Abstract**

Sound has always been an integral part of the outdoor environment. However, since the onset of the Industrial Revolution, and given the continual emergence of new technological sounds, society's aural awareness and sensitivity has continued to decrease (Schafer, 1977). While the visual often dominates the perception of the outdoor environment – especially within the design field – all five senses are vital to a holistic experience. A greater emphasis on sound in landscape architecture is critical as landscape architects move toward a more holistic approach to designing the outdoor environment.

The primary learning objective of this thesis was to evaluate the effectiveness of soundwalks and listening exercises for landscape architecture students, as a way to increase their aural awareness and sensitivity. The first part of this study established the current status and need for an acoustic education in landscape architecture by examining university course offerings and surveying professionals and faculty members in the field. The remainder of the study involved a listening experiment conducted with landscape architecture students from Kansas State University. Participants were assessed on their ability to listen to and analyze sounds before and after participating in soundwalks, listening exercises, and lessons in interdisciplinary sound terminology.

This study provides a clearer understanding of the role of sound in landscape architecture and, more broadly, the environment. The surveys revealed that respondents more often consider sound as noise to be mitigated rather than as inspiration for design. Respondents also indicated that sound is an important consideration in design and that an acoustic component can be valuable in landscape architecture education. Those who participated in the listening experiment also indicated that an acoustic education, including soundwalks and listening exercises, can be effective in increasing aural awareness and sensitivity. While this study did not explore all approaches to an acoustic education, it provides a suitable point of departure for future related research.




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Evaluating soundwalks and listening exercises  
in promoting aural awareness and sensitivity  
in landscape architecture education  
Samantha M. Jarquio

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Cover photo taken by author during study  
abroad in Wellington, New Zealand, Spring 2012.  
While there were many different soundscapes  
in the city, this space is particularly acoustically  
interesting. Bordered by high rises on one side  
and the harbor on the other, this space offers a  
diverse palette of sounds on any given day.

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**An Acoustic Education**

**Evaluating soundwalks and listening exercises  
in promoting aural awareness and sensitivity in  
landscape architecture education**

A Thesis

May 2013

**Kansas State University**

*College of Architecture, Planning & Design*  
Department of Landscape Architecture and  
Regional & Community Planning

**Thesis Committee**

*College of Architecture, Planning & Design*  
Department of Landscape Architecture and  
Regional & Community Planning

**Co-Major Professor Alpa Nawre**

**Co-Major Professor Anne Beamish**

*College of Arts & Sciences*

School of Music, Theatre, & Dance

**Tertiary Member Dr. Craig Weston**

*For Ben and my loving family.  
I am eternally grateful for all your support these past 23 years.  
Ben - I can't wait to start the rest of our lives together.*





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## ABSTRACT

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Even from the remote town in which the humble farmer resides, he can hear the church bells of the city resonating from their towers through the hills. As he saunters to the market, the merciless ringing of the pendulous arm against the heavy brass casing gradually crescendos until he arrives at the base of the campanile. As he drives along the meandering dirt road with his windows wide open, the wind whistles in his ears almost as loudly as the roar from his truck. This is his weekly occupation – to traverse the undulating hills from his quiet and otherwise serene hometown to the bustling and cacophonous city market. The farmer enjoys a bit of solitude, as he is the first farmer to appear in the empty lot in which the city has allowed the market to take place every week. He sets up shop in his regular spot near the artisan coffee shop, listening to the whir of coffee grinders and espresso machines from within. He does not need to look up from his work to recognize the familiar tone of more trucks pulling into the lot to sell their produce and wares.

More sounds fill the city soundscape as other farmers climb out of their rumbling trucks and begin to unload them. The screech of tent poles on concrete pervades the air. Plastic crates are piled one on top of the other with the sound of bouncing vegetables within creating a raucous rhythm. Table legs crash to the ground as they are positioned under tents. Crates are piled and lined up in a neat, colorful organization to attract potential customers. The bells of the campanile sound their recognizable melody at the top of the hour. It is now nine o'clock, and the farmer's market is open for business.

Within minutes of the campanile's final chime, cars begin to pull up filled with families coming to shop for their weekly produce and other necessary merchandise. Human voices fill the city soundscape. Some customers have even brought along their dogs to the outdoor event, each one attached to a leash, with a jingling nametag at the neck. A dog barks, and the farmer jumps in surprise, only to find the source of the sound to be a miniature dachshund lingering at his feet. Its owner is perusing the fresh corn and tomatoes meticulously laid out on the table in front of him. The farmer is keen to this active environment. After traveling back and forth for many years to and from the city market, he has become accustomed to both the countryside and the urban setting. While he seeks refuge in the quiet isolation of his home in the country, he appreciates and is entertained by the diverse soundscape of the city, which fuels his passion for farming and community.

## A SHORT NARRATIVE



Prior to conducting the listening experiment for this study, I believed I was familiar with the locations selected for the soundwalks, given that they were all either on or near campus. I have walked across Bosco Plaza almost every day since I began my studies at Kansas State University. An early studio project was sited in the McCain Quad and involved the placement and design of an outdoor amphitheater. I have been to Aggieville numerous times at different hours of the day for shopping, eating, and recreational activity. As both the administrator and a spectator of my listening experiment, I was surprised to find that there were significant aural qualities of each site I had unwittingly overlooked in the past.

For instance, the constant hum of air conditioning units scattered across the entire campus was discernible in the soundwalks at Bosco Plaza, Hale Quad, McCain Quad, and the parking circle. I can only attribute this oversight of sound to having developed a degree of familiarity with the campus soundscape, and being accustomed to the sounds of an urban environment. After completing the soundwalks and reflecting on my previous studio projects, I found it strange that my analysis of McCain Quad could indicate suitability for an outdoor amphitheater. With upwards of five air conditioning units surrounding the quad and the central HVAC unit serving McCain Auditorium being not only aurally dominant but a visual monstrosity, it is unfortunate that I did not make more note of it at the time. Had I been more sensitive to sound at this point in my education, this type of analysis could have directed me to a much stronger design concept and more relevant programming for my site design.

I was somewhat disappointed that I had not previously discerned the masking of human and nature sounds by the blanket of white noise present on campus at all times of the day. Beneath this blanket I could hear voices, footsteps, traffic in the distance, leaves rustling, crickets chirping, and more. I could distinguish how sound propagates in open air as opposed to enclosed spaces, on hard or soft ground, on wet or dry ground. After 23 years in this world, and after five years of formal education in landscape architecture, it took one soundwalk for me to close my eyes and listen to how sound affects the experience of the outdoor environment.

## PREFACE



**[FIGURE 1.01]**

The garden soundscape is typically associated with nature sounds, calming, and peaceful. Photo taken by author (2012), at the Wellington Botanic Gardens in Wellington, New Zealand.



[01]

INTRODUCTION

*“Imagine if architecture students were requested to analyze acoustic environments of existing buildings with the same intensity as music students are asked to analyze existing musical compositions; or if students of urban planning were asked to analyze acoustic environments of existing parks or residential areas.”*

WFAE. *Soundscape: The Journal of Acoustic Ecology*. 3. 2001.

# [01]

## INTRODUCTION

### 1.1 THE LEARNING OBJECTIVE

The primary learning objective of this thesis is to evaluate the effectiveness of soundwalks and listening exercises for landscape architecture students as a way to increase aural awareness and sensitivity in landscape architecture education. With a greater appreciation for outdoor urban soundscapes, landscape architects can design more holistic landscape experiences. The direction of this study was shaped largely by my passion for listening to and performing music. I wanted to integrate my musical background with my current training in landscape architecture and challenge the visual dominance in the field. In the early stages of my research, I arrived at the notion of *soundscapes*, and the research conducted by the pioneer of this field – composer, writer, educator, and environmental activist, Raymond Murray Schafer. His approach to thinking about the environment as an unending musical composition appealed deeply to the musician within me. After reading his seminal work, *The Soundscape: Our Sonic Environment and the Tuning of the World* (1977), my thoughts gradually began to take shape.

I quickly realized that the concept of ‘hearing the landscape’ had never been formally introduced in my landscape architecture education to date. In previous semesters’ projects, I had been inspired, for instance, by the *form* of musical instruments – as the visual often dominates the designer’s perception – but never by the real *acoustic qualities* of a site. I questioned early on in my research why a multi-sensory approach to design had not been fully addressed in my education, particularly the sense of hearing. I also questioned the bias to more often consider sound in the outdoor environment negatively, as noise.

My thesis, particularly the methodology, evolved over the course of several months. As I learned more about the various areas of study concerned with the soundscape, including acoustic ecology, soundscape design, ear-cleaning, and critical listening, to name a few, gaps in the landscape architecture body of literature were revealed. These gaps include the absence of literature concerning sound and landscape architecture and the absence of literature concerning listening and landscape architecture.

I later came across two additional works that would influence a significant portion of the methodology for my research: R. Murray Schafer's *Ear Cleaning: Notes for an Experimental Music Course* (1968) and *A Sound Education: 100 Exercises in Listening and Sound-Making* (1992). These two works outline several listening exercises written for students in the fields of acoustic communications and music. However, there were a handful of exercises that seemed to lend themselves to being adapted for landscape architecture students. Schafer discusses the use of soundwalks to practice actively listening to *all* sounds in the environment (Schafer, 1977). I wanted to test the effectiveness of these listening exercises and soundwalks in increasing aural awareness and sensitivity to sounds among landscape architecture students.

The difficulty of measuring 'listening ability,' a change in the ability of research subjects, and remaining within a feasible timeline for the study quickly became clear to me while attempting to devise my methodology. I recognized the need to quantify this qualitative study by establishing measurable categories that could indicate a change, or lack thereof. My methodology is therefore designed to address a landscape architecture issue that is twofold: establishing the unmet need for an acoustic education in landscape architecture curricula, and quantitatively testing the effectiveness of Schafer's methods on landscape architecture students.

By promoting an increase of aural awareness and sensitivity to sound, it is my intent to help the reader understand that sound is an integral part of the outdoor environment and therefore, sound should play a more critical role in landscape architecture for the design of outdoor urban soundscapes. The absence of an acoustic component in the education of landscape architects is simply a missed opportunity for those deeply involved in the design of the outdoor environment.

The remaining sections of 'Chapter One: Introduction' will discuss the underlying dilemma behind this study, the relation of sound and landscape architecture, the research questions involved, and the primary hypotheses of the methodology. 'Chapter Two: Background' is a comprehensive review of the literature, which provides a foundation for this study. 'Chapter Three: Methodology' will present a thorough description of the methodology, while 'Chapter Four: Findings' will present the raw data collected from the surveys and experiments. Finally, 'Chapter Five' will provide conclusions from the study, thoughts on the methodology, and ideas for future research endeavors related to sound and landscape architecture.



## 1.2 THE DEGRADATION OF SOCIETY'S AURAL AWARENESS AND SENSITIVITY

Sound has always been an integral part of the outdoor environment. In the form of silence or cacophony, sound is as present as objects, infrastructure, people, wildlife, or the open air. Historians, writers, scientists, acousticians, and composers have thoroughly documented descriptions of soundscapes around the world. A brief history of acoustics and an overview of different types of soundscapes can be found in 'Chapter Two: Background.' Like so many objects and infrastructure brought into and exposed to the environment, sound changes and evolves over the course of time. Those who have studied soundscapes – namely Raymond Schafer, Barry Truax, and Hildegard Westerkamp, at the forefront of the soundscape movement – believe that the effects of this change and evolution are many; the greatest impact on the soundscape occurred with the emergence of industry during the Industrial Revolution.

There is no doubt that the beginning of the Industrial Revolution was signaled around the world, in large part, by sound, not just with the advancement of science (Schafer, 1977; WFAE, 2001; Truax, 2001; Thompson, 2002). With the changing acoustic environment, industrialization spawned a shift in society's ability to listen. It can also be argued that society made a cultural shift in how they listen to and interpret the outdoor environment, by turning away from their sense of hearing and toward their other senses to experience the landscape. In the decades since, society has experienced a gradual degradation of aural awareness and sensitivity to sounds (Schafer, 1977; WFAE, 2000; Truax, 2001). Schafer, in particular, wrote his seminal literary works on sound during the late 1960s and 1970s, a period of time imbued with a significant amount of environmental activism. His perspective seems to have been heavily shaped by these two decades, as he promotes a reduction of noise pollution within 'low fidelity (lo-fi)' environments, a term used to describe the overcrowding of sounds and lack of clarity of sound signals in the soundscape, in his book *The Soundscape: Our Sonic Environment and the Tuning of the World* (Schafer, 1977). It should be noted that this research is concerned not with the reduction of noise pollution or the creation of high fidelity (hi-fi) environments that Schafer advocated, but with increasing aural awareness in landscape architects to yield more critical consideration of sound in the design of the outdoor environment.

The role of sound in the design professions, especially landscape architecture, has been significantly impacted by society's response to the shifting acoustic environment. Though sound has always been an integral part of the outdoor environment, a strong connection between sound and landscape architecture has not yet been established.

Few have written about the significance of sound in the outdoor environment, and fewer still have discussed the importance of sound in landscape architecture. In fact, no literature was found during the course of this research effort on enhancing landscape architects' listening abilities. Design professionals, inherently reliant on the sense of sight, often neglect the sense of hearing. As a result, sound was not found to play a critical role in the education and practice of landscape architects. Nevertheless, as landscape architects we are the primary manipulators and designers of the outdoor environment and we therefore have an obligation to explore fully all aspects of the outdoor environment.

Another important part of my research was to find out if other landscape architecture programs have incorporated sound in their curricula. In doing so, I conducted a study of the top ten undergraduate and graduate landscape architecture programs in the United States, and it was made apparent that there are few courses addressing the acoustic environment. The 16 schools selected for the study were based on the 2012 DesignIntelligence rankings of top landscape architecture programs around the United States (ASLA, 2012). The following schools' curricula were evaluated for any required or elective courses addressing sound in the landscape (in ranking order): undergraduate programs include Louisiana State University, Pennsylvania State University, California Polytechnic State University-San Luis Obispo, Purdue University, Texas A&M University, University of Georgia, Ohio State University, Cornell University, Ball State University, California State Polytechnic University-Pomona; graduate programs include Harvard University, Kansas State University, University of Pennsylvania, University of Virginia, University of California-Berkeley, and University of Illinois at Urbana-Champaign. With the exception of Cornell University, none of the top-ranking schools offer landscape architecture courses that address sound in the landscape. Cornell offers one elective titled Audio Documentary, which focuses on creating "aural portraits" to tell stories of sites in New York and other changing communities (Cornell, 2012).

Mastery of any subject or ability begins with education and training. Any approach to learning about a new area of study should include a variety of components (Schafer, 1977; Grano, 1929 and 1997; Uimonen, 2008). The approach tested in this research involved soundwalks and listening exercises, which included interdisciplinary lessons on acoustic and psychoacoustic terminology. The multi-faceted nature of the experiment was especially critical to this thesis because the methodology was informed by several interdisciplinary sources, including some from non-design-related fields.

### **1.3 THE RESULTING DISCONNECT BETWEEN SOUND AND LANDSCAPE ARCHITECTURE**

#### 1.4 LISTENING AND THE EXPERIENCE OF THE OUTDOOR ENVIRONMENT

All five senses are vital to a holistic experience of the landscape (Porteus, 1985; Corner, 1992; Grano, 1997; Rose, 2001; Pallasmaa, 2005). Since firsthand experience of the landscape engages all five senses, no one sense can be more important than another. As landscape architects, we create firsthand experiences in the built outdoor environment, purposefully and strategically. We cannot fully experience any landscape on simply a piece of paper or a computer screen. That being said, while the visual is an inherently important part of the design process, the aural qualities of the physical outdoor environment should not be overlooked or considered unimportant to the experience of the landscape.

#### 1.5 THE LANDSCAPE ARCHITECT'S ROLE IN DESIGNING SOUND IN THE OUTDOOR ENVIRONMENT

An interdisciplinary approach is needed for introducing sound and its many facets to those in the field of landscape architecture. There are established connections to sound within other fields, including communications, music, and acoustic engineering. Landscape architects have the opportunity to borrow knowledge from others in the arts and sciences to become more familiar with sound and its potential to inspire design. The opportunity to harness sounds for the design of the landscape and the improvement of the outdoor urban soundscape is unique and largely unexplored.

This interdisciplinary approach took form primarily in Part Two of the methodology – the full listening experiment. Due to Schafer's musical background and being a professor of communications at Simon Fraser University (Truax, 2001), the listening exercises adapted for this part of the methodology were originally developed to be practiced by students in the fields of music and communications studies. The listening exercises tested in this study employed many terms from Schafer's soundscape research, as well as acoustic and psychoacoustic terms taught in sound-related fields.

Truax argues, "Whatever the reason, all developments that shape the acoustic relation of the person to an environment will occur at the crucial interface called listening, and all design criteria that are to be effective must proceed from an intimate understanding of the listening process" (Truax, 2001, 30). Truax explains the listening process as having three components – source, transmitter, and receiver – with the receiver ultimately assigning meaning and information to the source. There are different levels of listening, and to be at the highest, or most sensitive level, one must actively participate in the soundscape. As society continues to evolve in conjunction with the increasing presence of sounds in the outdoor environment, outdoor soundscape design is an increasingly important issue to address in landscape architecture. To understand the soundscape, landscape architects must first master the fundamentals of listening. By actively listening, aural awareness and sensitivity can

improve, thereby enabling more critical consideration of outdoor soundscape design.

This thesis does not attempt to reject the reliance on the visual in landscape architecture education. Nor does it try to convey that the sense of hearing is any more or less important than the sense of sight. This thesis does not attempt to address sound preferences or provide a set of sound design techniques, which are different areas of study entirely that have already been tested by other scholars. The listening exercises in this study are not to be confused with the listening exercises of musicians, though aspects of the methodology for this thesis were adapted from exercises written by Schafer for musicians. Lastly, this thesis does not attempt to propose specific courses on sound, but rather tests one approach to an acoustic education, which incorporates soundwalks and listening exercises.

The primary research question was preceded by three supporting research questions. I began my search for answers seeking the current role of sound in landscape architecture practice and education, which seemingly did not play a very significant one, according to the literature I had read early on. Upon being inspired by the literature on soundscapes, it became clear that aural awareness and sensitivity to sounds are integral skills in understanding and designing the soundscape – skills which are not currently emphasized in the education of landscape architects. The supporting questions of this study address the current role of sound in the field, as well as the perception of landscape architecture professionals and faculty members on the incorporation of an acoustic education component in landscape architecture curricula. The main part of the methodology relates to the primary research question – the full listening experiment on landscape architecture students – which tests one approach to improving aural awareness and sensitivity as a form of acoustic education.

### **Supporting Questions**

- What is the current role and understanding of sound in landscape architecture practice and education?
- Do current landscape architects (professionals and faculty) feel that sound should be addressed in landscape architecture curricula?

### **Primary Question**

- Are the listening exercises outlined by R. Murray Schafer effective in improving the aural awareness and sensitivity of landscape architecture students?

## **1.6 RESEARCH CLARIFICATIONS**

## **1.7 RESEARCH QUESTIONS**

To arrive at conclusions for all three questions, I conducted a three-part methodology, involving a survey of landscape architecture professionals and faculty members, a three-week listening experiment (including listening exercises) with landscape architecture students, and a control listening experiment (not including listening exercises) with a second sample of landscape architecture students, who acted as a control group.

From the survey results, four primary issues were addressed when grouping the responses to reveal the current role of sound in landscape architecture practice and education:

- (1) Role of sound in the outdoor environment and the landscape architect's role in designing sound to reveal the potential need for education and training
- (2) Professionals' and faculty members' knowledge of outdoor acoustics
- (3) Professionals' and faculty members' belief that acoustics or sound courses can be useful
- (4) Current critical thought concerning sound in landscape architecture

From the full experiment results, four broad categories – with criteria that indicate a change, or lack thereof, in participants' aural awareness and sensitivity – were established to evaluate the effectiveness of the soundwalks and listening exercises. Effectiveness was measured by:

- (1) Change in the number of different sounds observed
- (2) Change in dominant sound source
- (3) Change in documentation of direction/movement or distance
- (4) Change in use of interdisciplinary acoustic or psychoacoustic terminology

## 1.8 HYPOTHESES

I began the research with two primary hypotheses:

- The surveys will reveal that landscape architecture professionals and faculty agree that an acoustic education can be a valuable addition to landscape architecture curricula, in order to address the design of outdoor urban soundscapes.
- Students participating in the listening exercises portion of the research will experience a heightening of their aural awareness and sensitivity to sounds.

There were four main differences anticipated to occur between those students who took part in the listening exercises and those who did not. Those who did not participate in the listening exercises were expected to:

- (1) Observe a fewer number of sounds compared to those who did participate in listening exercises
- (2) Observe different dominant sound sources observed for each soundwalk location compared to those who did participate in listening exercises
- (3) Have less documentation of direction/movement and distance of sound
- (4) Use less acoustic or psychoacoustic terminology in their journals

‘Chapter Four: Findings’ elaborates on each of the broad criteria categories and differences between the results of each experiment.



**[FIGURE 2.01]**

The city soundscape is diverse and exciting, filled with the sounds of traffic, people, and industry. Photo taken by author (2012), in Wellington, New Zealand.



**[02]**  
**BACKGROUND**



*“That is how we listened. The feeling would be there immediately, and off we would go into the spirit world, listening, feeling, and absorbing the waves of sound. That was an amazing time. It is gone now, but we could get it back with a quality sound that is visceral.”*

Neil Young. *Waging Heavy Peace*. 13. 2012.

# [02]

## BACKGROUND

### 2.1 CHAPTER OVERVIEW

This chapter provides a foundation for the thesis study based on a comprehensive review of the literature. To understand the premise of the study, this chapter discusses four broad topics:

- (1) Sound and Science
- (2) Sound and Identity
- (3) Sound and Design
- (4) Sound and Landscape Architecture Education

It is logical to begin with a historical discussion of sound as a science – or acoustics, as it is known in scientific terminology. The literature reveals that the field of acoustics science has had a deep impact on society and architectural design. It addresses the relationship of sound to other more obvious disciplines, including music, communications, and engineering, and the potential knowledge landscape architects may gain from these fields. The literature also reveals that sound can tell stories of place and culture. A brief overview of sound and identity can be found within this chapter, including a discussion of the role of sound in the experience of the landscape, or the perceived landscape. Two final sections in this chapter discuss literature that situates sound in design and sound in landscape architecture.

## 2.2 SOUND AND SCIENCE

### The Development of Acoustics as a Recognized Branch of Science and its Early Impact on the Listening Community

The texts of Emily Thompson and Leslie Doelle provide an historic background of sound (Thompson, 2002; Doelle, 1972). Barry Truax's *Acoustic Communication* provides a more contemporary review of the history of sound and electroacoustics (Truax, 2001a). Considerable literature exists regarding the role of sound in architectural design, including that of Thompson and Doelle, but Thompson's is particularly helpful in conveying the advancement of acoustics as a science, separate to acoustical building design. In these books, entitled *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933* and *Environmental Acoustics*, Thompson and Doelle discuss the evolution of the architectural response to increasing sound in the environment. They also raise awareness of the acoustical design of musical theaters and amphitheaters. Thompson begins by describing Symphony Music Hall in Boston, the first building designed for acoustics, and covers a span of time until the opening night at Radio City Music Hall, an event that signalled the end of the acoustics era. While music hall design and the science of acoustics are two significant aspects of her research, Thompson also discusses what sound reveals about the culture of that era (Thompson, 2002). Doelle, however, begins much earlier with a discussion of the influence of Greek arithmetic on 16th through 19th century theater and auditorium design (Doelle, 1972). While both texts are heavily centered on the architectural role of sound, they also begin to reveal the evolution of the soundscape and the culture of listening during those times.

The period between 1900 and 1932 marked a significant and rapid change in acoustics research and the development of acoustical instruments. At the start of this period, acoustics was not yet a recognized branch of science. In fact, opening night at Symphony Music Hall in Boston on the 15th of October in 1900 ushered in a new era of acoustic design in architecture, based not on theory but on scientific and mathematic reasoning. This began what historian Emily Thompson refers to as the 'Acoustics Era,' which occurred alongside the Industrial Age (Thompson, 2002).

Leading the research in architectural acoustics at this time was scientist Wallace Sabine (Thompson, 2002; Doelle, 1972). His push to define the modern reverberation theory – the formula for measuring the acoustic quality of a space, or the amount of time it takes for the intensity of a sound to degrade – became a catalyst for acoustics research conducted by scientists who followed him. Sabine advised Charles Follen McKim and his company about the acoustic considerations for the design of Symphony Music Hall prior to its construction in 1900. "The development of musical culture over the past century had rendered the act of listening increasingly





**[FIGURE 2.02]**

Boston Symphony Music Hall in Boston. Opening night in the music hall ushered in the acoustics era. Photo retrieved from Harnish (2012). Manipulated by author.



important, and this new culture of listening culminated in America just as Symphony Hall opened its doors to receive its audience” (Thompson, 2002, 45).

Prior to Sabine’s acoustics research, architects had designed music halls based on published theories about the acoustic quality of space. By 1915, the study of acoustics was a ‘growing field of scientific inquiry’ and acoustics became an established branch of engineering science (Thompson, 2002, 87; Doelle, 1972, 10).

The First World War, for instance, required much expertise from acoustics scientists, as it was a war in which soldiers were more attuned to their surroundings than in wars past (Thompson, 2001; Goldsmith, 2012). On the ground, soldiers were required to listen for the sound of oncoming engines ready to attack, particularly those of enemy aircraft. Sound ranging systems were developed to record enemy gunfire. These systems were equipped with microphones to triangulate and locate the source of the gunfire to help plan counter-attacks accordingly. In trench warfare, soldiers learned to distinguish the sounds of various types of incoming shells. At sea, underwater sound detectors were invented to help locate submerged German U-boats. Those who operated the sound detectors required training in listening for not only the enemy vessels, but also to distinguish what sounds were harmless, such as underwater turbulence and passing schools of fish. Prior to this, the existence of an underwater soundscape was unknown, but the sound detectors technology led acousticians to conclude that the sea is “actually much noisier under the water than above it” (Goldsmith, 2012, 183). Acoustical research was regarded as having helped the Allies achieve victory, and later, spawned several new subfields of science (Thompson, 2002).

Moving forward a few years, the 1920s roared, quite literally. The city grew louder with industrialization and increasing populations. The recent invention of the radio, phonograph, and telephone segued into new scientific and cultural inventions, including the new musical style of jazz in the early 1920s and the first sound motion picture in 1927. The use of sound for entertainment introduced society to the differences between sound and noise, or those sounds which are wanted and unwanted. While most people who were opposed to noise (or unwanted sound) were anxious to eliminate it, others were inspired by the changing soundscape. Joel Rogers remarks on how the “cowbells, auto horns, calliopes, rattles, dinner gongs, kitchen utensils, cymbals, screams, crashes, clankings, and monotonous rhythm” of jazz are accurate representations of modern civilization (Rogers, 1925, in Thompson, 2002, 131).

The mid-1920s emerged with a wide range of powerful new tools for acoustics. The American Telephone and Telegraph Company along

with the Western Electric and Bell Laboratories worked to improve their telephone service, by devising tools to measure electrical noise. Researchers and scientists attempted to develop new tools for measuring the sensitivity of the human ear. The audiometer was invented by Harvey Fletcher around 1923 to measure hearing loss in relation to different frequencies. Thousands of people, from school children to the working class, had their hearing abilities tested with the audiometer. Soon after, research expanded in an effort to measure city noise, particularly in New York City (Thompson, 2002).

While only a few decades prior ‘reverberation’ was considered a positive characteristic for music halls and auditoriums, by 1930 reverberation was challenged as just another noise. “Reverberation was inefficient because it interfered with the transmission of speech, like electrical noise in a telephone circuit. It also impeded the performance of work by amplifying and sustaining the cacophony of sounds that sapped workers’ energy and productivity” (Thompson, 2002, 171). With the positive attributes of reverberation quickly being dismissed, modern sound emerged as the new clean sound – clear and direct (Thompson, 2002).

Modern sound was born in the advent of acoustic technology and with that, electronic technology. Modern sound attempted to remove all reverberation – a topic which will be further explored later in this chapter. Electroacoustics – the transfer of sound energy from its physical form, the sound wave, to an electrical form, the audio signal – became the defining parameters of modern sound (Truax, 2001a; Thompson, 2002). The ‘electroacoustic soundscape,’ as Thompson calls it, developed as sound was extracted from space and time, reproduced and stored in analog<sup>1</sup> or digital form<sup>2</sup>. These forms would have several iterations in years to come, and it is clear that modern sound would have a direct impact on those who listened (Truax, 2001a; Thompson, 2002).

Acoustic and electronic technology was eventually embraced by public advertisement, which further supplemented the electroacoustic soundscape. In the 1930s, the sound motion picture and music industries began to advertise radio and television commercials with ‘short motifs,’ the aural equivalent to a trademark, more commonly known as a jingle (Truax, 2001a, 130). The short motif was strategically composed to be short and catchy enough to remain in the memory of the listener. These jingles were often of a simple rhythm<sup>3</sup> and contained very few changes in pitch<sup>4</sup>, so as to be easily recognizable yet definitive of the brand or product for which it was associated. The aural trademark of a product was refined much earlier than the product’s actual packaging. The short motifs first and foremost helped to establish “the brand name as a word” and later advertisers became concerned “for the image surrounding the product” (Truax, 2001a, 130).

#### [FIGURE 2.03]

Opposite, above: 1920’s style radio loudspeaker. The radio was one of the first inventions segueing into the acoustics era. Photo retrieved from Schneider (2007). Manipulated by author.

#### [FIGURE 2.04]

Opposite, middle: 1920’s style phonograph. Photo retrieved from Culligan (2010). Manipulated by author.

#### [FIGURE 2.05]

Opposite, below: 1920’s style telephone. Photo retrieved from Pedrik (2011). Manipulated by author.

The advancement of acoustics science led to the desire to control sound and the increasing noise in the city. Sound eventually became a commodity, a product to distribute and sell. Unwanted sound, on the other hand, was rigorously tried and tested to be eliminated from the soundscape.

### **The Rise of Noise Mitigation and Sound Control**

In 1929, New Yorkers were polled about the city sounds they found unpleasant. The top ten most troubling noises were all the products of the machine-age (Brown, et al., 1930). Noise reform began in the early 1900s as part of a larger movement to improve urban planning, public health programs, and other progressive efforts to address problems in the modern city. Anti-noise campaigns were disseminated in multiple types of media, including the newspaper and magazine. It was widely considered that noise led to inefficiency in the workplace and affected the health of the population and environment, but most importantly was the enemy of progress (Schafer, 1977; Smilor, 1977; Thompson, 2002). Smilor even describes anti-noise advocates as viewing noise as “retrogressive and primitive” (Smilor, 1977, 25).

In New York in 1908, Police Commissioner Thomas Bingham issued General Order 47, which enforced several ordinances to alleviate city noise. The Order targeted “shouts and bells of street vendors, the cries of newsboys, whistles on peanut roasters’ carts, and the assorted sounds of roller skaters, kickers of tin cans, automobile horns, automobiles operated without mufflers, and flat-wheeled streetcars” (Thompson, 2002, 124). Even though police continually arrested vendors, musicians, and shouters, they rarely confronted motorists or streetcar companies (Thompson, 2002).

Several cities made hawking illegal, considering it a disturbance to the “peace and comfort” of citizens (Smilor, 1977, 32). The state of Washington required permits for musical instruments; Baltimore outlawed drum corps, bands, and other bodies from blowing horns between 6:00pm and 6:00am; Boston forbade the ringing of bells in the streets; Kansas City made the sounding of gongs illegal; St. Louis made bells on all animals illegal; all cities declared blowing of steam whistles and locomotive whistles disallowed, except in cases signaling danger and in the application of factory whistles (Smilor, 1977).

A Noise Abatement Commission was formed in 1929, organized by the New York City Health Department (Smilor, 1977; Thompson, 2002). Experts in neurology, otology, engineering, building, and law were appointed to research the problems of noise and how society might cope. Their traveling laboratory was brought to approximately ninety different areas of New York City to measure and map noise levels and make observations. The audiometer, as

discussed previously, was also utilized in this research effort, making this group of researchers one of the first to measure in decibels, noise units, sensation units, and transmission units. The Commission's findings concluded that noise was harmful, and that constant exposure to it could lead to impaired hearing, a strained nervous system, and neurasthenic and psychothentic states (Smilor, 1977; Thompson, 2002). The Commission was active for two years, but the beginning of the Great Depression eventually led to the decline of noise reform and anti-noise campaigns, as budgets for research efforts were severely cut (Thompson, 2002).

Attempts to mitigate noise in the outdoor environment may have failed, but they thrived indoors with the advancement of acoustical technology for architectural building design. The din of city noise was soon ubiquitous; architects and scientists worked to eliminate the presence of noise as much as possible indoors. By 1930, numerous corporations were manufacturing and selling acoustical building materials conducive to mitigating sound (Thompson, 2002; Doelle, 1972). "These materials were made seemingly of anything and everything: gypsum, mineral wood, volcanic silica, flax, wood pulp, sugarcane fibers, disinfected cattle hair, and asbestos, [...] insulating papers, rigid wallboards, stone-like tiles, plasters, and all sorts of mechanical devices for structurally isolating floors, walls, and ceilings" (Thompson, 2002, 170). The materials were employed in auditoriums and sanctuaries, as well as offices, apartments, schools, and spaces of everyday life. By this time, architects and scientists were able to control sound in building design in ways that would have seemed impossible just decades before, made possible with the mass production and laboratory testing of acoustical building materials (Doelle, 1972).

This new ability to control sound also contributed to the production of 'clean, modern sound,' as mentioned in the previous section. The acoustical materials placed in architectural buildings were 'noise-absorptive,' effectively eliminating reverberation indoors (Thompson, 2002, 171). Sound control became a business and sound a commodity, and the building materials as well as the sound they produced were altogether the products of this business. Those exposed to modern sound believed it to be, more or less, good sound, and not noise.

The concept of noise pollution emerged in the 1970s, with Raymond Murray Schafer at the forefront after having published his book *The Soundscape: Our Sonic Environment and the Tuning of the World* in 1977. Schafer believed that a hi-fidelity soundscape, one in which listeners can clearly distinguish sounds, is what society should be striving for. He viewed the soundscape as a musical composition; he could hear major triads<sup>5</sup> in the combination of street lights, electric signs, and generator







**[FIGURE 2.06]**

Left: New York City in 1926. New York City was central to noise research in the acoustics era. Photo retrieved from Wass (1926). Manipulated by author.

**[FIGURE 2.07]**

Right: New York City in 1926. Photo retrieved from Wass (1926). Manipulated by author.

**[FIGURE 2.08]**

Below: A 1968 tape recorder. Tape music was one of the first storage techniques for recorded sound, prior to digital invention. Photo retrieved from Carbon Arc (2010). Manipulated by author.



sounds; he could discern the F-sharp in the whistles of passing trains (Schafer, 1977; Goldsmith, 2012). In contrast to Schafer’s perspective on the soundscape, it was later decided that instead of removing certain sounds from the environment, the soundscape could be manipulated by adding more sounds. Ambient music, for example, was added to restaurants, elevators, airports, shopping malls, and grocery stores (Droumeva, 2004; Goldsmith, 2012).

The act of controlling sound can also be seen in the rise of the music industry. We now return to the discussion of extracting, reproducing, and storing sound. Tape music<sup>6</sup> became a form of storing sound and was one of the first commodities of the music industry (in the 1930s) after the process of recording sound became possible (Truax, 2001a). As new ways of storing sound were developed, the ability to control and manipulate sound became more powerful. Editing sound became more complex, such as the ability to eliminate unwanted sounds in recordings and the ability to splice<sup>7</sup> recordings (Truax, 2001a; Thompson, 2002).

When digital recording and storage became possible in the late 1960s new possibilities emerged for sound. It has been argued by sound critics<sup>8</sup> that as sound manipulation moved from analog to digital capabilities, the fidelity of firsthand performance was lost (Sterne, 2006; Young, 2012). As data is compressed into multiple forms of storage – the CD or mp3, for example – parts of the original sound data are essentially eliminated in an effort to make sound more portable. “And so the critique that copies lose some essence of the original has been displaced into a debate about the relative merit of one kind of copy versus another” (Sterne, 2006, 338). To put it simply, the analog format of sound is more closely representative of sound itself than a digital one: “The sound wave itself is an analog phenomenon par excellence because it is created by a continuous change in pressure.” However, “digital representation of sound is achieved by sampling the analog” (Truax, 2001a, 153-154). Therefore, a digital format can never be a perfect replica of the actual sound that was recorded and stored (Sterne, 2006; Young, 2012).

When listeners are repeatedly exposed to a certain kind of sound, such as the digital format, and are led to believe that that kind of sound is the norm, listeners develop certain listening habits. Digital technology was yet another more powerful technique in control and manipulation, and it further allowed sound to be a commodity for distribution to the public. As vinyl records were replaced by tapes, and tapes were replaced by CDs, and CDs replaced by downloadable iTunes tracks, society developed different listening habits; as sound data was continually compressed, society gradually lost its ability to recognize differences in fidelity. If there was recognition, however, it did not leave a great enough impression on the industry

to advocate for vinyl records to remain as heavily stocked on store shelves as CDs today.

### **The End of the Acoustics Era**

When architectural acoustics reached its climax in perfecting the control of sound, it simultaneously met its demise. Thompson argues that the acoustics era for building design came to an end on the 27th of December 1932, on opening night at Radio City Music Hall (Thompson, 2002). The acoustic quality of the space was considered to have reflected complete mastery of acoustics control and building design technique at the time. The developments in the acoustics era have clearly had an impact on other sound-related industries. The rapid changes seen in the previous three decades leading up to opening night at Radio City Music Hall had, however, diminished quickly, arguably due to the decline of the economy during the Great Depression. “When engineers were no longer perceived to have all the answers; when their work ceased to inspire artists, writers, and musicians; when the machines they designed no longer challenged people to transform the age-old ways in which they perceived their world, the Machine Age was truly over and the modern soundscape would begin to transform itself again into something new” (Thompson, 2002, 315).

### **The Science of Listening**

The 1970s brought about a heightened concern for the environment. Raymond Murray Schafer, Barry Truax, and Hildegard Westerkamp were three scholars at the forefront of the soundscape movement, which began in the 1970s. In order to understand their view of the degradation of society’s listening abilities, it is beneficial to also understand the scientific and theoretical process of listening. Listening is just that, a process between the ear and the brain for receiving, processing, and retaining messages – in this case, aural messages (Bostrom, 1990, Truax, 2001a). “Individuals vary widely in their ability to receive information, and the causes of this variation are poorly understood” (Bostrom, 1990, 1). Variation or distortion of information could be accounted for in listeners’ attitudes, motivations, physical setting, or media.

Sound behaves dynamically. At the initial point of a sound, called the ‘attack,’ the sound pressure is building up to its maximum ‘steady state,’ which may last only a few milliseconds (Truax, 2001a, 142). So for example, as a musical instrument is getting ready to sound its first pitch, the physical material of the instrument is being set in vibratory motion. The initial attack of the sound is the stage in which the brain is most likely able to identify the sound and process the information, or identify the pitch the musical instrument just played, because the greatest change in pressure and vibration has occurred (Truax, 2001a).

The human ear can distinguish sounds at frequency levels<sup>9</sup> between 20 hertz and 20,000 hertz (Sataloff, 1973; Schafer, 1977; Bostrom, 1990; Truax, 2001a). Any sounds emitting frequencies lower than 20 hertz are heard as discrete pulsations, rather than as continuous frequency. (For example, a sound at ten hertz is heard as ten discrete pulsations per second, a sound at four hertz is heard as four discrete pulsations per second, and so on.) Sounds above 20,000 hertz are inaudible to the human ear. In terms of loudness, the human ear can comfortably experience up to 120 decibels of sound, which is considered the 'threshold of pain' (Truax, 2001a, 146). Background sound is typically at the lower end of that range. Truax explains that when too much sound is present in the environment, listeners tend to process very little information (Truax, 2001a, 146). In other words, the nature of the brain means that it can only skim overall content, rather than analyze it thoroughly, when too much information is presented in a disorganized manner. This happens when viewing commercial advertisements lasting approximately 30 seconds, combining music and sound effects that are only intended to get a very general message across to the viewer (Truax, 2001a).

Truax describes three levels of listening, in order from the most sensitive to least sensitive:

- (1) Listening in search
- (2) Listening in readiness
- (3) Background listening

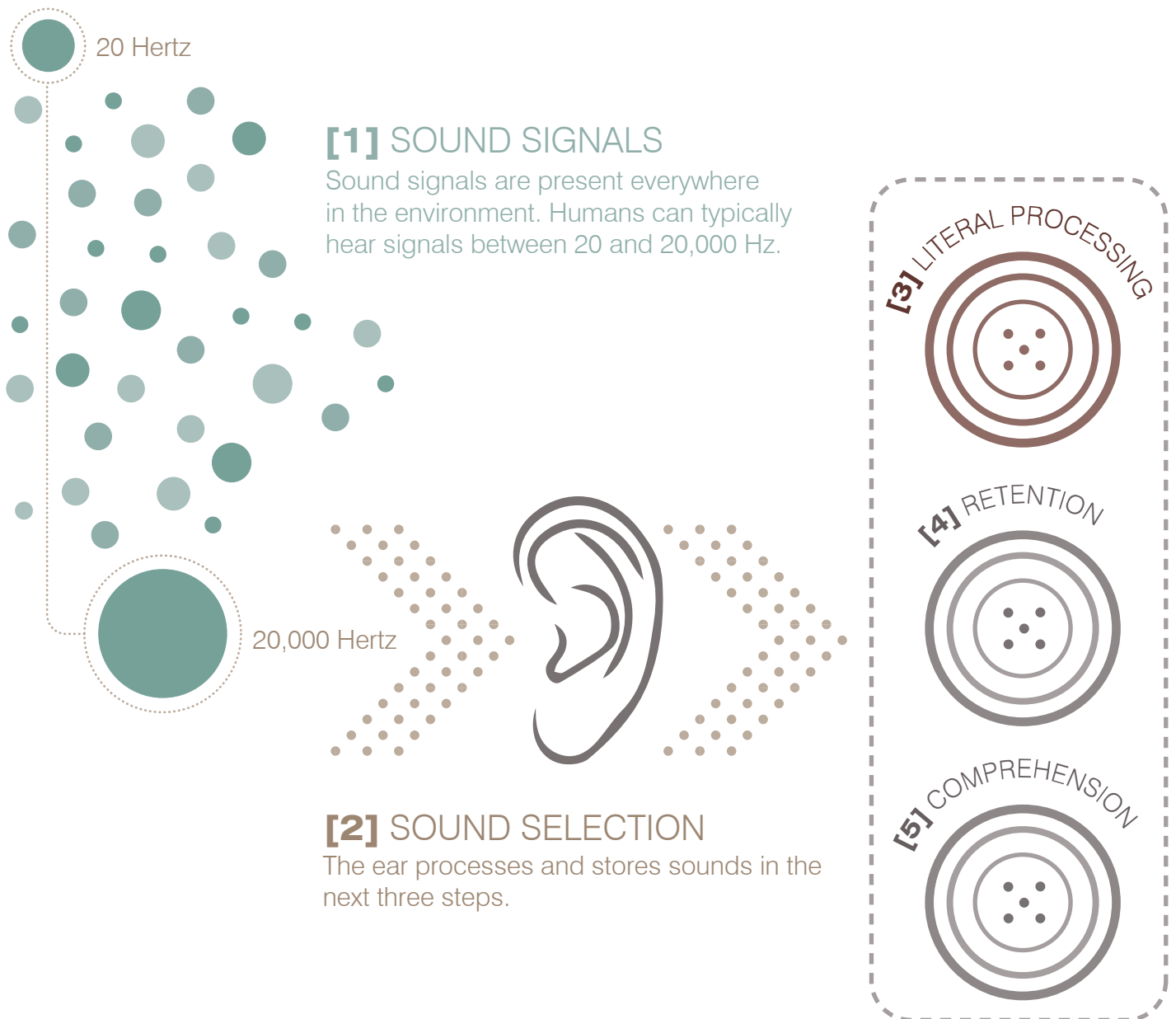
Each level of sensitivity represents how the brain processes information and determines its significance (Truax, 2001a). 'Listening in search' can be described as analytical listening, during which the listener evaluates the sound for meaningful information (Truax, 2001a). For example, the architects and scientists who were responsible for the design of Radio City Music Hall conducted a thorough analysis on how different spatial designs would impact the acoustic quality of the interior space. Another example would be band members listening to and tuning their personal instruments prior to a rehearsal or performance on stage. On the other hand, 'background listening' is closely related to distracted listening, during which the listener is primarily occupied by other activities besides listening (Truax, 2001a). For example, an individual may go about their normal everyday life without being able to recall specific sounds they hear in the process. This is not to say that they are physically incapable of hearing these sounds, but rather they do not retain the aural messages that come with them. Schafer has termed background sounds as 'keynote sounds,' those which are heard by a particular society continuously or frequently enough to form a background against which other sounds are perceived (Schafer, 1977). Keynote sounds are rarely acknowledged by the

listener because they have become commonplace and easily, but unconsciously, overlooked.

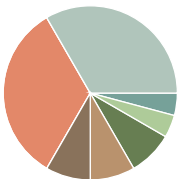
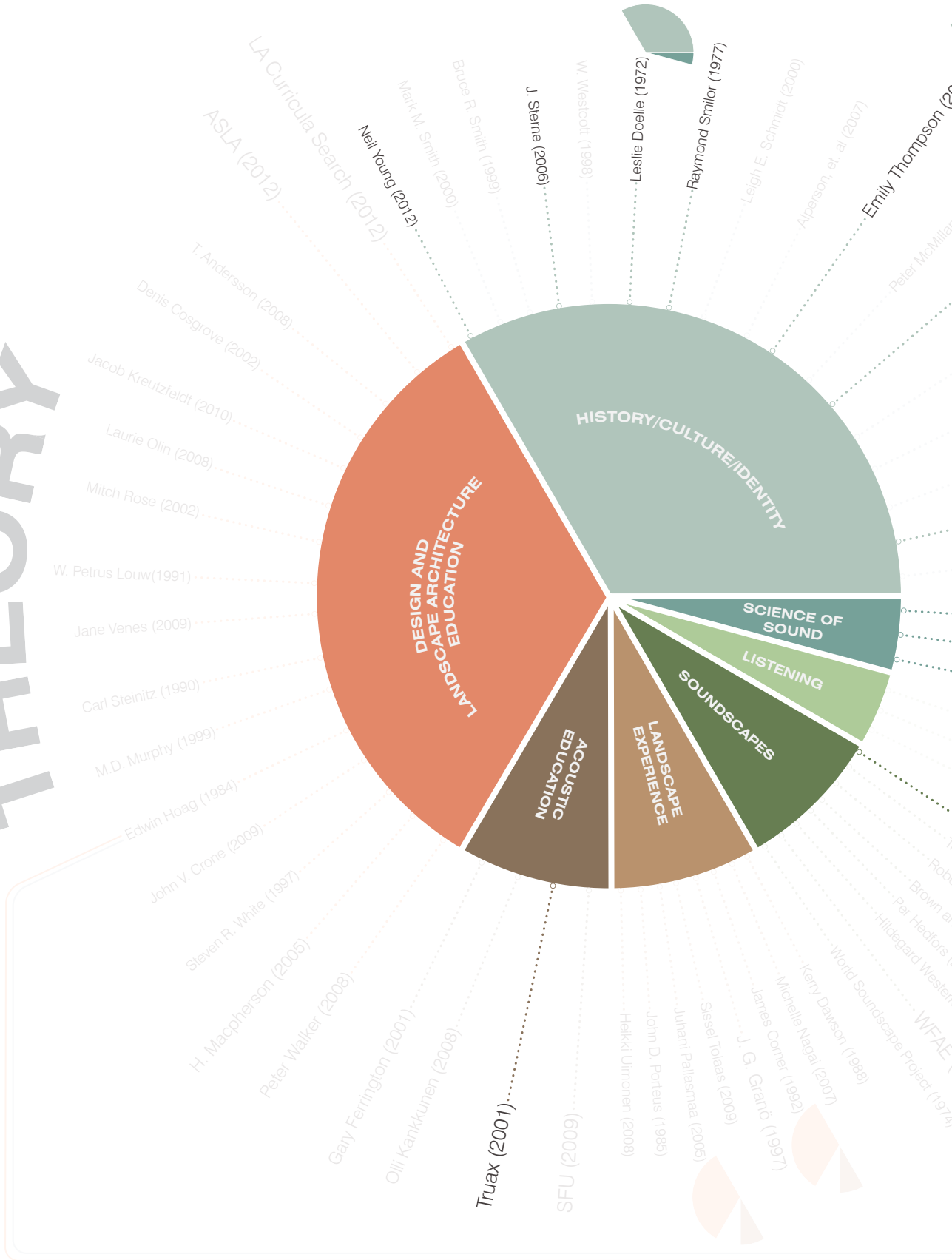
A soundmark, however, is a term derived from ‘landmark’ that Schafer describes as a sound that is unique and possesses qualities that make it specially regarded to the people of the community (Schafer, 1977, 26). Soundmarks possess wayfinding and cultural meanings that are vital to a holistic experience of the landscape. The next section of this chapter will discuss different soundmarks in cities and communities around the world that have shaped the acoustic identities of these places.

[FIGURE 2.09]

Below: The listening process. Sequence adapted from Bostrom, 1990. Graphic by author.



# THEORY



\*\*Smaller pie pieces indicate sources that discuss multiple theory topics.

# METHOD



[FIGURE 2.10]

Spread: Literature Map. Highlighted literature relevant to 'Sound and Science.' Graphic created by author.



## 2.3 SOUND AND IDENTITY

**[FIGURE 2.11]**

This page: The church bells of Italy. Photo retrieved from Aceto (2012). Manipulated by author.

**[FIGURE 2.12]**

Opposite, above: A gong of the orient. Photo retrieved from Hatch (2008). Manipulated by author.

**[FIGURE 2.13]**

Opposite, below: A watermill. Photo retrieved from Yume (2006). Manipulated by author.

**Soundmarks of Cities and Regions around the World**

Soundmarks provide unique aural cues to the communities to which they belong. They have been known to mark the passing of time, signal everyday routines, and announce social, religious, and political events (Schafer, 1977; Garrioch, 2003; Goldsmith, 2012). There are some soundmarks that are particularly well documented in literature to be historically linked to the soundscapes of cities and regions around the world: the church bells of Europe (Schafer, 1977; Garrioch, 2003; Atkinson, 2012); the gongs of the Orient (Schafer, 1977); and the mills of early agricultural territories (Schafer, 1977).

Schafer mentions the church bells of Europe in *The Soundscape* while discussing the use and meaning of soundmarks (Schafer, 1977). David Garrioch, in his 2003 article, “Sounds of the City: The Soundscape of Early Modern European Towns,” discusses in great depth the historic meaning of these church bells and other types of bells throughout Europe (Garrioch, 2003). Niall Atkinson’s expertise lies in the meaning of bells in the Florence soundscape (Atkinson, 2011).

Bells have been a part of European soundscapes since as early as the eighth century (Schafer, 1977, 54). In particular, church bells were widespread in Christian communities to symbolize spiritual unity, or drawing man and God together (Schafer, 1977, Garrioch, 2003; Atkinson, 2012). By the 17th century, Beauvais in northern France had 135 large bells, Lodi in northern Italy had 128 bells, and St. Ivan’s church in Moscow had 33 bells. There were also bells for other functions — where cities had survived the effects of war, city government buildings had bells of their own. This was seen in Florence, Siena, Flanders and northern France, and in parts of Germany (Garrioch, 2003). Handbells were also used for “official purposes, in religious processions, and by traders to attract custom.” The wealthier class could afford to use the bell to summon the servants of the household (Garrioch, 2003, 10).

The ringing of bells could be heard in several different ways, with a single bell or multiple bells and in many different variations of melodies. It was common for people of a community to be familiar with their own city’s bell variations and completely unfamiliar to variations of another. Most commonly, however, bells were used to mark the passing of time. In some cities, like Geneva, a bell was rung to signal the start of a working day and the opening of the city gates (Garrioch, 2003, 7). Many cities had a curfew, also signaled by the ring of a bell and closing of the city gates. Church bells of Catholic European communities were used “to call people to mass, to vespers, to catechism, to benediction, to tell them to pray” (Garrioch, 2003, 11). During the 14th century, the invention of the mechanical clock, together with the bells, became an aurally inescapable soundmark of Europe.

The gong is considered the bell of the Orient (Schafer, 1977; Westcott, 1998). It is unknown exactly where the gong first appeared, but both Eastern and Western Asia have been claimed as the area of its origin (Westcott, 1998). In most cities, the gong was used together with large drums and other bells as soundmarks to signal the time of day and important events. The gongs and bells of the Orient served similar functions as the bells of Europe. Temple bells were used for spiritual unity and ceremonial occasions, and since 2000 BC, Chinese cities “warned of fire, flood, or approaching enemy” with the public drum, bell, and gong (Westcott, 1998). In parts of Asia, such as India and China, smaller bells were hung on pagodas<sup>10</sup>, corners of temple roofs, palaces, pavilions, and private homes. Both gongs and bells were decorated very elaborately, with most designs having symbolic and religious import (Westcott, 1998).

The gong has also been used as a part of Asian and Pacific cultural music. Gong music is common to many Southeast Asian and Pacific countries, including Vietnam, Thailand, Cambodia, Laos, Mongolia, the Philippines, and Indonesia (Alperson, et. al, 2007, 11). Gongs for instrumental music are hit with mallets or sticks, they come in varying sizes, and can be carried, worn, suspended from the ceiling or set on a stand (Alperson, et. al, 2007).

The mills of early agricultural territories, like clocks, were ‘centripetal’ sounds at the center of early town life, which equated with the sounds of labor in a community (Schafer, 1977). The most common mills were grinding mills, papermills, sawmills, and water mills (Schafer, 1977, 57). Many early towns were founded along rivers and streams for the ready access to water power. At this time, the sounds of mills were as present in the early town soundscape as the voices of the inhabitants themselves. Schafer quotes Maxim Gorky<sup>11</sup> who wrote a description of Dryomov, Russia: “Awakening in the pearly gloom of an autumn dawn...the summoning blast of the mill whistle...the indefatigable murmur and rustle, the accustomed, dull, but powerful din of labour” (Gorky, 1952, 404, in Schafer, 1977, 57). The mill, though a symbol of labor, is indicative of the agricultural soundscape of early town life.

### **Sounds that are Distinctive of Culture or Period of Time**

Though the history of sounds has been less thoroughly documented than, say, visual or textual history, sounds are equally telling of different cultures and periods of time. Anthropologists, for example, have been known to record the sounds of indigenous cultures as a part of their research methods (Truax, 2001a). Similarly, ethnomusicologists study music that is indicative of cultural, social, and biological aspects of communities around the world. Ethnomusicology was created in the 1950s and is still developing as a field of study (Truax, 2001a), which explains why the concept of



soundscapes is a relatively new and emerging area of study, and why ‘sound historian’ is a relatively new occupation.

Goldsmith’s *Discord* (2012) offers an historic overview of noise around the world, primarily in European and Western cultures, and he suggests that because of the longer periods of darkness (compared to modern times) communities in the ancient world must have relied more on their sense of hearing than their sense of sight. Sounds of music pre-date modern humanity, with archaeological evidence found in southwestern Germany showing that Neanderthals crafted bone and ivory flutes (Goldsmith, 2012). ‘Rock-gongs’ have also been found in caves dating back 20,000 years ago in many parts of the world (Goldsmith, 2012, 19). By 10,000 BCE, the first farming settlements appeared bringing with them the sounds of trade – crowds of people, potters, artists, and other barterers (Goldsmith, 2012, 19).

Much later, sounds that would have been indicative of the classical period include the sounds of war – particularly the cries of battle and the calls of the trumpet and horn. The cries of war and battle, likely rooted in this period, were used to unite the attackers ‘into a single force’ and intimidate their enemies (Goldsmith, 2012, 27). Literature documents this tactic being employed by the Greeks, Romans, and Carthaginians as early as 255 BCE in the First Punic War<sup>12</sup> (Polybius, in Goldsmith, 2012, 27). For many centuries after that, in most countries, trumpets and horns were the primary instruments used in war. The trumpets of war became so prominent that by 396 BCE they were used in the Olympic Games to announce the start of each event (Goldsmith, 2012, 29). By 1055 CE, in a religious battle near Badajoz, Spain, Europeans even introduced the use of drums in the soundscape as another type of intimidation tactic in war (Goldsmith, 2012, 29).

Moving further ahead in time, Leigh Schmidt – writer and professor of religious studies at Washington University in St. Louis – has documented the meaning of sound in the American Enlightenment<sup>13</sup>, mid- to late- 18th century, in his book *Hearing Things: Religion, Illusion, and the American Enlightenment* (Schmidt, 2000). In “Chapter Two: Sound Christians,” Schmidt describes the strong influence of religion on the soundscape. With religion came “claps and trumpet blasts, calls to preach the gospel, whispers of prayer, reverberations of scripture, and revival noises” of devout Protestants (Schmidt, 2000, 8).

Bruce R. Smith, in his book *Acoustic World of Early Modern England*, writes about the soundscapes of the city, country, and court (Smith, 1999). Smith describes the soundscape of the city as being filled with the sounds of bells ringing, cannons firings, drums beating, and of course, the sounds of people. (This takes us back to the discussion on bells as soundmarks in Europe earlier in this chapter.)

The industrialized city of London was also teeming with immigrants of many different nationalities, including Dutch, French, German, and Italian, lending to the diversity of languages present in this soundscape. In the country, sounds of nature were more prevalent than any other type of sound. These included the sounds of wind, water, birds, domestic animals, and frogs, to name a few. In the court, the most audible sound would have been the talk of monarchs, especially the Queen<sup>14</sup>. Queen Elizabeth I, who reigned during the majority of early modern England, would have served as a soundmark in this particular setting, the central figure of court discourse (Smith, 1999). Sounds of the working class of early modern England would have been a reflection of their 'class' in society, such as the sounds of their clothes, speech, and walk (Garrioch, 2003, 13).

**[FIGURE 2.14]**

Below: The city soundscape in London, 19th century. Photo retrieved from WAVE (2011). Manipulated by author.





Mark M. Smith writes about the sounds of Antebellum America<sup>15</sup> (Smith, 2000; Smith, 2001). In his article, “Listening to the Heard Worlds of Antebellum America,” Smith discusses the sounds of emerging industry in 19th century America, and with that, the sounds of the slave trade (Smith, 2000). Not only was the American soundscape filling with the sounds of market bells and railroad bells, but the South was also crowded with the cries of slaves being transported from overseas. Smith speaks not only of the distressing sounds of slaves, but also of their passion for song on the plantations (Smith, 2000, 75). Despite the perception of slaves as ‘noisy,’ they actually valued the quiet soundscape as a tool for resistance, and out of fear of aggravating the plantation master (Smith, 2000, 75). Slaves learned the value of stealth movements, especially when attempting to escape the South. “Harriet Tubman learned from her father how to walk soundlessly through the woods, a skill that served her well, as posterity testifies” (Smith, 2000, 78). Smith describes even more sounds of the Antebellum period in his book, *Listening to 19th Century America* (Smith, 2001), including the noises of the Civil War and the sounds of emancipation. Sounds of the Civil War included the ‘din of arms,’ explosions of artillery, ‘sharp cracks’ of musketry, and finally the ‘yelps’ for liberty of the bonded (Smith, 2001, 150, 199).

### Soundscape Studies

Beyond simple inventories of sounds throughout history, little was documented about the impact of technology on the soundscape prior to Raymond Murray Schafer’s research beginning in the mid-20th century. Analytic studies of various soundscapes began with the World Soundscape Project (WSP) in the late 1960’s. The WSP was founded by Schafer to study the acoustic environment and the role of technology in the soundscape. The original research group consisted of Howard Broomfield, Bruce Davis, Peter Huse, Barry Truax, Hildegard Westerkamp, and Adam Woog. The research group published “The Vancouver Soundscape,” “Five Village Soundscapes,” “European Sound Diary,” and “The Handbook for Acoustic Ecology” (Westerkamp, 1991, 1). Other results of their research efforts included 300 audiotapes of soundscapes throughout British Columbia, Canada and Europe. While the group disbanded in 1975 – after Schafer left his teaching position at Simon Fraser University (SFU) – others from the original group went on to influence the founding of *Soundscape: The Journal of Acoustic Ecology* (or *The Soundscape Journal*, colloquially) by the World Forum for Acoustic Ecology (WFAE), and to teach in the Communications Department (as Schafer originally did) at SFU (Westerkamp, 1991).

*The Soundscape Journal*, with its final issue published in 2010, addressed all topics of sound and current events related to soundscape efforts around the world. The World Forum for Acoustic Ecology (WFAE) directed the publication of *The Soundscape*

### [FIGURE 2.15]

Opposite, above: The English countryside. Photo retrieved from Dcmaster (2006). Manipulated by author.

### [FIGURE 2.16]

Opposite, below: The English court. Buckingham Palace has been the official palace of the English monarchy since the accession of Queen Victoria in 1837. Photo retrieved from MacCath (2009). Manipulated by author.

*Journal*, and has defined acoustic ecology (as the organization is so named) as the interaction between networks of living organisms with other networks of their sound environment (Truax, ed., 1978). An article in volume seven, issue one of *The Soundscape Journal*, describes a 2006 soundscape research project called the “Language of the Listening Body” (Nagai, 2007). A group of dancers participated in this project to facilitate listening and movement research involving a series of soundwalks in areas of Manhattan, New York. The project lasted two weeks with post-walk discussions conducted after each session. For the soundwalks, the dancers were asked to listen to the soundscape and respond with the movement of their bodies. Nagai provided five journal entries of her observations from the soundwalks for the article. She noted a personal development in a language of listening, ‘a gesture language, part visceral response, part intellect’ (Nagai, 2007, 30).

Another soundscape-related project, “The Sublimated City,” was completed by the University of Missouri – Kansas City (UMKC) Center for Creative Studies in 2007. The project aimed to create a soundtrack for the city of Kansas City using only real-world sounds recorded in the city itself. A second part of the project involved the distribution of a survey to Kansas City residents, asking them to identify a memorable place within the city. The purpose of the survey was to gather responses containing descriptors of texture, sound, scent, and color, and ‘to try and trigger memories about urban experiences’ (UMKC, 2007, 26).

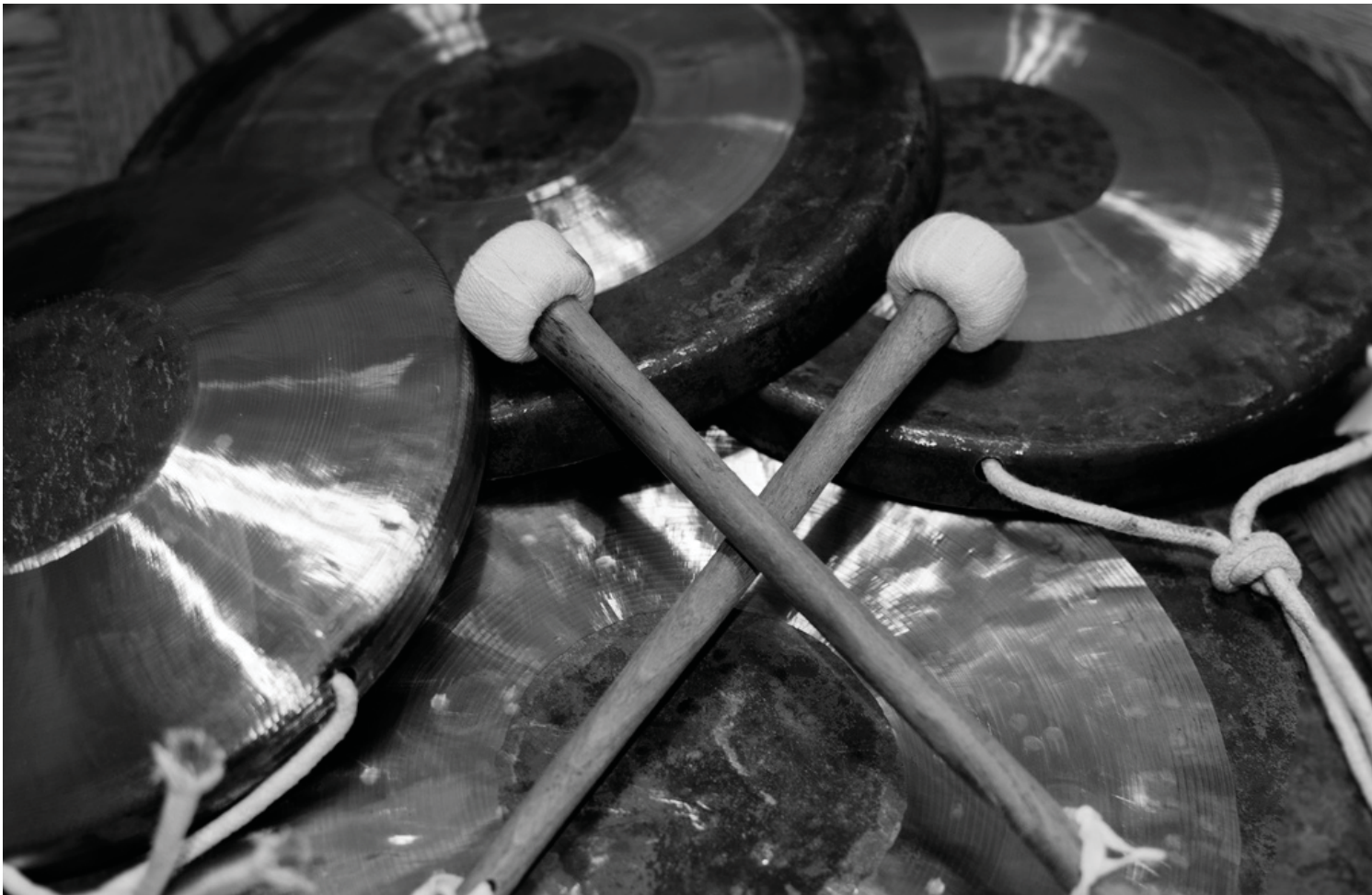
The sounds of city environments have been known to inspire many contemporary musical composers in their creative process. Schafer noted a shift in musical composition during the 20th century that resulted in orchestras expanding in size, primarily to include more percussion instruments (Schafer, 1977). Percussion instruments are capable of creating ‘sharp attacks and rhythmic vitality,’ reminiscent of the rhythm of the city (Schafer, 1977, 110). Composer Edgard Varèse – the first to use the concept of city sounds in music – composed a piece in 1931 called *Ionisation*, which employed only percussion instruments in the final score (Truax, 2001a). George Antheil’s 1926 *Ballet Mécanique* employed percussion instruments to imitate the sounds of airplane propellers (Schafer, 1977). In the 1920s and 1930s, a new form of music – *musique concrète* – made it possible to add any sound of the environment to a musical piece, a concept realized by Pierre Schaeffer (Cage, 1958; Schafer, 1977; Truax, 2001a). With the use of tape recordings, the gathered sounds could be used as tangible material for music.

Later in the 1950s, experimentalist and musical composer John Cage took the sounds of the environment to a new height in musical composition. In a type of music commonly known as ‘experimental

music,' composers take the liberty to write a number of non-musical instrument noisemakers into the piece (Cage, 1958; Schafer, 1977; Duckworth, 1995). John Cage's *Fontana Mix*, performed in 1958, is 20 minutes of nearly all prerecorded sounds, with little to no presence of musical instruments. His 1948 performance of *4'33"* was four minutes and 33 seconds of the audience sitting in "silence," designed with the intent of having the audience realize that silence is nearly nonexistent (Duckworth, 1995). John Cage went on to influence the work of other avant-garde composers, including Philip Glass<sup>16</sup>, Christian Wolff<sup>17</sup>, La Monte Young, and Marian Zazeela<sup>18</sup>.

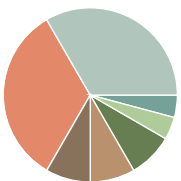
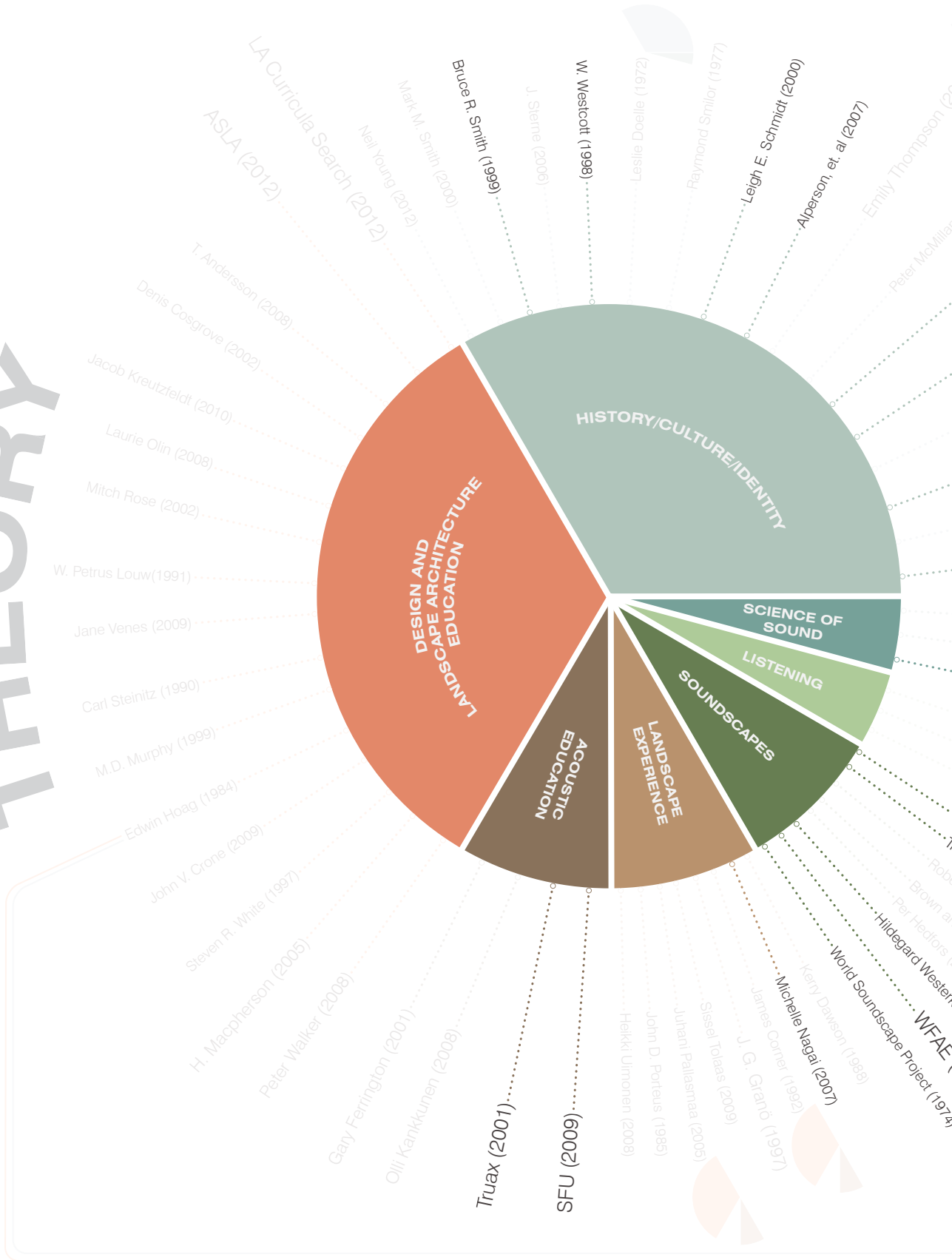
**[FIGURE 2.17]**

Below: Percussion instruments - gongs and mallets. Composers wrote in percussion instruments often to imitate non-musical sounds. Photo retrieved from VVLA (2010). Manipulated by author.





# THEORY



\*\*Smaller pie pieces indicate sources that discuss multiple theory topics.

# METHOD



[FIGURE 2.18]

Spread: Literature Map.  
Highlighted literature relevant to 'Sound and Identity.' Graphic by author.

## 2.4 SOUND AND DESIGN

**The Visually-Dominated Perception of Landscape and the Design Profession**

When describing the landscape, there is a particular ease in explaining its visual characteristics. Hannah Macpherson describes this dominant visual perception as ‘ocular-centrism,’ a reliance on the sense of sight over smell, taste, hearing, or touch (Macpherson, 2005). She describes the origin of the perception of *landscape* as ‘land as it is seen,’ as it was considered in early studies of geography (Macpherson, 2005, 95). The word *landscape* and its conventional meaning are rooted in the geographic practice found in the German concept of *Landschaft* (Cosgrove, 2002). Cosgrove explains that *Landschaft* is described in geography as representation, spatiality, and territory (Cosgrove, 2002). The English use of *landscape*, even in its definition in the Oxford English Dictionary, associates landscape with the idea of scenery; the word actually first came into use in the English language in the early 17th century as a type of painting (Cosgrove, 2002; OED, 2013). Cosgrove describes the early meaning of landscape: “A landscape is seen, either framed within a sketch or painting, composed within the borders of a map, or viewed from a physical eminence through receding planes of perspective” (Cosgrove, 2002, 61). This visual understanding of the landscape has shaped the word’s association with conventional and modern practices of landscape study.

It is appropriate then that representation of the landscape in fields of design is almost entirely a product of the visual, whether in the form of renderings or physical models (Walker, 2008; Rieder, 2008). Designers rely heavily on visual graphic representation to illustrate and communicate their ideas to the public, clients, and other designers during conceptual and schematic design stages. Visual graphic representation is used to “persuade, to present an argument, or to entice” (Olin, 2008, 142). Andersson even suggests that “a landscape architect does not function well professionally if he or she fails to develop graphic models that communicate those ideas precisely and persuasively” (Andersson, 2008, 75). Olin claims that “drawing is the work of designers,” and that landscape architects rarely ever are involved in the process of physically building their design ideas (Olin, 2008, 141).

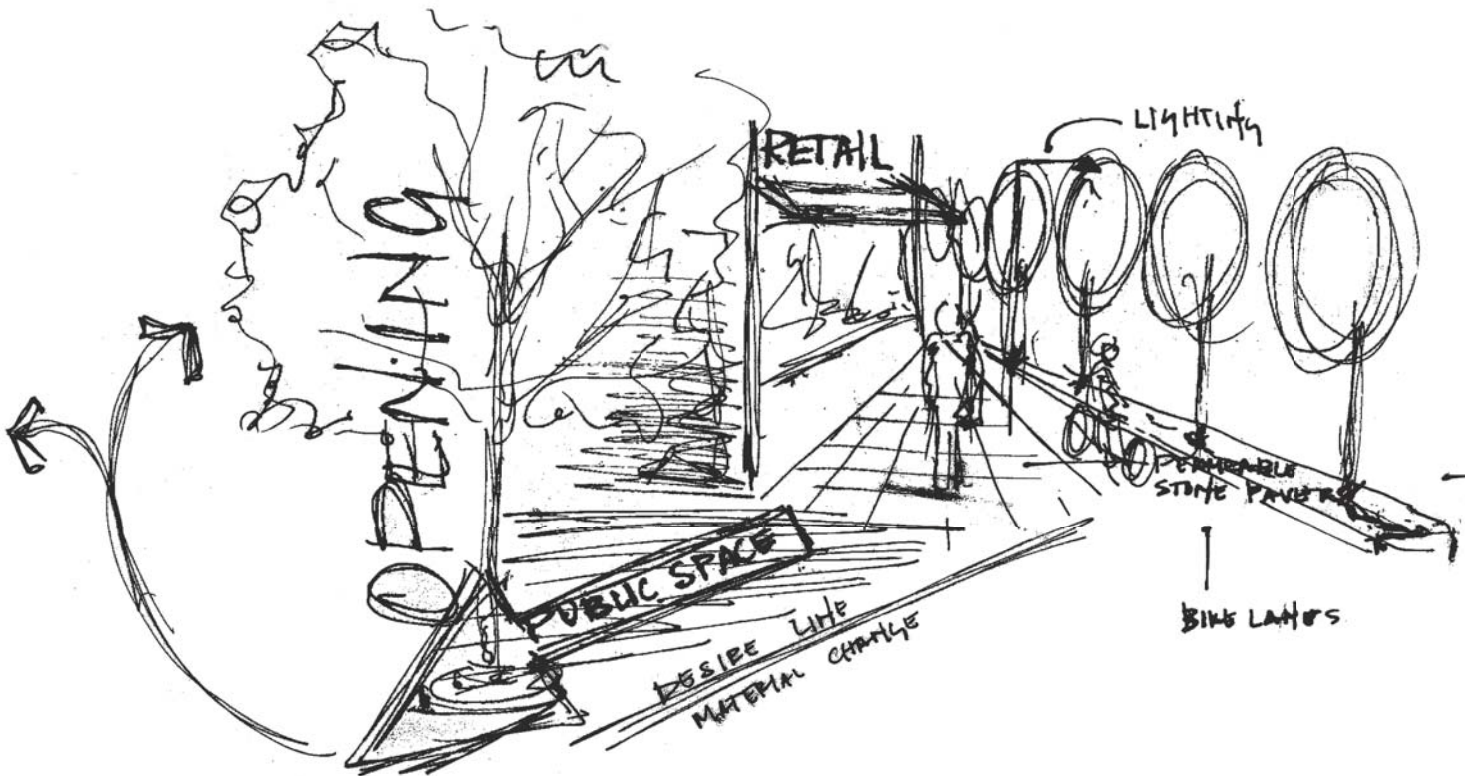
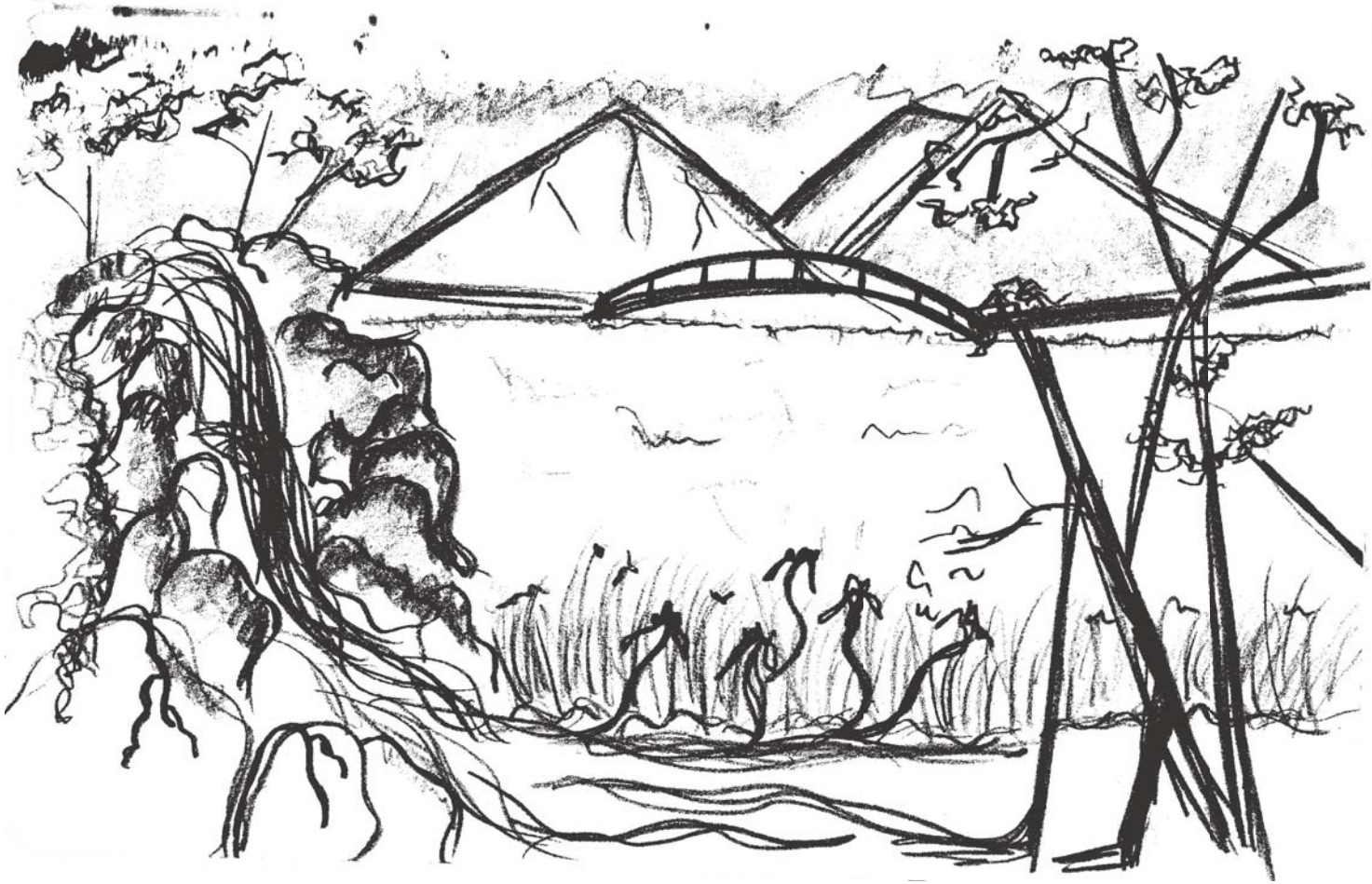
In order to explore the three-dimensionality of their work, designers, including landscape architects, architects, and interior architects, create digital or physical models. Three-dimensional models allow designers to understand and identify what elements in their work are visually clear, what needs to be adjusted, and how human scale is functioning within the design (Walker, 2008). Models are more accessible – compared to the technical plan or section drawing – to clients who are not designers themselves. Peter Walker, landscape architect and professor at the Harvard Graduate School of Design

**[FIGURE 2.19]**

Opposite, above: Conceptual sketch. Pencil drawing by author.

**[FIGURE 2.20]**

Opposite, below: Conceptual sketch. Pen drawing by author.





since 1975, has always required his students to build models as part of their design process and presentations (Walker, 2008). This requirement is the same for students in the College of Architecture, Planning & Design at Kansas State University, and for other design programs around the world.

With continual advancements in computer technology, digital modeling has become more complex and more powerful. Modeling software, like e-on Vue (introduced to landscape architecture students at K-State just three years ago and used in the production of the motion picture *Avatar*) and 3ds Max (used primarily in the department of architecture at K-State for building and structural modeling), have the ability to produce highly realistic renderings, both in terms of materiality and physicality. Nevertheless, many scholars of design maintain that even the most elaborate modeling software cannot replace one's firsthand experience of an environment or place.

### The Senses and Landscape Experience

The faculty of sight alone does not render a holistic experience of the landscape. Although graphic representation plays an integral role in the design process of landscape architects, the senses of smell, touch, hearing, and taste are all vital to a firsthand experience of the landscape. There are qualities inherent in firsthand experience that simply cannot be conveyed in two-dimensional drawings or even three-dimensional perspectives and smaller-scale built models.

Landscape architect James Corner's article, "Representation and Landscape," discusses this experience of the landscape as being "rich in sensual and phenomenological terms" (Corner, 1992, 146). The use of representational drawings as a medium for the landscape does not accurately portray its spatiality, temporality or materiality. What he calls the 'lived landscape' is not abstracted as drawings can be, nor is it construed or merely a representation of the environment (Corner, 1992). From a spatial geographic standpoint, Mitch Rose (2001) explains, "The presence of the landscape is intimately connected to how it operates through other kinds of activities (other landscapes, other relations, other processes and forces)...It is contingent upon what it initiates, activates and inspires" (Rose, 2001, 456). J.G. Granö – a geographer like Rose – in his most eminent publication, called *Pure Geography*<sup>19</sup>, also describes the landscape as something more than just seen – it is to be felt, heard, and smelled (Granö, 1997).

Granö believed in a holistic approach to studying the landscape. In his article, "Pure Geographer: Observations on J.G. Granö and Soundscape Studies," Heikki Uimonen discusses parallels between Schafer's book *The Soundscape: Our Sonic Environment and Tuning of the World* and Granö's view of the environment (Uimonen, 2008).



As Granö's thinking was influenced by the systematic research of German Geography of the 19th century, so Schafer was influenced by the methods of musicology, psychology, social sciences, and architecture of the German *Bauhaus* (Schafer, 1977; Granö, 1997; Uimonen, 2008). Granö sought to create a terminology for the visual, auditory, olfactory, and tactile phenomena of the landscape. In "Chapter Four: Proximity" of *Pure Geography* he describes visible phenomena and objects in the proximity as 'proximate field of vision'; the tactile, auditory, and olfactory phenomena are therefore the surrounding or adjacent elements of the 'medium' (Granö, 1997, 108). In other words, objects furthest away from the perceiver of the environment can primarily be perceived with sight, whereas objects closer to the perceiver can more readily be perceived and understood using the senses of touch, hearing, and smell.

Both Schafer and Granö emphasize an anthropocentric concept of perceiving and studying the landscape, or the relationship between the perceiver (a person or a community) and their environment (Schafer, 1977; Granö, 1997; Uimonen, 2008). According to Granö, proximity of geography is to be perceived using all five senses (Granö, 1997; Uimonen, 2008). Tactile phenomena would be temperature, movements, humidity, composition, and electrical properties; auditory phenomena are 'highly relevant factors' that provide more temporal information than any of the other senses; olfactory phenomena are widely varied from individual to individual and are often recognizable (Granö, 1997, 123-129). Although Schafer's focus was primarily on sound in the environment, both researchers emphasized a multi-disciplinary, systematic, and critical evaluation of the environment (Schafer, 1977; Granö, 1997; Uimonen, 2008).

Macpherson also discusses the role of the body and the senses in experiencing the landscape (Macpherson, 2005). She argues that the body is central to some understandings of the landscape, including muscular effort and locomotion that is 'felt' through physical terrain (Macpherson, 2005, 100). The concept of 'affordances' developed by J.J. Gibson in 1986 also posits that people encounter the environment as 'different surfaces and objects that are perceived relative to the human organism' (Macpherson, 2005, 100). The body indicates orientation, geometry, gravity, measurements of the world, distance, scale, enables movement and a sense of wholeness. Our experience of the landscape is essentially an embodied interaction with the environment, one that can only be understood with our senses and interaction with our bodies (Macpherson, 2005).

### Interdisciplinary Studies of Sensory Experiences

A handful of scholars beyond Raymond Murray Schafer have written about a singular sense other than sight and how that affects one's experience of the environment. Juhani Pallasmaa (2005) focuses on

#### [FIGURE 2.21]

Opposite, above: Three-dimensional model. Wooden dowels, paper, and cardboard. Crafted by author. Photo taken by author.

#### [FIGURE 2.22]

Opposite, below: Three-dimensional model. Chipboard and wooden dowels. Crafted by author. Phot taken by author.

the tactile sense for experiencing and understanding the world; J. Douglas Porteus (1985) emphasizes the olfactory sense; Sissel Tolaas (2012) is also intrigued by the olfactory sense.

In his book *The Eyes of the Skin*, Pallasmaa explains that the body is the “very locus of reference, memory, imagination, and integration” in the world (Pallasmaa, 2005, 11). He believes that society has a dominant sense of sight and that the sense of touch is ultimately suppressed because of this, especially in the field of design. He writes, “Architecture is communication from the body of the architect directly to the body of the person who encounters the work, perhaps centuries later. . . . When experiencing a structure, we unconsciously mimic its configuration with our bones and muscles: the pleasurable animated flow of a piece of music is subconsciously transformed into bodily sensations, the composition of an abstract painting is experienced as tensions in the muscular system, and the structures of a building are unconsciously imitated and comprehended through the skeletal system” (Pallasmaa, 2005, 67). Skin reads the surface and characteristics of objects in the environment, including texture, weight, density, and temperature; in this way, the skin functions like the eyes (Pallasmaa, 2005).

Although Pallasmaa primarily focuses on the tactile sense in his book, he does not dismiss the importance of the other senses to the experience and understanding of the environment. Regarding the auditory sense, sound is indicative of space and time. The sense of smell is often the most persistent in the memory of space. Certain colors and details evoke oral sensations. These notions run parallel with many of Granö’s thoughts on geography and the landscape discussed earlier in this chapter.

J. Douglas Porteus argues that the sense of smell is a critical influence on the experience of landscapes, which he elaborates on this point in his article entitled “Smellscape” (Porteus, 1985). The concept of the smellscape suggests that smells function similarly to visual impressions, by being spatially ordered or place-related. Unlike vision or sound, which tend to involve cognition, smell is a very ‘basic and arousing sense’ (Porteus, 1985, 357). Porteus writes in his article about smells of people, places, and time. He recognizes that an historical account of smell has not yet been documented, but that it remains an intriguing yet highly subjective topic (Porteus, 1985).

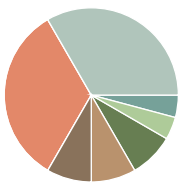
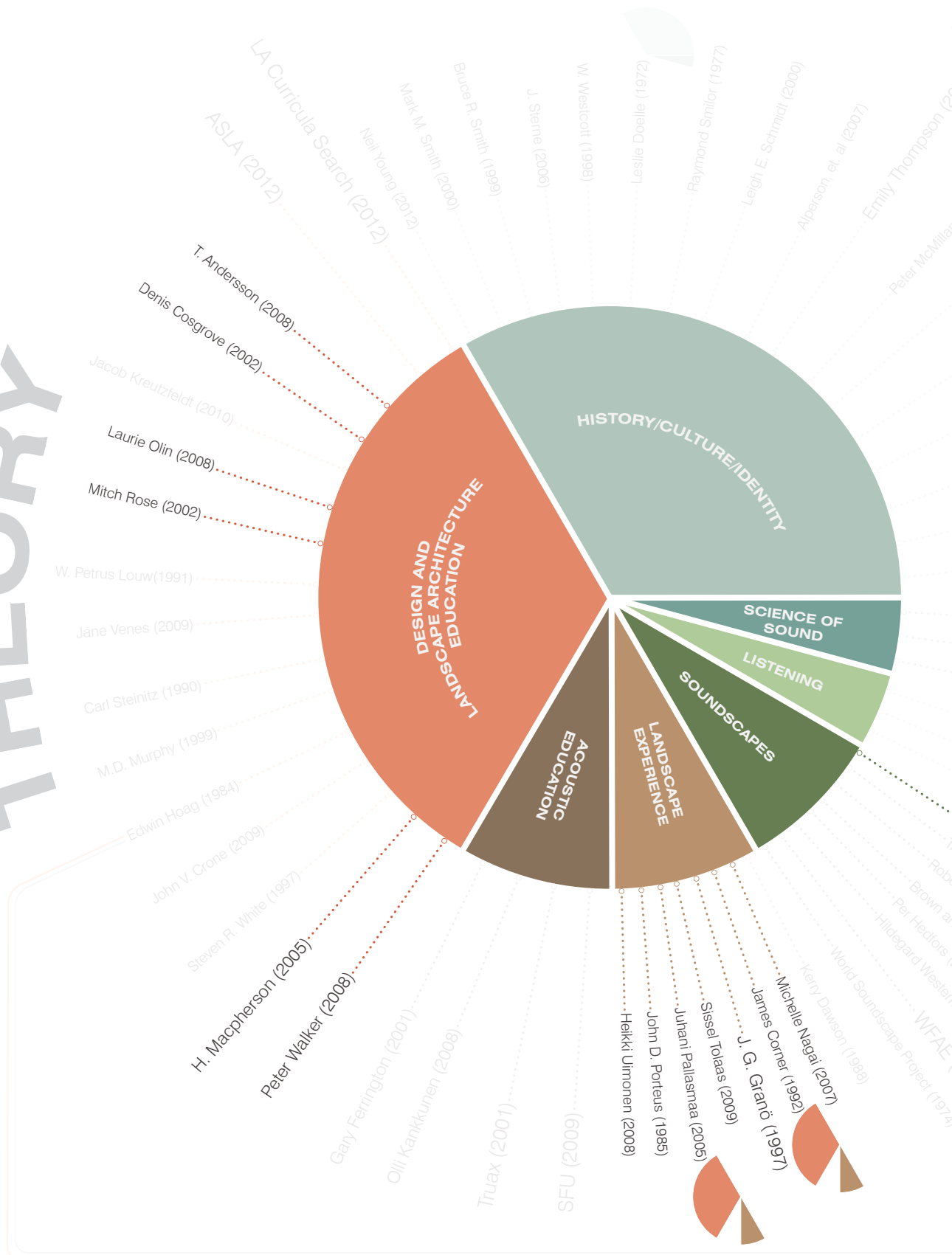
Scent curator, researcher, and ‘professional provocateur’ Sissel Tolaas has been studying and procuring smells since the late 1980s (Nowness, 2013). She currently has a collection of over 7,000 smells in her laboratory. Tolaas writes, “Smell is the first sense through which we interact with the world and react to it – we smell before we see” (Tolaas, 2009). She believes, like Porteus, that smells are a

critical component in defining and understanding the environment. In a project on smell in Mexico City, Tolaas gathered 200 smells from 200 neighborhoods. Two thousand people were filmed describing the smells of their city, which was later part of an exhibit (Tolaas, 2009).

Scholars such as Schafer, Pallasmaa, Porteus, and Tolaas have generated great momentum for studies on the senses, landscape experience, and the environment. Their research provides insight into the faculties of not only sight, but also tactile, auditory, olfactory, and gustation.

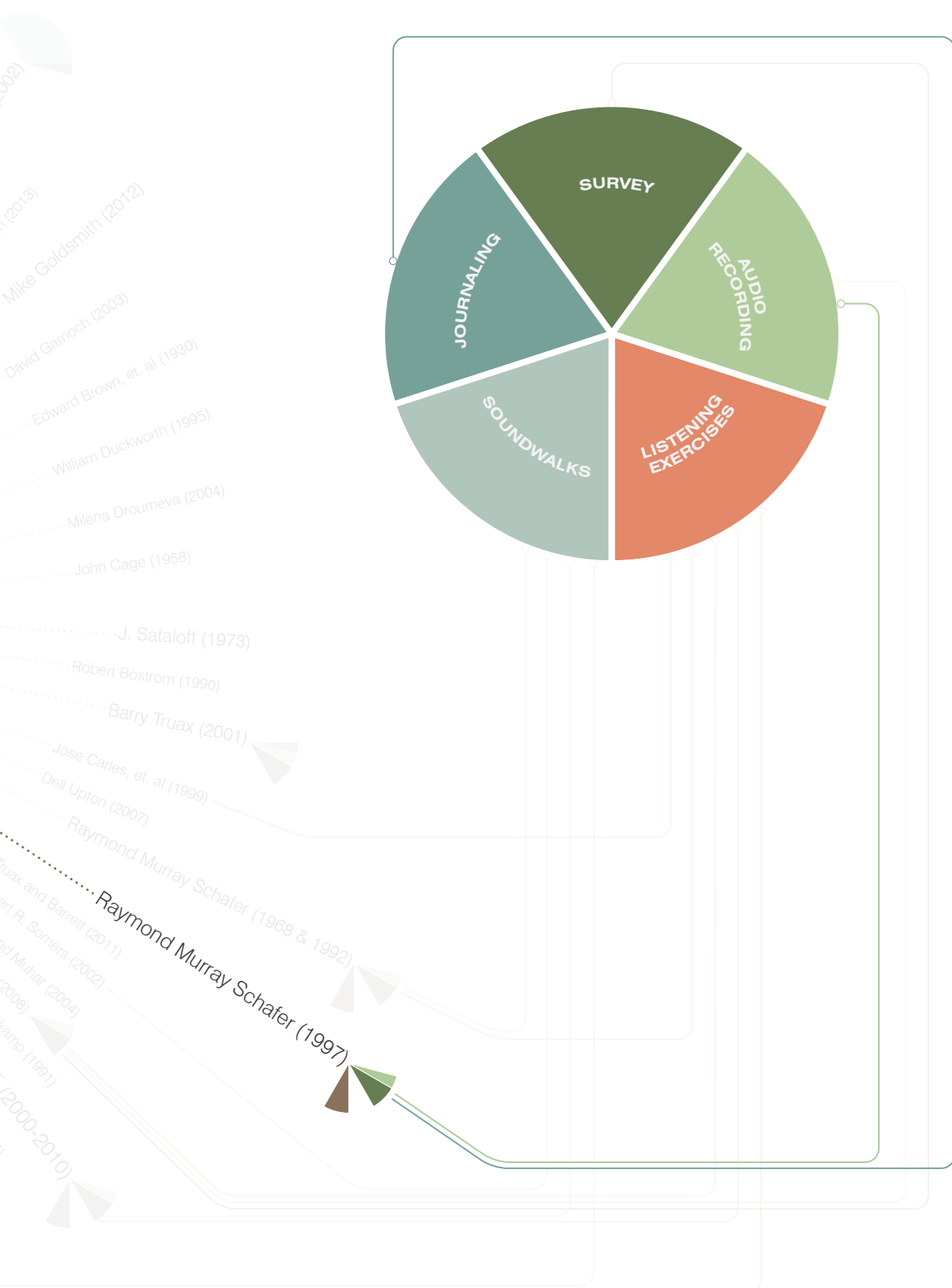


# THEORY



\*\*Smaller pie pieces indicate sources that discuss multiple theory topics.

# METHOD



[FIGURE 2.23]

Spread: Literature Map.  
Highlighted literature relevant  
to 'Sound and Design.'  
Graphic created by author.

## 2.5 SOUND AND LANDSCAPE ARCHITECTURE EDUCATION

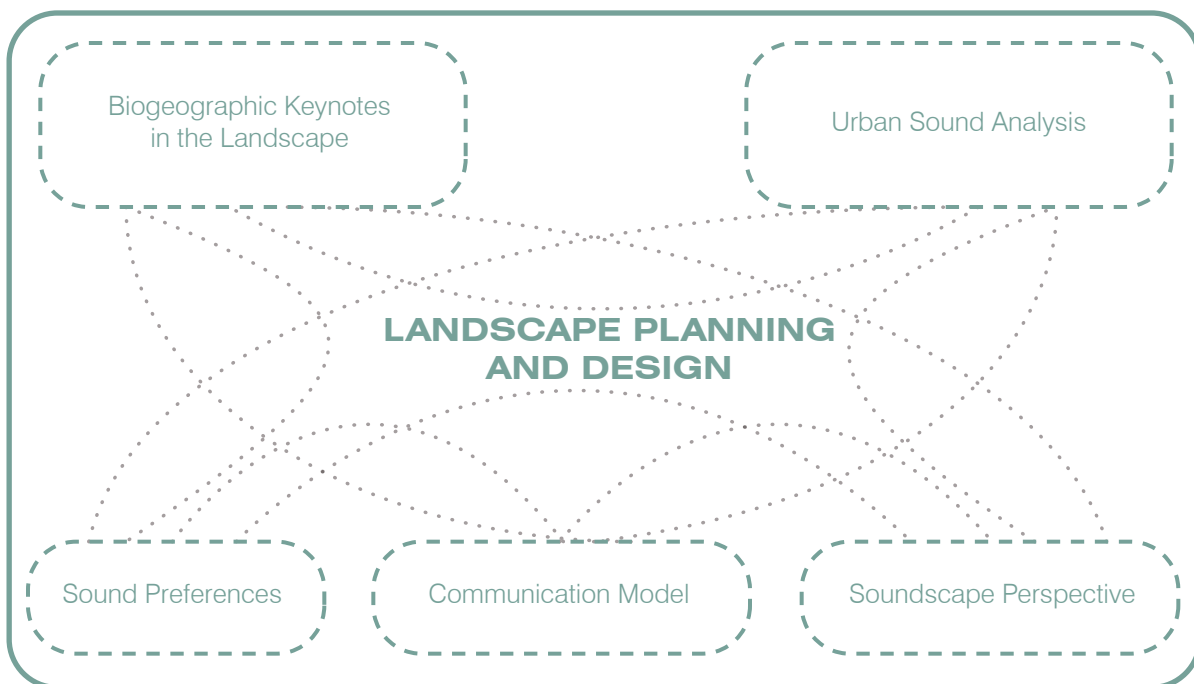
### The Landscape Architect's Influence on the Outdoor Environment

Landscape architects hold great influence over the outdoor environment. We are designers, creators, service providers, artists, and stewards to the environment. We have an obligation to understand the world and the medium with which we work in our daily lives. To not always strive for greater knowledge or to be unwilling to learn more about the various characteristics of the outdoor environment would be doing a disservice to our profession and to the principles of our work.

### The Landscape Architect's Influence on the Acoustic Environment

Although landscape architects play an integral role in the design of the outdoor environment – which includes the acoustic environment – there is not yet a strong connection between sound and landscape architecture. This missing connection is evident in the scarcity of literature and the scarcity of projects emerging from firms that focus on or deal with sound, beyond the mitigation of noise. Nevertheless, Per Hedfors argues in his landscape architectural dissertation that the profession of landscape planning and design is central among five components regarding sound and the environment: (1) biogeographic keynotes in the landscape, (2) sound preferences, (3) a communication model, (4) urban sound analysis, and (5) a soundscape perspective (Hedfors, 2008, 25).

**[FIGURE 2.24]**  
Below: Hedfors' (2008) theoretical framework, consisting of five components surrounding the profession of landscape planning and design. Graphic created by author.



While Schafer suggests that those in the fields of arts and sciences should address the soundscape, his fellow soundscape colleagues Truax and Barrett (2011) specifically mention the importance of those in the field of design and especially landscape architecture. In their article, “Soundscape in a Context of Acoustic and Landscape Ecology,” they propose that soundscape ecology is the synthesis of two fields of study – landscape ecology and acoustic ecology. “In addition to spectral and temporal aspects of soundscape perception, spatial development and recognition clearly play an important role...For anything to sound, there must be movement, and that movement, if it produces audible sound, interacts with the physical space and is perceived as sound that is inextricably combined with spatial information” (Truax and Barrett, 2011, 1204). The science of sound and listening in the landscape is also explained as “[contributing] to problem-solving approaches focused on ecological resource management and as an emerging component of sustainability science,” and they advocate for funding to be provided to “analyze and integrate the collection of sounds across temporal-spatial scales to configure ecosystem/landscape patterns and processes” (Truax and Barrett, 2011, 1206).

Jacob Kreutzfeldt asserts in his article, “Acoustic Territoriality and the Politics of Urban Noise,” that studying sound could be a useful method for planners, architects, designers, and politicians hoping to analyze the social dynamics of urban life (Kreutzfeldt, 2010). According to Kreutzfeldt, the urban soundscape articulates the “social practices of people inhabiting and using the place” (Kreutzfeldt, 2010, 15). It is important to note that Kreutzfeldt does not completely condone Schafer’s argument that the urban soundscape should be designed as a hi-fi environment. Rather, he feels that notion is out of line with modern urbanized environments, and that the concentrated presence of sounds in the city is an important component in analyzing these places. During a trip to Osaka, Kreutzfeldt observed that music in metropolitan culture is used heavily as a territorial device, especially for shops and restaurants (Kreutzfeldt, 2010). In this way, sound is used spatially and the community has adapted to its presence.

Other authors have written about sound and the landscape in a less technical, more narrative style. Although these articles are not directly relevant to the research for this thesis, they have helped shape perspectives and theories about topics on sound. In the article, “Flight, Fancy, and the Garden’s Song,” Kerry Dawson indicates a preference for natural sounds over man-made/machine sounds as he writes about using sound in a garden (Dawson 1988). His article compiles research on sound preferences, which reinforces that nature sounds are generally more pleasing. In “Sound as Landscape,” Dell Upton chronicles the role of sounds in the antebellum city and how it has changed culturally through time

(Upton 2007). This particular article discusses the eloquence of language and its influence on music and society.

A few landscape architecture theses and dissertations have researched the use of sound in landscape architecture design. As mentioned above, Per Hedfors' (2008) research is an in-depth discussion of how to approach soundscape design using site surveys with musicians, landscape architects, and the general public. He recognizes the need for an acoustic terminology to be built within the field of landscape architecture, to facilitate designing with sound. In contrast to Hedfors' approach, Robin Banks (2009) studied acoustics by presenting sound samples collected in the field to participants (general public, broadcasting, and videography professional) in a survey. The results of the survey were used to inform the design of an outdoor performance space. Robert Somers (2002) also researched sound for the design of an outdoor theater. One portion of his design process involved the use of soundwalks to analyze the site's acoustic qualities. These three theses and dissertations have helped further the study of sound in landscape architecture. While these references are pertinent in that they have shown that other scholars have begun to recognize the importance of addressing issues of sound in the landscape, they do not specifically mention the use of listening exercises as a fundamental part of improving the outdoor soundscape.

### **An Acoustic Education**

For landscape architects to effectively impact the acoustic environment, we must first be able to critically consider and analyze sound (Schafer, 1977; Truax, 2001a; Truax, ed., 1978). To become critical analyzers of sound, landscape architects must be trained to listen effectively to the acoustic environment (Schafer, 1977, 1968, 1992; Truax, 2001a; Truax, 2001b). Listening exercises are one approach to strengthen listening abilities, both to improve aural awareness and increase sensitivity to sound. An acoustic component in landscape architecture education can engage landscape architects with the acoustic environment, to potentially become better designers of the soundscape (Schafer, 1977, 1968, 1992; Truax, 2001a; Truax, 2001b; Carles, Barrio and de Lucio, 1999; Steinitz, 1990; Upton, 2007).

Schafer published two books on lessons in active, critical listening – *Ear Cleaning: Notes for an Experimental Music Course* (1968); and *A Sound Education: 100 Exercises in Listening and Sound-Making* (1992). Schafer (1977) was also the first to introduce the concept of soundwalks, the practice of actively participating in the soundscape with the intent of listening discriminately to all sounds of the outdoor acoustic environment. (The listening exercises used in the experiment for this thesis were adapted from Schafer's two listening books, and will be further elaborated on in Chapter Three: Methodology.) Several

researchers have participated in or conducted soundwalks for sound studies around the world. The World Soundscape Project was the first, however, to conduct soundwalks at sites in Canada and Europe (Truax, ed., 1978).

In *Soundscape: The Journal of Acoustic Ecology*, education on the acoustic environment is often referred to as a soundscape education. In volume eight, Olli-Taavetti Kankkunen discusses two soundscape pioneers of Finnish music education in the 1960s – Liisa Tenkku and Ellen Urho (Kankkunen, 2008). Their thoughts on music education are highly relevant to soundscape principles, in that their pedagogical methods are grounded in auditory perception. Their concept of ‘total expression’ utilizes both auditory and visual tools to help students understand musical constructs; these include drawings and paintings, inventive moving, working with music materials, sound, and silence. Aside from these creative activities, students are required to record and actively listen to compositions, in order to hear the details of tone quality in the piece. Tenkku’s and Urho’s ideas were embraced at first, but later criticized for not using ‘real and correct musical notation,’ though this was central to their goal of enhancing creative thinking (Kankkunen, 2008, 23). Some of their methods are still used today in music education, including active listening and creative music-making (Kankkunen, 2008).

In another article from *The Soundscape Journal* – “Teaching Acoustic Ecology: An International Overview” – Gary Ferrington writes about soundscape education programs around the world, including those in Burg Giebichenstein, Halle, Germany; London, United Kingdom; Iowa, United States; Montréal, Quebec, Canada; Burnaby, British Columbia, Canada; and Bombay, India (Ferrington, 2001). At the School of Art and Design in Burg Giebichenstein, the objective of the soundscape course is to “improve, broaden, and intensify the acoustic education of industrial designers” – these include activities such as ear cleaning (discussed later in this section) and training activities to facilitate the development of attentive listening (Ferrington, 2001, 21). In an acoustic ecology course in London at City University, students attend three separate sessions based on listening exercises, audio examples, and discussions. At the University of Iowa in the Cinema and Comparative Literature Department, students learn how to create meaningful soundscapes for films, video, or as audio works. In Quebec at Concordia University, the Communication Analysis of Environment seminar engages students in the analysis of museums, galleries, exhibitions, country-sides, landscapes, city streets, and highways, with an introduction to soundscape research. At Rizvi College of Architecture in Bombay, a soundscape course examines technical aspects of acoustics as well as a history of problems and dreams to instill in the students a self-awareness of their roles as emitters, receivers, and designers of sound (Ferrington, 2001).

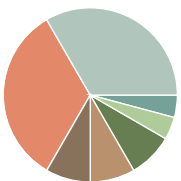
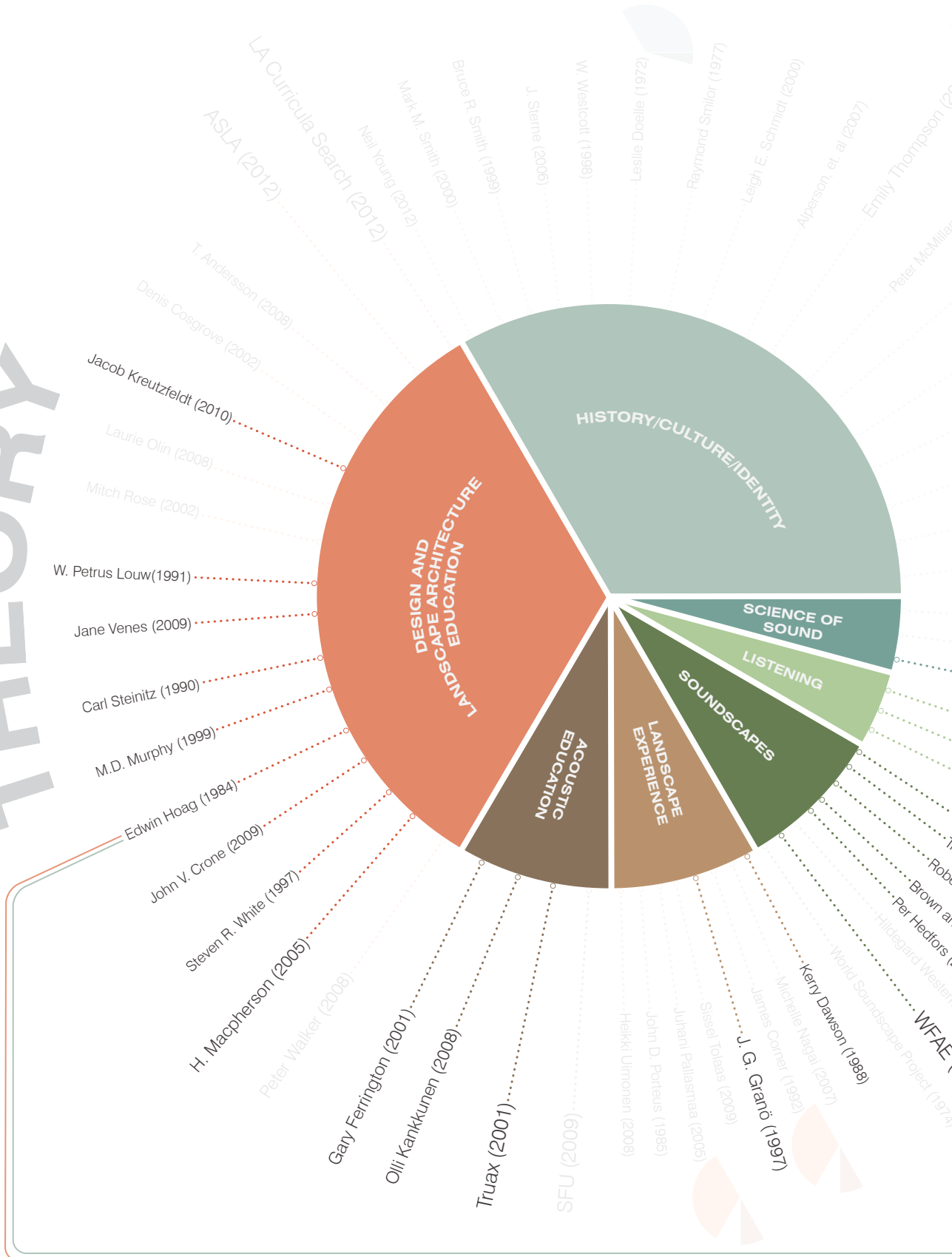
At SFU (referred to in Ferrington's article as well as in Truax (2001b)), professors of acoustic communications studies conduct ear-cleaning exercises and soundwalks with their students to improve listening abilities. A student who enrolled in one of the courses in the fall of 1974 wrote the following conclusion about her acoustic studies experience: "We all brought pre-determined perceptions into the seminars in the early fall. They were largely structured around visual perceptions. Over the past three months I have been able to eliminate a lot of my visual hang-ups and to re-assess the significance of sound in my surrounding environment. I know this to be a fact, because my ears have become extremely sensitive to technological sounds that the majority of the public either can't hear or take for granted" (Truax, 2001b).

It should be noted that no literature was found during the process of writing this thesis concerning the role of sound in landscape architecture education; this point was also mentioned in Chapter One: Introduction. The emergence of critical thought or discourse begins with education. Oft-neglected, listening should be actively practiced in training and the presence of sound should be acknowledged during all parts of the design process. Listening is especially critical at a time when sounds from technologies and machines are increasingly present in the outdoor urban environment. Sounds are indicative of culture, social dynamics, and aspects of a site's ecology, and they contribute a great deal to the experience of the landscape (Schafer, 1977; Granö, 1997; Truax, 2001a; Macpherson, 2005; Truax and Barrett, 2011). Sound can have a more compelling effect on the field if those inherently reliant on the visual can more readily observe by listening. If sound were to become an integral part of the education of landscape architects, the effects would be seen not only in design process but also in emerging landscape architectural built works.



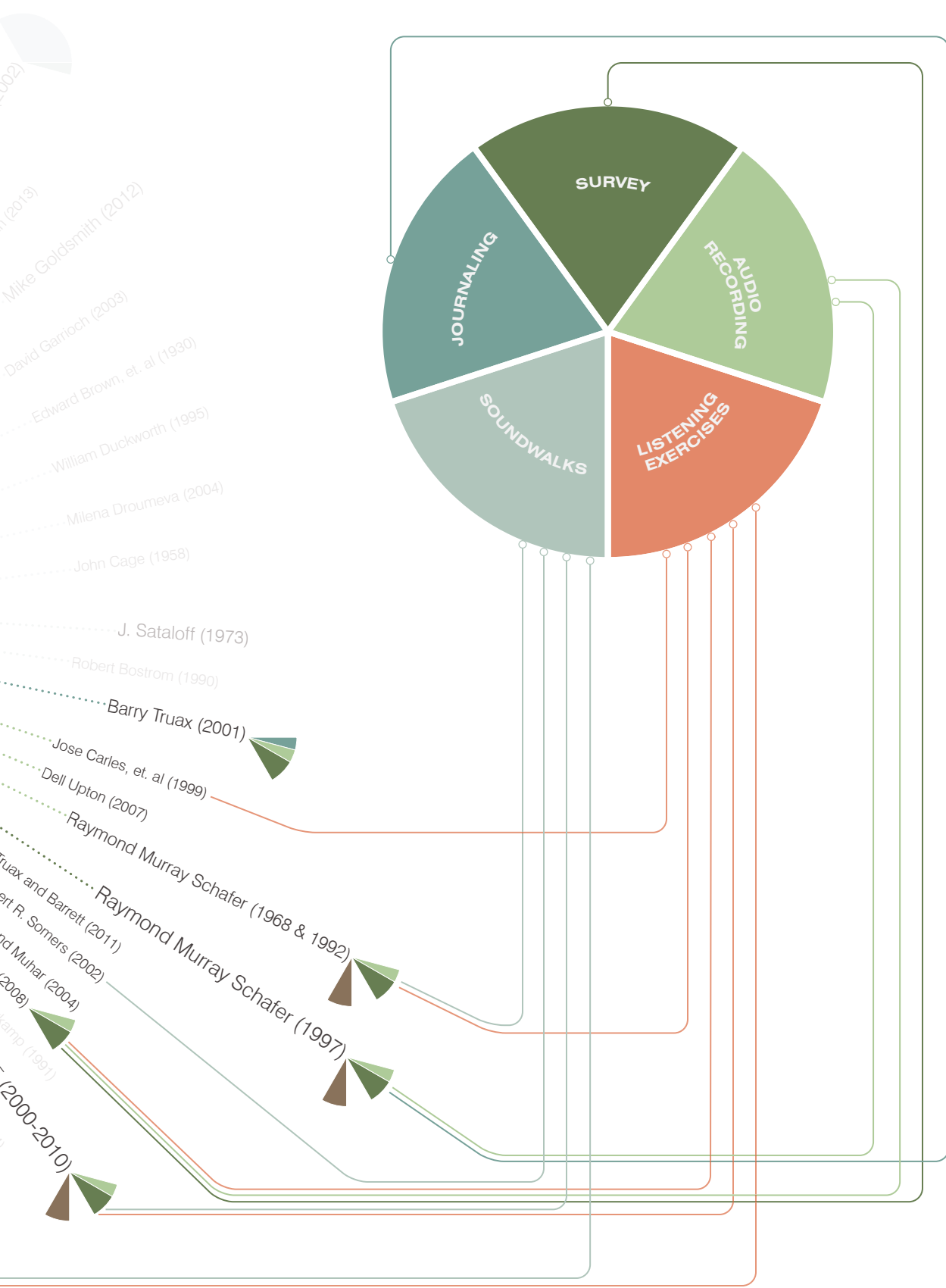


# THEORY



\*\*Smaller pie pieces indicate sources that discuss multiple theory topics.

# METHOD



**[FIGURE 2.25]**  
Spread: Literature Map.  
Highlighted literature  
relevant to 'Sound and  
Landscape Architecture  
Education.' Graphic created  
by author.



**[FIGURE 3.01]**

The café soundscape in Wellington, New Zealand is usually filled with the sounds of people chatting, cups clinking, and constant footsteps shuffling by. Photo taken by author (2012).



[03]

METHODOLOGY

*“Listening is our only means of contact with the sound environment, and if it is not practiced and kept sensitive, we will lose, both individually and culturally, all of the human benefits it can provide.”*

Barry Truax. *Acoustic Communication*. 2nd ed. 106. 2001.

# [03] METHODOLOGY

## 3.1 CHAPTER OVERVIEW

The purpose of the research design was to establish the unmet need for an acoustic education in landscape architecture and test the effectiveness of soundwalks and listening exercises on landscape architecture students to improve their aural awareness and sensitivity. There were three parts: (1) surveys of landscape architecture professionals and faculty members, (2) a listening experiment involving landscape architecture students, and (3) a control listening experiment involving a different sample of landscape architecture students from Part Two. Figure 3.02 graphically summarizes this three-part methodology. This chapter presents each part of the methodology in successive order.

### [FIGURE 3.02]

Below: Methodology summary. Graphic created by author.

### [PART ONE]

The Surveys of  
Landscape Architecture  
Professionals and  
Faculty Members

### [PART TWO]

The Three-Week  
Listening Experiment  
with Landscape  
Architecture Students

### [PART THREE]

The Control  
Listening Experiment  
with Landscape  
Architecture Students

### **Purpose of the Surveys**

The survey aimed to deepen our knowledge of the current role, understanding of, and attention to sound in landscape architecture practice and education. Key questions in the survey revealed whether an acoustic education can be a valuable addition to landscape architecture curricula and the preparation of landscape architects for playing a more critical role in using sound as an integral part of landscape architecture projects. The landscape architecture professionals received a different survey set from the one administered to the faculty members, though both survey sets were fundamentally similar in their ordering and addressing of general ideas. While the statements on how sound has been addressed in landscape architecture projects in the survey to professionals questioned their personal experience in practice, the survey to faculty members questioned their observations of their students' projects. This is the only difference between the two survey sets; all other questions were worded the same. Appendix D contains full copies of survey sets for both sample groups – professional landscape architects and landscape architecture faculty members.

### **Participants**

The survey was administered to 132 professionals from 44 firms and to 48 faculty members of 16 different universities in the United States. The selected firms were the recipients of a 2010 or 2011 American Society of Landscape Architects (ASLA) award; faculty members are full-time professors in the top ten undergraduate and graduate programs, as per the 2012 DesignIntelligence rankings. Appendix D contains the full list of firms and universities contacted in this study.

Official IRB approval for the survey was received September 11, 2012. Appendix C contains a copy of the official letter of approval.

### **Instrumentation and Procedures**

All surveys were administered online using Axio Survey, and all recipients were given two weeks to respond. The Axio software is a free, web-based reporting tool that is available to all faculty, staff, and students of Kansas State University for academic research. The Axio survey was used because: (1) the survey can be administered to anyone including those outside of the K-State community; (2) the link to the survey can be placed anywhere on the web; (3) responses to the survey can be seen immediately; and (4) results can be shared online (Kansas State University, 2012). These advantages were useful to this study because online distribution allowed for a quicker response rate, provided a way to monitor incoming responses on the Axio interface, and eliminated the funds involved in postage. Major content sections in the survey were opening instructions, question sets, and closing instructions. The type of

## **3.2 PART ONE: SURVEYS OF LANDSCAPE ARCHITECTS IN PRACTICE AND EDUCATION**

scale used to measure the items on the survey was a Likert scale (e.g. *strongly agree* to *strongly disagree* or *almost always* to *never*).

All firm contacts that were not listed online were contacted via the default informational email address on the firm's website or by phone. All email addresses were collected prior to the survey dissemination. At the point of dissemination, all contacts received the link to the online survey in an emailed cover letter, which included a short description of the study, an emphasis that the research is academic, and a notification of the anonymity of their responses. Appendix D contains full copies of cover letter templates for each sample group.

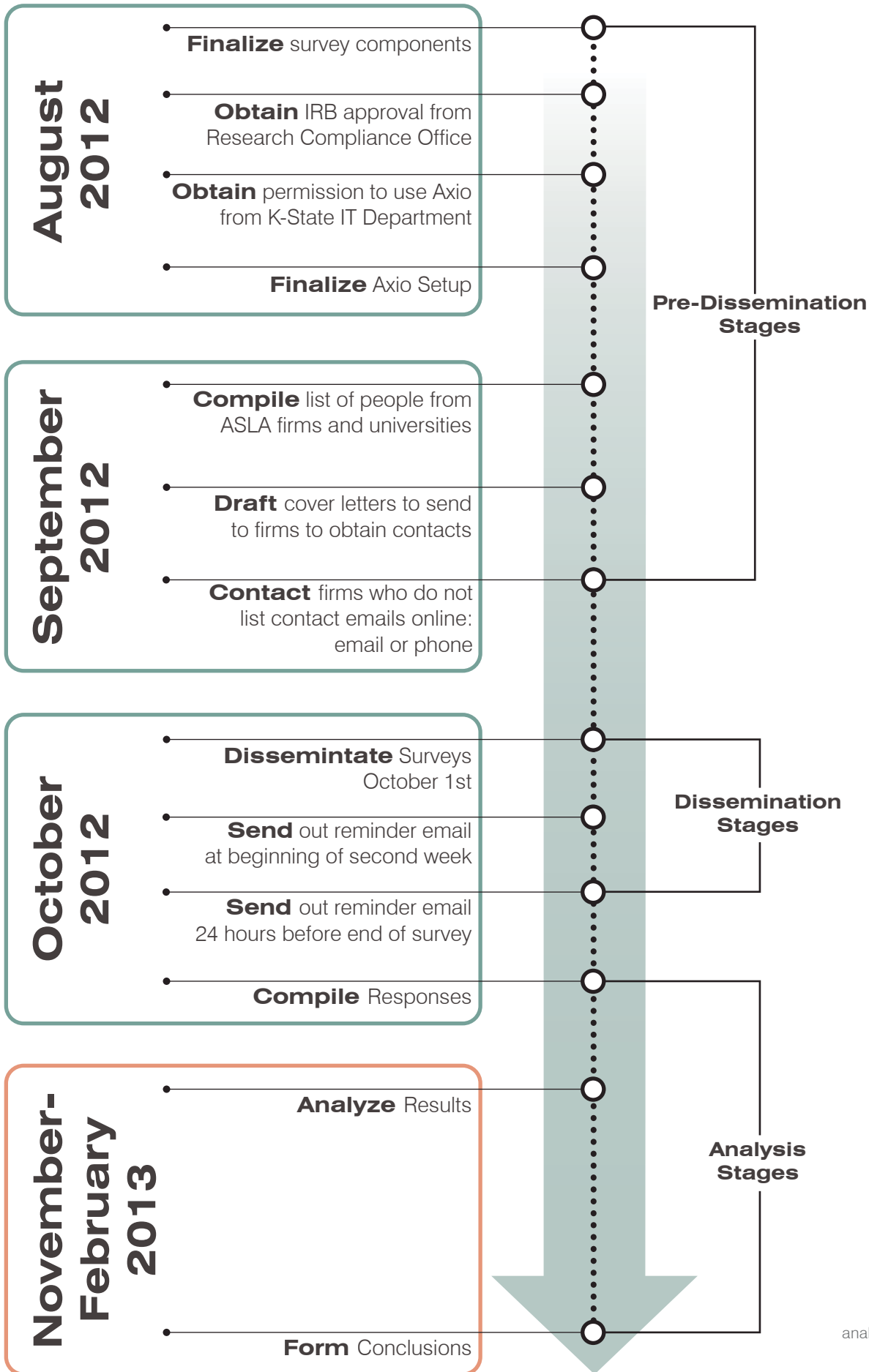
### **Time Frame for Surveying**

- August 2012 to September 2012: Finalizing Axio online setup was completed prior to dissemination. This included requesting access to Axio Survey from the IT department and formal approval by the department head.
- End of August 2012: IRB approval was sought and approved by the University Research Compliance Office.
- Mid-September 2012: Cover letters were drafted and finalized prior to contacts request procedures.
- Mid-September 2012: A distribution list of survey participants was compiled and finalized prior to dissemination.
- End of September 2012: An email was sent out a week prior to dissemination requesting contact information from the selected firms.
- October 2012: Surveys were disseminated the first of the month. Participants were given two weeks to complete and submit their responses to the online survey; a reminder emails were sent out at the start of week two, and 24 hours prior to the closing of the survey.

See Figure 3.03, which graphically presents the time frame for the Part One survey research.

### **Main Points Covered by the Surveys**

- How strongly participants agree/disagree that sound should be considered in the design of the outdoor environment
- How strongly participants agree/disagree that landscape architects are the right professionals to design sound in the outdoor environment
- How much participants know about outdoor acoustics
- How strongly participants agree/disagree that sound courses can be a valuable addition to landscape architecture curricula
- How often outdoor sound is addressed in the design process
- How often sound has been viewed as something to mitigate
- How often sound has been used to design with and/or draw inspiration from



[FIGURE 3.03]

This page: Part One time frame for survey development, dissemination, and analysis. Graphic created by author.



### Sample Selection Criteria

- Professionals must be practicing landscape architects from a landscape architecture firm, the criteria being those that have received an ASLA award
- Faculty members must be full-time professors

### Challenges

- Surveys were given to only three landscape architects per office; due to the anonymity of the Axio results, there was no way of finding or revealing if all three or only some of the landscape architects responded from each office

### Data analysis

The survey responses were analyzed to reveal the general attitudes of professionals and faculty members toward sound in landscape architecture. The Axio results were exported to several spreadsheets (tables can be found in the next chapter) and the distribution of responses was analyzed to assess general attitudes of landscape architects in practice and education. The type of analysis was a simple, descriptive statistical analysis to calculate the number and percentage of each type of response to the survey. The surveys were designed to reveal landscape architects' opinions about:

- (1) The role of sound in the outdoor environment and the landscape architect's role in designing sound
- (2) Current knowledge of outdoor acoustics
- (3) Belief that acoustics or sound courses can be useful
- (4) Current status of sound in landscape architecture – consideration of sound as noise to be mitigated or inspiration for design

Final results of the two surveys are presented in the next chapter.

### 3.3 PART TWO: THREE-WEEK EXPERIMENTAL RESEARCH TESTING SOUNDWALKS AND LISTENING EXERCISES

#### Purpose of the Experiment

The second and primary part consisted of empirical research on lessons in listening, as outlined in works by R. Murray Schafer (1968, 1977, and 1992). The intent of this part of the research was to observe how landscape architecture students' listening abilities change or improve, by practicing Schafer's listening exercises, learning interdisciplinary sound terminology, and engaging in soundwalks. The overall objective of an integrated sound education is to help promote a shift in landscape architecture students' thinking about sound from noise to be mitigated to exploring sound as an integral element of design. When students experience a change or increase in their aural awareness and sensitivity to sounds, they begin to think more critically about sound and how it affects the design of the soundscape (Schafer, 1977; Truax, 2001).

## Participants

A sample of 23 volunteer landscape architecture students in their second to fifth year of education (non-baccalaureate and post-baccalaureate) participated in the experiment. Kansas State University offers a five-year master's degree in landscape architecture, with no baccalaureate degree. Due to this five-year system, the landscape architecture program has two overarching groups of students – those who are seeking their five-year master's degree and those who have already obtained an undergraduate degree in a different program and are furthering their education to a Master's degree. A total of 20 participants completed the experiment in full. Data from the three participants who were unable to complete the experiment was excluded from the final results. All students participated on a voluntary basis, and the recruiting process is described in the next section. The researcher acted as an observer and administrator for the experiment, recording the participants' progress from one session to the next.

Official IRB approval for the experiment was received September 11, 2012. Appendix C contains a copy of the official letter of approval.

## Instrumentation and Procedures

The experiment involved a series of soundwalks, lessons in interdisciplinary sound terminology, and listening exercises, which were adapted from Schafer's two seminal works, *Ear Cleaning: Notes for an Experimental Music Course* (1968) and *A Sound Education: 100 Exercises in Listening and Sound-Making* (1992). In this series, terminology lessons were alternated with periods of listening and explorations in the concept of depicting sound graphically. It was critical to support explanations of sound characteristics with examples (in some cases sound samples). The participants' ability to analyze sound was supported by asking them to engage sound graphically, effectively appealing to designers' inherent visual lens. In this way, the listening exercises that were originally tailored to the musician, acoustician, and communications majors were adapted for landscape architecture students (Schafer 1968; Schafer 1992). At the completion of the experiment, all participants were asked to complete an exit survey (see 'Post-Experiment Survey for Landscape Architecture Students' for further explanation) to document their experience in the study.

An introductory meeting was held prior to the start of the experiment to recruit participants. The meeting was advertised in the College of Architecture, Planning and Design's Seaton Hall and Seaton Court two weeks in advance. The meeting covered the premise of the experiment, as well as the extent of participant involvement and a specific time frame for each session. Background information concerning the specific thesis topic was withheld, to avoid inadvertently biasing the results of the experiment. A neutral point

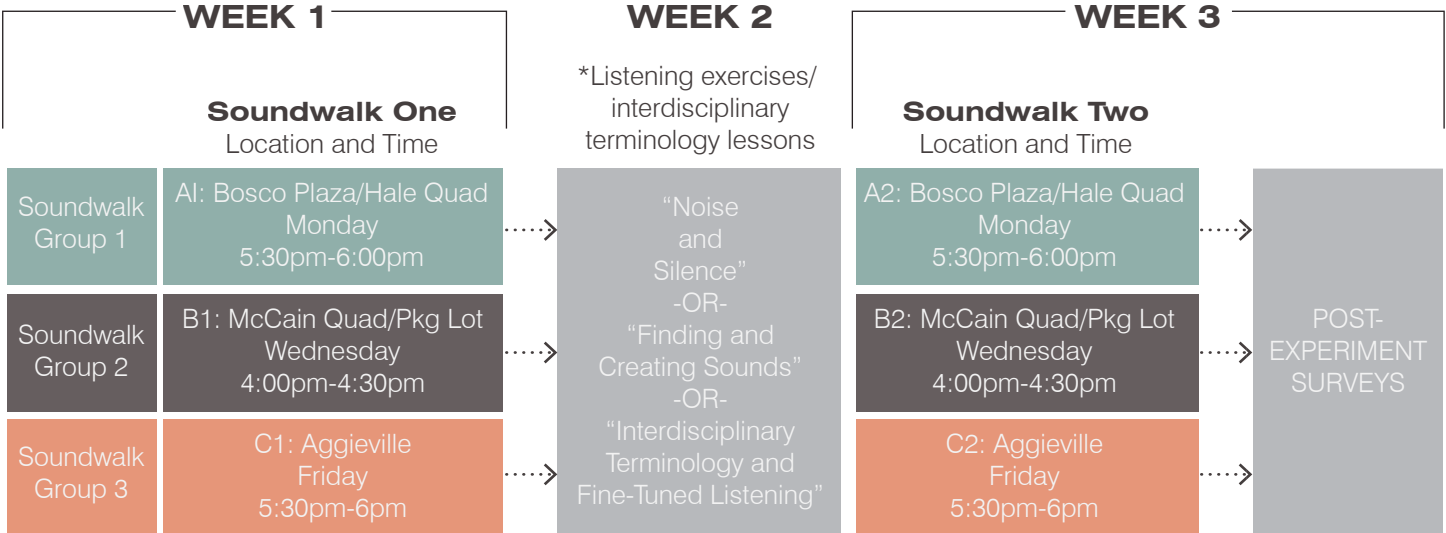
of view was presented by stating, ‘the effectiveness of the listening exercises will be tested,’ and purposefully omitting the researcher’s anticipation of an overall increase in aural awareness and sensitivity.

Although all students participated on a voluntary basis, they were asked to attend at least one session per week (preferably two listening exercise sessions in Week Two) to maintain accuracy and continuity of the results. All participants were required to fill out an ‘informed consent form’ prior to participating in any part of the experiment. Appendix C contains a copy of this form.

### **Time Frame for Experiment**

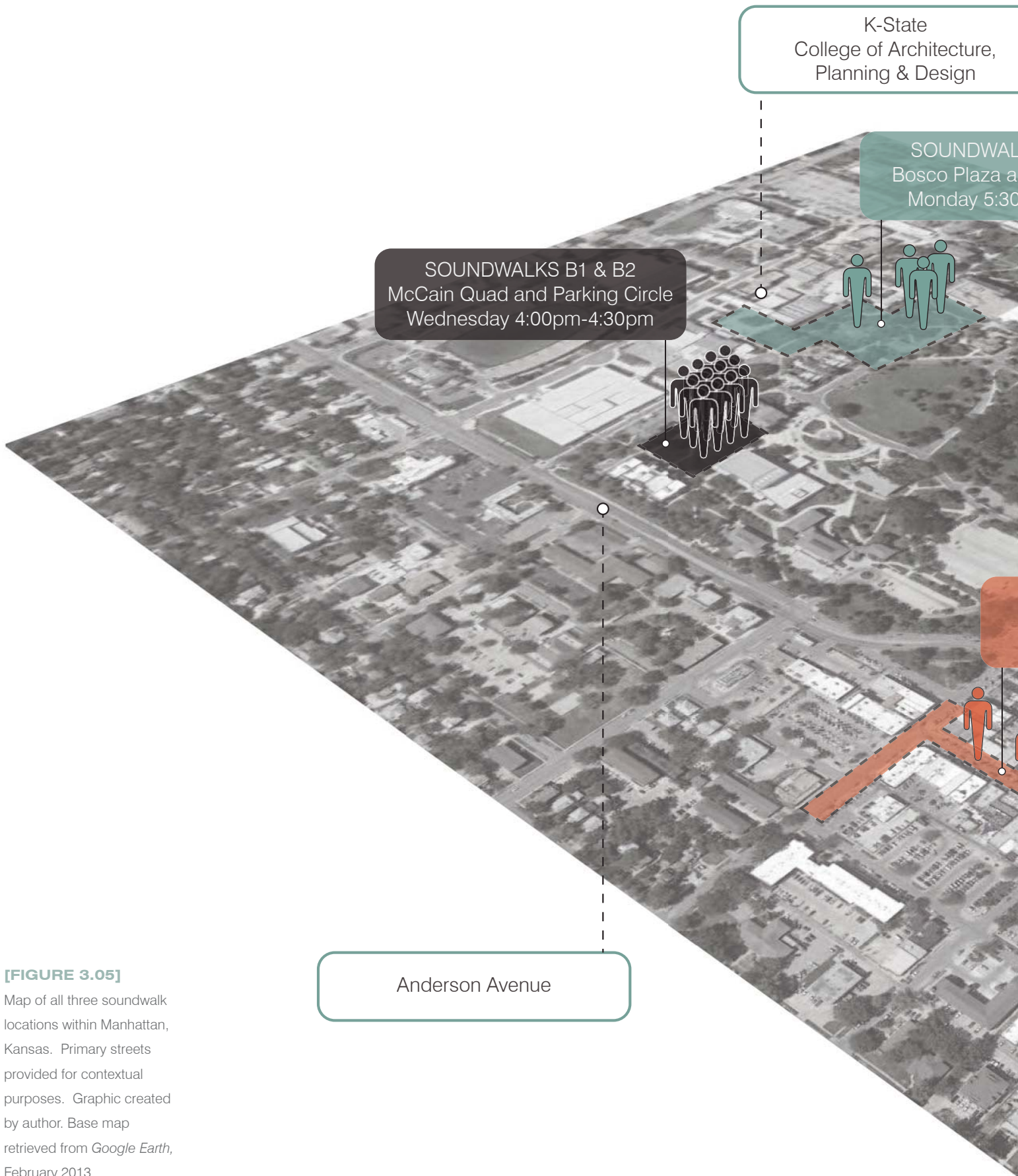
The experiment was a three-week process. Figure 3.04 shows a step-by-step breakdown of the experiment.

The first and third weeks involved conducting soundwalks in three different locations in Manhattan, Kansas, which have varying acoustic qualities. The locations selected for the soundwalks were the following: (a) Bosco Plaza and Hale Quad beginning at 5:30pm, (b) McCain Quad and adjacent parking circle during a period between classes beginning at 4pm, and (c) Aggieville’s Manhattan Avenue and Moro Street on an active Friday evening beginning at 5:30pm. Figure 3.05 shows a map of each soundwalk location; Figure 3.06 provides photographs of each location. Each participant attended one soundwalk in Week One and one soundwalk in the same location in Week Three; therefore, the groups for each soundwalk location remained the same in Week One and Week Three. Each soundwalk was 30 minutes and each participant was required to keep a journal of his or her acoustic observations. The instructions for Week One soundwalks and Week Three soundwalks also remained the same. The second week involved three in-class lessons and discussions about interdisciplinary sound terminology, exploring sound creation, and fine-tuned listening exercises. The participants were asked to attend any one of the in-class lessons in the second week. Each lesson was 30 minutes and all critical discussions were recorded for the researcher’s post-experiment analysis. The final week of the experiment involved three more 30-minute soundwalks conducted in the same locations and times of day as the first week.



\*Soundwalk groups are not the same as Week Two groups. Participants were asked to attend at least one session in Week Two, not necessarily on the same day of the week as their soundwalk session.

[FIGURE 3.04]  
Part Two full three-week  
experiment time frame.  
Graphic created by author.



[FIGURE 3.05]

Map of all three soundwalk locations within Manhattan, Kansas. Primary streets provided for contextual purposes. Graphic created by author. Base map retrieved from *Google Earth*, February 2013.



SOUNDWALKS A1 & A2  
Bosco Plaza & Hale Quad  
Friday 5:30pm-6:00pm

Manhattan Avenue

SOUNDWALKS C1 & C2  
Aggieville  
Friday 5:30pm-6:00pm



-  Name of Primary Street
-  SOUNDWALK GROUP 1  
A1 & A2 = Week 1 & Week 2  
Bosco Plaza & Hale Quad
-  SOUNDWALK GROUP 2  
B1 & B2 = Week 1 & Week 2  
McCain Quad and Parking Circle
-  SOUNDWALK GROUP 3  
C1 & C2 = Week 1 & Week 2  
Aggieville



**[FIGURE 3.06]**

Photographs of each soundwalk location. This page, above: Bosco Plaza. This page, below: Hale Quad. Photos taken by author, 2013.



**[FIGURE 3.06  
cont'd]**

Photos continued. This page, above: McCain Quad. This page, below: McCain parking circle. Photos taken by author, 2013.





### Controllable Conditions

- Location of each soundwalk
- Time of day during which each soundwalk was conducted
- Interdisciplinary sound terms discussed during lessons and exercises
- Specificity of instructions during soundwalks
- Amount of time allotted for each soundwalk session
- Medium provided for documenting acoustic observations

### Uncontrollable Conditions

- Weather conditions affecting the presence and magnitude of sounds
- The documentation style varies for each participant; therefore, the researcher had to analyze several different styles of acoustic documentation
- Participants may or may not have observed aurally the entire area of a soundwalk location during the allotted time for the session
- Accuracy of participants' observations; will they document what they physically hear? Or will they also document what they think they hear?

### Listening Exercises Explanations

The first Week Two session was meant to encourage participants to consider different sound source types, what sounds were moving or stationary, what sounds were continuous, repetitive, or unique, and what sounds were loud or quiet. Another portion of the session helped participants consider the sounds they found pleasant and those they found unpleasant. The session was supported by a section on interdisciplinary acoustic and psychoacoustic terminology, a listening exercise, and a graphic exercise. As a visually dominant field, it was important to introduce new concepts of sound with skills that were already familiar to the participants, such as drawing sound.

The second Week Two session included a short overview of soundscape terminology, followed by a longer listening exercise that coupled onomatopoeic words with sounds that best illustrate the words' meanings. Participants were encouraged to practice their creativity, but also to be courageous enough to get up in front of the group and perform their assigned sound word. Another objective of the listening exercise was to have participants draw what they imagine the individual sounds would look like if put onto paper.

The third Week Two session was framed around teaching acoustic and psychoacoustic terminology. The session incorporated informational presentation slides with sound samples and two listening exercises. The first listening exercise conducted at the beginning of the session challenged participants to think about what sounds they had heard prior to the session and the night before. After the researcher

### [FIGURE 3.06 cont'd]

Photos continued.  
Opposite above and  
below: both photos taken  
in Aggieville. Photos taken  
by author, 2013.

presented the terminology, participants were then asked to perform a second listening exercise with the new concepts of sound in mind. Participants were challenged a second time to listen and observe a particular sound they hear every day (in this case their own set of keys), but the subtleties of which may have escaped them in the past. These nuances are what differentiate particular sounds from similar sound sources. Appendix D contains a full description of instructions given each session during Week Two.

### **Post-Experiment Survey for Landscape Architecture Students**

The post-experiment survey for landscape architecture students was composed of five quantitative, Likert scale statements (participants responded to how much they agreed or disagreed with the statement) and one open-response question. Each statement in the survey was used to evaluate the change, if any, in each participant's listening abilities. Appendix D contains the post-experiment survey for Part Two.

### **Data Analysis**

The participants' sound journals were analyzed using a coding system to generate categories of change, or lack thereof, from Week One to Week Three of the experiment. The post-experiment surveys were analyzed using a simple, descriptive statistical analysis. Each journal was coded by **J#** (participant 1-30), **S#** (soundwalk session 1-6), and other codes based on the established factors that were hypothesized to indicate a change in aural awareness and sensitivity. Table 3.07 shows the coding convention used for each category. The categories of change were determined using the following factors:

- (1) Number of sounds perceived
- (2) Dominant sound source
- (3) Documentation of direction/movement or distance
- (4) Use of acoustic or psychoacoustic terminology

Additional observation categories were suggestive of a change in aural awareness and sensitivity, but not substantiated in the literature reviewed for the study. These observation categories were:

- (5) Use of onomatopoeic words
- (6) Documentation style

The post-experiment survey responses were used to support the results of the journal entries and reveal the effectiveness of the exercises. If more than half of the participants responded to statements one through five with "agree" to "strongly agree," this would indicate that the exercises were valuable for improving aural awareness and sensitivity. One through five on the post-experiment survey addressed:

- (1) Whether participants feel their listening abilities have improved since the beginning of the experiment;
- (2) Whether participants feel they are more sensitive to outdoor sounds now compared to the beginning of the experiment;
- (3) Whether participants feel their opinions about outdoor sounds have changed since the beginning of the experiment;
- (4) Whether participants feel that soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds; and
- (5) Whether participants feel they are more familiar with acoustic terminology now compared to the beginning of the experiment.

[TABLE 3.07]

Below: Coding convention for experiment analysis categories. Graphic created by author.

An additional open-response question at the end of the survey was included to obtain explicit testimonials of the participants, to further the understanding of the previous quantitative responses.

The following categories were used to indicate whether the participant demonstrated a positive change from Week One to Week Three:

- (1) Increase in number of different sounds
- (2) Change in dominant sound source type
- (3) Change in documenting direction/movement or distance
- (4) Increased use of interdisciplinary acoustic or psychoacoustic terminology.

CODING CONVENTION FOR EXPERIMENT ANALYSIS CATEGORIES					
Number of Sounds	Sound Source Type	Documentation of Direction/Movement or Distance	Number of Acoustic or Psychoacoustic Terminology	Number of Onomatopoeic Words	Documentation Style
<b>(N0)</b> 0	<b>(NA#)</b> Nature/Animal	<b>(YD)</b> Yes	<b>(T0)</b> 0	<b>(O0)</b> 0	<b>(L)</b> List
<b>(N1)</b> 1-5	<b>(HU#)</b> Human	<b>(ND)</b> No	<b>(T1)</b> 1-5	<b>(O1)</b> 1-5	<b>(P)</b> Pictures
<b>(N2)</b> 6-10	<b>(MU#)</b> Music (Electronic or otherwise)		<b>(T2)</b> 6-10	<b>(O2)</b> 6-10	<b>(M)</b> Mapping
<b>(N3)</b> 11-15	<b>(TR#)</b> Transportation		<b>(T3)</b> 11-15	<b>(O3)</b> 11-15	<b>(D)</b> Diagrams
<b>(N4)</b> 16-20	<b>(MA#)</b> Machinery or Technology		<b>(T4)</b> 16-20	<b>(O4)</b> 16-20	<b>(NT)</b> Narrative
<b>(N5)</b> 21-25	<b>(OT#)</b> Other		<b>(T5)</b> 21-25	<b>(O5)</b> 21-25	<b>(I)</b> Inquiries
<b>(N6)</b> 26+			<b>(T6)</b> 26+	<b>(O6)</b> 26+	

If the participant saw a positive change in more than half of the categories, it was thought to indicate an overall increase in aural awareness and sensitivity. A total was found for the number of participants showing an improvement, and the number of participants who did not. If more than half of the entire group indicated an increase in aural awareness and sensitivity, it was thought that Schafer's methods were effective for landscape architecture students.

### Sound Source Categorization Explanations

It is important to note that if a participant documented a specific sound more than once in a soundwalk session, the sound was counted only once in the analysis. It was critical to the analysis process to note the number of distinct sounds a participant observed. From this the researcher was able to reveal the dominant sound source the participant perceived.

#### *Nature/Animal-Produced Sounds:*

All sounds that were produced by an object of nature and/or facilitated by a natural element were categorized as a 'nature/animal-produced' sound source. These included organic materials such as plant parts, and inorganic materials found in the outdoors such as rocks and water. Natural producers of sound were blowing wind, running water, and active fire. 'Animal-produced' sounds were those projected by the animal itself. These included sounds of animal 'speak' and/or sounds produced by animal movement in contact with a natural object. An example of the latter would be the crunching sound of acorns produced by a squirrel.

#### *Human-Produced Sounds:*

All sounds that were produced by the voice of humans, sounds produced through the actions of humans, and sounds produced by clothing items worn by humans were categorized as 'human-produced' sound sources. These included, but were not limited to, the following sounds: clapping, snapping, talking, footsteps, to name a few. These also included sounds produced by humans in contact with inorganic materials found in the outdoors and/or sounds produced by humans in contact with non-powered transportation. An example would be the shuffling of feet along a concrete sidewalk. In this case, the object that produced the sound was the person's feet. Another example would be the slamming of a car door by a person. In this case, the sound of the slamming car door is produced solely through human movement, without the aid of the car's engine.

#### [FIGURE 3.08]

Opposite: Illustration of two-tiered and three-tiered sound categorizations.

Each combination of events results in the following classification in the final analysis of the journals. Graphic created by author.

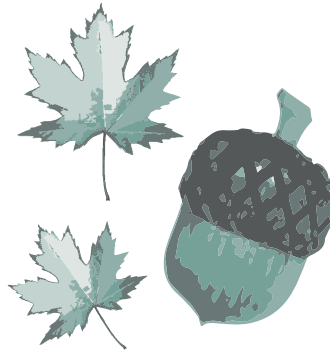
#### *Two-Tiered and Three-Tiered Sounds* (see Figure 3.08):

Some sounds were produced in a two-tiered or three-tiered series of events before the actual sound was perceived. It was important to establish criteria for identifying sounds that were produced by more than one sound event, to remain consistent in the analysis of each



MOVEMENT BY NATURE/ANIMAL

[ + ]



IN CONTACT WITH NATURAL OBJECT

[ = ]

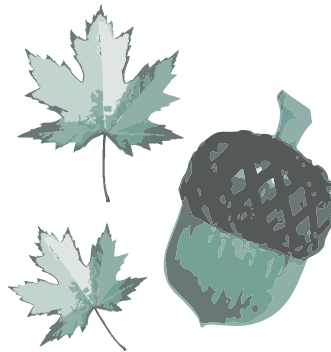
CLASSIFIED AS NATURAL

**Two-Tiered** Series One



MOVEMENT BY HUMAN

[ + ]



IN CONTACT WITH NATURAL OBJECT

[ = ]

CLASSIFIED AS NATURAL

**Two-Tiered** Series Two



MOVEMENT BY HUMAN

[ + ]



PRIMARY OBJECT NON-POWERED TOOL

[ + ]



IN CONTACT WITH SECONDARY OBJECT

[ = ]

CLASSIFIED AS SOUND OF PRIMARY OBJECT

**Three-Tiered** Series

journal. Figure 3.08 graphically explains the breakdown of multiple-tiered sounds. In the two-tiered series, the categorization of a sound was determined by the object event that takes place immediately prior to the sound being perceived. In the three-tiered series, the categorization of a sound was determined by which object event (primary or secondary) produced the final perceived sound. If the impact of the primary and secondary objects were concluded to both be producers of the final perceived sound, the researcher used the primary object in the final categorization. Exclusions for using the series criteria were sounds overlapping in transportation and human categories only. Two-tiered and three-tiered event series included the following:

*(Two-Tiered Series One)* Natural element/Animal movement – Natural object – Sound. A natural element/animal produced a movement, which came into contact with a natural object, which then created the perceived sound.

*(Two-Tiered Series Two)* Human movement – Natural object – Sound. A human produced a movement, which came into contact with a natural object, which then created the perceived sound.

*(Three-Tiered Series)* Human movement – Non-powered tool (primary object) – Secondary object – Sound. A human produced a movement, which manipulated a non-powered tool, which came into contact with another secondary object, and then created the perceived sound.

***Music (Electronic or otherwise) Sounds:***

All sounds of music, whether produced by human or technology were categorized as a ‘music’ sound source. These included music projected from a machine or music produced by a live performance. Formal and informal performances were grouped in this category, meaning a passing human singing to music on his/her iPod would be included, as well as an outdoor concert.

***Transportation Sounds:***

All sounds produced by a mode of transportation were categorized as a ‘transportation’ sound source. Even though it is assumed that all transportation functions on the basis of human-facilitated movement, the only sounds that are included in this category are those that require the power of the vehicle’s engine or gears to create the sound. An example of a power-generated sound would be the growl of a car, motorcycle, airplane, or train. An example of a non-power-generated sound would be the spinning of bicycle wheels on pavement. Excluded from this category were agricultural implements, construction equipment, and other heavy machinery.

***Machinery/Technology Sounds:***

Exclusions from the previous category were included in the ‘machinery/technology’ sound source category. These included

all other sounds that did not belong in ‘transportation,’ but those produced by a machine, agricultural and construction equipment, power/handheld tools, or other technology. Some examples of sounds in this category would be the drone of an air conditioning unit, the din of factory equipment, or the ring of a cell phone.

***Other:***

All sounds that did not fulfill any of the above criteria for sound source type categories were included in ‘other,’ including, but not limited to, jingling key chains, crinkling paper, and rustling plastic bags.

**Indications of Change Categories: Comparing Week Three Soundwalks to Week One Soundwalks**

The following categories were thought to indicate a positive change in a participant’s aural awareness and sensitivity to sound and the overall effectiveness of the soundwalks and listening exercises:

***Increased Number of Different Sounds:***

If the lists for “number of different sounds” increased from Week One to Week Three and/or from soundwalk to soundwalk, this indicated an increase in aural sensitivity. This indication of change is not to be confused with number of ‘sound source types.’ Two separate sounds can have the same sound source type, but they were still considered two distinct sounds. This includes describing two different acoustic aspects of one sound source, such as its rhythm in one description and its pitch in another. Another example is the description of a sound produced by a car moving slowly and a second description of a sound produced by a different car moving much faster being considered as producing two separate sounds. The determining factor in these types of notations was the supported description. No assumptions were made if the participant did not provide a description of the sound source. For example, simply noting ‘car’ twice in an entry was counted only once per session in the final results for a particular journal.

***Change in Dominant Sound Source:***

If the “dominant sound source type” changed from what Schafer (1977) considers to be easily discerned sounds (human, transportation, machinery) to background sounds/noises (music, nature), this indicated an increase in aural sensitivity. For the purposes of this thesis, this shift will be referred to as the ‘Schafer Shift’ in the Findings and Conclusions chapters of this document. If the dominant sound source type changed, in general, this may also point to an improvement in listening abilities. Participants discerning different types of sound sources in the environment in Week Three compared to Week One (whether this be Schafer’s shift or a general shift) were considered to have become more sensitive to other sound source types.



*Change in Documenting Direction/Movement or Distance:*

If participants did not note directionality/distance of sound sources in Week One but did for Week Three, this indicated an increase in aural sensitivity. Direction of a sound implies rhythm or movement to and from the observation point. Distance of a sound can be documented by noting the sound source location in relation to the observation point, or the sound source location relative to another sound source. Distance was noted either in general terms or more specific measurements. Accuracy of a distance measurement was not relevant to the experiment, but merely provided the evidence of a participant observing this particular aspect of a sound.

*Increased Use of Interdisciplinary Acoustic/Psychoacoustic Terminology:*

The following terms were considered appropriate acoustic/psychoacoustic terminology, as they were presented during Week Two lessons and exercises: noise, silence, sound source, keynote sound (background sound), sound signal, frequency, pitch, amplitude, intensity, loudness, softness, timbre, bright, warm. Concepts of tone (a note event) and rhythm were assumed to be familiar to the participants and therefore were not addressed specifically in the lessons. They were, however, included in the findings calculations. Any representation of these terms was included in the findings, and each single use of a term was counted only once. If participants noted an increased number of acoustic/psychoacoustic terms from Week One to Week Three, this indicated an increase in aural sensitivity, but more specifically a better understanding of the concepts of sound characteristics.

**Other General Observations**

The following general observation categories were suggestive of influencing aural awareness and sensitivity but not substantiated in literature. It was still important to note these observations of the journal data in the findings and analysis.

*Use of Onomatopoeic Words:*

Onomatopoeic words are part of the language for describing sound. Participants may have found it effective to use these types of words in documenting their acoustic observations. Each separate use of an onomatopoeic word was noted in the findings.

*Documentation Style:*

Because participants were allowed to interpret the soundwalks in their own way, the researcher anticipated a variety of documentation styles. These included lists, pictures, mapping, diagrams, and narrative styles. Depending on how participants observed and/or analyzed the sounds during their soundwalks, they may have found one style to be more effective for documenting what was perceived

than another. The type of documentation style used for Week One and Week Three was noted in the findings.

***Positive Change in One or More of the Indication of Change Categories:***

It is assumed that positive change, or an increase, in one or more of the indication of change categories could indicate an improvement in a participant's aural awareness and sensitivity. It is also assumed that a positive change seen in more than just one category could indicate greater improvement in a participant's aural awareness and sensitivity compared to a participant who saw positive change in only one category.

**Purpose of the Control Listening Experiment**

A control listening experiment was conducted with a second sample of landscape architecture students. Ideally, the control experiment and the full listening experiment would have been conducted simultaneously; however, due to time constraints at the start of the semester and the small pool of students registered to sign up for the experiment, this was conducted weeks after the full experiment. The control experiment was designed to reveal base data to which the results from Part Two of the research could be compared and to reveal any significant differences, or lack thereof, between the data sets. Each participant in the control group attended one soundwalk in one of the three soundwalk locations (same soundwalk locations and times of day as Part Two). The data from each control soundwalk group was then used to compare to the Week One data of the full experiment. The base data served to provide averages of the following:

- (1) Number of different sounds a landscape architecture student can hear in 30 minutes
- (2) Dominant sound source type a landscape architecture student can hear in 30 minutes
- (3) Tendency to be sensitive to sound direction/movement and/or sound distance in 30 minutes
- (4) Tendency to use acoustic or psychoacoustic terminology when describing sounds heard in 30 minutes
- (5) Tendency to use onomatopoeic words when describing sounds heard in 30 minutes
- (6) Documentation style

**Participants**

In order to design the experiment as close to the full experiment as possible, it would have been ideal to have the same number of participants in the control experiment as the number of participants in the full experiment. However, due to the conflict of the experiment with participants' final project deadlines, a mere eight landscape

**3.4 PART THREE: CONTROL LISTENING EXPERIMENT**

architecture students from Kansas State University were able to participate in this part of the research. This sample group included students ranging from their second to fifth year of education. All students participated on a volunteer basis, and a similar recruiting process as the full experiment was implemented. The recruiting process for the control experiment involved similar procedures as those implemented for the full experiment, excluding an introductory meeting. It was important to the study that the control group did not have any preconceptions about the control experiment, which could have been informed by an introductory meeting.

Official IRB approval for the control listening experiment was received November 27, 2012. Appendix C contains a copy of the official letter of approval.

### **Instrumentation and Procedures**

The main difference between the Part Two experiment and the Part Three control experiment is the use of Weeks Two and Three sessions and soundwalks. The control experiment involved only three soundwalks, each 30 minutes, over the course of a week. Soundwalks were conducted in the same three locations as the full experiment and at the same times of day. These locations were (1) Bosco Plaza and Hale Quad beginning at 5:30pm, (2) McCain Quad and adjacent parking circle during a period between classes beginning at 4pm, and (3) Aggieville's Manhattan Avenue and Moro Street on an active Friday evening beginning at 5:30pm. At the completion of the experiment, all participants were asked to complete a post-experiment survey, similar to the survey distributed at the end of the full experiment. The post-experiment administered to the control group was the same as the post-experiment survey administered to the full experiment group, with the exception of a statement addressing an increase in knowledge about acoustic terminology. This statement was not included in the survey for the control group because the participants did not have in-class lessons. Instead, this question was replaced with another on how much each participant knew about the premise of the experiment before taking part in the study. The Part Three post-experiment survey was intended to provide insight into each participant's experience in the study. Appendix D contains the full Part Three post-experiment survey.

### **Time Frame for Control Experiment**

The control listening experiment was conducted over one week. Each participant performed one 30-minute soundwalk, either on Monday, Wednesday, or Friday of the experiment week. Figure 3.09 provides a breakdown of the control experiment time frame and illustrates the main differences between the sequence of events for the full experiment and control group.

**Controlled Conditions:**

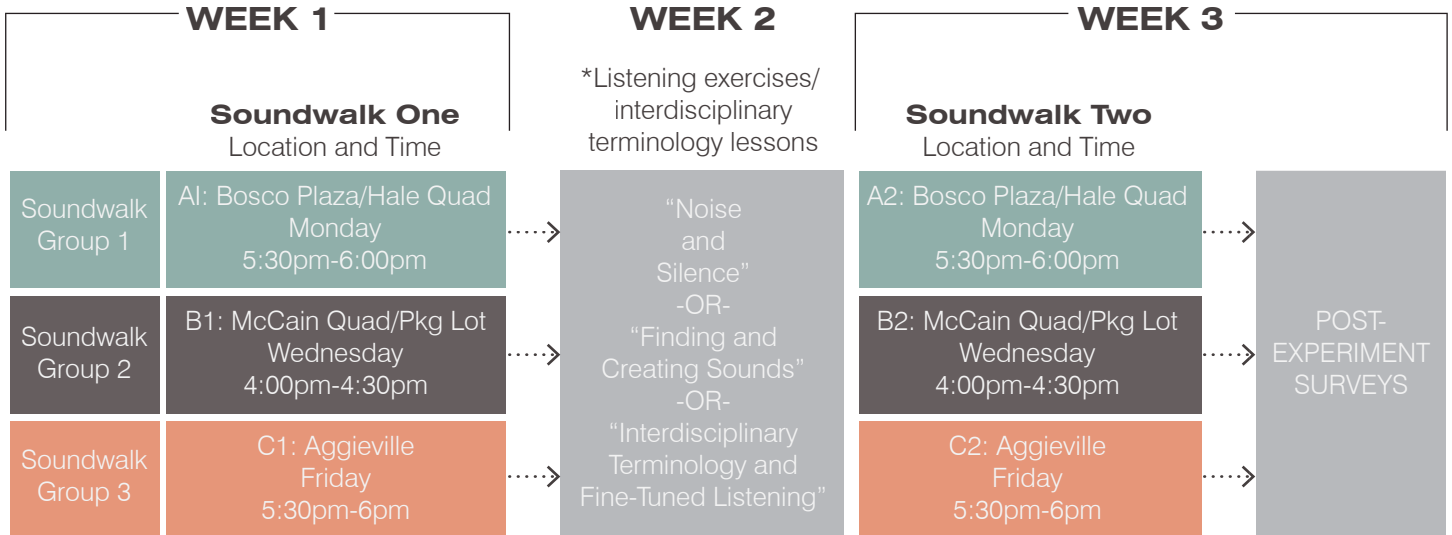
- Amount of time allotted for each soundwalk session
- Location of each soundwalk
- Time of day of each soundwalk session
- Medium provided for documenting acoustic observations
- Specificity of instructions during soundwalks

**Uncontrollable Conditions:**

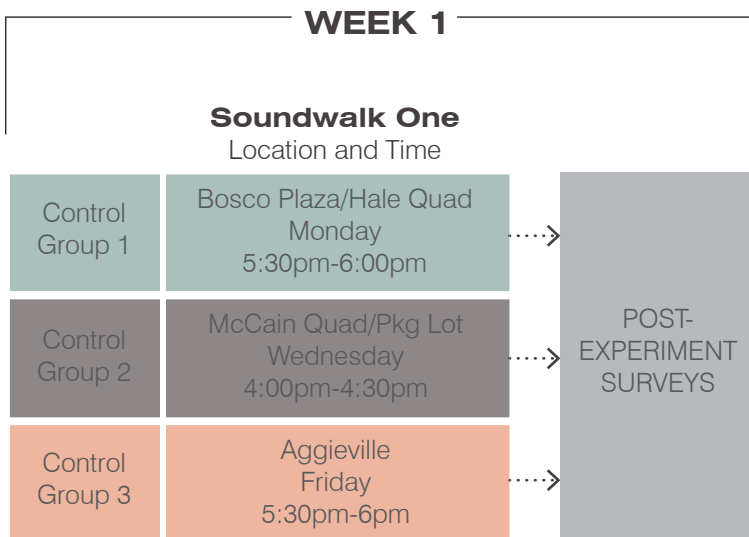
- Differences in weather conditions from Part Two experiment
- The documentation style varies for each participant; therefore, the researcher had to analyze several different styles of acoustic documentation
- Participants may or may not have observed aurally the entire area of a soundwalk location during the allotted time for the session
- Accuracy of participants' observations; will they document what they physically hear? Or will they also document what they think they hear?

**Data Analysis**

Because Part Three of the methodology was to provide base data that Part Two data could be compared with, the data analysis procedures remained the same for both parts. Data from Part Three was analyzed using the categories presented in Table 3.07, taken from Part Two. Criteria for each analysis category and sound source type category remained consistent throughout both experiments (refer to Part Two data analysis for full category explanations).



\*Soundwalk groups are not the same as Week Two groups. Participants were asked to attend at least one session in Week Two, not necessarily on the same day of the week as their soundwalk session.



[FIGURE 3.09]

Above: Part Three control

experiment time frame.

Graphic created by author.





**[FIGURE 4.01]**

On the harbor, there are frequently sounds of people traveling to and from work. The Wellington Harbour is in large part home to the port industry, welcoming cargo ships on a regular basis. Photo taken by author (2012), in Wellington, New Zealand.



5

[04]

FINDINGS



*“Vision separates us from the world whereas the other senses unite us with it.”*  
Pallasmaa, Juhani. *The Eyes of the Skin: Architecture and the Senses*.  
25. 2005.

## [04] FINDINGS

### 4.1 CHAPTER OVERVIEW

This chapter presents the data collected from all three parts of the research – the survey of landscape architecture professionals and faculty members and the listening experiment with landscape architecture students. To help understand the study findings, textual explanations, tabular data, and critical graphics are provided. Survey responses were organized sequentially by the survey statements and sample groups – landscape architecture professionals and faculty members. Professionals were selected from firms who have received a 2010 or 2011 American Society of Landscape Architects Award. Faculty members are from the top ten undergraduate and graduate landscape architecture programs of universities in the United States, according to the 2012 DesignIntelligence rankings. The survey findings were organized by the primary issues raised by the survey statements, and the following questions were answered for each sample group:

- (1) What is the role of sound in the outdoor environment?
- (2) What is the landscape architect’s role in designing sound to reveal the potential need for education and training?
- (3) How knowledgeable of outdoor acoustics are landscape architecture professionals and faculty members?
- (4) Do landscape architecture professionals and faculty members believe that acoustics or sound courses can be useful?
- (5) What is the current status of sound in landscape architecture? Do landscape architecture professionals and faculty members consider sound as noise to be mitigated or as inspiration for design?

The journal analysis was organized by the categories that indicated a change (or lack thereof) in participants’ aural awareness and sensitivity. Responses to the post-experiment survey were organized in the same order as the survey statements. The following categories were used to analyze change or no change:

- (1) Number of sounds perceived
- (2) Dominant sound source
- (3) Documentation of direction/movement or distance
- (4) Use of acoustic or psychoacoustic terminology

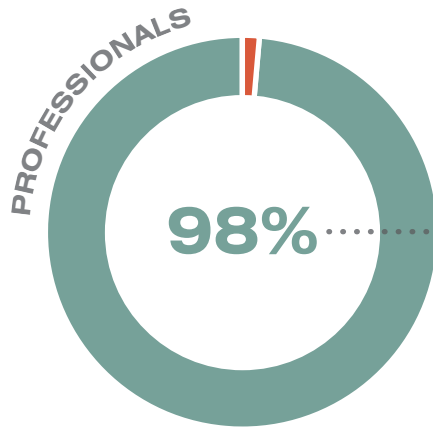
The survey was sent to 132 professional landscape architects in practice at 44 firms in the United States. A total of 62 responded and completed the survey, a response rate of 47%. Refer to Appendix D for Table 8.02 to view the breakdown of each professional landscape architect's response set.

Another survey set was sent to 48 faculty members from 16 different universities in the United States. 25 faculty members completed and responded to the survey, a 52% response rate. Refer to Appendix D for Table 8.03 to view the breakdown of each faculty member's response set.

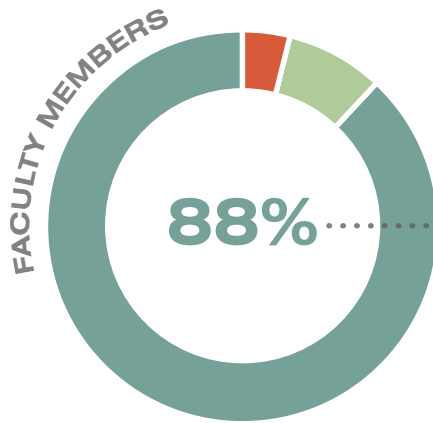
**Issue 1: Role of sound in the outdoor environment and the landscape architect's role in designing sound to reveal the potential need for education and training**

Combined survey results revealed that 95% of all landscape architecture professionals and faculty members who responded agreed or strongly agreed that sound should be considered when designing the outdoor environment. 49% agreed or strongly agreed that landscape architects are the right professionals to design sound in the outdoor environment and 12% disagreed or strongly disagreed. 98% of professionals who responded agreed or strongly agreed that sound should be considered when designing the outdoor environment. 45% of respondents in this group agreed or strongly agreed that landscape architects are the right professionals to design sound in the outdoor environment. Similarly, 98% of faculty members agreed or strongly agreed that sound should be considered when designing the outdoor environment. 60% of this second group indicated that landscape architects are the right professionals to design sound in the outdoor environment. Refer to Table 4.03 for the total percentage of responses to survey statements one and two, to see how landscape architecture professionals and faculty members feel about sound and landscape architects designing sound.

**4.2 PART ONE: RESULTS OF THE SURVEYS**



98% of landscape architecture professionals **agreed to strongly agreed** that sounds should be considered when designing the outdoor environment.



88% of landscape architecture faculty members **agreed to strongly agreed** that sounds should be considered when designing the outdoor environment.



Combined, 95% of professionals and faculty members **agreed to strongly agreed** that sounds should be considered when designing the outdoor environment.

[FIGURE 4.02]

Spread: Infographics for survey statements one and two. Graphic created by author.

### [S1] STATEMENT 1:

Sounds should be considered when designing the outdoor environment.

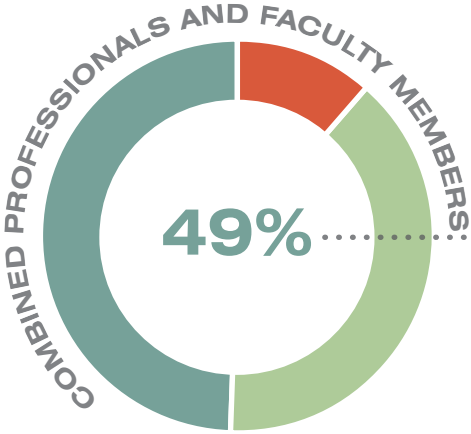
- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response



45% of landscape architecture professionals **agreed to strongly agreed** that landscape architects are the right professionals to design sound in the outdoor environment.



60% of landscape architecture faculty members **agreed to strongly agreed** that landscape architects are the right professionals to design sound in the outdoor environment.



Combined, 49% of professionals and faculty members **agreed to strongly agreed** that landscape architects are the right professionals to design sound in the outdoor environment.

**[S2] STATEMENT 2:**

Landscape architects are the right professionals to design sound in the outdoor environment.

- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response

STATEMENT	PERCENTAGE OF SURVEY RESPONSES AND (TOTAL #)		
	PROFESSIONALS (OUT OF A TOTAL OF 62 RESPONSES)	FACULTY MEMBERS (OUT OF A TOTAL OF 25 RESPONSES)	COMBINED PROFESSIONALS AND FACULTY
S1: Sounds should be considered when designing the outdoor environment.			
1 - Strongly disagree.	0%	4% (1)	1.15% (1)
2 - Disagree.	0%	0%	0%
3 - Neither agree nor disagree.	1.61% (1)	8% (2)	3.45% (3)
4 - Agree.	59.68% (37)	52% (13)	57.47% (50)
5 - Strongly agree.	38.71% (24)	36% (9)	37.93% (33)
No Response	0%	0%	0%
S2: Landscape architects are the right professionals to design sound in the outdoor environment.			
1 - Strongly disagree.	3.23% (2)	8% (2)	4.6% (4)
2 - Disagree.	9.68% (6)	0%	6.9% (6)
3 - Neither agree nor disagree.	41.94% (26)	32% (8)	39.08% (34)
4 - Agree.	33.87% (21)	48% (12)	37.93% (33)
5 - Strongly agree.	11.29% (7)	12% (3)	11.49% (10)
No Response	0%	0%	0%

[TABLE 4.03]

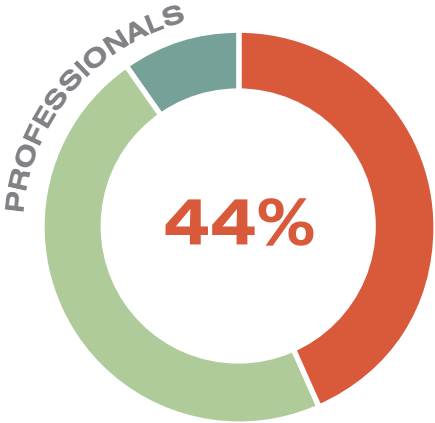
Above: Survey results of statements one and two for landscape architecture professionals and faculty members. Table created by author.

[FIGURE 4.04]

Opposite: Infographic for survey statement three. Graphic created by author.

**Issue 2: Knowledge of outdoor acoustics**

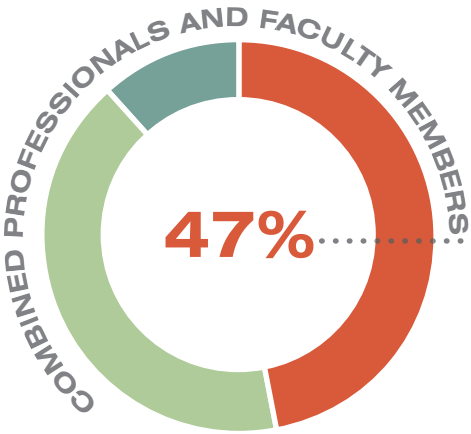
Combined survey results revealed that 47% of all landscape architecture professionals and faculty members who responded have less than or no knowledge, 41% have an average knowledge, and 11% have more than an average knowledge of outdoor acoustics. 47% of professionals who responded indicated an average knowledge, 44% a less than average or no knowledge, and 10% a more than average knowledge of outdoor acoustics. 56% of faculty members who responded indicated a less than average or no knowledge of outdoor acoustics. Similar to the results of the professionals, no faculty member responded that they are an expert in outdoor acoustics. Refer to Table 4.05 for the total percentage of responses to survey statement three, to see each sample group’s knowledge of outdoor acoustics.



44% of landscape architecture professionals **have no knowledge** or **some knowledge** of outdoor acoustics.



56% of landscape architecture faculty members **have no knowledge** or **some knowledge** of outdoor acoustics.



Combined, 47% of professionals and faculty members **have no knowledge** or **some knowledge** of outdoor acoustics.

**[S3] STATEMENT 3:**  
Knowledge about outdoor acoustics.

- More than Average Knowledge to Expert
- Average Knowledge
- Nothing to Some Knowledge
- No Response

STATEMENT	PERCENTAGE OF SURVEY RESPONSES AND (TOTAL #)		
	PROFESSIONALS (OUT OF A TOTAL OF 62 RESPONSES)	FACULTY MEMBERS (OUT OF A TOTAL OF 25 RESPONSES)	COMBINED PROFESSIONALS AND FACULTY
S3: How much would you say you know about outdoor acoustics?			
1 - Nothing.	3.23% (2)	16% (4)	6.9% (6)
2 - Some knowledge.	40.32% (25)	40% (10)	40.23% (35)
3 - Average knowledge.	46.77% (29)	28% (7)	41.38% (36)
4 - More than average knowledge.	9.68% (6)	16% (4)	11.49% (10)
5 - I am an expert.	0%	0%	0%
No Response	0%	0%	0%

[TABLE 4.05]

Above: Survey results of statement three for landscape architecture professionals and faculty members. Table created by author.

[FIGURE 4.06]

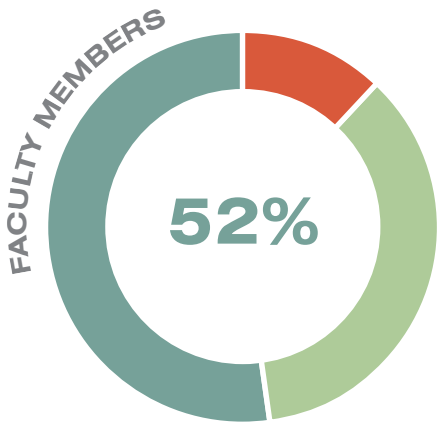
Opposite: Infographic for survey statement four. Graphic created by author.

**Issue 3: Belief that acoustics or sound courses can be useful**

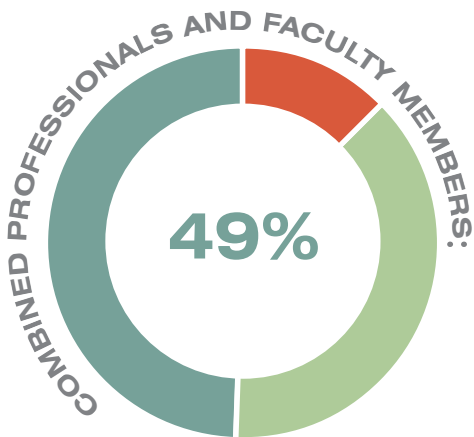
Combined survey results revealed that 49% of all landscape architecture professionals and faculty members who responded agreed or strongly agreed that acoustics or sound courses can be useful in landscape architecture education, while 13% disagreed or strongly disagreed. The professionals’ survey revealed that acoustics or sound courses can be a valuable addition to landscape architecture education, to facilitate designing sound. 48% of professionals agreed or strongly agreed that acoustics or sound courses can be valuable to landscape architecture education, while 13% disagreed. Similarly, 52% of faculty members agreed or strongly agreed that acoustics or sound courses can be valuable, while 12% disagreed or strongly disagreed. Refer to Table 4.07 for the total percentage of responses to survey statement four, to see how landscape architecture professionals and faculty members feel about acoustics or sound courses in the curricula.



48% of landscape architecture professionals **agreed** to **strongly agreed** that acoustics or sound courses can be useful in landscape architecture curricula.



52% of landscape architecture faculty members **agreed** to **strongly agreed** that acoustics or sound courses can be useful in landscape architecture curricula.



Combined, 49% of professionals and faculty members **agreed** to **strongly agreed** that acoustics or sound courses can be useful in landscape architecture curricula.

**[S4] STATEMENT 4:**

Acoustics/sound courses can be useful in landscape architecture education to facilitate designing sound in the landscape.

- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response



STATEMENT	PERCENTAGE OF SURVEY RESPONSES AND (TOTAL #)		
	PROFESSIONALS (OUT OF A TOTAL OF 62 RESPONSES)	FACULTY MEMBERS (OUT OF A TOTAL OF 25 RESPONSES)	COMBINED PROFESSIONALS AND FACULTY
S4: Acoustics/sound courses in landscape architecture curricula can be useful to facilitate designing sound in the landscape.			
1 - Strongly disagree.	0%	8% (2)	2.3% (2)
2 - Disagree.	12.9% (8)	4% (1)	10.34% (9)
3 - Neither agree nor disagree.	38.71% (24)	36% (9)	37.93% (33)
4 - Agree.	38.71% (24)	36% (9)	37.93% (33)
5 - Strongly agree.	9.68% (6)	16% (4)	11.49% (10)
No Response	0%	0%	0%

**Issue 4: Current status of sound in landscape architecture**

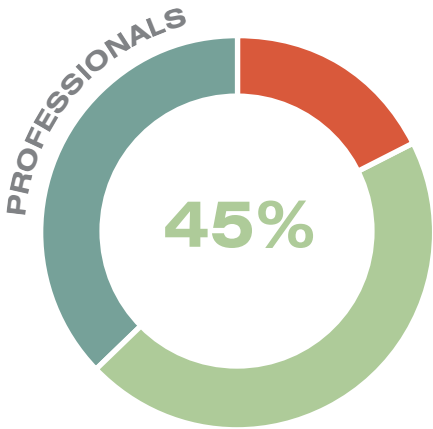
Combined survey results revealed that 41% of all landscape architecture professionals and faculty members who responded ‘occasionally’ address sound in landscape architecture projects; 52% frequently or very frequently approach sound from a mitigation standpoint; 24% frequently or very frequently draw inspiration from sound. 45% of professionals indicated that they address sound ‘occasionally’ in their projects; 58% indicated that they frequently or very frequently consider sound as something to be mitigated; 23% indicated that they frequently or very frequently draw inspiration from sound for design. Statements five through seven in the faculty members’ survey addressed how they have observed their students address sound, if at all, in their landscape architecture projects. 60% of faculty members have rarely or never observed their students address sound in their projects. Of those who do observe this, 36% indicated that their students frequently or very frequently consider sound as something to be mitigated; 28% indicated that their students frequently or very frequently consider sound as inspiration for design. Refer to Table 4.09 for the total percentage of responses to survey statements five, six, and seven, to see how often sound is addressed in practice and education.

**[TABLE 4.07]**

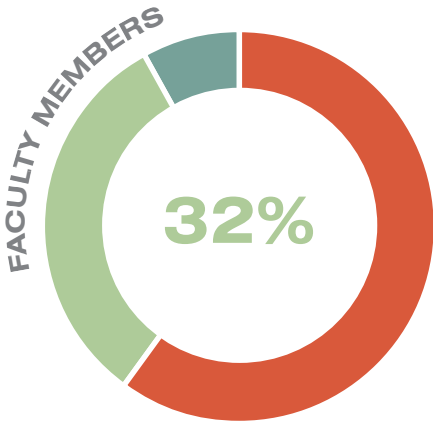
Above: Survey results of statement four for landscape architecture professionals and faculty members. Table created by author.

**[FIGURE 4.08]**

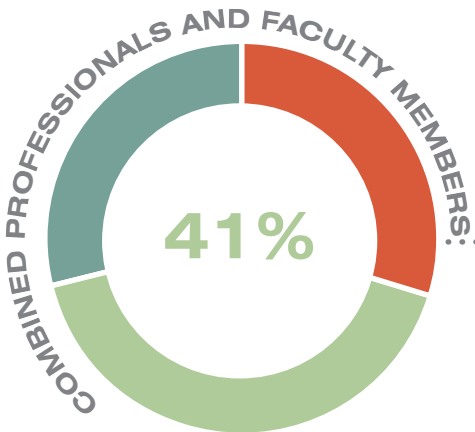
Opposite: Infographic for survey statement five. Graphic created by author.



45% of landscape architecture professionals indicated that sound is **occasionally** addressed in design projects at their firm.







32% of landscape architecture faculty members indicated that sound is **occasionally** addressed in design projects at their school.

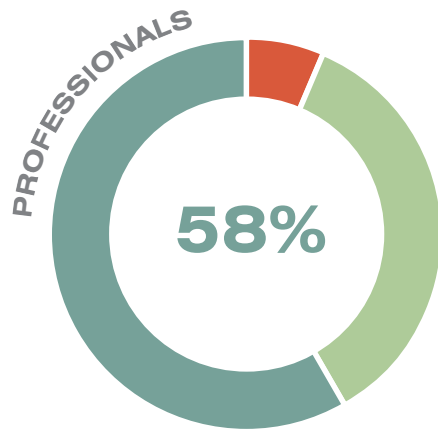


Combined, 41% of professionals and faculty members indicated that sound is **occasionally** addressed in design projects of firms and schools.

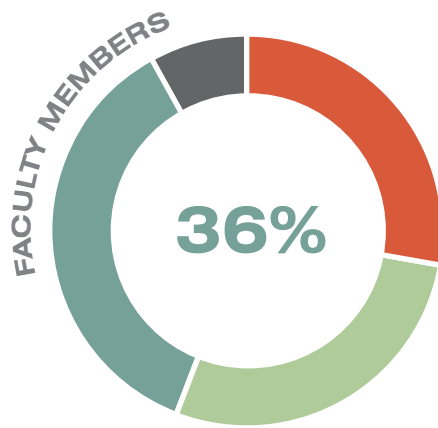
**[S5] STATEMENT 5:**

How often sound is addressed in design projects in practice and education.

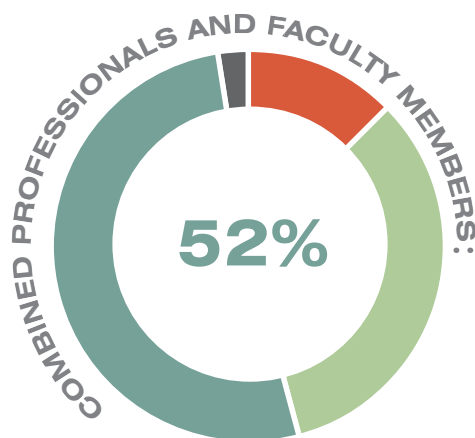
-  Frequently to Very Frequently
-  Occasionally
-  Never to Rarely
-  No Response



58% of landscape architecture professionals indicated that sound is **frequently** or **very frequently** considered as something to be mitigated in design projects at their firm.



36% of landscape architecture faculty members indicated that sound is **frequently** or **very frequently** considered as something to be mitigated in design projects at their school.



Combined, 52% of professionals and faculty members indicated that sound is **frequently** or **very frequently** considered as something to be mitigated in design projects of firms and schools.

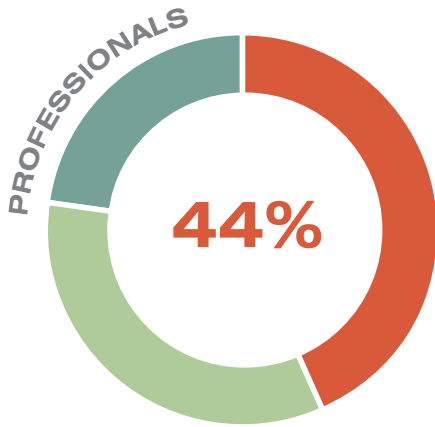
[FIGURE 4.08 cont'd.]

Spread: Infographic for survey statements six and seven. Graphics created by author.

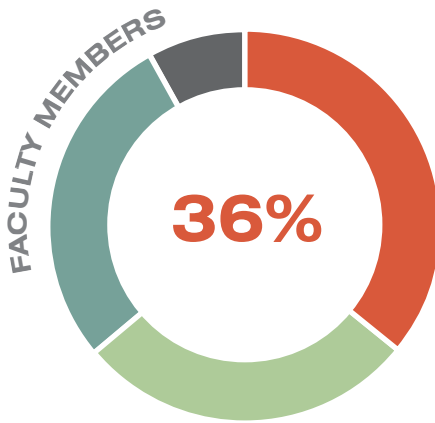
### [S6] STATEMENT 6:

How often sound is considered as noise to be mitigated.

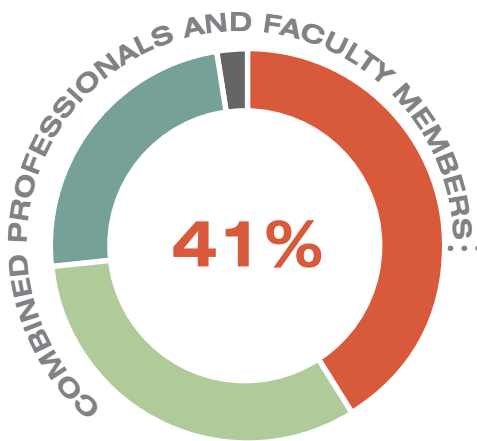
- Frequently to Very Frequently
- Occasionally
- Never to Rarely
- No Response



44% of landscape architecture professionals indicated that sound is **rarely to never** considered as inspiration for design projects at their firm.



36% of landscape architecture faculty members indicated that sound is **rarely to never** considered as inspiration for design projects at their school.



Combined, 41% of professionals and faculty members indicated that sound is **rarely to never** considered as inspiration for design projects of firms and schools.

**[S7] STATEMENT 7:**

How often sound is considered as inspiration for design.

- Frequently to Very Frequently
- Occasionally
- Never to Rarely
- No Response

STATEMENT	PERCENTAGE OF SURVEY RESPONSES AND (TOTAL #)		
S5 (Professionals): In practice, how often is outdoor sound addressed in the design process at your firm?  S5 (Faculty): How often do you see your students address outdoor sound address in their projects?	PROFESSIONALS (OUT OF A TOTAL OF 62 RESPONSES)	FACULTY MEMBERS (OUT OF A TOTAL OF 25 RESPONSES)	COMBINED PROFESSIONALS AND FACULTY
1 - Never. 2 - Rarely. 3 - Occasionally. 4 - Frequently. 5 - Very frequently. No Response	3.23% (2) 14.52% (9) 45.16% (28) 29.03% (18) 8.06% (5) 0%	12% (3) 48% (12) 32% (8) 8% (2) 0% 0%	5.75% (5) 24.12% (21) 41.38% (36) 22.99% (20) 5.75% (5) 0%
S6 (Professionals): If you have addressed outdoor sound, how often has it been something to be mitigated?  S6 (Faculty): If your students have addressed outdoor sound, how often has it been something to be mitigated?	PROFESSIONALS (OUT OF A TOTAL OF 62 RESPONSES)	FACULTY MEMBERS (OUT OF A TOTAL OF 25 RESPONSES)	COMBINED PROFESSIONALS AND FACULTY
1 - Never. 2 - Rarely. 3 - Occasionally. 4 - Frequently. 5 - Very frequently. No Response	3.23% (2) 3.23% (2) 35.48% (22) 48.39% (30) 9.68% (6) 0%	8% (2) 20% (5) 28% (7) 32% (8) 4% (1) 8% (2)	4.6% (4) 8.05% (7) 33.33% (29) 43.68% (38) 8.05% (7) 2.3% (2)
S7 (Professionals): If you have addressed sound, how often has it been a thing to design with and/or draw inspiration from?  S7 (Faculty): If your students have addressed outdoor sound, how often has it been something to design with and/or draw inspiration from?	PROFESSIONALS (OUT OF A TOTAL OF 62 RESPONSES)	FACULTY MEMBERS (OUT OF A TOTAL OF 25 RESPONSES)	COMBINED PROFESSIONALS AND FACULTY
1 - Never. 2 - Rarely. 3 - Occasionally. 4 - Frequently. 5 - Very frequently. No Response	8.06% (5) 35.48% (22) 33.87% (21) 20.97% (13) 1.61% (1) 0%	8% (2) 28% (7) 28% (7) 24% (6) 4% (1) 8% (2)	8.05% (7) 33.33% (29) 32.18% (28) 21.84% (19) 2.3% (2) 2.3% (2)

[TABLE 4.09]

Survey results of components five, six, and seven for landscape architecture professionals and faculty members. Table created by author.

A total of 23 students from Kansas State University participated in the full three-week experiment, and 20 participants completed it in full. The data from those who were unable to finish the full experiment is excluded from the findings report. A total of eight students (different from those who participated in the full three-week experiment) participated and completed the control experiment. Table 8.06 in Appendix D provides numerical and coded data from all 31 participant journals.

The following categories (1-4) were used in the coding analysis to quantify positive, neutral, or negative change in each participant's aural awareness and sensitivity:

- (1) Number of different sounds perceived
- (2) Dominant sound source
- (3) Documentation of direction/movement or distance
- (4) Use of interdisciplinary acoustic or psychoacoustic terminology

Observation categories (1-3 below), following the findings in the previous categories, could not be substantiated by literature to be analyzed for positive, neutral, or negative change in participants' aural awareness and sensitivity. They were documented in this findings report simply as 'observations' of the journals, but suggestive of indicating a change in aural awareness and sensitivity. These categories were:

- (1) Use of onomatopoeic words
- (2) Documentation style
- (3) Positive change in one or more of the indication of change categories

### **Category 1: Number of Different Sounds Perceived**

Category 1 quantified the acoustic observations documented in each participant's journal. Sounds documented more than once in the same soundwalk session were counted only once in the coding analysis.

Results of the control group compared to Week One of the full experiment revealed that participants heard, on average: 44 sounds from the control group and 28 sounds from the full experiment (in Bosco Plaza and the Hale Quad); 20 sounds from the control group and 22 sounds from the full experiment (in the McCain Quad and parking circle); and 32 sounds from the control group and 28 sounds from the full experiment (in Aggieville). The following subcategories describe those journals of the full experiment that saw an increase, neither an increase nor a decrease, and a decrease in the number of different sounds observed during the two soundwalks. Tables 4.10 and 4.10a show journal results of each soundwalk location and the

## **4.3 PART TWO AND THREE: RESULTS OF THE EXPERIMENTS**

number of sounds observed in each sound source category.

*Increased Number of Different Sounds*

The journals highlighted in green in Table 4.10 emerged with an increase in the number of different sounds documented in Week Three from Week One. 75% of all full experiment participants saw an increase in the number of different sounds documented in Week Three. The average difference in sounds documented in Week Three from Week One among these participant journals is 4.267, or a four to five difference. This means that, on average, participant journals that saw an increase observed four to five more sounds in Week Three than in Week One. All journals exhibited an increase in one or more individual sound source types when comparing Week Three to Week One.

*Neither Increased Nor Decreased Number of Different Sounds*

Journals J18 and J22 saw neither an increase nor a decrease in the number of different sounds documented, comparing Week Three to Week One. J18 observed 14 sounds both in Week One and Week Three, while J22 observed 41 sounds in both weeks.

*Decreased Number of Different Sounds*

The three journals highlighted in red in Tables 4.10 emerged with a decreased number of different sounds documented in Week Three compared to Week One. J13 decreased by 10, J16 by 3 and J20 by 4. Consequently, it appeared that in Week 1, the J13 participant spent time creating simple lists of different sounds and only one mapping of sounds; while in Week Three the participant spent more time creating pictures of sounds with descriptions, but fewer lists. The J16 participant documented his/her observations in a similar way to J13. While in Week One the J16 participant documented his/her acoustic observations by creating lists, pictures, and a map of sounds, in Week Three the participant excluded a map and created fewer pictures and lists. The J20 participant documented his/her acoustic observations in both Week One and Week Three by creating lists of different sounds.

**[TABLE 4.10]**

Opposite, above: The number of sounds recorded by participants in the full experiment. Table created by author.

**[TABLE 4.10a]**

Opposite, below: The number of sounds recorded by participants in the control group. Table created by author.

## NUMBER OF SOUNDS [FULL EXPERIMENT]

JOURNAL J#	Nature/ Animal		Human- Produced		Music		Transpor- tation		Machinery/ Technology		Other		TOTAL		CHANGE	GROUP AVERAGE	
	WK1	WK3	WK1	WK3	WK1	WK3	WK1	WK3	WK1	WK3	WK1	WK3	WK1	WK3		WK1	WK3
<b>BOSCO PLAZA AND HALE QUAD</b>																	
J1	8	8	7	5	0	1	4	8	4	3	7	8	30	33	+3		
J2	1	5	7	6	1	1	4	4	2	2	0	0	15	18	+3		
J3	7	8	10	16	1	2	13	8	2	3	5	11	38	48	+10		
J4	10	13	7	10	0	0	5	7	5	2	4	3	31	35	+4	28.5	33.5
<b>MCCAIN QUAD AND PARKING CIRCLE</b>																	
J5	5	3	6	8	0	1	6	7	4	6	3	4	24	29	+5		
J6	7	6	4	6	2	1	3	0	2	5	4	5	22	23	+1		
J7																	
J8	5	6	1	7	0	0	2	5	2	3	1	5	11	26	+15		
J9	3	9	5	4	0	0	6	6	7	5	4	4	25	28	+3		
J10	3	6	3	14	0	0	4	2	3	1	7	4	20	27	+7		
J11	2	2	0	0	0	0	0	0	1	2	0	0	3	4	+1		
J12	3	3	2	4	1	0	2	4	4	3	3	2	15	16	+1		
J13	7	5	8	9	1	1	12	5	2	6	7	1	37	27	-10		
J14	6	7	3	10	0	0	7	3	2	5	3	0	21	25	+4		
J15	7	5	8	11	0	1	11	7	5	6	6	8	37	38	+1		
J16	6	5	9	8	1	2	8	6	1	4	5	2	30	27	-3		
J17																	
J18	3	8	2	2	1	0	5	0	2	1	1	3	14	14	0	21.6	23.7
<b>AGGIEVILLE</b>																	
J19	1	4	1	5	3	2	7	2	0	1	0	0	12	14	+2		
J20	1	4	9	7	4	4	10	7	1	1	2	0	27	23	-4		
J21	3	4	5	14	5	6	10	5	1	1	8	4	32	34	+2		
J22	5	11	6	7	6	6	8	10	8	0	8	7	41	41	0	28	28
J23																	

## NUMBER OF SOUNDS [CONTROL GROUP]

JOURNAL J#	Nature/ Animal	Human- Produced	Music	Transpor- tation	Machinery/ Technology	Other	TOTAL	GROUP AVERAGE
<b>BOSCO PLAZA AND HALE QUAD</b>								
J24	3	15	0	7	4	10	39	
J25	3	31	0	6	6	10	56	
J26	3	15	1	7	1	5	32	
J27	3	21	1	9	3	10	47	43.5
<b>MCCAIN QUAD AND PARKING CIRCLE</b>								
J28	4	0	0	0	3	1	8	
J29	5	6	0	5	8	7	31	19.5
<b>AGGIEVILLE</b>								
J30	2	7	5	12	3	6	35	
J31	1	9	6	9	1	2	28	31.5

## LEGEND

+ INCREASED

- DECREASED

0 NO CHANGE

Wk Week

Incomplete Data



### **Category 2: Dominant Sound Source**

Category 2 quantified the number of sounds in each sound source category (nature/animal, human, music, transportation, machinery/technology, or other) documented in each participant's journal. The dominant sound source was derived by calculating the sound source with the highest number of sounds in that category.

Results of the control group compared to the full experiment revealed the most occurring dominant sound source for each soundwalk location to be: human for the control group and human/nature for the full experiment (in Bosco Plaza and the Hale Quad); no dominant sound source for the control group and human for the full experiment (in McCain Quad and the parking circle); and transportation for both experiments (in Aggieville). Table 4.11 represents those journals of the full experiment that exhibited a change or no change in the dominant sound source type observed in Week One to Week Three. Table 4.11a shows the dominant sound source type of those journals in the control experiment. 80% of the total number of full experiment participants experienced a change in the dominant sound they observed.

#### ***Exhibited the 'Schafer Shift'***

Participant journals in the full experiment that exhibited the 'Schafer Shift,' highlighted green in Table 4.11, were J9 (from 'machinery/technology' to 'nature/animal'), J18 (from 'transportation' to 'nature/animal'), and J22 (from 'transportation' to 'nature/animal').

#### ***Exhibited a General Change in Dominant Sound Source***

65% of participants saw a general shift in dominant sound source type from Week One to Week Three. The highlighted portions in the table indicate a change in dominant sound source type.

#### ***Exhibited No Change in Dominant Sound Source***

Participant journals J2, J4, J16, and J20 exhibited no change in the dominant sound source observed from Week One to Week Three.

CHANGE IN DOMINANT SOUND SOURCE [FULL EXPERIMENT]		
JOURNAL J#	SOUND SOURCE	
	Week 1	Week 3
BOSCO PLAZA AND HALE QUAD		
J1	NA/HU/OT	NA/TR/OT
J2	HU	HU
J3	TR	HU
J4	NA	NA
MCCAIN QUAD AND PARKING CIRCLE		
J5	HU/TR	HU
J6	NA	NA, HU
J7		
J8	NA	HU
J9	MA	NA
J10	OT	HU
J11	NA	NA/MA
J12	MA	HU/TR
J13	TR	HU
J14	TR	HU
J15	TR	HU
J16	HU	HU
J17		
J18	TR	NA
AGGIEVILLE		
J19	TR	HU
J20	TR	TR
J21	TR	HU
J22	TR	NA
J23		

[TABLE 4.11]

Above: The change in dominant sound sources from Week One to Week Three - full experiment. Table created by author.

[TABLE 4.11a]

Below: The change in dominant sound sources - control group. Table created by author.

DOMINANT SOUND SOURCE [CONTROL GROUP]	
JOURNAL J#	SOUND SOURCE
BOSCO PLAZA AND HALE QUAD	
J24	HU
J25	HU
J26	HU
J27	HU
MCCAIN QUAD AND PARKING CIRCLE	
J28	NA
J29	MA
AGGIEVILLE	
J30	TR
J31	HU/TR

LEGEND	
NA	Nature/Animal
HU	Human
MU	Music
TR	Transportation
MA	Machinery/Technology
OT	Other
	Schafer Shift
	Incomplete Data

### **Category 3: Documentation of Direction/Movement or Distance**

Category 3 noted whether each participant documented sound direction/movement or distance during the soundwalks. Not every sound required this characteristic to be documented. If ‘direction/movement’ was documented in a soundwalk session once, this was considered a ‘yes’ (Y) in the coding analysis. The same convention was used for the coding analysis for ‘distance.’

90% of the total number of full experiment participants documented the direction/movement or distance of sounds, while 100% of the total number of control experiment participants did this. Table 4.12 represents those journals of the full experiment that exhibited a change from not documenting direction/movement or distance in Week One to correctly documenting one or the other in Week Three. Table 4.12a shows whether or not participants in the control experiment documented direction/movement or distance during their soundwalk. The highlighted portions in Table 4.12 indicate those changes, or lack thereof, in documentation from no (N) to yes (Y).

#### ***Exhibited Change in Documentation of Direction/Movement or Distance***

Of those who documented direction/movement or distance, 35% indicated a change from not documenting one or both of these sound characteristics in Week One to correctly documenting one of the other in Week Three. These journals are highlighted green in Table 4.12.

#### ***Exhibited No Change in Documentation of Direction/Movement or Distance***

65% of the total number of full experiment participants saw no change in documenting sound direction/movement or distance from Week One to Week Three.

DOCUMENTATION OF DIRECTION/MOVEMENT OR DISTANCE [FULL EXPERIMENT]				
JOURNAL J#	DIRECTION/MOVEMENT		DISTANCE	
	Week 1	Week 3	Week 1	Week 3
<b>BOSCO PLAZA AND HALE QUAD</b>				
J1	N	N	N	N
J2	Y	Y	Y	Y
J3	N	N	Y	Y
J4	N	N	N	N
<b>MCCAIN QUAD AND PARKING CIRCLE</b>				
J5	Y	Y	Y	Y
J6	N	+Y	N	N
J7				
J8	Y	Y	N	+Y
J9	Y	Y	N	+Y
J10	Y	Y	Y	Y
J11	Y	Y	Y	Y
J12	N	+Y	Y	Y
J13	Y	Y	Y	Y
J14	Y	Y	Y	Y
J15	Y	Y	Y	Y
J16	Y	Y	Y	Y
J17				
J18	Y	Y	Y	Y
<b>AGGIEVILLE</b>				
J19	N	+Y	Y	Y
J20	N	+Y	N	N
J21	Y	Y	Y	Y
J22	N	+Y	N	N
J23				

[TABLE 4.12]

Above: Documentation of direction /movement or distance from Week One to Week Three - full experiment. Table created by author.

[TABLE 4.12a]

Below: Documentation of direction/movement or distance - control group. Table created by author.

DOCUMENTATION OF DIRECTION/MOVEMENT OR DISTANCE [CONTROL GROUP]		
JOURNAL J#	DIRECTION/MOVEMENT	DISTANCE
<b>BOSCO PLAZA AND HALE QUAD</b>		
J24	Y	Y
J25	Y	Y
J26	Y	Y
J27	Y	Y
<b>MCCAIN QUAD AND PARKING CIRCLE</b>		
J28	Y	Y
J29	Y	Y
<b>AGGIEVILLE</b>		
J30	Y	N
J31	Y	Y

LEGEND	
+	Positive Change
-	Negative Change
0	No Change
Y	YES, did document
N	NO, did not document
	Incomplete Data

#### **Category 4: Use of Interdisciplinary Acoustic or Psychoacoustic Terminology**

Category 4 quantified the number of acoustic and psychoacoustic terms documented in each participant's journal. Multiple documentations of the same acoustic or psychoacoustic term in one soundwalk session were counted once in the coding analysis.

Results of the control experiment compared to the full experiment revealed that, on average, participants documented two terms compared to one term in Bosco Plaza and the Hale Quad; four terms compared to three terms in McCain Quad and parking circle; and four terms compared to one term in Aggieville. Table 4.13 displays those journals of the full experiment that emerged with an increased use, neither increased nor decreased use, and decreased use of interdisciplinary acoustic or psychoacoustic terminology from Week One to Week Three. Table 4.13a provides the same analysis for those who participated in the control experiment.

#### ***Increased Use of Interdisciplinary Acoustic or Psychoacoustic Terms***

40% of the total number of full experiment participants, highlighted green in Table 4.13, emerged with an increased use of interdisciplinary acoustic or psychoacoustic terminology from Week One to Week Three.

#### ***Neither Increased Nor Decreased Use of Interdisciplinary Acoustic or Psychoacoustic Terms***

30% saw neither an increase nor a decrease in the use of interdisciplinary acoustic or psychoacoustic terminology from Week One to Week Three.

#### ***Decreased Use of Interdisciplinary Acoustic or Psychoacoustic Terms***

30% of the total number of full experiment participants, highlighted red in Table 4.13, emerged with a decreased use of interdisciplinary acoustic or psychoacoustic terminology from Week One to Week Three.

USE OF ACOUSTIC OR PSYCHOACOUSTIC TERMINOLOGY [FULL EXPERIMENT]			
JOURNAL J#	NUMBER OF TERMS		CHANGE
	Week 1	Week 3	
BOSCO PLAZA AND HALE QUAD			
J1	0	1	+1
J2	3	2	-1
J3	0	1	+1
J4	0	1	+1
MCCAIN QUAD AND PARKING CIRCLE			
J5	1	2	+1
J6	2	2	0
J7			
J8	1	4	+3
J9	2	3	+1
J10	6	11	+5
J11	5	0	-5
J12	6	7	+1
J13	3	2	-1
J14	6	4	-2
J15	1	3	-2
J16	2	2	0
J17			
J18	3	3	0
AGGIEVILLE			
J19	0	0	0
J20	1	1	0
J21	1	0	-1
J22	0	0	0
J23			

[TABLE 4.13]

Above: The use of acoustic or psychoacoustic terminology from Week One to Week Three - full experiment. Table created by author.

[TABLE 4.13a]

Below: The use of acoustic or psychoacoustic terminology - control group. Table created by author.

USE OF ACOUSTIC OR PSYCHOACOUSTIC TERMINOLOGY [CONTROL GROUP]	
JOURNAL J#	NUMBER OF TERMS
BOSCO PLAZA AND HALE QUAD	
J24	2
J25	2
J26	3
J27	0
MCCAIN QUAD AND PARKING CIRCLE	
J28	2
J29	5
AGGIEVILLE	
J30	5
J31	3

LEGEND	
+	INCREASED
-	DECREASED
0	NO CHANGE
	Incomplete Data

### **Observation Category 1: Use of Onomatopoeic Words**

Observation Category 1 quantified the number of onomatopoeic words documented in each participant's journal. Multiple documentations of the same onomatopoeic word in one soundwalk session were counted once in the coding analysis.

All journals, except J19, in both the full experiment and control experiment used onomatopoeic words to support descriptions or pictures of sounds. Table 4.14 shows those journals of the full experiment that emerged with an increased use, neither increased nor decreased use, and decreased use of onomatopoeic words. Table 4.14a provides the same analysis for those who participated in the control experiment.

#### ***Increased Use of Onomatopoeic Words***

45% of the total number of full experiment participants saw an increased use of onomatopoeic words from Week One to Week Three. These journals are highlighted green in Table 4.14.

#### ***Neither Increased Nor Decreased Use of Onomatopoeic Words***

30% saw neither an increased nor decreased use of onomatopoeic words from Week One to Week Three of the full experiment.

#### ***Decreased Use of Onomatopoeic Words***

25% saw a decreased use of onomatopoeic words from Week One to Week Three. These journals are highlighted red in Table 4.14.

[TABLE 4.14]

Above: The use of onomatopoeic words from Week One to Week Three - full experiment. Table created by author.

[TABLE 4.14a]

Below: The use of onomatopoeic words - control group. Table created by author.

USE OF ONOMATOPOEIC WORDS [FULL EXPERIMENT]			
JOURNAL J#	NUMBER OF WORDS		CHANGE
	Week 1	Week 3	
BOSCO PLAZA AND HALE QUAD			
J1	16	16	0
J2	1	1	0
J3	4	6	+2
J4	6	10	+4
MCCAIN QUAD AND PARKING CIRCLE			
J5	9	9	0
J6	5	4	-1
J7			
J8	2	4	+2
J9	8	8	0
J10	3	5	+2
J11	0	3	+3
J12	6	10	+4
J13	12	9	-3
J14	13	5	-8
J15	2	8	+6
J16	17	15	-2
J17			
J18	11	8	-3
AGGIEVILLE			
J19	0	0	0
J20	2	2	0
J21	2	5	+3
J22	7	8	+1
J23			

USE OF ONOMATOPOEIC WORDS [CONTROL GROUP]	
JOURNAL J#	NUMBER OF WORDS
BOSCO PLAZA AND HALE QUAD	
J24	15
J25	14
J26	14
J27	6
MCCAIN QUAD AND PARKING CIRCLE	
J28	2
J29	8
AGGIEVILLE	
J30	6
J31	5

LEGEND	
+	INCREASED
-	DECREASED
0	NO CHANGE
	Incomplete Data



### **Observation Category 2: Documentation Style**

Observation Category 2 noted the documentation style or styles (list, pictures, mapping, diagrams, narrative, inquiries) used by each participant for each soundwalk session.

Table 4.15 provides information about all journals and their documentation styles throughout the experiment. 50% of the participants in the full experiment exhibited multiple documentation styles in Week One and Week Three. Of those who participated in the control group, 63% chose multiple documentation styles during their soundwalk. Table 4.15a provides the same analysis for those who participated in the control group.

#### *Exhibited Change in Documentation Style*

30% of those who participated in the full experiment exhibited a change in the way they chose to document their observations from Week One to Week Three. Each documentation style is shown in Table 4.15.

#### *Exhibited No Change in Documentation Style*

70% of those who participated in the full experiment exhibited no change in the way they documented their observations from Week One to Week Three.

DOCUMENTATION STYLE [FULL EXPERIMENT]		
JOURNAL J#	STYLE	
	Week 1	Week 3
BOSCO PLAZA AND HALE QUAD		
J1	L	L
J2	L/P	L/P
J3	L	L
J4	L	L
MCCAIN QUAD & PARKING CIRCLE		
J5	L/M	L/M
J6	L/P	L/P
J7		
J8	L	L
J9	L	L/P
J10	NT	NT
J11	I/P	I/P
J12	N/P	N/P
J13	L/M	L/P
J14	L/P	L/P
J15	L/P/M	L/P/M
J16	L/P/M	L/P
J17		
J18	L/P/M	L/P
AGGIEVILLE		
J19	L	L
J20	L	L
J21	L	L
J22	L	L
J23		

[TABLE 4.15]

Above: Participants' documentation style from Week One to Week Three - full experiment. Table created by author.

[TABLE 4.15a]

Below: Participants' documentation style - control group. Table created by author.

DOCUMENTATION STYLE [CONTROL GROUP]	
JOURNAL J#	STYLE
BOSCO PLAZA AND HALE QUAD	
J24	L/P/M
J25	L
J26	L/M
J27	L
MCCAIN QUAD & PARKING CIRCLE	
J28	NT/P
J29	L/P
AGGIEVILLE	
J30	L
J31	L/P/M

LEGEND
L Lists
P Pictures
M Mapping
D Diagrams
NT Narrative
I Inquiries
Incomplete Data

[TABLE 4.16]

This page: Positive change seen in participants in from Week One to Week Three in the full experiment. Table created by author.

**Positive Change in One or More of the Indication of Change Categories**

Positive change in a participant’s aural awareness and sensitivity was considered to be indicated by a(n):

- (1) Increased number of different sounds
- (2) Change in dominant sound source
- (3) Change in documenting direction/movement or distance
- (4) Increased use of acoustic or psychoacoustic terminology

95% of participants in the full experiment saw a positive change in one or more of the ‘indication of change’ categories; 50% of participants saw a positive change in over half of the categories. All journals and description of changes are displayed in Table 4.16.

LEGEND	
Y	APPLICABLE
N	NOT APPLICABLE
	Incomplete Data

POSITIVE CHANGE CATEGORIES					
JOURNAL J#	CATEGORIES				NUMBER OF CATEGORIES APPLIED
	Increase in the number of different sounds	Change in dominant sound source	Change in documentation of direction/movement or distance	Increase use of acoustic or psychoacoustic terminology	
<b>BOSCO PLAZA AND HALE QUAD</b>					
J1	Y	Y	N	Y	3
J2	Y	N	N	N	1
J3	Y	Y	N	Y	3
J4	Y	N	N	Y	2
<b>MCCAIN QUAD AND PARKING CIRCLE</b>					
J5	Y	N	N	Y	2
J6	Y	Y	Y	N	3
J7					
J8	Y	Y	Y	Y	4
J9	Y	Y	Y	Y	4
J10	Y	Y	N	Y	3
J11	Y	Y	N	N	2
J12	Y	Y	Y	Y	4
J13	N	Y	N	N	1
J14	Y	Y	N	Y	2
J15	Y	Y	N	Y	3
J16	N	N	N	N	0
J17					
J18	N	Y	N	N	1
<b>AGGIEVILLE</b>					
J19	Y	Y	Y	N	3
J20	N	N	Y	N	1
J21	Y	Y	N	N	2
J22	N	Y	Y	N	2
J23					

The results of the post-experiment surveys from participants in the full experiment and control experiment are presented below. The results were organized by broad categories that represent trends in the responses:

- (1) Responses to the full experiment post-experiment survey
- (2) Responses to the value of soundwalks and listening exercises
- (3) Interest in attending more soundwalks and/or listening exercises

Figures 4.17 and 4.18 show responses to the post-experiment surveys from both experiments. Refer to Appendix D for Tables 8.07 and 8.08 to view the breakdown of the post-experiment survey results from both the full experiment participants and control group.

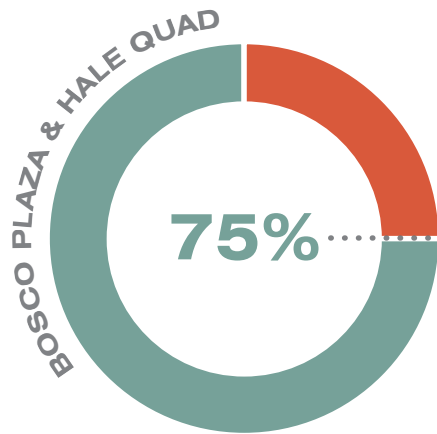
#### **Responses to the Full Experiment and Control Group Post-Experiment Surveys**

The following were the five statements on the post-experiment survey administered to the full experiment, which required the participants to indicate their level of agreement:

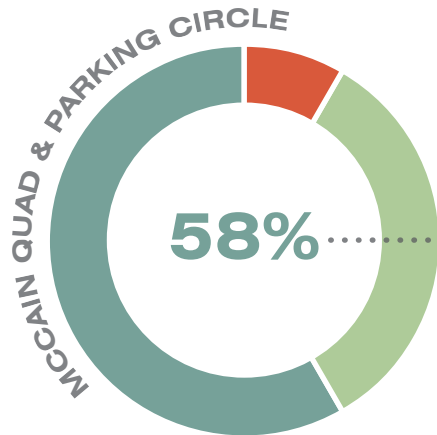
- (1) My listening abilities have improved since the beginning of the experiment. (55% of participants agreed or strongly agreed.)
- (2) I am more sensitive to outdoor sounds now compared to when I first started the experiment. (60% of participants agreed or strongly agreed.)
- (3) My opinions about outdoor sounds have changed since the beginning of the experiment. (55% agreed or strongly agreed.)
- (4) I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds. (95% of participants agreed or strongly agreed.)
- (5) I am more familiar with acoustic terminology. (35% of participants agreed or strongly agreed.)

Figure 4.17a through 4.17e illustrates the overall results for each statement on the post-experiment survey for the full experiment.

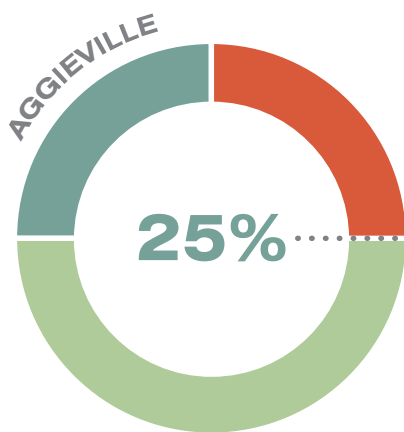
#### **4.4 RESULTS OF THE FULL EXPERIMENT AND CONTROL GROUP POST-EXPERIMENT SURVEYS**



75% of landscape architecture students in Bosco Plaza & Hale Quad **agreed to strongly agreed** that their listening abilities have improved since the beginning of the experiment.



58% of landscape architecture students in McCain Quad & Parking Circle **agreed to strongly agreed** that their listening abilities have improved since the beginning of the experiment.



25% of landscape architecture students in Aggieville **agreed to strongly agreed** that their listening abilities have improved since the beginning of the experiment.

[FIGURES

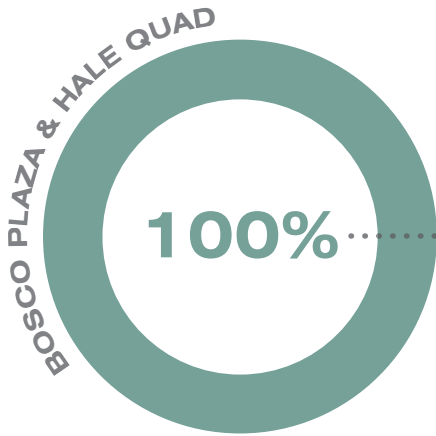
4.17a-4.17b]

Spread: The post-experiment survey results for statements one and two of the full experiment. Graphics created by author.

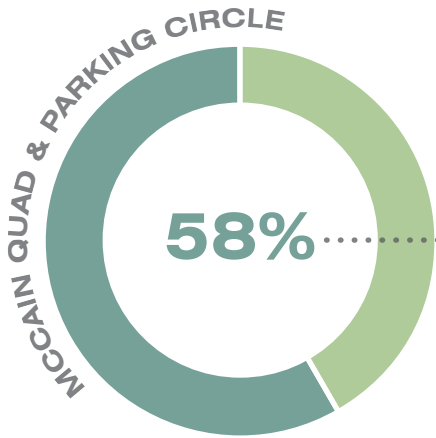
[S1] STATEMENT 1:

My listening abilities have improved since the beginning of the experiment.

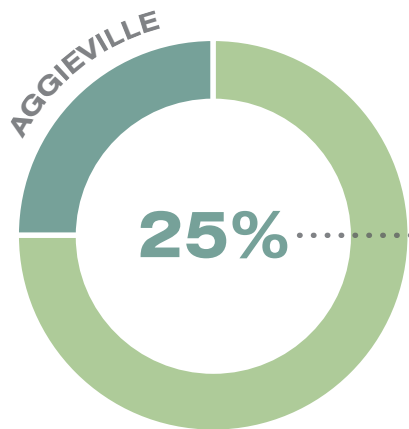
- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response



100% of landscape architecture students in Bosco Plaza & Hale Quad **agreed** to **strongly agreed** that they are more sensitive to outdoor sounds now compared to the beginning of the experiment.







58% of landscape architecture students in McCain Quad & Parking Circle **agreed** to **strongly agreed** that they are more sensitive to outdoor sounds now compared to the beginning of the experiment.

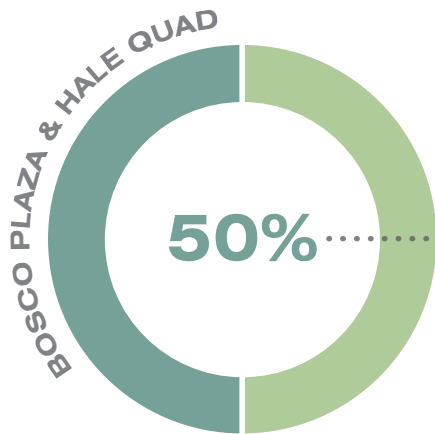


25% of landscape architecture students in Aggieville **agreed** to **strongly agreed** that they are more sensitive to outdoor sounds now compared to the beginning of the experiment.

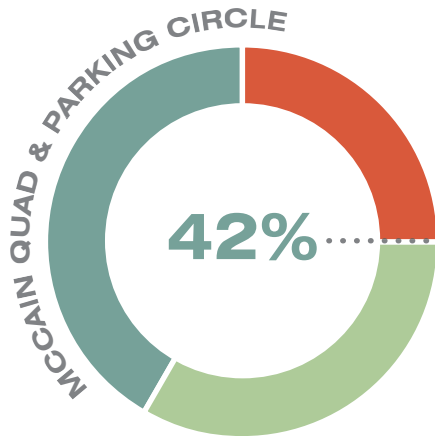
**[S2] STATEMENT 2:**

I am more sensitive to outdoor sounds now compared to when I first started the experiment.

-  Agree to Strongly Agree
-  Neither Agree nor Disagree
-  Disagree to Strongly Disagree
-  No Response



50% of landscape architecture students in Bosco Plaza & Hale Quad **agreed** to **strongly agreed** that their opinions about outdoor sounds have changed since the beginning of the experiment.



42% of landscape architecture students in McCain Quad & Parking Circle **agreed** to **strongly agreed** that their opinions about outdoor sounds have changed since the beginning of the experiment.



100% of landscape architecture students in Aggieville **agreed** to **strongly agreed** that their opinions about outdoor sounds have changed since the beginning of the experiment.

[FIGURES

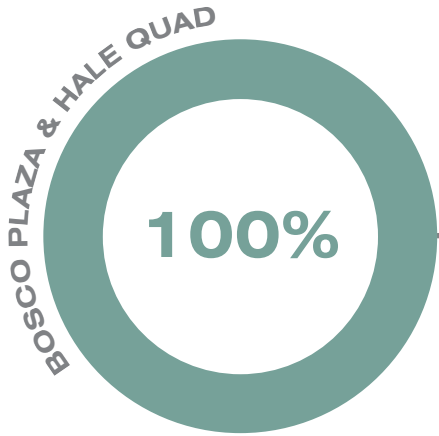
4.17c-4.17d]

Spread: The post-experiment survey results for statements three and four of the full experiment. Graphics created by author.

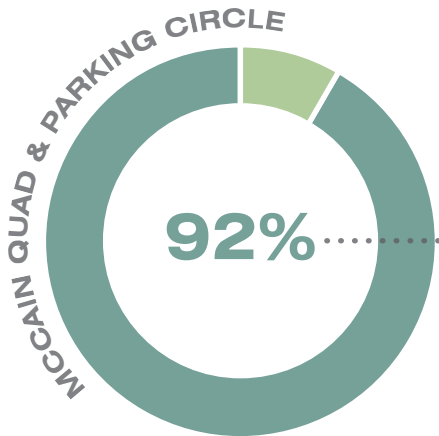
[S3] STATEMENT 3:

My opinions about outdoor sounds have changed since the beginning of the experiment.

- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response



100% of landscape architecture students in Bosco Plaza & Hale Quad **agreed** to **strongly agreed** that soundwalks and listening exercises can be useful to help improve aural awareness and sensitivity to sounds.







92% of landscape architecture students in McCain Quad & Parking Circle **agreed** to **strongly agreed** that soundwalks and listening exercises can be useful to help improve aural awareness and sensitivity to sounds.



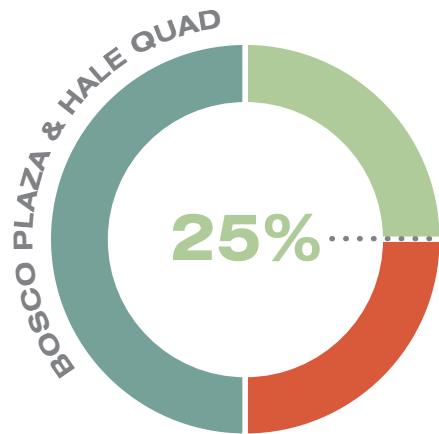
100% of landscape architecture students in Aggieville **agreed** to **strongly agreed** that soundwalks and listening exercises can be useful to help improve aural awareness and sensitivity to sounds.

**[S4] STATEMENT 4:**

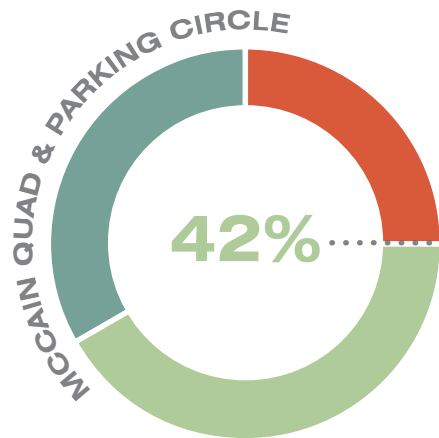
I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.

-  Agree to Strongly Agree
-  Neither Agree nor Disagree
-  Disagree to Strongly Disagree
-  No Response

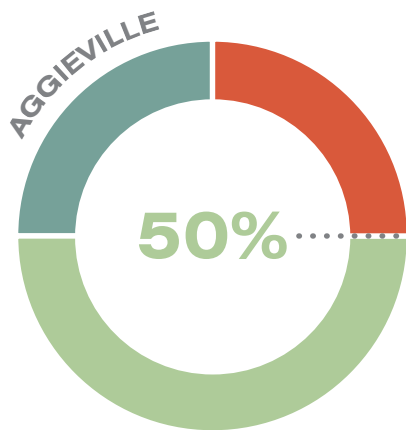




25% of landscape architecture students in Bosco Plaza & Hale Quad **neither agreed** nor **disagreed** that they are more familiar with acoustic terminology now compared to the beginning of the experiment.







42% of landscape architecture students in McCain Quad & Parking Circle **neither agreed** nor **disagreed** that they are more familiar with acoustic terminology now compared to the beginning of the experiment.



50% of landscape architecture students in Aggieville **neither agreed** nor **disagreed** that they are more familiar with acoustic terminology now compared to the beginning of the experiment.

**[FIGURE 4.17e]**  
The post-experiment survey results for statement five of the full experiment. Graphics created by author.

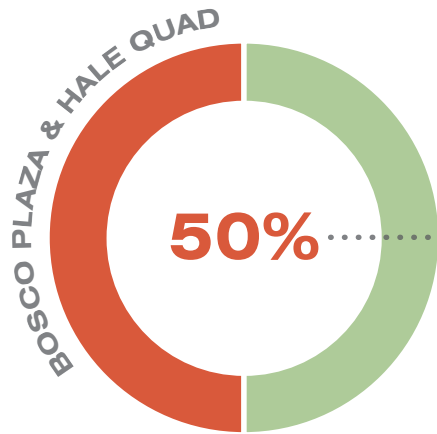
**[S5] STATEMENT 5:**  
I am more familiar with acoustic terminology.

-  Agree to Strongly Agree
-  Neither Agree nor Disagree
-  Disagree to Strongly Disagree
-  No Response

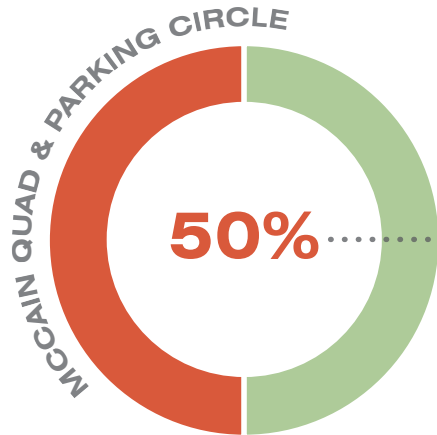
The following were the five questions/statements on the post-experiment survey administered to the control group:

- (1) How much did you know about the premise of the experiment beforehand, aside from the soundwalks? (63% of participants indicated they know nothing or have some knowledge.)
- (2) How much do you know about outdoor acoustics? (88% of participants indicated they know nothing or have some knowledge of outdoor acoustics.)
- (3) My listening abilities have improved since the beginning of the experiment. (38% of participants agreed and no participants strongly agreed.)
- (4) My opinions about the outdoor sounds have changed since the beginning of the experiment. (25% of participants agreed and no participants strongly agreed.)
- (5) I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds. (88% of participants agreed or strongly agreed.)

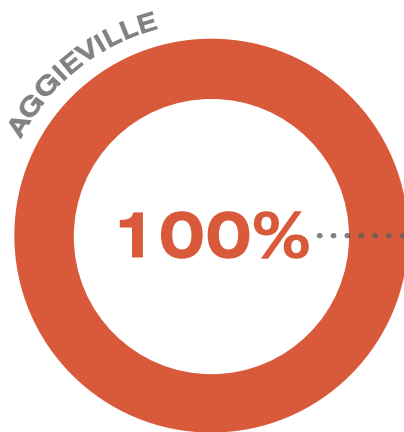
Figure 4.18a through 4.18e illustrates the complete results for the control group's responses to their post-experiment survey.



50% of landscape architecture students in Bosco Plaza & Hale Quad indicated **knowing nothing** or having **some knowledge** about the premise of the experiment.



50% of landscape architecture students in McCain Quad & Parking Circle indicated **knowing nothing** or having **some knowledge** about the premise of the experiment.



100% of landscape architecture students in Aggieville indicated **knowing nothing** or having **some knowledge** about the premise of the experiment.





[FIGURES

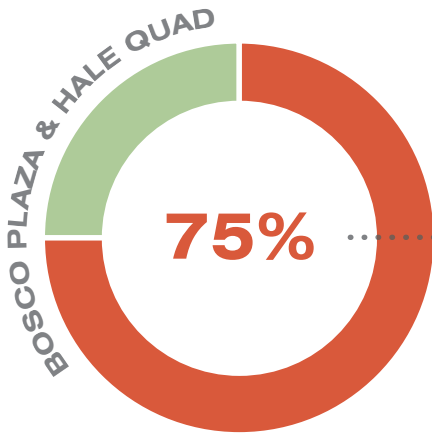
4.18a-4.18b]

Spread: The post-experiment results for statements one and two of the control group. Graphics created by author.

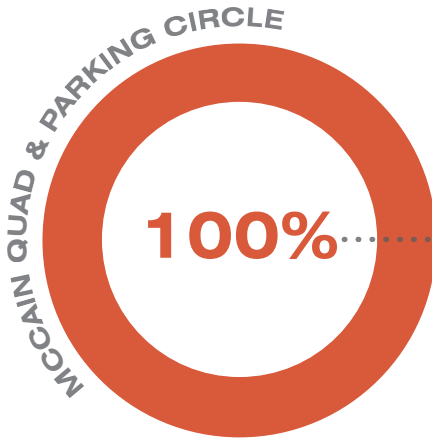
[S1] STATEMENT 1:

How much did you know about the premise of the experiment beforehand, aside from the soundwalks?

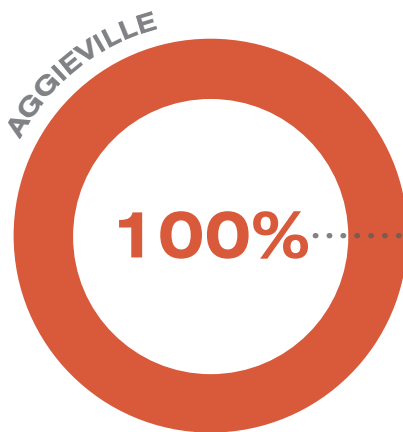
-  Almost Everything to Everything
-  Average Knowledge
-  Nothing to Some Knowledge
-  No Response



75% of landscape architecture students in Bosco Plaza & Hale Quad indicated having **no knowledge or some knowledge** of outdoor acoustics.



100% of landscape architecture students in McCain Quad & Parking Circle indicated having **no knowledge or some knowledge** of outdoor acoustics.

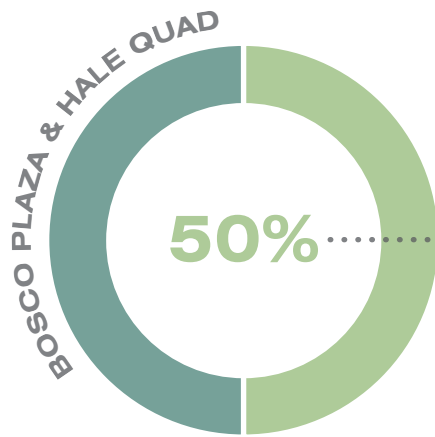


100% of landscape architecture students in Aggieville indicated having **no knowledge or some knowledge** of outdoor acoustics.

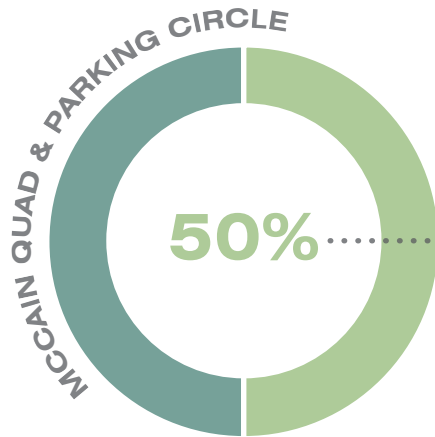
**[S2] STATEMENT 2:**

How much do you know about outdoor acoustics?

- Almost Everything to Everything
- Average Knowledge
- Nothing to Some Knowledge
- No Response



50% of landscape architecture students in Bosco Plaza & Hale Quad **neither agreed** nor **disagreed** that their listening abilities have improved since the beginning of the experiment.



50% of landscape architecture students in McCain Quad & Parking Circle **neither agreed** nor **disagreed** that their listening abilities have improved since the beginning of the experiment.



100% of landscape architecture students in Aggieville **neither agreed** nor **disagreed** that their listening abilities have improved since the beginning of the experiment.

[FIGURES

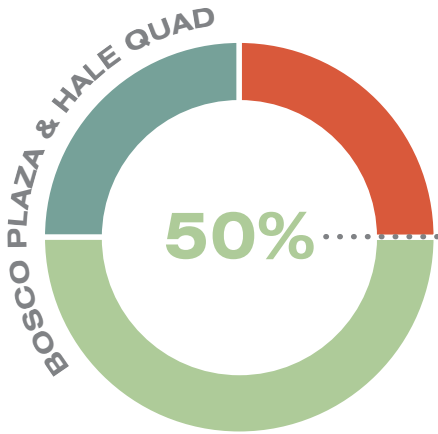
4.18c-4.18d]

Spread: The post-experiment results for statements three and four of the control group. Graphics created by author.

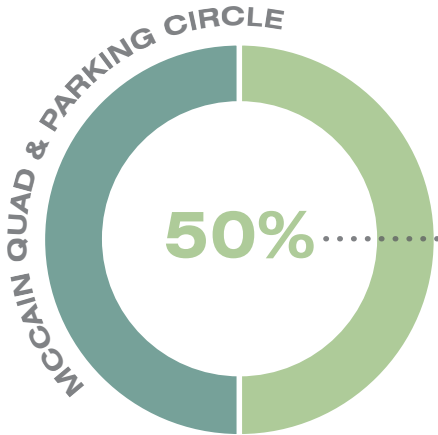
[S3] STATEMENT 3:

My listening abilities have improved since the beginning of the experiment.

- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response



50% of landscape architecture students in Bosco Plaza & Hale Quad **neither agreed** nor **disagreed** that their opinions about outdoor sounds have changed since the beginning of the experiment.







50% of landscape architecture students in McCain Quad & Parking Circle **neither agreed** nor **disagreed** that their opinions about outdoor sounds have changed since the beginning of the experiment.

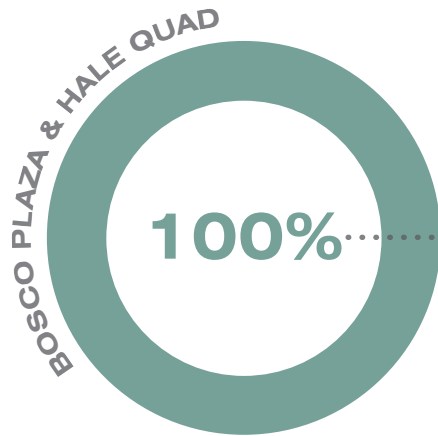


100% of landscape architecture students in Aggieville **neither agreed** nor **disagreed** that their opinions about outdoor sounds have changed since the beginning of the experiment.

**[S4] STATEMENT 4:**

My opinions about outdoor sounds have changed since the beginning of the experiment.

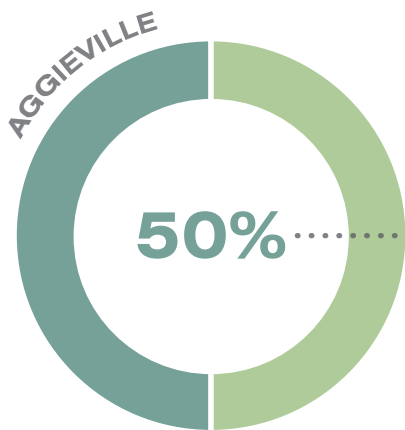
-  Agree to Strongly Agree
-  Neither Agree nor Disagree
-  Disagree to Strongly Disagree
-  No Response



100% of landscape architecture students in Bosco Plaza & Hale Quad **agreed** to **strongly agreed** that soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.



100% of landscape architecture students in McCain Quad & Parking Circle **agreed** to **strongly agreed** that soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.



50% of landscape architecture students in Aggieville **agreed** to **strongly agreed** that soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.

[FIGURE 4.18e]

The post-experiment results for statement five of the control group. Graphic created by author.

### [S5] STATEMENT 5:

I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.

- Agree to Strongly Agree
- Neither Agree nor Disagree
- Disagree to Strongly Disagree
- No Response

### Responses to the Effectiveness of Soundwalks and Listening Exercises

95% of participants in the full experiment agreed or strongly agreed with the statement on the survey that addressed whether the soundwalks and listening exercises were helpful in improving aural awareness and sensitivity to sounds. Interestingly, though they did not participate in any listening exercises, 88% of participants in the control group agreed or strongly agreed with this statement. The participants who responded ‘neither agree nor disagree’ commented:

J11: *“The soundwalks were relaxing. I don’t think we stop and listen as much as we could. It’s interesting to think about how sound fills (or does not fill) a space.”*

J31: *“The soundwalk was an interesting experiment. I found it challenging at times recording sounds. It was easy to experience the sounds, but recording was interesting both graphically and through text. I can’t say that I noticed sounds that I haven’t but I did discover that Moro Street has speakers in the street lights.”*

### Interest in Attending More Soundwalks and/or Listening Exercises

Three out of the 20 participants of the full experiment and one of the eight participants of the control group noted that they would have been interested in attending more soundwalks or exercises sessions, in order to see a greater change in their aural awareness and sensitivity to sounds. Their open responses read as follows:

J6: *“The soundwalks were definitely helpful, but would be more beneficial if done more frequently. Because it is a sense often neglected, we need to exercise it more often!”*

J13: *“I enjoyed the soundwalks. I think more walks would have been beneficial in improving my awareness. It also differed based on weather. I noticed the sounds that were more annoying more often than pleasant noises.”*

J19: *“I found the soundwalks to be somewhat meditative but haven’t noticed a change in sound awareness. I don’t think I did enough soundwalks to become more in tune with that sense.”*

J30: *“Having only participated in one soundwalk, the change in perception question is hard to answer, but I was [...] able to isolate an experience, and focus on the audible quality of space. During the experiment, I was able to focus on what sounds were and were about.”*





**[FIGURE 5.01]**

Like the garden soundscape, the ocean soundscape can be equally calming, with the sounds of waves moving closer and further away from the shore in a steady, rhythmic pattern. Photo taken by author, 2012, in Picton, New Zealand.



**[05]**

**DISCUSSION AND  
CONCLUSIONS**

*“A sound is not unlike the circles of ripples that spread from a stone thrown into a pool, all moving outwards from the point of impact. Each new ripple disturbs the water a little less than the one before, and, as each spreads, its speed remains the same, but its height reduces, until eventually the pool is flat and still again.”*

Mike Goldsmith. *Discord: The Story of Noise*. 5. 2012.

# [05]

## DISCUSSION AND CONCLUSIONS

### 5.1 CHAPTER OVERVIEW

Presented in this chapter are the discussion topics that emerged at the completion of the research and the conclusions drawn from the three parts of the study. The goal of the research design was to assess whether:

- (1) There was an unmet need for an acoustic education in landscape architecture; and
- (2) Soundwalks and listening exercises were effective at improving landscape architecture students' aural awareness and sensitivity.

The findings of this study reveal that sound is an important aspect of the outdoor environment, and that sound should play a more critical role in landscape architecture practice and education. The first part of the research addressed the current status and understanding of sound in the profession and education. The second and third parts involved testing the effectiveness of soundwalks and listening exercises on landscape architecture students, as a means to increase their aural awareness and sensitivity to sound.

There were several anticipated findings, but the following were the primary hypotheses prior to beginning the study:

- The surveys will reveal that landscape architecture professionals and faculty members agree that an acoustic education can be a valuable addition to landscape architecture curricula, in order to address the design of outdoor urban soundscapes.
- Students participating in the listening experiment portion of the research will experience a heightening of their aural awareness and sensitivity to sounds.

On the whole, the results from the three parts of research support the original hypotheses and anticipated findings. However, portions of the data from individual survey respondents and experiment participants do not fully support the original hypotheses. To more fully understand these particular results, patterns in survey responses and journal findings were identified to reveal the reasoning behind yielded results. These patterns will be further elaborated on in this chapter.

The surveys revealed that landscape architecture professionals and faculty members have an average knowledge, or lower, of outdoor acoustics. This suggests a need for education and training. The same can be drawn from the evaluation of current curricula across the United States and survey responses from landscape architecture professionals and faculty members, which reveal that sound is only occasionally considered in landscape architecture design projects. Establishing an acoustic component or discourse of sound for students and professionals can be useful as we begin to think about designing more holistic landscape experiences.

Upon completion of this study, many questions and topics emerged requiring further research and development. Not every question and topic could be fully addressed within the scope of this study. As a result of the time available, surveys and experiments were administered and conducted within a limited time frame, and sample groups were kept at a reasonable size.

At a mid-review colloquium with my thesis committee members and students and faculty from the Department of Landscape Architecture/Regional and Community Planning, several questions arose concerning the subjectivity of measuring listening abilities and the criteria used to do so: How can one really measure a change in listening abilities? How can one really know what the students experience in the experiment? Can a control group be helpful in providing a comparative set of results? Another potential issue raised was that many of the students present at the colloquium and planning to participate in the experiment could manipulate the results, by being aware of the anticipated findings from the listening experiment. The final question brought forward was: How will it be known if the students are recording what they hear or what they think they hear?

To address the subjectivity of measuring listening abilities, a set of categories were used in the evaluation of the students' journals and post-experiment surveys (refer to Chapter Three: Methodology and Chapter Four: Findings). This methodology was one approach to testing students' listening abilities, but certainly not the only one. While this study does not exhaust all of the possibilities, it provides a foundation for future studies to explore other ways to improve aural awareness and sensitivity to sounds of current and emerging landscape architects.

Those students who were present at the mid-review colloquium were not excluded from participating in the thesis experiment. Although it was a valid concern that these participants could have a biased perspective on the premise of the experiment compared to those who did not attend the colloquium, this was ultimately

## 5.2 UNRESOLVED QUESTIONS AND TOPICS

an uncontrollable factor. Excluding groups of students from the experiment would have reduced the size of the sample group and reduced the possibility of obtaining results representative of the landscape architecture program.

Another uncontrollable variable was knowledge of whether the students honestly documented their actual acoustic observations in the journals. Assumptions could not be made when evaluating the content in the journals with the analysis categories. The possibility of students recording dishonest observations was another valid concern, since there would be no benefit from the study if they were dishonest. However, given the anonymity of experiment results, there was no ethical way of cross-checking the information with each participant. Findings were analyzed as objectively as possible according to the analysis categories. More experiments with fewer uncontrollable factors could address this issue (this will be discussed in “Future Research Ideas”).

Findings revealed a distinction in the journal entries for the Aggieville participants in the full experiment from Week One to Week Three. What is distinct about this group is that 50% either saw a decrease in the number of sounds observed or no change at all. The findings from this group provide a seemingly inconclusive result of the full experiment. However, it is important to note that at the time of the soundwalks for this group of participants, the weather conditions in Week One and Week Three were drastically different. While during the first soundwalk the weather was mild and conducive to taking notes outdoors, during the second soundwalk it rained consistently for the 30-minute period. It was also observed that the participants were far less eager to cover all grounds of the soundwalk location because of the possibility of imminent rain.

Questions also emerged at the completion of the experiment that were not found to be addressed in any relevant literature. Does a shift in documentation style indicate an increase in exploring the possibilities of sound in design? And therefore, can it indicate that students are beginning to explore sound differently, in a more critical way? And does this change indicate an increase in aural awareness and sensitivity? Is an increase in sensitivity also indicated by an increased use of onomatopoeic words? These two types of changes in journal entries are suggestive of a change in aural awareness and sensitivity, but could not be confirmed by literature within the scope of the study.

### **Current Role and Understanding of Sound in Landscape Architecture Practice**

The survey results of professional landscape architects showed that there is insufficient awareness and sensitivity to sound in professional practice. This means that current opinions (of survey respondents) indicate that professionals have a tendency to think about sound from a generally negative perspective, and do not explore other possibilities for sound as positive inspiration for design. Professionals' overall average knowledge of outdoor acoustics may have affected how sound is perceived and strategized in the design of the outdoor environment. Because professionals do not have formal training in acoustic concepts, they may be currently under-equipped to explore sound in its full potential to inspire design, and are thereby unable to make a conscious effort to consider sound in design process.

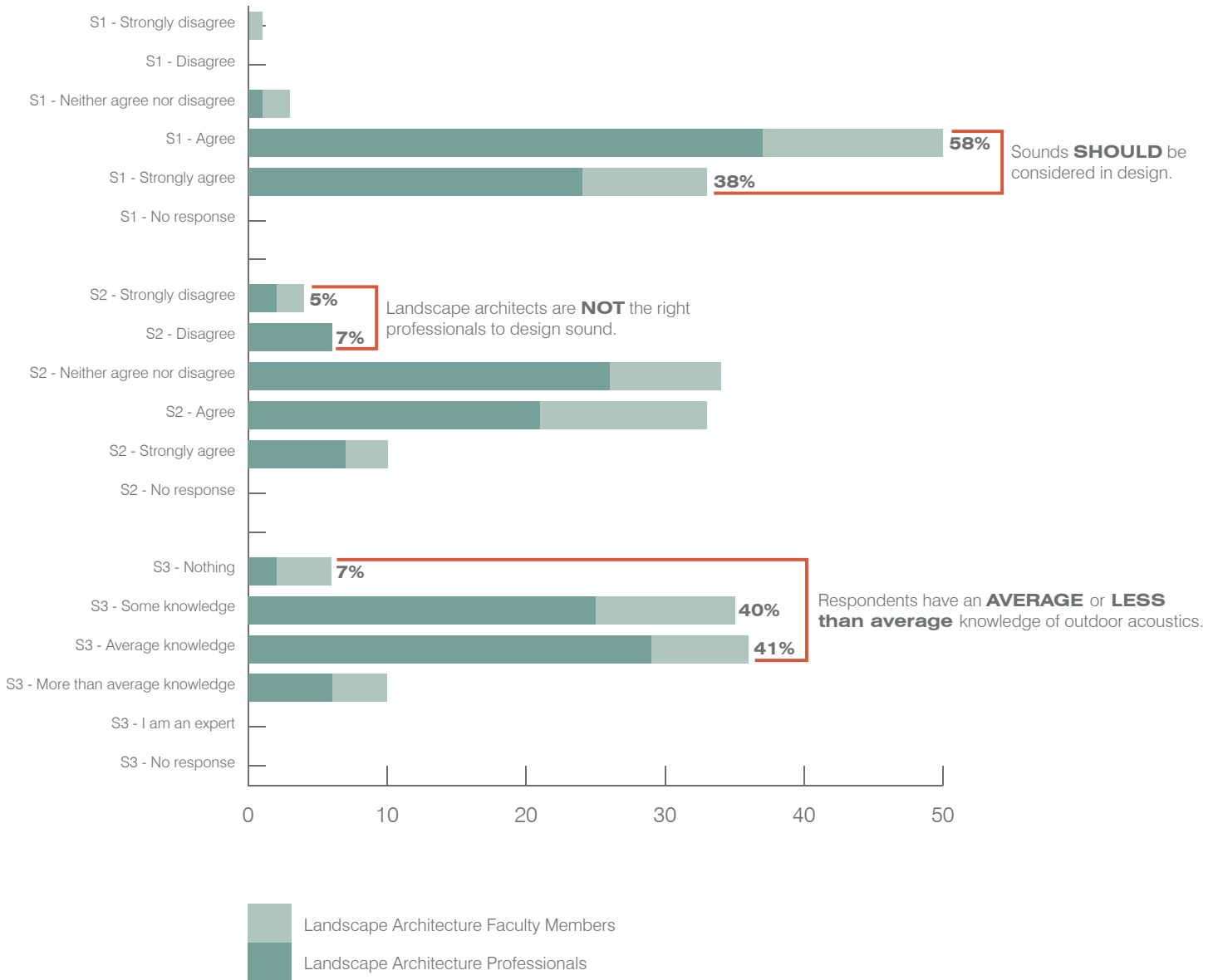
After reviewing individual response sets, it was interesting to find that the 12% of professionals who were not convinced that landscape architects are the right professionals to design sound also responded that sound is important to consider in design. Of this group of respondents, half indicated having 'average' knowledge and half having 'some' knowledge or 'no' knowledge of outdoor acoustics. (Figure 5.02 illustrates this first pattern.) The implication that can be made from this pattern of responses is that this sample of respondents lacks the adequate knowledge to explore sound as an integral element of design; however, they do consider it important to acknowledge the presence of sound in the outdoor environment, as it is an integral part. It can also be speculated that this group of respondents may believe that landscape architects already have significant knowledge, and while sound is critical to other types of designers, landscape architects may not have the capacity or desire to learn about the additional aspects of sound.

More landscape architecture professionals who responded agree than disagree that acoustics or sound courses could have been valuable in their former education, to facilitate designing with sound in their current practice. A second pattern is revealed based on this notion. (Figure 5.03 illustrates this second pattern.) Given that they are deeply involved in the design of the outdoor environment, over half of the professionals who indicated the value of acoustics or sound courses also affirmed that landscape architects are the right professionals 'to design sound.' Of the professionals who affirmed the value of acoustics or sound courses, all agreed that sounds are important to the design of the outdoor environment.

### **Current Role and Understanding of Sound in Landscape Architecture Education**

Similar conclusions can be drawn from the initial curricula search and the survey results of landscape architecture faculty members,

## **5.3 CONCLUSIONS ON THE SURVEYS**



**STATEMENTS**

**S1:** Sounds should be considered when designing the outdoor environment.

**S2:** Landscape architects are the right professionals to design sound in the outdoor environment.

**S3:** How much would you say you know about outdoor acoustics?

[FIGURE 5.02]

Above: Survey pattern one.

This graphic highlights the relevant data to the conclusions for survey pattern one. Bar graph created by author.

regarding the projects being produced by their students and their stance on sound in the field. Sound is not addressed in landscape architecture education, which is made clear by the absence of courses dealing with sound (in the top 10 undergraduate and graduate programs, as per the 2012 DesignIntelligence ratings) and faculty members' average knowledge of outdoor acoustics. Survey results also revealed that most faculty members observe that their students rarely address sound in their projects.

It can therefore be concluded that it is unlikely many students have fully explored sound to inspire and inform design, due to not having been formally exposed to sound in their current education. From those who indicated that their students rarely address sound, a pattern is revealed that specifies their students more often consider sound as noise to be mitigated and rarely as an element to inspire design. (Figure 5.04 illustrates this third pattern.) Students seemingly have a limited awareness of sound, caused by a lack of instruction. Nevertheless, overall, faculty members feel that sound should be considered in the design of the outdoor environment, and acoustics or sound courses can be valuable additions to landscape architecture curricula to facilitate students designing with sound in future projects.

### **Future Implications for Sound in Landscape Architecture Practice and Education**

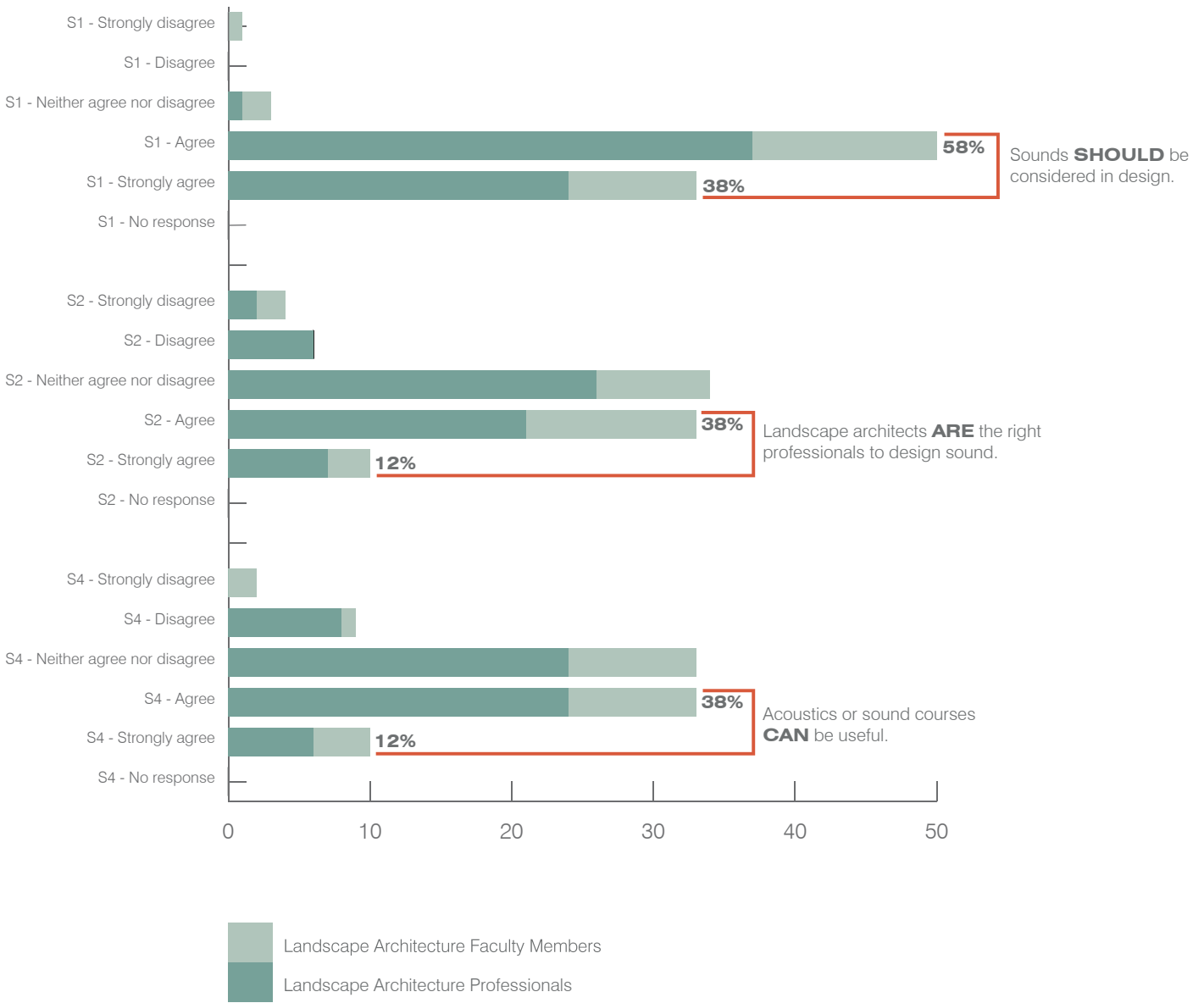
The incorporation of an acoustic education in landscape architecture curricula would promote greater awareness about sound among students and future professionals in the field. Results of the surveys showed that professionals and faculty members believe in the value of incorporating acoustics or sound courses in landscape architecture education, which would facilitate more diverse thought about sound in landscape architecture design projects. Whether these courses took the form of electives or core classes, it is clear that faculty members would find them helpful to students.

### **The Effectiveness of Schafer's Methods on Landscape Architecture Students**

The journal data alone renders the experiment inconclusive on the effectiveness of Schafer's methods on landscape architecture students. Half of all full experiment participants experienced an overall increase in their aural awareness and sensitivity to sounds. This was determined by the number of 'indication of change' categories – presented in the Methodology chapter – that applied to each journal from Week One to Week Three. However, in the post-experiment surveys, 95% of respondents indicated that the soundwalks and listening exercises were useful; over half of the

## **5.4 CONCLUSIONS ON THE EXPERIMENTS**





**STATEMENTS**

- S1:** Sounds should be considered when designing the outdoor environment.
- S2:** Landscape architects are the right professionals to design sound in the outdoor environment.
- S4:** Acoustics/sound courses in landscape architecture curricula can be useful to facilitate designing sound in the landscape.

**[FIGURE 5.03]**  
 Above: Survey pattern two.  
 This graphic highlights the relevant data to the conclusions for survey pattern two. Bar graph created by author.

participants indicated that their listening abilities and sensitivity to sounds had improved since the start of the experiment.

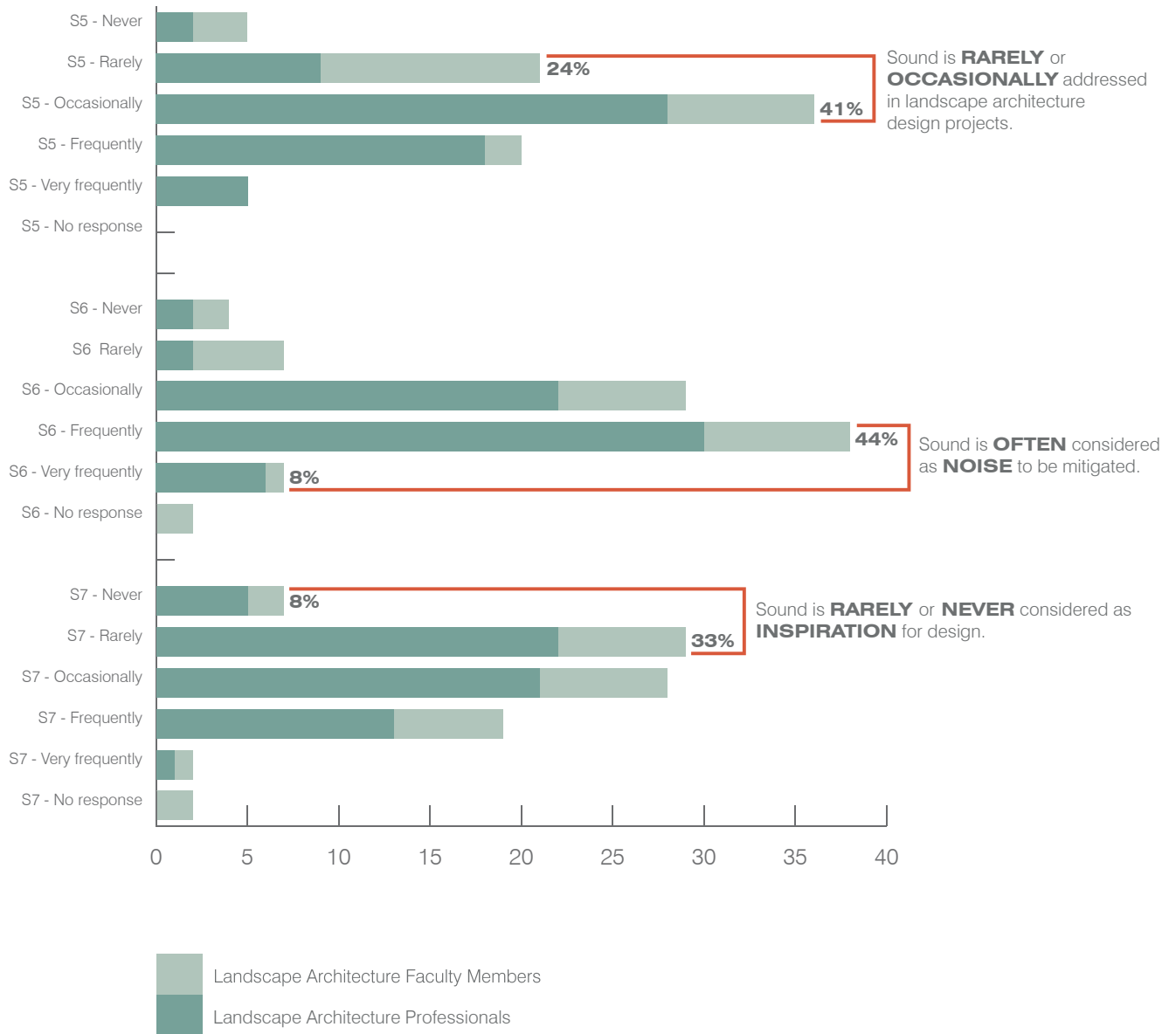
The following four major differences were anticipated to occur between the control group results and the full experiment results:

- (1) The control group will observe a fewer number of sounds
- (2) The control group will observe different dominant sound sources for each soundwalk location from those in the full experiment
- (3) The control group will demonstrate a lack of documentation of direction/movement and distance of sound
- (4) The control group will demonstrate less usage of acoustic or psychoacoustic terminology by the control group

The journal data of the control group did not fully support the anticipated findings. A fewer number of sounds was revealed for those who participated in the soundwalk in McCain Quad and parking circle, but not for those in Bosco Plaza/Hale Quad or Aggieville. For each soundwalk location, the most occurring dominant sound source was revealed to be the same for Bosco Plaza/Hale Quad and Aggieville. No dominant sound source was revealed in the McCain Quad/parking circle soundwalk control group, since each participant observed a different dominant sound source. All participants in the control group documented direction/movement or distance or both characteristics of sound. Participants in the control group revealed more usage, on an average count, of acoustic or psychoacoustic terminology than those in the full experiment.

The data collected from the control group could be the result of many factors during the soundwalks, including differences in weather conditions, the actual presence of more sounds in the outdoor environment during the week of the control experiment, the difference in the amount of participants in each experiment, and the background and past experiences of participants. For instance, two participants in the control experiment mentioned in their post-experiment survey open response that they had participated in similar activities in past courses. Participant 27 wrote, "I've done other sensory projects before, for example, how surrounding sounds can be used in interactive light installations, so I have sat and thoroughly listened to sounds before."

It can be concluded from the second and third parts of the research that measuring a change in listening abilities is an extremely challenging endeavor, given the instrumentation of the study. Measuring any ability without the aid of scientific equipment quickly becomes highly subjective. In this case, the post-experiment surveys in each experiment were used in place of scientific instrumentation, as a means of gaining insight into participants' thoughts on the study. While the post-



**STATEMENTS**

**S5:** How often is outdoor sound addressed in design projects (at your firm/at your school)?

**S6:** If sound has been addressed, how often has it been something to be mitigated?

**S7:** If sound has been addressed, how often has it been something to design with and/or draw inspiration from?

**[FIGURE 5.04]**

Above: Survey pattern three.

This graphic highlights the relevant data to the conclusions for survey pattern three. Bar graph created by author.

experiment survey responses were not absolutely reflective of the journal entries, the researcher considered the final question on the survey to be the most revealing of participants' experience in the experiment:

*How did you find the soundwalks? How did they help you notice sounds you haven't noticed before? If you did not sense a change in your awareness of sounds, why do you think this happened?*

Multiple students' open responses can provide insight into the effectiveness of the soundwalks and listening exercises. Three common topics were found in grouping the participant responses. (Figure 5.05 illustrates these three common topics; Appendix D provides a list of all the open responses color-coded to the respective topic.) First, though nearly all students agreed that the soundwalks and listening exercises are useful for training listening abilities, four participants (three from the full experiment and one from the control group) believed they would have seen a greater change in their abilities if they had participated in more sessions throughout the experiment. In particular, Participant Six wrote, *"The soundwalks were definitely helpful, but would be more beneficial if done more frequently. Because it is a sense often neglected, we need to exercise it more often!"*

Second, several participants discussed a change in their perspective on the outdoor environment, and some noted how the visual often dominates their experience of the outdoors. Participant 21 wrote, *"The soundwalks did not change my aural attention very much, but it was a different way of walking through a space [...] Familiar sounds do help give a space character, and unfamiliar sounds leave the imagination to wander [...]"*

Finally, a common topic among the survey responses was the role of sound in design and more specifically how sound influences the experience of the outdoor environment. Participant 22 (a participant in the Aggieville soundwalk) wrote, *"[...] I began to think about how the sounds affected me and I realized they bothered me. [...] I definitely became more aware of the effect the sounds have on me. And I think that is very important in designing."* Participant 29 in the control group wrote, *"Probably the most notable factor is how spatial relations can be felt through enclosures and forms. Buildings, walls, sculptures, and overhangs could all be felt through the sound."* On the whole, participants' open responses reflected positively on their involvement in the experiment.

### An Acoustic Education in Landscape Architecture Curricula

It can be concluded from the results of Parts Two and Three of the research that soundwalks and listening exercises in landscape architecture would be valuable additions to the curricula. It is evident that students find sound an important aspect of the outdoor environment, but they do not engage in listening frequently enough to apply this skill to design. Listening actively has allowed the students

#### [TOPIC 1]

Four participants expressed a desire to participate in more soundwalk sessions throughout the experiment.



#### [TOPIC 2]

Six participants expressed a change in their perspective on the outdoor environment, since the visual often dominates their experience.



#### [TOPIC 3]

Eight participants expressed that they found sound influences their experience of the outdoor environment and design.



Full Experiment Participant



Control Group Participant

#### [FIGURE 5.05]

Above: Three common topics found among the open responses to post-experiment survey question six. Graphic created by author.

to become more aware of how the acoustic environment affects their experience of the outdoors; and a majority of the students agreed that soundwalks and listening exercises are helpful in improving aural awareness and sensitivity to sounds.

### 5.5 WHAT WOULD I HAVE DONE DIFFERENTLY?

Three primary things I would have changed about my study, based on the data I collected and the conclusions drawn, include: (1) running trial experiments before conducting the experiment for the thesis study, (2) testing a greater number of landscape architecture students over all five years of study for the soundwalks and listening exercises, and (3) sampling more landscape architecture professionals and faculty members in the survey from lesser-known firms and universities.

First, had I run trial experiments before conducting the full experiment for the study, I would have been able to test out multiple strategies for setting up and conducting the experiment. Other strategies could have been developed to eliminate the uncontrollable factors in the experiment concerning environmental conditions, such as weather and exposure to certain sounds. The sample group of students from Kansas State University was limiting, primarily because of the size of the overall program. Had I run multiple trial experiments, fewer students would have been available to participate in the full thesis experiment. This may have required obtaining the participation of landscape architecture students from other universities.

Second, it may have been beneficial to test a greater distribution of landscape architecture students from all years of study in the full experiment. Findings indicated that a greater number of fifth year students participated in the experiment than any other year, with very few participants from the second and fourth years of study. Students from each year possess varying degrees of experience in site analysis, and it could have been interesting to explore patterns of observations from each group.

Finally, it could have been beneficial to expand the survey sample groups to individuals at firms and universities of less renown. A more holistic set of data about firms and universities in the United States would provide different results from the data collected in this study from award-winning places. It is likely that there are other firms who work with sound in landscape architecture, but had not received an award in the past two years. It could be interesting to survey individuals from firms and universities not listed in this study and compare each set of results.

### 5.6 FUTURE RESEARCH IDEAS

This study provides a foundation for others to explore future research endeavors concerning sound and landscape architecture. After

completing the experiment, it became apparent that a more controlled environment in which to test students could yield interesting findings. Environmental simulations, in which users or administrators can control and manipulate the aural environment, are being used in numerous communications projects around the world (Eckel, 2001; Davies, et. al, 2007; Adams, et. al, 2008). It could be interesting to conduct an experiment in which participants listen to a simulated environment instead of a genuine one, with the administrator knowing the exact number of sounds and sound sources present in the simulation. Accuracy of participants' acoustic observations could more readily be evaluated against the simulation.

Another future research idea could be to conduct an extended version of the full experiment presented in this study. Several participants noted in their post-experiment surveys (see Chapter Four: Findings) that they may have experienced a greater change in their aural awareness and sensitivity had they participated in a greater number of soundwalks and listening exercises. An extended experiment could test the effectiveness of soundwalks and listening exercises adapted from Schafer's ear-cleaning books (Schafer, 1968 and 1992) other than those tested in this study.

Finally, another future research idea could be to evaluate different design strategies that utilize sound as the primary inspiration for design projects. Hedfors (2008) as well as Brown and Muhar (2004) have begun a discussion on acoustic design and how society reacts to certain sounds. Both sources address the importance of designed and natural sounds. It could be interesting to further their discussion in the form of design charrettes or temporary interventions to test designs with people who will experience these types of landscape architecture projects in their daily lives.

The current role and understanding of sound speaks volumes about the culture of the design profession and the field of landscape architecture. First, the sense of hearing is often neglected and frequently in favor of the sense of sight. Second, there is a bias in the profession to consider sound in the outdoor environment as noise. While this is not surprising, given the state of modern technology and our dominant visual lens, a lack of clarity in the acoustic environment provides an impetus for more critical investigation of sound to inform the design of the outdoor environment, especially the outdoor urban soundscape. Finally, current landscape architecture curricula do not adequately prepare students to think about and fully explore sound in design projects. If students are not practicing listening in their education, it is unlikely that they will do so in professional practice. The overall findings of this study support the original hypotheses, which anticipated that surveyed landscape architecture professionals

## 5.7 CLOSING THOUGHTS

and faculty members would believe acoustics or sound courses can be valuable to landscape architecture education, and soundwalks and listening exercises would prove effective for landscape architecture students in increasing their aural awareness and sensitivity to sound. It is clear that sound plays an integral role in the experience of the outdoor environment but is currently underplayed in the field of landscape architecture. A better understanding of sound in the outdoor environment will be critical moving forward as landscape architects continue to develop more holistic landscapes.

After having completed this nearly year and a half-long research endeavor, I feel that my findings and conclusions are both enlightening and emerging. I strongly feel that sound is not yet an established discourse in the field of landscape architecture, but hope that my study has the potential to inspire others pursuing related topics. I believe that sound plays an important role in landscape architecture, lending places a sense of identity and unique characteristics. There are many more directions for future studies and my hope is that I can continue to research this topic in more depth in the future.









## ENDNOTES

### Chapter Two

1. *Analog* – The process of taking audio and video signals and translating them into electronic pulses. The conventional analog tape recorder records waveforms onto magnetic tape or other storage medium (Truax, ed., 1999).
2. *Digital form* – In a digital recorder, the input signal is first filtered to remove any frequencies that cannot be accurately represented digitally (Truax, ed., 1999).
3. *Rhythm* – In general, rhythm is a pattern in space and time. With sound, rhythm describes the pattern of events in time (Truax, ed., 1999).
4. *Pitch* – In non-musical terms, pitch is the subjective impression of frequency. The pitch of a tone or note allows it to be placed in a musical scale (Truax, ed., 1999).
5. *Major triad* – A triad is a combination of three notes played simultaneously. Major describes the sequence and tonality of the triad, consisting of seven notes (Virginia Tech, 2013).
6. *Tape music* – Musical compositions created with tape recorders and magnetic tape using a variety of sources, both electronic and natural (Truax, ed., 1999).
7. *Splice* – The act of joining two ends of magnetic tape with the use of adhesive material called splicing tape (Truax, ed., 1999).
8. *Sound critics* – The loss of fidelity when converting analog recordings to digital form has been most recently argued by singer, songwriter, and author, Neil Young, in his bibliography *Waging Heavy Peace*. In his book, he discusses his studio PureTone remaining an analog studio for this reason (Young, 2012). Sterne also argues this point in his article, “The Death and Life of Digital Audio” (Sterne, 2006).
9. *Frequency levels* – Frequency refers to the rate of repetition of the cycles and periodic quantity of a soundwave. The frequency content of a sound is its spectrum, measured in Hz (Truax, ed., 1999).
10. *Pagodas* – Originating in East Asia, the pagoda most commonly functioned for religious activities, or a house of worship (Westcott, 1998).
11. *Maxim Gorky* – A Russian and Soviet writer during Russia’s social, political, and cultural transformation in the late 19th century (McMillan, 2013).

12. *First Punic War* – The first of three ancient wars fought between the Carthaginians and Romans from 264 to 241 BC (Goldsmith, 2012).

13. *American Enlightenment* – The period between the mid- to late-18th century that is considered to have thrived intellectually, influenced by the scientific revolution and the Renaissance the century before (Schmidt, 2000).

14. *The Queen* – The queen reigning during the majority of early modern England was Queen Elizabeth the first (Smith, 1999).

15. *Antebellum America* – The period of time during the Civil War, marked by slavery in the South (Smith, 2000).

16. *Philip Glass* – Glass is a minimalist and one of the most popular avant-garde composers still living (Duckworth, 1995). However, Glass is often considered to have similar thinking to John Cage as an avant-garde composer. Glass was one of the founding members of an experimental theater company in Paris, called Mabou Mines, for which he composed many of his early pieces. His work has been celebrated at the opera, ballet, on television, in symphony halls, films, jazz clubs, and even the occasional sports stadium (Duckworth, 1995). His type of music is based on ‘rhythms with overlapping cycles...like wheels turning inside wheels’ (Duckworth, 1995, 319).

17. *Christian Wolff* – Wolff is originally from Nice, France. His work is political in nature, as he has written pieces on the Vietnam War, German concentration camps, as well as pieces about progressive political figures. His work has been honored in Europe, particularly Germany and Holland (Duckworth, 1995).

18. *La Monte Young and Marian Zazeela* – Young and Zazeela united in 1962. Their most significant pieces are *The Well-Tuned Piano* and *Dream House*. The former is a piano piece nearly seven hours in length. The latter employs both a sound and light presentation designed to exist for weeks, months, or even years. It was originally set in their loft in the early sixties (Duckworth, 1995).

19. *Pure Geography* – This book was first written in 1929 in his native Finnish and translated to English nearly 70 years in 1997 by Malcolm Hicks.





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## APPENDIX A OPERATIONAL DEFINITIONS

### Primary Terms Used by the Researcher

- *acoustics* – within this thesis, the sound qualities of an outdoor environment
- *acoustic environment* – the acoustic equivalent to the visual environment, not necessarily designed in the conventional sense
- *aural awareness* – the ability to hear sounds in the environment, specifically sounds of the outdoor environment
- *aural sensitivity* – the level of awareness of sounds in the environment, specifically sounds of the outdoor environment
- *soundscape* – this term will be used to refer to the designed acoustic environment; while Schafer uses the term interchangeably with “acoustic environment,” here it will specify to the designed acoustic environment
- *soundscape design* – see above description

### Key Terms Created by Soundscape Scholars

- *acoustic ecology* – the study of the effects of the acoustic environment on the physical responses or behavioral characteristics of creatures living within it
- *ear-cleaning* – a systematic program for training the ears to listen more discriminatingly to sounds, particularly those of the environment
- *hi-fi* – a favorable signal-to-noise ratio; lo-fi, therefore, is the opposite
- *keynote* – those that are heard by a particular society continuously or frequently enough to form a background against which other sounds are perceived
- *moozak* – background music and noise, typically produced by a radio, telephone, stereo, etc.; typically placed in public spaces
- *soundmark* – derived from landmark to refer to a community sound which is unique or possesses qualities which make it specially regarded or noticed by the people in that community
- *soundscape* – the acoustic environment
- *soundscape design* – a new interdiscipline combining the talents of scientists, social scientists and artists (particularly musicians); soundscape design attempts to discover principles and to develop techniques by which the social, psychological and aesthetic quality of the acoustic environment or soundscape may be improved
- *soundscape ecology* – ecology is the study of the relationships between individuals and communities and their environment; soundscape ecology is thus the study of the effects of the acoustic environment, or soundscape, on the physical responses or behavioral characteristics of those living within it
- *soundwalk* – a form of active participation in the soundscape; though the variations are many, the essential purpose of the soundwalk is to encourage the participant to listen discriminately, and moreover, to make critical judgments about the sounds they hear and their contribution to the balance or imbalance of the

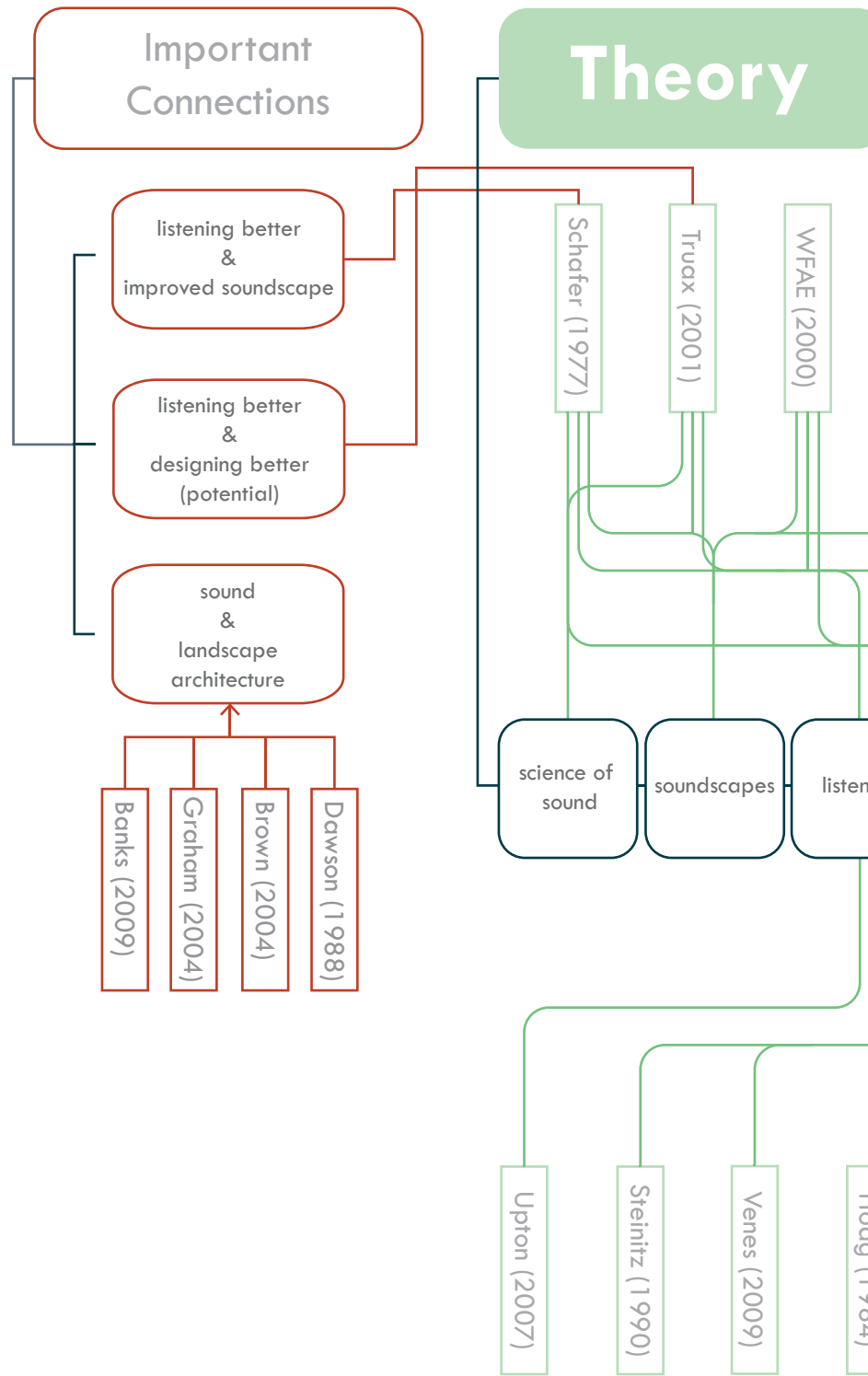
sonic environment

- *World Soundscape Project* – a research project centered at the Sonic Research Studio of the Department of Communication Studies, Simon Fraser University, British Columbia, Canada, devoted to the comparative study of the world soundscape (1971)

### Other Useful Terms

- *amplitude* – the acoustic term for the loudness or softness of sound
- *direction* – as in the dynamic movement of sound, the sound is coming from and going towards; or increasing loudness or softness
- *distance* – how close or how far away a sound is from the location of a project site
- *frequency* – the rate of repetition of the cycles of a periodic quantity, such as a sound wave
- *melody* – any combination of tones
- *noise* – an undesirable sound signal which interferes with the sounds one wants to hear
- *rhythm* – the pattern of regular and irregular pulses of sound
- *silence* – the absence of sound
- *sound source* – who/what object is producing a sound
- *texture* – the interrelationship between horizontally presented aspects of melody and rhythm and the vertically presented aspect of harmony
- *timbre* – the characteristic quality of sound produced by a particular instrument or voice; tone color
- *tone* – the quality or character of sound
- *volume* – the intensity of a sound and its impact on a project site

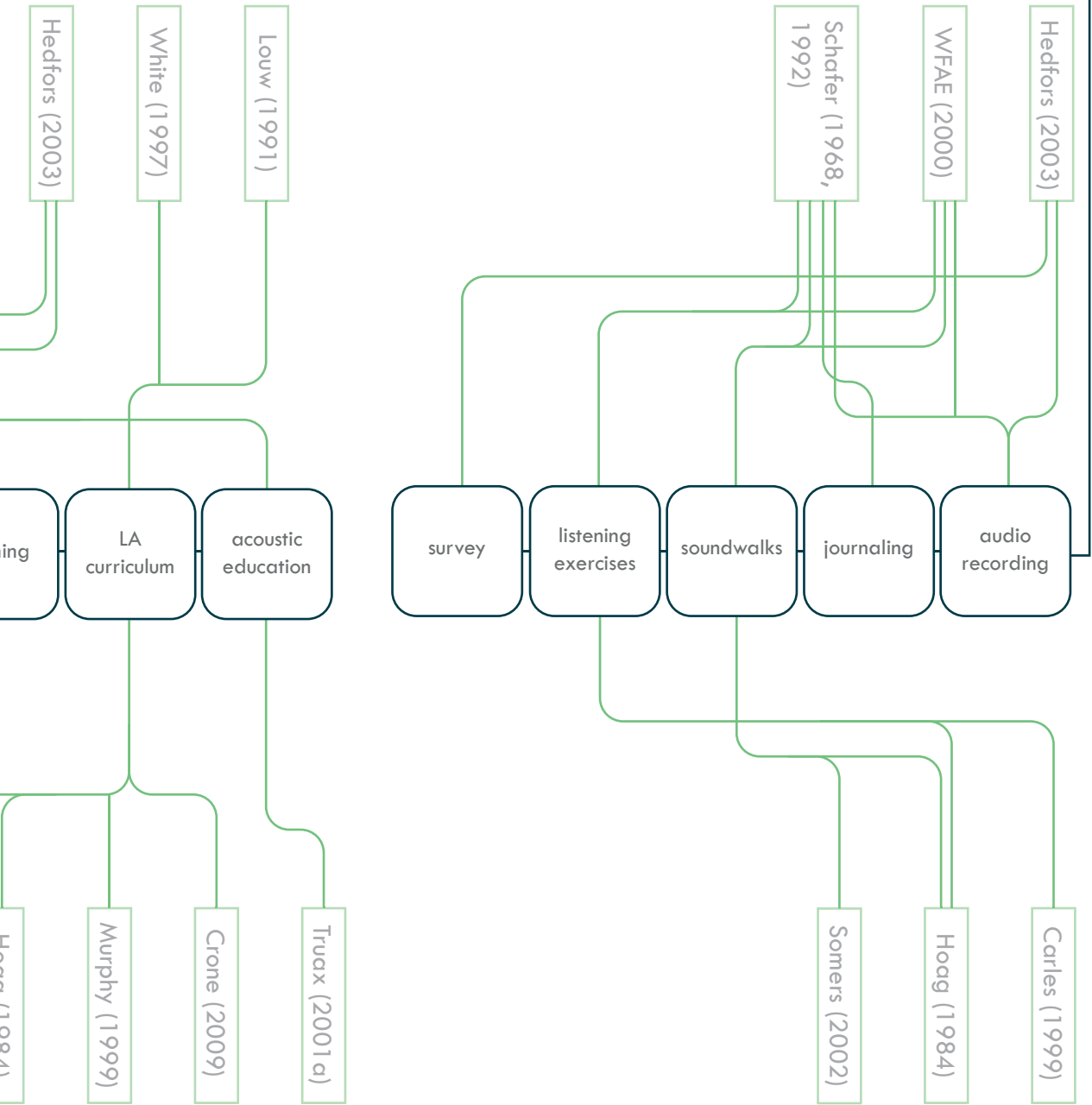
**APPENDIX B**  
WORKING DOCUMENTS



**[FIGURE 8.01]**

Original literature map from thesis proposal, presented at department colloquium, fall 2012. Graphic created by author.

# Method



**Literature Review [from thesis proposal, summer 2012]**

When describing the landscape, there is a particular ease in explaining its visual characteristics. Cosgrove (2002) describes this dominant visual perception using the term “ocular-centrism,” a reliance on the sense of sight over smell, taste, hearing or touch. It is appropriate then that representation of the landscape in design is almost entirely a product of the visual, in the form of renderings and physical models. However, Corner’s article, “Representation and Landscape,” discusses the firsthand experience of the landscape as “rich in sensual and phenomenological terms” (Corner, 1992, 146). The use of representational drawings as a medium for the landscape does not accurately portray its spatiality, temporality or materiality. From a spatial geographic standpoint, Rose (2001) explains, “The presence of the landscape is intimately connected to how it operates through other kinds of activities (other landscapes, other relations, other processes and forces). . . It is contingent upon what it initiates, activates and inspires” (Rose, 2001, 456). Porteus (1985) even argues that the sense of smell is a critical influence on the experience of landscapes, elaborated in his article entitled, “Smellscape.” So although society has a great reliance on the ocular sense, it takes all five senses to fully experience the physical and tangible landscape.

Few have written about the significance of sound in the outdoor environment – these constitute the authors of primary publications that define the soundscape movement. These defining works will be introduced here, and some will be elaborated on later in this literature review. The first book containing a comprehensive knowledge of soundscapes is Raymond Murray Schafer’s *The Soundscape: Tuning of the World*, published in 1977. Schafer’s book is a synthesis of information presented in his prior publications, including *The New Soundscape* (1968) and *The Book of Noise* (1970). These publications were the culmination of a research effort to study sound in the environment. The World Soundscape Project, as it was known, was founded by Schafer in the late 1960s and had its headquarters at Simon Fraser University (SFU) in British Columbia, Canada. Several documents were produced as a result of the findings of the World Soundscape Project, most notably Schafer’s essays titled *The Music of the Environment* (1973) and *The Vancouver Soundscape* (1974). These publications have provided a backdrop for more recent literature and studies about sound and the outdoor environment, including those written in the early 2000s by Barry Truax and scholars in the World Forum for Acoustic Ecology (WFAE).

Schafer’s book *The Soundscape: Tuning of the World* recognizes that sound has always been a part of the outdoor environment. In forms of silence or cacophony, sound is as tangible as objects, infrastructure, people, wildlife and even the open air. Schafer, Truax and scholars in the WFAE have different approaches to writing about the soundscape.

As Schafer's musical background has heavily influenced his research, he believes a soundscape can be impacted by those in music as well as other disciplines within fields of arts and sciences (Schafer, 1977). He views the soundscape as a musical composition, complex and fluctuating. Truax's approach to writing is more science based, given that he has a background in acoustic communication and electro-acoustic music. In *Acoustic Communication*, his book published in 2001, he describes the theory of sound as it moves from the source to receiver, the range of sound frequencies heard by the average human, and impacts of technology on the human ear (Truax, 2001).

When compared to the writings of Schafer and Truax, the WFAE is a different kind of source entirely. Schafer's book on soundscapes (Schafer, 1977) and the World Soundscape Project, prompted the publication of an entirely new forum – the *Soundscape Journal*, a collection of writings compiled by the WFAE (2000) and associated countries from around the world. The *Soundscape Journal*, its most recent issue published in 2009, includes literature addressing all topics of sound and current events of worldly soundscape efforts. The WFAE has defined acoustic ecology (as the organization is so named) as the interaction between networks of living organisms with other networks of their sound environment (Truax, ed., 1978).

The World Soundscape Project was a significant research effort on sound environments conducted by scholars of SFU (Schafer, 1978). Participants in the earlier stages of research included Howard Broomfield, Bruce Davis, Peter Huse, Barry Truax, Hildegard Westerkamp, and Adam Woog. The Project was productive until the late 1970s, with primary sound studies at sites in Canada and Europe. Schafer, along with Barry Truax, Hildegard Westerkamp, Susan Frykberg, Norbert Ruesaat, and Robert MacNevin, have taught undergraduate and graduate level courses in soundscape studies and acoustic ecology for nearly 30 years in the School of Communication at SFU (Truax, 2001, 15).

Those who have studied soundscapes agree that over time sound changes and evolves. The effects of this change and evolution are many, but there is one highlight on society's timeline that soundscape scholars consider to have had a major impact on the acoustic environment – the Industrial Revolution. From approximately 1760 to 1840, the Industrial Revolution introduced new sounds to the outdoor environment, including those from machines, factories and vehicles. Schafer calls this resulting type of acoustic environment a "lo-fi soundscape," or low-fidelity environment with an overcrowding of sounds and a lack of clarity of sound signals (Schafer, 1977, 71). With these new sounds, society inevitably began to listen differently, in the sense that they could no longer distinguish single sound sources among droning machines. This condition has been referred to as a

gradual degradation of the reliance on aural awareness (Schafer, 1977; WFAE, 2000; Truax, 2001). Sound became no longer an appreciative quality and society passively turned to their other senses to experience the outdoor environment. In response to the degradation of society's aural awareness, the WFAE published entire issues on "hearing loss," "ear-cleaning," and "listening" (WFAE, 2000).

Because of the degradation of aural awareness and sensitivity, Schafer recognized the need to improve listening around the globe, and stated, "To me soundscape design is not design from above or abroad but from within, achieved by stimulating larger and larger numbers of people to listen to the sounds about them with greater critical attention" (Schafer, 1992, 11). Schafer published two books on lessons in listening – *Ear Cleaning: Notes for an Experimental Music Course* (1968); and *A Sound Education: 100 Exercises in Listening and Sound-Making* (1992). Schafer (1977) was also the first to introduce the concept of soundwalks, the practice of actively participating in the soundscape with the intent of listening discriminately to all sounds of the outdoor acoustic environment. Several researchers have participated and/or conducted soundwalks for sound studies around the world. The World Soundscape Project was the first, however, to conduct soundwalks at sites in Canada and Europe (Truax, ed., 1978).

At SFU, professors of acoustic communications studies conduct ear-cleaning exercises and soundwalks with their students to improve listening abilities. A 1974 student who enrolled in one of the courses wrote the following conclusion about her acoustic studies experience: "We all brought pre-determined perceptions into the seminars in the early fall. They were largely structured around visual perceptions. Over the past three months I have been able to eliminate a lot of my visual hang-ups and to re-assess the significance of sound in my surrounding environment. I know this to be a fact, because my ears have become extremely sensitive to technological sounds that the majority of the public either can't hear or take for granted" (Truax, 2001).

Although Schafer did mention that those in the fields of arts and sciences should address the soundscape, Truax and Barrett (2011) specifically mention the importance of those in the field of design and especially landscape architecture. In their article, "Soundscape in a Context of Acoustic and Landscape Ecology," they propose that soundscape ecology is a new synthesis to leverage two fields of study – landscape ecology and acoustic ecology. "In addition to spectral and temporal aspects of soundscape perception, spatial development and recognition clearly play an important role...For anything to sound, there must be movement, and that movement, if it produces audible sound, interacts with the physical space and is perceived as sound that is inextricably combined with spatial information" (Truax and Barrett,

2011, 1204). The science of sound and listening in the landscape is also explained to help “contribute to problem-solving approaches focused on ecological resource management and as an emerging component of sustainability science,” and they advocate for funding to be provided to “analyze and integrate the collection of sounds across temporal-spatial scales to configure ecosystem/landscape patterns and processes” (Truax and Barrett, 2011, 1206).

Other authors have written about sound and the landscape in a less scientific, more narrative style. Although these articles are not directly relevant to the research for this thesis, they have helped the researcher form perspectives and theories about topics on sound. In the article, “Flight, Fancy, and the Garden’s Song,” Kerry Dawson makes a preference for natural sounds over man-made/machine sounds as he writes about using sound in a garden (Dawson 1988). His article compiles a list of research on sound preferences, which verify that nature sounds are generally more pleasing. In “Sound as Landscape,” Dell Upton chronicles the role of sounds in the antebellum city and how it has changed culturally through time (Upton 2007). This particular article discusses the eloquence of language and its influence on music and society.

A few landscape architecture theses and dissertations have researched the use of sound in landscape architecture design. Per Hedfors’ (2003) research is an in-depth discussion of how to approach soundscape design using site surveys with musicians, landscape architects, and the general public. He recognizes the need for an acoustic terminology to be built within the field of landscape architecture, to facilitate designing with sound. In contrast to Hedfors’ approach, Robin Banks (2009) studied acoustics by presenting sound samples collected in the field to participants (general public, broadcasting, and videography professional) in a survey. The results of the survey were used to inform the design of an outdoor performance space. Robert Somers (2002) also researched sound for the design of an outdoor theater. One portion of his design process involved the use of soundwalks to analyze the site’s acoustic qualities. These three theses and dissertations have helped further the study of sound in landscape architecture. While these references are pertinent in that they have shown that other scholars have begun to recognize the importance of addressing issues of sound in the landscape, they do not specifically mention the use of listening exercises as a fundamental part of improving the outdoor soundscape.

No literature has been written thus far for landscape architects on how to become better listeners to the acoustic environment. In fact, there is a distinct lack of evidence suggesting that listening exercises have been performed specifically by landscape architects or other outdoor design-related professionals for the purpose of improving listening abilities.



In studying ten undergraduate programs and eleven graduate programs in the United States, it is apparent that there are few courses addressing the acoustic environment in current landscape architecture curricula. The twenty-one schools selected for the study were based on the 2012 DesignIntelligence rankings of top landscape architecture programs around the United States (ASLA, 2012). The following schools' curricula were evaluated for any required or elective courses addressing sound in the landscape: Louisiana State University, Pennsylvania State University, California Polytechnic State University-San Luis Obispo, Purdue University, Texas A&M University, University of Georgia, Ohio State University, Cornell University, Ball State University, California State Polytechnic University-Pomona, Harvard University, Kansas State University, University of Pennsylvania, University of Virginia, University of California-Berkeley, and University of Illinois at Urbana-Champaign. With the exception of Cornell University, none of the top-ranking schools offer landscape architecture courses that address sound in the landscape. Cornell offers one elective titled Audio Documentary, which focuses on creating "aural portraits" to tell stories of sites in New York and other changing communities (Cornell, 2012).

One key text that could prove useful to landscape architects hoping to learn more about sound is *The Handbook for Acoustic Ecology* (Truax, ed., 1978). Key terminology from all disciplines that deal with sound are compiled into this one handbook, and any terms dealing with sound used in this thesis can be found here as well. Given that ear-cleaning exercises have proven effective for students in the fields of music and communications (Truax, 2001), there is reason to believe that the same exercises can be effective for students of landscape architecture. This means, however, that the ear-cleaning exercises will need to be tailored so that landscape architecture students are familiar with the key terminology. The Handbook is useful in its definition of a host of terms concerning sound, in the context of several different disciplines.

This thesis is intended to emphasize the importance of addressing sound in landscape architecture, and more importantly, the need for an acoustic education and fundamental lessons in listening for landscape architecture students. The primary source that connects the importance of better listening abilities to the potential improvement in the design of the soundscape is the book *Acoustic Communication* by Truax (2001). Truax argues, "Whatever the reason, all developments that shape the acoustic relation of the person to an environment will occur at the crucial interface called listening, and all design criteria that are to be effective must proceed from an intimate understanding of the listening process" (Truax, 2001, 30). Truax explains the listening process as having three components – source, transmitter, and receiver – with the

receiver ultimately assigning meaning and information to the source. There are different levels of listening, and to be at the highest, or most sensitive level, one must actively participate in the soundscape. "Listening is our only means of contact with the sound environment, and if it is not practiced and kept sensitive, we will lose, both individually and culturally, all of the human benefits it can provide" (Truax, 2001, 106).

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*Theory*

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## ***Methods***

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## LAR 897 | Spring 2012 | Literature Summary

### Book, Soundscapes

Schafer, R. Murray. 1977. *The soundscape: Our sonic environment and the tuning of the world*. Rochester: Destiny Books.

#### Objectives/Big Ideas:

- Viewing the acoustic environment as a musical composition.
- Critically analyzing the acoustic environment. This means not necessarily noise mitigation, but sound as a resource.
- City sonotopes: when a city has a significant/unique sonic environment

#### Relevance to my topic:

- Schafer is the first researcher who coined the term “soundscape,” beginning the movement of acoustic ecology

### Book, Soundscapes

Truax, Barry. Ed. 1978. *The World Soundscape Project's Handbook for Acoustic Ecology*. Vancouver: ARC Publications.

#### Objectives/Big Ideas:

- The World Soundscape Project's aim was to bring together “research on the scientific, sociological and aesthetic aspects of the sonic environment” (preface)...sciences and arts of sounds, to clarify all terms and definitions relating to sound.
- This handbook includes most of the major terms dealing with sound from the following areas: phonetics, acoustics, psychoacoustics, psychology, electroacoustics, communications and noise control, musical terms appropriate for an environmental handbook, and soundscape terms that Schafer and others have invented or adapted.

#### Memorable Passages:

- “As researchers into every aspect of the acoustic environment, we feel that this paradox reveals the tendency of our culture to trade its ears for its eyes, that is, to rely more heavily on visual information and less and less on aural cues.” Pg. v.
- “It is our contention that the cause of this predicament can be traced to the public's waning auditory skills – a basic inability to hear clearly by those responsible for this imbalance, by which we mean to include as much the citizen who buys noisy appliances and vehicles, as the architects who build noise into their (visually and structurally) advanced designs, and the manufacturers who do the same with products that are thoughtlessly unleashed into the sonic environment regardless of their harmful effects.” Pg. v.

Relevance to my topic:

- This can serve as a guide to structuring exercises, such as what terms are most important to cover/introduce to landscape architecture students.
- A good reference for definitions of soundscape terms for the “operational definitions” component of my thesis proposal.

Book, Listening

*Schafer, R. Murray. 1968. Ear cleaning: Notes for an experimental music course. Ontario: BMI Canada Limited.*

- “Millions have already been spent on such research and studies, and the results go largely unheeded; more listening and imaginative thinking are the only things that still need to be done.” Pg. vi.

Relevance to my topic:

- A book of listening exercises, originally for music courses.
- Can provide a framework for listening exercises in my study.

Book, Listening

*Schafer, R. Murray. 1992. A Sound education: 100 Exercises in listening and sound-making. Ontario: Arcana Editions.*

Relevance to my topic:

- A book of listening exercises.
- Can provide a framework for listening exercises in my study.
- According to Truax (2001) Schafer, Truax, and others teach courses in listening in Communications studies at Simon Fraser University.

Book, Design and Sound

*Truax, Barry. 2001. Acoustic communication, 2nd Edition. Westport, Connecticut: Ablex Publishing.*

Objectives/Big Ideas:

- Three components are isolated in the acoustics model for the study of sound: source, transmitter and receiver.
- Suggests a network of interactions which comprise an acoustic environment, including several senders and receivers which can change roles and have both function at the same time.
- Provides a link between designers (which he refers to sometimes as “environmental artists”) and the need to listen to the acoustic environment.

Memorable passages:

- “Whatever the reason, all developments that shape the acoustic relation of the person to an environment will occur at the crucial interface called listening, and all design criteria that are to be effective must proceed from an intimate understanding of the listening process.” Pg. 30
- “We can summarize three factors that can promote change in an acoustic system, particularly one that is malfunctioning:
  - Listening and critical evaluation
  - Preservation and protection
  - Design of alternatives” pg. 106
- “Listening is our only means of contact with the sound environment, and if it is not practiced and kept sensitive, we will lose, both individually and culturally, all of the human benefits it can provide.” Pg. 106
- “Careful listening leads to questions about what we hear and an evaluation of its usefulness, interest, and beauty, or lack of the same.” Pg. 106

Relevance to my topic:

- Designing + listening = improvement of soundscape design.
- Provides an extensive description about the stages of listening.

Book, Research Methods

*Creswell, John. 2003. Research design: Qualitative, quantitative, and mixed methods approaches. 2nd Ed. Thousand Oaks: Sage Publications, Inc.*

Relevance to my topic:

- A guide for developing qualitative and quantitative research methods.
- Checklists for each on pages 160 and 191.
- Will help in developing surveys and experiment procedures for my research.

Scholarly Journal, Soundscapes

*World Forum for Acoustic Ecology. (2000). Soundscape: The journal of acoustic ecology. Volumes 1-9. Vancouver: Kinkos Vancouver.*

Relevance to my topic:

- A journal/forum from 2000-2010 of articles concerning the soundscapes all over the world; current and emerging issues.

Thesis/Dissertation, Sound and landscape architecture

*Banks, Robin. 2009. Native Reverberation: Artistic acoustics for the outdoor stage on the Castle Creek Campus. M.L.A. thesis, Kansas State University*



*(Kansas), United States. Retrieved 28 January 2012, from KRex.*

Goals:

- An aspect of her research concentrated on acoustics of outdoor environments, in order to design the Castle Creek Campus performance space for the Aspen Music Festival and School.

Objectives/Big Ideas:

- “Sound Basics” – how sound moves and reacts [reflection, diffraction, refraction]
- “Sound in Nature” – certain atmospheric factors affect the propagation of sound in open air conditions [air absorption, wind, temperature, ground cover]
- “Acoustics and Performing Music” – criteria for “good” performances [uniform loudness, enhancement of bass and treble, fullness of tone, range of crescendo, diffusion of sound, intimacy]
- “Organization of structures for performance spaces” [rectangle, horseshoe, fan shape] – classified further into designs according to types of music [ie choral, jazz, orchestral, rock concert]
- “Importance to Listeners” – physiological and psychological effects of sound provide evidence to support design decision-making on the Aspen School campus; it has been scientifically proven that auditory stimuli induce responses in the human body.

Methods:

- Survey completed on KSU campus and applied to Aspen [due to time constraints].
- A fiddler was recorded at each of the 4 site visits.
- A record of weather conditions, layout of the space, vegetation in the space, and surrounding activities [ie construction and materials in the space] was kept of each site.
- Qualitative Analysis Survey
- Each participant of the survey was electronically sent a form linked to the recordings done on the KSU campus
- They were then asked to rate the clarity of the intended sound of the fiddle in each site
- Participants in the survey were selected in three categories: “layman, broadcasting professional and videographer professional”
- After compiling the results, each variable was classified based on the analysis into “excellent,” “good,” “fair,” or “poor” category
- Results:
  - Variables to dictate design
  - organization of the space
  - materials within the space
  - proximity to water
  - vegetation choices
  - degree of enclosure
- Major Conclusions Drawn from Thesis

- Developing an understanding of how sound interacts, how that interaction occurs in nature, how acoustics relates to music, and how sound affects the human body and psyche guides the inventory and analysis, and later the design of performance spaces.
- Surface materials, vegetation type and density, degree of enclosure, and organization of space affect the propagation of sound in an outdoor environment.
- Enhancing the “musical clarity” = propagation of sound
- Relevance to my topic:
- Not really relevant to my specific methods, besides exploring sound and landscape architecture.

Thesis/Dissertation, Sound and landscape architecture

*Graham, Cynthia S. R. (2004). Designing landscapes for psychological restoration: Adding considerations of sound. M.L.A. dissertation, University of Guelph (Canada), Canada. Retrieved February 1, 2012, from Dissertations & Theses: Full Text.(Publication No. AAT MQ92954).*

Goals:

- To produce guidelines to inform the design of restorative spaces for undergraduate university students.
- To further research in the areas of Attention Restoration Theory and the use of rating scales, specifically, the Perceived Restorativeness Scale developed by Hartig and his colleagues.

Relevance to my topic:

- Not entirely relevant, besides exploring sound in landscape architecture

Thesis/Dissertation, Sound and landscape architecture

*Hedfors, Per. 2003. Site soundscapes: landscape architecture in the light of sound. Doctoral dissertation, Sveriges Lantbruksuniversitet (Sweden), Sweden.*

Goals:

- “This research raised the orchestration of the soundscape as a new area of concern in the field of landscape architecture.”

Objectives/Big Ideas:

- A prototype of a computer tool for use in landscape architecture was developed. This was intended to promote listening as well as stimulate an appreciation of the soundscape approach in the processes of planning and design.
- “The aim of the research was to view sounds as potential resources in the planning and design of outdoor environments.”

- Recognizes the need for an acoustic terminology within the field of landscape architecture.
- Believes soundscape studies alone are not enough to provide a foundation for making sound a concern in the field of landscape architecture (too isolated in the research world, not necessarily applicable to all design projects).
- Section on sound preferences, beginning on page 28.

Methods:

- Exploratory interviews were conducted with professionals from the relevant fields at the start of the research.
- Case studies were used to lay the groundwork for the practitioners to obtain a personal acoustic reference bank... to serve to stimulate their aural awareness during the planning process, i.e. site visits.

Results:

- The exploratory interviews demonstrated the need to compile the project-related skills in the form of project descriptions.
- A new approach to site analysis concerning sound in landscape architecture.
- “It has implications for the process of physical planning and was therefore presented in a manner designed to enable landscape planners to view sounds as a planning resource.”
- “It is of significance to the layout of the outdoor environment and was therefore presented in a manner designed to enable landscape architects to view sounds as a design component.
- “It was presented together with practical methods of approach; these are flexible in order to enable practitioners to more efficiently transform them for each unique situation. Sounds are therefore managed in the processes which affect either the creation of the physical environment or the changes therein.”
- Relevance to my topic:
- Very pertinent background research covered in this thesis, including sound and architecture/landscape architecture, music/ethnomusicology, environmental psychology.

Thesis/Dissertation, Landscape architecture curriculum exercises  
*Hoag, Edwin R. 1984. Visually and verbally initiated mental imagery and success in landscape architectural education. Doctoral dissertation, Texas A&M University (Texas), United States. Retrieved 01 February 2012, from Dissertations & Theses: Full Text. (Publication No. AAT 8504736).*

Goals:

- Test the validity of visual exercises with landscape architecture students to see how their visual perceptions affect their success in design.

#### Objectives/Big Ideas:

- Argument – “If a student enters a program with deficiencies in verbalization, math or science, he or she must take remedial courses before being allowed to continue. Why aren’t students with low level visualization skills identified and cycled through remedial coursework to prepare them for the design curriculum? If this were done, students would enter a design curriculum with a balance of verbal, graphic, and mental imagery skills.” Pg. 3 of thesis
- This thesis examines the “relationship between the verbally and visually initiated mental imagery and student success in landscape architectural education.”

#### Methods:

- Students in the Department of Landscape Architecture at Texas A&M University were tested to determine visualization ability levels.
- It was found that imagery capability levels remained constant throughout the student population.
- Positive correlations were observed between visualization ability levels, as indicated by test scores, and academic performance as indicated by grades in specific courses.
- Tests of visual skills given to experimental group. Visual testing occurred from September 18-20, 1984.
- Space relations test of the differential aptitude tests – required the subject to mentally fold a pattern into an object, rotate this object and compare it to one of four representations
- Group embedded figures test – required the subject to locate a previously seen simple figure within a larger complex pattern that has been organized to obscure or embed the simple figure
- Vandenberg-Shepard mental rotations test – a mental rotation task consisting of a criterion cube and four alternative figures; the task is to match the criterion cube with one of the other alternatives
- Space relations test of the primary mental abilities test – measure the ability to rotate an object mentally in 2D space and to recognize the object as seen from another angle

#### Results:

- Based on the results of the study, Hoag recommends that landscape architectural curriculum sequencing “be based, in part, upon the visualization abilities of students and faculty members.”
- There is a positive relationship between spatial ability and success in architecture and engineering
- Positive changes in motivation and attitude toward spatial tasks and mathematics have been observed after training in spatial skills
- These skills are developable in adults and children of both sexes.
- These skills were not only retained but continued to develop after the training and experimentation sessions ended.

- Relevance to my topic:
- Proof that pre-test and post-test are important to include in this type of experiment
- Post test discussions with students revealed that “several students felt they did not know what to do during the early portions of the tests. Several students stated that a better explanation of the test would have been helpful. A more thorough introduction to the test might also increase the reliability of the test.” Pg. 26 of thesis – These results can be helpful notes for when I am developing my testing procedures.

#### Thesis/Dissertation, Soundwalks

*Somers, Robert Gerardus. 2002. Acoustic landscape ecology and the urban environment. M.L.A. dissertation, The University of Manitoba (Canada), Canada. Retrieved 01 February 2012, from Dissertations & Theses: Full Text. (Publication No. AAT MQ76872).*

#### Goals:

- develop a document for landscape architects and other urban designers that identifies the spatial relationships between sound and the everyday North American urban environment using the concept of Acoustic Landscape Ecology.

#### Objectives/Big Ideas:

- “Identify the potential role sound map play in landscape architectural practice within the context of the North American urban environment.” Abstract
- “Spatially identify and illustrate key principles of Acoustic Landscape Ecology that are pertinent to the practice of landscape architecture in the urban environment.” Abstract
- “Illustrate the ways in which principles can be used in the design of urban environments.” Abstract
- “Open the ears of landscape architecture to the sound of the urban environment and the potential of acoustic ecology in creating place.” Abstract

#### Methods:

- Case study: analyzing Walker Theater and associated land, Winnipeg, Manitoba, Canada, for design development.
- Mapping methods include projections of sound sources and isobel contour maps.
- Listening exercises include soundwalks.

#### Results:

- A series of analysis maps on Winnipeg’s soundscape.
- Notes that soundwalks should be taken at various times of the year to get an accurate analysis of the soundscape.

- Site analysis of the soundscape can lead to better design development stages.
- “After having come to an understanding of the acoustic landscape ecology of a space, the next step is to understand how programmatically and spatially future development will effect and shape the audible experience. From there we can begin to create solutions that engage the concept of acoustic landscape ecology, in an attempt to increase communicability of information and elevate the positive experience of ‘place,’ from the mono-sensual creation that permeates experience today.” Pg. 96

Relevance to my topic:

- The method of soundwalks can be helpful when structuring curriculum exercises, but still feel like this thesis has little relevance to my research.

Thesis/Dissertation, Landscape architecture curriculum change  
*Venes, Jane. 2009. Design core commonalities: A study of the College of Design at Iowa State University. Ph.D. dissertation, Iowa State University (Iowa), United States . Retrieved 01 February 2012, from Dissertations & Theses: Full Text. (Publication No. AAT 3369904).*

Research Question:

- Allowing for differences in disciplinary lens and terminology, what commonalities can we identify among design disciplines? Pg. 7

Goals:

- The purpose of this study was “to establish the actual core thinking skills, knowledge bases and manipulative abilities in the College of Design at Iowa State University and perhaps elsewhere.”
- To create a survey instrument to extract a “shopping list” of possible core elements for a multidisciplinary art or design program.
- “To bridge lens or vocabulary differences in order to determine what really is basic in a given school of art or design.”

Objectives/Big Ideas:

- “It was a two-fold process, including both a discovery process and a validation survey.”
- “The discovery process produced a list of skills, knowledge bases, values, and thought processes that appear common to most or all of the six programs in the College of Design.”
- “The list was initially assembled from two sources: an analysis of the accreditation standards and guidelines set forth by the relevant accreditation associations for each discipline in the College, and a

series of interviews with faculty from all six degree programs.”

- “The interviews elicited the qualities common to students who are or become successful in each discipline, explored disciplinary lenses, and checked the match between accreditation expectations and practice.”

Methods:

- A modified case study approach that included qualitative interviews and document analysis.
- A consolidation, categorization, and evaluation of the information gathered in the first phase; this was accomplished with a survey document that served to clarify, validate, and assess the information collected in the qualitative phase.

Results:

- From interviews: 273 thinking skills, 341 knowledge bases, 53 affective skills, and 59 manipulative abilities.
- From documents: critical thinking, analysis, research skills, problem solving, design.
- From validation: thinking skills, principle, design process, spatial thinking, drawing, designer client relationships, knowledge bases and thinking skills, materials and technology, human experience, a sense of context, systems thinking, design and art history, communication, likes and works.

Relevance to my topic:

- Is it particularly relevant to my research to find out what types of skills are naturally observed in landscape architecture? Beyond visual and problem-solving, is it necessary to go into more depth? The workings of a landscape architect’s mind, and the necessity to improve listening?

Thesis/Dissertation, Landscape architecture curriculum change  
*White, Steven Robert. 1997. A confluence of thinking: The influence of 20th century art history on American landscape architecture. M.L.A. thesis, University of Arizona (Arizona), United States. Retrieved 01 February 2012, from Dissertations & Theses: Full Text. (Publication No. AAT 1387958).*

Goals:

- To make a case for aligning the profession of landscape architecture with the fine arts and humanities. “An art history component in the curriculum and education and training of landscape architects would augment their design and presentation skills in the workplace.” Pg. 7 of thesis
- A goal of the surveys was to begin to see what influences art history has on individual careers, teaching and professional development.

- A secondary goal was to find out the current ideas, subjects, themes, and teaching philosophies of landscape architecture education around the country.
- A final goal is to develop an art history course for landscape architect students as a result from this research.

#### Methods:

- A survey questionnaire sent out to 65 landscape architecture teaching faculty representing 38 landscape architecture programs in the United States. These individuals held either a Bachelor of Fine Arts degree, a Master of Fine Arts degree, or they had a scholarly research interest in art, background in landscape architecture and some artists..

#### Results:

- Argument – "...the history of art offers the landscape architect and the profession a vast wealth of helpful philosophy, design concepts, vocabulary and terminology."
- Three significant art history events have direct impact on the profession of American landscape architecture [The Armory Show of 1913, Bauhaus movement, Post Modern period]
- Full information on questionnaire and responses, as well as a glossary of art history terms located in the appendix

#### Relevance to my topic:

- White is proposing a change in landscape architecture curriculum by finding parallels in another field of the arts.
- Later, White touches on the influences of landscape architects, such as Peter Walker, Michael Van Valkenburgh and Martha Schwartz, noting that specific art movements/artists have influenced their work

#### Article, Sound and landscape architecture

Brown, A.L., and Andreas Muhar. 2004. "An approach to the acoustic design of outdoor space." *Journal of environmental planning and management* 47 (6): 827-842.

#### Goals:

- To develop specific acoustic objectives for outdoor soundscapes and the translation of these objectives into acoustic criteria that are amenable to measurement and prediction as part of the design process.

#### Objectives/Big ideas:

- "Urban and landscape architects should take auditory perception into account. The perception of all senses should be dealt with to the same degree and the visual should not be favoured." Pg. 828



- “Urban and landscape planners and designers should create sonic environments which form part of their context over both space and time.” Pg. 828
- “Design tools dealing with auditory aspects should be developed to fit into the process of urban and landscape planning and design.” Pg. 828

Methods:

- Literature research

Results:

- Some example acoustic objectives for outdoor spaces (composed based on personal experiences, and observations, opinions, and commentary found in the soundscape literature):
  1. Moving water should be the dominant sound heard
  2. A particular (iconic) sound should be clearly audible over some area
  3. Hear, mostly, (non-mechanical, non-amplified) sounds made by people
  4. The sounds of nature should be the dominant sound heard
  5. Acoustic sculpture/installation sounds should be clearly audible
  6. Sounds conveying the city’s vitality should be the dominant sounds heard

Relevance to my topic:

- Not directly relevant to my research methods, but Brown and Muhar do cite some credible sources that discuss acoustics and the outdoor environment, including WFAE, Schafer, Truax, Sasaki, and Hellstrom.

Article, Sound and landscape architecture

*Carles, José Luis, Isabel López Barrio and José Vicente de Lucio. 1999. “Sound influence on landscape values.” Landscape and urban planning 43: 191-200.*

Goals:

- “In short, our aim is to show how the acoustic impact on landscapes and, in particular, can signify a loss of environmental quality which until now has been barely considered.”

Objectives/Big Ideas:

- Hypothesis: Landscapes that are associated with harmful activities and unexpected sounds are rejected by the population.
- People’s evaluation of a city’s sound environment depends on three aspects: the information contained in the sound, the context in which it is perceived, and its level.

## Methods:

- 6 images and 6 sounds were selected covering natural and semi-natural scenes and urban green spaces (parks) on a parallel variability scale of similar environmental situations.
- The visual and sound stimuli were presented first separately and then in varying combinations.
- 75 subjects (university students) rated each image, each sound, and each combination in terms of pleasure on a five-point scale (1=very unpleasant and 5=very pleasant). The test took about 25 min.
- Responses were written down on a pre-prepared template
- Tests were completed in an acoustically conditioned room.

## Results:

- “The results of these studies indicate that both the emotional meaning attributed to a sound and the importance of the context in which it occurs determine the degree of liking felt for a particular landscape.”
- “When sounds are not appropriate to the context in which they are perceived and do not provide readable information on the same (ie traffic circulation in a natural landscape) they are perceived as ‘noise’ and negatively rated.”

## Relevance to my topic:

- The relationship between a sound and its context has an important impact on its interpretation and whether or not the sound is noticed.
- This article could help direct the structure of some listening exercises (sound walks, location).

## Article, Sound and landscape architecture

Dawson, Kerry J. 1988. “Flight, fancy, and the garden’s song.” *Landscape journal* 7: 170-175.

## Objectives/Big Ideas:

- This article discusses the use of sound in the garden.
- Preferences for natural sounds over man-made/machine sounds.
- Provides evidence of research conducted about sound preferences.
- Provides descriptions of some key soundscape terms: keynote sounds, signals, soundmarks.
- A discussion about interviews conducted by John Carter (World Soundscape Project) with both city and country dwellers about sound preferences.
- Nature sounds at the top of the pleasing list for both categories of interviewees, including songbirds (#1), and then cat’s purr, and church bells.
- Displeasing sounds included dog’s bark, lawnmowers,

motorcycles, sirens.

- “Beautiful” sounds included bird songs, crackling of fire, waterfalls, wind, rain, children laughing, favorite music, and flutes.
- “Ugly” sounds found to be traffic, power saws, gunfire, dentist’s drills, screams of pain.
- Another research project echoed the results of the previous (Daag 1976).
- 98% preference songbirds on their property
- 86% chipmunks; 68% squirrel; 10% skunk.
- “Classification must be made of various sounds as natural, human, technological; continuous, interrupted; rhythmic, non-rhythmic.”  
Pg. 171

Relevance to my topic:

- Literature regarding sound preferences guiding soundscape design.
- Precedent literature regarding research on sound preferences.
- Precedent literature regarding the change of sound preferences due to change in society/culture/machine age.
- “The World Soundscape Project recommends that designers undergo “ear cleaning,” the favored term for becoming sensitive to environmental sounds, to unique sounds, to rhythm, notations, and to timing.” Pg. 175

Article, Landscape architecture curriculum

*Steinitz, Carl. 1990. “A framework for theory applicable to the education of landscape architects (and other environmental design professionals).” Landscape journal 9 (2): 136-143.*

Objectives/Big Ideas:

- “This paper presents a six-level framework that organizes questions associated with a landscape design problem. Each has an associated modeling type.”
- “The framework can be used to integrate applicable knowledge and also to identify areas where contributions of theory are needed.”

• Levels of inquiry/models:

Representation

Process

Evaluation

Change

Impact

Decision

- “To decide to make a change, one needs to know how to evaluate

alternatives. To be able to evaluate alternatives, one needs to know their comparative impacts from having simulated changes. To be able to simulate change, one needs to know what changes to simulate. To be able to consider changes to test, one needs to evaluate how well the current situation is performing. To be able to evaluate the situation, one needs to understand how it works. And in order to understand how it works, one needs representational schemata to describe its current state.” Pg. 138

Relevance to my topic:

- This is more of an article to keep myself in check with my process of researching and developing ideas to test my hypotheses. Essentially, this article is stating that whatever a designer proposes, there must be valid reason for it and information to support the change.
- For me, my proposal is incorporating an acoustic education into landscape architecture curriculum. My argument must (1) establish the need for an acoustic education, (2) state how this will be tested, (3) propose appropriate course content, (4) validate my study with background literature, (5) test and results.

Article, Acoustics curriculum

*Truax, Barry. 2001. "Acoustic communication studies at Simon Fraser University." Soundscape: Journal of acoustic ecology 2 (2). December 2001. ISSN 1607-3304.*

Objectives/Big Ideas:

- Texts for the courses were based on Schafer's writings: *The Music of the Environment* and *The Book of Noise* and sections from *The New Soundscape*
- Lecture topics included: the first soundscape, the lo-fi soundscape, signal and noise, basic acoustics of sound, the recordings of sound, radio broadcasting policy in Canada, the sound object, masking, the interview technique, radio as an alternative environment, telephones and telephone systems, and principles of acoustic design.
- Student work consisted of weekly exercises creating and evaluating soundwalks, researching a community noise topic, studying terminology, recording voice and environmental sounds, analyzing a radio broadcast, doing a masking experiment, recording interviews and preparing a short radio program, and critiquing bad acoustic design features in the soundscape
- Courses ALWAYS began with lessons in "listening and aural awareness" pg. 12, beginning with wearing earplugs
- Nearly 30-year history of an acoustic curriculum at SFU
- Schafer is already retired, since 1975
- A collection of student reports remains on file at SFU

- “When the plugs were taken out, another dramatic aural shift occurred as the person experienced a heightened auditory awareness because of their lowered hearing threshold before it re-adjusted to the current ambient level. Some students continued to use the plugs after the assignment, while others found them discomfoting, but all realized they now had a choice in any unfavourable acoustic environment.” Pg. 12
- One student’s testimony: “...Over the past three months I have been able to eliminate a lot of my visual hang-ups and to re-assess the significance of sound in my surrounding environment. I know this to be a fact, because my ears have become extremely sensitive to technological sounds that the majority of the public either can’t hear or take for granted. I have also learned the value of the natural soundscape which is in as much danger of facing extinction as the bald-headed eagle.”
- “Part of the reason for the slow spread of the concept is the lack of instructors trained in an interdisciplinary manner where a combination of social science, artistic, and technical background is needed.” Pg. 15

Relevance to my topic:

- “Understanding acoustic communication, and hence acoustic ecology, inevitably required knowledge gleaned from the specific disciplines which study sound from various perspectives.” Pg. 15 – Therefore, this is evidence that landscape architects must use an interdisciplinary approach to studying acoustic ecology.
- Student accounts of the success of Schafer’s courses at SFU

Article, Sound and listening:

*Truax, Barry and Gary W. Barrett. 2011. “Soundscape in a context of acoustic and landscape ecology.” Landscape ecology 26: 1201-1207.*

Objectives/Big Ideas:

- Soundscape ecology is being proposed as a new synthesis that leverages two important fields of study: landscape ecology and acoustic ecology.
- “Sound results in meaning based on two types of information and knowledge provided by the listener: (A) information gleaned from the properties of the sound itself, such as its spectral and temporal patterns, and (B) listener’s knowledge of the environmental, social and cultural context.” Pg. 1203
- The listening process can occur at different levels of attention, “ranging from a foreground, more analytical level, through to a background, distracted or habitual level.” Pg. 1203
- “In addition to spectral and temporal aspects of soundscape perception, spatial development and recognition clearly play an

important role. However, we recognize that there is a danger in applying customary visual notions of space and ability to document it in mappings, to the experience of ‘acoustic space’ that operates on a much different set of principles. The most dramatic difference is that acoustic space is evanescent and unstable because it depends on time. For anything to sound, there must be movement, and that movement, if it produces audible sound, interacts with the physical space and is perceived as sound that is inextricably combined with spatial information.” Pg. 1204

- “Hence at the primary level of psychoacoustic perception, feature extraction of sound sources is a complex set of abilities involving spectral and temporal cues imbedded in spatial information, all of which, interpreted by the contextual knowledge and ability of the listener to interact with the world, allows the listener to form an embodied relationship with that world.” Pg. 1205
- Soundscape perception is complemented by soundscape interaction. Listening is intertwined with soundmaking.

Relevance to my topic:

- The science of sound and listening in the landscape is explained to help “contribute to problem-solving approaches focused on ecological resource management and as an emerging component of sustainability science” pg. 1206 (concrete examples of knowledge of sound and their value to landscape architecture)
- Advocates for funding to “be provided to analyze and integrate the collection of sounds across temporal-spatial scales to configure ecosystem/landscape patterns and processes” pg. 1206.
- “Contextualize sound as acoustic process within a transdisciplinary science of soundscape ecology” pg. 1206.

Article, Sense of hearing

*Upton, Dell. 2007. “Sound as landscape.” Landscape journal 26: 24-35.*

Objectives/Big Ideas:

- “This essay explores the role of sounds in the antebellum city, challenging our customary emphasis on the visible and the designed or intentional in the cultural landscape.”
- “It examines the ways in which 19th century Americans interpreted ambient urban sounds, ranging from industrial noises to articulate speech, as parts of a continuum that paralleled the cues of social order and disorder.”
- “Consequently those who wish to study or design place, meaning environments that enrich self and society, must now take account of the sensory city – the spoken, declaimed, shouted, screamed, sung, drummed, rattled, hammered, heard, overheard, smelled, tasted, and endured city – as much as the tangible elements that have absorbed our attention in the past.” Pg. 24

- Quoting Atlee, “The intimate connection which subsists between the body and the mind’ means that sensations are conveyed to the brain by the nerves, and in turn ‘the sensorium...by a power which I shall not attempt to explain, is enabled to react upon these nerves and, by this reaction, to produce motion,’ meaning emotional affect.” Pg. 28
- “To see and to hear, and to be seen and to be heard connote quite different relationships between subject and object. Hearing is inherently social. It presumed (before the era of the mechanical reproduction of sound) the physical proximity of speaker or noise-maker and hearer. Like it or not, the omnidirectionality of sound placed one in the midst of the action.” Pg. 32

Relevance to my topic:

- Though not entirely relevant from cover to end, this essay touches on the sense of hearing and its impact, society’s loss of hearing through time, and its importance to those who wish to design.
- This essay is predominantly about classes in society relating to eloquence of language, the preconceptions about different cultural music and society.

Abstract, Interdisciplinary education

*Crone, John V. 2009. “Interdisciplinary approaches to education of landscape architecture students: A case study.” 2008-2009 CELA Conference Abstract. Retrieved 10 February 2012, from <http://www.thecela.org/documents.php>.*

- Abstract only provided on CELA conference proceedings.
- A case study approach to observe the interaction of landscape architecture students with civil engineering students (a 3-year period).
- A major goal was to “develop a model for supporting a multidisciplinary research, planning and design process that engaged landscape architecture and civil engineering students...”

Relevance to my topic:

- While this research studied how landscape architecture students can learn from other disciplines such as civil engineering, my study is taking approaches/course content from a music/communications study and observing how landscape architecture students can benefit from it.

Abstract, Landscape architecture curriculum

*Louw, Willem Petrus. 1991. The role of the subject theme. “Construction” in the education in landscape architecture. (Afrikaans text). M.L. dissertation,*

University of Pretoria (South Africa), South Africa. Retrieved 14 February 2012, from *Dissertations & Theses: Full Text*. (Publication No. AAT 0664630).

- Abstract only provided online, full text not available for purchase
- “In a search of alternative teaching methods based on sound educational principles, the study scrutinizes the undergraduate teaching in landscape architecture construction, from the overall teaching philosophy to the detail of learning opportunities.”
- Methods
- “Foreign teaching practices and sources dealing specifically with the teaching of architecture were investigated to find a basis for course content, objectives, evaluation and teaching methods.”
- “The focus of the study is the evaluation of student work resulting from the implementation of instruction strategies, based on research.”
- “Conclusions confirm certain prevailing practices, indicates the progress made, and describes remaining defects in the learning of the students.”
- “The teaching proposals serve only as a guide for the continuous process of future curriculum planning and development of directive teaching in the course theme Construction, and can be further developed into a study guide for students and lecturers.”

Relevance to my topic:

- A study that searches for alternative course content, objectives, and teaching methods for landscape architecture curriculum.

Abstract, Landscape architecture curriculum

*Murphy, Michael Davis. 1999. Investigation of a process for developing a culturally and geographically relevant curriculum for landscape architecture education in South Africa. Ph.D. dissertation, University of Pretoria (South Africa), South Africa. Retrieved 01 February 2012, from Dissertations & Theses: Full Text. (Publication No. AAT 0800922).*

- Abstract only provided online, full text not available for purchase
- “This research was conducted to establish a process of identifying the evolving requirements of landscape architectural practice in order that they may be incorporated into professional education to maintain quality of learning.”

Methods

- Questionnaire survey of practicing landscape architects in South Africa.
- “Results were obtained from private practitioners and public agency employees with experience levels of from less than one to more than 20 years. All practicing landscape architects in South



Africa were polled and results were received from 33% of the population, providing a strong probability that the conclusions reached were representative of the experiences and opinions of the profession as a whole.”

- “The enquiry compared responses from South African practitioners with the results from similar investigations conducted in the United Kingdom and the United States. It also had the purpose of determining the strengths and weaknesses of the University of Pretoria programme in meeting the training requirements of contemporary practice.”
- Findings:
- The current curriculum of Pretoria is underperforming with regard to the expectations of practitioners in both private practice and civil service,
- Both the nature of practice and the service values of practitioners are changing,
- And that there is a need for differentiated training for private practitioners and civil servants.
- The educational implications of these findings were synthesized and developed into a model curriculum.

Relevance to my topic:

- Surveyed professionals to obtain data about what they think landscape architecture curriculum should cover in order for students to be prepared for the professional environment.

**APPENDIX C**  
FORMS AND APPLICATIONS

**FOR OFFICE USE ONLY:** IRB Protocol # \_\_\_\_\_ Application Received: \_\_\_\_\_  
Routed: \_\_\_\_\_ Training Complete: \_\_\_\_\_

## Committee for Research Involving Human Subjects (IRB)

### Application for Approval Form

Last revised on January 2011

#### ADMINISTRATIVE INFORMATION:

- **Title of Project:** (if applicable, use the exact title listed in the grant/contract application)  
Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening

- **Type of Application:**  
 New/Renewal       Revision (to a pending new application)  
 Modification (to an existing # \_\_\_\_\_ approved application)

- **Principal Investigator:** (must be a KSU faculty member)

Name:	Alpa Nawre, Co-Major Professor	Degree/Title:	
Department:	Landscape Architecture	Campus Phone:	(785)532-5961
Campus Address:	104 D Seaton Court	Fax #:	(785)532-6722
E-mail	anawre@k-state.edu		

- **Contact Name/Email/Phone for Questions/Problems with Form:** Samantha Jarquio. sjarquio@k-state.edu, 816-877-1528

- **Does this project involve any collaborators not part of the faculty/staff at KSU?** (projects with non-KSU collaborators may require additional coordination and approvals):

No  
 Yes

- **Project Classification** (Is this project part of one of the following?):

Thesis  
 Dissertation  
 Faculty Research  
 Other: \_\_\_\_\_

**Note:** Class Projects should use the short form application for class projects.

- **Please attach a copy of the Consent Form:**

Copy attached  
 Consent form not used

- **Funding Source:**  Internal       External (identify source and attach a copy of the sponsor's grant application or contract as submitted to the funding agency)

Copy attached       Not applicable

- **Based upon criteria found in 45 CFR 46 – and the overview of projects that may qualify for exemption explained at <http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html>, I believe that my project using human subjects should be determined by the IRB to be exempt from IRB review:**

No  
 Yes (If yes, please complete application **including** Section XII. C. 'Exempt Projects'; remember that only the IRB has the authority to determine that a project is exempt from IRB review)

**If you have questions, please call the University Research Compliance Office (URCO) at 532-3224, or [comply@ksu.edu](mailto:comply@ksu.edu)**

## Human Subjects Research Protocol Application Form

The KSU IRB is required by law to ensure that all research involving human subjects is adequately reviewed for specific information and is approved prior to inception of any proposed activity. Consequently, it is important that you answer all questions accurately. If you need help or have questions about how to complete this application, please call the Research Compliance Office at 532-3224, or e-mail us at [comply@ksu.edu](mailto:comply@ksu.edu).

Please provide the requested information in the shaded text boxes. The shaded text boxes are designed to accommodate responses within the body of the application. As you type your answers, the text boxes will expand as needed. After completion, print the form and send the original and one photocopy to the Institutional Review Board, Room 203, Fairchild Hall.

<b>Principal Investigator:</b>	<b>Samantha Jarquio (MLA Student), Alpa Nawre (Co-Major Professor), Anne Beamish (Co-Major Professor)</b>
<b>Project Title:</b>	<b>Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening</b>
<b>Date:</b>	<b>25 July 2012</b>

### MODIFICATION

**Is this a modification of an approved protocol?**  Yes  No **If yes, please comply with the following:**

If you are requesting a modification or a change to an IRB approved protocol, please provide a concise description of all of the changes that you are proposing in the following block. Additionally, please highlight or bold the proposed changes in the body of the protocol where appropriate, so that it is clearly discernable to the IRB reviewers what and where the proposed changes are. This will greatly help the committee and facilitate the review.

### NON-TECHNICAL SYNOPSIS (brief narrative description of proposal easily understood by nonscientists):

**The thesis will be a two-part study. The first will examine the unmet need for an acoustic education in landscape architecture curricula for the education of outdoor urban soundscape design. A part of this step will be to administer surveys to landscape architects, asking their opinion about incorporating acoustic education in landscape architecture curricula. The second will test how effectively listening exercises can be utilized by landscape architecture students to develop aural sensitivity. The study will help the researcher and readers understand the need for the introduction of an acoustic education in landscape architecture curricula and the possibility of listening exercises as one approach.**

### I. BACKGROUND (concise narrative review of the literature and basis for the study):

**The theoretical basis of this study is established by a combination of literature from various sources, including Schafer, Truax, the World Forum for Acoustic Ecology (WFAE), and past theses and dissertations that have researched the relationship of sound in landscape architecture (Schafer, 1977; Truax and Barrett, 2011; WFAE, 2000). Since the publication of Schafer's, *The Soundscape: Tuning of the World* (1977), soundscape scholars believe that the improvement of the acoustic environment starts with the improvement of aural sensitivity to sounds. In their article, "Soundscape in a Context of Acoustic and Landscape Ecology," Truax and Barrett (2011) bring forth the notion that designers who have an increased aural sensitivity will have a greater potential to design the soundscape more effectively. All scholars who have researched sound emphasize active participation in the soundscape and the study of acoustic ecology. As landscape architects greatly influence the outdoor environment, an increase in their aural sensitivity can help them become better critical analyzers of the outdoor urban acoustic environment.**

### II. PROJECT/STUDY DESCRIPTION (please provide a concise narrative description of the proposed activity in terms that will allow the IRB or other interested parties to clearly understand what it is that you propose to do that involves human subjects. This description must be in enough detail so that IRB members can make an informed decision about proposal).

**The study will involve two parts requiring human participation. The first will be the distribution of survey questionnaires to landscape architects, requesting their response to landscape architecture curriculum and the subject of outdoor acoustics. The questionnaire will essentially ask the landscape**

architects about their previous education and if they could have benefitted from an additional acoustic education. A second part of the study will test listening exercises on landscape architecture students on the Kansas State University campus and surrounding areas. The listening exercises are based on R.M. Schafer's listening exercises for musicians, including six soundwalks, listening to sound samples, and three lessons on acoustic vocabulary. The listening exercises will be conducted within a three-week time frame and will be performed on the Kansas State University campus, in classrooms, and surrounding areas (a walkable distance).

**III. OBJECTIVE** (briefly state the objective of the research – what you hope to learn from the study):

The researcher hopes to learn that an acoustic education can be an effective and valuable addition to landscape architecture curriculum and that listening exercises can be one approach to structuring lessons in improving aural sensitivity of landscape architecture students.

**IV. DESIGN AND PROCEDURES** (succinctly outline formal plan for study):

- |   |  |
|---|--|
| A. Location of study:   | <p><b>1. Survey questionnaires: online distribution to landscape architects in the United States</b></p> <p><b>2. Soundwalk sites: Kansas State University (Bosco Plaza, quad) and Aggieville, Manhattan, KS.</b></p>  |
| B. Variables to be studied:   | <p><b>1. Survey Questionnaires:</b></p> <ul style="list-style-type: none"> <li>• How often outdoor sound is addressed in the design process</li> <li>• How strongly participants agree/disagree that sound courses can be a valuable addition to landscape architecture curricula</li> <li>• How strongly participants agree/disagree that landscape architects are the right professionals to design sound in the outdoor environment</li> </ul> <p><b>2. Soundwalks:</b></p> <ul style="list-style-type: none"> <li>• Attitudes of each student</li> <li>• Acoustic observations of each soundwalk site</li> </ul> |
| C. Data collection methods: (surveys, instruments, etc – <b>PLEASE ATTACH</b> )   | <b>Survey questionnaires (attached), soundwalk sessions, classroom discussions on sound terminology, post-experiment survey</b>  |
| D. List any factors that might lead to a subject dropping out or withdrawing from a study. These might include, but are not limited to emotional or physical stress, pain, inconvenience, etc.: | <ul style="list-style-type: none"> <li>• Availability during soundwalk sessions (inconvenience)</li> <li>• Non-responsive to survey questionnaires (inconvenience)</li> </ul>  |
| E. List all biological samples taken: (if any)  | N/A  |
| F. Debriefing procedures for participants:  | <b>A post-experiment survey (paper handout) for the landscape architecture students will be distributed at the completion of the three weeks. The students will be asked to answer a series of six questions regarding their experience in the study. They will be expected to return their responses to the researcher within a week of the survey's distribution.</b>  |

**V. RESEARCH SUBJECTS:**

- |            |   |
|------------|---|
| A. Source: | <p><b>1. Survey Questionnaire: recipients from 50 firms and 21 universities in the United States</b></p> <p><b>2. Listening Exercises: landscape architecture students from Kansas State University</b></p> |
| B. Number: | <b>1. Survey Questionnaire: 213 survey recipients</b>   |

	<b>2. Listening Exercises: 30 landscape architecture students</b>
C. Characteristics: (list any unique qualifiers desirable for research subject participation)	<p><b>1. Survey Questionnaire: must be firms who have received an American Society of Landscape Architects 2010-2012 award; full-time landscape architecture faculty from universities in the top ten undergraduate and top eleven graduate programs (2012 DesignIntelligence (DI) rankings).</b></p> <p><b>2. Listening Exercises: landscape architecture students, ranging from their second to fifth year of study at Kansas State University.</b></p>
D. Recruitment procedures: (Explain how do you plan to recruit your subjects? Attach any fliers, posters, etc. used in recruitment. If you plan to use any inducements, ie. cash, gifts, prizes, etc., please list them here.)	<p><b>The survey will be distributed online through Axio Survey, and will be accompanied by a cover letter with a brief description of the thesis study.</b></p> <p><b>The listening exercises will be conducted on a volunteer basis. Advertising for the introductory meeting will occur two weeks in advance, using poster announcements in Seaton Hall and Seaton Court. The meeting will explain the premise of the experiment, as well as the extent of participant involvement and a specific time frame for each session. The students who want to participate will be required to sign the informed consent form.</b></p>

**VI. RISK – PROTECTION – BENEFITS:** The answers for the three questions below are central to human subjects research. You must demonstrate a reasonable balance between anticipated risks to research participants, protection strategies, and anticipated benefits to participants or others.

- A. **Risks for Subjects:** (Identify any reasonably foreseeable physical, psychological, or social risks for participants. State that there are “no known risks” if appropriate.)  

**no known risks**
- B. **Minimizing Risk:** (Describe specific measures used to minimize or protect subjects from anticipated risks.)  

**N/A**
- C. **Benefits:** (Describe any reasonably expected benefits for research participants, a class of participants, or to society as a whole.)  

**An increase of aural sensitivity and an appreciation for acoustic ecology, which can lead to an improvement in soundscape design.**

In your opinion, does the research involve **more than minimal risk** to subjects? (“Minimal risk” means that “the risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.”)

Yes       No

**VII. CONFIDENTIALITY:** Confidentiality is the formal treatment of information that an individual has disclosed to you in a relationship of trust and with the expectation that it will not be divulged to others without permission in ways that are inconsistent with the understanding of the original disclosure. Consequently, it is your responsibility to protect information that you gather from human research subjects in a way that is consistent with your agreement with the volunteer and with their expectations. If possible, it is best if research subjects’ identity and linkage to information or data remains unknown.

Explain how you are going to protect confidentiality of research subjects and/or data or records. Include plans for maintaining records after completion.

**Confidentiality of research subjects will be obtained throughout the writing of the final thesis document. The researcher will not use names in the final document, but instead will use a coding system. This remains the same for both the survey questionnaire recipients and listening exercises participants. After completion of the thesis process, all data/records of the study containing participants' identities will be obtained by the researcher herself and will not be distributed for any reason, academic or other. Publication of the thesis study is a possibility, but identities of the participants will remain confidential.**

**VIII. INFORMED CONSENT:** Informed consent is a critical component of human subjects research – it is your responsibility to make sure that any potential subject knows exactly what the project that you are planning is about, and what his/her potential role is. (There may be projects where some forms of “deception” of the subject is necessary for the execution of the study, but it must be carefully justified to and approved by the IRB). A schematic for determining when a waiver or alteration of informed consent may be considered by the IRB is found at

<http://www.hhs.gov/ohrp/policy/consentckls.html>

Even if your proposed activity does qualify for a waiver of informed consent, you must still provide potential participants with basic information that informs them of their rights as subjects, i.e. explanation that the project is research and the purpose of the research, length of study, study procedures, debriefing issues to include anticipated benefits, study and administrative contact information, confidentiality strategy, and the fact that participation is entirely voluntary and can be terminated at any time without penalty, etc. Even if your potential subjects are completely anonymous, you are obliged to provide them (and the IRB) with basic information about your project. See informed consent example on the URCO website. It is a federal requirement to maintain informed consent forms for 3 years after the study completion.

**Yes No Answer the following questions about the informed consent procedures.**

- |                                     |                                     |  |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | A. Are you using a written informed consent form? If “yes,” include a copy with this application. If “no” see b.   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | B. In accordance with guidance in 45 CFR 46, I am requesting a waiver or alteration of informed consent elements (See Section VII above). If “yes,” provide a basis and/or justification for your request.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | C. Are you using the online Consent Form Template provided by the URCO? If “no,” does your Informed Consent document has all the minimum required elements of informed consent found in the Consent Form Template? (Please explain)  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | D. Are your research subjects anonymous? If they are anonymous, you will not have access to any information that will allow you to determine the identity of the research subjects in your study, or to link research data to a specific individual in any way. Anonymity is a powerful protection for potential research subjects. (An anonymous subject is one whose identity is unknown even to the researcher, or the data or information collected cannot be linked in any way to a specific person). |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | E. Are subjects debriefed about the purposes, consequences, and benefits of the research? Debriefing refers to a mechanism for informing the research subjects of the results or conclusions, after the data is collected and analyzed, and the study is over. (If “no” explain why.) Attach copy of debriefing statement to be utilized.  |
- Analysis of the results will not be completed soon after the end of the study. The purpose of the study will already be explained in the Informed Consent Form as well as the intended benefits of the research.

**\*It is a requirement that you maintain all signed copies of informed consent documents for at least 3 years following the completion of your study. These documents must be available for examination and review by federal compliance officials.**

**IX. PROJECT INFORMATION:** (If you answer yes to any of the questions below, you should explain them in one of the paragraphs above)

Yes	No	<b>Does the project involve any of the following?</b>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. Deception of subjects
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. Shock or other forms of punishment
<input type="checkbox"/>	<input checked="" type="checkbox"/>	c. Sexually explicit materials or questions about sexual orientation, sexual experience or sexual abuse
<input type="checkbox"/>	<input checked="" type="checkbox"/>	d. Handling of money or other valuable commodities
<input type="checkbox"/>	<input checked="" type="checkbox"/>	e. Extraction or use of blood, other bodily fluids, or tissues
<input type="checkbox"/>	<input checked="" type="checkbox"/>	f. Questions about any kind of illegal or illicit activity
<input type="checkbox"/>	<input checked="" type="checkbox"/>	g. Purposeful creation of anxiety
<input type="checkbox"/>	<input checked="" type="checkbox"/>	h. Any procedure that might be viewed as invasion of privacy
<input type="checkbox"/>	<input checked="" type="checkbox"/>	i. Physical exercise or stress
<input type="checkbox"/>	<input checked="" type="checkbox"/>	j. Administration of substances (food, drugs, etc.) to subjects
<input type="checkbox"/>	<input checked="" type="checkbox"/>	k. Any procedure that might place subjects at risk
<input type="checkbox"/>	<input checked="" type="checkbox"/>	l. Any form of potential abuse; i.e., psychological, physical, sexual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	m. Is there potential for the data from this project to be published in a journal, presented at a conference, etc?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	n. Use of surveys or questionnaires for data collection

**IF YES, PLEASE ATTACH!!**

**X. SUBJECT INFORMATION:** (If you answer yes to any of the questions below, you should explain them in one of the paragraphs above)

Yes	No	<b>Does the research involve subjects from any of the following categories?</b>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. Under 18 years of age (these subjects require parental or guardian consent)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. Over 65 years of age
<input type="checkbox"/>	<input checked="" type="checkbox"/>	c. Physically or mentally disabled
<input type="checkbox"/>	<input checked="" type="checkbox"/>	d. Economically or educationally disadvantaged
<input type="checkbox"/>	<input checked="" type="checkbox"/>	e. Unable to provide their own legal informed consent
<input type="checkbox"/>	<input checked="" type="checkbox"/>	f. Pregnant females as target population
<input type="checkbox"/>	<input checked="" type="checkbox"/>	g. Victims
<input type="checkbox"/>	<input checked="" type="checkbox"/>	h. Subjects in institutions (e.g., prisons, nursing homes, halfway houses)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	i. Are research subjects in this activity students recruited from university classes or volunteer pools? If so, do you have a reasonable alternative(s) to participation as a research subject in your project, i.e., another activity such as writing or reading that would serve to protect students from unfair pressure or coercion to participate in this project? If you answered this question "Yes," explain any <u>alternatives options</u> for class credit for potential human subject volunteers in your study. (It is also important to remember that: Students must be free to choose <b>not</b> to participate in research that they have signed up for <b>at any time</b> without penalty. Communication of their decision can be conveyed in any manner, to include <b>simply not showing up</b> for the research.) <div style="background-color: #e0e0e0; padding: 5px; margin-top: 5px;">The research subjects for the listening exercises <b>MUST</b> be students from Kansas State University studying landscape architecture. This is essential for the results of the study to remain consistent. Students are recruited on a volunteer basis only, and expected to complete the exercises to the best of their ability.</div>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	j. Are research subjects <b>audio</b> taped? If yes, how do you plan to protect the recorded information and mitigate any additional risks? <div style="background-color: #e0e0e0; padding: 5px; margin-top: 5px;">The recorded discussions will be available only to the researcher and her thesis committee for examination. The only people allowed to access this information will be the researcher herself and her thesis committee.</div>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	k. Are research subjects' images being recorded (video taped, photographed)? If yes, how do you plan to protect the recorded information and mitigate any additional risks? <div style="background-color: #e0e0e0; padding: 5px; margin-top: 5px;"></div>



XI. **CONFLICT OF INTEREST:** Concerns have been growing that financial interests in research may threaten the safety and rights of human research subjects. Financial interests are not in them selves prohibited and may well be appropriate and legitimate. Not all financial interests cause Conflict of Interest (COI) or harm to human subjects. However, to the extent that financial interests may affect the welfare of human subjects in research, IRB’s, institutions, and investigators must consider what actions regarding financial interests may be necessary to protect human subjects. Please answer the following questions:

- |  |  |  |
|--|--|--|
| <b>Yes</b><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | <b>No</b><br><input checked="" type="checkbox"/><br><input checked="" type="checkbox"/><br><input checked="" type="checkbox"/><br><input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <p>a. Do you or the institution have any proprietary interest in a potential product of this research, including patents, trademarks, copyrights, or licensing agreements?</p> <p>b. Do you have an equity interest in the research sponsor (publicly held or a non-publicly held company)?</p> <p>c. Do you receive significant payments of other sorts, eg., grants, equipment, retainers for consultation and/or honoraria from the sponsor of this research?</p> <p>d. Do you receive payment per participant or incentive payments?</p> <p>e. If you answered yes on any of the above questions, please provide adequate explanatory information so the IRB can assess any potential COI indicated above.</p> |
|--|--|--|

**XII. PROJECT COLLABORATORS:**

A. **KSU Collaborators – list anyone affiliated with KSU who is collecting or analyzing data:** (list all collaborators on the project, including co-principal investigators, undergraduate and graduate students)

Name:	Department:	Campus Phone:	Campus Email:
Alpa Nawre, Co-Major Professor	Landscape Architecture and Regional and Community Planning	(785)532-5961	anawre@ksu.edu
Anne Beamish, Co-Major Professor	Landscape Architecture and Regional and Community Planning	(785)532-5961	abeamish@ksu.edu
Craig Weston, Thesis Committee Member	Chair of the Theory, History, and Composition Division	(785)532-5788	cweston@ksu.edu

B. **Non-KSU Collaborators:** (List all collaborators on your human subjects research project not affiliated with KSU in the spaces below. KSU has negotiated an Assurance with the Office for Human Research Protections (OHRP), the federal office responsible for oversight of research involving human subjects. When research involving human subjects includes collaborators who are not employees or agents of KSU the activities of those unaffiliated individuals may be covered under the KSU Assurance only in accordance with a formal, written agreement of commitment to relevant human subject protection policies and IRB oversight. The Unaffiliated Investigators Agreement can be found and downloaded at <http://www.k-state.edu/research/comply/irb/forms/Unaffiliated%20Investigator%20Agreement.doc>

C. The URCO must have a copy of the Unaffiliated Investigator Agreement on file for each non-KSU collaborator who is not covered by their own IRB and assurance with OHRP. Consequently, it is critical that you identify non-KSU

collaborators, and initiate any coordination and/or approval process early, to minimize delays caused by administrative requirements.)

Name:	Organization:	Phone:	Institutional Email:

**Does your non-KSU collaborator’s organization have an Assurance with OHRP?** (for Federalwide Assurance and Multiple Project Assurance (MPA) listings of other institutions, please reference the OHRP website under Assurance Information at: <http://ohrp.cit.nih.gov/search>).

No  
 Yes If yes, Collaborator’s FWA or MPA # \_\_\_\_\_

**Is your non-KSU collaborator’s IRB reviewing this proposal?**

No  
 Yes If yes, IRB approval # \_\_\_\_\_

**C. Exempt Projects:** 45 CFR 46 identifies six categories of research involving human subjects that may be exempt from IRB review. The categories for exemption are listed here: <http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html>. If you believe that your project qualifies for exemption, please indicate which exemption category applies (1-6). Please remember that only the IRB can make the final determination whether a project is exempt from IRB review, or not.

Exemption Category: 1 and 2

**XIII. CLINICAL TRIAL** Yes No  
(If so, please give product.)

**Export Controls Training:**

-The Provost has mandated that all KSU faculty/staff with a full-time appointment participate in the Export Control Program.

-If you are not in our database as having completed the Export Control training, this proposal will not be approved until your participation is verified.

-To complete the Export Control training, follow the instructions below:

Click on:

<http://www.k-state.edu/research/comply/ecp/index.htm>

1. After signing into K-State Online, you will be taken to the Export Control Homepage
2. Read the directions and click on the video link to begin the program
3. Make sure you enter your name / email when prompted so that participation is verified

If you click on the link and are not taken to K-State Online, this means that you have already completed the Export Control training and have been removed from the roster. If this is the case, no further action is required.

-Can’t recall if you have completed this training? Contact the URCO at 785-532-3224 or [comply@ksu.edu](mailto:comply@ksu.edu) and we will be happy to look it up for you.

**Post Approval Monitoring:** The URCO has a Post-Approval Monitoring (PAM) program to help assure that activities are

**performed in accordance with provisions or procedures approved by the IRB. Accordingly, the URCO staff will arrange a PAM visit as appropriate; to assess compliance with approved activities.**

**If you have questions, please call the University Research Compliance Office (URCO) at 532-3224, or [comply@ksu.edu](mailto:comply@ksu.edu)**

## INVESTIGATOR ASSURANCE FOR RESEARCH INVOLVING HUMAN SUBJECTS

(Print this page separately because it requires a signature by the PI.)

P.I. Name: Alpa Nawre (Co-Major Professor), Anne Beamish (Co-Major Professor)

Title of Project: Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening

XIV. **ASSURANCES:** As the Principal Investigator on this protocol, I provide assurances for the following:


- A. **Research Involving Human Subjects:** This project will be performed in the manner described in this proposal, and in accordance with the Federalwide Assurance FWA00000865 approved for Kansas State University available at <http://ohrp.osophs.dhhs.gov/polasur.htm#FWA>, applicable laws, regulations, and guidelines. Any proposed deviation or modification from the procedures detailed herein must be submitted to the IRB, and be approved by the Committee for Research Involving Human Subjects (IRB) prior to implementation.
- B. **Training:** I assure that all personnel working with human subjects described in this protocol are technically competent for the role described for them, and have completed the required IRB training modules found on the URCO website at: <http://www.k-state.edu/research/comply/irb/training/index.htm>. I understand that no proposals will receive final IRB approval until the URCO has documentation of completion of training by all appropriate personnel.
- C. **Extramural Funding:** If funded by an extramural source, I assure that this application accurately reflects all procedures involving human subjects as described in the grant/contract proposal to the funding agency. I also assure that I will notify the IRB/URCO, the KSU PreAward Services, and the funding/contract entity if there are modifications or changes made to the protocol after the initial submission to the funding agency.
- D. **Study Duration:** I understand that it is the responsibility of the Committee for Research Involving Human Subjects (IRB) to perform continuing reviews of human subjects research as necessary. I also understand that as continuing reviews are conducted, it is my responsibility to provide timely and accurate review or update information when requested, to include notification of the IRB/URCO when my study is changed or completed.
- E. **Conflict of Interest:** I assure that I have accurately described (in this application) any potential Conflict of Interest that my collaborators, the University, or I may have in association with this proposed research activity.
- F. **Adverse Event Reporting:** I assure that I will promptly report to the IRB / URCO any unanticipated problems involving risks to subjects or others that involve the protocol as approved. Unanticipated or Adverse Event Form is located on the URCO website at: <http://www.k-state.edu/research/comply/irb/forms/index.htm>. In the case of a serious event, the Unanticipated or Adverse Events Form may follow a phone call or email contact with the URCO.
- G. **Accuracy:** I assure that the information herein provided to the Committee for Human Subjects Research is to the best of my knowledge complete and accurate.

\_\_\_\_\_  
(Principal Investigator Signature)

\_\_\_\_\_  
(date)

TO: Alpa Nawre  
Landscape Architecture  
104 D Seaton Ct

Proposal Number: 6343

FROM: Rick Scheidt, Chair   
Committee on Research Involving Human Subjects

DATE: 08/29/2012

RE: Proposal Entitled, "Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §46.101, paragraph b, category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

**Committee for Research Involving Human Subjects (IRB)**  
**Application for Approval Form**  
 Last revised on January 2011

**ADMINISTRATIVE INFORMATION:**

- Title of Project:** (if applicable, use the exact title listed in the grant/contract application)  
 Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening, 2

- Type of Application:**  
 New/Renewal       Revision (to a pending new application)  
 Modification (to an existing # \_\_\_\_\_ approved application)

- Principal Investigator:** (must be a KSU faculty member)  

<b>Name:</b>	Alpa Nawre, Co-Major Professor	<b>Degree/Title:</b>	
<b>Department:</b>	Landscape Architecture	<b>Campus Phone:</b>	(785)532-5961
<b>Campus Address:</b>	104 D Seaton Court	<b>Fax #:</b>	(785)532-6722
<b>E-mail</b>	anawre@k-state.edu		

- Contact Name/Email/Phone for Questions/Problems with Form:** Samantha Jarquio. sjarquio@k-state.edu, 816-877-1528

- Does this project involve any collaborators not part of the faculty/staff at KSU?** (projects with non-KSU collaborators may require additional coordination and approvals):  
 No  
 Yes

- Project Classification** (Is this project part of one of the following?):  
 Thesis  
 Dissertation  
 Faculty Research  
 Other: \_\_\_\_\_

Note: Class Projects should use the short form application for class projects.

- Please attach a copy of the Consent Form:**  
 Copy attached  
 Consent form not used

- Funding Source:**  Internal     External (identify source and attach a copy of the sponsor's grant application or contract as submitted to the funding agency)  
 Copy attached       Not applicable

- Based upon criteria found in 45 CFR 46 – and the overview of projects that may qualify for exemption explained at <http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html>, I believe that my project using human subjects should be determined by the IRB to be exempt from IRB review:**  
 No  
 Yes (If yes, please complete application including Section XII. C. 'Exempt Projects'; remember that only the IRB has the authority to determine that a project is exempt from IRB review)

## Human Subjects Research Protocol Application Form

The KSU IRB is required by law to ensure that all research involving human subjects is adequately reviewed for specific information and is approved prior to inception of any proposed activity. Consequently, it is important that you answer all questions accurately. If you need help or have questions about how to complete this application, please call the Research Compliance Office at 532-3224, or e-mail us at [comply@ksu.edu](mailto:comply@ksu.edu).

Please provide the requested information in the shaded text boxes. The shaded text boxes are designed to accommodate responses within the body of the application. As you type your answers, the text boxes will expand as needed. After completion, print the form and send the original and one photocopy to the Institutional Review Board, Room 203, Fairchild Hall.

<b>Principal Investigator:</b>	<b>Samantha Jarquio (MLA Student), Alpa Nawre (Co-Major Professor), Anne Beamish (Co-Major Professor)</b>
<b>Project Title:</b>	<b>Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening</b>
<b>Date:</b>	<b>November 2012</b>

### MODIFICATION

**Is this a modification of an approved protocol?**  Yes  No **If yes, please comply with the following:**

If you are requesting a modification or a change to an IRB approved protocol, please provide a concise description of all of the changes that you are proposing in the following block. Additionally, please highlight or bold the proposed changes in the body of the protocol where appropriate, so that it is clearly discernable to the IRB reviewers what and where the proposed changes are. This will greatly help the committee and facilitate the review.

### NON-TECHNICAL SYNOPSIS (brief narrative description of proposal easily understood by nonscientists):

**This research endeavor will document the average listening abilities of landscape architecture students, by conducting three soundwalks in various locations in Manhattan, Kansas. Participants will be required to document their acoustic observations of these locations in journals using a list format. Each soundwalk will be 30 minutes and students will be asked to attend only one session.**

### **I. BACKGROUND** (concise narrative review of the literature and basis for the study):

**The theoretical basis of this study is established by a combination of literature from various sources, including Schafer, Truax, the World Forum for Acoustic Ecology (WFAE), and past theses and dissertations that have researched the relationship of sound in landscape architecture (Schafer, 1977; Truax and Barrett, 2011; WFAE, 2000). Since the publication of Schafer's, *The Soundscape: Tuning of the World* (1977), soundscape scholars believe that the improvement of the acoustic environment starts with the improvement of aural sensitivity to sounds. In their article, "Soundscape in a Context of Acoustic and Landscape Ecology," Truax and Barrett (2011) bring forth the notion that designers who have an increased aural sensitivity will have a greater potential to design the soundscape more effectively. All scholars who have researched sound emphasize active participation in the soundscape and the study of acoustic ecology. As landscape architects greatly influence the outdoor environment, an increase in their aural sensitivity can help them become better critical analyzers of the outdoor urban acoustic environment.**

### **II. PROJECT/STUDY DESCRIPTION** (please provide a concise narrative description of the proposed activity in terms that will allow the IRB or other interested parties to clearly understand what it is that you propose to do that involves human subjects. This description must be in enough detail so that IRB members can make an informed decision about proposal).

**The study will be a one-week procedure, involving three 30-minute soundwalks - the first in Boscoe Plaza, the second in McCain Quad and the adjacent parking circle, and the final on the main streets of Aggieville. Each participant in the study will be given a journal to document their acoustic observations of each location during the 30-minute time frame. Each participant will be asked to attend only one soundwalk session in the week. The journals will be collected at the end of each session and the entries will be analyzed as an effort to quantify their listening abilities.**

### **III. OBJECTIVE** (briefly state the objective of the research – what you hope to learn from the study):

The results will be compared to a previous study conducted by the researcher involving listening exercises. The researcher hopes to learn that an acoustic education can be an effective and valuable addition to landscape architecture curriculum and that listening exercises can be one approach to structuring lessons in improving aural sensitivity of landscape architecture students.

**IV. DESIGN AND PROCEDURES** (succinctly outline formal plan for study):

- A. Location of study: **Soundwalk sites: Kansas State University (Bosco Plaza, McCain quad and adjacent parking circle) and Aggieville, Manhattan, KS.**
- B. Variables to be studied: **Soundwalks:**
  - Attitudes of each student
  - Acoustic observations of each soundwalk site
- C. Data collection methods: (surveys, instruments, etc – **PLEASE ATTACH**) **Soundwalk Instructions (attached); Post-experiment Survey (attached)**
- D. List any factors that might lead to a subject dropping out or withdrawing from a study. These might include, but are not limited to emotional or physical stress, pain, inconvenience, etc.: **•Availability during soundwalk sessions (inconvenience)**
- E. List all biological samples taken: (if any) **N/A**
- F. Debriefing procedures for participants: **A post-experiment survey (paper handout) will be distributed at the completion of the study. The students will be asked to answer a series of three to six questions regarding their experience in the study. They will be expected to return their responses to the researcher within a week of the survey's distribution.**

**V. RESEARCH SUBJECTS:**

- A. Source: **Landscape architecture students from Kansas State University**
- B. Number: **Approximately 3-5 landscape architecture students per soundwalk group**
- C. Characteristics: (list any unique qualifiers desirable for research subject participation) **Landscape architecture students, ranging from their second to fifth year of study at Kansas State University.**
- D. Recruitment procedures: (Explain how do you plan to recruit your subjects? Attach any fliers, posters, etc. used in recruitment. If you plan to use any inducements, ie. cash, gifts, prizes, etc., please list them here.) **The study will be conducted on a volunteer basis. The researcher will recruit students in studio classrooms and request their participation during the week of the experiment.**

**VI. RISK – PROTECTION – BENEFITS:** The answers for the three questions below are central to human subjects research. You must demonstrate a reasonable balance between anticipated risks to research participants, protection strategies, and anticipated benefits to participants or others.

- A. **Risks for Subjects:** (Identify any reasonably foreseeable physical, psychological, or social risks for participants. State that there are “no known risks” if appropriate.) **no known risks**
- B. **Minimizing Risk:** (Describe specific measures used to minimize or protect subjects from anticipated risks.) **N/A**
- C. **Benefits:** (Describe any reasonably expected benefits for research participants, a class of participants, or to society as a whole.) **An increase of aural sensitivity and an appreciation for acoustic ecology, which can lead to an improvement in soundscape design.**



In your opinion, does the research involve **more than minimal risk** to subjects? (“Minimal risk” means that “the risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.”)

Yes       No

**VII. CONFIDENTIALITY:** Confidentiality is the formal treatment of information that an individual has disclosed to you in a relationship of trust and with the expectation that it will not be divulged to others without permission in ways that are inconsistent with the understanding of the original disclosure. Consequently, it is your responsibility to protect information that you gather from human research subjects in a way that is consistent with your agreement with the volunteer and with their expectations. If possible, it is best if research subjects’ identity and linkage to information or data remains unknown.

Explain how you are going to protect confidentiality of research subjects and/or data or records. Include plans for maintaining records after completion.

**Confidentiality of research subjects will be obtained throughout the writing of the final thesis document. The researcher will not use names in the final document, but instead will use a coding system. After completion of the thesis process, all data/records of the study containing participants' identities will be obtained by the researcher herself and will not be distributed for any reason, academic or other. Publication of the thesis study is a possibility, but identities of the participants will remain confidential.**

**VIII. INFORMED CONSENT:** Informed consent is a critical component of human subjects research – it is your responsibility to make sure that any potential subject knows exactly what the project that you are planning is about, and what his/her potential role is. (There may be projects where some forms of “deception” of the subject is necessary for the execution of the study, but it must be carefully justified to and approved by the IRB). A schematic for determining when a waiver or alteration of informed consent may be considered by the IRB is found at

<http://www.hhs.gov/ohrp/policy/consentckls.html>

Even if your proposed activity does qualify for a waiver of informed consent, you must still provide potential participants with basic information that informs them of their rights as subjects, i.e. explanation that the project is research and the purpose of the research, length of study, study procedures, debriefing issues to include anticipated benefits, study and administrative contact information, confidentiality strategy, and the fact that participation is entirely voluntary and can be terminated at any time without penalty, etc. Even if your potential subjects are completely anonymous, you are obliged to provide them (and the IRB) with basic information about your project. See informed consent example on the URCO website. It is a federal requirement to maintain informed consent forms for 3 years after the study completion.

**Yes    No    Answer the following questions about the informed consent procedures.**

- |                                     |                                     |   |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | A. Are you using a written informed consent form? If “yes,” include a copy with this application. If “no” see b.  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | B. In accordance with guidance in 45 CFR 46, I am requesting a waiver or alteration of informed consent elements (See Section VII above). If “yes,” provide a basis and/or justification for your request.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | C. Are you using the online Consent Form Template provided by the URCO? If “no,” does your Informed Consent document has all the minimum required elements of informed consent found in the Consent Form Template? (Please explain)   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | D. Are your research subjects anonymous? If they are anonymous, you will not have access to any information that will allow you to determine the identity of the research subjects in your study, or to link research data to a specific individual in any way. Anonymity is a powerful protection for potential research subjects. (An anonymous subject is one whose identity is unknown even to the researcher, or the data or information collected cannot be |

linked in any way to a specific person).

- E. Are subjects debriefed about the purposes, consequences, and benefits of the research? Debriefing refers to a mechanism for informing the research subjects of the results or conclusions, after the data is collected and analyzed, and the study is over. (If “no” explain why.) Attach copy of debriefing statement to be utilized.
- Analysis of the results will not be completed soon after the end of the study. Participants will be debriefed about the purpose of the study in the post-experiment survey.

**\*It is a requirement that you maintain all signed copies of informed consent documents for at least 3 years following the completion of your study. These documents must be available for examination and review by federal compliance officials.**

**IX. PROJECT INFORMATION:** (If you answer yes to any of the questions below, you should explain them in one of the paragraphs above)

- | Yes                                 | No                                  | <b>Does the project involve any of the following?</b>  |
|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | a. Deception of subjects   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | b. Shock or other forms of punishment  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | c. Sexually explicit materials or questions about sexual orientation, sexual experience or sexual abuse            |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | d. Handling of money or other valuable commodities   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | e. Extraction or use of blood, other bodily fluids, or tissues   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | f. Questions about any kind of illegal or illicit activity   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | g. Purposeful creation of anxiety  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | h. Any procedure that might be viewed as invasion of privacy   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | i. Physical exercise or stress   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | j. Administration of substances (food, drugs, etc.) to subjects  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | k. Any procedure that might place subjects at risk   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | l. Any form of potential abuse; i.e., psychological, physical, sexual  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | m. Is there potential for the data from this project to be published in a journal, presented at a conference, etc? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | n. Use of surveys or questionnaires for data collection  |
- IF YES, PLEASE ATTACH!!**

**X. SUBJECT INFORMATION:** (If you answer yes to any of the questions below, you should explain them in one of the paragraphs above)

- | Yes                                 | No                                  | <b>Does the research involve subjects from any of the following categories?</b>  |
|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | a. Under 18 years of age (these subjects require parental or guardian consent)   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | b. Over 65 years of age  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | c. Physically or mentally disabled   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | d. Economically or educationally disadvantaged   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | e. Unable to provide their own legal informed consent  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | f. Pregnant females as target population   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | g. Victims   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | h. Subjects in institutions (e.g., prisons, nursing homes, halfway houses)   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | i. Are research subjects in this activity students recruited from university classes or volunteer pools? If so, do you have a reasonable alternative(s) to participation as a research subject in your project, i.e., another activity such as writing or reading that would serve to protect students from unfair pressure or coercion to participate in this project? If you answered this question “Yes,” explain any <u>alternatives options</u> for class credit for potential human subject volunteers in your study. (It is also important to remember that: Students must be free to choose <b>not</b> to participate in research that they have signed up for <b>at any time</b> without penalty. Communication of their decision can be conveyed in any manner, to include <b>simply not showing up</b> for the research.) |

The research subjects for the study **MUST** be students from Kansas State University

studying landscape architecture. This is essential for the results of the study to remain consistent. Students are recruited on a volunteer basis only, and expected to complete the exercises to the best of their ability.

- j. Are research subjects **audio** taped? If yes, how do you plan to protect the recorded information and mitigate any additional risks?
- k. Are research subjects' images being recorded (video taped, photographed)? If yes, how do you plan to protect the recorded information and mitigate any additional risks?

XI. **CONFLICT OF INTEREST:** Concerns have been growing that financial interests in research may threaten the safety and rights of human research subjects. Financial interests are not in them selves prohibited and may well be appropriate and legitimate. Not all financial interests cause Conflict of Interest (COI) or harm to human subjects. However, to the extent that financial interests may affect the welfare of human subjects in research, IRB's, institutions, and investigators must consider what actions regarding financial interests may be necessary to protect human subjects. Please answer the following questions:

- | Yes                      | No                                  |   |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | a. Do you or the institution have any proprietary interest in a potential product of this research, including patents, trademarks, copyrights, or licensing agreements? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | b. Do you have an equity interest in the research sponsor (publicly held or a non-publicly held company)?   |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | c. Do you receive significant payments of other sorts, eg., grants, equipment, retainers for consultation and/or honoraria from the sponsor of this research?           |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | d. Do you receive payment per participant or incentive payments?  |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | e. If you answered yes on any of the above questions, please provide adequate explanatory information so the IRB can assess any potential COI indicated above.          |

**XII. PROJECT COLLABORATORS:**

**A. KSU Collaborators – list anyone affiliated with KSU who is collecting or analyzing data:** (list all collaborators on the project, including co-principal investigators, undergraduate and graduate students)

Name:	Department:	Campus Phone:	Campus Email:
Alpa Nawre, Co-Major Professor	Landscape Architecture and Regional and Community Planning	(785)532-5961	anawre@ksu.edu
Anne Beamish, Co-Major Professor	Landscape Architecture and Regional and Community Planning	(785)532-5961	abeamish@ksu.edu
Craig Weston, Thesis Committee Member	Chair of the Theory, History, and Composition Division	(785)532-5788	cweston@ksu.edu

**B. Non-KSU Collaborators:** (List all collaborators on your human subjects research project not affiliated with KSU in the spaces below. KSU has negotiated an Assurance with the Office for Human Research Protections (OHRP), the

federal office responsible for oversight of research involving human subjects. When research involving human subjects includes collaborators who are not employees or agents of KSU the activities of those unaffiliated individuals may be covered under the KSU Assurance only in accordance with a formal, written agreement of commitment to relevant human subject protection policies and IRB oversight. The Unaffiliated Investigators Agreement can be found and downloaded at <http://www.k-state.edu/research/comply/irb/forms/Unaffiliated%20Investigator%20Agreement.doc>

C.

The URCO must have a copy of the Unaffiliated Investigator Agreement on file for each non-KSU collaborator who is not covered by their own IRB and assurance with OHRP. Consequently, it is critical that you identify non-KSU collaborators, and initiate any coordination and/or approval process early, to minimize delays caused by administrative requirements.)

Name:	Organization:	Phone:	Institutional Email:

Does your non-KSU collaborator’s organization have an Assurance with OHRP? (for Federalwide Assurance and Multiple Project Assurance (MPA) listings of other institutions, please reference the OHRP website under Assurance Information at: <http://ohrp.cit.nih.gov/search>).

No

Yes If yes, Collaborator’s FWA or MPA # \_\_\_\_\_

Is your non-KSU collaborator’s IRB reviewing this proposal?

No

Yes If yes, IRB approval # \_\_\_\_\_

C. **Exempt Projects:** 45 CFR 46 identifies six categories of research involving human subjects that may be exempt from IRB review. The categories for exemption are listed here: <http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html>. If you believe that your project qualifies for exemption, please indicate which exemption category applies (1-6). Please remember that only the IRB can make the final determination whether a project is exempt from IRB review, or not.

**Exemption Category:** 1 and 2

XIII. CLINICAL TRIAL Yes No  
(If so, please give product.)

**Export Controls Training:**

-The Provost has mandated that all KSU faculty/staff with a full-time appointment participate in the Export Control Program.

-If you are not in our database as having completed the Export Control training, this proposal will not be approved until your participation is verified.

-To complete the Export Control training, follow the instructions below:

Click on:

<http://www.k-state.edu/research/comply/ecp/index.htm>

1. After signing into K-State Online, you will be taken to the Export Control Homepage
2. Read the directions and click on the video link to begin the program
3. Make sure you enter your name / email when prompted so that participation is verified

If you click on the link and are not taken to K-State Online, this means that you have already completed the

Export Control training and have been removed from the roster. If this is the case, no further action is required.

-Can't recall if you have completed this training? Contact the URCO at 785-532-3224 or [comply@ksu.edu](mailto:comply@ksu.edu) and we will be happy to look it up for you.

**Post Approval Monitoring:** The URCO has a Post-Approval Monitoring (PAM) program to help assure that activities are performed in accordance with provisions or procedures approved by the IRB. Accordingly, the URCO staff will arrange a PAM visit as appropriate; to assess compliance with approved activities.

**If you have questions, please call the University Research Compliance Office (URCO) at 532-3224, or [comply@ksu.edu](mailto:comply@ksu.edu)**

## INVESTIGATOR ASSURANCE FOR RESEARCH INVOLVING HUMAN SUBJECTS

(Print this page separately because it requires a signature by the PI.)

P.I. Name: Alpa Nawre (Co-Major Professor), Anne Beamish (Co-Major Professor)

Title of Project: Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening

XIV. **ASSURANCES**: As the Principal Investigator on this protocol, I provide assurances for the following:

- A. **Research Involving Human Subjects**: This project will be performed in the manner described in this proposal, and in accordance with the Federalwide Assurance FWA00000865 approved for Kansas State University available at <http://ohrp.osophs.dhhs.gov/polasur.htm#FWA>, applicable laws, regulations, and guidelines. Any proposed deviation or modification from the procedures detailed herein must be submitted to the IRB, and be approved by the Committee for Research Involving Human Subjects (IRB) prior to implementation.
- B. **Training**: I assure that all personnel working with human subjects described in this protocol are technically competent for the role described for them, and have completed the required IRB training modules found on the URCO website at: <http://www.k-state.edu/research/comply/irb/training/index.htm>. I understand that no proposals will receive final IRB approval until the URCO has documentation of completion of training by all appropriate personnel.
- C. **Extramural Funding**: If funded by an extramural source, I assure that this application accurately reflects all procedures involving human subjects as described in the grant/contract proposal to the funding agency. I also assure that I will notify the IRB/URCO, the KSU PreAward Services, and the funding/contract entity if there are modifications or changes made to the protocol after the initial submission to the funding agency.
- D. **Study Duration**: I understand that it is the responsibility of the Committee for Research Involving Human Subjects (IRB) to perform continuing reviews of human subjects research as necessary. I also understand that as continuing reviews are conducted, it is my responsibility to provide timely and accurate review or update information when requested, to include notification of the IRB/URCO when my study is changed or completed.
- E. **Conflict of Interest**: I assure that I have accurately described (in this application) any potential Conflict of Interest that my collaborators, the University, or I may have in association with this proposed research activity.
- F. **Adverse Event Reporting**: I assure that I will promptly report to the IRB / URCO any unanticipated problems involving risks to subjects or others that involve the protocol as approved. Unanticipated or Adverse Event Form is located on the URCO website at: <http://www.k-state.edu/research/comply/irb/forms/index.htm>. In the case of a serious event, the Unanticipated or Adverse Events Form may follow a phone call or email contact with the URCO.
- G. **Accuracy**: I assure that the information herein provided to the Committee for Human Subjects Research is to the best of my knowledge complete and accurate.

\_\_\_\_\_  
(Principal Investigator Signature)

\_\_\_\_\_  
(date)

TO: Alpa Nawre  
Landscape Architecture  
104 D Seaton

Proposal Number: 6475

FROM: Rick Scheidt, Chair   
Committee on Research Involving Human Subjects

DATE: 11/27/2012

RE: Proposal Entitled, "Establishing the Unmet Need for anAcoustic Education in Landscape Architecture and Testing Lessons in Listening, 2"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §46.101, paragraph b, category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

## Informed Consent Form

### Project Information

*Project Title:* Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening

*Project Approved:* 08/2012    *Project Expiration Date:* 05/2013

*Principal Investigator:* Samantha Jarquio, 5<sup>th</sup> Year MLA

*Thesis Committee:* Alpa Nawre (Co-Major Professor), Anne Beamish (Co-Major Professor), Craig Weston

*Purpose of the Research:* The theoretical basis of this study is established by a combination of literature from various sources, including musical composers and writers Raymond Murray Schafer and Barry Truax, the World Forum for Acoustic Ecology (WFAE), and past theses and dissertations that have researched the relationship of sound in landscape architecture (Schafer, 1977; Truax and Barrett, 2011; WFAE, 2000). Since the publication of Schafer's, *The Soundscape: Tuning of the World* (1977), soundscape scholars believe that the improvement of the acoustic environment starts with the improvement of aural sensitivity to sounds. In their article, "Soundscape in a Context of Acoustic and Landscape Ecology," Truax and Barrett (2011) bring forth the notion that designers who have an increased aural sensitivity will have a greater potential to design the soundscape more effectively. All scholars who have researched sound emphasize active participation in the soundscape and the study of acoustic ecology. As landscape architects greatly influence the outdoor environment, an increase in their aural sensitivity can help them become better critical analyzers of the outdoor urban acoustic environment.

### Experimental Procedures

The experiment will be a *three-week* process, involving a total of *nine* different 30-minute sessions.

*Week 1:* Three 30-minute soundwalks in different locations in Manhattan, Kansas with varying acoustic qualities. Each soundwalk will be 30 minutes and each student will keep a journal of his or her acoustic observations.

*Week 2:* Three 30-minute in-class lessons and discussions about interdisciplinary sound terminology. Each lesson will be 30 minutes and all discussion will be audio recorded for the researcher's post-experiment analysis.

*Week 3:* Three more 30-minute soundwalks in the same locations as Week 1.

At the end of the three weeks, all participants will fill out a post-experiment survey to describe their experience in the exercises.



**[220] APPENDIX C**

*All sessions will be conducted on campus and varying locations in the city of Manhattan, Kansas. Identities of participants will remain confidential in the final thesis product.*

*For more information about research subjects' rights you may visit the following website:*

*<http://www.k-state.edu/research/comply/irb/index.htm>.*

**TERMS OF PARTICIPATION**

I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name: \_\_\_\_\_

Participant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Witness to Signature: (project staff) \_\_\_\_\_ Date: \_\_\_\_\_

## INFORMED CONSENT FORM

### Project Information

*Project Title:* Establishing the Unmet Need for an Acoustic Education in Landscape Architecture and Testing Lessons in Listening, 2

*Project Approved:* TBD    *Project Expiration Date:* 05/2013

*Principal Investigator:* Alpa Nawre, Co-Major Professor

*Master's Student:* Samantha Jarquio, 5<sup>th</sup> Year MLA

*Thesis Committee:* Alpa Nawre (Co-Major Professor), Anne Beamish (Co-Major Professor), Craig Weston (Tertiary Member)

*Purpose of the Research:* The researcher intends to review your acoustic observations of each soundwalk location for purposes of thesis research.

### Experimental Procedures

The experiment will be a *one-week* process, involving a total of *three* different 30-minute soundwalks. You are asked to attend ONE soundwalk during the week. *All sessions will be conducted on campus and varying locations in the city of Manhattan, Kansas.* You will receive a journal to document your acoustic observations for the duration of the soundwalk, after which the researcher will collect this back from you. *Identities of all participants will remain confidential in the final thesis product.*

At the end of the experiment, you will be debriefed about the study by completing a post-experiment survey. This should be completed and returned to the researcher within a week's time.

*For more information about research subjects' rights you may visit the following website:*

*<http://www.k-state.edu/research/comply/irb/index.htm>.*

Or contact the K-State Research Compliance Office at (785)532-3224 or [comply@k-state.edu](mailto:comply@k-state.edu).

### TERMS OF PARTICIPATION

I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

**[222] APPENDIX C**

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name: \_\_\_\_\_

Participant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Witness to Signature: (project staff) \_\_\_\_\_ Date: \_\_\_\_\_

The Graduate School

Kansas State University

Name: Samantha Jarquio		Master's Thesis <input checked="" type="checkbox"/> Master's Report <input type="checkbox"/> Non Thesis/Report <input type="checkbox"/>
K-State eID: sjarquio		
Student Number (WID): 895456242		
Degree Program: Landscape Architecture		
College: <input type="checkbox"/> AG <input checked="" type="checkbox"/> AR <input type="checkbox"/> AS <input type="checkbox"/> BA <input type="checkbox"/> ED <input type="checkbox"/> EN <input type="checkbox"/> HE <input type="checkbox"/> TC <input type="checkbox"/> VM		

Course Number Example: AGRON101	Course Title Example: Basic Introduction	Credit Hours Example: 3	Semester Taken Example: S05
<b>Review instructions on page 2 prior to completing.</b>			
LAR 741	PRB/LANDSCAPE ARCH	3	B S11
LAR 646 X	COMM PLAN & DESIGN	5	B U11
LAR 650 X	SEMLANDSCAPE ARCH 2	2	A U11
LAR 648 X	LAR SPECIALIZATION	5	A F11
LAR 725 X	LA RESEARCH METHODS	3	A F11
LAR 750 X	SEMLAR 3	2	A F11
LAR 897 X	PROPOSAL WRITING	2	A S12
LAR 704 X	ENVIRON LANDSCAPE PLAN & DSGN	5	F12
<del>LAR 899</del>	<del>MLA RESEARCH</del>	<del>3</del>	<del>F12</del>
LAR 745 X	PROFESSIONAL PRACTIC	3	S13
LAR 899 X	MLA RESEARCH	<del>2</del> 6	S13
<b>24@ 700 LEVEL AND ABOVE GPA 3.6</b>			

Total KSU credits 36

**Transfer Credit(s)** - Indicate where/when transfer courses and/or degree work was/will be completed. Official transcript required.

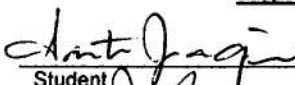
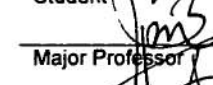
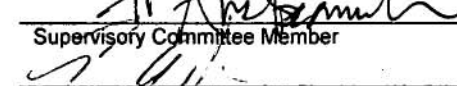
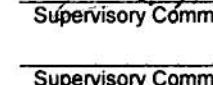
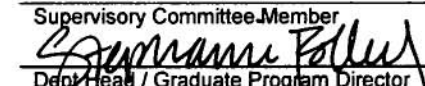
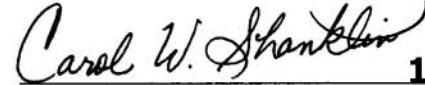
TRANSFER WORK			

Total transfer credits \_\_\_\_\_

SEP 18 2012

## Supervisory Committee

The signatures below signify agreement between the student and the Supervisory Committee for composition of the program of study, approval by the graduate program, and approval by the Dean of the Graduate School.

<u>Names &amp; Depts (printed)</u>		<u>Signatures</u>
Samantha Jarquio	LARCP	
Student	Dept.	Student
Alpa Nawre (CO-MAJOR) X	LARCP	
Major Professor	Dept.	Major Professor
Anne Beamish (CO-MAJOR) X	LARCP	
Supervisory Committee Member	Dept.	Supervisory Committee Member
Craig Weston X	Music	
Supervisory Committee Member	Dept.	Supervisory Committee Member
Supervisory Committee Member	Dept.	Supervisory Committee Member
Supervisory Committee Member	Dept.	Supervisory Committee Member
Stephanie Rolley	LARCP	
Dept Head / Graduate Program Director	Dept.	Dept Head / Graduate Program Director
Dean of the Graduate School (Signature):		
		<b>10/30/12</b> Date
		Dean of the Graduate School

Typed copies of the program signed by the student, major professor, committee members, and the department head or group chairperson are forwarded to the *Dean of the Graduate School, 103 Fairchild Hall*. (Department head or graduate program director signs twice if also a committee member.)

### RESEARCH APPROVAL

Review and approval by a federally mandated Compliance Committee is required for all research activities that involve the use of subjects or materials as listed below. Please indicate if your research involves any of these and the Compliance Committee's approval number. If you have not yet received approval, you must do so before beginning any research activities. The Compliance Office is located in *Room 203 Fairchild Hall*. Information is available at <http://www.k-state.edu/research/comply/>.

Does your program involve:

- |   |  |  |
|---|--|--|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | Human Subjects. (Institutional Review Board) IRB# <u>0343</u>  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | Radioactive Materials. (Radiation Safety Committee)  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | Live vertebrates. (Institutional Animal Care and Use Committee) IACUC# _____                                 |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | Biohazards including recombinant DNA and infectious Agents<br>(Institutional Biosafety Committee) IBC# _____ |

### INSTRUCTIONS

A full-time student must file a program before the end of the second semester of graduate study, and part-time students must do so upon completion of 9 credit hours. **If courses have already been taken, department codes, course numbers, course names, credits earned, and the semesters taken should be listed on the program of study as they appear on the transcript(s). Master's research hours should be listed on one line with the total sum of credits.** Do not include course work earned more than six years prior to the semester this program is submitted.

### SUBMISSION

Form to be submitted to the *Dean of the Graduate School, 103 Fairchild Hall*.

**The  
Graduate  
School**

**Kansas State  
University**

**APPENDIX D**  
METHODOLOGY-/PROCEDURE-  
RELATED DOCUMENTS

**List of 2012 DesignIntelligence Schools Referenced for Sound Courses**

*\*Schools with both undergraduate and graduate programs were contacted only once.*

***Undergraduate Programs***

1. Louisiana State University
2. Pennsylvania State University
3. California Polytechnic State University-San Luis Obispo
4. Purdue University
5. Texas A&M University
6. University of Georgia
7. Ohio State University
8. Cornell University
9. Ball State University
10. California Polytechnic University-Pomona

***Graduate Programs***

1. Harvard University
2. Louisiana State University
3. Kansas State University
4. Cornell University
5. University of Pennsylvania
6. University of Georgia
7. University of Virginia
8. Texas A&M University
9. University of California-Berkeley
10. Ball State University
11. University of Illinois at Urbana-Champaign

## ASLA Award-Winning Landscape Architecture Firms

*\*Firms who received more than one award were contacted only once.*

### *2010 Professional Award Recipients*

1. Andrea Cochran Landscape Architecture, San Francisco, CA
2. Michael Van Valkenburgh Associates, Inc., New York City, NY
3. James Corner Field Operations and Diller Scofidio + Renfro, New York City, NY
4. Ten Eyck Landscape Architects, Inc., Phoenix, AR
5. The Office of James Burnett, Houston, TX
6. EDSA, Inc., Fort Lauderdale, FL
7. Hoerr Schaudt Landscape Architects, Chicago, IL
8. Landworks Studio, Boston, MA
9. Richardson & Associates, Landscape Architects, Saco, ME
10. Blasen Landscape Landscape Architecture, San Anselmo, CA
11. Keith LeBlanc Landscape Architecture, Boston, MA
12. Design Workshop, Inc., Aspen, CO
13. Scott Lewis Landscape Architecture, San Francisco, CA
14. Rees Roberts & Partners, New York City, NY
15. Michael Vergason Landscape Architects, Ltd., Alexandria, VA
16. Rumsey Farber, Long Island City, NY
17. Lutsko Associates, Landscape, San Francisco, CA
18. Hocker Design Group, Dallas, TX
19. AECOM Design + Planning, Denver, CO
20. Dlandstudio, llc, Brooklyn, NY
21. Nelson Byrd Woltz Landscape Architects, Charlottesville, VA
22. Interface Studio LLC, Philadelphia, PA
23. William McDonough + Partners, Charlottesville, VA
24. The Cultural Landscape Foundation, Washington, D.C.
25. Ken Smith Landscape Architect, New York City, NY
26. RTKL Associates, Inc., Los Angeles, CA
27. Schmidt Design Group, Inc., San Diego, CA
28. Rios Clementi Hale Studios, Los Angeles, CA
29. OLIN, Philadelphia, PA

### *2011 Professional Award Recipients*

1. ZGF Architects LLP, Portland, OR
2. Klopfer Martin Design Group, Cambridge, MA
3. Reed Hilderbrand, Watertown, MA
4. Siteworks, Charlottesville, VA
5. BNIM, Kansas City, MO
6. Nelson Byrd Woltz Landscape Architects, Charlottesville, VA
7. Van Atta Associates, Inc., Santa Barbara, CA
8. Design Workshop, Inc., Denver, CO
9. UnitedLAB and Isaac T. Brown Ecology Studio, Seoul and Los Angeles, CA
10. AECOM, Denver, CO
11. AECOM, Seattle, WA



12. Hoerr Schaudt Landscape Architects, Chicago, IL
13. GLS Landscape/Architecture and Daniel Solomon Design Partners, San Francisco, CA
14. Wallace Roberts & Todd, Philadelphia, PA
15. The Cultural Landscape Foundation, Washington, D.C.
16. Carol Franklin, Philadelphia, PA
17. SWA Group and the StreetSpace Collaborative, Dallas, TX
18. Nevue Ngan Associates, Portland, OR
19. Visual Logic, St. Louis, MO
20. Wimmer Yamada and Caughey, San Diego, CA

## Cover Letter Templates

*Subject Line: Thesis Research: Contacts Request*

Date

Recipient Name

Firm Name

Firm Address

[Landscape Architect name],

I am a graduate student in the Department of Landscape Architecture at Kansas State University and currently working on my master's thesis. As part of my research, I will be administering an online survey to professional landscape architects and landscape architecture faculty members. In one week's time I plan to notify the recipients about my research topic and administer the surveys through email, using an online survey program through the university.

I am unable to locate email addresses for this firm online. Therefore, I am hoping you could help by either sending me email addresses of any three landscape architects in the firm OR forwarding on the next two emails to them, so that they can respond to the survey. Please let me know what works best for you.

I greatly appreciate your time and attention to this matter. Thank you for aiding me in my academic research effort.

Sincerely,

Samantha Jarquio

*Subject Line: Master's Thesis Survey: Please Respond*

*Survey Cover Letter: Professional LA's*

Date

Recipient Name

Firm Name

Firm Address

[For forwarding contacts only: To whom it may concern: Please forward on the message below to 3 landscape architects in the office. Thank you!]

[Landscape Architect name],

I am a graduate student in the Department of Landscape Architecture at Kansas State University and currently working on my master's thesis, concerning sound in landscape architecture. Please take a few minutes to respond to the single-page survey. Distribution of this survey will be to approximately 50 different firms and 21 different universities around the United States. Your identity will be kept anonymous and your participation is greatly appreciated. Click on the link below and it will take you to the online survey. I very much look forward to reading your responses.

<https://surveys.ksu.edu/TS?offeringId=198467>

Sincerely,

Samantha Jarquio

*Survey Cover Letter: Faculty Members*

Date

Recipient Name

Department of Landscape Architecture

University Name

Mr./Ms. Recipient Last Name,

I am a graduate student in the Department of Landscape Architecture at Kansas State University and currently working on my master's thesis, concerning sound in landscape architecture. Please take a few minutes to respond to the single-page survey. Distribution of this survey will be to approximately 50 different firms and 21 different universities around the United States. Your identity will be kept anonymous and your participation is greatly appreciated. Click on the link below and it will take you to the online survey. I very much look forward to reading your responses.

<https://surveys.ksu.edu/TS?offeringId=198484>

Sincerely,

Samantha Jarquio

*Survey Cover Letter: KSU Faculty Member*

Date

Recipient Name

Department of Landscape Architecture, Regional Community  
Planning  
Kansas State University

Recipient Name,

Please take a few minutes to respond to the single-page survey, which concerns my thesis topic of sound in landscape architecture. Distribution of this survey will be to approximately 50 different firms and 21 different universities around the United States. Your identity will be kept anonymous and your participation is greatly appreciated. The link below will take you to the Axio online survey. I very much look forward to reading your responses.

<https://surveys.ksu.edu/TS?offeringId=198484>

Sincerely,

Samantha Jarquio

***Follow-up Email***

To all landscape architecture faculty members/landscape architecture professionals:

This is just a reminder to please take a few minutes to respond (if you have not already done so) to the short, single-page survey that was sent to you earlier this week. The survey is part of my thesis research concerning sound in landscape architecture. I greatly appreciate your help.

Here is the link to take you to the online survey:

<https://surveys.ksu.edu/TS?offeringId=198484>

Many thanks,

Samantha Jarquio

## Survey Questionnaires for Parts One through Three of Methodology

**Introductory message:** Please take a few minutes to respond to the following survey. Your identity will be kept anonymous and your participation is greatly appreciated. The results of the survey will contribute to Master's thesis research concerning sound in the landscape. This is an issue more broadly related to improving soundscape design.

Please answer all seven questions in this survey.

Thank you for taking time to complete this survey!

### *Survey Sets for Landscape Architecture Professionals and Faculty For Professionals:*

Please indicate your response to each of the following questions by selecting one of the numbers along the scale.

1. How much would you say you know about outdoor acoustics?

- 1 – Nothing
- 2 – Some knowledge
- 3 – Average knowledge
- 4 – More than average knowledge
- 5 – I am an expert

2. In practice, how often is outdoor sound addressed in the design process at your firm?

- 1 – Never
- 2 – Rarely
- 3 – Occasionally
- 4 – Frequently
- 5 – Very frequently

3. If you have addressed outdoor sound, how often has it been something to be mitigated?

- 1 – Never
- 2 – Rarely
- 3 – Occasionally
- 4 – Frequently
- 5 – Very frequently

4. If you have addressed outdoor sound, how often has it been a thing to design with and/or draw inspiration from?

- 1 – Never
- 2 – Rarely
- 3 – Occasionally
- 4 – Frequently
- 5 – Very frequently

Please indicate your agreement or disagreement with the following statements by selecting one of the numbers on the scale.

5. Acoustics/sound courses could have been helpful while in school for landscape architecture, to facilitate designing sound in the landscape.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

6. Sounds should be considered when designing the outdoor environment.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

7. Landscape architects are the right professionals to design sound in the outdoor environment.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

*For Faculty:*

Please indicate your response to each of the following questions by selecting one of the numbers along the scale.

1. How much would you say you know about outdoor acoustics?

- 1 – Nothing
- 2 – Some knowledge
- 3 – Average knowledge
- 4 – More than average knowledge
- 5 – I am an expert

2. How often do you see your students address outdoor sound in their projects?

- 1 – Never
- 2 – Rarely
- 3 – Occasionally
- 4 – Frequently
- 5 – Very frequently

3. If your students have addressed outdoor sound, how often has it been something to be mitigated?

- 1 – Never
- 2 – Rarely
- 3 – Occasionally
- 4 – Frequently
- 5 – Very frequently

4. If your students have addressed outdoor sound, how often has it been a something to design with and/or draw inspiration from?

- 1 – Never
- 2 – Rarely
- 3 – Occasionally
- 4 – Frequently
- 5 – Very frequently

Please indicate your agreement or disagreement with the following statements by selecting one of the numbers on the scale.

5. Acoustics/sound courses in landscape architecture curricula can be useful for students designing sound in the landscape.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

6. Sounds should be considered when designing the outdoor environment.

- 1 – Strongly disagree
- 2 – Disagree

3 – Neither agree nor disagree

4 – Agree

5 – Strongly agree

7. Landscape architects are the right professionals to design sound in the outdoor environment.

1 – Strongly disagree

2 – Disagree

3 – Neither agree nor disagree

4 – Agree

5 – Strongly agree



**Post-Experiment Survey for Landscape Architecture Students [Full Experiment]**

Please fill out and return to Samantha Jarquio in 106b!

Journal #: \_\_\_\_\_ Year in the MLA Program: \_\_\_\_\_

Please Circle: (NB or PB?)

Please indicate your agreement or disagreement with the following statements by circling one of the numbers on the scale.

1. My listening abilities have improved since the beginning of the experiment.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

2. I am more sensitive to outdoor sounds now compared to when I first started the experiment.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

3. My opinions about outdoor sounds have changed since the beginning of the experiment.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

4. I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

5. I am more familiar with acoustic terminology.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

Please provide a few sentences on the back of this page about your experience in the experiment.

6. How did you find the soundwalks? How did they help you notice sounds you haven't noticed before? If you did not sense a change in your awareness of sounds, why do you think this happened?

## POST-EXPERIMENT DEBRIEFING AND SURVEY

### [Controlled Experiment]

Please fill out and return to Samantha Jarquio in 106b!

Journal #: \_\_\_\_\_ Year in the MLA Program: \_\_\_\_\_

Please Circle: (NB or PB?)

Experiment Debriefing: The theoretical basis of this study is established by a combination of literature from various sources, including musical composers and writers Raymond Murray Schafer and Barry Truax, the World Forum for Acoustic Ecology (WFAE), and past theses and dissertations that have researched the relationship of sound in landscape architecture (Schafer, 1977; Truax and Barrett, 2011; WFAE, 2000). The study in full tests the effectiveness of listening exercises, outlined in works by R.M. Schafer. While Schafer's exercises were originally constructed to be practiced by those in areas of music and communications, this experiment addresses the use of similar exercises for landscape architecture students. A second sample group participated in a study that extended three weeks, including listening exercises and acoustic and psychoacoustic terminology lessons. Your part in the study will serve as base data for the researcher to compare to the results of the full experiment. This method of research will serve to address the larger context of soundscape design.

Please indicate your responses to the following statements/questions by circling one of the numbers on the scale.

1. How much did you know about the premise of the experiment beforehand, aside from the soundwalks?

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

2. How much do you know about outdoor acoustics?

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree
- 5 – Strongly agree

3. My listening abilities have improved since the beginning of the experiment.

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Neither agree nor disagree
- 4 – Agree

5 – Strongly agree

4. My opinions about outdoor sounds have changed after since the beginning of the experiment.

1 – Strongly disagree

2 – Disagree

3 – Neither agree nor disagree

4 – Agree

5 – Strongly agree

5. I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds.

1 – Strongly disagree

2 – Disagree

3 – Neither agree nor disagree

4 – Agree

5 – Strongly agree

Please provide a few sentences on the back of this page about your experience in the experiment.

6. How did you find the soundwalks? How did they help you notice sounds you haven't noticed before?

## Instructions for Week Two of Full Experiment

### Monday – “Noise and Silence”

- A. Sit and listen for two minutes. No one is allowed to talk. (Schafer, 1968, 6)
  1. Write down all the sounds you hear. Then, take five minutes to hear a few students' lists out loud, and take three minutes.
    - a. Each thing you wrote down will have a sound source or will be a sound source. Think of the sound source as the object that projected or created the sound.
    - b. When we begin to describe these sound sources, we tend to use acoustic or psycho-acoustic terminology. . . describe the difference in these two.
      - i. Sound is made up of changes in air pressure in the form of waves (sound-waves); mechanical energy that requires a mechanical medium to propagate.
      - ii. Frequency – cycles (oscillations) per unit of time (seconds); 20 Hz-20,000 Hz is the human perceptible range; frequency is the property of sound that most determines pitch.
      - iii. Amplitude – the degree of change in atmospheric pressure, measured in decibels, represented by the height of a soundwave; sounds with greater changes in atmospheric pressure will have a greater amplitude and will be perceived as being louder than sounds that produce smaller changes in atmospheric pressure ([http://www.indiana.edu/~emusic/etext/acoustics/chapter1\\_amplitude.shtml](http://www.indiana.edu/~emusic/etext/acoustics/chapter1_amplitude.shtml)).
    - c. From sound sources we can derive keynote sounds and sound signals.
    - d. Keynote sounds in a soundscape can be described as those heard by a particular society continuously or frequently enough to form a background against which other sounds are perceived. For example, rain, the AC, electrical hum in a restaurant. These sounds are typically ignored or overlooked.
    - e. Sound signals, on the other hand, are sounds which convey particular messages and are meant to be listened to. For example, sirens, church bells, the church bell on campus.
  2. Take ten minutes to do this next step. Divide the lists in various ways. Start by assigning the letters N, H or T to each sound depending on whether it is a sound made by nature, a human sound or a technological (machine) sound.
    - a. Did you or others produce most of the sounds on your list?
    - b. Some sounds continued unceasingly throughout your listening period; others may have been repetitive, occurring more than once, and some were heard once only. Assign the letters C for continuous (keynote sounds), R for repetitive and U for unique before each sound on your list.
    - c. Can you think of a keynote sound that has been going on continuously ever since you began the exercise though you hadn't noticed it until asked this question? (Schafer,

1992, 16)

d. Assign the letters S for stationary and M for moving.

3. Take the last few minutes for this step. Take another sheet of paper. Let the top of the page stand for loud and the bottom for soft. Arrange the sounds you heard up and down the page according to how loud or soft they seemed to be. Now let the top of the page stand for pleasant, the bottom for unpleasant, and list your sounds this way (Schafer, 1992, 17).

4. "Hearing gets to places where sight cannot. Ears see through walls and around corners. When something is hidden, sound will reveal its location and meaning. Make a list of all the sounds you can think of that come from hidden places, sounds that are made by objects you have never seen."

a. Pick 2 of these sounds and try to draw what these sounds would look like.

B. Think about this: Silence is elusive. Try to find it! (Schafer, 1968, 8)

#### Thursday – "Finding and Creating Sounds"

A. All of the journals for Week 1 have some type of an indication or list of sound sources.

1. And sound sources are essentially the object that projected or created the sound you heard.

2. And from sound sources we can derive a few keynote sounds and sound signals.

3. Keynote sounds are those in the soundscape that are heard continuously or frequently enough to form a background against which all other sounds are perceived. These are often times ignored or overlooked as you're passing through. For example: the AC unit in McCain.

4. Sound signals, on the other hand, are sounds that convey particular messages and are meant to be listened to. For example, the church bells on campus that indicate the time, or sirens that signal an emergency situation.

B. Today we will be creating the sounds for the group to listen to and document.

C. The students will be asked to choose a group of two or three to work with. Find an interesting sound or create one that best illustrates the following words:

5. Thump

6. Crunch

7. Gargle

8. Squeal

9. Dribble

10. Whack

11. Crinkle

12. Pop

- D. The students are given ten minutes to experiment (preferably in separate rooms, anywhere around Seaton Hall or right outside). No restrictions are placed on them, except that their sound should involve all the performers in the group. It may be consonant, dissonant, short, long – whatever they wish. When they return, spend time listening to all ten groups perform their sound, two minutes for each performance (Schafer, 1968, 28).
- E. As you listen to each group perform, try to draw what you imagine the sounds would look like.
- F. Think about this. Do sounds have colors?

### Friday – “Interdisciplinary Sound Terminology and Examples”

- A. Take 3 minutes: Please write the following in your journal:
  - 13. What was the first sound you heard this morning upon waking?
  - 14. What was the last sound you heard last night before sleeping?
  - 15. What was the loudest sound you heard today?
  - 16. What was the most beautiful sound you heard today?
- B. Exercises adapted from Schafer. He suggests that in order to develop an acoustic awareness and sensitivity, there needs to be an understanding of sound terminology from multiple disciplines and a constant practice in listening.
- C. Take 6 minutes for this portion of the session. So, we’re going to be looking at a number of acoustic and psychoacoustic sound terms.
  - 17. Timbre
    - a. Tone color, overtone structure.
    - b. Common vocabulary to describe timbre, bright vs. warm tone...
    - c. If a trumpet, a clarinet, and a violin all play the same tone, timbre is what makes trumpetness, clarinetness, and violinness.
    - d. Timbre brings the color of individualism to music. Without it everything is a uniform and unvarying grey, like the pallor of a dying patient.
    - e. Sound samples – trumpet, clarinet, violin. Clarinet vs. accordion. Acoustic guitar vs. banjo.
    - f. Any other sounds that have distinctly different timbres? Instrument or other type of sound source?
  - 18. Amplitude vs. Loudness
    - a. The amplitude (or sound pressure) of a sound can be measured in decibels with a sound pressure level meter ([http://wiki.answers.com/Q/How\\_are\\_loudness\\_intensity\\_and\\_amplitude\\_related](http://wiki.answers.com/Q/How_are_loudness_intensity_and_amplitude_related), or <http://www.sfu.ca/sonic-studio/handbook/Amplitude.html>)

- b. This should not be confused with the ‘loudness’ or ‘softness’ of a sound.
  - c. The loudness of a sound is subjective, varies by the perception of the individual.
  - d. Loudness and softness adds a third dimension to the tone by the illusion of perspective.
  - e. “Where does the loud sound appear in relationship to you, the listener? Where the soft? A soft sound is instinctively thought to be behind a loud sound.”
  - f. Sound samples – clarinet (soft), accordion (loud). Also note a difference in timbre for each instrument.
  - g. Any other relationships of loud and soft sounds, or how different sounds can create perspective in the soundscape?
19. Frequency vs. Pitch
- a. Like ‘amplitude,’ frequency is a measurable quality of sound, measured in hertz.
  - b. The subjective quality of frequency is called ‘pitch’ (<http://www.sfu.ca/sonic-studio/handbook/Frequency.html>)
  - c. The human ear can hear all frequencies from approximately 20-20,000 Hz, which is often called the audible range or range of hearing.
  - d. Take for instance the pitches on a piano. A higher pitch will have a higher frequency than a lower pitch.
  - e. Sound samples – piano high pitch vs. low pitch.
  - f. Any other examples of high frequency vs. low frequency? High pitch vs. low pitch?
- D. Take 10-15 minutes for this last portion of the session. Now that we are more familiar with these different characteristics that make up a sound, we’re going to do a really quick listening exercise.
20. Take out your keys you brought with you and pass them up to the front.
21. All key rings are passed in and everyone listens, eyes closed, as the group leader shakes each in turn. Put your hand up if you think you detect your own and it will be dropped behind you. Have all sets of keys found their rightful owners at the end?



Survey Results Breakdown: Landscape Architecture Professionals			
Recipient	S1: Sounds should be considered when designing the outdoor environment.	S2: Landscape architects are the right professionals to design sound in the outdoor environment.	S3: How much would you say you know about outdoor acoustics?
A	4	4	3
B	4	3	2
C	5	4	3
D	5	4	3
E	4	3	3
F	5	3	2
G	5	3	4
H	4	1	1
I	4	2	2
J	4	3	1
K	4	4	2
L	4	3	3
M	5	5	2
N	4	1	2
O	4	2	3
P	4	3	3
Q	4	3	3
R	4	3	3
S	5	3	3
T	4	3	4
U	5	4	2
V	4	3	4
W	4	3	3
X	4	2	3
Y	5	3	3
Z	5	4	2
AA	4	5	3
BB	4	3	3
CC	5	2	2
DD	4	4	2
EE	3	3	2
FF	4	3	4
GG	5	3	2
HH	4	4	3
II	4	4	3
JJ	5	5	2
KK	4	4	2
LL	4	2	3
MM	5	3	3
NN	4	4	2
OO	4	4	3
PP	5	4	2
QQ	5	4	3
RR	4	3	3
SS	5	5	4
TT	4	4	3
UU	4	3	2
VV	4	3	2
WW	5	3	2
XX	5	4	2

[TABLE 8.02]

This page and following:  
The breakdown of individual  
survey response sets -  
landscape architecture  
professionals. Tables  
created by author.

Survey Results Breakdown: Landscape Architecture Professionals, cont'd				
Recipient	S4: Acoustics/sound courses could have been helpful while in school for landscape architecture, to facilitate designing sound in the landscape.	S5: In practice, how often is outdoor sound addressed in the design process at your firm?	S6: If you have addressed outdoor sound, how often has it been something to be mitigated?	S6: If you have addressed outdoor sound, how often has it been a thing to design with and/or draw inspiration from?
A	3	4	4	2
B	4	4	5	2
C	4	4	4	4
D	3	5	4	4
E	2	3	5	2
F	4	4	4	3
G	4	4	3	3
H	3	1	1	1
I	2	2	3	3
J	2	1	1	1
K	3	2	3	3
L	4	3	3	3
M	5	4	4	4
N	2	4	4	3
O	3	3	3	3
P	4	2	3	3
Q	2	4	3	3
R	3	3	3	3
S	5	4	5	4
T	3	3	4	2
U	3	4	3	3
V	3	3	3	2
W	3	3	4	3
X	3	4	4	2
Y	4	5	5	5
Z	4	3	3	3
AA	2	4	4	4
BB	4	3	4	2
CC	4	5	4	2
DD	3	3	5	2
EE	3	2	2	1
FF	3	3	3	3
GG	3	3	3	2
HH	3	5	4	3
II	4	4	4	4
JJ	5	2	2	1
KK	4	3	4	2
LL	2	3	4	4
MM	3	3	4	3
NN	3	3	4	2
OO	4	3	5	1
PP	5	2	3	2
QQ	3	4	3	2
RR	4	3	3	2
SS	5	4	4	3
TT	3	3	4	3
UU	4	3	3	2
VV	3	2	3	2
WW	5	3	4	2
XX	4	3	4	4

Survey Results Breakdown: Landscape Architecture Professionals			
Recipient	S1: Sounds should be considered when designing the outdoor environment.	S2: Landscape architects are the right professionals to design sound in the outdoor environment.	S3: How much would you say you know about outdoor acoustics?
YY	4	4	2
ZZ	4	4	3
AAA	5	3	2
BBB	5	5	2
CCC	5	4	2
DDD	4	4	3
EEE	5	5	3
FFF	5	5	4
GGG	5	3	2
HHH	4	4	3
III	4	2	3
JJJ	4	3	3

[TABLE 8.02 cont'd.]

This page and following:

The breakdown of individual survey response sets - landscape architecture professionals. Tables created by author.

Survey Results Breakdown: Landscape Architecture Professionals, cont'd				
Recipient	S4: Acoustics/sound courses could have been helpful while in school for landscape architecture, to facilitate designing sound in the landscape.	S5: In practice, how often is outdoor sound addressed in the design process at your firm?	S6: If you have addressed outdoor sound, how often has it been something to be mitigated?	S6: If you have addressed outdoor sound, how often has it been a thing to design with and/or draw inspiration from?
YY	3	2	3	2
ZZ	2	3	3	4
AAA	4	5	4	3
BBB	3	3	4	4
CCC	4	2	3	2
DDD	4	4	4	2
EEE	3	4	4	4
FFF	4	3	4	4
GGG	4	3	4	3
HHH	4	3	3	3
III	4	3	4	2
JJJ	4	4	4	4

[248] APPENDIX D

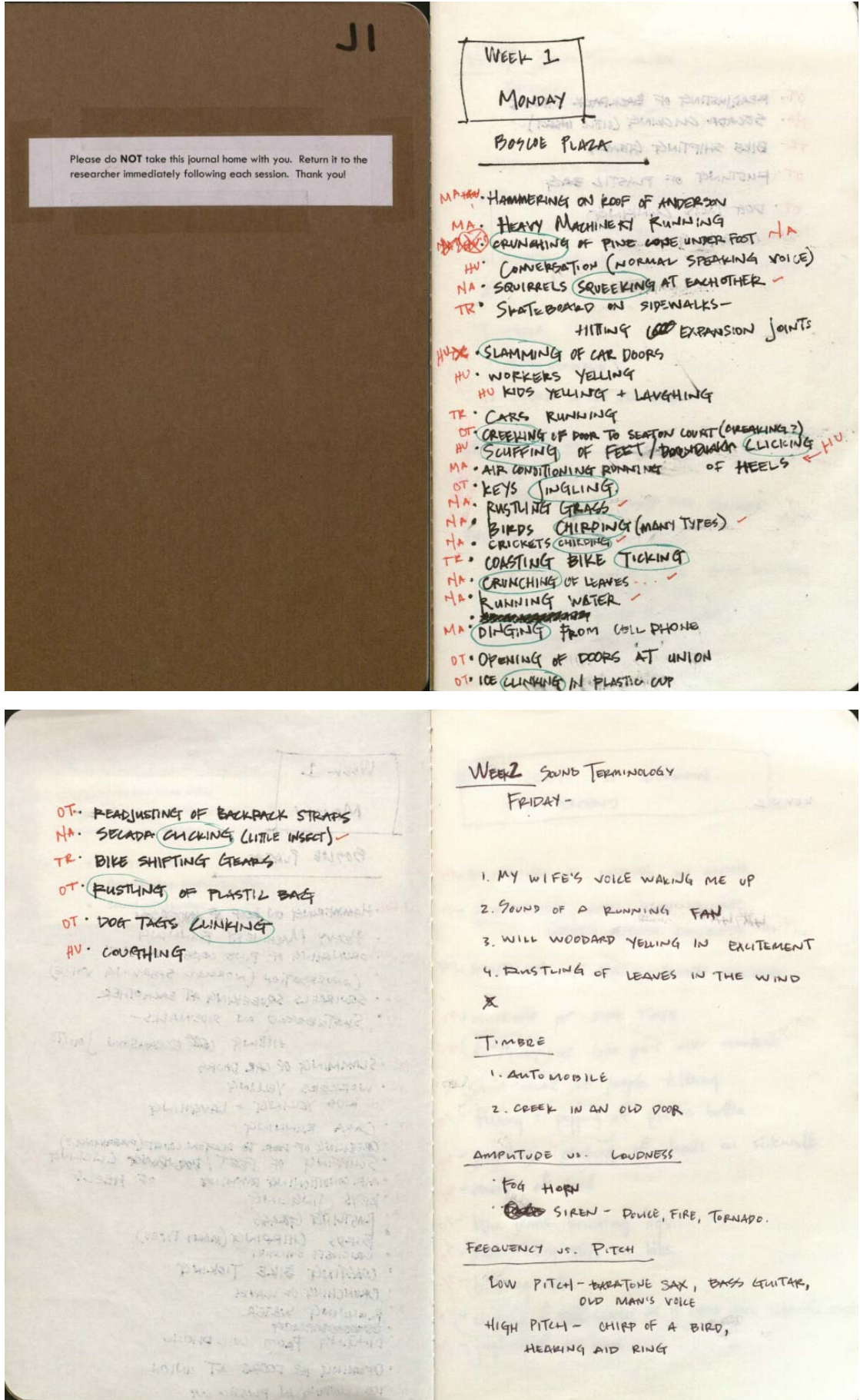
Survey Results Breakdown: Landscape Architecture Faculty				
Recipient	S1: Sounds should be considered when designing the outdoor environment.	S2: Landscape architects are the right professionals to design sound in the outdoor environment.	S3: How much would you say you know about outdoor acoustics?	S4: Acoustics/sound courses in landscape architecture curricula can be useful for students designing sound in the landscape.
A	4	4	3	2
B	4	3	1	4
C	4	3	2	3
D	5	4	3	4
E	5	4	3	3
F	4	1	4	3
G	4	5	4	3
H	3	4	2	3
I	4	4	2	3
J	4	4	1	4
K	3	3	2	1
L	5	3	3	4
M	5	3	2	5
N	5	3	3	3
O	4	4	2	4
P	4	4	1	4
Q	4	3	4	3
R	4	4	2	3
S	5	4	3	5
T	5	4	4	4
U	4	3	2	5
V	5	5	2	4
W	1	1	3	1
X	4	4	1	4
Y	5	5	2	5

[TABLE 8.03]

The breakdown of individual survey response sets - landscape architecture faculty members. Tables created by author.

## Survey Results Breakdown: Landscape Architecture Faculty, cont'd.

Recipient	S5: How often do you see your students address outdoor sound address in their projects?	S6: If your students have addressed outdoor sound, how often has it been something to be mitigated?	S7: If your students have addressed outdoor sound, how often has it been something to design with and/or draw inspiration from?
A	2	4	3
B	2	3	2
C	3	3	3
D	3	4	3
E	4	5	3
F	2	4	2
G	3	4	3
H	2	2	2
I	2	2	1
J	1		
K	2	2	3
L	2	3	5
M	3	4	3
N	2	3	2
O	2	2	2
P	3	4	4
Q	1		
R	2	3	4
S	2	1	2
T	3	3	4
U	3	3	4
V	2	4	2
W	4	2	4
X	1	1	1
Y	3	4	4



[FIGURE 8.04]

This page and following: Journal entries of the full experiment participants. J1-J4 are shown with coding marks (in red and green) to show initial analysis. The remaining journals in the experiment are shown without coding marks to illustrate the documentation style of each participant.

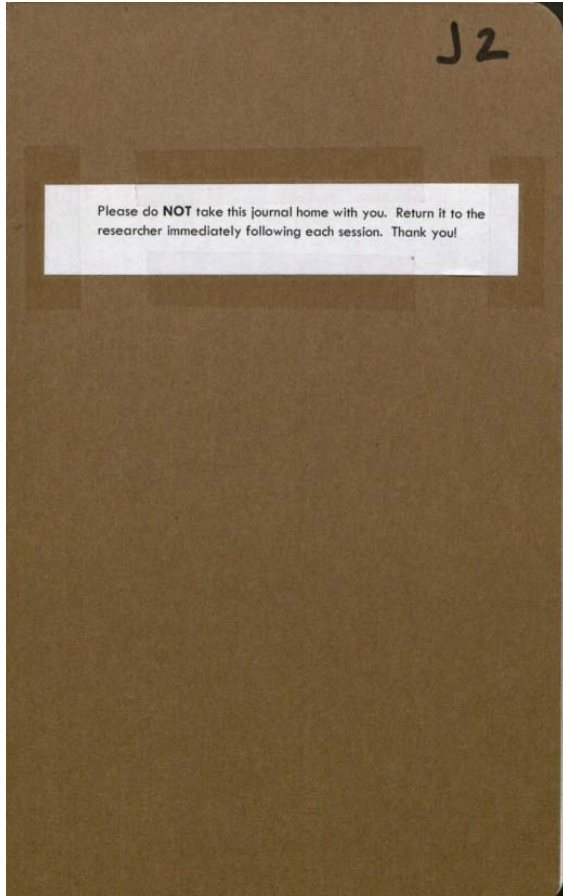
KEY # 2.

WEEK 3 MONDAY.  
WALK AROUND

- HA - RUSTLING OF LEAVES IN WIND
- HA - SCRAPPING AND <sup>HA</sup>SLIDING OF LEAVES ACROSS CONCRETE
- HU - SHUFFLING OF FEET ON SMOOTH CONCRETE
- TR - CLICKING OF BIKE TIRES
- TR - Ka-thump as bike goes over manhole
- HU - chit-chat of people talking
- OT - flexing + <sup>OT</sup>popping of plastic bottle
- HU - <sup>HU</sup>pounding + <sup>HU</sup>clicking of heels on sidewalk
- HA - chirp of bird
- OT - blue jeans brushing legs
- OT - psst. filling tires on bike
- HA - trickling water
- TR - clicking of ~~scor~~ scooter as it runs over sidewalk cracks
- OT - jingling of car keys

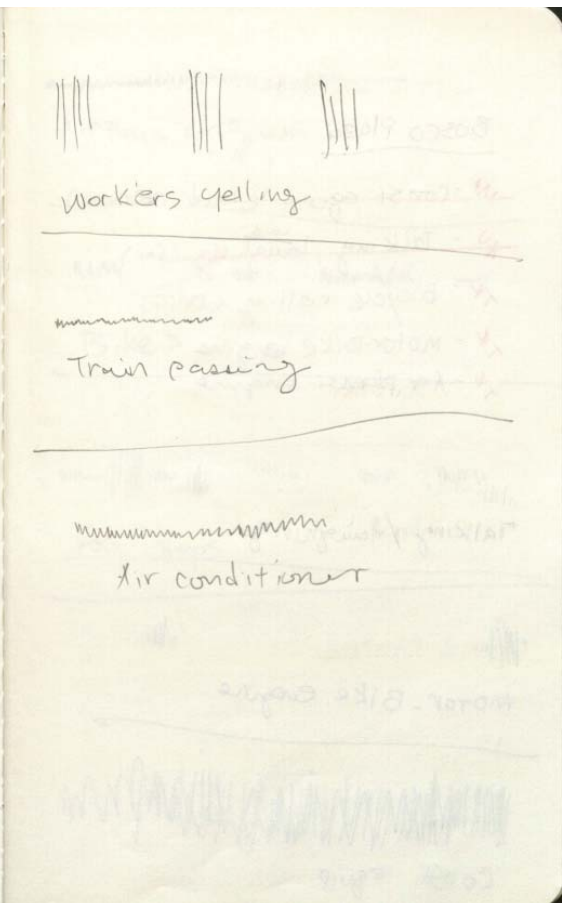
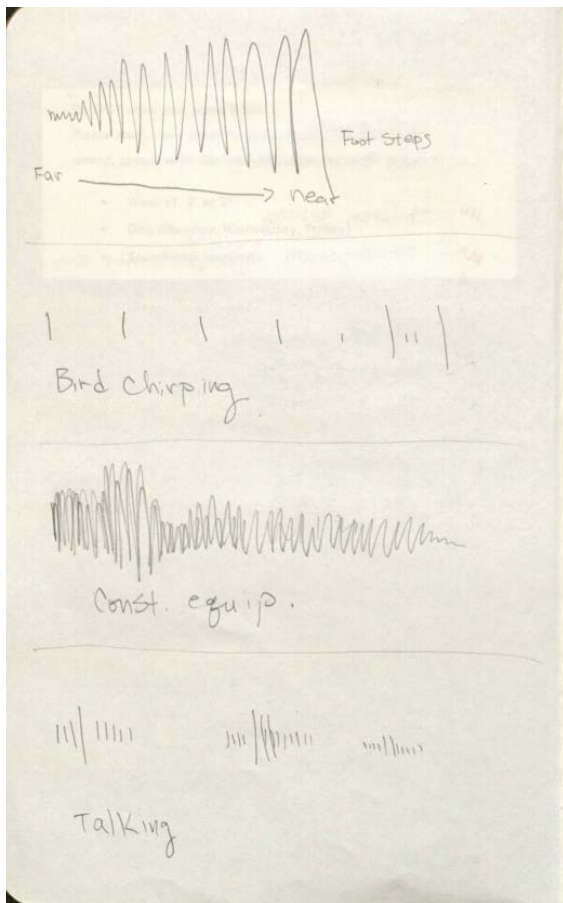
- TR - SQUEAKING OF BIKE BRAKES
- HU - CLAPPING OF HANDS
- OT - WAVING OF FLAG IN WIND
- HA - CRUNCHING OF LEAVES UNDERFOOT
- TR - SCREECHING OF CAR BRAKES.
- TR - THE LOUD ROAR FROM MOTORCYCLES ACCELERATING
- OT - CREAK FROM OPENING DOOR
- HA - CHIRPING CRICKET.
- HA - SAWTREL DIGGING THROUGH GRASS TO BURY A NUT
- TR - BIG TRUCKS GROAN AS THEY GO DOWN ANDERSON
- MA - POUNDING OF HAMMER FROM CONSTRUCTION
- MA - FLEXING AND <sup>MA</sup>POUNDING OF LUMBER BEING DROPPED
- MU - KSTATE DRUMLINE - SOME GUY POUNDING
- TR - SIREN? FROM EMERGENCY VEHICLE
- OT - JINGLING OF ZIPPER





Week 1 Monday  
Location Lawn outside of Section

- HU - Children yelling
- MA - construction machine equip (continuous)
- HU - Workers yelling
- HU - Talking, laughing
- MA - Bird chirping (const)
- TK - Train passing (once)
  
- HU - foot steps
- MA - Air conditioner



Bosco Plaza

- ~~MV~~ - Const equip cloud, consist)
- ~~HU~~ - Talking, <sup>loud</sup> laughing (far)
- ~~TV~~ - Bicycle rolling (once)
- ~~TV~~ - Motor-Bike engine
- ~~TV~~ - Air plane engine

Talking / laughing

Motor-Bike engine

Const equip

Airplane engine

~~~~~

Bikes

Foot steps

Quad outside of Hale

- ~~HU~~ Bird Chirping
- ~~HU~~ Distant talking
- ~~HA~~ Distant const. machine
- ~~HU~~ My own foot steps
- ~~MU~~ Drum beat (distant)
- ~~HU~~ Talking / yelling (distant)

Bird chirp

Distant talking

Dist const. machine

My foot steps

drum beat

Talking / yelling

Week 2 Friday 10/5/2012

- ① footsteps
- ② cat meowing
- ③ Chair moving (leg dragging on the floor)
- ④ music video from the internet

Timbre - 2 sounds different timbres

- 1) Drum beat
- 2) water ~~dro~~ dripping

Week 3 Monday 10/8/12

Location: Hale Quad

Examples of loud sounds?

- Train passing
- Cannon shots
- Gun shots
- Screams / yelling
- ~~• Loud music~~

| High pitched               | Low Pitched      |
|----------------------------|------------------|
| • Cat meow                 | • Drum           |
| • Nail scratch chalk board | • Foot steps     |
| • Boiling tea Kettle       | • Gun shots      |
| • flute                    | • Hammering nail |

my key #3

- HV - Chattering
- HV - Foot steps
- ~~HV - Talking~~
- HA - Wind/~~leaf~~ Blowing leaves
- TK - Distant car Engines
- MV - Distant Drum beat
- ~~TK - Talking~~
- TK - Bike rolling
- HA - Wind/passing my ears
- ~~TK - Talking~~
- HV - Laughter
- MA - Furnance

Bosco student plaza

~~Talking on the phone~~ .....  
 #U Foot steps .....  
 HA Wind blowing leaves .....  
~~Wind blowing passing my ears~~ .....  
~~Bicycle rolling~~ .....  
 TK Distant car engine .....  
 HA High heels .....  
~~Car engine~~ .....  
~~Talking / Chattering~~ .....  
 MA Air ventilation .....  
 HA Water flowing to the pool .....

HF Bird chirp .....  
 HU Door opening .....  
 TV Siren .....

J3

Week 1, Monday, Bosco Plaza

Please do NOT take this journal home with you. Return it to the researcher immediately following each session. Thank you!

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>                     HU kids playing<br/>                     HA AC units<br/>                     TK longboard<br/>                     HU people talking<br/>                     HA running water<br/>                     TK truck warning beep for parking<br/>                     TK train horn<br/>                     TK bicycle hi<br/>                     HU shoes on pavement<br/>                     TK car passing<br/>                     AC unit<br/>                     people talking<br/>                     HA generator<br/>                     people talking<br/>                     OT plane taking<br/>                     AC unit<br/>                     HA squirrels chattering<br/>                     people talking<br/>                     TK skate board<br/>                     jacking a <del>nut</del><br/>                     bicycle<br/>                     OT door opening<br/>                     HA bird chirping                 </p> | <p>                     TK car engine door slam HU<br/>                     OT closing door<br/>                     OT dropping phone<br/>                     HU shoes scraping pavement<br/>                     HU talking in building<br/>                     people walking &amp; talking<br/>                     Skate board<br/> <del>bird chirping</del> (singing) HA<br/>                     TK truck engine fire<br/>                     HU music<br/>                     AC unit<br/>                     people talking<br/>                     TK airplane<br/>                     talking<br/>                     HA (clicking) (chirping) (gas turbine?)<br/>                     HA animal sounds<br/>                     TK bicycle whirring gears<br/>                     HU shoes scraping ground<br/>                     engine sounds<br/>                     TK bike tires<br/>                     shoes scraping ground<br/>                     OT bike lock clicking<br/>                     shoes on ground<br/>                     people talking (labs)                 </p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                   | Week 2 |   |   |  | 10/12 |
|-----------------------------------|--------|---|---|--|-------|
| <del>TK</del> bicycle peddling    |        |   |   |  |       |
| <del>wheels</del>                 |        |   |   |  |       |
| <del>night chills</del>           |        |   |   |  |       |
| <del>recipients</del>             |        |   |   |  |       |
| <del>bed</del>                    |        |   |   |  |       |
| <del>bicycle wheel</del>          |        |   |   |  |       |
| <del>bed</del>                    |        |   |   |  |       |
| <del>bicycle</del>                |        |   |   |  |       |
| <del>flip flops on ground</del>   |        |   |   |  |       |
| <del>laying</del>                 |        |   |   |  |       |
| <del>shoes</del>                  |        |   |   |  |       |
| <del>knights</del>                |        |   |   |  |       |
| <del>talk</del>                   |        |   |   |  |       |
| <del>TK</del> tires on pavement   |        |   |   |  |       |
| <del>TK</del> car engine starting |        |   |   |  |       |
| <del>HV</del> yelling             |        |   |   |  |       |
| <del>HA</del> birds screech       |        |   |   |  |       |
| <del>birds</del>                  |        |   |   |  |       |
| <del>page turning</del>           |        |   |   |  |       |
| <del>talk</del>                   |        |   |   |  |       |
| <del>HV</del> high heels          |        |   |   |  |       |
| <del>talk</del>                   |        |   |   |  |       |
| <del>talk</del>                   |        |   |   |  |       |
| <del>talk</del>                   |        |   |   |  |       |
| <del>low</del>                    |        |   |   |  |       |
| <del>walk</del>                   |        |   |   |  |       |
| N wind                            | C      | M | N |  |       |
| H people walking                  | R      | M | H |  |       |
| H people talking                  | R      | M | H |  |       |
| T paper shuffling                 | U      | S | T |  |       |
| T pencil scratching               | U      | S | T |  |       |
| H hands coming off paper          | U      | S | H |  |       |
| T erasing                         | U      | S | T |  |       |
| T book sliding                    | U      | M | T |  |       |
| H high heels                      | R      | M | H |  |       |
| T vehicle moving/turning          | U      | M | T |  |       |
| H people talking                  | R      | M | H |  |       |
| H walking/foot steps              | R      | M | H |  |       |
| H arm sliding on table            | U      | M | H |  |       |
| H talking                         | R      | M | H |  |       |
| H turning turning                 | U      | S | H |  |       |

Loud  
 Truck  
 high heels  
 talking  
 walking

Quiet  
 wind  
 hands off paper  
 arm moving  
 Erasing ← book moving  
 Pencil scratch

Quiet

Pleasant  
 wine  
 pencil scratch  
 arm moving  
 book sliding  
 fingers off paper

erasing  
 talking  
 walking  
 high heels  
 turning  
 truck

Unpleasant

Sounds you can't see

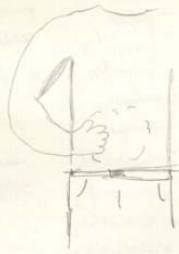
wind

stomach growling

flatulents

thunder

What the sounds look like...



WEEK 3  
BOSCO & HALE QUINO

|    |                    |                            |                  |                  |
|----|--------------------|----------------------------|------------------|------------------|
| HU | paper talking      | talking                    | generator        | ac               |
| HA | bird chirping      | talking                    | TV plane(s)      | talking          |
| TR | bike               | talking                    | talking          | birds            |
| HA | car                | skates on pavement         | talking          | bird             |
| MA | AC unit            | skates                     | talking          | HA squirrel      |
| HU | Cooking            | talking                    | talking          | skates           |
|    | talking            | HU whistling               | ac               | ac               |
| OT | Keys jangling      | HU tapping                 | bird             | talking          |
| HU | walking            | skates on pavement         | HA water running | skates           |
|    | skates             | tapping                    | talking          | skates           |
|    | skates             | HA crickets(?)             | ac               | bird             |
| TR | car                | OT car horn                | ac               | OT chair drabing |
| HU | skates on pavement | HU bass on pavement        | talking          | walking          |
|    | skates             | TR motorcycle              | ac               | walking          |
| HU | skates on pavement | skates on pavement         | ac               | walking          |
|    | skates             | OT car horn                | ac               | skates           |
|    | skates             | HA birds                   | ac               | skates           |
|    | skates             | HA wind                    | ac               | skates           |
|    | skates             | OT car horn                | ac               | skates           |
|    | skates             | HU jelling                 | ac               | skates           |
|    | skates             | MA curl engine (generator) | ac               | skates           |
|    | skates             | HU jelling                 | ac               | skates           |
| HU | Keys (popping)     | OT keys jangling           | ac               | skates           |
|    | skates             | OT ice in bottle           | ac               | skates           |
|    | skates             | TR car horn                | ac               | skates           |
| MA | generator          | talking                    | ac               | skates           |
|    | skates             | HU sandals dragging        | ac               | skates           |
|    | skates             | ac                         | ac               | skates           |
|    | skates             | HU whistling               | ac               | skates           |

Week 1

JA

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Bosco Plaza-Hale  
 HU children talking  
 HA water fall from water feature in Bosco  
 HA skateboarders & bikes! TR  
 HA Birds chirping - crows?  
 HU feet on pavement <sup>shuffling... people need to pick up their feet...</sup>  
 MA construction sounds - (backing up & vehicle motor) MA  
 - seems lots of people are not present → not consistent sounds of people passing through  
 OT keys clinking on keychain  
 - people talking... mostly just  
 ↑ couples in pairs  
     Bosco  
 - bikes  
 - feet on pavement <sup>more shuffling</sup>  
 HA crickets & cicadas  
 HA squirrel in tree rustling leaves  
 HA feet on grass

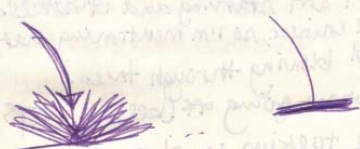
- Bosco - Male week ①
- leaves dropping on pavement
  - twigs dropping from squirrel
  - ~~conversations~~
  - someone dropping their bike after unlocking it
  - someone yelling
  - construction sounds - vehicle materials
  - window air conditioner clashing running
  - ~~Birds chirping/cawing~~
  - ~~people talking on cell phones~~
  - ~~skateboarder... skateboarder~~
  - ~~falling... skateboarder cursing~~
  - ~~keys on keychain clinking~~
  - water from air conditioner dripping into grass - puddle noise
  - my phone ringing... oops forgot to silence that one.
  - sidewalk Bosco to season court

- air planes flying ahead
- birds chirping/cawing
- someone's keys jangling
- ~~more feet shuffling~~
- someone's plans dragging along pavement
- bikes rolling
- car horn
- insects chirping (cicada?)
- squirrel running through trees
- (leaves rustling, branches twigs breaking)
- someone's flip flops
- clicking of ~~open~~ a pen
- ~~sounds of construction~~ - vehicles materials
- ~~people walking through grass~~
- crickets
- walk around Holtz back to Bosco
- leaves falling onto mulch
- overall observations
- most sound came from Bosco
- usually on sidewalks, people

- tended to walk silently (even if they were with someone else) as opposed to Bosco - lots of voices
- Nature sounds (leaves, squirrel, grass walking, insects, etc) only outside of Bosco
  - bikes, construction, shuffling constant.


THURSDAY week ②

"THUMP"




BLACK IF COLOR - SOLID, HEAVY SOUND

"CRUNCH"




BROWN... NOT APPEALING... GRATES ON YOUR NAILS SOUND.

"WHACK"



GREEN... BOLD BRIGHT SOUND... BOLD BRIGHT COLOR

"POP"



BLUE... SUDDEN EXCITING COLOR



Week 3 MONDAY

- I know we're supposed to only do sounds, but I am starting and it smells like Chinese, so I'm mentioning that, ha.
- MA Wind blowing through trees.
- MA My phone going off (bells)... oops.
- MA people talking in plaza
- MA keys clanking
- MA birds chirping
- MA water rushing-falling from Roseo plaza \*
- Wind rushing through trees has a different sound ~~than~~ than wind rushing through certain kinds of shrubs \*
- MA Bike tires against cement
- MA leaf rolling along pavement... -- wind!
- MA more birds - different than 1st birds
- MA Majors fair flyer flapping in wind
- MA people shuffling their feet along the pavement
- MA people crunching leaves along pavement.

- Lots of wind... If wind doesn't necessarily have a sound, but it's all over... \*
- MA rushing through my ears, etc.
- MA Heels clicking along cement
- MA Crickets chirping
- MA Cicada

→ General observation: I never notice the insect ~~no~~ noises until I leave the plaza. Not sure if that's cause no insects live there (plaza) or other sounds just take over... \*

- MA someone kicking twig & twig
- MA skidding along floor
- MA Giggling
- MA someone eating - crunching food... not sure what he is eating exactly
- MA shuffling papers... ~~shuffling feet~~
- MA dog barking... not sure when
- MA hammering somewhere - aggieville direction

- very sweaty bike... ~~drive to still~~
- MA clomping of stillettos from a girl not used to wearing them... her indignantly yelling into her phone as well... she was not happy. HU
- MA Sirens from police car & ambulance
- MA more heels... Lord, must be some fancy event going on tonight
- MA ~~talking on phone~~
- MA skate board rolling across pavement
- MA motorcycle engine
- NO dripping AC today... yay!
- MA someone's jeans dragging along the ground.
- MA metal against metal... not sure what
- MA car engine

J5

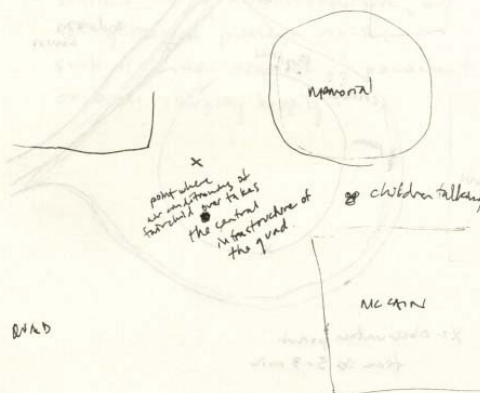
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WEEK 1  
WEDNESDAY  
MCCAIN QUAD & PARKING CIRCLE

air conditioning  
humming of big green electrical boxes

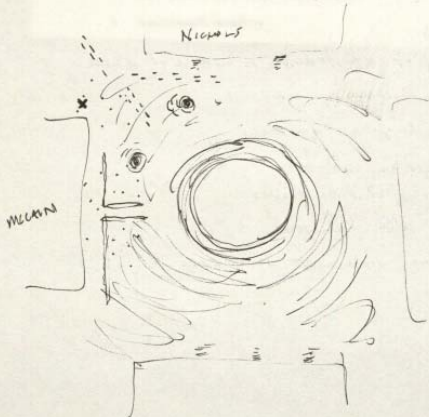
SOUNDS  
rattling of infrastructure in middle of quad  
birds chirping/singing  
water dripping from trees  
footsteps on concrete  
squirrel rustling leaves  
leaves falling from trees  
roar from grate next to McCain

X = observation point



keys jingling  
children talking  
foot steps  
car screeching to stop  
talked to a guy about ~~what~~ what we're doing  
car passing → wetness of pavement  
car starting  
car passing

constant noise due to infrastructure



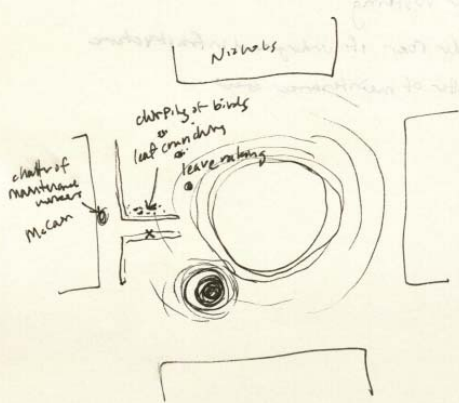
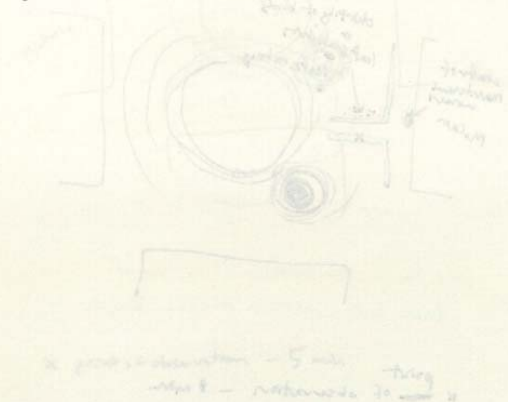
X = observation point, 5 min 4:13-4:18

- ∴ water droplets from trees
- = air conditioning
- walking
- ⊙ birds chirping

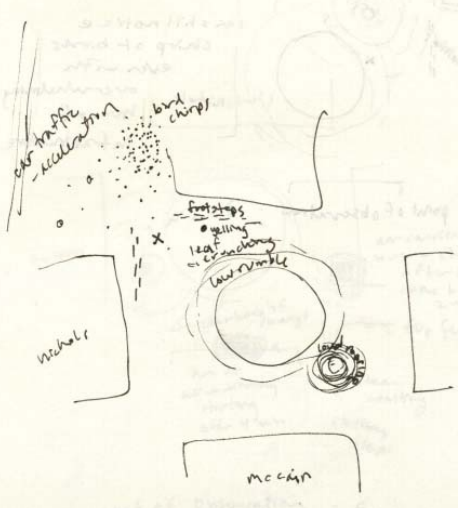


WEEK 3  
 WEDNESDAY  
 MCCAIN QUAD & PARKING GARAGE

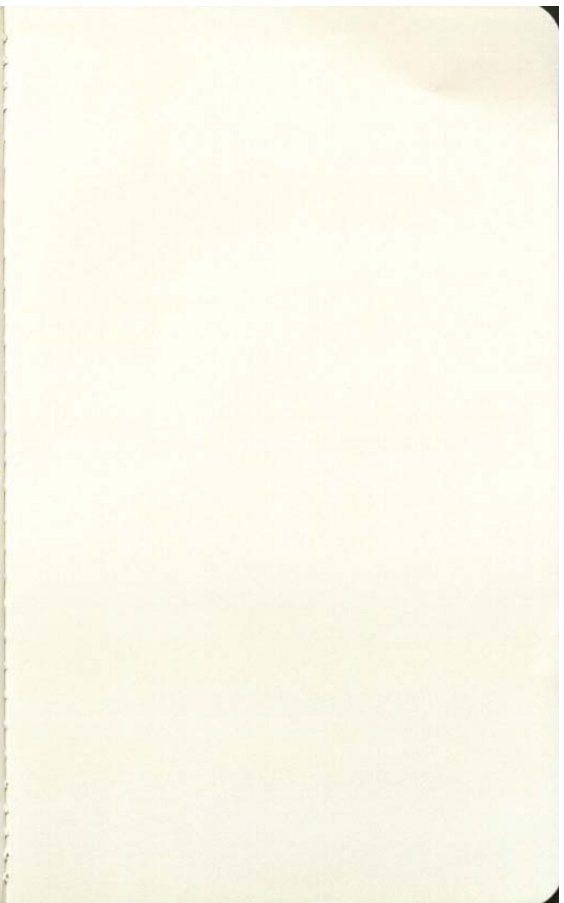
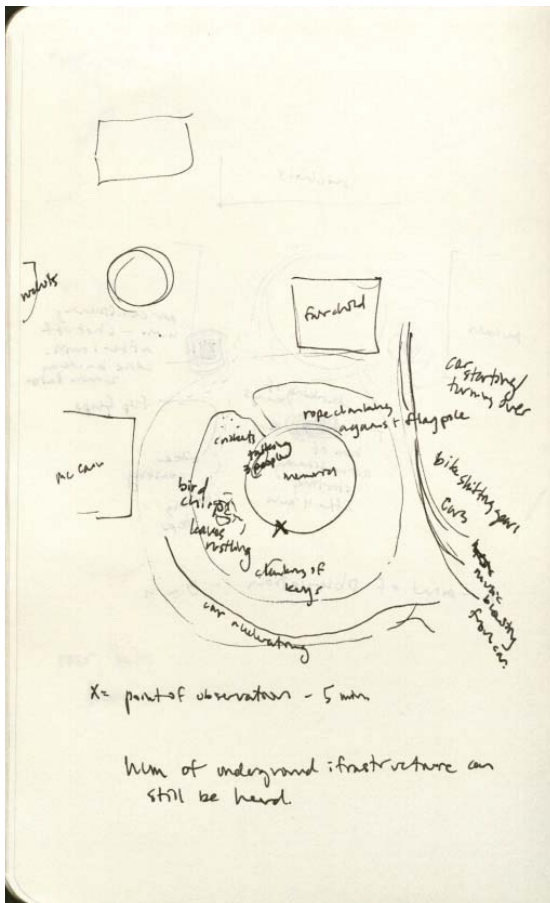
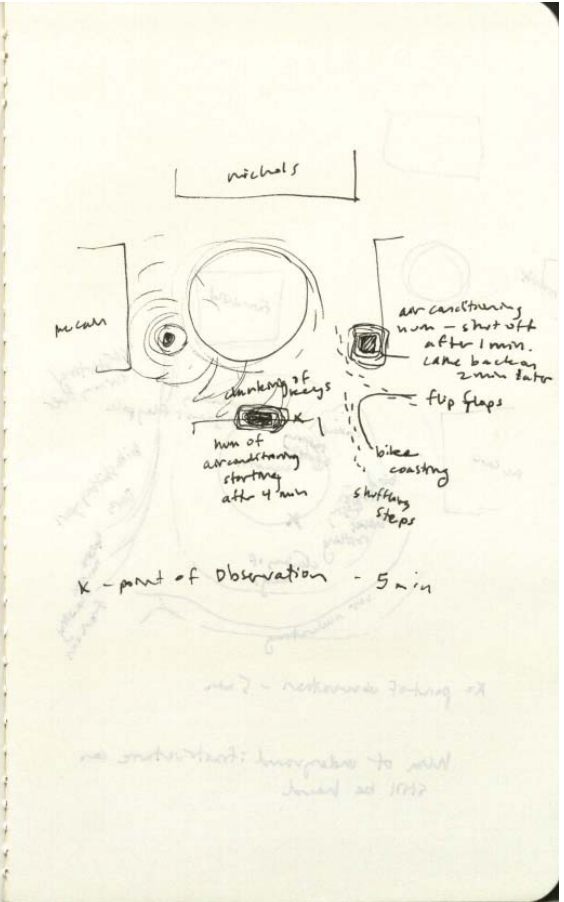
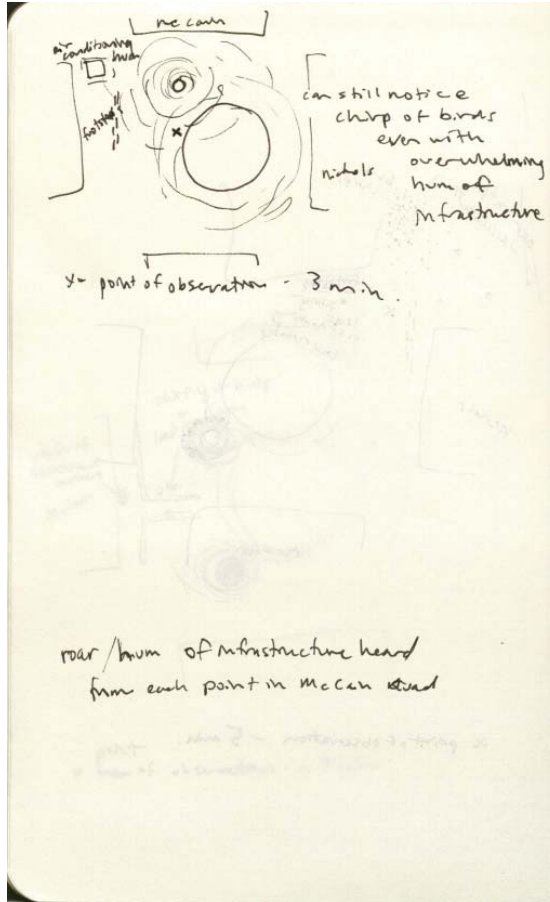
crunching leaves → raking  
 roaring of infrastructure in middle  
 crunching leaves, walking  
 jingling of keys  
 paper rustling  
 louder roar of underground infrastructure  
 chatter of maintenance crew



x point of observation - 9 mtr.



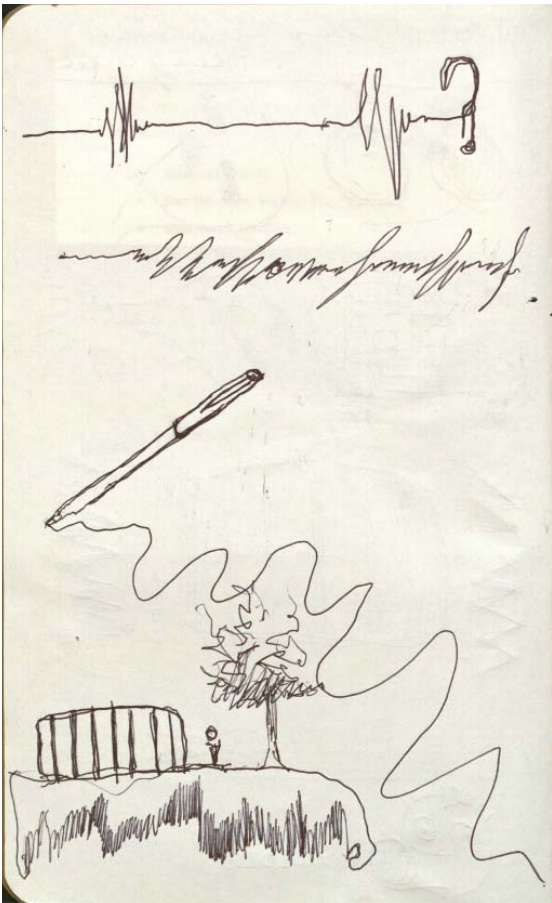
x point of observation - 5 mtr.



26

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WEEK 1 WEDNESDAY McLAN Quad + PARKING CIRCLE



WIND RUSTLING, PEOPLE MARCHING, BIRDS, MUSIC,  
 THOUGHTS, HORNS, SHUFFLING A V A C, DROPPING,  
 RAIN DROPS, KEYCHAINS SANGLING, SCRATCHING,  
 BELLING, THAT VOICE IN THE HEAD  
 ORGANIZATION, THOUGHTS, MOVEMENT, COMING  
 IN ONE EAR AND OUT THE OTHER



Week 2 FRIDAY

1. DOOR OPENING
2. PEOPLE WALKING UPSTAIRS
3. MUSIC
4. WIND BLOWING THRU THE TREES

TIMBRE

- DOGS BARKING IN SAME TONE
- COLLIE, GERMAN SHEPHERD, Corgi

Loudness

- SPEAKING • ENGINES • WALKING
- ~~Hand~~ • CLAPPING HANDS

PITCH

- MAN VS GIRL VOICES
- HI - SCREAM
- LO - DRUM BEATING
- HI - BIRD CHIRPING
- LO - BOMB EXPLODING



THERE ARE MANY THINGS THAT I  
SEE MOVING THAT I KNOW ARE  
MAKING SOUNDS THAT I KNOW  
WHAT THEY ARE LIKE TO  
EXPERIENCE, BUT ALL I HEAR  
IS THE ~~XXXXXXXXXXXXXXXXXXXX~~



WEEK 1 - WEDNESDAY - MCCAIN QUAD - PARKING C.

- NOISE FROM AIR-CONDITIONING - CALVIN HALL
- NOISE FROM CENTER CONSOLE OF MCCAIN
- FIRE TRUCK OPEN
- BIRDS CHIPPING
- THE SOUND OF PPL DRAGGING THEIR FEET
- PAIN DRIPPING FROM TREES
- LEAVES FALLING AND SLIDING ON THE CONCRETE
- CARS DRIVING BY
- DOORS OPENING WHEN PPL WALK INTO BLDG.
- DOMINANT SOUNDS:
  - BIRDS CHIPPING
  - CENTER CONSOLE (A.C.?)
- ↳ DROWNS OUT MOST NOISES/SOUNDS
- ↳ COULD BE A BIRD FIGHT?
- MOTORCYCLE
- NO WIND TO BLOW THE TREES
- WOULD BE CALMING SOUNDS BUT A.C. IS TOO LOUD



J8

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SOUND:

- BIRDS FLAPPING THEIR WINGS
- IF I CONCENTRATE ON THE BIRD SOUNDS AND LOOK AROUND, I FORGET THAT I'M ON CAMPUS
- THE SPLASH OF PUDDLES THAT PPL STEP IN
- LOTS OF NOISE THAT EXPECT TO HEAR, I DON'T - DUE TO CENTER OF MCGWIN
- PPL DRAGGING THEIR FEET
- IF I CLOSE MY EYES, THE ~~OTHER~~ SOUNDS (MAINLY THE BIRDS) REMIND ME OF THE ~~THE~~ ZOO

WEEK 2 - THURSDAY

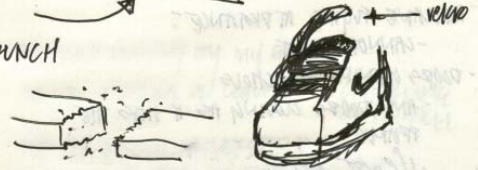
• SQUEEL



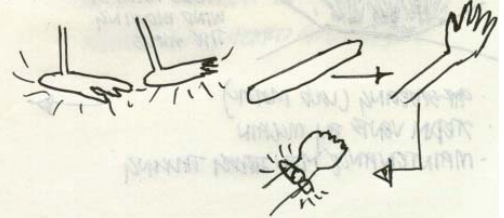
• THUMP




• PUNCH



• WHACK



WEDNESDAY, WEEK 3

- MAINTENANCE MACHINES
- MAINTENANCE MAN'S KEYS WINKLING
- BIRDS CHIPPING
- PEOPLE'S FOOTSTEPS AS THEIR SHOES GRIND THE CONCRETE
- BACKPACK NOISES
  - HOOPING
  - ZIPPER
- CARS DRIVING BY
  - CAN ONLY BE HEARD FROM OUTSIDE CORNER OF QUAD
- TREE BRANCHES BLOWING IN THE WIND
- AIRPLANE FLYING AT DISTANCE
  - CANNOT SEE IT
- DOORS OPENING TO NICHOLS
  - AND DOORS CLOSING AS IT HITS THE FRAME
- ~~THE~~ ~~WIND~~ NOISE OF WIND BLOWING THE GRASS
 
- CAR SPEEDING (Loud MOTOR)
- STEAM VENTS BY MCGWIN
- MAINTENANCE MEN ~~THEY~~ TALKING

WEDNESDAY, WEEK 3

- A.C. FOR ONE OF THE BUILDINGS
- CAR DOORS OPENING
- THE SOUND OF SEAMS OR PARTS WHEN THEY RUB TOGETHER AS PPL WALK
- TRUCK MOTOR
- CAR ~~ENGINE~~ BRAKES SLIGHTLY SCREECHING
- CRICKET?
- ~~MAINTENANCE~~ MAINTENANCE NOISES NOT AS LOUD BY MCGWIN DEODOFF CIRCLE
- HEELS WINKING BY
- THE WIND BLOWING BY MY EARS
- PERSON STEPPING ON LEAVES → CRACKLING OR CRUNCH
- NOT TOO MANY CONVERSATIONS
  - PEOPLE ARE GENERALLY QUIET
  - NO ONE ON THEIR PHONE EITHER
  - SCRATCH THAT, HEARD ONE PERSON

J9

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## Week 1 Day - Wednesday Soundwalk Location - McCain Quad and Parking circle

### Acoustic observations:

- Sound/humming of the center circular air system
- Air conditioning of Calvin Hall produces a high hum. ← North side corner.
- A few birds singing - nice peaceful sound.
- Police cars sirens as it passes by on Anderson Ave.
- Calvin Hall's window units produce more hums, and air conditioners, front of building / main entrance on East side.
- Car traffic / vehicles towards the south of the site. ← motor sounds.
- Scuffing of shoes on the sidewalk
- ~~Opening~~ <sup>closing</sup> of a door in <sup>Nichols</sup> ~~Nichols~~ Hall. (x2)

- droplets of water hitting the concrete sidewalk by McCain. <sup>concrete retaining wall</sup> <sub>stone</sub>
- Air Vent by McCain produces a whooshing / blowing sound of air.
- Window air conditioners of Fairchild Hall
- More birds / sing as the rain lets up.
- Students talking as they walk towards the parking circle from McCain Quad.
- Car Alarm / beep from a car in the circle
- The spinning sound of wheels as a biker passes through McCain Quad.
- Car tires on wet concrete as it towards Anderson Hall.
- Sounds of a few insects possibly crickets?
- Woman with rolling backpack as it hits the sidewalk increments.
- Scuffing of wet shoes on wet concrete
- Engine (car) motors.
- Car doors closing by McCain / car alarm set

- Boot clicking on concrete drive by McCain / parking circle
- Biker parking bike @ the metal racks causing noise.
- More cricket sounds as time passes.
- More Bikers / people chatting as class must have just let out
- Car doors slamming and cars driving by with wet tires
- Air conditioning hum a constant around the site
- Pounding of a hammer? Doing some construction at Anderson Hall.
- Birds present more around trees in McCain Quad. <sub>where there is also less motor / car sounds.</sub>
- Keys jingling in woman's pocket as she walks by
- Police car siren sounds again.
- The grind and push of more steam out of the center cooling system.
- Laughing of students as they walk through.
- Standing close to the <sup>crowns out a lot</sup> of noise such as the birds.

o Bird sound coming from the tall metal tower (possibly radio tower?) Both of the tower on and near the site

Week 2 Friday  
Sound terminology

1. My alarm going off this morning.  
- song/jingle
2. The clicking of my lamp turning off.
3. The loudest sound was when the architecture studio decided to move all of their chairs across the floor it sounded like an airplane taking off.
4. The most beautiful sound was the sound of laughter.

Different Timbres:

~~Tuba and Trombone~~ →  
French horn and Trombone

Inherently ~~loud~~ loud sounds:

- Beating of a bass drum / drum band
- ~~Yelling~~ / turning up the volume / emotion.
- Jet Engines

High Pitched sounds:

- Speech → yelling - emotion (High and low)
- Songs - Karaoke (that pulsing) Pitch
- Crickets/bugs - high pitch

Wednesday October 10, 2012  
Week 3

McCann Quad Sound Walk

- ~~Hear the central humming noise~~ <sup>coming out of the air/steam system</sup> <sup>manhole?</sup>
  - Bird calls near Calvin hall
  - Chatting of students as they walk by  
- coming out of Calvin
  - Student coughed as he passed.
  - Humming (slightly) from the central cooling station
  - Birds like to sit on the radio towers - sing songs  
- very pretty
  - Air conditioning units by Calvin hall  
picking on producing a low hum noise.
  - Crunch of grass as I step into it.
  - Sounds of engines (cars) near Nichols hall (constant sound)
  - Scudding of leaves as they are blown across the ground - peaceful
  - rustling of leaves on trees as the wind blows
  - opening and closing of Nichols main doors near the entrance to the hall.
- Ugly sound constant
- Sounds like a generator
- Overpowers every noise on the site.

- Birds chirping in the understory - bushes by McCain Auditorium / Entrance by McCain Quad.

- Scuffing of shoes on the concrete as student walk by / crunching of leaves on the sidewalk.

Air / humming of the air ventilation system behind McCain / entrance side of McCain Quad. to the side

Exiting of a car engine after it has been shut off (parking circle)

people talking by the parking meters

Roll of car tires on the parking ~~the~~ circle

Flags rustling / metal wire on pole sounds from the flag poles in the center of the parking circle.

Crickets sounding in the shrubs near the South Entrance of the Memorial.

Motorcycle engine passing by on the street (loud!)

Can still hear the hum of the steam system from the far side of the memorial.

Laughter as people hang out in the memorial area.

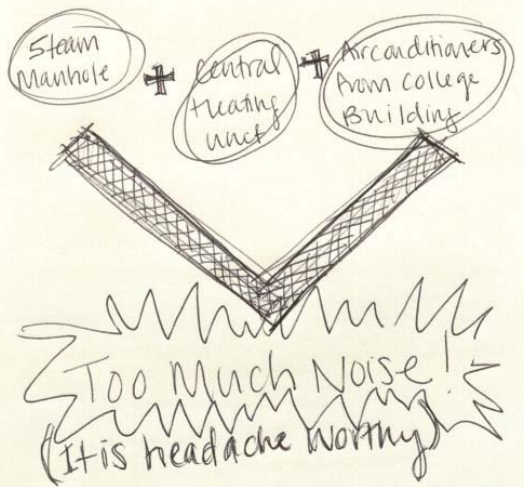
Car / truck engines as they go down the street - interrupts peaceful area.

Foraging of ~~sett~~ squirrels for nuts on the ground near the tall trees of the memorial / ~~central~~ parking circle

Buzz

Hum of the air conditioners / window units of the Fairchild hall.

The squealing of brakes (cars) as it passes by.



J10

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WEEK 1  
WEDNESDAY  
MCCAIN  
QUAD

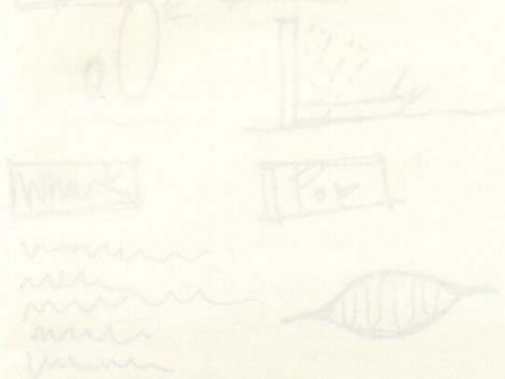
Overwhelming sound of A/C or generator. Not unbearable, but drains out the chirping of the ~~birds~~ birds. There seems to be at least three birds communicating constantly. A police siren just passed behind me. Slow, quiet steps from a student as he passes by with a confused look on his face. Another A/C just turned on behind me - that of Fairchild. As I walk closer to Calvin Hall, its A/C is not the primary source of noise.

A saturated leaf falls from the tree, but its slow descent and subsequent soft landing provided no noise. The gears from a bike strike my ear. A familiar noise. A student walks by with his feet dragging on the concrete path. More students are now out walking. One pulls a piece of luggage on wheels. Why don't they pick up their feet? My ipod just notified me of an alert. It was that sound we have become accustomed to recognize. A photographer takes pictures. His shutter snaps, once, twice, three times.

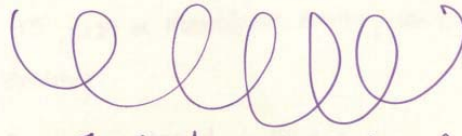
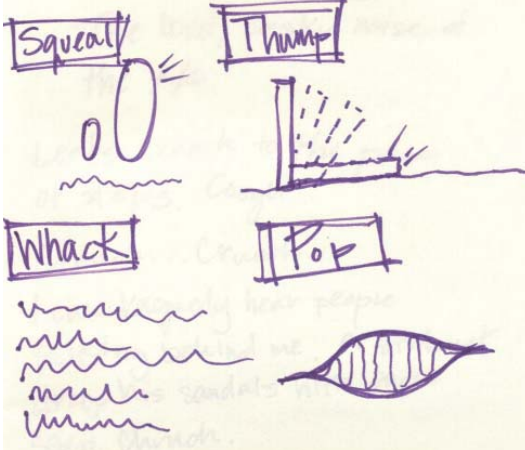
The sound of a page turning. A shutter opens & closes. Another bike grazes by me; the same noise as before. I hear the buckles on one woman's shoes bounce as she walks. Pick up your feet! Finally, a word from someone as they walk by. Now another. The birds aren't alone. A student twirls his lanyard and his keys produce a sound. The central A/C or generator is now pushing <sup>away</sup> all other noises from my ears. I vaguely hear footsteps in the grass. The shutter opens and closes again.

You know that sound of someone popping their neck? I just did that. More sirens to the south this time. Footsteps followed by a loud, indistinguishable noise behind Calvin Hall. I can hear more clearly now the chirping of the birds coming from their look-out on the antenna. A motorcycle, presumably, just passed. Something is sunk to the bottom of my shoe, causing a scraping noise with each stride. More steps in the grass. The birds continue to obnoxiously chirp.

Another motor vehicle passes by with its modified exhaust system. It's loud. So is the girl who just passed by on her cell phone. "Ouuuuu"



Week 2  
Thursday



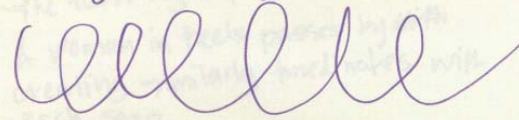
The loud, pesky noise of the A/C.

Leafs crunch to the pace of steps. Cough.

Crunch... Crunch...

I can vaguely hear people talking behind me. A student drags his sandals with each step. Crunch.

A keychain dangles from a backpack causing a chiming noise



The A/C cannot be toned out. It's just a monotone noise, never-ending.

Crunch... Crunch... Crunch

Another student walks by with their key chain in hand: It chimes with each step.

A student talks aloud as she passes me.

Another walks by without a single noise.

Sometimes a gust of wind will swoop past my ear, causing a deep muffled sound.

I hear a shuffling sound. could be the turning of pages.

A woman in heels passes by with creating similarly-toned notes with each step.

Crunch... crunch... crunch...

More people pass by, each with a distinct tone and pattern that accomodates their steps.

Birds chirp in the distance.

~~Crunch~~

Crunch...

More dragging of the feet on the concrete.



The A/C is still providing background noise.

A car is put into 'park'

The keys jingle.

A car door slams shut.

Now the other door

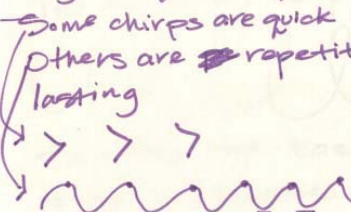
Feet drag past me - slowly



crunch...

Birds continue to chirp in a high-pitched tone. But the tones vary in length and pattern.

Some chirps are quick and loud. Others are ~~re~~ repetitive and lasting




I hear a person's voice. It has a slight accent.

More foot steps, this time quicker.

////


A group of people pass:  
 talk - quietly  
 walk - ~~even~~ quieter.  
 Keychain produces a jingle w/ each step.

I hear a motor vehicle pass  
 it's not loud, but it's apparent



Leaves create a noise as the wind blows through.


The A/C is still the primary noise



Tap, tap, tap. Each step of the heel produces the same sound as the previous step.

Birds chirping

A guy spits. It's quick and monotone.

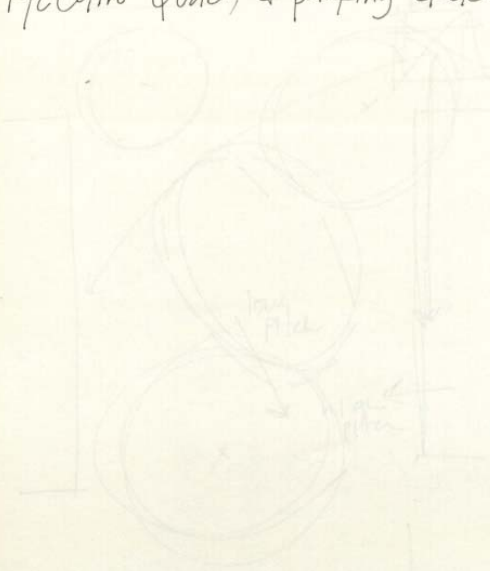


More steps on the concrete.

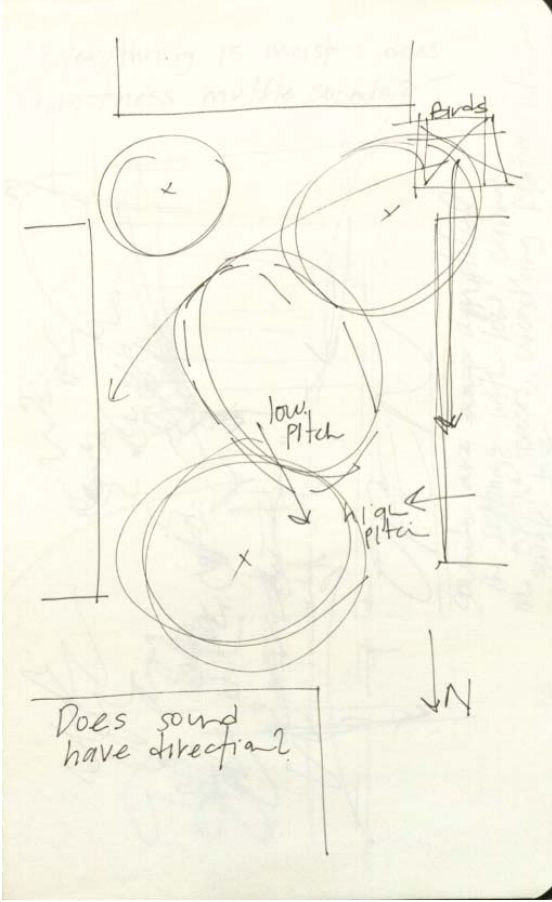
J11

Please do NOT take this journal home with you. Return it to the researcher immediately following each session. Thank you!

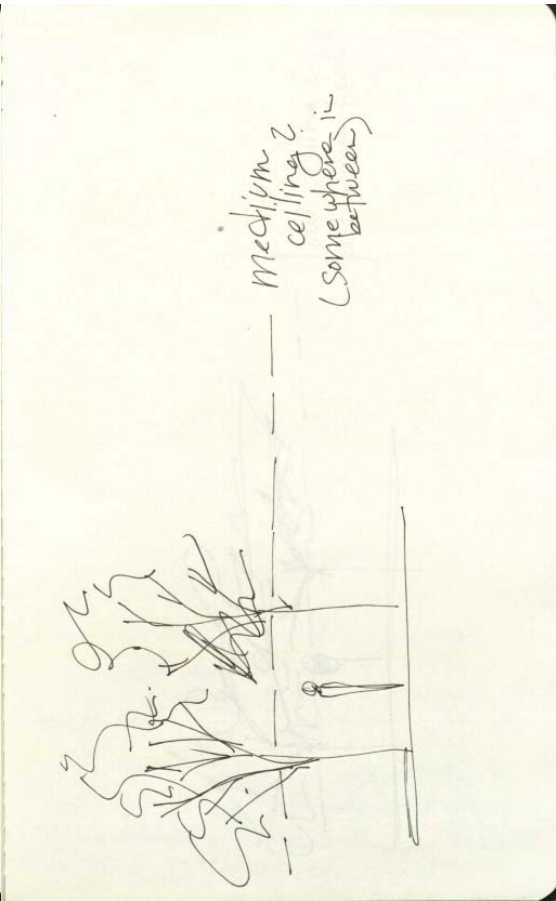
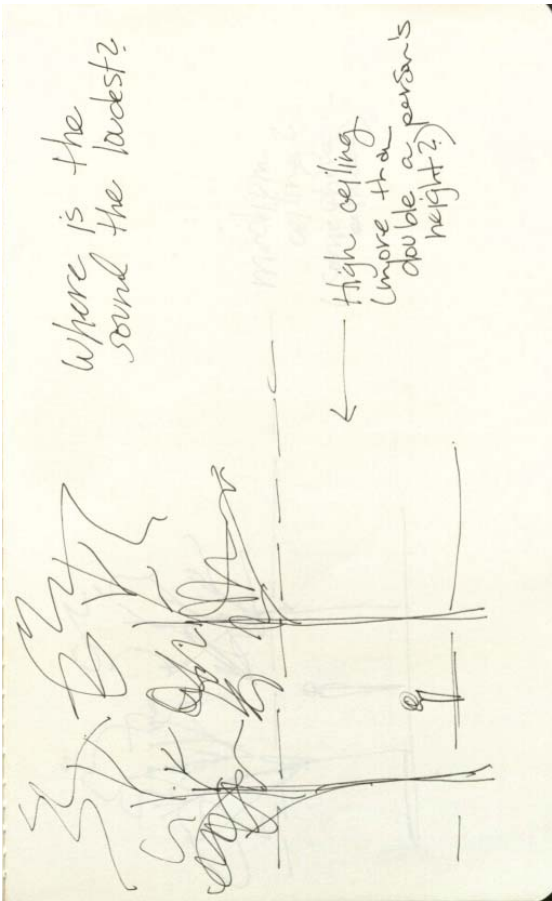
Week 1  
 Wed.  
 McCain Quad, & parking circle



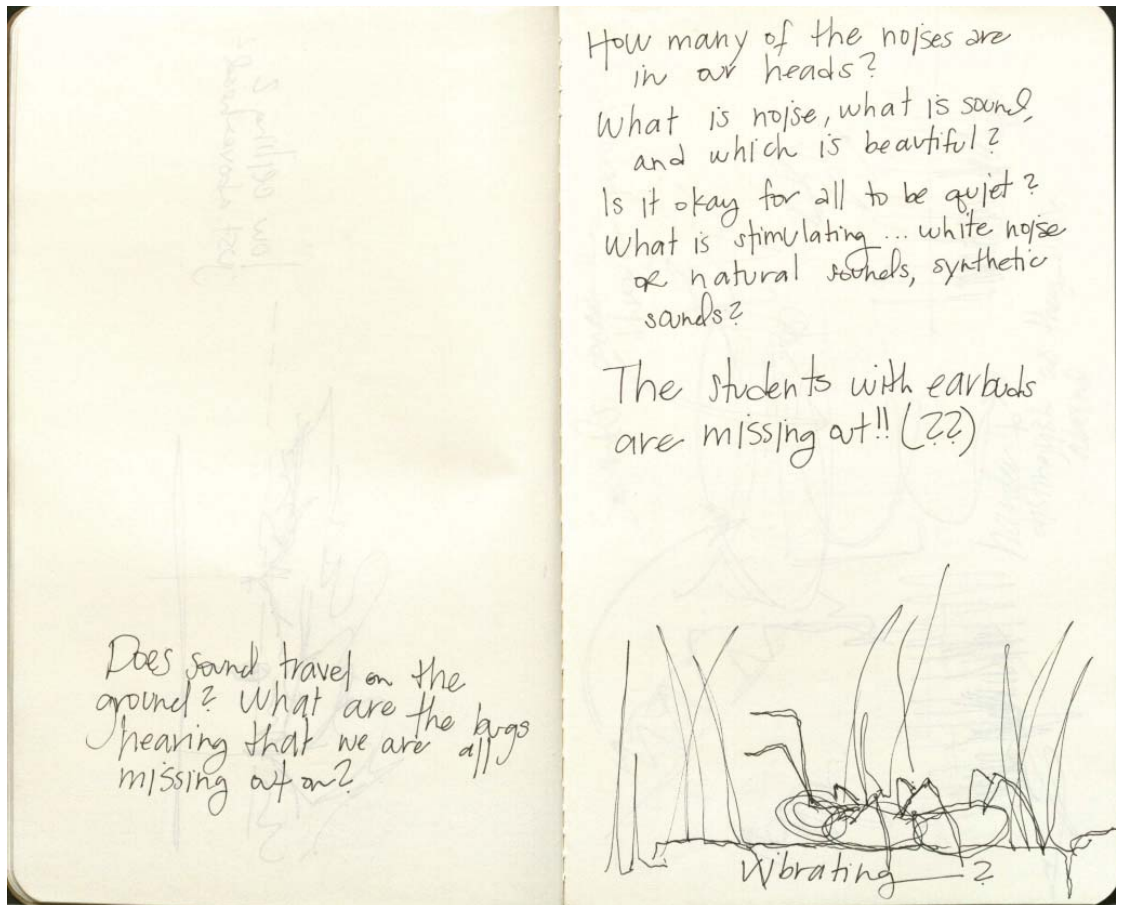
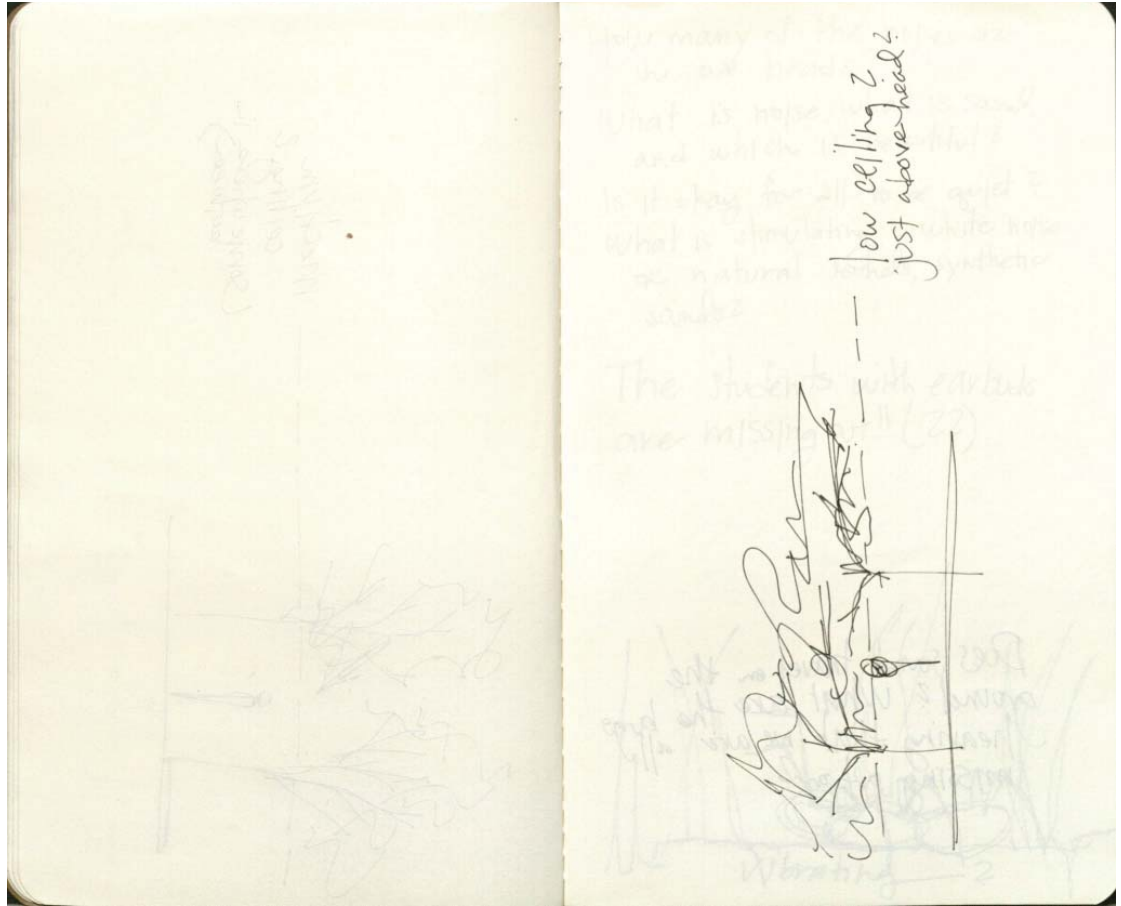
Does sound have direction?



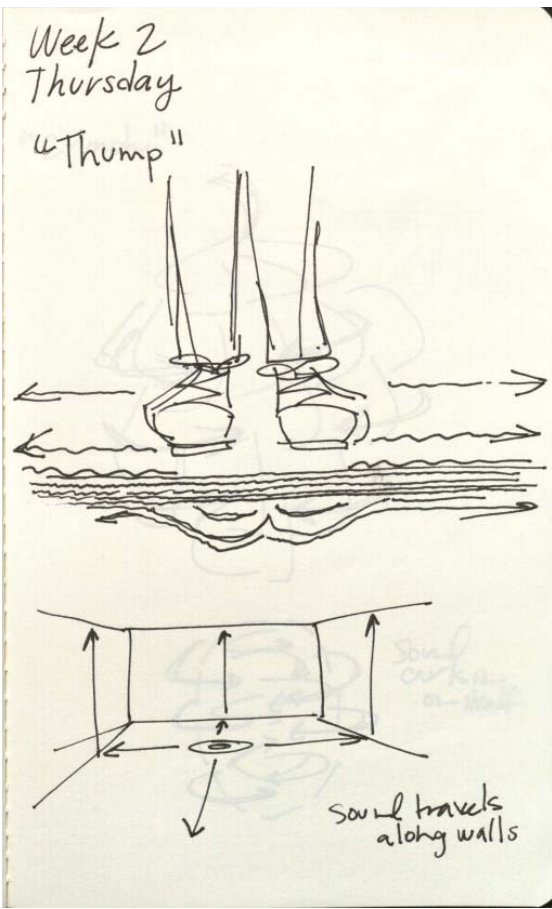
Does sound have directional?

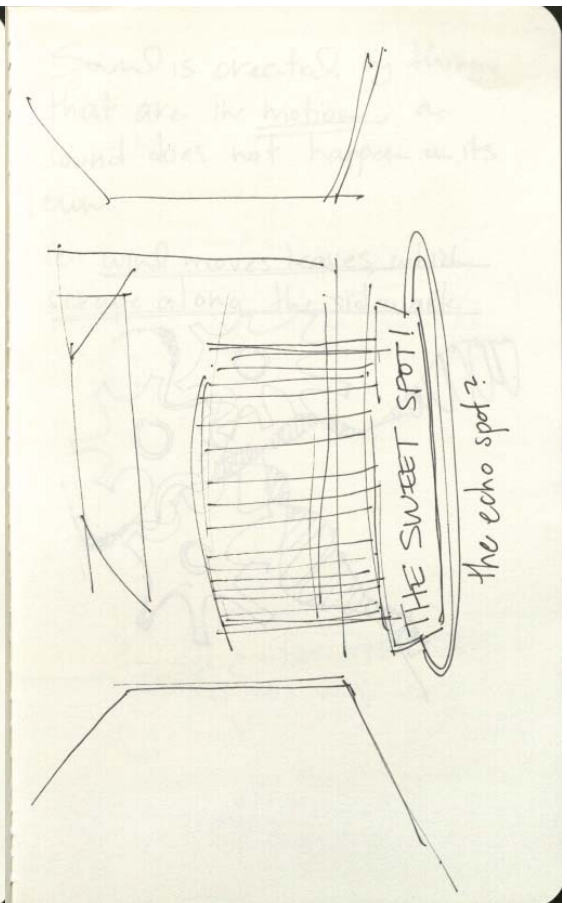
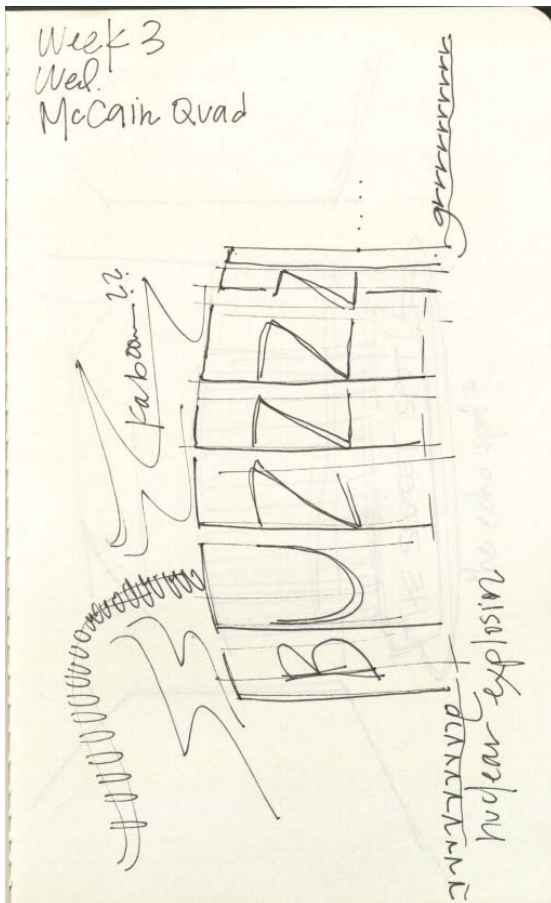
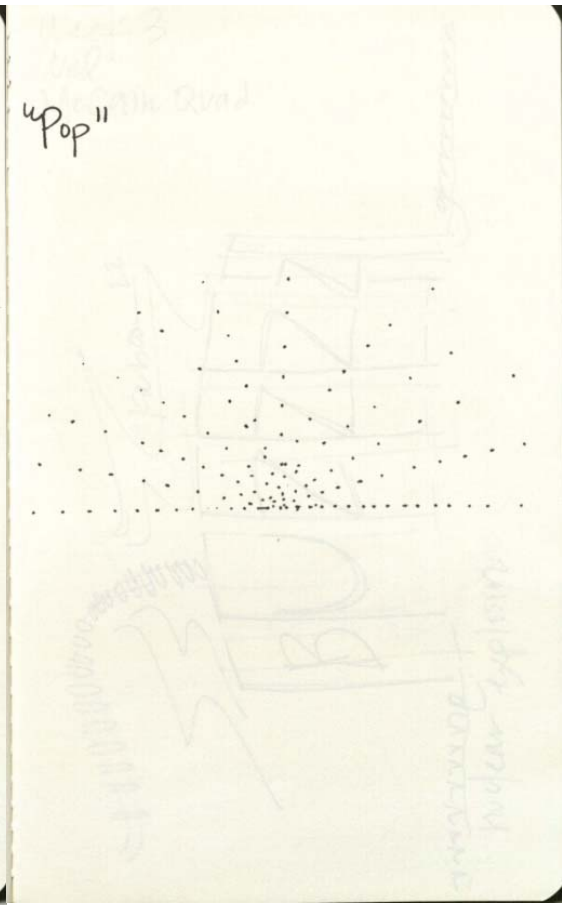
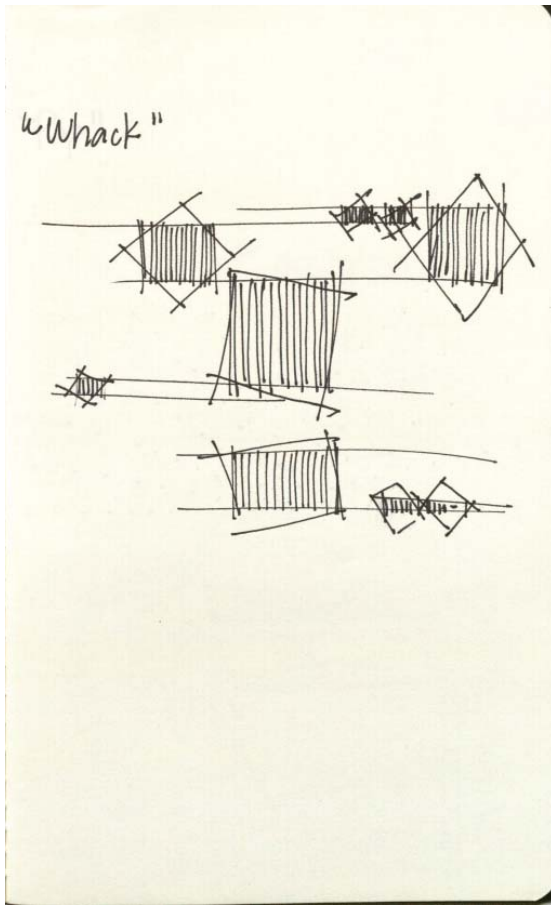


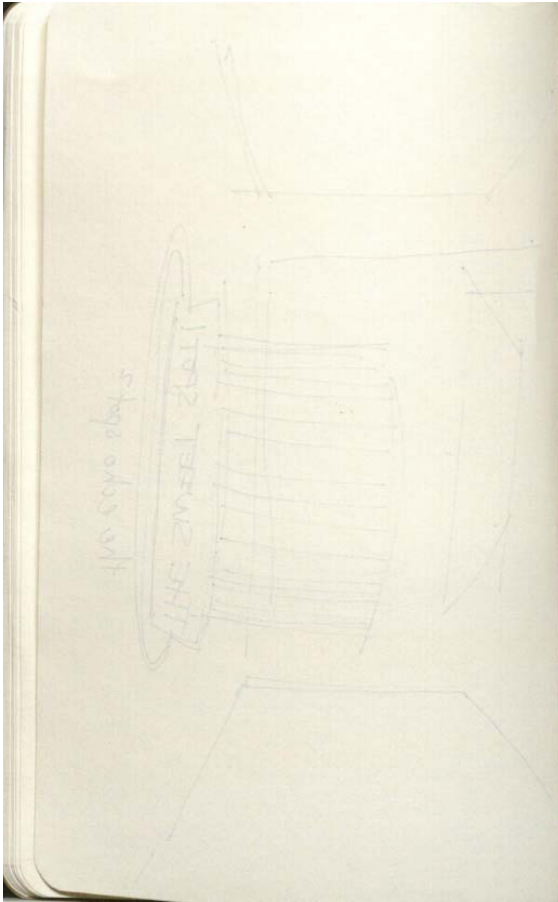




How many of the notes are in or beside?  
 What is noise, what is song and which is beautiful?  
 Is it okay for all to be quiet?  
 What is spiritual... white noise or natural notes, symbols, sounds  
 The students will continue to be missing out!!

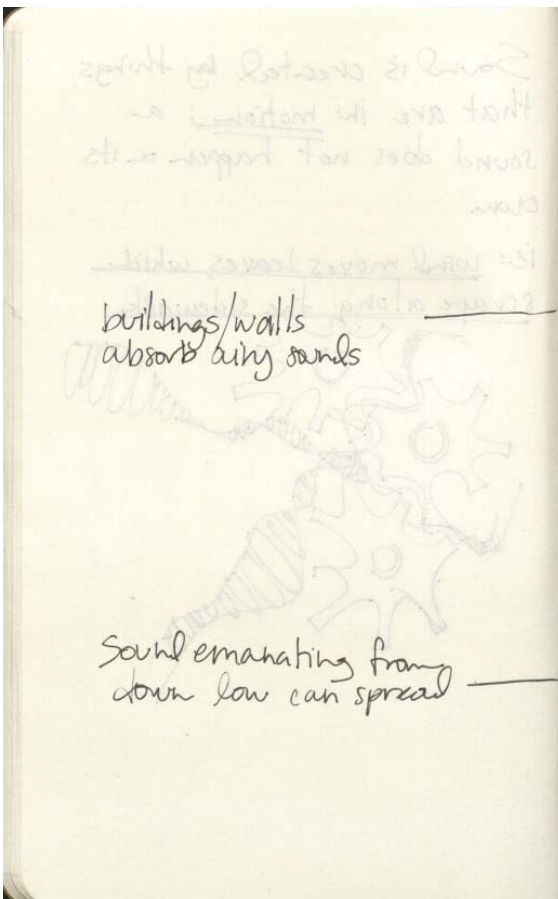
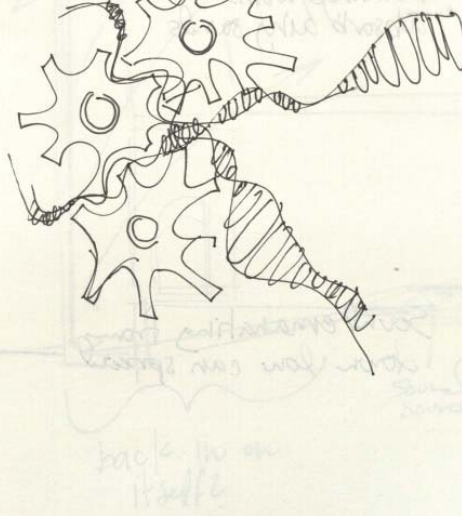






Sound is created by things that are in motion; a sound does not happen on its own.

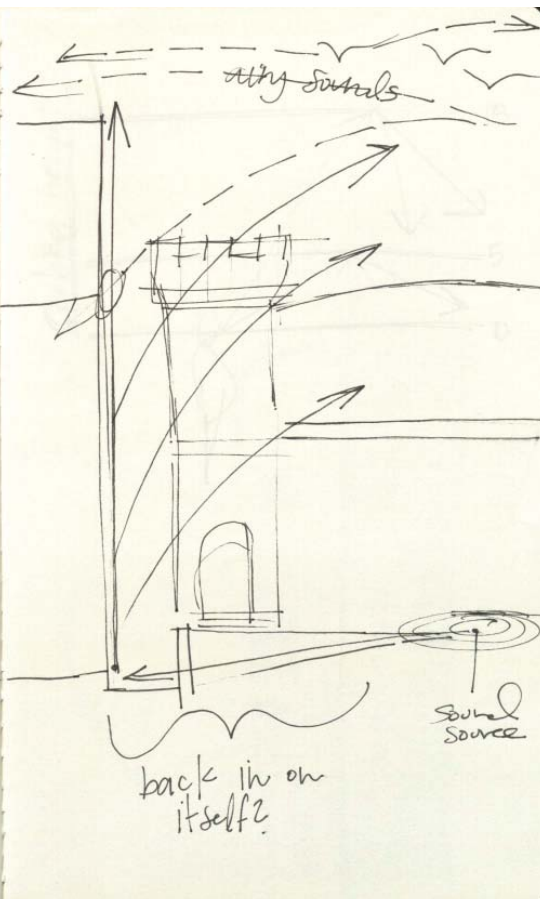
ie: wind moves leaves, which scrape along the sidewalk.



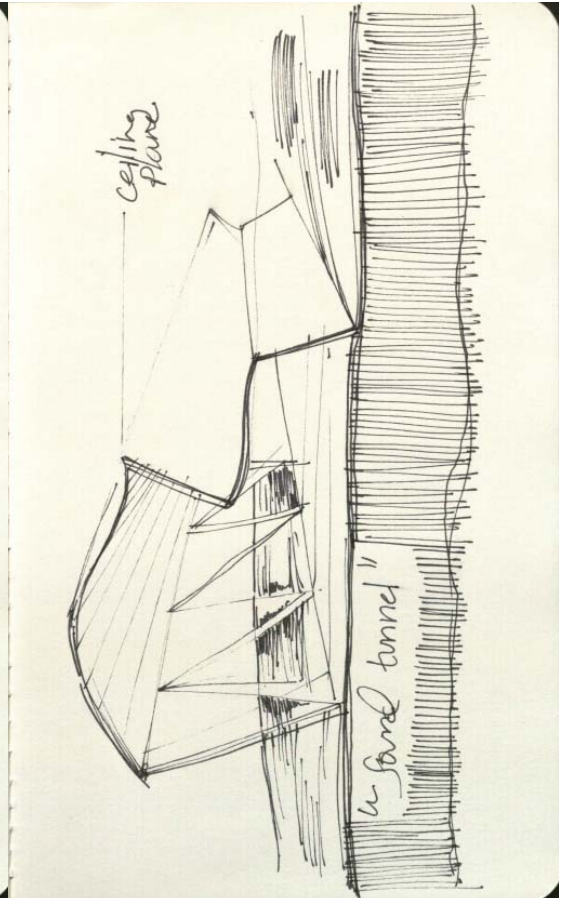
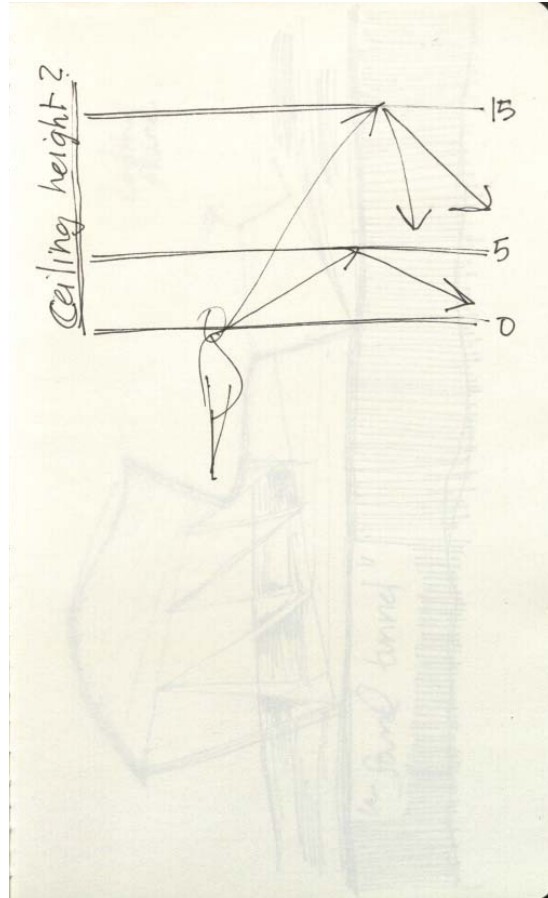
Sound is created by things that are in motion. Sound does not happen on its own.

buildings/walls absorb any sounds

Sound emanating from down low can spread



back in on itself?



J12

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no wind, the plants are quiet

Natural noise vs. synthetic noise

- foot steps
- leaves rustling
- talking
- automobiles
- airconditioning
- walkie-talkie

in the quad there is an  
overwhelming, synthetic, constant  
hum from all angles. It  
surrounds me



J13

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WEEK ONE

WEDNESDAY

McLain Quad + Parking Circle

BIRD WHISTLING IN TREE

MULTIPLE MECHANICS

RIGHT + LEFT OF ME

RUMBLE, BUZZ, CLANK

DIPPING RAIN FROM TREES

MORE BIRDS

SIRENS TO SOUTH, 5 seconds

The mechanics are LOUD.

- makes it difficult to hear  
anything when standing next  
to it

ringing in my ears as I get  
further away towards Blument

CARS + automobiles are splashing in  
puddles on Blument

more birds → different calls  
Anne Denney shuffling feet



Nichols Hall doors opening  
and closing followed by footsteps

People coughing  
more footsteps passing me

Cars echo of McClain

Squeaking footsteps, loud trucks

WHITE NOISE  
FROM ANNOYING  
TRANSFORMER

- you can hear  
it all over the  
quad

More squeaking footsteps  
Crackling wood, louder winddrops

Dragging a suitcase on concrete  
Air blowing up from vents

• I hear more crickets around  
McClain dropoff than birds

• Bicycle clicking down sidewalk

Footsteps

Car Tires rounding a curve

Bicycle tires down hill

Slamming fan away...

Flip Flops Flippin'

CRICKETING!!!

High pitched sound... don't know  
Motorcycle rev maybe?

FIRST VOICE → little kid

More voices

people getting out of class

CRASH?

Brakes squealing, honking

Speeding up hill

MORE CHATTER

Speeding up in cars

Shuffling feet

Drums? Roops on Anderson?

Chinese Language

Jangling trees back to  
loud transformer fronts

- McClain Quad is

L O U D

Sirens

Squirrel snickering

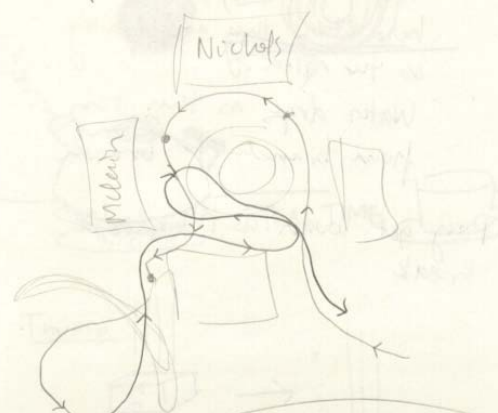
Construction? or annoying  
transformers

Yawn

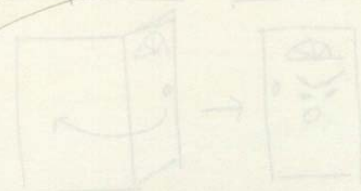
BIRDS

↳ this one so weird  
Sad with melancholy

Patterns of Walk



ROAD



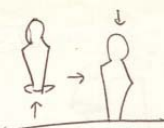
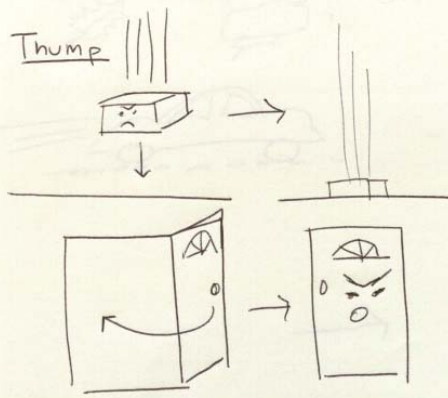
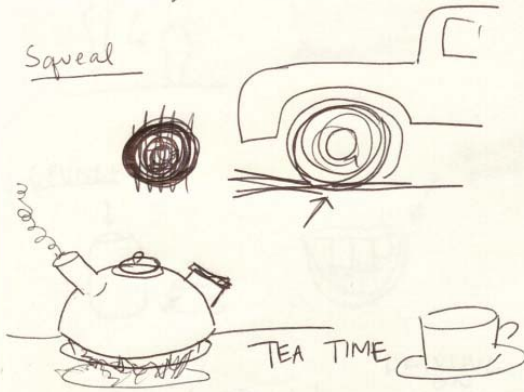
When I close my eyes,  
Birds + Squirrel sounds are  
more distinguishable

- Individual, you can  
here where they are moving  
in the trees -
- Water drops as they run  
from branch to branch

They get louder as the clouds  
break

WEEK 2, THURSDAY

Squeal



RED  
ANGER

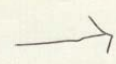
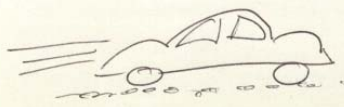
CRUNCH



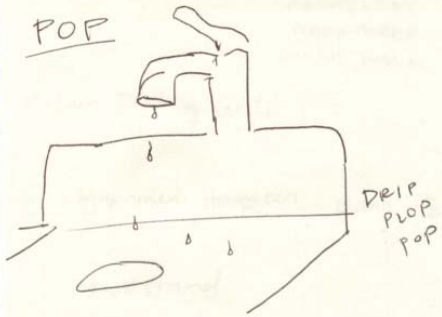
Crunching  
Food



DRIVING  
ON  
GRAVEL



POP



DEEP PLOP POP

WATER!

WEDNESDAY  
WEEK THREE  
SOUND WALK

McCain Drop off Circle

Hammer, Hammer, Bang, Bang

Kickstand

Stomp stomp, shuffle

jingle jangle

"make her feel like an idiot too."

clap clap clap

shuffle shuffle

Air conditioners constant

Traffic

Construction



Leaf Blower

Door Slam, Jiggle

Feet shuffling


Throat Clearing

Walk

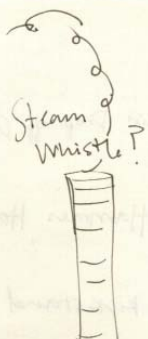
Shuffle

Walk

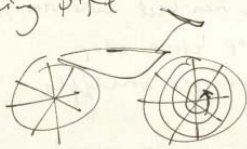
Lawn Mower



Steam Whistle?



Squeaking Bike



Leaves Blowing in wind across the concrete

Happy conversations in the sunlight

Trees rustle in the fall wind

CONSTANT WHITE NOISE

what is white noise made up of?

- Cars humming
- Air conditioners
- Breezes
- Leaves

Sounds like cymbals...

major jean shuffling

Someone running up hill

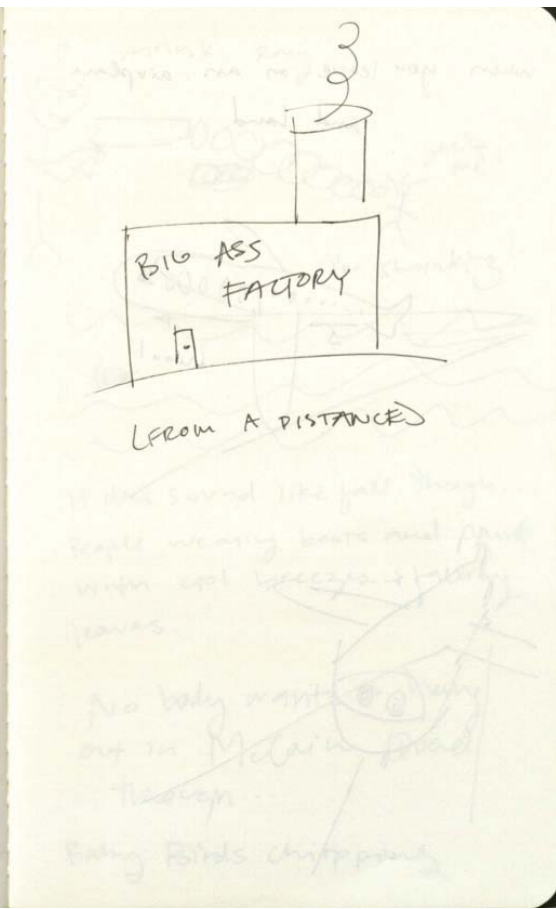
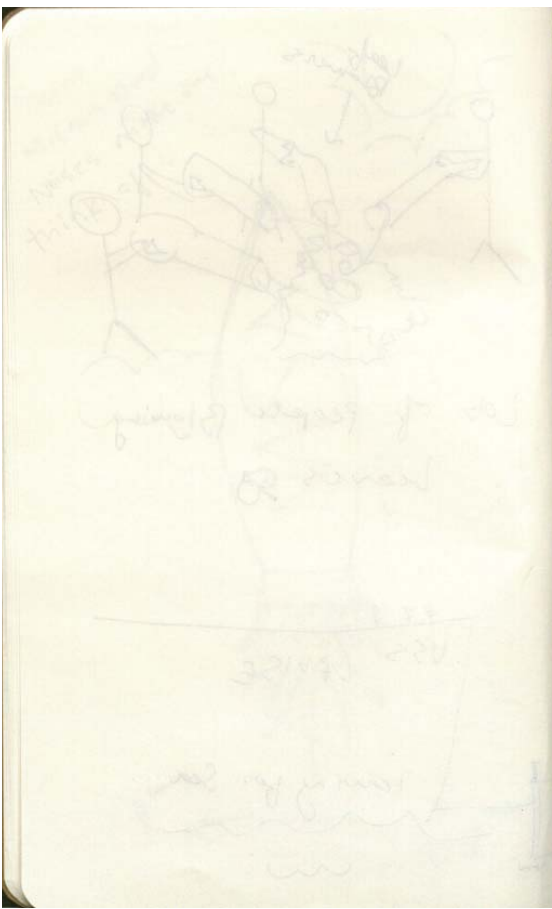
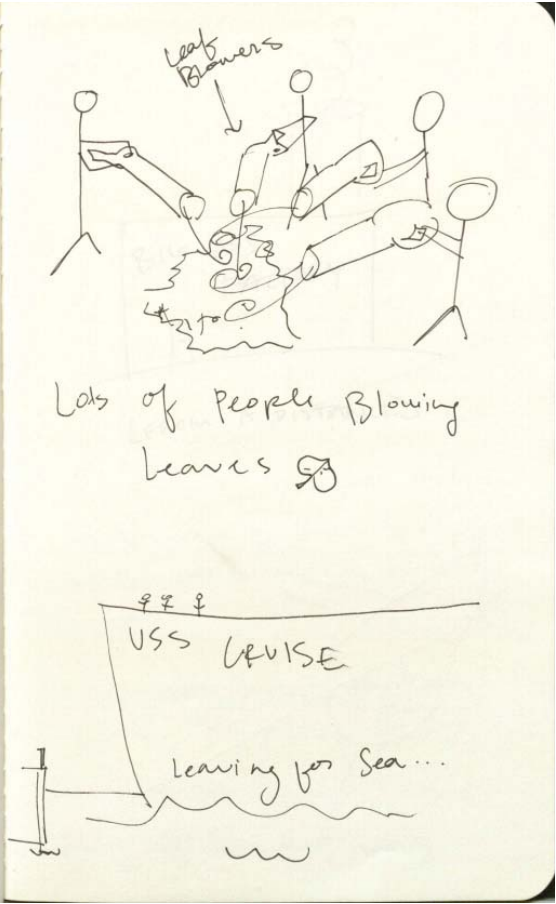
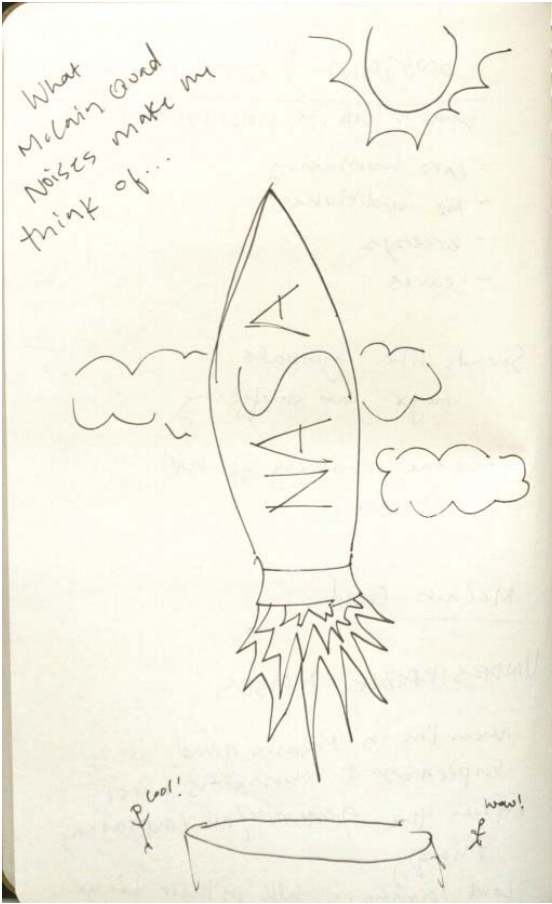
- STRANGE

McCain Quad

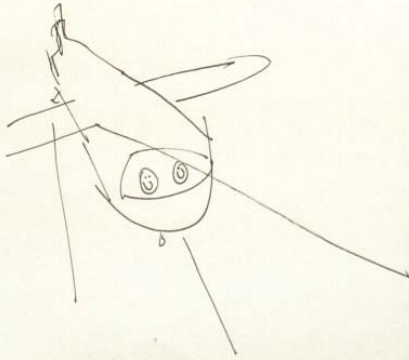
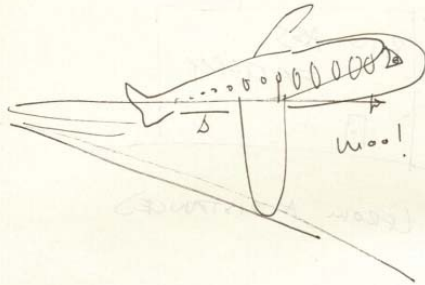
UNDESIRABLE NOISES

when I'm in McCain quad, it is unpleasant, obnoxious noise from the generator/air conditioning thingy...

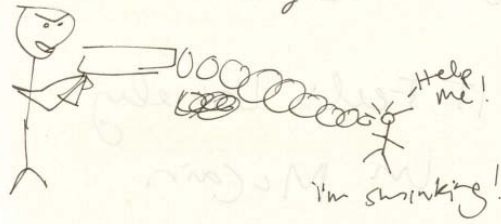
- Loud Janitors talk in their Lingo.



when you leave on an airplane  
and land



a shrink ray



It does sound like fall though...  
People wearing boots and pants  
with cool breezes + falling  
leaves.

No body wants to hang  
out in McCain Quad  
though...

Baby Birds chirping

CRUNCHING LEAVES

IT Feels Lonely  
in McCain  
Quadrangle

J14

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WEEK ONE // WEDNESDAY // MCCAIN QUAD, PKNG CIRCLE

30 MIN:

DOCUMENT ACOUSTIC OBSERVATIONS

high pitch came in and out of hearing  
low grumble of some air cond unit

right next to my ears clnk the metal on my earrings as I turn my head

shoes on wet pavement  
rough grim scrapes on concrete but

AC unit in window purrs like a cat or a heart beat

CHIRP of BIRD cuts in

faint chirping through hum of AC units  
whine  
grumble  
purr  
consistent high bug hum cuts in

scrapes of passers on pavement

standing next to AC the grumble now sounds like a whoosh of wind or a stream as air is pushed through

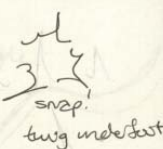


(more birds)  
spikes in pitch more frequent now

scrapes  
overlaps

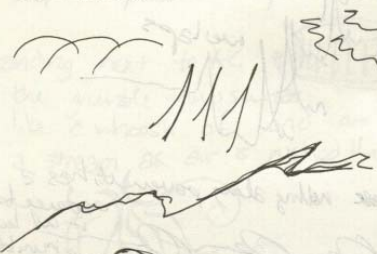
suitcase rolling along pavement has a resonance to it will leap  
grumble or grate  
then spikes in volume as it passes and control its

BIRDS  
 motorcycle hum hum hum  
 hum hum hum hum hum  
 BIRDS





3  
4  
snap!  
twig underfoot

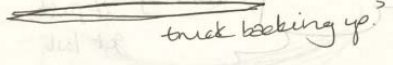
... how in the world do I draw  
 bird calls??



carbon

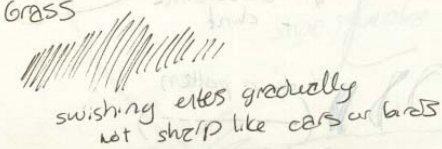



car alarm



truck backing up?

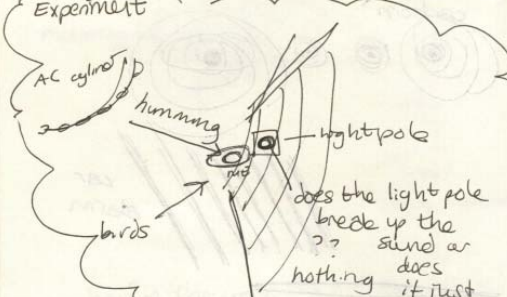
GRASS



swishing ears gradually  
 not sheep like cars or birds


humming still going...

Experiment




AC cylinder  
 humming  
 birds  
 light pole

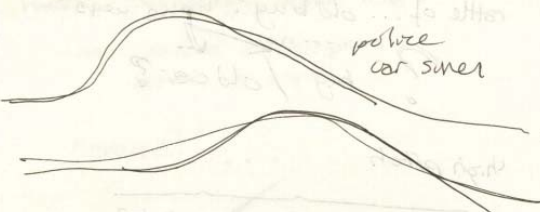
does the light pole  
 break up the  
 ?? sound or  
 nothing does  
 it just  
 get lost  
 in the hum of  
 everything else?



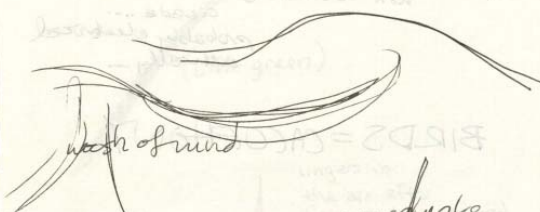
clink clink  
 clink



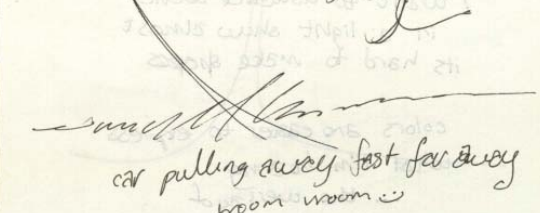
chirp pattern



produce car siren



washed of mind



shoe squeaks

car pulling away fast far away  
 vroom vroom :)

rattle of... old bug? <sup>haha ways</sup>

? -- not <sup>bug / old car?</sup>

high pitch

non wavering cricket?  
acade...  
probably electrical  
actually...

### BIRDS = CACOPHONY

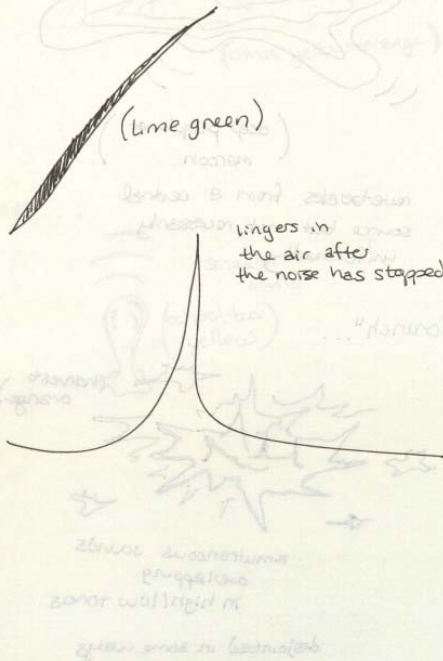
I want to visualize sound  
in a light show almost  
its hard to make spaces

colors are easier to express  
what I'm hearing  
... the way of  
dim backgrounds  
bright interrupting notes  
notes that enter slowly  
and crescendo or  
drop off

WEEK 2 || Thursday || Season 106 c

• sound sources or descriptions  
- keynote vs signals

"squeal"



"thump"...



(deep purple or maroon)

reverberates from a central  
source but not necessarily  
uniformly

"crunch"...

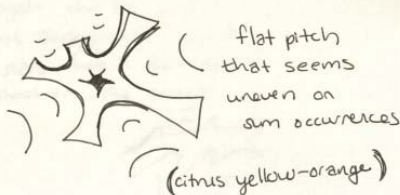


(harvest orange)

simultaneous sounds  
overlapping  
in high/low tones

disjointed in some ways

"whack"....



flat pitch  
that seems  
uneven on  
some occurrences

(citrus yellow-orange)

"pop"...



singular burst of  
sound

(school-bus  
yellow)



clarity felt  
 concrete world  
 no human  
 consciousness  
 (aggressive-wildly alive)

low wash of air  
 is an undertone to high pitched  
 grung of AC

Birds remain still

birdcalls

AC

whoosh of air

itches  $\Delta$  as I walk  
 around the nut.

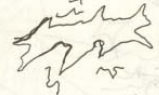
fan thing by manhole  
 almost like a breathing  
 to its consistent del pitches

overpowers all but  
 whooshing sound

I can barely hear the sounds  
 I normally make - such as  
 swishing jeans  
 footsteps  
 hair swish

WEEK THREE // WEDNESDAY // MCCAIN QUAD  
 PANG CIRCLE

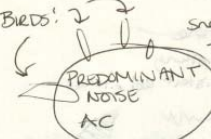
once again the AC unit is  
 the first thing I notice but to  
 start there is the scrape of  
 shoes on the cement



click click of a participant's boots  
 almost like a pop



Birds:

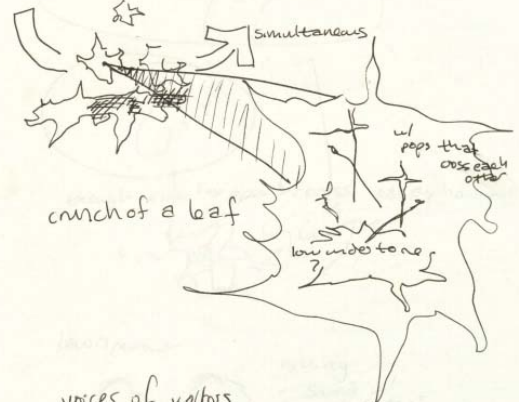


sneaks in occasionally  
 to the majority of  
 my attention



enter ac w/ + starting dip

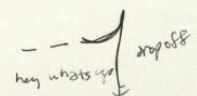
the consistency is unpleasant...moving on...  
 walked through leaves on the path  
 - combo of shoe grate & crunch

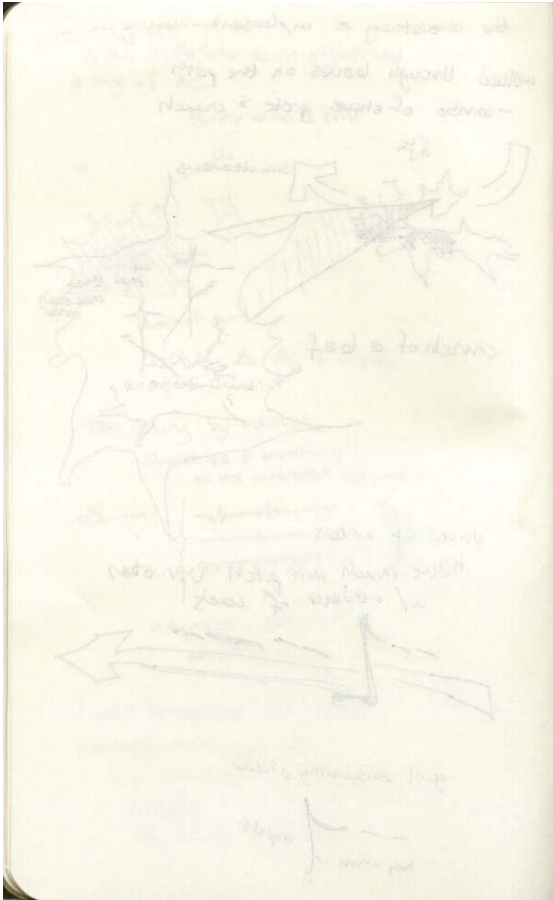


voices of walkers  
 have much more pitch variation  
 w/ cadence of words



girl answering phone





Birds  
same as human voice  
→ variance

though over time becomes cacophonous

lawnmower

nothing same at grate to +

(2c)

sometimes I wonder if the sound of the whoosh is just me trying to listen and picking up wind blood in ears? more accurate?

car zooming up in background seems more like an addition to the mixture than a separate noise

wind picks up and pick of lower undertone changes

this time car seems outside

also internal noises... my stomach is grumbling that originates w/in me

car's on road

AD by noticeability

J15

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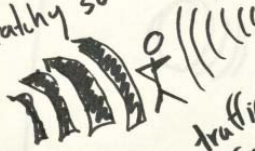
Week 1 Wednesday McCain

list pictures diagrams

large central air conditioner

air conditioner from Calvin hall

scratchy sound when people walk



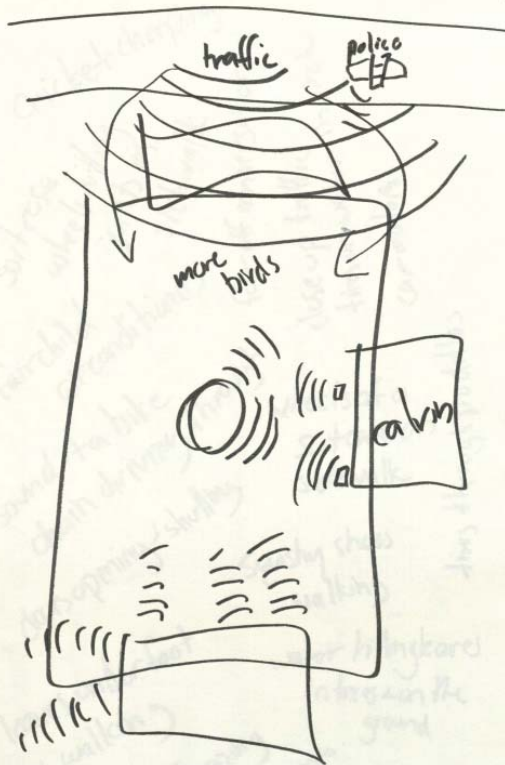
traffic, wet tires from road

police siren  
birds in trees

squirrel jumping around

traffic, but only on ends of Nicholes

more birds  
coughing of someone nearby



cricket chirping

suitcase wheel hitting joints in sidewalk

fairchild air conditioners

fair of conversation  
close up traffic in row  
tires on water in row  
car motors

sound of a bike chain driving through doors opening/shutting

wheels of a suitcase on sidewalk

leaves under foot as walking

Squishy shoes walking

water dripping from trees onto pavement

water hitting leaves in trees on the ground

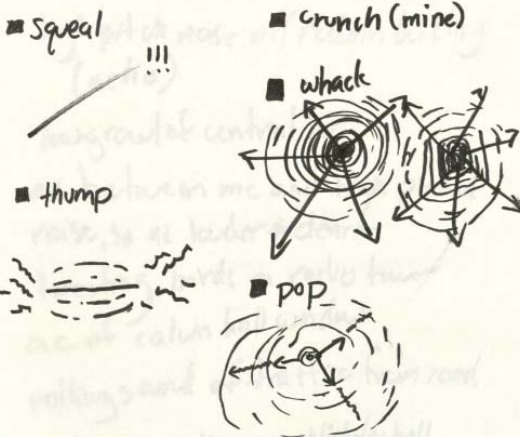
tires through puddles

another fairchild ac unit kicking on umbrella flopping in a man's hand  
 deep of a car horn myself breathing deep at times  
 cardoor shutting high pitch car engine  
 bike chain Fairchild ACs again  
 far off conversation (some people on a phone) squicky shoes again  
 laughing gears in a car shifting  
 end of an umbrella tapping the ground  
 keys jingling on a belt

echo of McCain AC off nearby tree  
 echo of several ACs off Calvin Hall  
 feet on concrete  
 coughing again  
 door opening & closing

guy passing by in grass (feet against grass)  
 Rachel stretching her back against her hand  
 laughing  
 yawning  
 loud McCain AC (Big One)  
 birds

Week 2 Oct 4<sup>th</sup> Thursday 106C Seaton Hall



Oct 10<sup>th</sup> 2012 McCain Quad

high pitch noise off McCain building (echo)  
 low growl of central ac  
 ac between me and high pitched noise, so ac louder & clearer  
 tweeting birds on radio tower  
 ac of Calvin Hall window  
 rolling sound of traffic from road  
 a thump noise near Nicholas Hall  
 some high pitched noise, but now seems to be near fairchild  
 leaves under foot  
 maintenance worker putting ladder in truck

high pitch noise is a pump in the center of the quad, that's why I couldn't pinpoint it

sound of guy walking passed on concrete (scrapsand)

sat in same place five minutes near McCain, only hear pump, middle ac, + roar from road

I sneezed, and sniffing, but in a manly way

doors closing at McCain  
guy talking on phone

tapping on flag poles  
car doors opening & closing, kids talking  
beeping of door stocking  
quarter hitting my ground



tapping of little girl walking on wall

feeding the meter

people talking in memorial  
cars moving on roads (low engine noises)

wind rattling pine oak leaves  
single leaf blown around concrete (scratchy rattle)

motorcycle in the distance

bicycle chain

people talking & laughing  
can hear my own steps clearly once away from ac.

roll of tires on asphalt

squeaky shoes on concrete walk  
motorcycles high pitch in the distance

lugging engine noise of a diesel engine

wind against my ears

music of passing car

high pitch wail of bike tires going down hill

opening & closing of car doors

high heels on pavement

gingle of keys on belt

ac along fanhild's south side

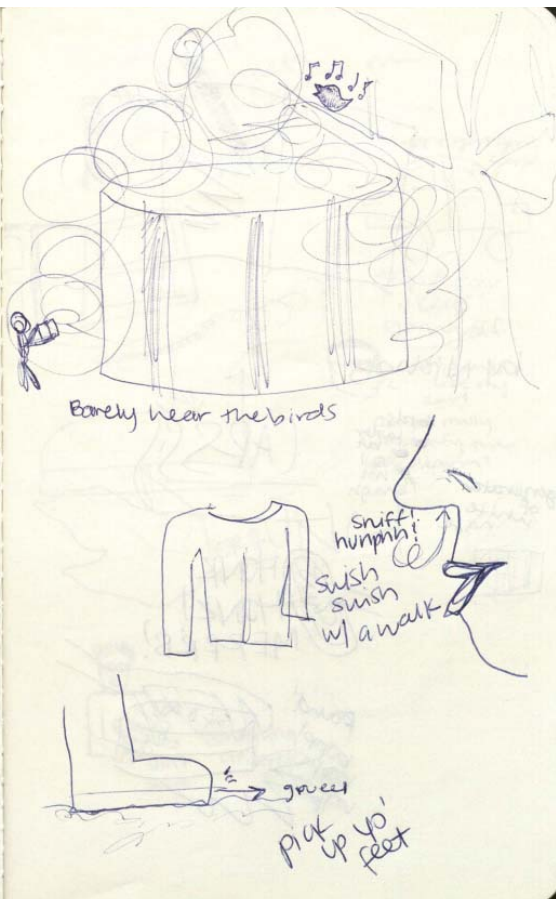
people talking on phone

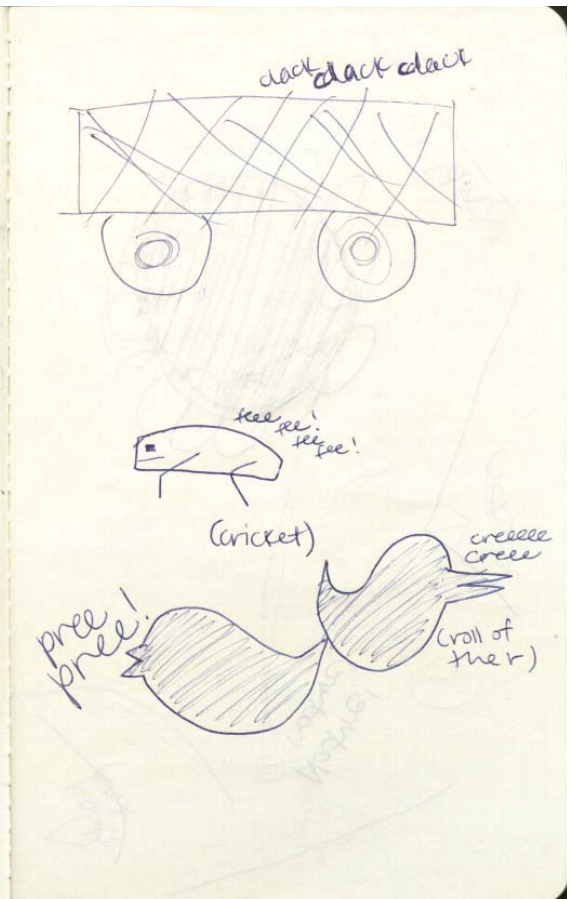
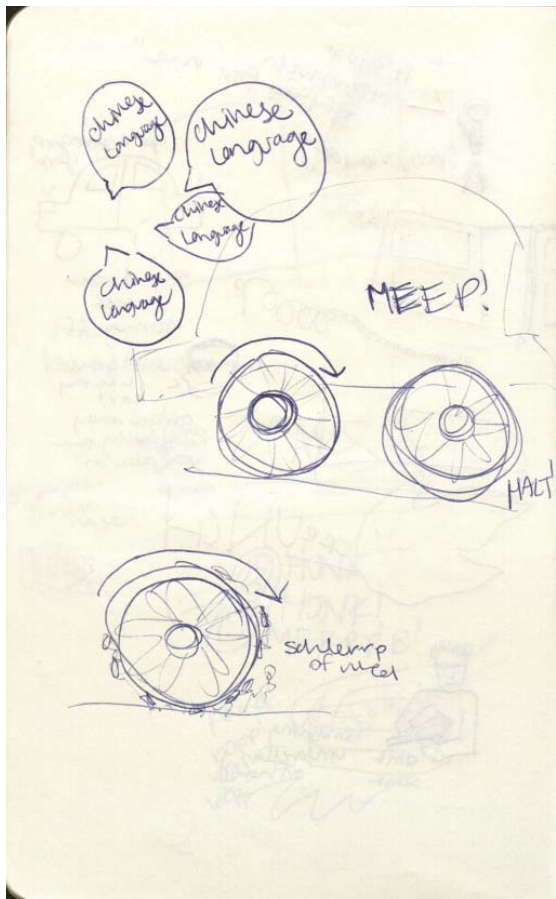
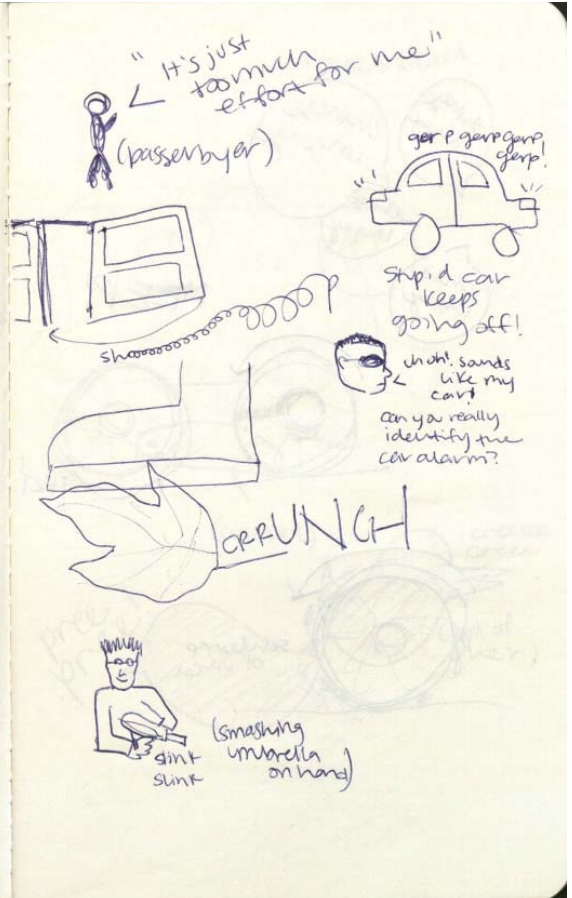
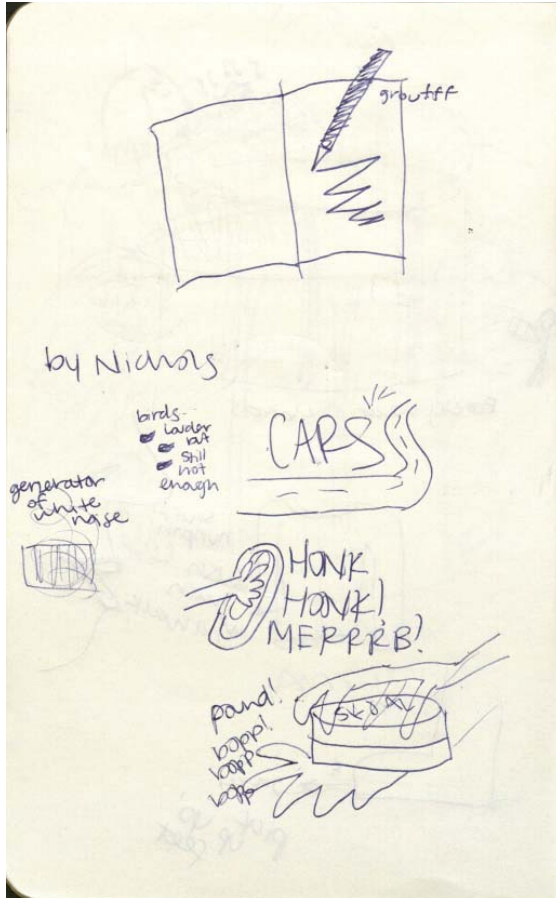
it's not a pump, it's a damn fan  
leaves crushed under foot

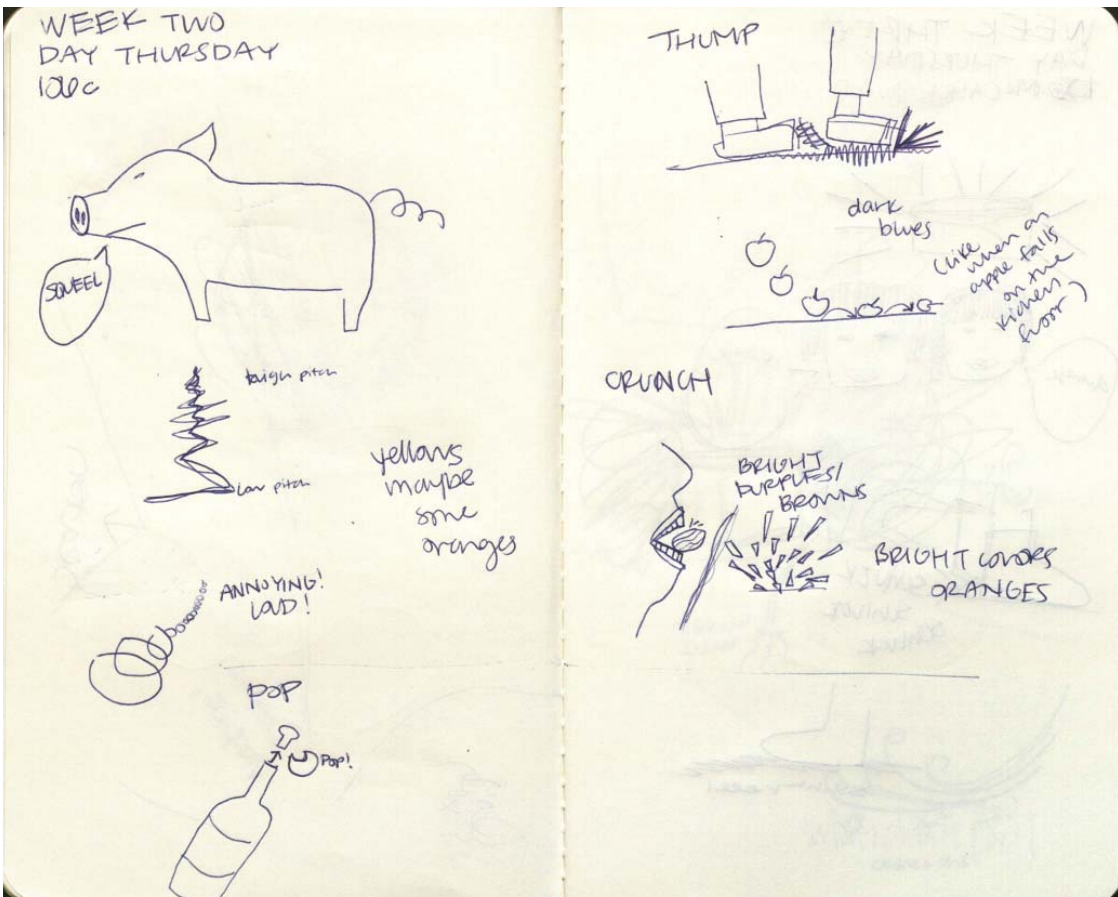
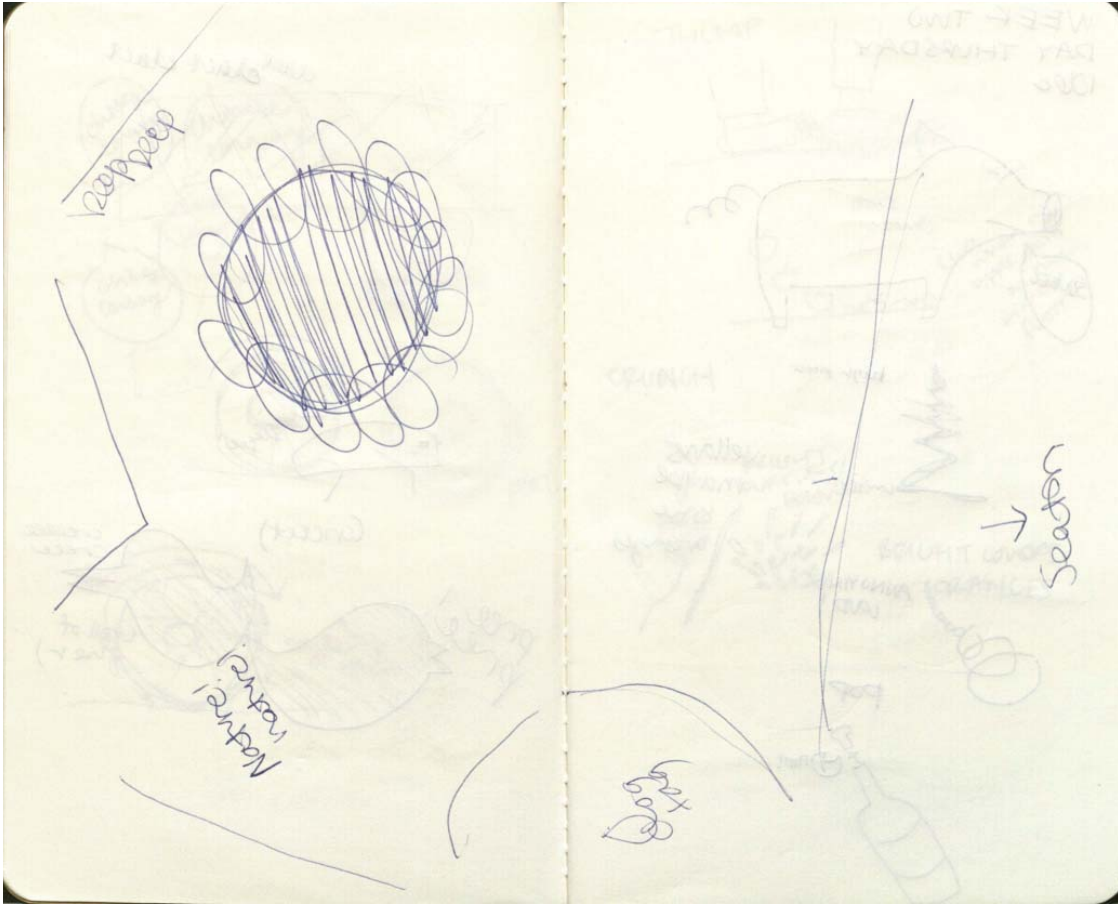
J16

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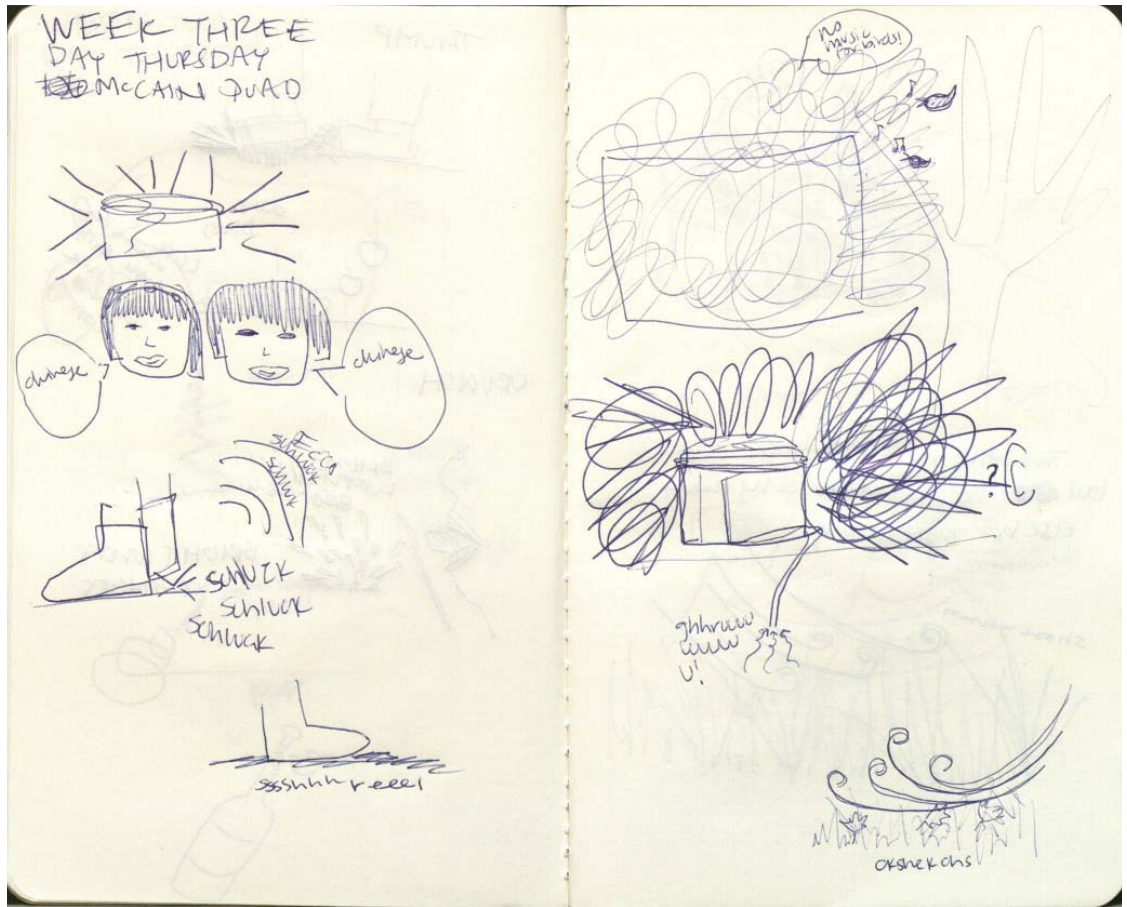
WEEK ONE  
DAY WEDNESDAY  
MCCAIN QUAD / PARKING CIRC



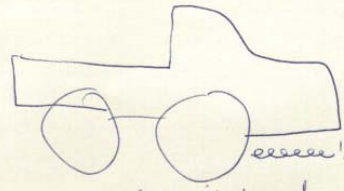




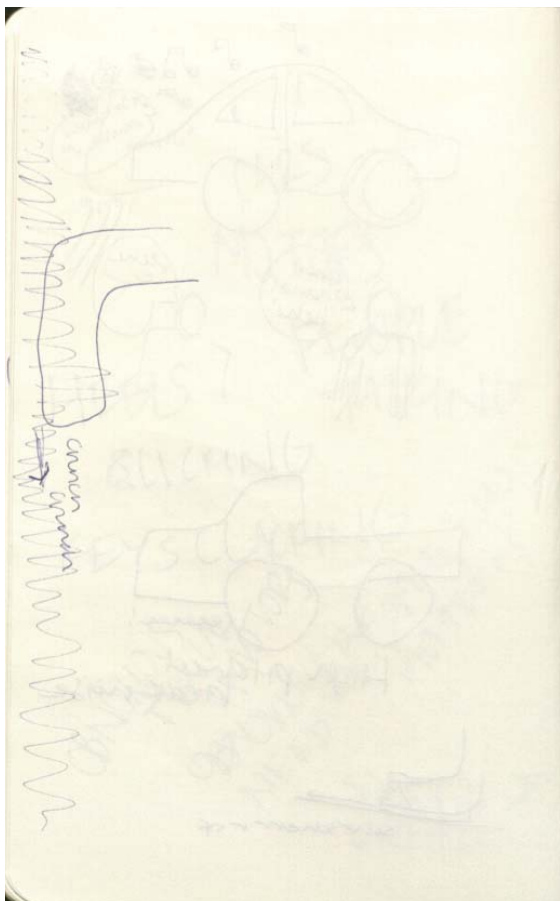




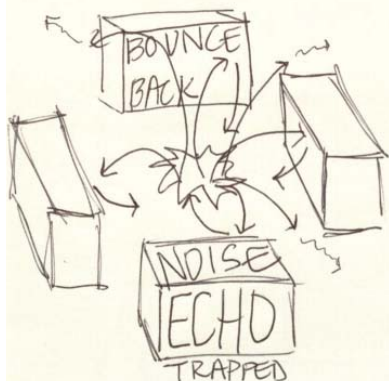
sniffle\*  
 CARS  
 MOTORS  
 PEOPLE  
 TALKING  
 HEELS  
 SLICKING  
 KEYS CLACKING  
 OBNOXIOUS  
 TRUCK  
 MOTORS  
 OBNOXIOUS PEOPLE WHO  
 NEED NEW  
 MITTLERS  
 SPEED OF  
 ENGINE



High pitched  
 break noise





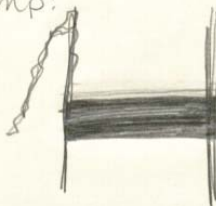


Week 2  
Thursday

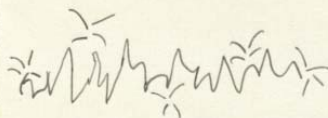
~~ignore this~~  
Squeal:



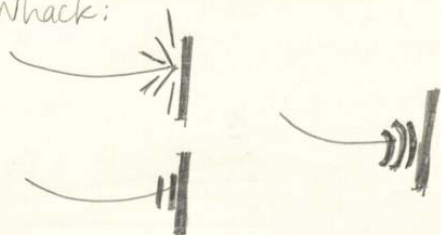
Thump:



Crunch:



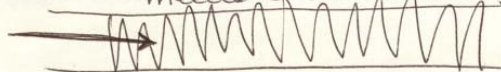
Whack:



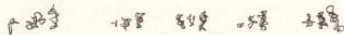
Week 3  
Wednesday

~~ignore this~~

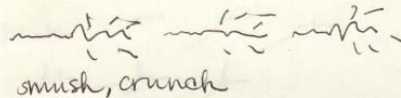
vacuuming noise - constant but overpowering  
meeeecccccccccccccccccccc



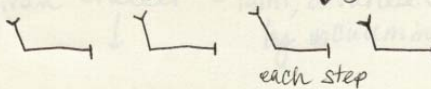
keys clanking and jingling



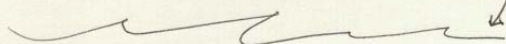
leaves crunching/crackling under foot



grasswishing from stepping/walking

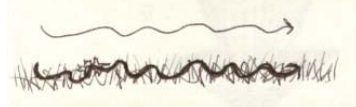


each step

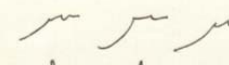


steps shuffling all together

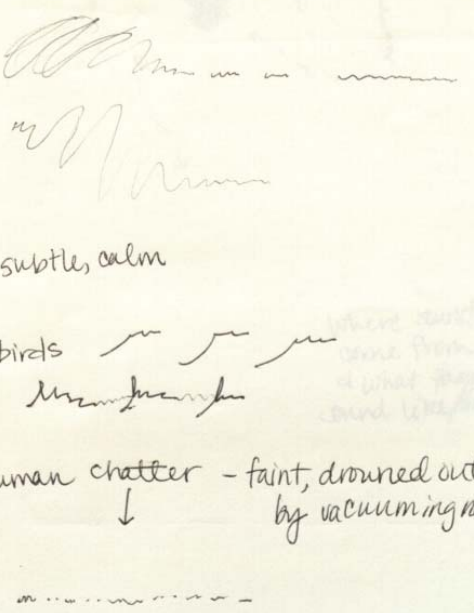
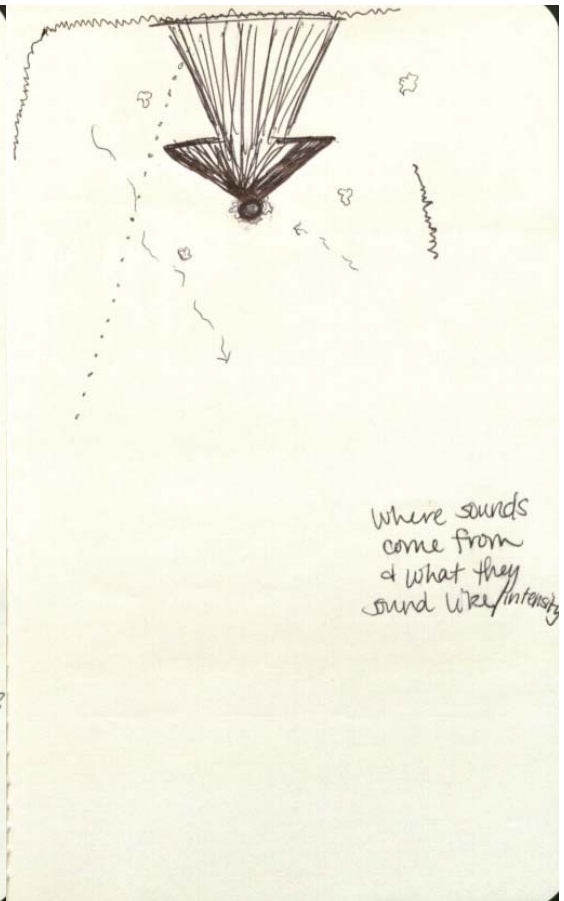
wind blowing → across grass  
and leaves



subtle, calm

birds 

human chatter - faint, drowned out  
↓ by vacuuming noise

J19

Please do NOT take this journal home with you. Return it to the researcher immediately following each session. Thank you!

- SESSION 1  
WEEK 1  
FRIDAY  
MANHATTAN + MORE
- CAR STEREO MUSIC
  - CAR ENGINE
  - PARK CONCERT
  - PEOPLE TALKING ACROSS STREET
  - MUFFLER
  - HORN
  - SKATEBOARD
  - MUSIC (ROCK) ~~SEE~~ OUTDOOR SPEAKER
  - BIRD CHIRP
  - BRAKES
  - PLANE OVERHEAD
  - CAR TURNING

SESSION 2  
WEEK 2  
MONDAY (PIECE COMMONS)

- FOOT STEPS (FLOOR ABOVE) (H) R M
- SQUEAKY WOODEN FLOOR (H) R M
- DOOR OPENING (H) U S
- VOICES DOWN HALL (H) R S/M
- SNIFFLING (H) R S
- AIR VENTS OVERHEAD (T) C S
- STOOL SLIDING ACROSS CONCRETE (H) U S
- BANG NOISE (H) U S
- KEYS JINGLE (H) U M
- CHAIR SCOTED ACROSS FLOOR (H) U M
- TRACE PAPER CRUMBLED (H) U S

- |                |                |
|----------------|----------------|
| N - NATURE     | C - CONTINUOUS |
| H - HUMAN      | R - REPETITIVE |
| T - TECHNOLOGY | U - UNIQUE     |
| S - STATIONARY |                |
| M - MOVING     |                |

LOUD

- ↑
- BANG NOISE
  - SQUEAKY FLOORS
  - FOOT STEPS
  - VOICES
  - STOOL SLIDING
  - CHAIR SLIDING
  - SNIFFLING
  - DOOR OPEN
  - KEYS JINGLE
  - TRACE CRUMBLED
  - AIR VENT
- ↓

SOFT



PLEASANT

- ↑
- AIR VENTS
  - VOICES
  - KEYS JINGLE
  - SQUEAKY WOODEN FLOORS
  - FOOT STEPS
  - SNIFFLING
  - DOOR OPENING
  - TRACE PAPER CRUMBLE
  - STOOL SCOTED ACROSS FLOOR
  - CHAIR SCOTED ACROSS FLOOR
  - BANG NOISE
- ↓

NON PLEASANT

CHAIR SCOTED

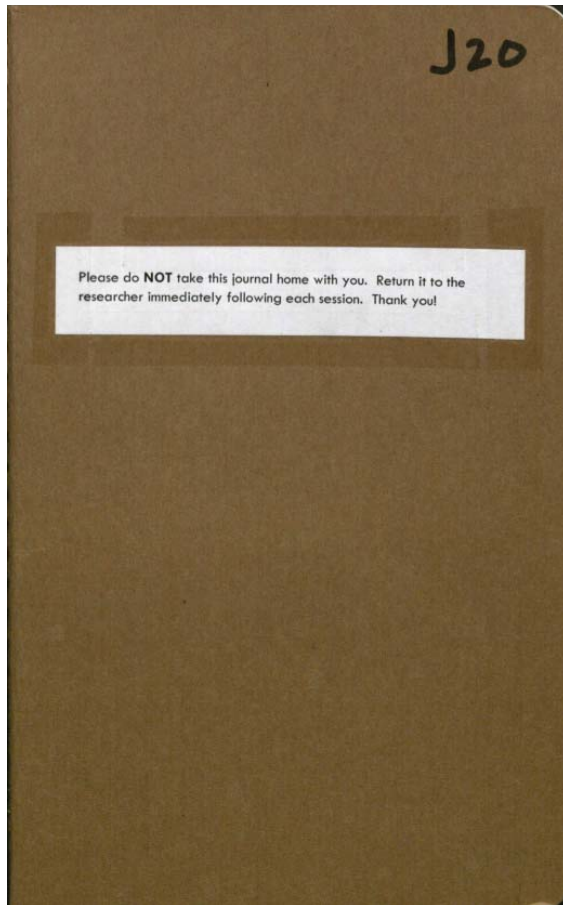


FOOT STEPS



WEEK #3 FRIDAY LAST SOUND WALK

- WATER TRICKLING
- BIRDS CHIRPING
- VOICES
- MUSIC FROM INSIDE A SHOP
- HONK
- FOOT STEPS
- CAR ENGINE
- MUSIC OUTSIDE OF BLUESTEM
- WATER PUDDLE
- WATER FALLING FROM GUTTER SPOUT
- WOMAN LAUGHING
- CAR DOOR SLAM
- ELECTRIC BOX HUMMING
- FEET SLIDING
- DOWN POUR
- SKATEBOARD



Week 1 — Friday — Ville

---

- man talking about lesbians
- feet walking
- 2 bikes
- breaks squeaking
- acceleration of 3 cars
- background music
- music from car
- loud truck
- ~~skateboard~~ Varnes's music
- Friends talking
- professor saying good job participating
- walking
- music in short store
- workers talking really fast explaining short stuff
- girl walking around in high heels
- country riding skateboard over bumps in concrete
- cars moving
- door on car shut
- bar music
- old couple talking
- black girl walking with sandals & keys making noise
- rap music from car
- vials from stores
- something wrong with ear

- multiple cars moving
- car went through window splashes, had music & pressed brakes
- shirt left and talking
- Katie Smith being annoying
- Antonio & Katie working out schedule
- plane taking
- A.C.
- dog collar jiggling
- cars
- laughing
- walking & skateboarding (eaves)
- birds
- car starting
- base from country car
- A.C.
- workers yelling at each other
- someone telling me "go fuck yourself" - sarcastically
- people socializing with the folks
- keys moving from girl

10/2/12 Week 2 (J20)

---

- MTR - Foot steps on the 1st floor of scatin
- MNC - Leaves blowing in wind from outside
- MTR - Footsteps on 1st floor
- high heels
- MTHU - Door opening
- MTHU - Truck outside
- MTR - Talking in hallway
- MTR - Talking out in bike plaza
- MTR - Footsteps on first hill
- MTR - Guy & Girl talking outside

LOUD

- Truck
- High heels on 1st floor
- Walking on first floor
- Other talking
- Girl + boy talking in hall
- Talking in Base Plaza
- Leaves blowing from wind

Quiet

Pleasant

- Leaves blowing from wind
- Talking in Base plaza
- girl + boy talking in hall
- other talking
- High heels on 1st floor
- walking on first floor
- Truck

noise  
I would  
hear

Unpleasant

- ~~Insects~~
- animals not in sight
- Thunder
- Air plane



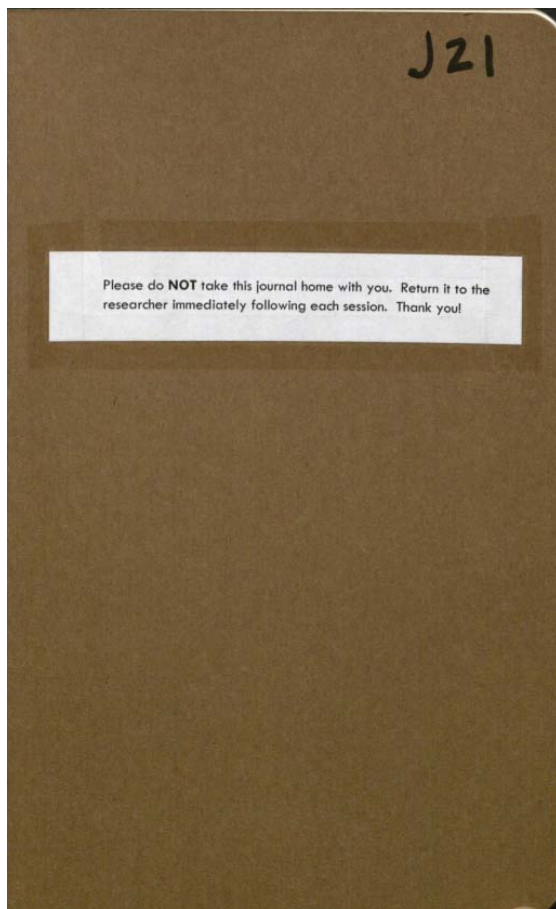
Quiet





Week 3 Friday

- truck driving through water puddle
- vehicles accelerating
- water dripping from overhang
- kid walking with rubber jacket
- people having a conversation car gradually
- bike tire had 1 click
- son of a bitch! - guy in car yelling
- every store playing girl music
- trumpet - assume from speaker/recording
- car tires on wet surface
- music from movies
- people having yellow, happy convo
- radio at vanstop
- asphalt talking
- car hitting water rail - like shit hitting the toilet
- phi delts laughing
- sound of water through gutter hitting concrete
- electric bike making loud humming sound
- rain drops then heavier rain - people coming out from
- water hitting street - skateboard hitting ground



Week 1, Friday, More Aggieville

- "You can Make it if you try!" JJ
- Vehicle engines
- "Let's go out tonight!" JJ - Car
- Vehicles - heavy traffic
- Grill with cast - foot steps
- Flip-Flops
- Engine start
- Another radio station
- Jimmy John's customers within
- Door opens
- Another radio chimes in
- O'Malley's music - empty room
- Fiddle on radio - brief
- Flip-Flops, phone call
- 2 Girls chatter, Flip-Flops scuff by
- Skateboard across pavement
- Pulling into parking spot
- Scuff, Scuff
- Forcing chatter
- Small talk
- Still hear the music from 3 songs ago
- Butter
- Car brake - Cars zoom by - crushing trees
- Motorcycle in distance
- Bump
- Scuffing up ~~stairs~~ stairs
- Birds
- Car
- Door slam to store
- Dry leaves rilling
- Engine start
- Screech
- Radio - Laura Park
- Helicopter
- Friends chatter
- Key jangle
- Radio on building
- Bird
- Keys
- Guys chatter - Keys
- Engine start
- Car beep
- Shuffling
- Laughter →

Bag crunching - paper  
 Trash lid bang  
 Cars  
 Bicycle clicking  
 Radio on building  
 Radio  
 Helicopter  
 Band outside - Applefest setup  
 Lumber traffic - little rest in between  
 Cracked chirping  
 Crosswalk beep  
 Obnoxious engine  
 Brass playing at bandstand  
 Motorcycle  
 Crosswalk beep  
 Bicyclist zooming by  
 Boat steps  
 Open bar chatter  
 Paper bag - purchased a book  
 Brakes squeaking

Week 2, Thursday, Pierce

H Footsteps upstairs — RM  
 H Steps walking past — RM  
 H Steps — RM  
 H Echoing chatter of students downstairs — RS  
 H Coughing — RS  
 H Chair screech — RM  
 T Air Conditioner - constant noise — CS  
 H Chair jangling — UM  
 H Chair screech — RM  
 H Shoe scuff — UM  
 H Footsteps above — RM  
 H Coughing in distance — RS  
 H Chattering downstairs — RS  
 H Steps coming up stairs, walking by — RM  
 H Chair screech upstairs — RM  
 H Someone clearing throat — RS  
 H Movement in studio upstairs — RM  
 H Footsteps with a sigh — UM

n - nature  
 h - human  
 t - technology  
 C - continuous  
 R - repetitive  
 U - Unique  
 S - stationary  
 M - Moving

Loud:  
 Footsteps when above or next to me  
 Coughing  
 Movement in studio  
 Coughing (even in the distance)  
 Chair screeching


Soft:  
 Air Conditioner  
 Echoing chatter - Most strain to understand

Pleasant:  
 Air conditioner - basically a white noise  
 Distant chatter and footsteps

Unpleasant:  
 Sudden coughs  
 Studio movements  
 Repetitive footsteps everywhere

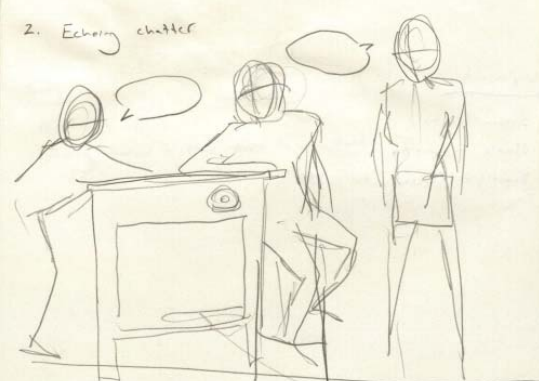
Two Sounds:

1. Studio movement - dropping item



Dropping something that sounds like a steel ball

2. Echoing chatter



Week 3, Aggieville

Dripping water from rain off awning  
 Cars  
 Clutter  
 Car  
 Beeping  
 Car  
 Vaino's music  
 Sleep  
 Laughter  
 "You too"  
 Foreign chatter  
 Feet scuffing  
 Cars  
 Still hear Vaino's  
 Easy pop music briefly  
 Dog collar clanging as the dog trots  
 Large group  
 DJ/beat music  
 Laughter  
 Feet  
 Clutter  
 Two songs clashing  
 Laughter  
 Car braking  
 Car horn  
 Car opening  
 Clutter

Main lights buzzing  
 Keys jangling  
 Annoying chatter behind me  
 Music  
 Bicycle  
 More music  
 Cars - busier traffic  
 Water driplets hitting concrete  
 Car braking  
 Distant yelling  
 Feet squeaking in puddles  
 Harder rain  
 Coughing  
 Distant man's voice  
 Suck  
 Door opens, people

J22

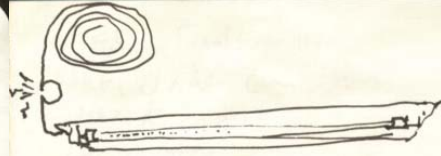
Please do NOT take this journal home with you. Return it to the researcher immediately following each session. Thank you!

Music from stereo  
 from car  
 from Vaino's  
 tiles on pavement  
 engine rolling  
 powersteering whining  
 Voila  
 birds chirp  
 Metal chair scraping concrete  
 shoes, flip flops  
 Door hinge  
 Door stop clicks  
 thud of my own feet, moletan sound  
 Clicking of someones boots  
 squeaking brakes  
 Everything is cluttered with cars & music  
 Cell phone ringing, voice from driver's seat  
 tonal beep from intersection.  
 Car starting  
 Pip or hissing  
 birds flopping wings

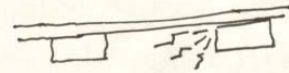
↙ dings  
 ↘ voices  
 bassbeat  
 WEEK 1 FRIDAY  
 AGGIEVILLE  
 air conditioner  
 clicking  
 laughing  
 Cat hola  
 fingers on a computer  
 key board  
 air conditioner  
 Airplane



Pleasant  
 Whispering  
 tennis shoes on floor  
 papers rustling  
 creaking pipe



Unpleasant  
 ? lights buzzing  
 people speaking  
 keys jingle  
 squeaking wood  
 boots on wood  
~~sniffing~~ sniffing nose  
 stool on concrete



Friday, Final soundwalk  
 Water under car wheels  
 Water from gutter  
 water dripping  
 car engines  
 voices  
 door hinge, latch  
 keys jingle,  
 shoes shuffle  
 boots clicking  
 music playing, trumpet, piano, bass  
 feet splashing, scraping ground  
 tricycle clicking  
 door closing  
 car beeping  
 high pitch ~~beeping~~ speed from car  
 speaker system voice, guitar  
 jacket rustling  
 brake squeak  
 coughing, hacking  
 Diesel engine, turbo ~~hiss~~  
 rock & kicked across ground

Rain drops on pavement, on fire escape  
 on trash can, concrete  
 locks under my feet  
 paper bag rustles  
 car horn  
 Rain and water create  
 a lot of white noise  
 blocking out sounds  
 but much more pleasant

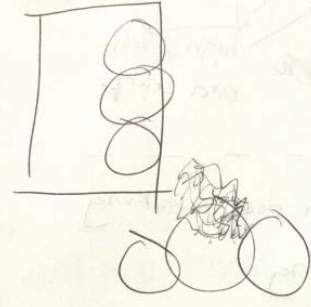
J24

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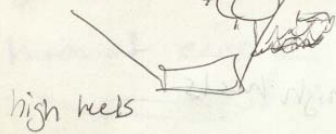
Monday  
Basco Plaza

birds chirping

East side



people talking  
shuffling feet  
bike wheels  
stamping down steps

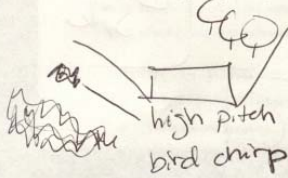


dangling keys

car motors

more birds

bike pedals

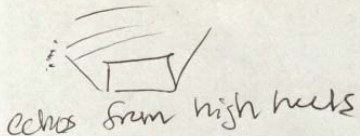


high pitch  
bird chirp

high pace walking

coughing

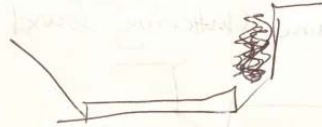
multiple people talking/ laughing



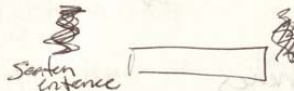
cowboy boot heels

West side

banging of union doors



stamping up stairs



high heels

fidgeting with large boards

billes

backpack jingling

different volumes of people talking

soft thuds of walking

Lots of door banging

hum of cars

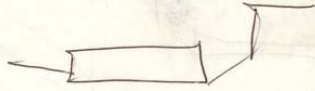


[FIGURE 9.05]

This page, and following:  
Journal entries of the  
control group

moments of silence  
except for hum

some machine fluttering sound



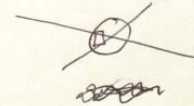
shuffling feet  
talking on phones  
really loud laughing/chuckling  
in groups  
major jiggling of knees  
crunching of plastic bag  
don't hear birds now  
leaves tapping pavement as  
wind blows

Quad

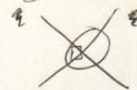
car/machine humming



light talking  
light steps of walking  
moments of silence except for humming  
another machine hum started



coughing  
bang of doors - soft



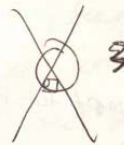
loud or engine

loudest hum



~~constant~~ constant

squeaky door



something that sounded like a  
gun - loud crack



more  
door  
banging

rustle of  
plastic bag

another loud crack  
soft keep rustling  
soft walking - person sniffing

J25

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Monday, December 3rd

Bosco Plaza

- birds tweeting behind me
- people's footsteps
- pants swooshing as they walk by
- talking
  - \* some cleaners, others muffled
- cars driving by circle
- stomping down stairs
- lots of birds
- high-heel clicks
- shuffling
- tip-tapping of shoes
- my pen against this paper
- shuffling
- bike chain/gears
- yelling
- talking two feet from me
- soft distant echoes between buildings

- louder talking near Union, dies out as you get farther away
- distant high-heel clacking "clip-clap, clip-clap" likes horses hooves
- glass clanking together
- talking
- soft-shoe shuffling
- deep voice
- loud shuffling
- high-heels "clip-clap" again
- sweatpants swooshing
- talking
- leaves rustling along concrete
- backpack zipper
- major shoe shuffling
- loud girl voice mixed with deep guys voice
- laughing
- echo of laughing

- far off laughing
- bike tires along concrete
- leaves rustling along concrete
- air blowing from Seaton A/Cs
- Clip-clap - this time from boots
- leaves rustling
- shuffling/sliding feet
- talking
- light tip-tap
- echo of talking
- continued echo of talking
- squeak of union door opening/closing
- loud laughing
- loud laughing continued
- keys/key chains clacking together
- clip-clap high-heels
- bike chain & tires on concrete



- loud talking
- Someone Sighing
- running down stairs
- Shoe tapping while walking
- distant machine(?) running
- doors opening & closing
- Squeak of door
- talking
- giggling
- loud shoe tapping
- small cough
- talking
- stepping on grate in front of union

Hole Guard

- talking
- shoes clip-clopping
- machine(?) in distance
- buzzing of lights
- air blowing(?)
- sniffing

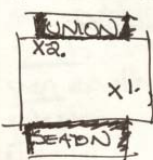
- car engine in the distance
- consistent echoing of machine(?)  
(could be kennel/near art building)
- coughing
- footsteps getting louder towards me
- door opening
- slight shuffling
- talking
- car echoes
- lights buzzing
- squeaky door opening
- ~~the~~ footsteps
- distant talking
- start-up of machine(?)
- distant shuffling and talking → coming closer, getting louder
- skateboard wheels in the distance
- doors opening
- muffled echoes outside/inside site

- keys jingling
- footsteps → a shuffle every now and then
- sniff ~~ing~~
- scratching of paper

J26

Please do NOT take this journal home with you. Return it to the researcher immediately following each session. Thank you!

BOSCO PLAZA

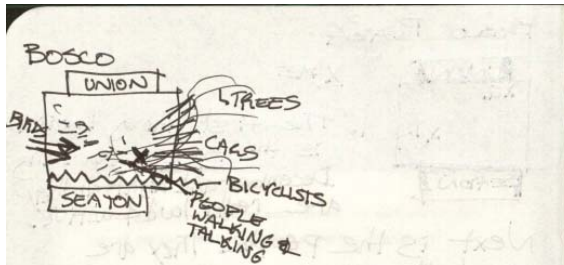


x=me  
1. The first thing I notice is the birds. For being December and nightfall they are really loud & active.

Next is the people. They are constantly walking around me. Some with the clap of heels, others the shuffling of feet, and others the plop of a firm hit to the ground. For all the people, there is little talking. It's mainly the fading in and out of someone talking on their phone as they walk by.

The next thing I notice is the cars. The occasional sound of one passing by. Bikes too, but are far rarer. A screech of hitting the breaks is even rarer.

The last thing I notice is the sound of the leaves rustling in the light wind. Overall, nothing I hear discomforts, disturbs, or surprises me. It's all rather ordinary. Another thing I notice is the scratch of my pen on this paper.



the occasional loud, annoying person or group walks by.

at I moved where the smoking tables are. The first thing I notice is the slam of the doors as they shut. It's more disruptive than the sudden loud voices emerging from inside. A vent of some sort is making a constant sound like a fan that is spinning. I still hear a constant shuffling of feet. A skate boarder rolls through the plaza with the clap-clap sound mimicking the clip-clop pattern of a train. In the distance I occasionally hear the rev of an engine accelerating. Another thing I am overlooking is the sound I am making. The air as I breathe, cough or yawn. I'm also making noise

by rubbing my hands for warmth, and the rubbing sound as I shift in my seat. Or the plop when I drop my pen on the paper. Some girl is playing country music from her phone I really don't get why. It's been on for too long to be a phone call. Rarely someone is walking and I can hear the click of change or keys. Someone finally set down to smoke, and I heard the sound of igniting a lighter and the occasional sigh or exhale of the smoker. Will & Alxssa came over to talk.



HALE QUAD the first thing I notice that's different is the sound of crickets chirping. I still hear people walking by talking &

~~shuffling their feet~~ shuffling their feet. It's quieter here. Because it's quieter, I can hear more distant sounds faintly bouncing off buildings just barely making it to my ears. The distant sounds are from cars & pedestrians.

A new sound I made was sniffing. I probably should have worn my jacket. Bikes still click repeatedly as they pass by, and distant cars rev. their engines. The people walking by have not all spoken in English, some of them were speaking in an (I assume based off of race) Asian language. Another state borders states by. More "klop-dop" as his wheels roll over cracks.

J2B

Please do **NOT** take this journal home with you. Return it to the researcher immediately following each session. Thank you!

Monday  
5:30

Bosco Plaza

- footsteps on the cement
- doors of scaton opening
- people in pairs walking from the union to quad talking
- bicycle wheels
- keys in peoples hands walking
- leaves ~~are~~ blowing across pavement
- people coughing
- laughter
- sound from smokestack
- larger trucks driving on anderson
- cars driving on 17th street
- doors closing on union
- cowboy boots on pavement
- trees blowing in the wind
- Whistling
- people yelling from street

- teachers talking leaving station
- girl singing on the phone
- most noise (people walking) accumulates in center of Bosco disperses in different directions
- people climbing station stairs
- the sound of wind breaker pants/jeans wobbling together as people are walking
- people asking for time
- skateboard wheels hitting breaks in cement on boscos surface

5:45  
in front of  
Hall

- coughing
- people on phone talking
- bike wheels turning
- ~~40~~ people yawning
- generators from surrounding buildings
- crickets
- doors opening
- heels hitting pavement
- sniffing
- change rattling in pockets
- large plastic bags rustling
- steam from hall
- murmuring of voices carried from edge of site
- keys
- ringtones
- skateboards from areas surrounding the site

- footsteps on pavement
- move windpants
- ~~people~~ - move talking from people in groups mostly from bosco towards derby center  
(that general direction)

- airplane
- clanging of metal water bottle
- a second airplane
- doors closing
- a sound similar to an air compressor/power washer coming from Willard
- bird chirping
- crutches on pavement

- fast paced walking
- man running
- skateboard wheels on cement cracks
- voices coming from window of wood shop
- voices of people leaving Hall
- different languages

J28

Please do NOT take this journal home with you. Return it to the researcher immediately following each session. Thank you!

Wednesday - McLain Quad

I'm not exactly sure what the machine/utility thing in the middle of McLain Quad is, but it is ~~the~~ loud enough to ruin a relaxing moment that one may want to enjoy.



The light breeze ~~blows~~ runs through the winter stricken trees. A sound that I've always associated with winter...

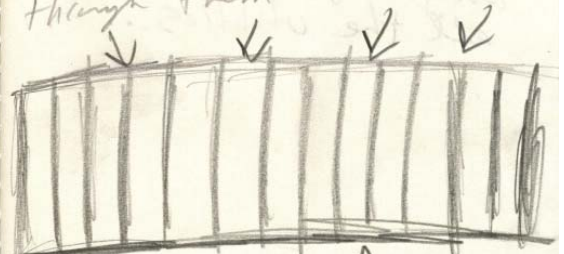
Birds chirping and playfully flying from tree to tree... I can even hear a few in the areas outside of McLain Quad.

The quad isn't very far from Anderson... I would expect to hear more <sup>of</sup> traffic but I can't. Perhaps <sup>the</sup> Nichols Hall and the height difference act as a perfect sound barrier.

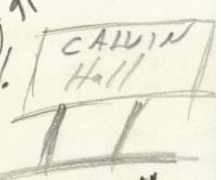
A very loud, annoying sound just came from the top of McLain... no clue what it was!! I've heard it before... but never standing so close before.

The electrical boxes... Such an eye sore... lightly humming...

Pampas grass!!! I love the sound it makes when a steady breeze passes through them...



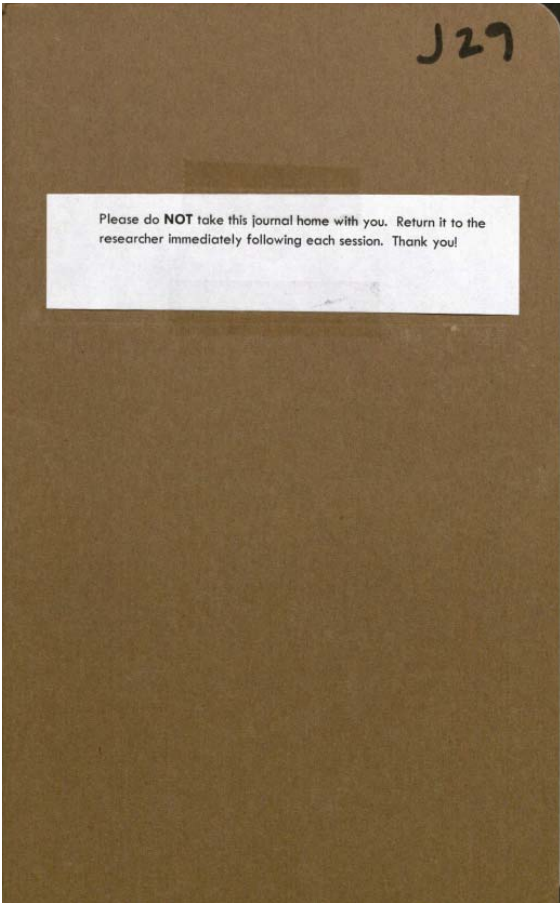
That ugly thing <sup>is</sup> still annoying!



Kind of reminds me of the irrigation pumps back home... the Hum that is... it's almost as soothing.

No matter where I go within  
 McCain Quad... I can still  
 hear the humming ugly machines!

The views here would be  
 lovely... if it weren't for  
 all the utilities... ☹



MCCAIN QUAD 12.5.12

INITIAL SOUNDS

*[Faint scribbles]*

*[Sketch of a bird-like creature]*

BUSTLING LEAVES

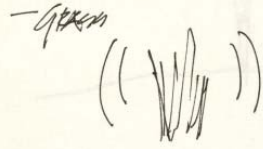
*[Faint scribbles]*

*[Sketch of a horizontal oval with internal lines]*

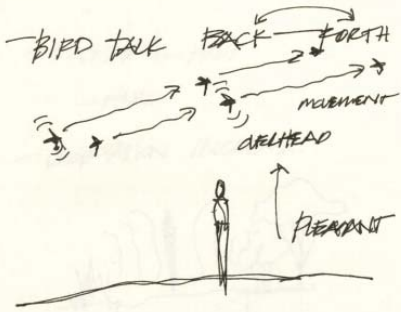
STEADY  
 RHYTHMIC WAVES  
 RESONATING FROM COPE

- SURELY BIKE  
(GLOW PAGE)
- SOFT CONVERSATION  
COVERED BY WHITE NOISE
- SOUND OF AIR TUNNEL  
CONSTANT "WHRRR"
- BIRD CHIPPING
- DOOR SLAMMING SHUT
- BIKE \* SURELY
- AC UNIT - DEEPER HUMM
- ANDERSON - VEHICLES
- PLANE
- WINDOW SHUTS

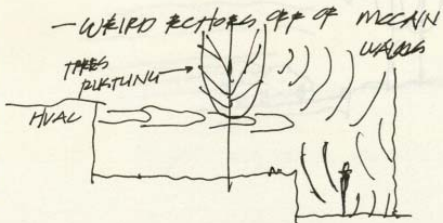
- CRUMPLING PAPER
- HOSS OF ANDERSON
- CAR DOOR OPENS



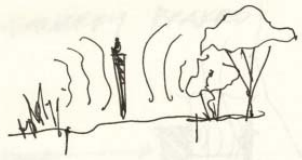
- SMALL CONVERSATION
- GRUTTING \* HEELS - TAP-TAP  
\* KEYS
- OLD AC - METAL FAN  
SPINNING
- EXHAUST FROM MCCAIN  
10 SEC. - EMERGENCY NOISE!!  
DEPARTING



- STRUTS
- DENIM - FABRIC
- CONVERSATIONS
- INCREASE  
- CLAM TRAFFIC



- MACHINERY - HOSS
- HVAC
- VEGETATION INCREASE



- OPEN SOUND - LESS ECHO
- \* NEAR CIRCLE



- ~~HD~~ VOICES
- CARRYING FURTHER
- CELL PHONE RING

- SQUEAKY BRAKES



- BIRD CAWS, CHIRPS, FLUTTERS
- HIGH PITCH RING - FROM BLDG.
- ENGINE HUMMING
- COMBINATION OF HUMMS  
& VEGETATION  
WHEN ENTERING QUAD

J30

Please do **NOT** take this journal home with you. Return it to the researcher immediately following each session. Thank you!

- speakers, Vanney's  
Band Music
- car traffic
- tires
- engines high pitch  
and lower pitch

- foot steps, gravel /  
grit grinding

- people talking
- breaks. (high pitch  
squeak)

- friends/friendly conversation
- planning

- engine starting
- more talking
- doors, skis

- laughing
- slight quiet



- slight quieting
- distant wren's racket & distant car noises
- group conversation
- yelling and loud conversation

I "Jimmy John's"

- smooth / 80's rock
- car doors
- noise (small motor) rotating barber shop light
- rhythmic ~~ammmmmmmmm~~ quite disturbance.

II - kids family

- laughing

III traffic, car horns

IV ~~at~~

- + quiet then noise of car repeated ... consistent intervals
- wispy voice of speakers
- catches, clack ... clack metallic & plastic
- footsteps

I

- loose sands
- scratching & dragging

II

- quiet noise to last

III

- conversation 2 people
- interactive talk
- laughing across street
- break, old truck sounds

IV

- engine revving from idel
- sand of groups
- conversation loud, anyone can hear but no thought about it

- + rain, shallow pats
- loud thunder of exhaust
- coughing

+

- interval of traffic
- rhythmic idel and rust
- couples conversing
- discussing others

+

- traffic more prevalent
- 80's / rock music again
- rain more heavily
- patting on paper
- wistful music
- no ideal what to call it

+

- "
- gathering
- doors being

- squeak of an old door
- honey against street noise

old R&B

- comfortable / writing
- tick and break of a bike

+

- young pop music
- rain drops
- intermitent tap
- more bike clicking
- loader sands
- noise picking up
- traffic
- fast foot steps

+

- high noise pollution
- loud people
- "Udd / Wozen out"

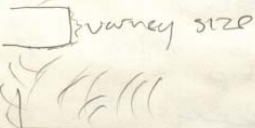
- many cars at  
idol

- much traffic

† - loudest point in  
ville

- noise tunnel

□ - variety size



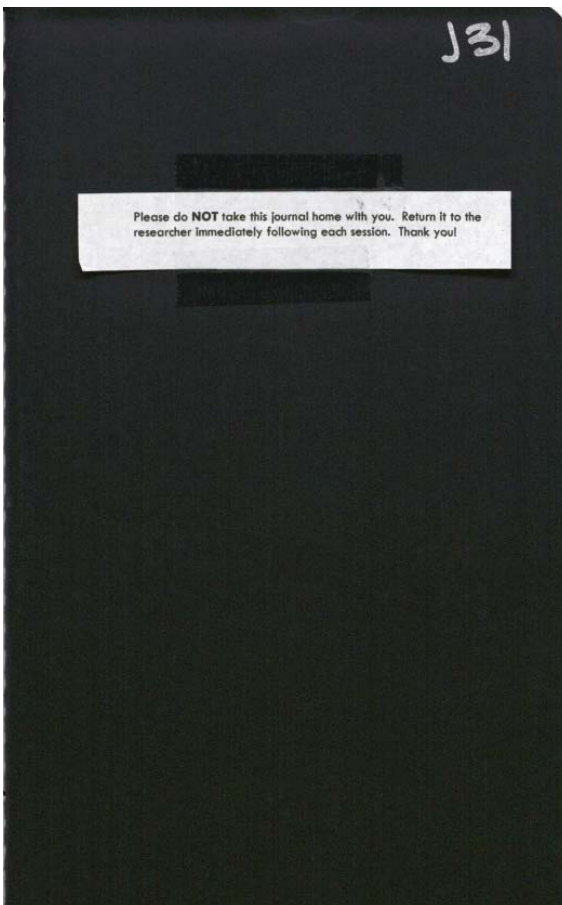
- noise wall.

- noise seems focused  
at me.

† - static noise of speakers

- interwoven traffic

... close idol & rv.  
followed by long  
pause



FRIDAY  
AGGIEVILLE

← TRAFFIC

VARIOUS  
ROCKSTONE

ACCELERATING CARS

"IT MAY BE  
USED IT MAY  
BE FADED BUT  
ITS BRAND NEW

LAUGHING  
FEET DRAGGING

COUNTRY MUSIC  
LOUD RODES  
ENGINE NOISE  
SQUEEK OF AGED  
DOORS (BLUESTEIN)

FLEETWOOD MAC  
RUSTY'S  
(CANT HEAR  
VARIETY)

QUIET  
SUBTLE AUTO NOISE

SURROUND  
SOUNDS

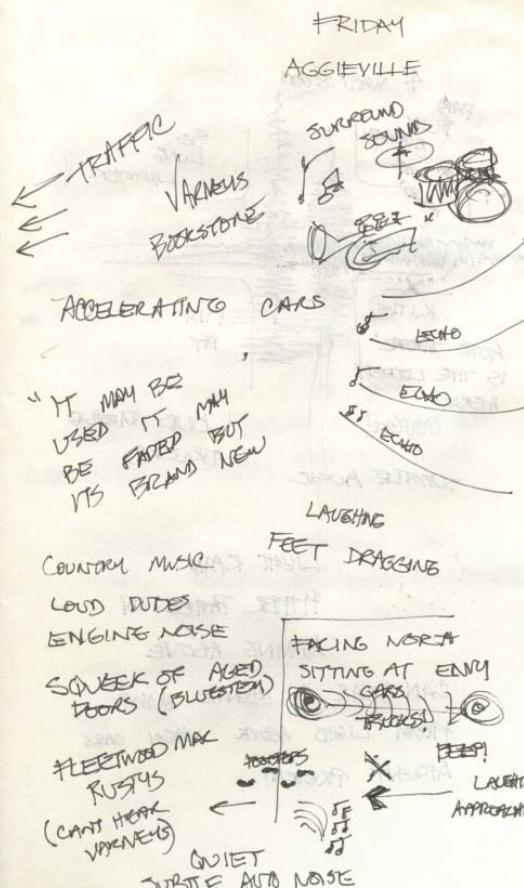
ECHO

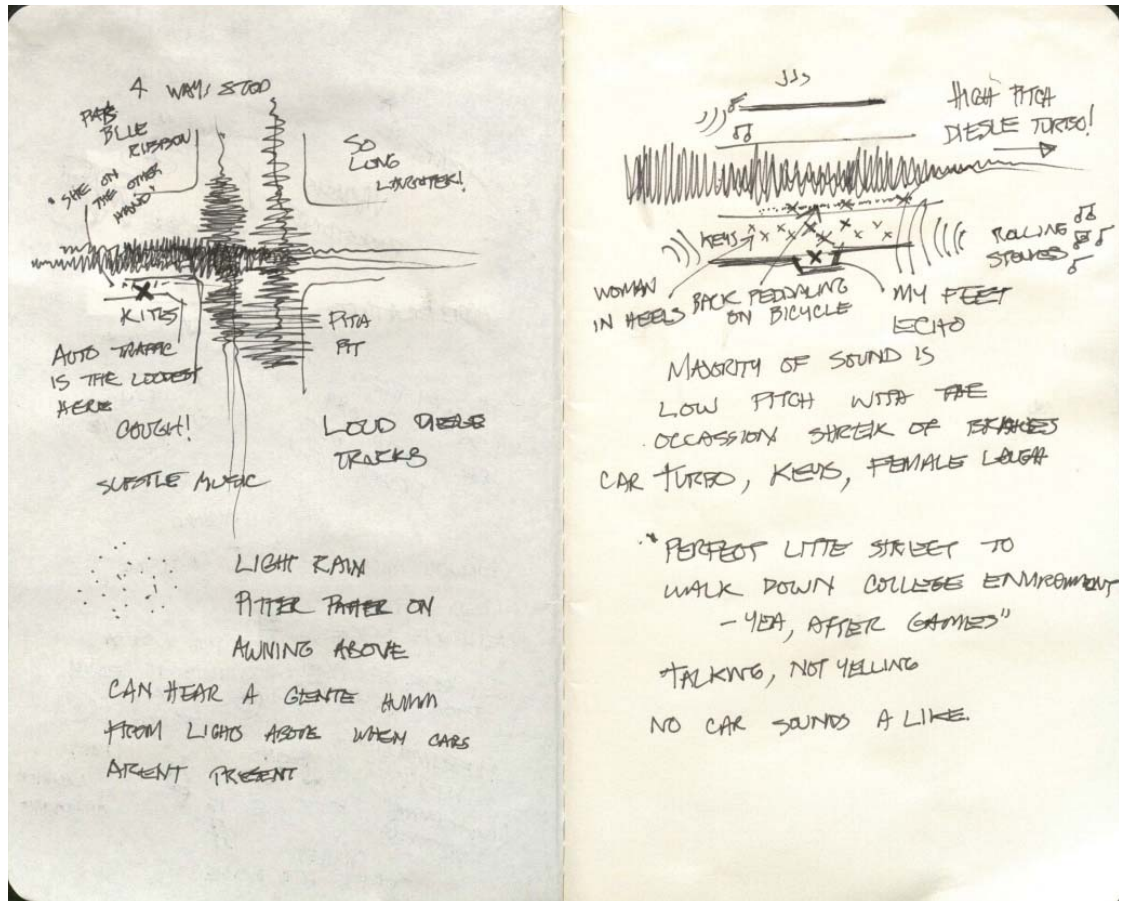
ECHO

ECHO

FACING NORTH  
SITTING AT ENVY  
CARS  
ROCKS!

LAUGHTER  
APPROACHING





[TABLE 8.06]

This page, below: Analysis coding convention, use as guide for table on next page. Opposite: Journal codes for all journals in full experiment and control group. Tables created by author.

| CODING CONVENTION FOR EXPERIMENT ANALYSIS CATEGORIES |                                       |                                                 |                                                  |                              |                     |
|------------------------------------------------------|---------------------------------------|-------------------------------------------------|--------------------------------------------------|------------------------------|---------------------|
| Number of Sounds                                     | Sound Source Type                     | Documentation of Direction/Movement or Distance | Number of Acoustic or Psychoacoustic Terminology | Number of Onomatopoeic Words | Documentation Style |
| (N0) 0                                               | (NA#) Nature/Animal                   | (YD) Yes                                        | (T0) 0                                           | (O0) 0                       | (L) List            |
| (N1) 1-5                                             | (HU#) Human                           | (ND) No                                         | (T1) 1-5                                         | (O1) 1-5                     | (P) Pictures        |
| (N2) 6-10                                            | (MU#) Music (Electronic or otherwise) |                                                 | (T2) 6-10                                        | (O2) 6-10                    | (M) Mapping         |
| (N3) 11-15                                           | (TR#) Transportation                  |                                                 | (T3) 11-15                                       | (O3) 11-15                   | (D) Diagrams        |
| (N4) 16-20                                           | (MA#) Machinery or Technology         |                                                 | (T4) 16-20                                       | (O4) 16-20                   | (NT) Narrative      |
| (N5) 21-25                                           | (OT#) Other                           |                                                 | (T5) 21-25                                       | (O5) 21-25                   | (I) Inquiries       |
| (N6) 26+                                             |                                       |                                                 | (T6) 26+                                         | (O6) 26+                     |                     |

| JOURNAL CODES   |            |                  |     |                   |          |                                                 |     |                                                  |     |                              |     |                     |      |
|-----------------|------------|------------------|-----|-------------------|----------|-------------------------------------------------|-----|--------------------------------------------------|-----|------------------------------|-----|---------------------|------|
| Journal J#      | Location   | Number of Sounds |     | Sound Source Type |          | Documentation of Direction/Movement or Distance |     | Number of Acoustic or Psychoacoustic Terminology |     | Number of Onomatopoeic Words |     | Documentation Style |      |
| FULL EXPERIMENT |            |                  |     |                   |          |                                                 |     |                                                  |     |                              |     |                     |      |
|                 |            | Wk1              | Wk2 | Wk1               | Wk2      | Wk1                                             | Wk2 | Wk1                                              | Wk2 | Wk1                          | Wk2 | Wk1                 | Wk2  |
| J1              | Bosco/Hale | N6               | N6  | NA/HU/OT          | NA/TR/OT | N/N                                             | N/N | T0                                               | T1  | O3                           | O4  | L                   | L    |
| J2              | Bosco/Hale | N3               | N4  | HU                | HU       | Y/Y                                             | Y/Y | T1                                               | T1  | O1                           | O1  | L/P                 | L/P  |
| J3              | Bosco/Hale | N6               | N6  | TR                | HU       | N/Y                                             | N/Y | T0                                               | T1  | O1                           | O2  | L                   | L    |
| J4              | Bosco/Hale | N6               | N6  | NA                | NA       | N/N                                             | N/N | T0                                               | T1  | O2                           | O2  | L                   | L    |
| J5              | McCain/Pkg | N5               | N6  | HU/TR             | HU       | Y/Y                                             | Y/Y | T1                                               | T1  | O2                           | O2  | L/M                 | L/M  |
| J6              | McCain/Pkg | N5               | N5  | NA                | HU       | N/N                                             | Y/N | T1                                               | T1  | O1                           | O1  | L/P                 | P    |
| J7              | McCain/Pkg | [Shaded Row]     |     |                   |          |                                                 |     |                                                  |     |                              |     |                     |      |
| J8              | McCain/Pkg | N3               | N6  | NA                | HU       | Y/N                                             | Y/Y | T1                                               | T1  | O1                           | O1  | L                   | L    |
| J9              | McCain/Pkg | N5               | N6  | MA                | NA       | Y/N                                             | Y/Y | T1                                               | T1  | O2                           | O2  | L                   | L/P  |
| J10             | McCain/Pkg | N4               | N6  | OT                | HU       | Y/Y                                             | Y/Y | T2                                               | T3  | O1                           | O1  | NT                  | NT   |
| J11             | McCain/Pkg | N1               | N0  | NA                | None     | Y/Y                                             | N/N | T1                                               | T0  | O0                           | O1  | I                   | I    |
| J12             | McCain/Pkg | N3               | N4  | MA                | HU/TR    | N/Y                                             | Y/Y | T2                                               | T2  | O2                           | O2  | NT/P                | NT/P |
| J13             | McCain/Pkg | N6               | N6  | TR                | HU       | Y/Y                                             | Y/Y | T1                                               | T1  | O3                           | O2  | L/M                 | L/M  |
| J14             | McCain/Pkg | N5               | N5  | TR                | HU       | Y/Y                                             | Y/Y | T2                                               | T1  | O3                           | O1  | L/P                 | L/P  |
| J15             | McCain/Pkg | N6               | N6  | TR                | HU       | Y/Y                                             | Y/Y | T1                                               | T1  | O1                           | O2  | L/M/P               | L/P  |
| J16             | McCain/Pkg | N6               | N6  | HU                | HU       | Y/Y                                             | Y/Y | T1                                               | T1  | O4                           | O3  | L/M/P               | L/P  |
| J17             | McCain/Pkg | [Shaded Row]     |     |                   |          |                                                 |     |                                                  |     |                              |     |                     |      |
| J18             | McCain/Pkg | N3               | N3  | TR                | NA       | Y/Y                                             | Y/Y | T1                                               | T1  | O3                           | O2  | L/M/P               | L/P  |
| J19             | Aggieville | N3               | N3  | TR                | HU       | N/Y                                             | Y/Y | T0                                               | T0  | O0                           | O0  | L                   | L    |
| J20             | Aggieville | N6               | N5  | TR                | TR       | N/N                                             | Y/N | T1                                               | T1  | O1                           | O1  | L                   | L    |
| J21             | Aggieville | N6               | N6  | TR                | HU       | Y/Y                                             | Y/Y | T1                                               | T0  | O1                           | O1  | L                   | L    |
| J22             | Aggieville | N6               | N6  | TR                | NA       | N/N                                             | Y/N | T0                                               | T0  | O2                           | O2  | L                   | L    |
| J23             | Aggieville | [Shaded Row]     |     |                   |          |                                                 |     |                                                  |     |                              |     |                     |      |

| JOURNAL CODES |            |                  |  |                   |  |                                                 |  |                                                  |  |                              |  |                     |  |
|---------------|------------|------------------|--|-------------------|--|-------------------------------------------------|--|--------------------------------------------------|--|------------------------------|--|---------------------|--|
| Journal J#    | Location   | Number of Sounds |  | Sound Source Type |  | Documentation of Direction/Movement or Distance |  | Number of Acoustic or Psychoacoustic Terminology |  | Number of Onomatopoeic Words |  | Documentation Style |  |
| CONTROL GROUP |            |                  |  |                   |  |                                                 |  |                                                  |  |                              |  |                     |  |
| J24           | Bosco/Hale | N6               |  | HU                |  | Y/Y                                             |  | T1                                               |  | O3                           |  | L/M/P               |  |
| J25           | Bosco/Hale | N6               |  | HU                |  | Y/Y                                             |  | T1                                               |  | O3                           |  | L                   |  |
| J26           | Bosco/Hale | N6               |  | HU                |  | Y/Y                                             |  | T1                                               |  | O3                           |  | L/M                 |  |
| J27           | Bosco/Hale | N6               |  | HU                |  | Y/Y                                             |  | T0                                               |  | O2                           |  | L                   |  |
| J28           | McCain/Pkg | N2               |  | NA                |  | Y/Y                                             |  | T1                                               |  | O1                           |  | NT/P                |  |
| J29           | McCain/Pkg | N6               |  | MA                |  | Y/Y                                             |  | T1                                               |  | O2                           |  | L/P                 |  |
| J30           | Aggieville | N6               |  | TR                |  | Y/N                                             |  | T1                                               |  | O2                           |  | L                   |  |
| J31           | Aggieville | N6               |  | HU/TR             |  | Y/Y                                             |  | T1                                               |  | O1                           |  | L/M/P               |  |

| LEGEND                  |                 |
|-------------------------|-----------------|
| NA Nature/Animal        | L Lists         |
| HU Human                | P Pictures      |
| MU Music                | M Mapping       |
| TR Transportation       | D Diagrams      |
| MA Machinery/Technology | NT Narrative    |
| OT Other                | I Inquiries     |
| Y YES, did document     | Wk Week         |
| N NO, did not document  |                 |
| [Shaded Box]            | Incomplete Data |

| POST-EXPERIMENT SURVEY RESULTS [FULL EXPERIMENT] |                                                                                                                  |                                |          |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|
| SURVEY STATEMENTS                                |                                                                                                                  | Total % of Responses and (#)   |          |
| NUMBER AND STATEMENT                             | RESPONSE                                                                                                         |                                |          |
| 1                                                | My listening abilities have improved since the beginning of the experiment.                                      | 1 - Strongly disagree          | 0%       |
|                                                  |                                                                                                                  | 2 - Disagree                   | 10% (2)  |
|                                                  |                                                                                                                  | 3 - Neither agree nor disagree | 35% (7)  |
|                                                  |                                                                                                                  | 4 - Agree                      | 55% (11) |
|                                                  |                                                                                                                  | 5 - Strongly agree             | 0%       |
| 2                                                | I am more sensitive to outdoor sounds now compared to when I first started the experiment.                       | 1 - Strongly disagree          | 0%       |
|                                                  |                                                                                                                  | 2 - Disagree                   | 0%       |
|                                                  |                                                                                                                  | 3 - Neither agree nor disagree | 40% (8)  |
|                                                  |                                                                                                                  | 4 - Agree                      | 50% (10) |
|                                                  |                                                                                                                  | 5 - Strongly agree             | 10% (2)  |
| 3                                                | My opinions about outdoor sounds have changed since the beginning of the experiment.                             | 1 - Strongly disagree          | 0%       |
|                                                  |                                                                                                                  | 2 - Disagree                   | 15% (3)  |
|                                                  |                                                                                                                  | 3 - Neither agree nor disagree | 30% (6)  |
|                                                  |                                                                                                                  | 4 - Agree                      | 50% (10) |
|                                                  |                                                                                                                  | 5 - Strongly agree             | 5% (1)   |
| 4                                                | I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds. | 1 - Strongly disagree          | 0%       |
|                                                  |                                                                                                                  | 2 - Disagree                   | 0%       |
|                                                  |                                                                                                                  | 3 - Neither agree nor disagree | 5% (1)   |
|                                                  |                                                                                                                  | 4 - Agree                      | 50% (10) |
|                                                  |                                                                                                                  | 5 - Strongly agree             | 45% (9)  |
| 5                                                | I am more familiar with acoustic terminology.                                                                    | 1 - Strongly disagree          | 0%       |
|                                                  |                                                                                                                  | 2 - Disagree                   | 25% (5)  |
|                                                  |                                                                                                                  | 3 - Neither agree nor disagree | 40% (8)  |
|                                                  |                                                                                                                  | 4 - Agree                      | 30% (6)  |
|                                                  |                                                                                                                  | 5 - Strongly agree             | 5% (1)   |

[TABLE 8.07]

This page: Post-experiment survey results of the full experiment. Table created by author.

| POST-EXPERIMENT SURVEY RESULTS [CONTROL GROUP] |                                                                                                                  |                                 |           |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------|
| SURVEY STATEMENTS                              |                                                                                                                  | Total % of Responses and (#)    |           |
| NUMBER AND STATEMENT                           | RESPONSE                                                                                                         |                                 |           |
| 1                                              | How much did you know about the premise of the experiment beforehand, aside from the soundwalks?                 | 1 - Nothing                     | 25% (2)   |
|                                                |                                                                                                                  | 2 - Some knowledge              | 37.5% (3) |
|                                                |                                                                                                                  | 3 - Average knowledge           | 37.5% (3) |
|                                                |                                                                                                                  | 4 - Almost everything           | 0%        |
|                                                |                                                                                                                  | 5 - Everything                  | 0%        |
| 2                                              | How much do you know about outdoor acoustics?                                                                    | 1 - Nothing                     | 37.5% (3) |
|                                                |                                                                                                                  | 2 - Some knowledge              | 50% (4)   |
|                                                |                                                                                                                  | 3 - Average knowledge           | 12.5% (1) |
|                                                |                                                                                                                  | 4 - More than average knowledge | 0%        |
|                                                |                                                                                                                  | 5 - I am an expert              | 0%        |
| 3                                              | My listening abilities have improved since the beginning of the experiment.                                      | 1 - Strongly disagree           | 0%        |
|                                                |                                                                                                                  | 2 - Disagree                    | 0%        |
|                                                |                                                                                                                  | 3 - Neither agree nor disagree  | 62.5% (5) |
|                                                |                                                                                                                  | 4 - Agree                       | 37.5% (3) |
|                                                |                                                                                                                  | 5 - Strongly agree              | 0%        |
| 4                                              | My opinions about outdoor sounds have changed since the beginning of the experiment.                             | 1 - Strongly disagree           | 0%        |
|                                                |                                                                                                                  | 2 - Disagree                    | 12.5% (1) |
|                                                |                                                                                                                  | 3 - Neither agree nor disagree  | 62.5% (5) |
|                                                |                                                                                                                  | 4 - Agree                       | 25% (2)   |
|                                                |                                                                                                                  | 5 - Strongly agree              | 0%        |
| 5                                              | I think soundwalks and listening exercises are useful to help improve aural awareness and sensitivity to sounds. | 1 - Strongly disagree           | 0%        |
|                                                |                                                                                                                  | 2 - Disagree                    | 0%        |
|                                                |                                                                                                                  | 3 - Neither agree nor disagree  | 12.5% (1) |
|                                                |                                                                                                                  | 4 - Agree                       | 75% (6)   |
|                                                |                                                                                                                  | 5 - Strongly agree              | 12.5% (1) |

[TABLE 8.08]

This page: Post-experiment survey results of the control group. Table created by author.

[330] APPENDIX D

| POST-EXPERIMENT OPEN RESPONSES [FULL EXPERIMENT] |                                                                                                                                                                                                                                                                                                                                                                                                            |       |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| JOURNAL J#                                       | RESPONSE                                                                                                                                                                                                                                                                                                                                                                                                   | OTHER |
| <b>BOSCO PLAZA &amp; HALE QUAD</b>               |                                                                                                                                                                                                                                                                                                                                                                                                            |       |
| J1                                               | I noticed a big change in my ability to listen to a landscape. Almost always I focus on the visual, even olfactory factors, but very rarely audio. It was very interesting from my perspective.                                                                                                                                                                                                            |       |
| J2                                               | It helps me listen to a more distant noise, not just the close/nearby sounds. I think the exercises helped me listen more attentive to what is going on, not just blocking it out.                                                                                                                                                                                                                         |       |
| J3                                               | I liked the soundwalks. It was nice to take time just to listen. I feel that I noticed more sounds the second walk. The first walk I tried to listen but I think I did a better job. Even outside of this I find myself (for my other projects) paying more attention to what I was hearing while on my sites.                                                                                             |       |
| J4                                               | I definitely found myself trying to be more aware to all sounds during the walks. I don't know that I am magically more aware, but I was comparing the two walks to each other (see journal). It was good and relaxing for me to just listen...because I focus on that it stopped me from thinking about other more worrisome things...like studio, ha. Overall, good experience.                          |       |
| <b>MCCAIN QUAD &amp; PARKING CIRCLE</b>          |                                                                                                                                                                                                                                                                                                                                                                                                            |       |
| J5                                               | The soundwalks made me more aware of noises in the landscape. Before, I think I was more apt to notice sound of 'annoyance,' or sounds I found to be unpleasant.                                                                                                                                                                                                                                           |       |
| J6                                               | The soundwalks were definitely helpful, but would be more beneficial if done more frequently. Because it is a sense often neglected, we need to exercise it more often!                                                                                                                                                                                                                                    |       |
| J7                                               |                                                                                                                                                                                                                                                                                                                                                                                                            |       |
| J8                                               | The soundwalks were nice. Feels good to get out of studio. The 30 minutes was long enough for us to really pay attention. Both allowed me to hear things I probably would not notice otherwise.                                                                                                                                                                                                            |       |
| J9                                               | Soundwalks are fun, helped get out of studio. I usually tune most sounds out unless I am actually looking for them. I don't think I sensed a change because of my music background, my sensitivity to nature, and my love for being outdoors.                                                                                                                                                              |       |
| J10                                              | I found the soundwalks by navigating across campus on my feet. I am often aware of these sounds, however, I tend to tune them out because they are so common. I believe my familiarity with these sounds prevented me from gaining a "new awareness." The most probable reason is because of the use of my other senses. I could see the origin of the sounds. I knew my location. I felt my surroundings. |       |
| J11                                              | The soundwalks were relaxing. I don't think we stop and listen as much as we could. It's interesting to think about how sound fills (or does not fill) a space.                                                                                                                                                                                                                                            |       |
| J12                                              | The soundwalks were nice, I kind of wish I wasn't in the McCain Quad group because that thing in the middle gets kind of annoying. The soundwalks helped me see how sound affects the way a space feels.                                                                                                                                                                                                   |       |
| J13                                              | I enjoyed the soundwalks. I think more walks would have been beneficial in improving my awareness. It also differed based on weather...I noticed the sounds that were annoying more often than pleasant noises.                                                                                                                                                                                            |       |
| J14                                              | I was looking for certain things by the end. I am sensitive when I try to be.] The soundwalks were helpful in trying to zero in on specific sounds and how they layered in the environment, but difficult for I'm not sure I in how I usually interpret them.                                                                                                                                              |       |
| J15                                              | It made me more aware of the different noises in areas based on area use...where people are talking, walking, etc. Hard to hear though with that damn AC in McCain.                                                                                                                                                                                                                                        |       |
| J16                                              | I found the soundwalks peaceful and refreshing. It helped me because we were forced to observe the noises. I think not much change happened because of that darn McCain white noise thing. It was so hard to hear outside noises.                                                                                                                                                                          |       |
| J17                                              |                                                                                                                                                                                                                                                                                                                                                                                                            |       |
| J18                                              | I feel that I already was pretty aware of sounds, but the soundwalks helped me notice more of the background noises. The walks made me more aware of their 'visual' quality. It seems we always associate things to visual. It also made me aware of how dominating the human-produced noises can be in our environments.                                                                                  |       |
| J19                                              | I found the soundwalks to be somewhat meditative but haven't noticed a change in sound awareness. I don't think I did enough soundwalks to become more in tune with that sense.                                                                                                                                                                                                                            |       |

| POST-EXPERIMENT OPEN RESPONSES [FULL EXPERIMENT, CONT'D] |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| JOURNAL #                                                | RESPONSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OTHER |
| AGGIEVILLE                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |
| J20                                                      | I usually don't walk around public places to listen and observe sounds. I always hear them but do I recognize them? The noises that were long and steady like an air conditioner or the electric box I heard were hard to distinguish or recognize when I'm not trying to distinguish it. These sounds can help block sounds that have higher frequencies. I have determined that the most annoying and frequently heard sound is cars.                                                                                                     |       |
| J21                                                      | The soundwalks did not change my aural attention very much, but it was a different way in walking through a space. I normally hear everything when I walk around, but only listening does not give the entire picture of the space. However, familiar sounds do help give a space character, and unfamiliar sounds leave the imagination to wander (such as something in a horror film). Personally, I am a listener, though when I'm lost in a thought, a loud noise will jolt me back to reality. Familiar places leave little surprises. |       |
| J22                                                      | Doing the soundwalk in Aggieville bothered me because all the sounds were distasteful in my perspective. I began to think about how the sounds affected me and I realized they bothered me. I don't think my awareness of sound changed because I didn't notice something I never had before, but I definitely became more aware of the affect the sounds have on me. And I think that is very important in designing.                                                                                                                      |       |
| J23                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |

| LEGEND |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
|        | <b>TOPIC 1:</b> Expressed a desire to participate in more soundwalk sessions throughout the experiment.                                |
|        | <b>TOPIC 2:</b> Expressed a change in their perspective on the outdoor environment, since the visual often dominates their experience. |
|        | <b>TOPIC 3:</b> Expressed that they found sound influences their experience of the outdoor environment and design.                     |
|        | INCOMPLETE DATA                                                                                                                        |
|        | NO COMMON TOPIC APPLICABLE TO RESPONSE                                                                                                 |

[TABLE 8.09]

Spread: Post-experiment color-coded open responses of the full experiment participants. Table created by author.



[332] APPENDIX D

| POST-EXPERIMENT OPEN RESPONSES [CONTROL GROUP] |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| JOURNAL #                                      | RESPONSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OTHER |
| <b>BOSCO PLAZA &amp; HALE QUAD</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |
| J24                                            | Nothing was too particularly pleasing, but I became more aware of the everyday sounds around me. Picking out sounds, especially with my eyes closed, helped me pinpoint sounds, their frequency, and where they were coming from.                                                                                                                                                                                                                                                                                                                              |       |
| J25                                            | The soundwalks were interesting and really focused my attention. I was very in tune with the sounds and paying my attention to them only. It was hard to describe some of the sounds, but that was the most difficult of the soundwalks.                                                                                                                                                                                                                                                                                                                       |       |
| J26                                            | Through journaling in Jon Hunt's Design Graphics and studio I have deliberately listening to my surroundings and experience most of what I heard. One area I had not thought about before was the noises I made. My movements, actions, etc. caused sounds to affect the space I was in. Before I'd always just listen to what was surrounding me. I am an aural learner, and experience a lot of the world through sound. I find it relaxing to sit and listen.                                                                                               |       |
| J27                                            | We were given the sites to listen in. I've done other sensory projects before, for example, how surrounding sounds can be used in interactive light installations, so I have sat and thoroughly listened to sounds before.                                                                                                                                                                                                                                                                                                                                     |       |
| <b>MCCAIN QUAD &amp; PARKING CIRCLE</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |
| J28                                            | The soundwalks were relaxing. I'm not sure it has helped me notice sounds in any other way.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
| J29                                            | Interesting to say the least. The soundwalk made me realize how accustomed we've become to machine noises - HVAC, cars, and exhausts. The comfort associated with nature noises was also realized. Probably the most notable factor is how spatial relations can be felt through enclosures and forms. Buildings, walls, sculptures, and overhangs could all be felt through the sound. Correlation might be through manmade versus nature. Manmade sounds had order, rhythm, consistency, while nature sounds had variance, fluctuation, and non-linear form. |       |
| <b>AGGIEVILLE</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |
| J30                                            | Having only participated in one soundwalk, the change in perception question is hard to answer, but I was peaceful to be able to isolate an experience, and focus on the audible quality of space. During the experiment, I was able to focus on what sounds were and were about. Slowing down to analyze the individual sounds, I was able to pick up on the impact, context, and resulting subtle impressions that sound creates in the mind.                                                                                                                |       |
| J31                                            | The soundwalk was an interesting experiment. I found it challenging at times recording sounds. It was easy to experience the sounds, but recording was interesting both graphically and through text. I can't say that I noticed sounds that I haven't but I did discover that Moro Street have speakers in the street lights.                                                                                                                                                                                                                                 |       |

| LEGEND |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
|        | <b>TOPIC 1:</b> Expressed a desire to participate in more soundwalk sessions throughout the experiment.                                |
|        | <b>TOPIC 2:</b> Expressed a change in their perspective on the outdoor environment, since the visual often dominates their experience. |
|        | <b>TOPIC 3:</b> Expressed that they found sound influences their experience of the outdoor environment and design.                     |
|        | INCOMPLETE DATA                                                                                                                        |
|        | NO COMMON TOPIC APPLICABLE TO RESPONSE                                                                                                 |

[TABLE 8.10]

This page: Post-experiment color-coded open responses of the control group. Table created by author.



