

# **VISUALIZING AUDITORY DISTRACTION**

[PROCESS DOCUMENTATION]



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**SOUND, NOISE, VISUAL COMMUNICATION.**

RYAN GERADA

GRPH4015-17

003

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## PREFACE

This journal will act as both a running log of my work to date as well as a process book. It will document and critique the successes and failures I've encountered throughout the 8 month endeavor. It is important to me to accurately document my findings as I explore the complex nature of sound and its relationship with its listener.

My name is Ryan Gerada, I started my graphic design degree 4 years ago at OCAD University, and it is my pleasure to bring my interests to you in the form of this book. On the next page, you will read deeper into the intention for this thesis work, consolidated into an abstract, I believe that is all the priming you will need before diving into this publication.

Turning back the clock, the beginning of this thesis was conceptualized on the premise of synthesized audio, an intrinsic interest in sound and the importance audio has played in my design career. The notion of working with sound had been justly warned at the beginning of this process, fringing the divide between art and design. Ultimately, immersing myself within the field of audio proved to be a powerful motivator, and the result was an enriching experience start to finish.

# ABSTRACT

[REVISION 05]

This thesis will identify and challenge the relationship between sound, cognitive recognition, and acoustic ecology.

I will explore and discover the relationship between sound and visual communication, channeling these discoveries through the lens of the user's experiences and auditory surroundings. It is my intention to identify a speculative dichotomy between these two channels of communication, later highlighting these contrasts as they relate to auditory distraction. Throughout the process of this thesis, I will establish a collection of sound resources - sourcing audio from the established workspaces.

This thesis will effectively challenge the correlation between cognitive recognition and our auditory surroundings. Inspired by the work of Walter Murch, this thesis will root itself in the study of acoustic ecology and psychoacoustics, these studies will help to navigate an objective, communication based outcome. Currently, there will be three main channels of communication being utilized: the cadence of audio, how that audio is visually represented, and lastly, the communication that is derived from that reciprocal exchange.

**4015.**

[ FIRST SEMESTER ]

**September - December 2017**

RYAN GERADA

GRPH4015-17

003

## 09.08-15

I've already forgotten the importance of the weekly journal, it's been reiterated to me many times up until this point but ultimately it appears that it hasn't sunk in.

But that's okay! It's a couple days into the first week, and truthfully this is the first real opportunity I've allowed myself to sit down and start researching. Throughout the weekend of last week and the beginning of this week, I've given thought to the overall execution of the project, however, I'd be foolish to think that I'm not getting ahead of myself there. I'm considering the aesthetic properties of overprinting or working with off registry printing - this stems from the fixation on sound wave forms.

02 09.08-15

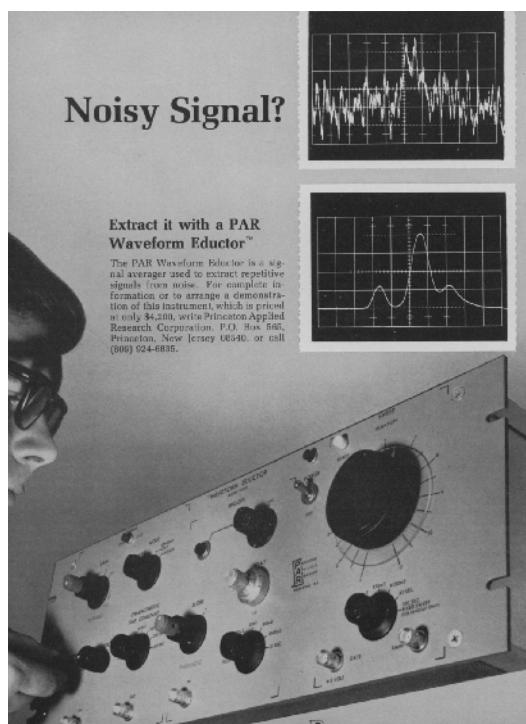
The first week brought with it many unanswered questions. The idea was there, that was sound, however it was difficult bringing much substance to the thought while in class. I feel as many doors as I've managed to close, twice as many have opened. The research process is just getting started. To the right, I have placed a couple prized pieces of technology. These will act as a source of inspiration, manifesting themselves as a reminder of where sound technology has come from, and where it is going.

[internal dialog]

Initially, I plan to explore the concept of sound through my preliminary research, as well as discuss the broader concept with friends, peers and hopefully strangers. I will leave this journal entry open ended, as it is my hope to communicate through this journal as best I can the process in which my thesis, the one that you are hopefully viewing in completion has taken me.

Later this week, continuing into the next months - I will be developing a catalog of sound, in which I intend to experiment with, augment, and discover how sound is transmitted - more on that later.

03 WEEK ONE



Science, New Series, Vol. 162, No 3859.  
(Dec. 13, 1968)



The newly designed  
Model 1010 digital computer uses  
true signal averaging rather than straight summation  
or weighted average methods. Sweep speeds range  
from 20 microseconds per address to 200 seconds  
for a complete 256 address sweep.  
It's easier to operate; even the oscil-  
scope and X-Y recorder output

## 09.15-22

Last week's research rendered little result, as I helplessly scoured the internet for substance that lived within the top 10 results of google.

No luck.

Furthering my research into this week, I will be taking the opportunity to spend time outside, purposfully taking the long way on my commutes to and from school, work, and leisure. It is my intention to find purpose in the sounds surrounding me, mostly in the heart of downtown Toronto.

06 09.15-22

Sound design has popped up multiple times throughout my preliminary research, this week presents itself as a great opportunity to educate myself on that aspect of audio. I've also begun laying out some of my ideas in point form. Writing down these raw, unfiltered ideas will provide a strong reference list down the line, as well as act as a sort of checklist for possible process driven projects in the coming weeks. These ideas have ranged from sound recording to screen printing, a few of which are listed below.

How does layering sound influence it's characteristics?

What are the implications of stacking or layering audio?

Record daily (5 minutes maybe?) play in background as the next day is recorded

Is it feasible to EQ certain aspects of audio to invoke different responses?

Aside from those curious questions, I've laid out some of the key takeaways from class this week, as I have documented in my thesis notebook. These range from the importance of the daily journal reflections to the initial renderings of what my abstract will develop into.

07 WEEK TWO

9:05am  
the importance of weekly journals, process book implementation. daily reflection?

develop abstract over the next couple of weeks, its a living document, meant to evolve.

9:19am  
compress abstract about the project into a word, sentence, paragraph

problem framing, examining and planning out the problems that the thesis will address

(im still considering what the problem, the question in this case, is going to be. what is it going to look like? where do i start? do i even have a large enough conversation to study for 8+ months?)

9:28am  
organic project mapping,  
the importance of strategy

08 09.15 - 22

Examining these notes retrospectively, I believe that there is real value to each of these points. The inclusion of these notes, and the bold figure is to act as a reminder to myself, still developing this project as it is for you to get a glimpse into my unedited notes.

The rest of week two was rather unproductive, as you may be able to extrapolate from the abrupt end to this chapter.

09 WEEK TWO

**09.22-29**

I've found myself constantly directing my thesis thoughts into what I might imagine the final product being. Bad idea, I find it wise to narrow in on the more pressing issues, such as the lack of significant content that I've been able to digest, even as the weeks start to add up. Throughout this week, I will be investing my time in developing a sort of DIY assortment of recording equipment, I plan to start recording samples from around my house, from around the block, and around the city. These samples could prove useful in the development of my curiosity toward sound, they could unlock new levels of experimentation and incite failure. All of which I hope will prove useful in the development of my thesis.

Moving forward, this week also presents the challenge of pulling together an agreeable abstract. The key objective was to arm myself with enough of a foundation in which I can start to build an argument (more on that on the next page), but to also set out a sort of contract for myself to stick to once the weeks start to add up. With that came with it further insight as to how I wish to develop my thesis. Throughout the rest of this week, I will start to develop a running list of key terms which will help guide my research as well as development of the core concept which are starting to emerge.

These key terms will start with the most universal form of communication, linguistics, and branch out from there. Below I've listed a couple of excerpts from the first iteration of my abstract, these are the things that I think I got right, mostly.

I will explore and discover the relationship between sound and visual communication, channeling these discoveries through the lens of the user's perception and expectations.

I will establish a collection of sound resources - ranging from real world samples, noise, and synthesized audio, later pairing them with visual queues as a means to invoke an exercise in perception.

#### abstract presentation week

this week we had our abstract presentations, the following notes are the jot from that class:

the importance of problem recognition and problem solving

this is still a time that im not fully aware of my target audience for the project

developing a body of work, daily goals or mini submissions

#### jackson's project

db levels of sound, mapping that data

listening to the ambient sounds, perhaps setting up a mic outside?

- recording for days?
- recording outside?
- recording recordings?

create catalog of sound through daily recording

#### my presentation comments

sound clarity, city sounds versus nature, the clarity of a unique sound in nature is much easier to distinguish as opposed to the priority in the city. (can the idea of measuring db levels around the city play in here?)

environmental awareness when considering perception of sound, and its possible effects

urban vs rural culture -> layering sounds

babies crying as a means of communicating

sound poem

#### find reference points

tabular data

mapping can include three scenarios, best, middle and worst case alternatives

research and make simultaneously

create a goal checklist

Resisting the urge to jump into things too quickly, this page contains some of the relevant definitions that pertain to linguistics and understanding. There is a strong connection between the psychology of understanding and sound perception. I've laid out the following terminology as a sort of rubric or set of guidelines that will help direct my research going forward.

## Language.

### Semantics

Linguistic and philosophical study of meaning.  
words, phrases, signs, symbols

### Pragmatics

Dealing with things sensibly and realistically in a way that is based on practical rather than theoretical considerations.

### Polysemous; (polysemic)

When a word or phrase has several meanings, you can describe that word as polysemous. One word that's famously polysemous is "bank."

A word is polysemous if it can be used to express different meanings. The difference between the meanings can be obvious or subtle.

### Homonymy

Homonyms are two words that are spelled the same and sound the same, but have different meanings. The word "homonym" comes from the prefix "homo," which means the same, and the suffix "-nym," which means name.

## Outcomes.

Polysemic and homonym are two great words to spearhead a starting point for this avenue of research and thesis development. The words themselves question the meaning of words, specifically words that sound the same, but ultimately achieve different results.

This is a strong development, and one that I hope to utilize in one way or another.

### Key Questions:

are these definitions at all applicable to the relationship between visuals - can visuals take on several construed meanings if accompanied by different audio?

### Denotation

Translation of a sign to its meaning, precisely to its literal meaning, more or less like dictionaries try to define it.

### Connotation

Commonly understood cultural or emotional association that some word or phrase carries, in addition to its explicit or literal meaning.

### Syntax

Language, communication

Set of rules, principles, and processes that govern the structure of sentences in a given language, specifically word order and punctuation.

### Tangential

Hardly touching a matter; peripheral

## 09.29-06

Week four was all about organization. I decided to start laying the bricks of the foundation that will become the engine of this project. Creating a system that will house all of the gathered information, the audio, visuals, research - this was imparitive.

I began by creating a simple structure in which I would tag my daily audio clips. I also created a rather intricate note folder that would facilitate the large breadth of information that would be flowing in and out of my research. Lastly, I began the early workings of a sorting system for the visual content I would be studying alongside audio.

Besides the organizational systems put in place, there was a fair amount of research done on 3-D sound, detailed later this week.

The audio clips would have to be stored chronologically as to not lose the quality of possible statistical relationships.  
The final ordering system is quite simple:

These four criteria will provide a strong filter if the opportunity to analyze the metadata becomes pertinent.

**date**  
**location**  
**time**  
**weather**

Similarly, the categorization of the research and experimental visual content fell into the same framework, dictated by date, refined by location. As my research collection begins to grow, and as the video content moves from experimental to permanent, I foresee a bit of revision to the current systems.

I also spent time reading about 3d sound and sound effects. I thought some of the material on 3d sound was interesting, and pertained to my current list of key objectives. More specifically, this is a quote I pulled from the Wikipedia page on 3-D sound, unfortunately it did not have a source. "It is the phenomenon of transforming sound waves (using head-related transfer function or HRTF filters and cross talk cancellation techniques) to mimic natural sounds waves, which emanate from a point in a 3-D space. It allows trickery of the brain using the ears and auditory nerves, pretending to place different sounds in different 3-D locations upon hearing the sounds, even though the sounds may just be produced from just 2 speakers (dissimilar to surround sound)."

Real life examples of this include attractions such as Sounds Dangerous, at the Walt Disney World Resort in Florida. Guests are equipped with special earphones that are paired with a video presentation. The 3-D audio immerses the viewers while the video flashes off and on, directing focus to and from the audio experience.

"The ears are separated by about 18cm there will be a time difference between the sound arriving at the ear nearest the source and the one further away. So when the sound is off to the left the left ear will receive the sound first, and when it is off to the right the right ear will hear it first. If the sound is directly in front, or behind, or anywhere on the median plane, the sound will arrive at both ears simultaneously. The time difference between the two ears will depend on the difference in the distances that the two sounds have to travel. A simplistic view might just allow for the fact that the ears are separated by a distance  $d$  and therefore calculate the effect of angle on the relative time difference by considering only the extra length introduced due to the angle of incidence. This assumption will give the following equation for the time difference due to sound angle" [3dsoundtechnology.Kart]

Although the technology is intricate and brilliantly engineered, it is not the revolutionary experience that I intend to harvest in this thesis, however, I'm interested in the greater idea surrounding 3-D audio, and the implications it may have on user perception.

$$\Delta t = \frac{d \sin(\theta)}{c}$$

where

$\Delta t$ -the time difference between the ears (in s)

$d$ -the distance between the ears (in m)

$\theta$ -the angle of arrival of the sound from the median (in radians)

$c$ -the speed of sound (in ms<sup>-1</sup>) .

"3dsoundtechnology.Kart." Google Sites,  
sites.google.com/site/kart3dsoundtechnology/.

This basic equation, while not entirely accurate as it does not account for the added travel distance the sound must take to get around the radius of the head may still prove useful when considering the deliverable experiences of this thesis.

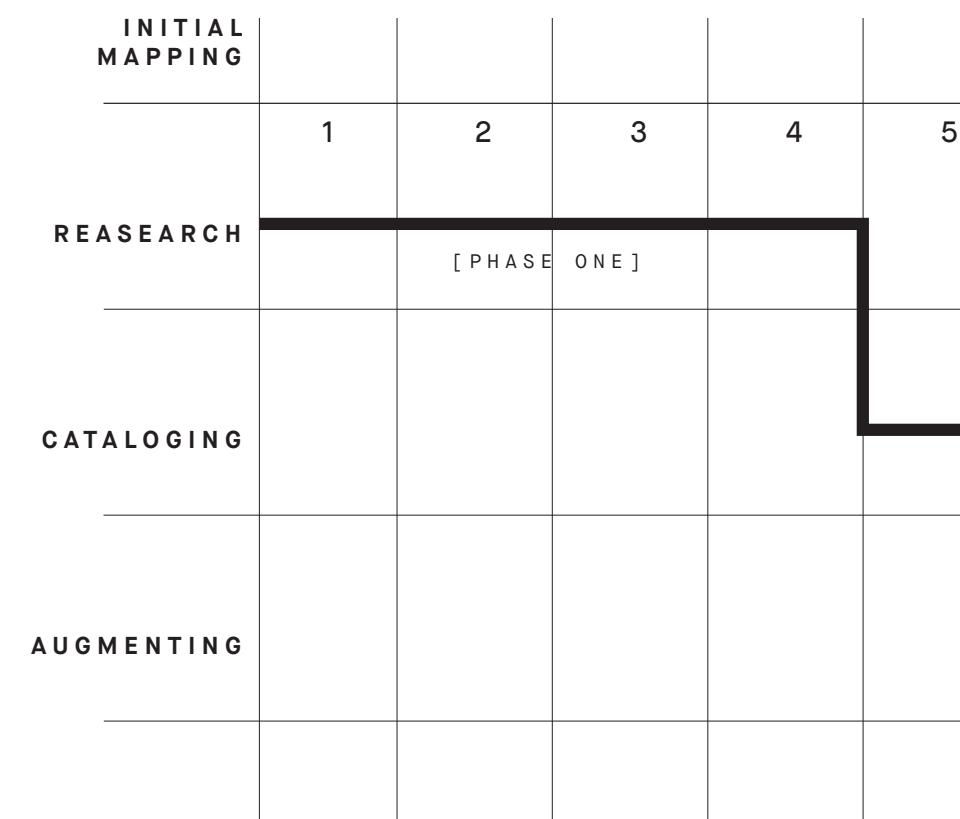
## 10.06-13

The majority of my time will be spent fleshing out the first renditions of the journal and mapping. Throughout this process, I'll be identifying the majority of my future workload with as accurate of a forecast as I can. The objective here is to build a strong foundation, again, like last week. I suppose the last two weeks have been centrally themed around preparation, something I feel has been my weakness up until this point in my career. Although forecasting my workload seems like an ominous task at the moment, I'll have to constantly remind myself that there is room to breathe here.

As the week begins to progress, I see myself falling into a bit of a slump, I've struggled with forecasting my workload, and at the moment the mapping process is becoming a bit of a chore. However, the importance of time management has made itself present as the map begins to take form.

One major factor that I've identified throughout the mapping process is iteration. The importance is building a structure that will then be malleable enough to withstand the constant iteration and tweaking is clear. As the journal and mapping come together, I've started to spend a bit of time wrapping up a bit of the continuing research that I've put to the side.

To the right I've provided a sample of the first version of the map. It's bare, rather uninspired, and I think there's a lot of room for improvement. This is just a cropped version to give you an idea of the three main tiers of content. Overall, this was a tough week as I was clearly unprepared for the breadth of foresight that was necessary to effectively plan for the next eight or so weeks.



Research Phases

Cataloging

[1] Primary research, defining key terminology.

[2] Aligning key terms with case studies and field research.

## MAPPING DEVELOPMENTS

[FURTHER INSIGHT, REVISION 02]

Below are a few insights pertaining to the decisions I made in choosing the main categories within the map.

Research and knowledge building is a staple within any thesis project, it was a mandatory element of this map. Within the second iteration of the map, there were some key developments within the intensity levels of research during certain weeks. I've also allotted myself more research time, turning down the intensity during this time.

Research may include: primary research, defining key terminology, expressing and expanding ideas with quantitative research.

I purposefully broke the research stage of the first semester into two phases, the first is clearly stated above, the second is meant to refresh and invigorate existing research. If this area of research is successful, a big chunk of the project will be informed by research, I plan to feel comfortable with my content and direction by the end of week 9. Of course, there will still be a vast amount of research to be done, but the objective is to eliminate as much of the tangential inquiries as possible by this time.

## Research

The accumulated collection of sampled sounds, created synth pads and generated noise will be constructed as a comprehensive catalog to pull from. This catalog timeframe has been adjusted in the second iteration of this mapping process, I believe there was need of some slight tweaking to the timeline here. I have strung together the catalog phases into two phases, similar to the research category - connected by a brief intermission if you will. The sole objective of this catalog phase is to synthesize the collected information, most of which will be sound sampling from my field research.

Pulling from the established collection of sound, investigate the connection between audio and visuals. This process will be experimental and visual, the audio may be arbitrarily placed on top of the video, and vice versa. There will also be a combination of videography and animation here. This augmenting stage will pair hand in hand with the collection stage that has recently been added as the longest process in this map. Best case scenario here would be taking a collection of video footage and running experiments with that, in pairing with the catalogued sounds.

Collecting was the last category, it was excluded from the initial map mostly due to oversight. The collection stage is the crux of this thesis, it will present me with the opportunity to experiment, discover and iterate. This metaphorical engine is eager to depart and the discoveries should be exciting.

## Cataloging

## Augmenting

## Collecting

## 10.13-20

Study break already?

This week is going to be incredible. I've allotted every second of free time to furthering my research and refining the journal and mapping as my knowledge base grows. I have also planned some recording time with the portable microphone, as well as allotted myself a generous amount of time to dust off the synthesizer and start creating a vast amount of content to add to the catalog. At the moment, I do not have any tangible outcomes for these synthesized sounds, which, if I had to guess, is starting to present itself as a problem. However, I believe simply starting and seeing where it gets me will set the tone for how this experiment is going to wrap itself up.

The case studies have begun to come to fruition, it's pretty clear that there's a massive amount of information to be gathered from tangential research, and that's reflected in the little offshoot blips that I've enjoyed investigating. I've begun browsing the implications of sound within video game design, as well as prolific film sound designer Walter Murch. More on these next week.

## CASE STUDY [1]

[SOUND WITHIN VIDEO GAMES]

Sound within the video game industry is an ever evolving art form. The latest installments of massive titles have put a certain emphasis on sound design, something that has not seen this much attention prior. This development has peaked my interest, as I have personally experienced a well balanced, brilliantly sounding game. Two titles in particular will be highlighted in this case study, with supporting information from Twenty-Thousand Hertz, a sound design podcast. Other supporting information includes the design principles of Walter Murch, sound designer and film director as well as input from game sound designer Damien Kastbauer.

Musical scores, coupled with larger than life themes are common place in today's massive titles, however it wasn't always this way. Prior to modern day titles, video games placed a large portion of their budget and creative capabilities on groundbreaking graphics and realistic physics. Besides the creative, innovative and immersive story telling, games lacked the certain polish of its other features when it came to the sound design.

It takes time to create a truly immersive soundtrack, accommodated with a full array of appropriate sound effects and foley (more on foley later). Game designers utilize what's called an engine to propell these sounds into the playspace. Contrary to the obstacles sound designers must conquer when implementing sound into the movie, sound designers for games must account for an infinite amount of possibilities within their unique play experience. The player must feel the same amount of care and attention has gone into the audible gaming experience whether it takes them a couple of minutes, or a couple of hours to complete the level.

"Music in modern games has gained a complexity because of how variable the player's interaction can be. music is composed in elements or little chunks, or tiny little pieces or layers that the game then controls the sequence of or the playback of, based on what's happening." - Damian Kastbauer

Dynamic mixing includes the following:

- ambience
- footsteps
- gunfire
- dialog

**a constant level of prioritization is present in the game's sound mix. the overwatch team created a system that evaluates threat level to your immediate situation, allowing the games volume mix down to constantly fluctuate as the context of the game evolves around you.**

Continuing my investigation of video game sound design, I ventured into the process of creating these sounds. I was curious to discover what exactly went into the development of these sounds, and how the epic score of a blockbuster title came together.

Before the video game industry satisfied itself with graphics, a large portion of time and energy went into making the game look better, leaving the sound leagues behind. However, the industry has caught up with itself, and it has reinvented what designers thought sound can do to the gaming experience. Sound plays a massive role in the game's overall feel, Dallas Taylor's sound design podcast Twenty-Thousand Hertz, touches on this subject, sound communicates a sense of place within the game, a sense of emotion. It drives the gaming experience into a whole other tier of immersion.

Here's a list of the 5 key layers of a gaming soundtrack, deconstructed by Dallas Taylor.

#### ambience (backgrounds)

- ties the player to the location, environmental
- wind, rain

#### foley

- from the player's body
- clothing movement, stepping.

#### hard effects

- machines, sirens, construction, vehicles

#### voices

- narration, character dialog

#### music layer

- the track that brings everything together.
- can have multiple sub layers that unite to create the soundtrack

All of these sounds must be programmed individually. The infinite amount of possibilities within the game must be accounted for.

Again, this is facilitated through the game engine.

Taylor, Dallas, and James Introcaso. "Level Up." Twenty-Thousand hertz, 3 Oct. 2017, [www.20k.org/episodes/levelup](http://www.20k.org/episodes/levelup).

The final layer of research within this case study are the techniques used by sound design and foley artists to bring these worlds, and their characters to life. Before creating these sounds however, the artists must get a real sense for the character or environment. This may include how the character moves around the playspace, or perhaps their role in the lore. The artists must develop a sort of relationship with the particular character or space before moving onto the job. Creating the sounds can range from acts of foley, simply defined as a sound created by the movement or actions of a person. Artists use a wide array of techniques to create these sounds, such as real world food being mixed in a bowl with a mic in close proximity, often including unassociated materials or substances. All of these techniques come together to help the artist create a truly immersive experience for the player.

Implementing these sounds into the game requires a careful collection of modules that work in unison to seamlessly stitch together the music, atmosphere and foley into single fluid soundtrack. Damien Kastbauer, guest on Taylor's Twenty-Thousand Hertz breaks down a typical video game score:

This modular form of music writing in its simplest form looks like:

- the triggered start
- a loop-able middle
- a conclusion or end

Kastbauer continues, "longer, more complex games can have up to 40 modules, split up by themes and instrumentation. this allows the game to have unique playback experiences through a non repetitive listening experience."

10 minute pieces of music can be transformed into hours worth of unique gameplay music. The objective is to appropriately score the gameplay no matter how long it takes them to complete that level specific sequence.

A game that captures these elements seamlessly is Nintendo's latest Legend of Zelda: Breath of the Wild. Breath of the Wild features a common video game feature not yet covered here called player feedback. Simply, player feedback initiates a sense of value through an auditory cue, it lets you know that you did something good (opening a chest, killing an enemy, hitting a headshot.) These seemingly small blips of sound accomplish a lot in terms of the player's understanding of their interaction with the playspace.

Another key element of the game's design is their intention ambience throughout the entirety of the multi-thousand hour playtime. The creator chose to include little in the way of traditional video game scores, instead, the focus has been directed to the ambiance of the atmosphere. The location, time of day, elements all effect the atmosphere within the game. Hajime Wakai, sound director on Nintendo's Breath of the Wild had an interesting quote about his design decisions when developing the game in the mini-series *The Making of The Legend of Zelda: Breath of the Wild*.

"For this game, the background music revolves around piano compositions that really accentuate the ambient sound. From the very beginning, we wanted to focus on those ambient sounds rather than excitement building because we knew they'd add authenticity to the environments and scenery. We felt that approach would be a better fit for this game. Since time actually passes in this game, there are environmental and atmospheric differences that distinguish day from night. The music in towns also changes to reflect this transition, though players might not notice this unless they pay very close attention to the music. It's really satisfying how the tempo gradually gets slower and slower and instruments steadily drop off as it gets closer to night. Then, as day gets closer, the tempo quickens and instruments join in one by one. It was really difficult to express the change between night and day and convey it effectively in the score. That was a big challenge for us."

Aonuma, Eiji, and Hajime Wakai. *The Making of The Legend of Zelda: Breath of the Wild*.  
Youtube, 14 Mar. 2017, [www.youtube.com/watch?v=vLMGrmf4xaY](http://www.youtube.com/watch?v=vLMGrmf4xaY).

## 10.20-27

The daily recordings continue. I've kept myself on track with the recordings, it's beginning to get to a point of mass, and I'm excited to pull the files into ableton to get started with some experimenting.

Besides the audio, this week has been a major catchup week, dovetailing the successful research week last week. A large amount of my time will be spent gathering the collected information and putting in the time to transfer that into the journal/process book.

I had the pleasure of meeting with Adam Tindale this week. I approached the meeting with some key objectives, discovering if I was on track with the work I have done up until this point would be the most notable. As a result of the meeting, this week has brought with it many new discoveries and avenues of research to venture into. Even in the short time we had together, Adam played a massive role in reinforcing the direction this thesis will ultimately take. Two notable figures rose to the top as clear sources of inspiration - Lawrence English and Michael Chion. This week will be spent researching and documenting the work of these two individuals.

## Lawrence English

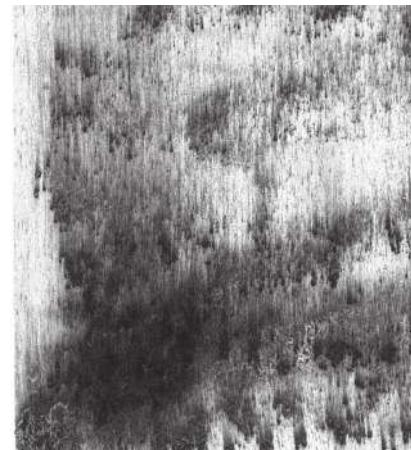
Lawrence English, a brilliant sound designer working out of Brisbane, Australia questions the relationship between auditory experiences and human engagement. English's work roots itself within the study of acoustic ecology, and the many examples of such work have influenced the way I have begun to conduct this second tier of research. I see many parallels in the objectives of this thesis project and his work as a whole. His commentary on the effects of sound in the context of a performance have inspired thought about this work.

"I think at home you're only working with one set of ears, in concert you start using the body as an ear, and that's where it gets interesting. There's a kind of instant synesthesia that happens – the sense of physical sound on the body and how that effects how you interpret sound with your ears, and that's for me what I want to do with the concerts. I want to have that relationship where you're actually starting to consider the body as part of the equation for listening." [1]

<http://www.factmag.com/2014/08/19/i-want-to-do-things-that-have-meaning-an-interview-with-one-of-ambient-musics-modern-masters-lawrence-english/>



Lawrence English, The Lab  
(Mar. 29, 2017)



Lawrence English, Viento  
(2015)

English questions the interaction with sound, and draws conclusions from his musical experimentation. This is no clearer than his reference to time in relation to sound. "Every time you listen to something you're dying a little bit. That's time you don't get back, and ideally it contributes to the better version of you for the future. It's like reading a book – anything that requires a set amount of time to do, it has to pay off in some way." [2]

Below I've listed the key takeaways from the study:

- scale in audio - big vs small
- mistaking an instrument for a field recording
- measuring time in sound or music

## Michel Chion, Audio Vision

Michel Chion's Audio Vision has played a supporting role in defining the relationship between perception of sound and visuals. The content listen below are excerpts from Audio Vision's foreword, written by Walter Murch. These notes are highlighted in this journal for their remarkable resemblance to the study being conducted here, they're qualities and poetic vernacular will act as a constant source of inspiration.

### Audiovisual Contract

The audiovisual relationship is not natural but rather a sort of symbolic pact to which the audio-spectator agrees to forget that sound is coming from loudspeakers and picture from the screen. The audio-spectator considers the elements of sound and image to be participating in one the same entity or world.

The result of the audio-visual contract is that one perception influences the other and transforms it.

### Magnetization (spatial)

- The spectator will mentally place a voice as coming from off screen left, in tandem with visual indications about the person speaking, even through in a monaural movie theater the sound really emanates from a speaker behind the center of the screen
- If a character is walking across the screen, the sound of the footsteps seems to follow his image, even though in real space, they continue to issue from the same stationary loudspeaker.
- Sounds of loudspeakers located somewhere in the room will be perceived as coming from the TV-screen

Magnetization happens in spite of the evidence of our own senses.

The spectator perceives that a sound source is in space of the image, no matter what the real point of origin of the sound.

### Acousmêtre

Acousmêtre - a kind of voice-character specific to cinema that derives mysterious powers from being heard and not seen.

The disembodied voice seems to come from everywhere and therefore to have no clearly defined limits to its power.

Acousmêtre depends for its effects on delaying the fusion of sound and image to the extreme, by suppling the sound - almost av voice - and withholding the image of the sound's true source until nearly the very end of the film. Only then, when the audience has used its imagination to the fullest is the real identity of the sound revealed, almost always with a accompanying loss off imagined power. As long as we can't see whom we attribute all-seeing power to the voice, but once inscribed in the visual field he loses his aura (as the wizard in the Wizard of Oz and HAL in 2001).

The acousmêtre has...

- the power of seeing all
- the power of omniscience
- the omnipotence to act on the situation
- the gift of ubiquity (to be where he or she wishes)

## 10.27-03

I've been slightly absent from my thesis development while in Montreal. It's been a mildly inspiring experience, most notably the use of projections onto buildings. The grid used within the projections while the graphics play in their own cadence is a technique that can be used here.

This week will also cover another case study that has been in development throughout the past week and a half. During my travels I had an opportunity to bring the research to fruition and document it in a digestable way.

## CASE STUDY [2]

[CLEAR DENSITY, DENSE CLAIRITY]

Walter Murch has played a large role in informing my decisions up until this point within the process. His influential philosophies have established him as both a revolutionary sound designer and educator. Murch's work has been tangentially related to the previous case study in which I reference his work and theories behind the Clear Density, Dense Clarity essay. His teachings have had wide spread implications throughout various industries, and I believe that has been clearly noted above. This case study will focus on the key takeaways from my research surrounding his work, his teachings, and how this will tie in with the working process of this thesis. It will be rooted within the Clear Density essay but also pull from additional sources such as filmsound.org.

Dense Clarity, Clear Density has been an inspiring essay to dive into. Its implications, as previously noted have far surpassed just the film industry. It has been a pleasure to measure some of the teachings to my own work, at its current state there have been many branches of inspiration, as noted on the next page in the candid writing of my unedited notes. It is my intention to help illuminate your understanding of where my inspiration and thoughts were during the process of investigating this case study. Before diving into the core outcomes of the research, identifying some of the candid insight gained

## Note Excerpts

sourcing audio from various locations, for the purpose of this instalment of inspiration, we'll say we are sourcing from a Toronto intersection. this intersection has a lot of variables, including the time of day, the weather conditions, the specific day of the week, and what the surrounding traffic conditions are at that current moment.

further insight might have me look into the quality of sound, or perhaps the loudness of sound from that intersection:

- this could be evaluated for its loudness
- for its quality of sound
- experiment with what is distinguishable from just the audio
- retrofit other sounds overtop to see if they blend in or juxtapose the original audio
- layer multiple days of recording in different conditions or times and compare those findings
- potentially pulling back to one of my original concepts here, visualizing that sound and comparing the collection infographic style

all the while, keeping in mind murch's teachings about importance of audio hierarchy

also considering filming and playing music over top of this audio / video

deconstructing sound visually. is it possible to find a program to aid in the deconstruction of sound and visually represent each layer of a composition visually?

Considering the effects of sound on an individual, it was clear that collecting data, organising and listening was a common sequence when reading further into Murch's early explorations of sound. Below are a few notes that I took while analysing his Dense Clarity, Clear Density essay.

1.

- recorded sounds constantly, sourced from unique places while actively listening for potential tools and resources
- the power of silence, negative space in sound

2.

the first of our senses is sound, activated while only 4 months old, it is the first and only sense that we encounter until we are born.

Murch illustrates the early relationship we begin to develop with sound in an article featured on filmsound.org, a leading film website focusing on the effects of useful sound techniques in film. "So we all begin as hearing beings – our four and a half month baptism in a sea of sound must have a profound and everlasting effect on us – but from the moment of birth onward, hearing seems to recede into the background of our consciousness and function more as an accompaniment to what we see. Why this should be, rather than the reverse, is a mystery: why does not the first of our senses to be activated retain a lifelong dominance of all the others?" [1]

Murch continues to illustrate the difference between our visual and auditory appreciation, his commentary reinforces the core principle in which I plan to uncover during the process of this thesis. Sound as a backdrop to visuals continues to play a supporting role, a role in which an unappreciated aesthetic continues to fade into the background, cast into the ominous shadow of the visual experience. "Something of this same situation marks the relationship between what we see and hear in the cinema. Film sound is rarely appreciated for itself alone but functions largely as an enhancement of the visuals" [2]

Below, I've listed multiple quotes from Murch's writing in his essay Dense Clarity, Clear Density. I've decided to take a step back from the formal paper vernacular I've worked with on the previous page, instead I will list a series of quotes that I found particularly inspiring or important. These quotes have been helpful in guiding the way that I have approached this thesis, they are not intended to be taken at face value, but rather related back to the on going discussion within this process journal.

"The general level of detail, fidelity, and what might be called the "hormonal level" of sound and image has been vastly increased, but at the price of much greater complexity in preparation."

"This character – or timbre – is slightly different for each instrument, and that difference is what allows us to distinguish not only between types of instrument – clarinets from violins, for example – but also sometimes between individual instruments of the same type – a Stradivarius violin from a Guarnieri."

"this kind of harmonic superimposition has no practical limits to speak of. As long as the sounds are harmonically linked, you can superimpose as many elements as you want. Imagine an orchestra, with all the instruments playing octaves of the same note. Add an organ, playing more octaves. Then a chorus of 200, singing still more octaves. We are superimposing hundreds and hundreds of individual instruments and voices, but it will all still sound unified. If everyone started playing and singing whatever they felt like, however, that unity would immediately turn into chaos."

#### [UNITY VS CHAOS]

harmonic superimposition, building up a sound, the example of crickets in the basement - recording many versions of the crickets chirps and imposing them over each other to create a surreal ambiance.

#### [THE DAGWOOD SANDWICH]

Murch draws parallel to the dagwood sandwich when considering the auditory implications of stacking sound within a mix.

"Somehow, it seems that our minds can keep track of one person's footsteps, or even the footsteps of two people, but with three or more people our minds just give up – there are too many steps happening too quickly. As a result, each footprint is no longer evaluated individually, but rather the group of footprints is evaluated as a single entity, like a musical chord. If the pace of the steps is roughly correct, and it seems as if they are on the right surface, this is apparently enough. In effect, the mind says "Yes, I see a group of people walking down a corridor and what I hear sounds like a group of people walking down a corridor." [3]

#### [EMBODIED VS ENCODED SOUND]

encoded sound, talking is mostly dealt with on the left side of the brain while embodied sound, birds chirping, traffic flowing on the right.

#### [LIMITED SOUND PERCEPTION]

Wrapping up Murch's writing on dense clarity, he speaks toward the finite amount of sounds we as listeners can digest at a time.

"five layers is the maximum that can be tolerated by an audience if you also want them to maintain a clear sense of the individual elements that are contributing to the mix. In other words, if you want the experience to be simultaneously Dense and Clear."

## 11.03-10

This week shifted my focus to practical examples of visual demonstration. These examples ranged from analog signal visualization as demonstrated through the oscilloscope to the digital synthesis practiced by the spectrogram.

The objective of this research in particular is to broaden my understanding of the science and calculation behind sound visualization. Informing myself of the best, most applicable ways of visualizing sound as it pertains to this thesis is the ultimate goal.

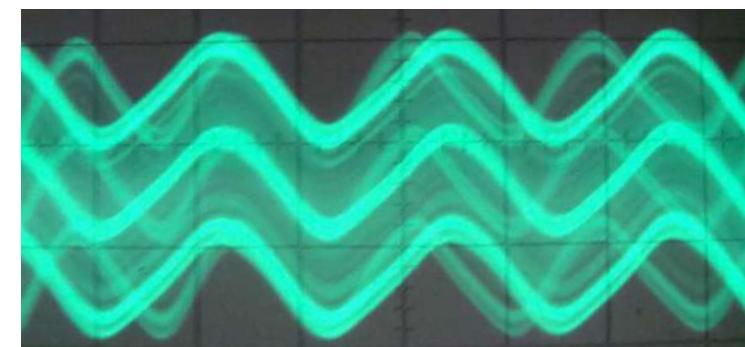
## SOUND VISUALIZATION

[OSCILLOSCOPES, SPECTROGRAMS & MORE]

Below features the insights and advancement in this work. The project research was necessary to prelude visual experiments.

### Oscilloscope

One of the first techniques I discovered through the process of my research was the oscilloscope. This unbelievable piece of technology is able to visualize a signal that is fed into the machine. The oscilloscope yielded a satisfying return of inspiration, there are many intriguing aesthetic outcomes, the variable here is in the quality, or type of signal.

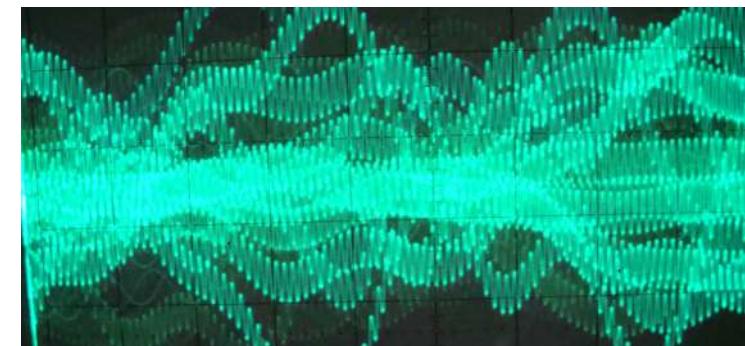


Examples of oscilloscope readings.

Time is represented on the x-axis, while frequency is demonstrated on the y-axis.

### AC hum on sound

By Rippey574 at English Wikipedia  
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<https://commons.wikimedia.org/w/index.php?curid=11466732>



Heterodyne

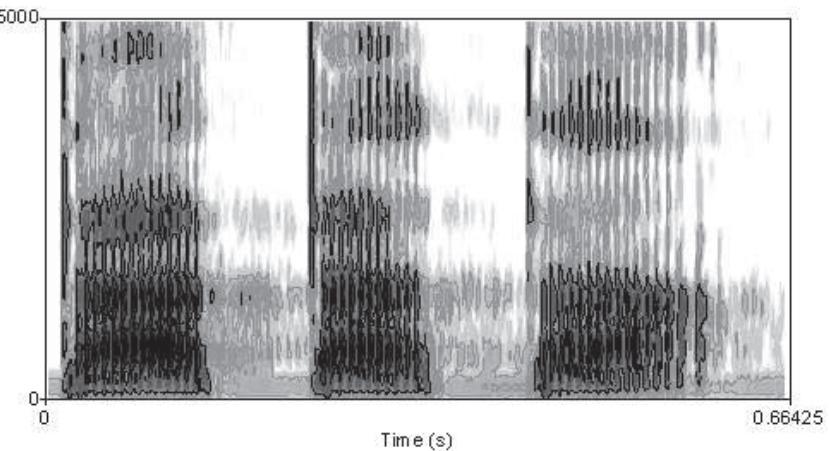
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**Spectrogram**

A spectrogram is a visual representation of the spectrum of frequencies of sound or other signal as they vary with time or some other variable. Spectrograms are sometimes called spectral waterfalls, voiceprints, or voicegrams.

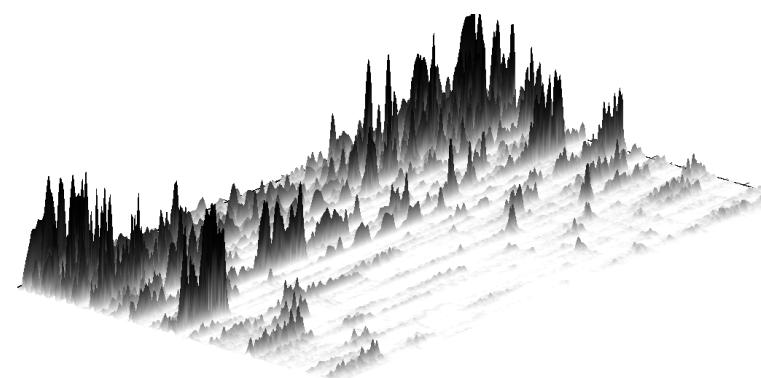
Spectrograms commonly operate on a two axis grid, measuring time and frequency, with a third element being added as a measure of amplitude through intensity.

Spectrograms are a possible visual outcome for this project as they carefully articulate the acoustic properties of a signal through a visual outcome.



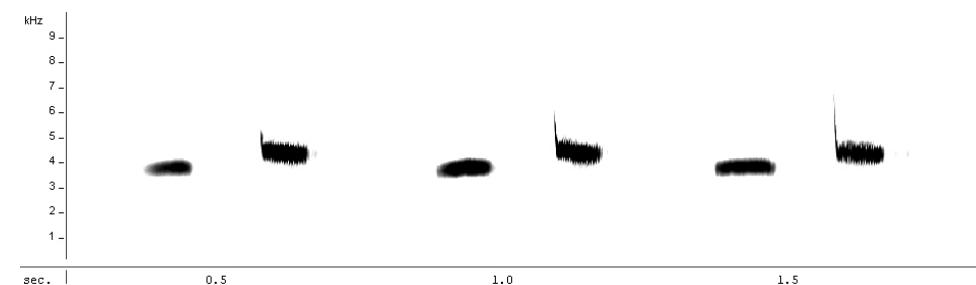
Spectrogram of a male voice saying 'ta ta ta'.

CC BY-SA 3.0  
<https://commons.wikimedia.org/w/index.php?curid=647191>



3D surface spectrogram of a part from a music piece.

By Debianux - Own work  
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<https://commons.wikimedia.org/w/index.php?curid=4729646>



Spectrogram of great tit song.

By Maxime Metzmacher - Own work  
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<https://commons.wikimedia.org/w/index.php?curid=19906743>

Below I've provided a list of key terminology that have, and will play an informing within the process of this research as it relates to audio visualization.

## Visualization.

### Spectrum

a spectrum is a condition that is not limited to a specific set of values but can vary, without steps, across a continuum.

### Self Similarity Matrix

In data analysis, the self-similarity matrix is a graphical representation of similar sequences in a data series.

Similarity can be explained by different measures, like spatial distance (distance matrix), correlation, or comparison of local histograms or spectral properties (e.g. IXEGRAM[1]). This technique is also applied for the search of a given pattern in a long data series as in gene matching.[citation needed] A similarity plot can be the starting point for dot plots or recurrence plots.

## Catagorization.

### Equivalent Rectangular Bandwidth

The equivalent rectangular bandwidth or ERB is a measure used in psychoacoustics, which gives an approximation to the bandwidths of the filters in human hearing, using the unrealistic but convenient simplification of modelling the filters as rectangular band-pass filters.

### Critical Band

In audiology and psychoacoustics the concept of critical bands, introduced by Harvey Fletcher in 1933[1] and refined in 1940,[2] describes the frequency bandwidth of the "auditory filter" created by the cochlea, the sense organ of hearing within the inner ear. Roughly, the critical band is the band of audio frequencies within which a second tone will interfere with the perception of the first tone by auditory masking.

### Auditory Masking

Auditory masking occurs when the perception of one sound is affected by the presence of another sound. Auditory masking in the frequency domain is known as simultaneous masking, frequency masking or spectral masking. Auditory masking in the time domain is known as temporal masking or non-simultaneous masking.

The next spreads are early explorations of sound visualization  
techniques I may consider exploring as I start to exercise a bit  
of design within the research process.

**NO.1**

[oct24.17]

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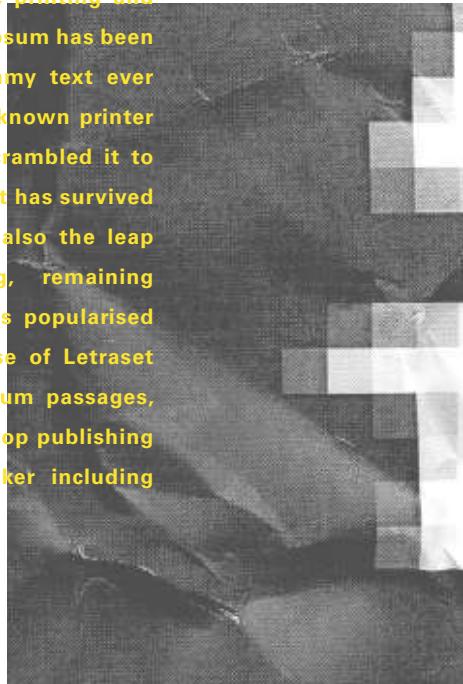
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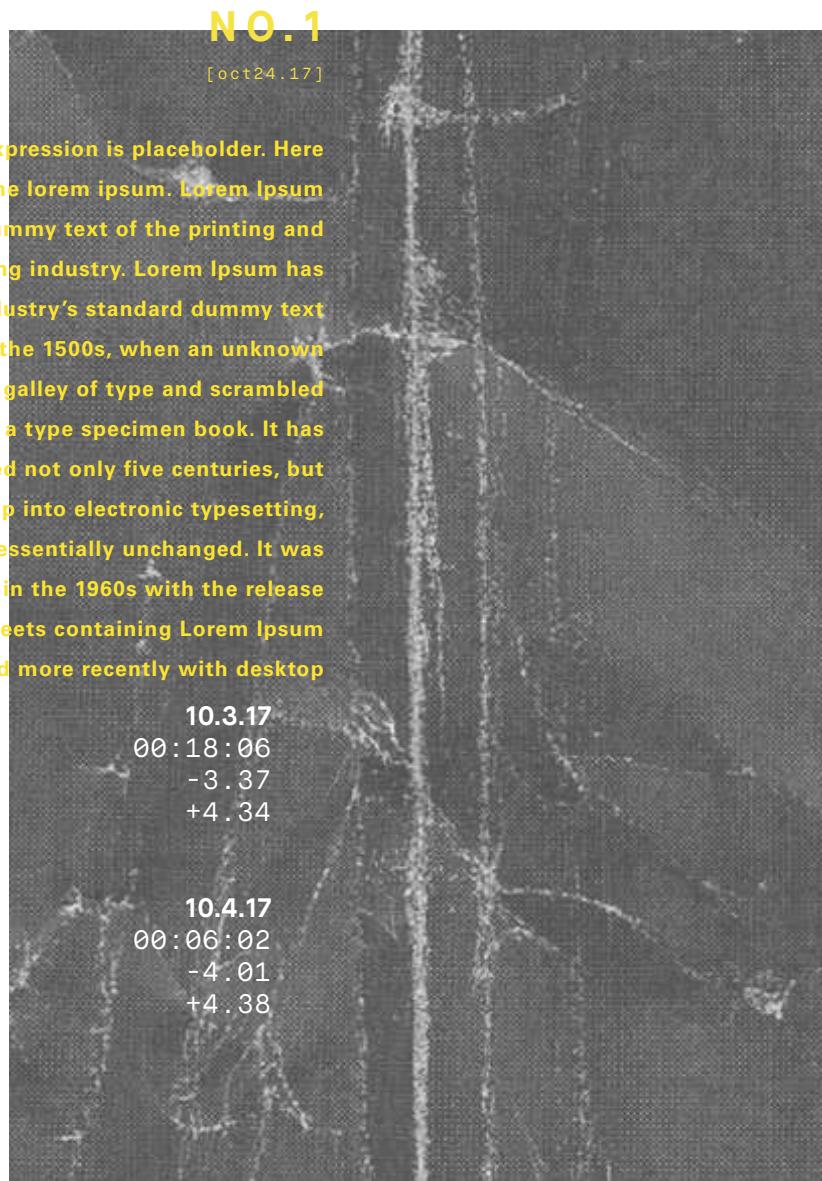
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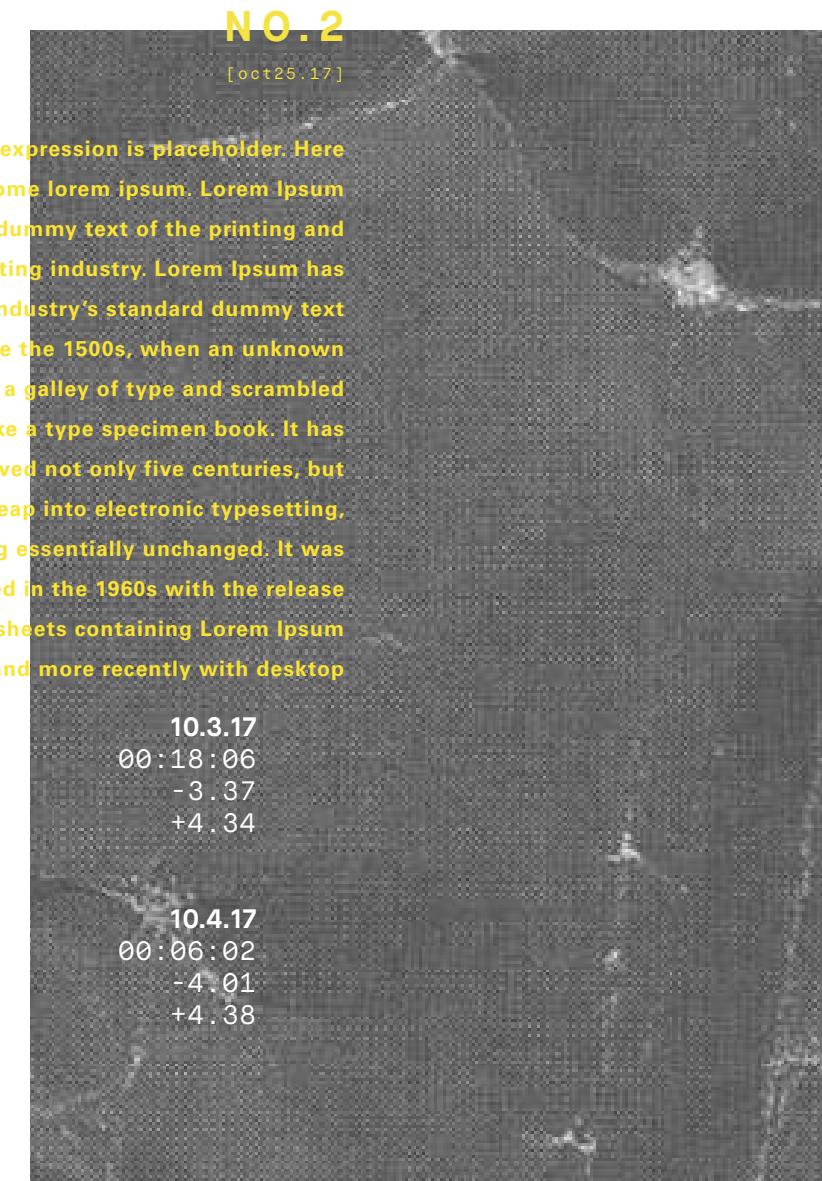
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## 11.10-17

Week ten has started slowly. The journal has been lagging behind, it has become a bit of an afterthought in the process of preparing the mass of sound files for examination. Last week provided a fantastic outlet for researching sound visualization alternatives, this week I have set out to start pulling these sounds into my computer and really start listening, experimenting, and visualizing.

The following visual experiments are comprised of a weeks worth of sound recordings, these early experiments were encouraged to be unfamiliar and unrefined. The third week of October (16-22) was subject to visual experimentation, with no objective in mind, mistakes and failures have made themselves present.

These visualizations manifested themselves in three ways, all through the built in features of Audacity. First, a generated waveform was created, second, a decibel reading and lastly a spectrograph. Although there is plenty of room for iteration, these visualizations have been a welcome start.

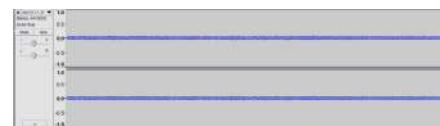
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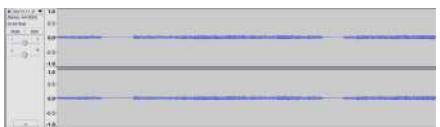
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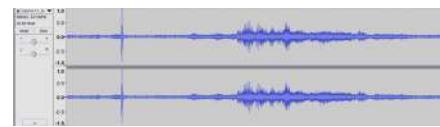
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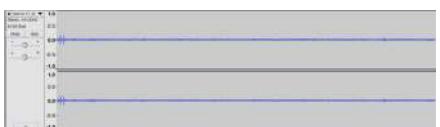
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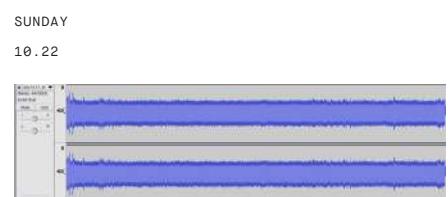
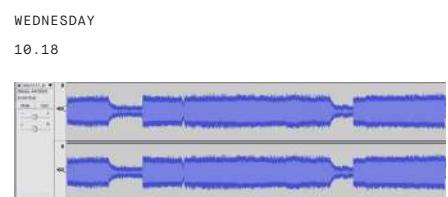
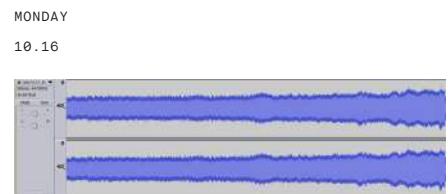


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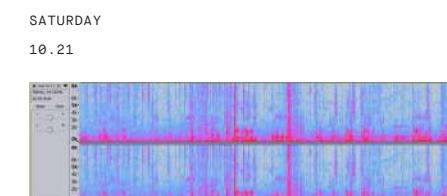
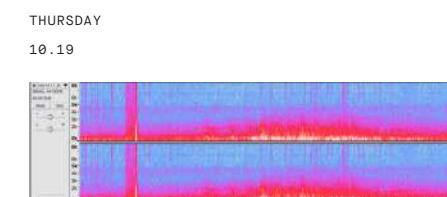
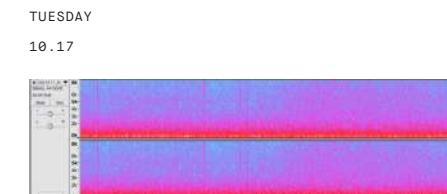
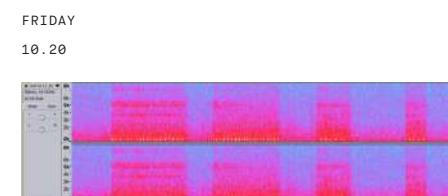
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70 11.10-17



71 WEEK TEN



# 10.17-24

## CHAPTER 2 - Rethinking the Process

Up until this point, the process has consisted of carefully selected tactics with a distinct lack of ideation. Working through the research process, I suppose I expected an idea to present itself to me without giving the process some long, hard thought. Chapter 2 marks the advent of a real idea, a lens in which the rest of this thesis will be orchestrated. Ahead of you lies the undigested ideas, I believe these ideas will provide the structure needed to fulfill this project in its fullest form.

The fact that it has taken me until week 11 to realize there was no core idea driving the research, intention and methodology of this project is a concerning. This journal has been conjured as a response to the now panic that I'm confronted with.

### PROCESS:

**REVIEW RESEARCH, NOTES**

**IDEATE**

**ITERATE, CONVERSE**

**MOVE FORWARD**

① IDEA ?  
 IDEA  
 ? ? ?

VS.

- KULESHOV VIDEO EXPERIMENTS - LAYERING RECORDED SOUNDS  
 SOUND VIS BOOK  
 (TRANSPARENT PAPER)  
**TACTIC**  
 - VIBRATION PRINTING  
 - SOUND VIS - SPECTROGRAMS ETC  
 - URBAN SOUND RECORDINGS  
 - DATA MAPPING MATRICS IN SOUND

## CHAPTER 2

NOV 23 / 17

### [1] ELIMINATING DISTRACTIONS

#### ACOUSTIC ECOLOGY

- STUDY OF THE ACOUSTICS OF OUR SURROUNDINGS (WHAT WE HEAR)
- INVOLUNTARY AUDIO
- DISLOCATING SOUNDS
- WALTER MURKIN (CLEAR DENSITY, ~~CLEAR DENSE~~ CLARITY)
- Kuleshov effect can play a role in demonstration here

### [2] MAPPING THE UNSEEN

#### PSYCHO ACOUSTICS

- NAVIGATING URBAN SPACES AS A VISUALLY IMPAIRED PEDESTRIAN
- AUDIO QUEUES? ARE THEY PRESENT ENOUGH?
- WHAT DO PUBLIC SPACES SOUND LIKE W/O VISUAL ASSISTANCE?
- WALTER MURKIN (AGAIN)

## CURRENT ABSTRACT [REV 03]

[MIDTERM - WEEK ELEVIN]

This thesis will challenge the relationship between sound, visual communication and user perception.

I will explore and discover the relationship between sound and visual communication, channeling these discoveries through the lens of the user's perception and expectations. It is my intention to identify a speculative dichotomy between these two channels of communication. Throughout the process of this thesis, I will establish a collection of sound resources - ranging from real world samples, noise, and synthesized audio, later pairing them with visual queues as a means to invoke an exercise in perception. The experimentation with these sounds will range from digital recreation, manipulation, and modification, as a means of stretching audio to its limit.

This thesis will effectively challenge the correlation that has been pre-established between audio video communication by demonstrating the dynamic potential of their symbiotic relationship. This thesis will root itself in the study of psychoacoustics, this will help to navigate an objective, communication outcome. Currently, there will be three main channels of communication being utilized: the cadence of audio, how that audio is visually represented, and lastly, the communication that is derived from that reciprocal exchange.

This version of the abstract illustrates my previous intentions for the work quite well. However, changing the focus of the project to examine auditory distractions has left me with a few counter intuitive points here. They will need to be revised and either edited or excluded. Next,

## ABSTRACT [NEW]

[REVISION 04]

This thesis will identify and challenge the relationship between sound, cognitive recognition, and acoustic ecology.

I will explore and discover the relationship between sound and visual communication, channeling these discoveries through the lens of the user's experiences and auditory surroundings. It is my intention to identify a speculative dichotomy between these two channels of communication, later highlighting these contrasts as they relate to auditory distraction. Throughout the process of this thesis, I will establish a collection of sound resources - ranging from real world samples, noise, and synthesized audio. These resources will be visualized as a means to draw visual solutions to the auditory problem.

This thesis will effectively challenge the correlation between cognitive recognition and our auditory environments. This thesis will root itself in the study of acoustic ecology and psychoacoustics, these studies will help to navigate an objective, communication based outcome. Currently, there will be three main channels of communication being utilized: the cadence of audio, how that audio is visually represented, and lastly, the communication that is derived from that reciprocal exchange.

Many of the primary objectives outlined in the previous abstract had to be revised to better fit the new objective of this thesis. At first, the objective was to curate a audio/visual playlist of sorts. Although that is still a realistic experiment, it now feels like a tangential study rather than thesis topic. Of course, there was insight that could have been extrapolated from that, but ultimately, I was unable to conjure a strong problem that was to be solved. Thinned out, the new abstract reads easily, many of the ambiguous terminology has been edited or trimmed away. This was a necessary adjustment as I believe it is wise to create a more approachable abstract.

## 11.24-01

Focus is a difficult skill to master, it is something that I personally battle on a daily basis. Mustering up the focus to get into a steady workflow, a state where you truly transcend any level of distraction and just hone in on the task at hand. The focus of this project will now direct itself to looking through the lens of acoustic ecology, a study that examines the sounds that surround us everywhere we go. Acoustic ecology is a perfect starting point for my problem, which can be put as simply as: how do we eliminate distracting sounds or noises?

My research will change course slightly, as I begin to investigate a topic that I've only scratched the surface of, noise and sounds are distracting, can these sounds be visualized in a way that respects and preserves the authenticity of their form?

## DEFINING NOISE:

"Noise can adversely affect man in various ways. For example, prolonged exposures to intense noise may damage sensory cells and other body tissues as seen in cases of noise-induced hearing loss. Noise can mask speech reception needed to accomplish a task, disrupt one's ability to attend to a job, or otherwise complicate work performance. Noise may disturb rest, relaxation, and sleep. In short, noise may affect the health, productivity, and well-being of people." (Cohen 1968)

## SOUNDSCAPE:

Soundscape, that is the acoustic environment as perceived, experienced and/or understood by people in context.

## 12.01-08

The big week.

This week will see a large focus of time being spent on cleaning up and refining this process book, the goal it to get it to a presentable level. Rereading, editing and polishing the previous weekly entries. It is also worth considering the amount of time that it'll take to pull together the visual deliverables for the upcoming end of term presentation. The presentation will have three major deliverables, the first being this process book. The next is going to be a fleshed out visual scenario, the scenario will be fully detailed within the next couple of chapters. Lastly, a experimental visual movie will be paired with a collection of sourced samples. This exercise is intended to provoke curiosity as to how I may implement sound within the final thesis presentation, as more of an attention grabber rather than main focus.

Creating the scenario started with generating a catalog of field recordings from the Toronto Reference Library. A mostly quiet workspace, it was my intention to capture some of the intricacies within the space, some of the recordings were on the spot, others were sourced from long recordings of workspaces within the library. Combing through the files, these are the visual outcomes that were produced while experimenting with the waveforms.

These recordings are being singled out in order to represent the space in a unique way, as a constant reminder, I found myself questioning the purpose of each of these sounds while navigating the library, ears open, listening intently for unique or distracting sounds.

**How or when do I include sound?**

Including sound within the presentation of the work has been a hefty consideration, at the time of writing this journal entry, I am still unsure of the role sound will play within the presentation. If you asked me a week ago, I had convinced myself that sound was an unnecessary affix to the project. It was my thinking that eliminating sound entirely would let the user extrapolate, tapping into their own experiences. However, upon further reflection, and conversation regarding the topic of inclusion or exclusion, I have been swayed back into the middle ground.

At the moment, there is an argument to be made for the inclusion of sound, but when or how is it implemented? It's possible that sound can be used as a lure, as a device to build intrigue, while being constrained enough that it doesn't spoil the payoff for the viewer. Conversely, sound could be implemented as a supplementary element within the final statement. Is this project going to open up like a dramatic movie sequence? Or perhaps take it's time, carefully considering each act like a masterfully crafted ballet performance?

**An Acoustic Study of:**

The scenario must be thoroughly described before inviting the viewer into the experience. Defining a list of carefully considered characteristics of the space will provide critical information about the context in which the study has been conducted.

**Dissecting the Space**

- what are you doing?
- where are you in the space?
- what is the space used for? (+more trivial details)
- where are these sounds being recorded? how do they relate back to the acoustic study?
- are your auditory surroundings intrusive? \*intrusive in this case defines anything that is distracting

**Defining the system:**

The early stages of visualization will be built on the principle of foundation. The system must have the flexibility to scale up exponentially as the potential for growth is possible here. As the system is developed, organization of the original files and their edited counterparts of critical. Date, time, location, name and relevance are important considerations. Building upward from this foundation is the goal, so it is obvious a strong organizational system must be put into place. How easy it is to forget that as the files begin to be explored and edits begin to churn out more and more rapidly.

**Problem One: Too small**

These damn waveform files aren't large enough! I'm having trouble configuring a setup that will yield large waveform files that can be applied to any use I intend for them. At the moment, they are being exported or captured in kilobytes, which isn't even remotely close to how large I'd like the files to be - in an ideal world I'm thinking 10-25 megabytes. Unfortunately, I've been unable to conjure a clever way of manipulating the files sizes to extract more data out of the screenshots or audacity exports. At the moment, I'm considering taking what I have, printing that file, and rescanning it in at 300 dpi. Although I understand that won't necessarily give me a higher resolution, it may allow me to scale up the waveforms without losing image quality.

## 12.08-15

Presentation week preparation, pulling together the final visuals for the presentation will most likely be the largest task I've set out for myself here. Through revision, I've decided to spend time focusing on the deliverables that will be most impactful during conversation with the class. I will make the conscious effort to stray away from visual content that may come across as ambiguous, for example as I have previously mentioned, a spectrogram collage or poster. I've decided to eliminate that from the presentation in part because of my belief in a stronger direction, in which this poster does not integrate well. Additionally, it is clear that the presentation will be a fantastic opportunity to generate objective discussion, at this point, I don't see value in provoking that topic of conversation.

This week has been spent largely creating the waveform and spectrogram visualizations for the Reference Library scenario I've set out to fulfill for next week's presentation. Ultimately, the presentation will be a effectively catch my peers up on what I've been working on since the midterm presentation, and highlight the future plans for this project, in a detailed, but unconstrained way.

Both the waveform and spectrogram visuals have increased in quality thanks to online resources I've dug into. Ultimately, both SoundForge Pro and Audacity were fantastic resources to manage the sound files, but the built in visualizations were unable to be exported at a high quality. Simply screenshots the waveform or spectrogram visualizations were inadequate. The size of the imagery is still concerning, as it is not infinitely scalable, however, I will be experimenting with printing these images and rescanning them in at a higher DPI. I'm hoping that the additional data gathered through the scan will yield large enough imagery that can be scaled to the whatever size necessary.

In terms of visual content for the presentation, I've laid out my collections of sounds that have been sourced from the Reference Library in the following way. Firstly, I collected the sounds, 9 in total. I then pulled the 9 unique sounds (paper shuffling for example) into SoundForge, my audio editing program of choice, and cropped each clip individually down to 10 seconds. After cropping, I pulled all 9 clips into Ableton Live and stacked them, exported the master channel and was left with a chaotic, noisy 10 second clip - my 10th sound file. I then gathered each file and ran it through a spectrogram and waveform generator, one by one, unique visualizations of each sound individually were generated, sorted, and quickly edited in photoshop (for minor colouring adjustments.)

Below, I've scanned and featured some of the iterations that have manifested over the last couple of weeks. Although they were not documented well in the above chapters, these quick illustrations have plagued my notebook. This journal felt incomplete without the inclusion of these illustrations, as they are the best way of expressing the direction in which I see this thesis developing over the next semester.

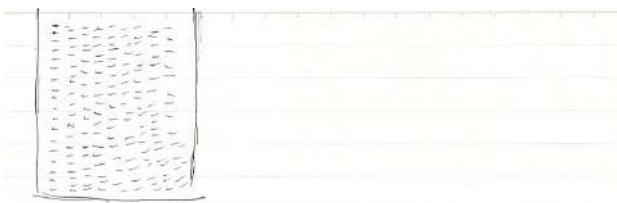
## CONCEPT WORK TO DATE:

The following is a chronological collection of iterative sketches that have been accumulated over the course of this semester, with many of the highlights being sourced from the past few months. Each of these examples are a glimpse into where I was in terms of development and mindset at the time. These sketches act as a visual reminder of the iterative process that this project has taken to date, and I believe this collection is a powerful tool to refer back to moving forward.

**Nov 7 - The Poster**

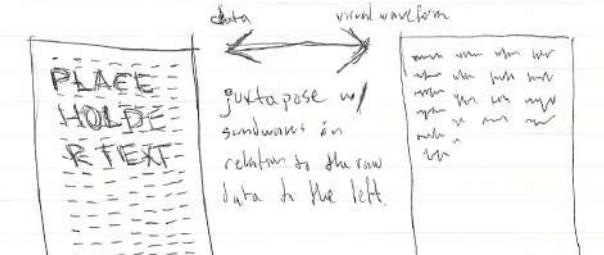
The poster was a concept developed around delivering data visualization in a slightly different way. The study of the scenario would be conducted all the same, however, multiple versions of the study would be conducted - ultimately generating a massive collection of sounds. The poster would be a tool for visualizing this mass of data, where the viewer is invited into this visually stimulating labyrinth to extrapolate from this comparative study.

The poster is still an intriguing idea, although I believe this would be more of a tangential solution it would certainly be an interesting experiment to conduct. It would be labor intensive, but the visual payoff would be undeniably satisfying if delivered on a large enough canvas. At this point, I would consider this visual outcome a very realistic opportunity to capitalize on in the next semester.



DB levels in rooms NOV 7 /17

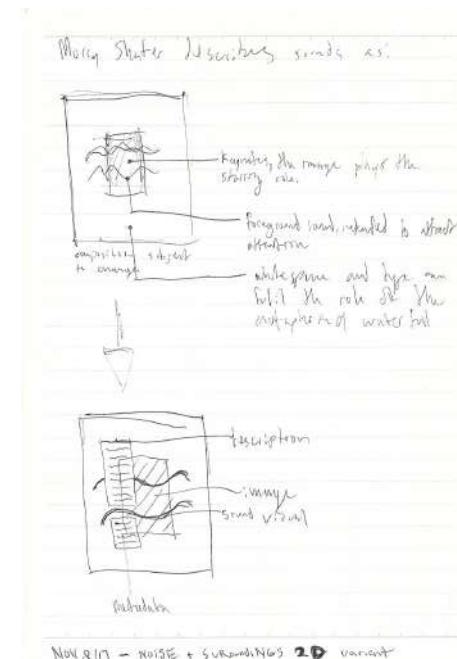
Sonic branding



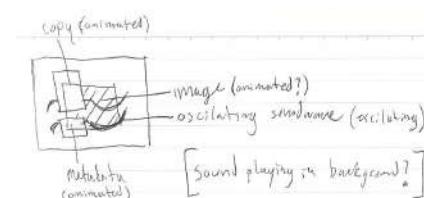
layering text over data

**Nov 8 - Sound Profile**

The sound profile has been detailed in previous chapters of this journal. Although I believe the sound profile has potential to yield a fantastic visual outcome, I believe my current visual solution is slightly stronger, more dynamic and flexible. The sound profile does a great job at detailing the differences within a specific sound, and has certainly influenced the perspective I have begun to view this project from. I would consider this a early experimentation, and a great success in propelling this thesis in the right direction.



Nov 8/17 - NOISE + SURROUNDINGS 2D variant



so this can be broken down into the following parts:

collection - both sound + visual

building - setting context within the system  
- finding the parameters of the sound  
- visualizing the sound

Nov 8/17 NOISE + SURROUNDINGS 3D variant

**Nov 17 - Sound Book**

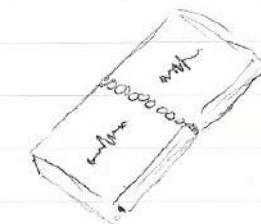
Sound book was the first iteration of a publication that would accompany the journal in my final presentation. The book would be a collection of sounds, categorized by scenario. The idea of the book was to utilize clear mediums, such as printing on acetate, allowing the viewer to draw conclusions between sound waves. The visuals of these sound waves are stunning in it of themselves, however, the beauty comes when the viewer is invited to combine, measure, and extrapolate from the data their presented with. The overlaying effect that the acetate would provide would certainly be a valuable asset to accompany the journal.

This is absolutely within reason, it would also be a rather pleasurable experience - the whole printing on acetate and layering the sounds would be a fantastic experience for myself and the viewers of this work. Ultimately, I believe this needs much more work in order to transcend the niche it would provide in its current form - how can this be pushed? Firstly, I believe a simple reordering system would need to be installed within the book, think of a classic school binder that had its binder rings replaced with a metal strip. Each page would be equipped with a magnetic strip that would be in place of where the spine would swallow the page in a typical perfect bind. This technique would allow users to easily strip out pages of the book, fortifying the playful position in which this book would live. Additionally, the detailing on the pages would most certainly have to be refined, simply printing sound waves on a page and slapping context underneath would come across as an underdeveloped work.

Nov 17/17

2 books: one formal, process, boring  
one concise, visual, aesthetically appealing

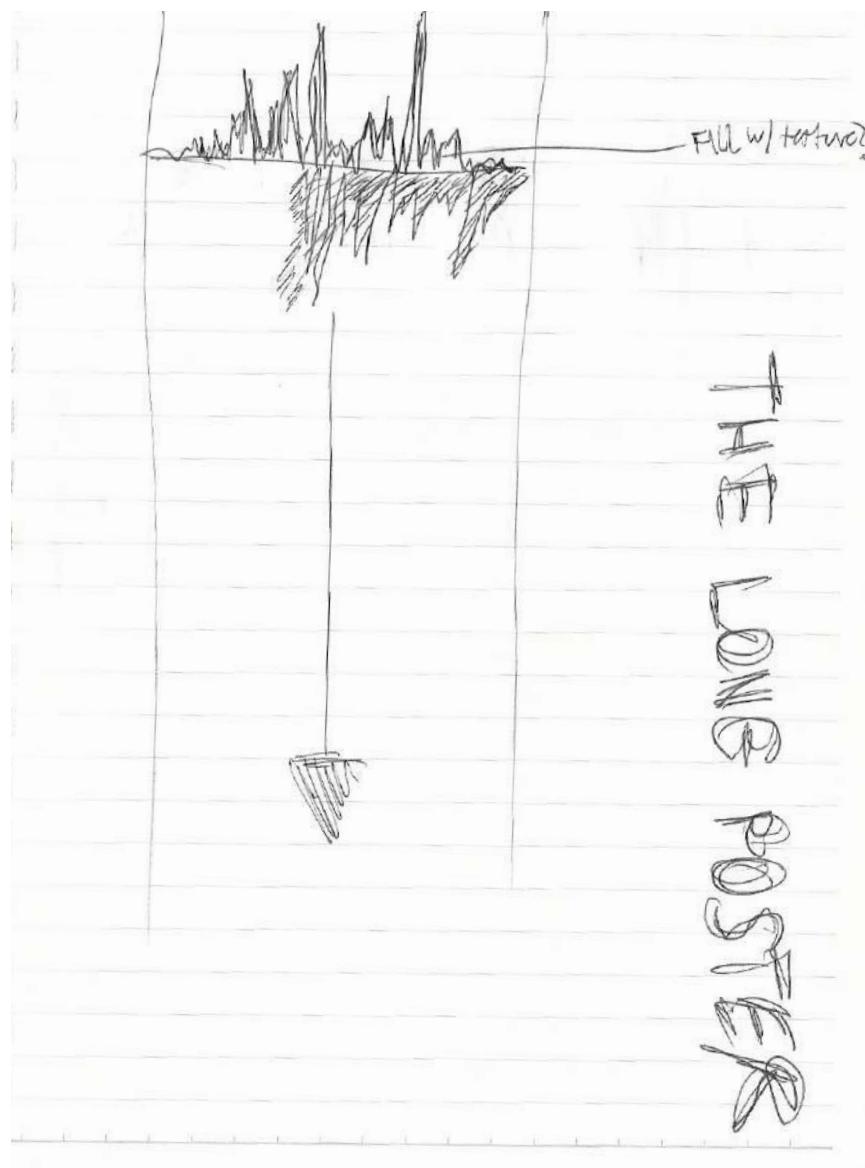
acetate print and layer



**Nov 17 - Long Poster**

November 17th yielded two unique visual outcomes. The long poster would be a celebration of sound waves in their rawest form. The sound waves would be exploded into a large format, cut and spliced and run down a massive poster. This poster would be a visual invitation for viewers to be invited into, although I think the appeal of this piece ends right there. It would definitely be expressive, catchy and aesthetically pleasing, but it lacks the complexity beyond visual appeal.

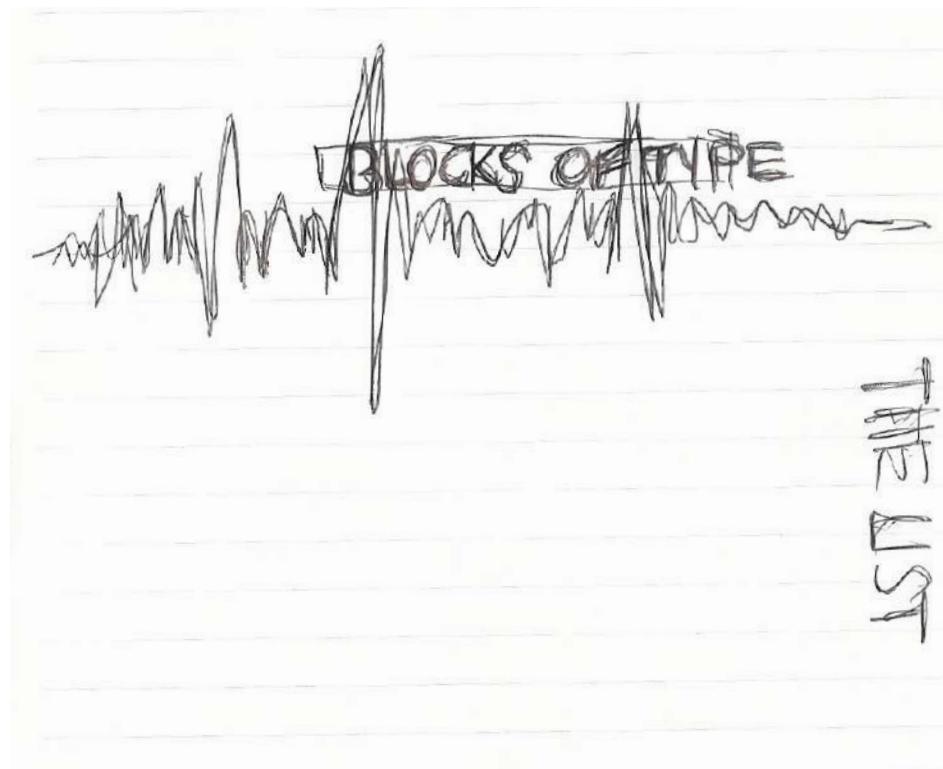
The Long Poster has been iterated into what I believe is the strongest visual outcome to date, to be detailed below. The aesthetics of this long poster are appealing to me still, although I am unable to conclude a strong argument for the inclusion of an aesthetic piece within the process of this thesis when there are more intellectual concepts.



100 12.08-15

Nov 23 - Blocks

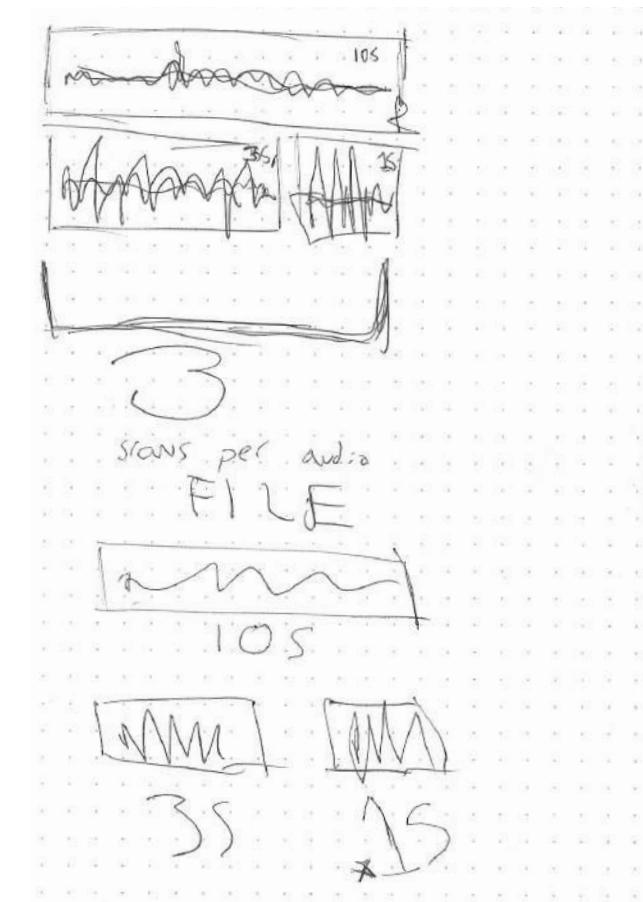
Blocks started as a simple way of visualizing generous amounts of sound waves, giving the viewer context as to what the visual is, but restricting their ability to fully comprehend the graphic as there would be a distinct lack of sound. At the time of developing Blocks, I was interested in withdrawing sound from this thesis entirely, although at the time of writing this retrospective, my mind has been changed. I believe it is best to look back at this visualization concept and learn from it, but I do not see it having a future in this Thesis.



101 WEEK FOURTEEN

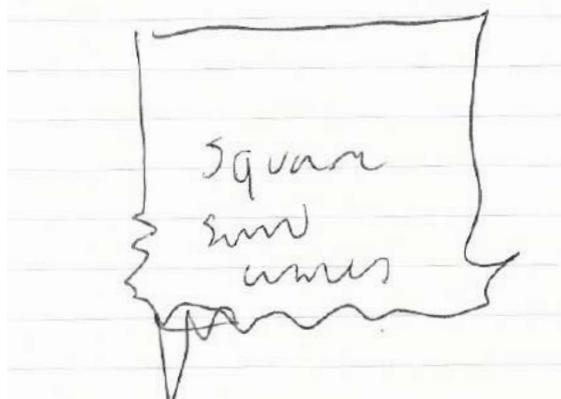
Dec 8 - Three Ways

Three ways attempts to create a visual spectacle through the juxtaposition of each individual sound wave. The sound waves would be scaled 3 into three different lengths: 10s, 1, 0.1s - cropping these files in such a way provides different depth and contrast within the negative space of the sound waves themselves. Conceptually, comparing the same sound file three times doesn't pull together all that well, early on in the development of this concept, I struggled with how the concept would tie back to the idea which is simply analyzing distraction. There is a more refined way of presenting these contrasting graphics, so this concept has been put to the side for the time being.



**Dec 11 - Square and Circle Forms**

Square and Circle forms give life to the standard wave form, while preserving, if not accentuating, the information provided within it. Square and Circle forms can be a delicate way of expressing their forms in a more dynamic style. The natural counter space within the form will be used as a canvas to communicate further, I foresee the space being flooded with the accompanying spectrogram. The spectrogram will help communicate the intricacies within the sound file, but will also provide powerful textures to bolster the visualization's aesthetic properties.

**What am I looking for here?**

Throughout the detailing of these early concepts, it's clear that there has to be multiple channels of communication in the final product. Firstly, there has to be a visual attraction, a showpiece, in this case, I believe the best candidate is the square or circle forms. These will be expressive, visually captivating, but ultimately, hard to fully comprehend at first glance - and that's okay. Second will be the supplementary study, a comprehensive journal that will articulate the broader study and teachings from the work. This may take the form of the sound book, where viewers can dive deeper into each individual sound presented in the poster. As I currently see it, each poster is visually dynamic, captures the entirely of its unique scenario, and is accompanied by a publication further detailing the scenario. The poster invites, the book educates.

In terms of research, this week has seen very little progression in that front. It will be important to continue informing both the aesthetic and theoretical decisions I am going to be making in the near future, as execution begins to ramp up. However, I believe that at the moment, it is best to temporarily postpone further research until a better opportunity presents itself. I've recognized the importance of solidifying the current theories and execution that I have in mind before jumping back into research just to boggle up my current understanding. Of course, there is value in continuing to broaden my horizons, but for the purposes of seeing this presentation take a refined form - I best stop for now. The holidays will provide a fantastic opportunity to generate more ideas and tactics, as well as iterate on my current understanding of the project.

**Presentation Deliverables: Proof of Concept**

Currently, there will be two main presentation deliverables. Firstly, a fleshed out journal, with entries up to this week, 14. Additionally, probably in content that will fit right into the presentation will be what I'd call "alpha stage" visualizations - a unrefined version of what the final thesis visual outcomes will look like. As mentioned above, the objective here is to display as much content as possible while keeping the conversation loose and open ended. Ideally, the discussion is split 60/40 between the class and I. The more informed input I receive here, the better prepared I will be moving into holiday break and next semester.

## CONCLUDING THOUGHTS

This semester has been a tremendous learning experience. From the very start, I knew sound was an interest of mine, and that pursuing a thesis study on the topic would lead to both a rewarding and perhaps more importantly, satisfying experience.

Although this semester was crammed with overwhelming amounts of work at times, I still feel as if there were many avenues of research and exploration that were ultimately ruled out and forgotten. This journal has played a large part in resurfacing those memories, as I eagerly pressed forward during the process of this work.

As I've already stated, next semester will bring with it a tremendous opportunity to explore visual expression through auditory aesthetics. I feel confident that my final deliverable will be both impactful and insightful, but it is as clear as it has ever been that there is a lot of work ahead, and that's exciting.

Thank you for a fantastic semester, this will be the last entry for the first 14 weeks.

**4016.**

[SECOND SEMESTER]

**Janurary - April 2018**

RYAN GERADA

GRPH4016-17

003

## 01.05-12

The first week back has brought with it a tremendous amount of work, it's been difficult restraining myself from bogging myself down by looking at the bigger picture. The project has taken a turn toward a realistic and visually appealing direction. However, there is much work to be done, there must be a fully realized work at the end of this process, and that is still entirely unrealized up until this point.

I foresee the first couple of weeks playing out as a sort of catch up for the lacklustre winter break. Fortunately, last semester was rewarded with generous comments and critique from my peers and instructors, leaving me with the confidence I believe I'll need as I re-immerse myself in this work. That being said, these next couple of weeks are expected to play out as re-immersion weeks, where I'll be providing myself with ample amounts of time to wrap up any loose ends and begin moving to the production phases of this work.

Firstly, I wanted to focus my time on reestablishing some core design principles that will dictate the craft of this project. Below are my first thoughts as to how this project will guide itself onward to the end of this semester. Consider the following as guidelines, to be treated similarly to the intention of the abstract at the beginning of the first semester of work.

### **What this project will become:**

#### **Innovative.**

It will define a unique aesthetic that has not been previously demonstrated in visual design.

#### **Useful.**

The information presented must convey digestible information.

#### **Thorough.**

Details are an important consideration, and not to be overlooked.

## **WHAT'S NEXT?**

Using the bulk of this week as a way to set the tempo for the rest of the semester, I've used my time to layout some of the key objectives that will help guide my workflow to see the completion of this project.

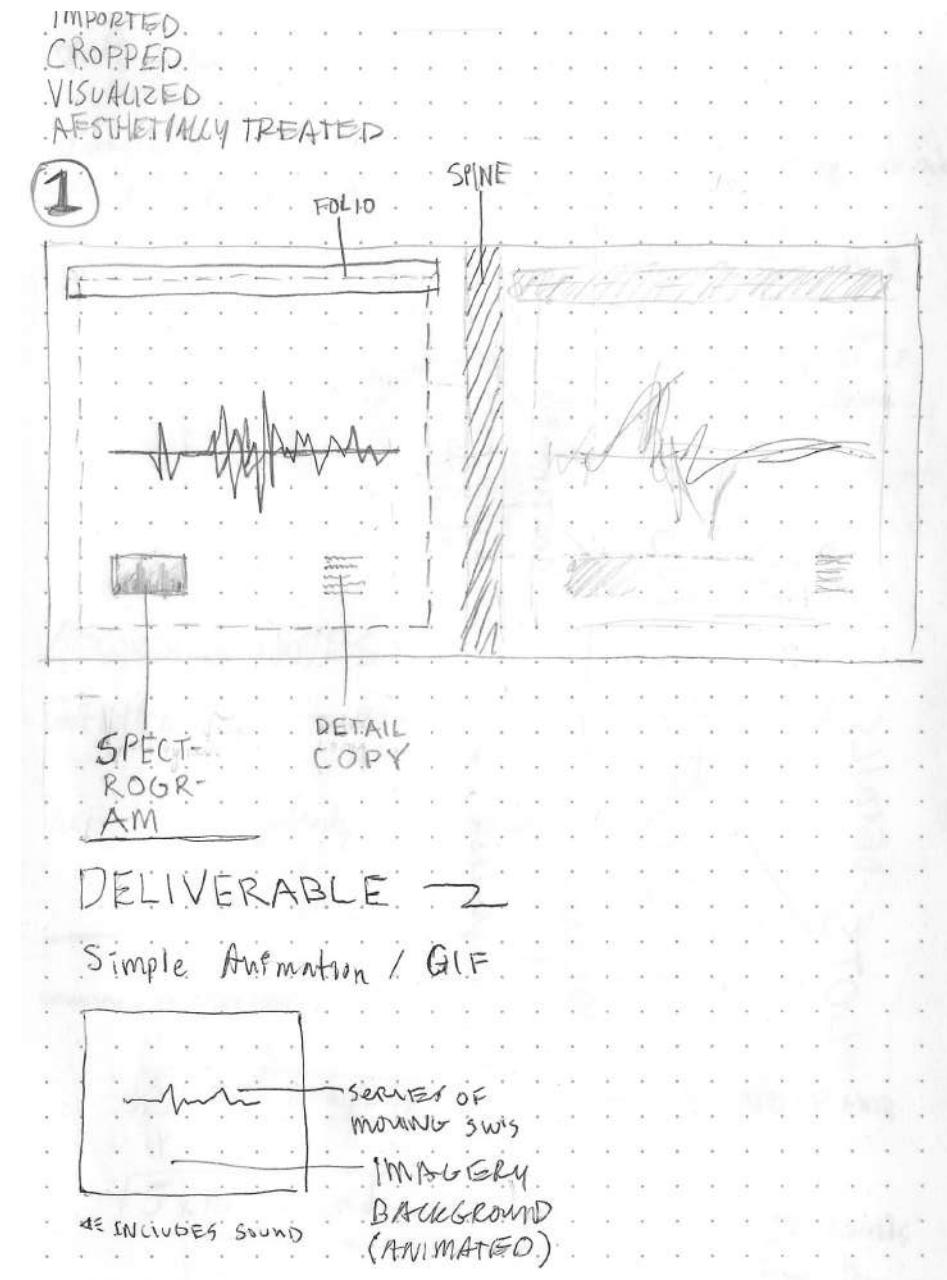
## 01.12-19

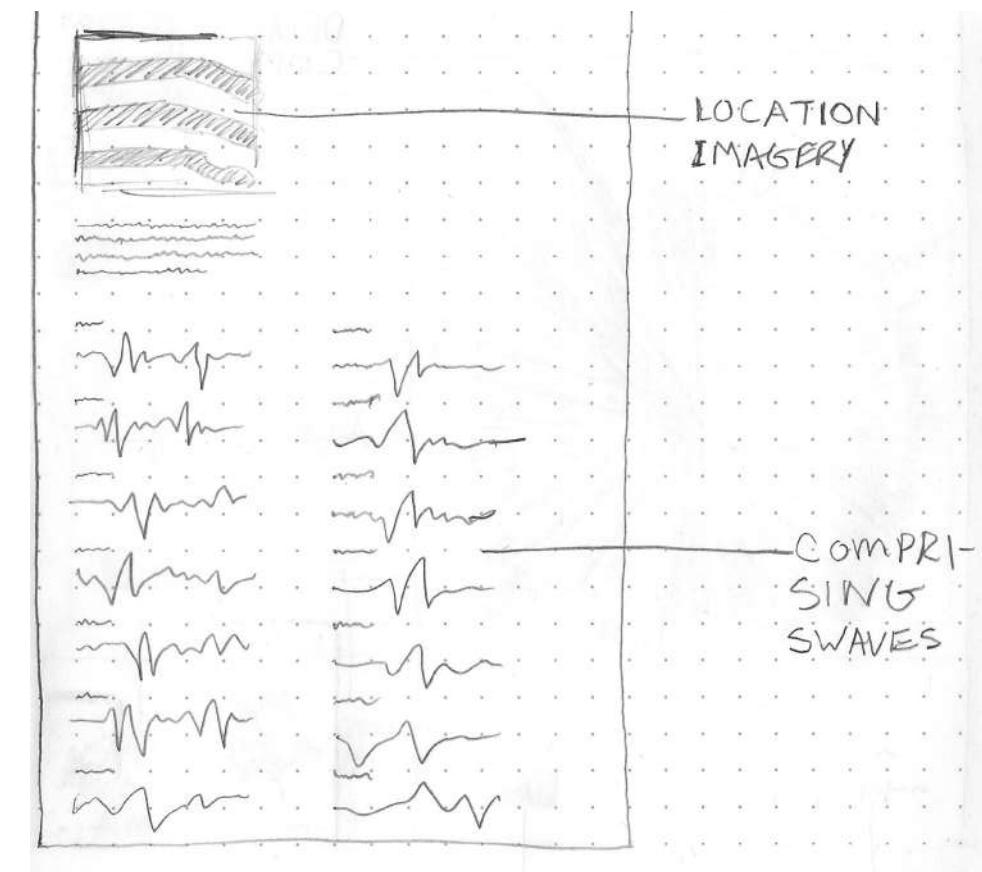
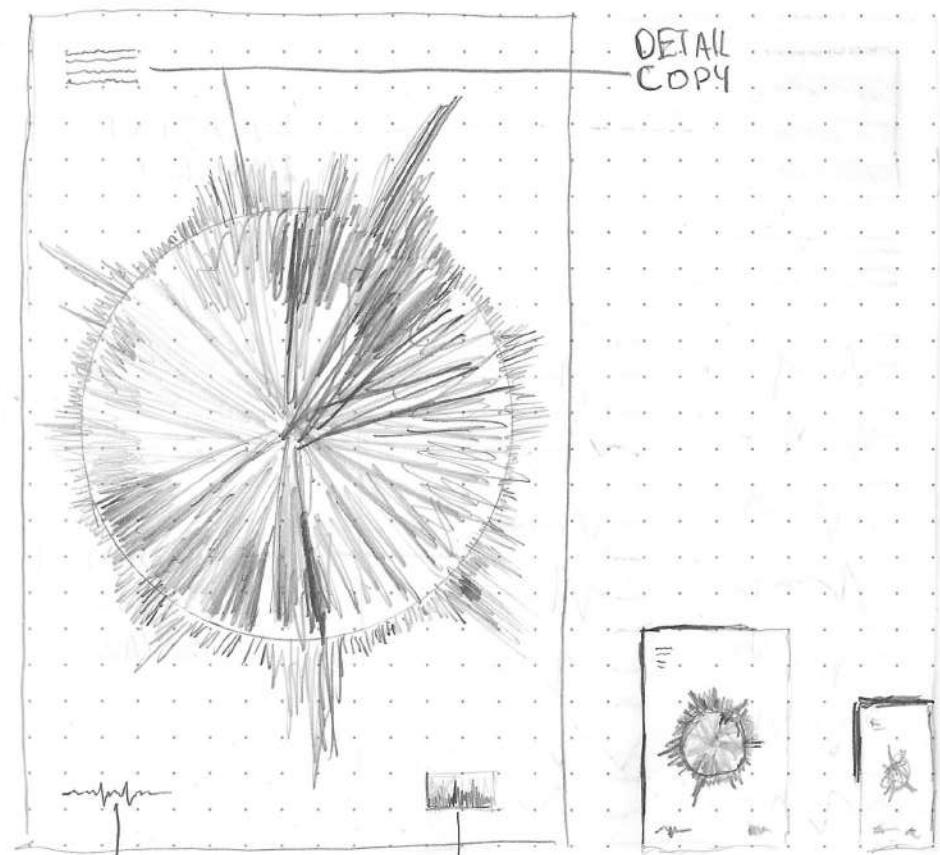
This week has started slowly for thesis. There have been many considerations as to how the rest of this semester is going to play out, and of course, that became much clearer after last week's mapping session. Ultimately, there's has to be a lot more experimentation before any final layouts or compositions can start to manifest themselves within this process.

These experimentations will range from tactics conceived last semester that weren't fulfilled, as well as new experiments such as mediums that will be considered for the final presentation. Moreover, there is a lot more recording to be done in the near future. Firstly, I will be scouting a third space, at the moment, the third space is going to be a studio space - more on that later. The coffee shop and reference library will be studied extensively, I plan to pay many visits to the reference library. The goal here being simple: there has to be a lot more content to study, digest, visualize, and synthesize. I will be running lengthy recordings of these spaces in search of a more dynamic graphic visualization, simply put, there is a strong chance longer recordings will have greater dynamic ranged in volume, as the sounds won't be condensed into a 10 second clip of all of the highlights. This will be an important consideration when evaluating the final visual content.

## EARLY VISUAL FORECASTING

This week has also provided an opportunity to begin the early workings of the visual realizations that this work will transform into. It was important to spend time developing a working idea of the mediums I intend to work with, as I believe it will aid in the collection process, and ultimately help inform any later decision making in terms of managing sound files or location specific adjustments.





INCLUDES:

conclusions  
detail info  
case study  
Short rational on why the space

## 01.19-26

This week's time was allocated to digesting and eliminating a large amount of the remaining question marks regarding this project. Considering last week's presentation, there was a clear void within my work, a large amount has been done, but it felt as if a majority of the project had been overlooked up until this point. I was most certainly getting ahead of myself, conducting studies without considering the entire picture. Similar to the issue I faced last semester, where I had been unable to zoom out to analyze the bigger picture (with the whole idea vs tactic thing) this situation feels unfortunately similar. Time to unravel.

Last week's group meeting was productive, and overloading in as I presented the working formats for how I currently envision the final products taking form. With that came timely critiques of integral parts of my work, most notably, a clear confusion as to what the viewers is looking at. These shortcomings have been presented at a ripe time, allowing me to correct course and refine the methodology to better serve the viewer.

Through critique, I discovered two major shortcomings in my current vision of the project.

Firstly, it's crucial to implement a sense of place for the viewer to ground themselves when experiencing the work. This is simply rectified, provide more information that is pertinent to their understanding. Provide a sense of place, a taste of audio for them to relate to, and some detailed information in relation to the graphical representation of the space. I've quickly discovered the danger in leaving out too much information in the act of trying to preserve as much white space as possible - it's clear that there needs to be further refinement in the final deliverable, as to not leave the viewer shorthanded.

Moreover, the second discovery is not as easy of a fix. Providing a sense of place for the viewer can be supplemented by the right use of information, however, the second issue I am currently facing will take further massaging, it is crucial to get this right. Within all three spaces, the general focus was distracting sounds, in the act of recording all of these specific sounds I have lost sight of what the critical problem was: working spaces can be distracting, capture that and unite the findings in a digestible visual outcome. I still have no definitive answer for this problem.

As discussed in the group critique, there will most certainly be room for both a unifying sound as well as location specific sounds that will play a supplementary, but crucial role. These sounds will be both visually, and audibly combined for maximum effect, a culmination of the audio will be looped, creating an unending auditory experience. The curated sounds will be implemented within the loop to ground the listener. Next week will see the recordings amalgamated and the process documented within this journal.

#### **Location Specific Audio:**

These sounds will be location specific, going back to the problem of these work spaces having distracting sounds, it is critical to capture these in a genuine fashion, inviting the viewer into an auditory and visual experience. These sounds will represent the location, and will be the only connection the viewer has to a real sense of the space.

#### **Curated Audio:**

Curated audio will bring with it a world of imaginative, compelling, complex sounds that are not connected to the space whatsoever, these sounds will however be played within the atmosphere of each specific space in order to study the acoustical effects of each space.

**What does distraction sound like?**

More research must be conducted to help define my thinking in regard to the treatment of these curated sounds. There must be a connection between auditory distraction, and signature sounds, quotes, or teachings that will represent the study. It is apparent to me that presenting an audio clip that represents auditory distraction would be the perfect fit.

Current considerations include the use of a partially synthesized, partially sampled piece of audio to combine into a audio logo of sorts. Beginning the broadcast, so to speak, would provide a sense of grounding for the listener.

Currently, I envision the loop conducting like so:

```
< open loop           v
audio logo           v
combined location specific sounds v
curated sounds played in location v
> close loop         v
```

**Where does this shit belong?**

Allocating a space for all of these collected sounds, combined sounds, etc etc. This will act as a mental organizer to trap my thoughts on paper, and allocate these sounds into their iterative homes.

**Visualizations:****50 Samples / Location**

found in: location specific publications  
processed: individually  
format: waveforms or possibly spectrograms

**50 Samples / Combined**

found in: location specific poster  
processed: combined  
format: circular wv/spc

**5 Longplays / Location**

found in: location specific publications  
processed: combined  
format: circular wv/spc

[The audio loop must correlate with the visual poster]

**Audio:****50 Samples / Location**

found in: location specific audio playback  
processed: integrated / cascade  
format: looped audio

**3 Curated Sounds / Audio Logo**

found in: location specific audio playback  
processed: integrated / cascade  
format: looped audio

Additionally, it is clear that the decision to include or exclude audio in the final presentation has most certainly favoured the inclusion of audio. Increasingly, through the group discussions and the further development of the project, there is most definitely a need for audio. The audio will help carry the weight of explanation, and if done correctly, will continue to build intrigue. Naturally, I'm urged to present this audio as a subjective piece of communication, however I have to remind myself to be conscience of the objective deliverable that this project aims to deliver. As my thoughts flow, I'll continue to articulate my current vision for the audio within this project, all the while I am aware that I may be getting ahead of myself. I must define what the audio signature will sound like, what will it consist of.

Future considerations include the implementation of said audio. How does this communicate across the grad-ex floor, how is this presented in the final presentation? Additionally, how can these sounds be leveraged beyond the obvious playback of the curated files, I wish to explore a deeper implementation of these sounds. Cymatics comes to mind here, where the printed publication is altered by the sounds that it is visualizing.

## 01.26-02

A month in, the second semester, what have I done? What is there left to do? I've found these first four weeks of the semester some of the most challenging of the entire process. Grounding myself to the work has been a struggle, developing a realistic, yet challenging and motivating set of expectations for the final deliverable has proven to be difficult. Conjuring more and more ideas, only to throw them away in the wake of time management has left an uncertain doubt about this, it has not been motivating. Realizing this, I also understand the importance of moving past these hurdles, it is critical that a strong foundation be laid, the path illuminated as I venture into the final stretch of this adventure.

This journal has proved to be a strong asset when feeling uncertain about the current state of this thesis work. Trapping my thoughts on paper has allowed me to move forward, as opposed to thinking in circles, ultimately getting no where. This week's workload was heavy. I had set out some specific goals to accomplish before the week's end.

They are listed as the following:

journal aesthetic revised (iterated from last semester's printed deliverable)  
cymatics experiments  
bond / cmyk print tests  
audio logo / audio loop experiments

This workload has extended slightly further into writing scripts in which I intend to record a voice actor. These scripts will be translated into audio form through the work of said voice actor, and will conduct similarly to a narration - providing context to the listener as to what this experiment is about. This narration will be short and sweet, the key will be in the writing. I will conjure compelling, yet understandable narratives that will quickly establish the context of this project.

Editing, cropping and organizing the recorded clips from the Reference Library took a bit of my time this week as well. Interestingly, the software I was using provided the tools to generate a detailed decibel readout for the duration of the clip. Uses of this information are limitless, I've considered multiple ways of introducing this information into the work.

### First draft:

This work will attempt to visually demonstrate a relationship between the selected spaces and auditory distraction.

This work curiously analyzes the acoustic ecology of three working environments, the Toronto Reference Library, Jimmy's Coffee, and an anonymous private studio space.

What you are about to hear is an amalgamated of locally sourced sound bytes, these sounds have been sampled from the... (1, 2, 3 locations)

## 02.02-09

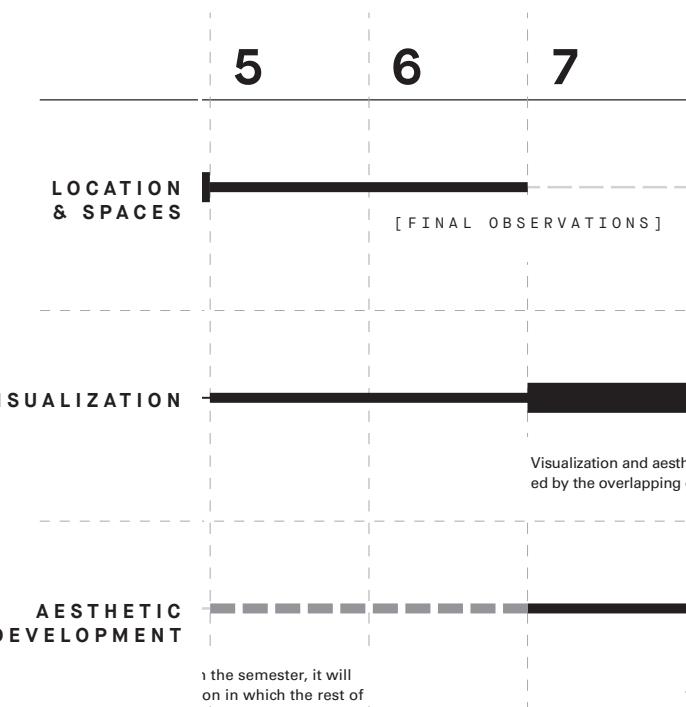
This week, just like the last, will see the continuation of many of the ongoing mini projects. Firstly, the curated sounds must be dealt with. They will be refined throughout the week to ensure ample amounts of time are left to record the remaining spaces. At the moment, all of the sounds have been collected from the Reference Library, minus the curated sounds. Those will be collected next week, as well as Jimmy's coffee.

Planning ahead has proved useful in scheduling some of the intricate timings that have been baked into this project. The subtle additions will indeed make a tremendous impact on the final project, especially when you consider them in totality.

## CURATED SOUNDS

[TO BE RECORDED]

The curated sounds have been completed this week, as too has the recording of the selected spaces. To date, the curated sounds have still yet to be recorded within the spaces, that will be conducted next week. The curated sounds were created using Ableton live, multiple analog synthesizers, but yet were purposefully kept simple. These raw sound files are intended to act as a benchmark, or a way of comparison, muddying up the unique qualities of the sounds would have been detrimental to experiencing the rate (or perhaps not) of change within each space respectively.



According to my mapping, there are another two weeks of low intensity collection to be conducted, as we begin to wrap up the location scouting and recording workload of this semester. It's becoming clear that the pace I've set for myself has left me slightly behind schedule, as I still have a few hours of recording to conduct in the coming week, however, I am generally pleased with the situation I find myself in, according to my map.

## VIDEO GRID MOCKUP

[EARLY EXPERIMENTATION]

The video grid will provide an additional layer of intrigue when considering the overall layout of the final deliverable. Aside from 2d printouts that are going to come in the form or a poster + book, it was important to include another medium to bolster the content. This video grid hopes to speak to the larger exploration here by exposing, or at the very least, introducing a more literal visual format for viewers. Further explanation to come in the next weeks.

As projected, the resolution of each of these squares is subject to change. At the moment for test purposes, I've divided up a standard screen resolution of 1920 x 1080, a 16:9 aspect ratio.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15

360px

384px

## 02.09-16

Week six presented the opportunity to complete the recording of the curated sounds within the spaces. Before beginning the process, the distance and volume were carefully noted to ensure continuity between spaces. Additionally, this week was a chance to catch my breath and clean up all of the nagging side projects that have either dropped in priority, or become irrelevant as the work has pressed on. Moving forward, logistics with the video grid have begun to take shape, however it will be put to the side for the moment, it will be revisited in a week or two.



It has come to my attention that I have not yet showcased the recording device that I have been using for the entirety of this thesis. The RHODE Video Micro has served my purposes well. It is a directional microphone, and has provided a discrete, low profile form factor that has made navigating some of the more challenging recordings much more plausible.

The second and final draft has been completed and is ready for recording. One of my peers, Eric Steele has connected me with the voice of Toby Keymer, who will be tasked with the role of narration.

**Second Draft:**

This work will attempt to visually demonstrate a relationship between the selected spaces and environmental auditory distraction.

This project is motivated by the work of Walter Murch, an american film editor and sound designer, who's teachings in the field of sound have provoked further investigation.

This work curiously investigates the acoustic ecology of three working environments, the Toronto Reference Library, Jimmy's Coffee, and a 15 square foot private studio.

What you are about to hear is an amalgamation of locally sourced sound bytes, these sounds have been sampled from the Toronto Reference Library.

What you are about to hear is an amalgamation of locally sourced sound bytes, these sounds have been sampled from Jimmy's Coffee.

What you are about to hear is an amalgamation of locally sourced sound bytes, these sounds have been sampled from a 15 square foot private studio.

## 02.16-23

Everything is on the go.

The recordings have been completed, the narrated voiceover is in the works, and GradEx considerations have been swirling around in my thoughts. As the weeks press onward, I have been finding the communication outcomes of this work easier to visualize, as well as their rationales connecting more and more. However, pulling these journal entries together has become more and more difficult as the past couple of weeks have been quite sterile in terms of creative practices. Additionally, the need for research has also come to an end, leaving me with little to report back on. I have struggled to pull together a quality journal entry for the past couple of weeks because of this. Although the journal has had shortcomings in the recent weeks, I have been feeling optimistic about this work, and my workflow has begun to catch stride.

The midterm presentation is approaching, currently, the plan is to bring forward a host of visual examples as to what my expectations are for the final deliverable. These include: location specific logo, location specific spectrogram manual, voice acting/audio byte loop, working prototype of grid.

The midterm presentation is beginning to take shape. The intention was to create a cropped narrative that starts at the beginning of this semester, while providing everyone with a bit of a reminder as to what exactly I'm working on with this project. Opening up, the 5th revision of the abstract provides a condensed reminder. Next was a quick reminder of the spaces I chose to investigate, and what it was that I wanted to get out of each of them. Moving forward, I recognized the importance of providing a bit of a technical lesson, demonstrating the differences in audio visualization. The visualizations take over from there, they are beginning to take a recognizable form, although there is still much to do, including a decision on handling the infographic.

Additionally, it is my intention to provide context as to what exactly I'm gathering, and from where exactly. The visualizations on the coming pages within this chapter will highlight the current work that I have constructed to be included in the coming midterm presentation.

#### 50 Sound Bytes, 5 Long Recordings

35 environmental sounds	[10 sec]
15 curated sounds	[10 sec]
05 long recordings	[10 min]

x3



[01] CAFE - JIMMY'S COFFEE



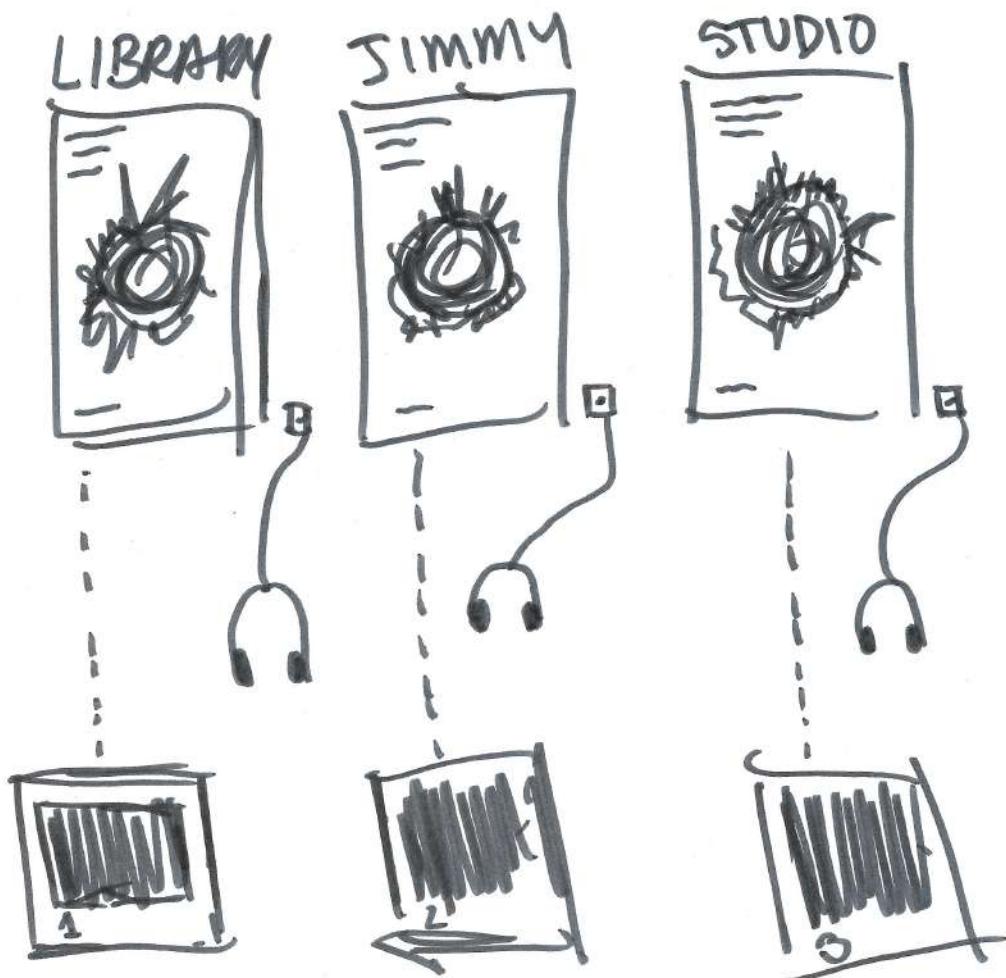
[02] LIBRARY - TORONTO REFERENCE LIBRARY



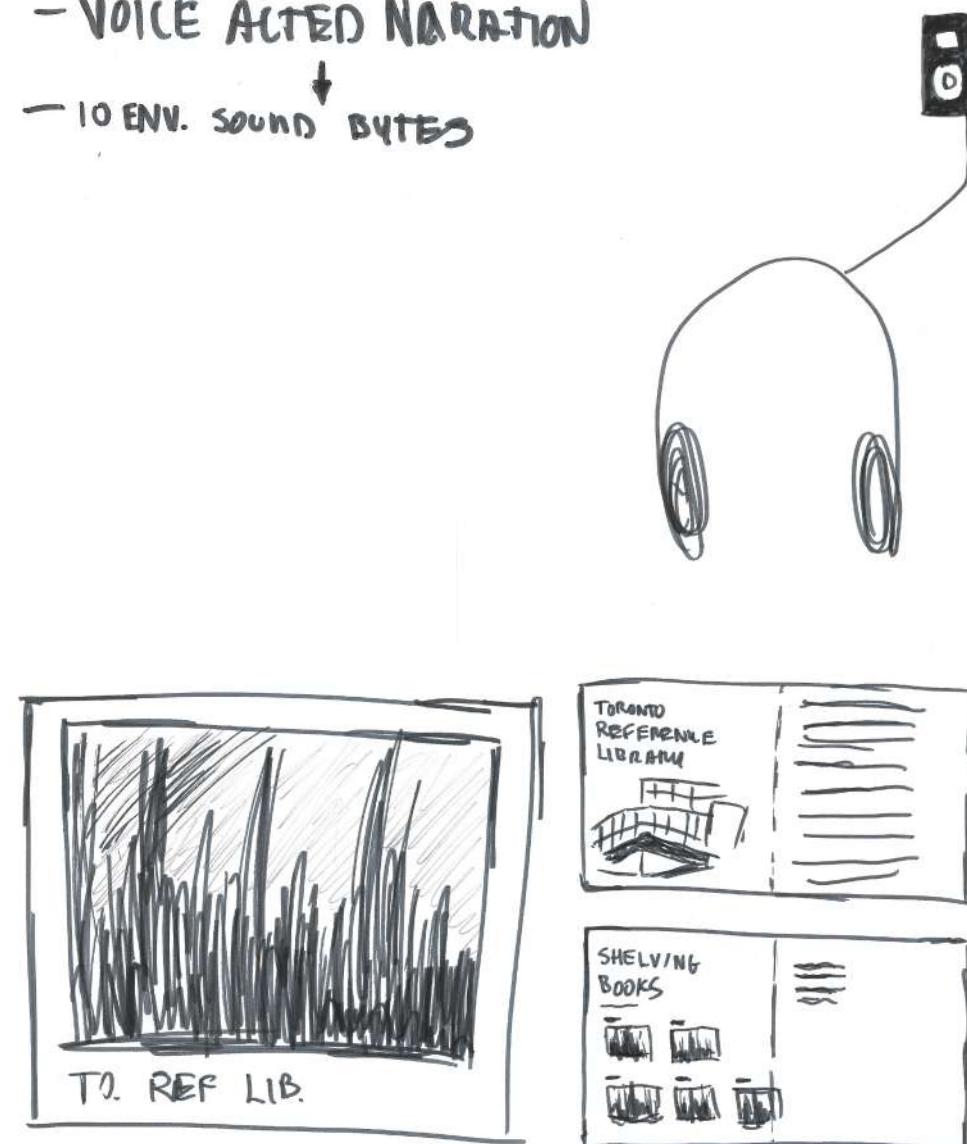
[03] STUDIO - PERSONAL HOME STUDIO

## REVISED VISUAL FORECASTING

[REVISION 02]



- VOICE ACTED NARRATION
- 10 ENV. SOUND BYTES



148 02.16-23

149 WEEK TWENTYONE

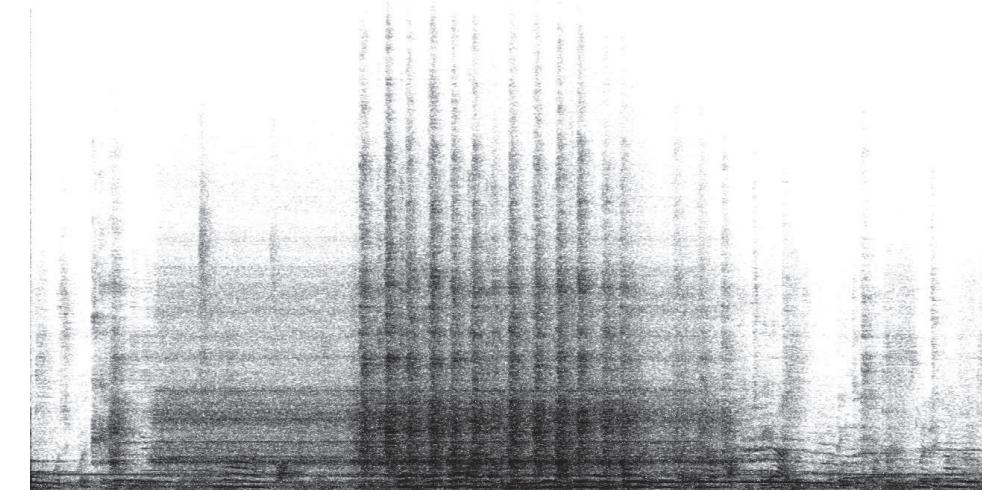
## SOUND BYTE (WAVEFORM / SPECTROGRAM)

[10 SECOND RECORDING]

COFFEE GRINDING (WAVEFORM)



COFFEE GRINDING (SPECTROGRAM)



150 02.16-23

151 WEEK TWENTYONE

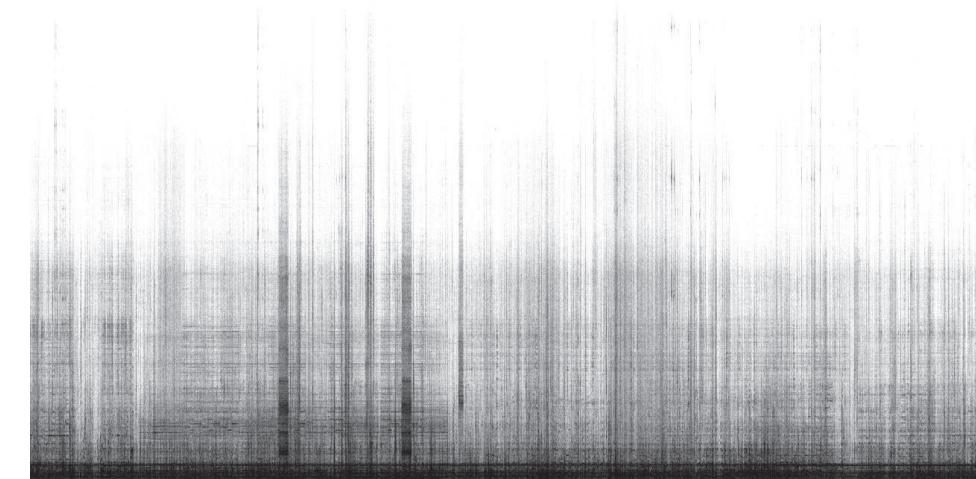
## LONGPLAY (WAVEFORM/SPECTROGRAM)

[10 MINUTE RECORDING]

LONGPLAY (WAVEFORM)



LONGPLAY (SPECTROGRAM)



## 02.23-02

Much of my time this week was dedicated to organizing the audio files collected in the weeks past. As previously stated, the audio files will be referenced countless times in the process of completing the projected deliverables, it was important to spend as much time as possible properly setting myself up for success in the future. These files have had multiple treatments, including trimming and cropping to the appropriate length (10 seconds / 10 minutes respectively) spectrogram and waveform visualizations, file optimization and documentation.

The organization of the files began with properly naming each of the recordings. A universal naming system was created to ensure uniformity across all of the files.

Location \_ NameOfSound \_ #ofRecording.wav

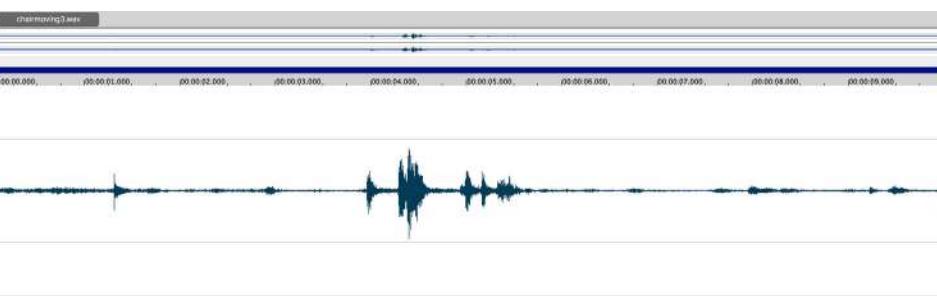
Name	Date Modified	Size	Kind
cropped	Mar 1, 2018 at 5:17 PM	--	Folder
(jimmy) spek visualizations	Mar 1, 2018 at 5:15 PM	--	Folder
combined logo files	Mar 1, 2018 at 10:04 AM	--	Folder
ableton files	Feb 28, 2018 at 6:50 PM	--	Folder
backup	Feb 28, 2018 at 6:11 PM	--	Folder

JIMMY'S COFFEE PARENT FOLDER, FILE BREAKDOWN

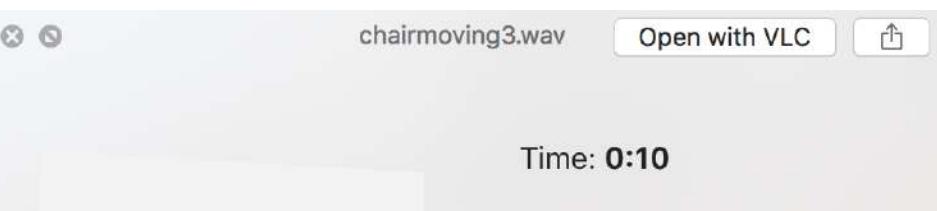
Name	Date Modified	Size	Kind
1Audacity Exports	Mar 1, 2018 at 9:42 AM	--	Folder
1LP1.wav	Feb 20, 2018 at 2:11 PM	211.7 MB	WAVE Audio File
1LP2.wav	Feb 20, 2018 at 2:29 PM	211.7 MB	WAVE Audio File
1LP3.wav	Feb 20, 2018 at 3:30 PM	211.7 MB	WAVE Audio File
1LP4.wav	Feb 21, 2018 at 5:19 PM	211.7 MB	WAVE Audio File
1LP5.wav	Feb 21, 2018 at 5:20 PM	211.7 MB	WAVE Audio File
bang1.wav	Feb 20, 2018 at 1:28 PM	3.5 MB	WAVE Audio File
bang2.wav	Feb 20, 2018 at 1:30 PM	3.5 MB	WAVE Audio File
bang3.wav	Feb 20, 2018 at 1:59 PM	3.5 MB	WAVE Audio File
bang4.wav	Feb 20, 2018 at 2:01 PM	3.5 MB	WAVE Audio File
bang5.wav	Feb 20, 2018 at 2:03 PM	3.5 MB	WAVE Audio File
chairmoving1.wav	Feb 20, 2018 at 1:49 PM	3.5 MB	WAVE Audio File
chairmoving2.wav	Feb 20, 2018 at 2:10 PM	3.5 MB	WAVE Audio File
chairmoving3.wav	Feb 20, 2018 at 5:04 PM	3.5 MB	WAVE Audio File
chairmoving4.wav	Feb 20, 2018 at 5:13 PM	3.5 MB	WAVE Audio File
chairmoving5.wav	Feb 28, 2018 at 12:27 PM	3.5 MB	WAVE Audio File
chatting1.wav	Feb 20, 2018 at 1:41 PM	3.5 MB	WAVE Audio File
chatting2.wav	Feb 20, 2018 at 1:56 PM	3.5 MB	WAVE Audio File
chatting3.wav	Feb 20, 2018 at 1:57 PM	3.5 MB	WAVE Audio File
chatting4.wav	Feb 20, 2018 at 2:06 PM	3.5 MB	WAVE Audio File
chatting5.wav	Feb 20, 2018 at 2:23 PM	3.5 MB	WAVE Audio File
chatting6.wav	Feb 20, 2018 at 5:25 PM	1.8 MB	WAVE Audio File

CROPPED AUDIO FOOTAGE, NAMING SYSTEM IN PLACE

As we've previously covered, each of the sound bytes have been cropped to 10 second clips, while the longplays have been cropped to 10 minute clips. SoundForge Pro was the audio editing software of choice as it expedited the process of cropping each of these samples.

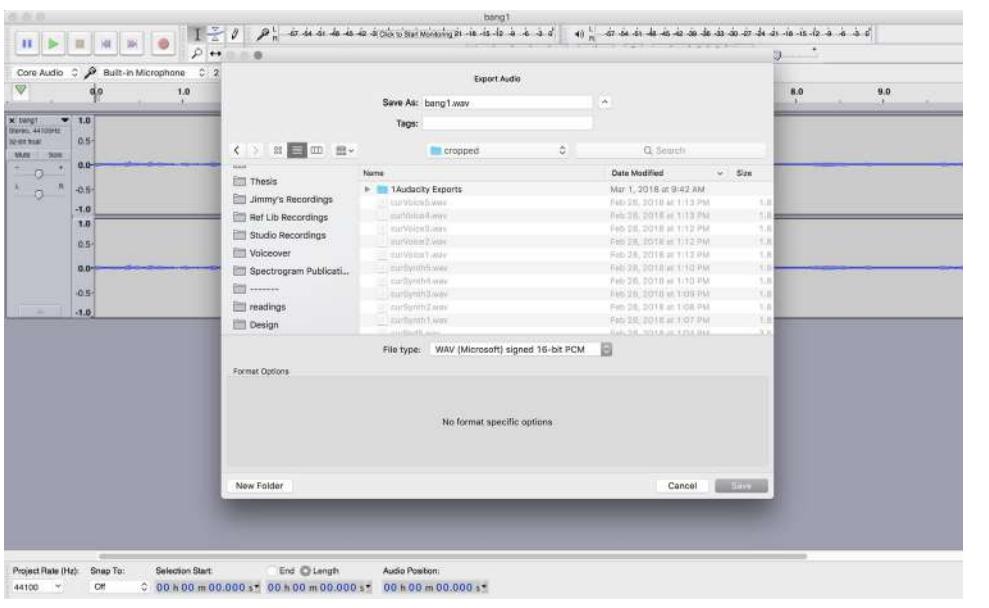


SOUNDFORGE PRO AUDIO CROPPING, 10 SECOND SOUND BYTE



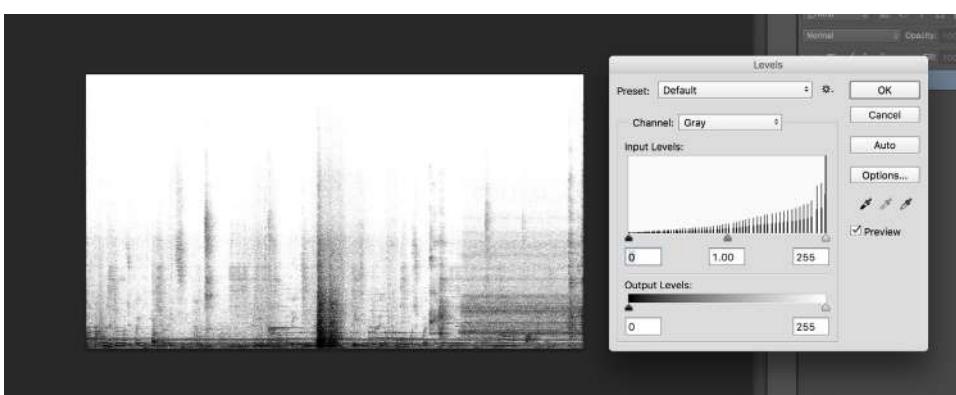
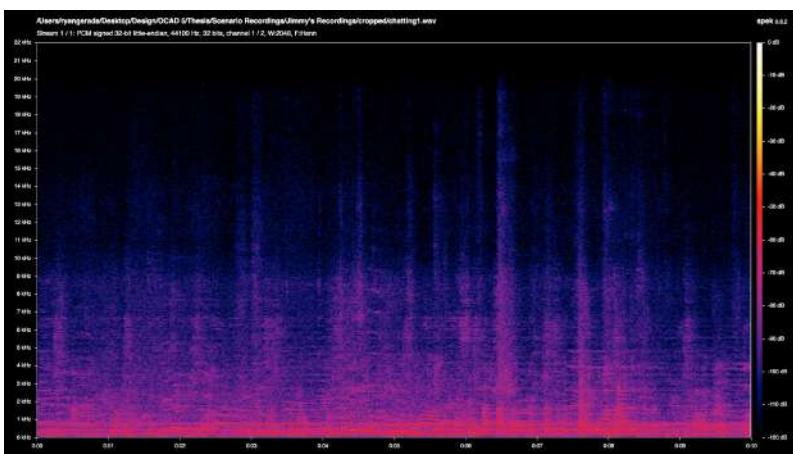
CROPPED AUDIO CLIP, 10 SECOND SOUND BYTE

Each of the files have been converted to a global file format (.wav) within audacity for universal use.



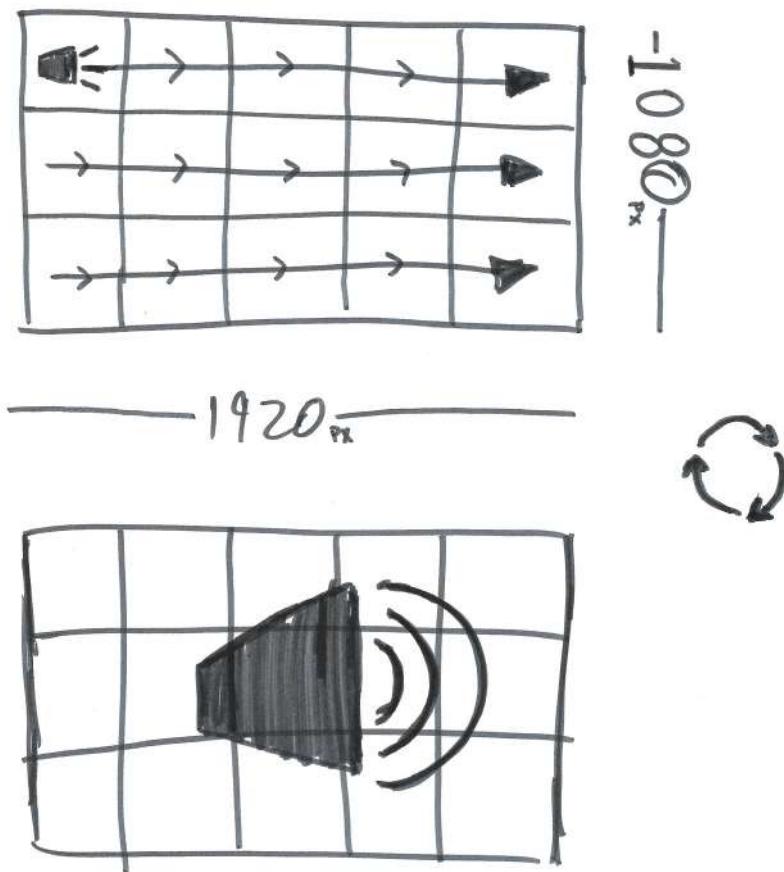
AUDACITY FILE CONVERSION, .WAV FILE

These recordings have also been visualized using a spectrogram visualizer named Spek. The spectrograms are then pulled into photoshop, converted to greyscale, inverted, and levels adjusted.

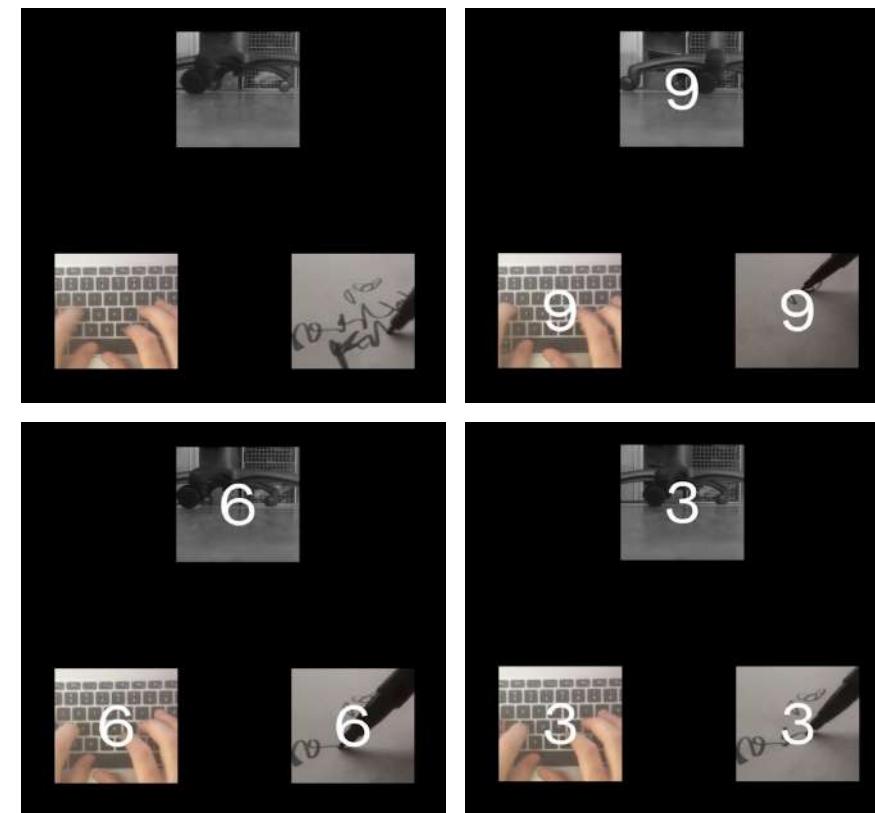


SPEK RAW SPECTROGRAM VISUALIZATION EXAMPLE (TOP)  
PHOTOSHOP RECOLORING (BOTTOM)

Video Grid conceptualization.



AUDIO SEQUENCE, EARLY VISUALIZATIONS



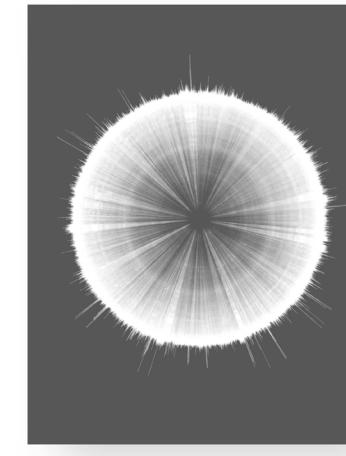
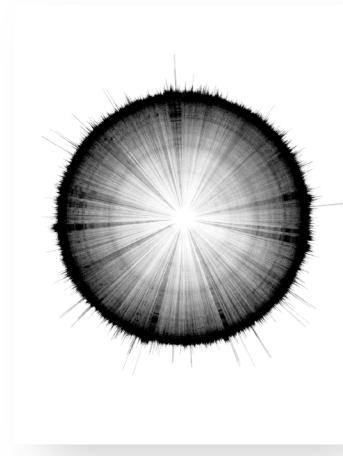
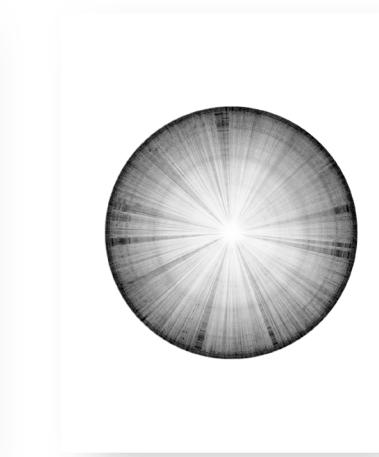
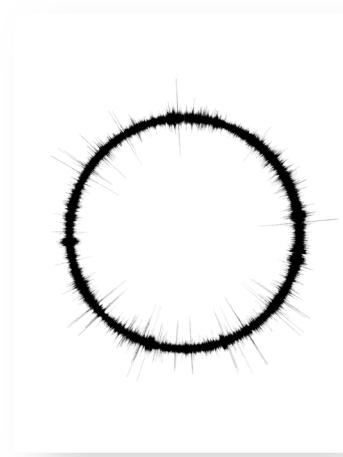
EARLY VIDEO GRID PROTOTYPE

160 02.23-02

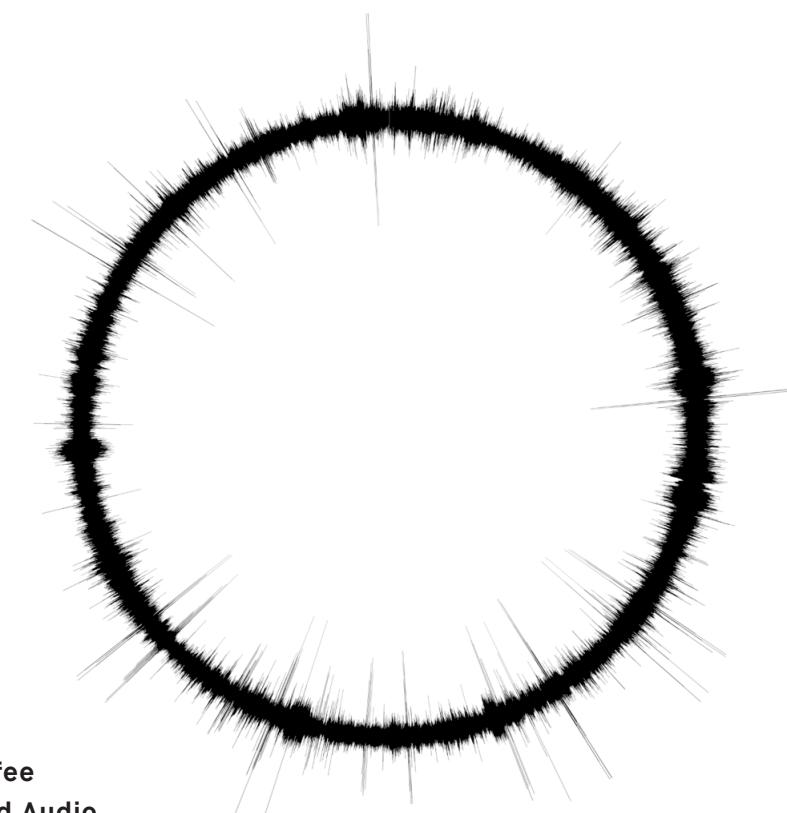
161 WEEK TWENTYTWO

**Audio Graphic Series**

01, 02, 03.



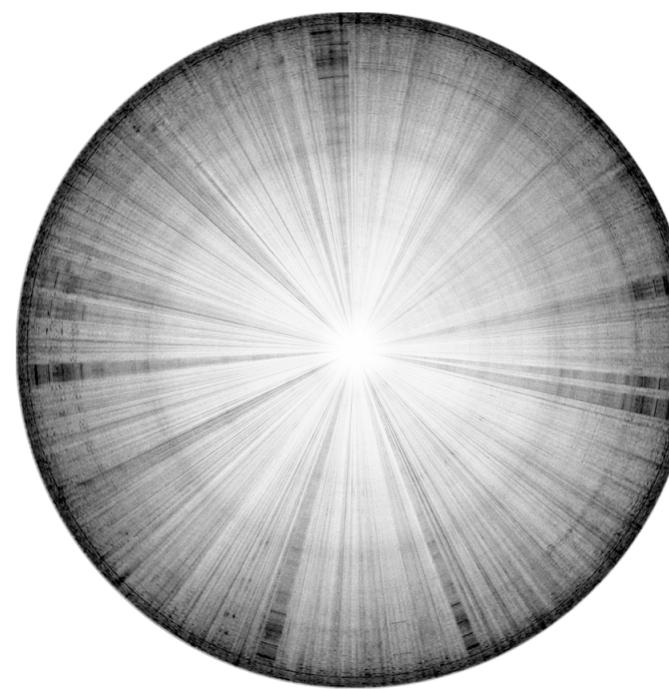
162 02.23-02



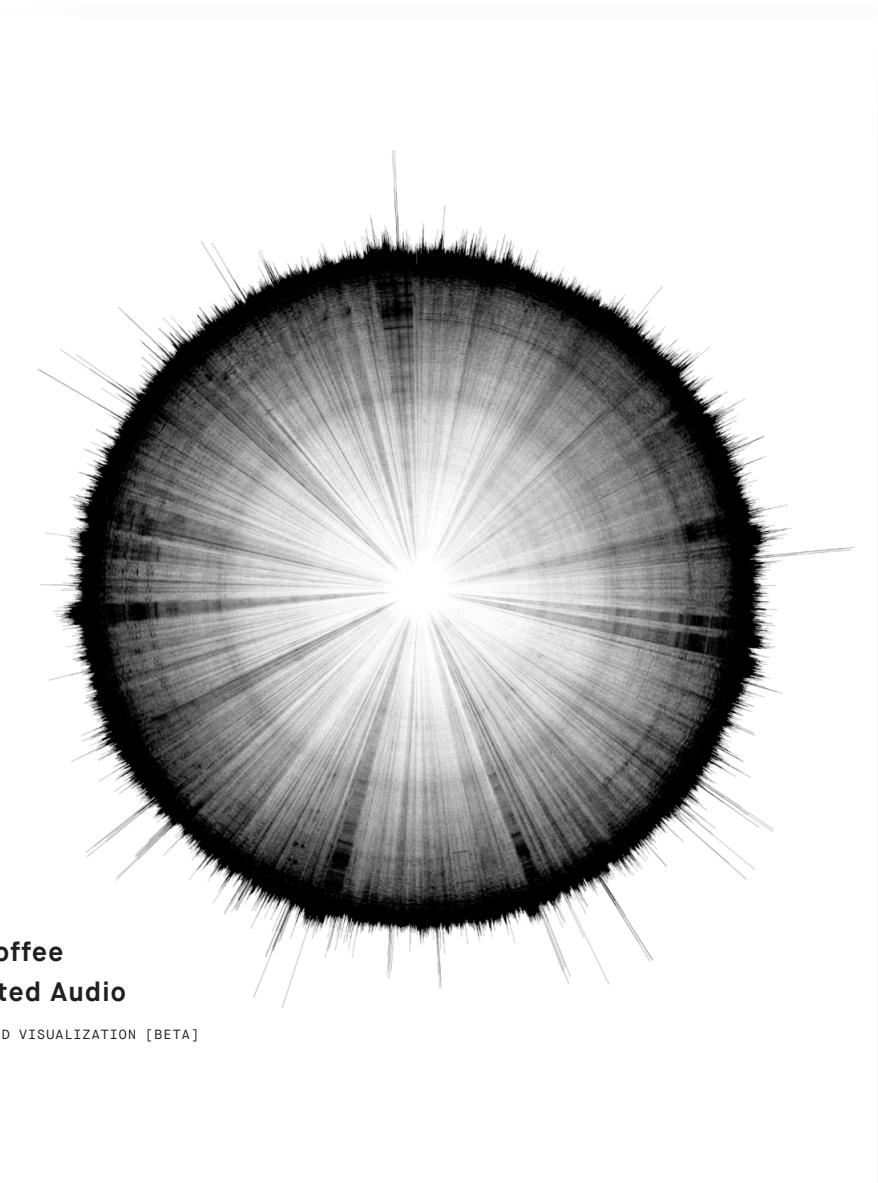
**Jimmy's Coffee  
Amalgamated Audio**

[PARTS 1 & 2]

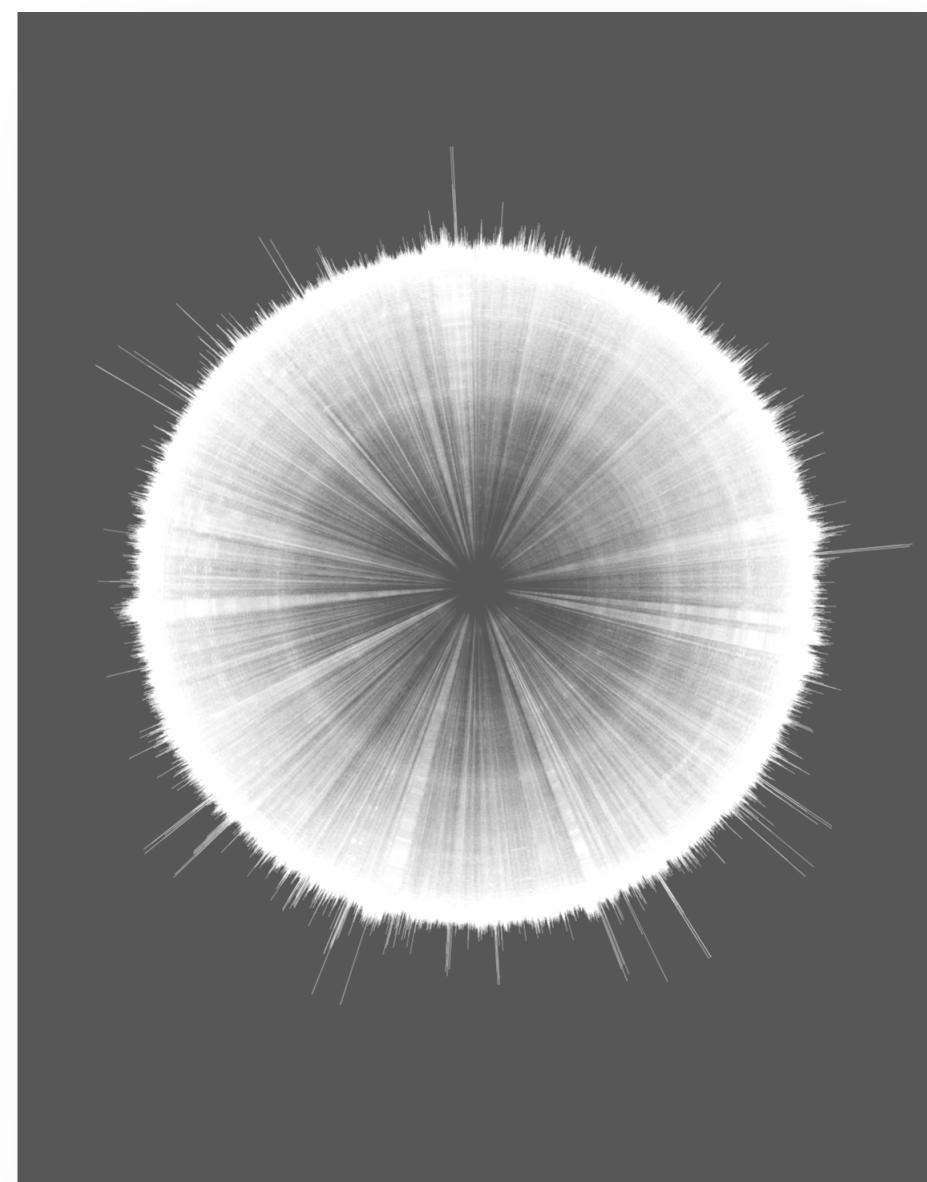
163 WEEK TWENTYTWO



164 02.23-02



165 WEEK TWENTYTWO



## 03.02-09

With the midterm presentation behind me, there were many successes and motivations that came out of it. The process of pulling the presentation together was helpful in many regards. Similar to this journal, it provided a stable platform to trap my thoughts, solidify any concerns that had gone unaddressed, and perhaps most importantly, allowed me a chance to speak about it in front of a large crowd for the first time since last semester. This week has been spent reflecting on the criticism provided within the presentation, refining the scope of the work and planning the workload for the remaining weeks.

The critiques have provided a valuable last minute resource that will be implemented as I continue to refine this work.

Documenting the interior properties of each space, including flooring materials, wall construction, ceiling height.

Infographic implementation is still undergoing thought. It was brought to the forefront of conversation during the critique, and is still ultimately undecided.

The curated sounds must have a home for comparison. The viewer will be able to compare the curated sounds within the spectrogram manual, all three environments will be featured in each book for comparisons sake.

# ENVIRONMENTAL INTERIOR PROPERTIES

## [01] Cafe

### **Jimmy's Coffee:**

Jimmy's Coffee is housed within an old victorian home, north of Dundas on McCaul street. The coffee shop opens its doors at 7am, and is open for 12 hours from then on. During my investigation of the space, I had planned to study the interactions of the employee's, the guests, and how the space was utilized. Since it is obvious that the dynamics of the coffee shop change throughout the day, I paid close attention to when I was visiting, and noted any unique interactions or events that stood out. As I observed, I noticed that Jimmy's is home to a wide array of clients. You get an interesting combination of locals from around the area, either starting or finishing their workday. Hospital employees that work just down the street, or some young professionals that are on their way to work up the street. It also plays hosts to a wide range of students, from both OCAD and U of T. This diverse range of client make the space dynamic, exciting, and distracting.

The space is divided up equally between the front of house, and a public workspace towards the back. Immediately after entering the coffee shop, you're greeted by the baristas behind the counter to your right. There are a few chairs that host window seating at the front as well as a few bench tables across from the barista's countertop. As you move to the back, you enter the main workspace, where a large communal table is shared with a few others, some more bench seating, and a couple single tables a bit further back. For the purposes of the recordings, it was my intention to cover every nuance of the space. Setting up by microphone in each corner of the shop to capture my long plays. The sound-bytes and curated sounds were a bit more difficult to capture, as the space is constantly flooded with new guests. It was critical that the microphone be setup in a working space while recording all of the sounds. The recordings brought with them a more atmospheric and noisy background, although I wouldn't consider this a failure - it's just how the space is.

The space, although sometimes over capacity, feels robust and welcoming. The ceilings stand a generous 15 feet, and appear to be constructed out of a hardwood. Similar to the ceilings, the floors toward the back working space are constructed out of a dilapidated hardwood that has been warped over the years. As guests or employees step, it gives way with a loud creak.

## [02] Library

### **Toronto Reference Library:**

The Toronto Reference Library was the most public of the three spaces analyzed during this project. The majority of the space is open to the public to do as they wish. The vast amount of choice you have once you enter the building allowed for a lot of flexibility when choosing the locations in which I recorded. Firstly, I spent a large amount of time calibrating myself within the space, observing how guests interacted with it, how they spent their time and navigated the library itself. I also paid close attention to any dialog shared within the space, if guests were chatting with one another, keeping to themselves or asking for directions. These observations would ultimately lead me to record each of the five public floors of the library. Each floor has a similar layout, with any major book cataloguing taking place on the east or west sides of the floor. The north side of the library was typically shared as a minor storage area for books, and also functioned as a communal work space, hosting guests with large tables and chairs. The south side typically hosts staff and floor specific assets, such as historical photography cataloguing or architectural documents.

The size of the Reference Library dwarfs the other two spaces analyzed in this work. Its interior design is universal throughout the entirety of the building. Concrete floors are masked with heavily padded and carpeted floors. The floors are slightly muted, but can give off a loud hiss if someone is dragging their feet or something is dragging across the surface. The ceilings are generously spacious, each of the floors has 20 foot ceilings, with a large portion of the reference library having no ceiling at all. This creates unique spatial acoustics, as much of the sound is not contained behind walls. The library begins to feel as though it is breathing, as the acoustics swell around the space similar to a stadium. A ruckus on the first floor bleeds to even the furthest reaches of the fifth floor, and vice versa. This unique auditory experience has been captured within the recordings, most notably, the long plays.

The recordings were spread out across all of the floors, firstly, I captured a single long play recording from each of the 5 floors. I then pursued the sound bytes, these, similar to the long plays, were captured across the entire building. When recording, I chose to setup in a location that would facilitate a guest if they chose to work at the library, I then proceeded to capture each of the recordings from that position.

**[03] Studio**  
**Studio:**

The studio recordings were the least public of the trio. Of course, having the privacy of my own space would allow for such. The studio space functions as a multipurpose - doubling as a bedroom, it is one of two bedrooms in a downtown apartment. A suitable 15 square foot space serves its purposes well as both a functional studio space as well as a bedroom. The allocation of space is roughly cut down the middle, with the desk and working space occupying the near side of the room, while the bed rests comfortably against the far side of the space. The apartment space itself is quite modular, its exterior walls are constructed out of sturdy concrete. It can be implied then that the floors and roof of the space are also concrete. This plays a major role in how muted the acoustics are. With 8 foot concrete ceilings, and sturdy concrete floors, the recordings capture a crisp, unobstructed sample of sound. Compared to the acoustic properties of the other two spaces, the studio recordings stand out as the cleanest, most defined of the trio.

All of the recordings were taken from inside the working space, although some of the sounds recorded did not directly occur within the space, the microphone was positioned to capture a genuine snapshot of how the sound would interact from within the working space.

## PREFACE

[ PROVIDING CONTEXT ]

This thesis project was initiated with the intent of studying sound within spaces. It has quickly transformed into a broader study of acoustic ecology, inspired by the works of Walter Murch. I have set out to study the distracting sounds within three selected spaces, all three of these environments range in size and construction assemblies. The studies have been conducted using a portable condenser microphone, each of the selected sounds have been recorded five times. Additionally, this same methodology has been applied to three created sounds, dubbed curated audio for purposes of clarification. These recordings were played and recorded within each of the selected spaces, with the intention of establishing a better baseline comparison of the acoustic qualities of each individual environment. Lastly, five longplay recordings were conducted throughout each of the three environments. The 10 minute longplay recordings are an important part of the study, as it captures the atmosphere of each of the spaces. This publication is intended to act as an extension to the Audio Graphic posters on display. You may consider this publication a translator of sorts, its sole purpose is to lower the barrier to entry that has been established with these visualizations. The vernacular used within this manual is intended to educate, and extrapolate on the abstracted imagery you have already been presented with. Insights, comparisons and raw spectrographic visualizations are housed within this book. The content has been generated from Jimmy's Coffee.

Following this preface, there will be a brief crash course on how to properly read and analyze spectrograms. Of course, you are encouraged to draw your own conclusions.

## [01] Jimmy's Coffee

### **Miscellaneous Bang**

The bang of an object or objects.

These were recorded as matters of coincidence. In the commotion of a bustling coffee shop, these bangs ranged from the natural motions of the barista, to the public dropping something on the wooden floors.

The banging was sporadic, but frequent enough to reliably pull you away from your work to try to locate the origin of the sound. In a concentrated state, the banging of a falling object can break your concentration.

This audio was recorded at a distance, while sitting in the coffee shop's communal working space.

### **Chair Moving**

The scrubbing of a chair against the wooden floor.

The sometimes chaotic coffee shop brings with it a generous amount of movement.

During peak hours, chairs shuffled around the coffee shop frequently. With guests moving around within the workspace, the dragging and shuffling of chairs is imminent. The crowd and population of the space influenced the amount of chair drag.

This audio has been captured within a close proximity to the coffee shop's communal working space.

### **Anonymous Chatter**

Guests conversing.

The bustling coffee shop invites all types of leisure, or productivity.

Peak hours invited generous amounts of conversation, the more populated, the higher chance of a conversation being sparked up between guests. The conversations can pull you away from your concentrated state, as you can't resist tuning in.

These conversations were captured within a close proximity to the coffee shop's communal working space.

### **Coffee Grinding**

The barista's were hard at work.

The natural workflow of the coffee shop tasks the coffee grinder with producing generous amounts of ground coffee.

Grinding coffee plays an integral role in shaping the acoustic ecology of the coffee shop. The sound can be heard anywhere within the shop, and at almost anytime. The grinding of coffee can sometimes be soothing, although more often than not, it invites you to tune in - taking you out of your work.

This audio was recorded at a distance, while sitting in the coffee shop's communal working space.

### **Anonymous Laughing**

Guests conversing.

The bustling coffee shop invites all types of leisure.

Peak hours invited generous amounts of laughter, the more populated, the higher chance of a conversation being sparked up between guests. The laughter can pull you away from your concentrated state, as you can't resist tuning in.

This laughter was captured within a close proximity to the coffee shop's communal working space.

### **Steaming Milk**

The prevailing sound of any coffee shop.

As the baristas rush to fulfill their queue of orders, the steaming of milk steadily pierces the ambience of the space.

Steaming milk creates a soft hiss that covers the coffee shop in a quiet hiss. Similar to grinding coffee, the sound of the steaming milk comes with the territory, although the sound is jarring enough to pull you out of your concentration.

This audio was recorded at a distance, while sitting in the coffee shop's communal working space.

### **Curated Audio [Pad]**

This curated audio clip is 20 seconds.

A long, droning pad gathers momentum as the sound begins to swell as it almost simultaneously fades away. Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the coffee shop.

### **Curated Audio [Synth]**

This curated audio clip is 10 seconds.

An arpeggio loops for a few seconds, then, it suddenly ends.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the coffee shop.

### **Curated Audio [Voice]**

This curated audio clip is 10 seconds.

An amalgamation of sampled audio of voices were combined from all three spaces, these voices were anonymous.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the coffee shop.

### **Longplay**

The longplay recording is 10 minutes.

The longplays curiously capture the ambiance of the environments.

All 5 recordings take place in different locations from around the coffee shop.

**The following descriptions will be plunked into the spectrogram handbook, these are intended to provide a bit more context as to where each sound was recorded, as well as how that specific sound relates to the space.**

## [02] Toronto Reference Library

### Rustling Backpack

Opening, searching through, or closing a backpack.

With guests steadily cycling through the library, the sounds of backpacks bursting open pierce the space.

Frequency of the sound varied depending on the amount of guests within the workspace. Explosions of zippers or other compartments created an array of distracting sounds that alerted you of their presence.

These recordings were captured at a close distance, within the communal workspace of the library.

### Shelving Book

Shelving, or shuffling through a selection of books.

Whether it's a guest or a librarian, the rustling of books on the shelf is prevalent in any of the working spaces within the library.

Naturally, book retrieval is an integral function of the library, these sounds were prevalent and happened frequently. The rustling in the bookshelves pulls you out of your work as you try to locate the source of the sound.

This audio was recorded at a distance, within the communal workspace of the library.

### Crunching Paper

Folding or crumpling scrap paper.

The communal workspaces are often generously populated, amongst the fray you can reliably find a frustrated or frenzied worker dismissing unwanted paper.

Within the confines of the communal workspace, someone's frustration would often take form by crumpling a piece of scrap paper. The burst of sound was distracting, as you would find yourself trying to locate the source of the sound.

These recordings were captured at a close distance, within the communal workspace of the library.

### Anonymous Footsteps

Traveling through the workspace.

As guests come and go through the the libraries's workspace, the shuffling of their footsteps on the carpeted floors alerts you of their presence.

Depending on how active the workspace was, you would generally tune into the hushed whispers of a guest's footsteps sneaking across the floor. The closer these footsteps were to your immediate location, the more distracting they became. The increased volume of the step paired with the curiosity of their exact location provided a strong distraction.

This audio was recorded at a distance, within the communal workspace of the library.

### Mouse Clicking

Operating a computer mouse.

Accommodating the many laptops that populate the workspace, computer mouses can be heard operating.

You're frequently greeted with an exciting burst of clicking as you enter the communal workspaces. This clicking can be sporadic, increasing the distracting nature of the small bursts of sound.

These recordings were captured at a close distance, within the communal workspace of the library.

### Pen Writing

Scribbling or drawing with a pen.

The shearing of a pen on paper is prevalent within the workspace.

Frenzied workers race to trap their ideas on paper, it's a common to hear an army of pens frantically making contact with paper. This comes with the territory, and it's common for many of these sounds to blend together, however the auditory nuances can stand out and become distracting.

These recordings were captured at a close distance, within the communal workspace of the library.

### Headphones Dropping

Dropping on a desk or table.

Getting up from the workstation to take a break, or put your music or podcast on hold, the tumbling of headphones impacting the table.

Coming or going, taking a break from music or running to the washroom - headphones crashing against the wooden tables of the workspaces constantly demanded your attention.

These recordings were captured at a close distance, within the communal workspace of the library.

### Curated Audio [Pad]

This curated audio clip is 20 seconds.

A long, droning pad gathers momentum as the sound begins to swell as it almost simultaneously fades away.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the library.

### Curated Audio [Synth]

This curated audio clip is 10 seconds.

An arpeggio loops for a few seconds, then, it suddenly ends.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the library.

### Curated Audio [Voice]

This curated audio clip is 10 seconds.

An amalgamation of sampled audio of voices were combined from all three spaces, these voices were anonymous.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the library.

### Longplay

The longplay recording is 10 minutes.

The longplays curiously capture the ambiance of the environments.

All 5 recordings take place in different locations from around the library.

## [03] Studio

### **Chair Moving**

The rolling of the wheels on the concrete floor, and the creaking of the reclining office chair.

Navigating or getting comfortable, these recordings were captured while I was sitting at my work space within the studio.

These sounds happen frequently, reclining, repositioning, and moving all provoke a distracting shriek out of the chair.

The audio was captured at a close distance, within the studio's workspace.

### **Mouse Clicking**

Operating my computer mouse.

While working within the studio space, bursts of mouse clicks can be heard blooming from the space.

Although these sounds are frequently produced by me, the bursts of sound can still be a distracting.

The audio was captured at a close distance, within the studio's workspace.

### **Door Opening**

The entrance way into the apartment with the studio space.

Heard from the confines of the studio, the creaking of the opening and closing door intrude on the silence of the space.

Guests opening the door, or my roommate returning home from work often pull me away from my train of thought.

The audio was recorded at a distance, from within the studio's workspace.

### **Fan**

The fan that provides the general circulation of air within the space.

The clicking of the inner workings spark to life as the fan's thermostat initiates it's request. The fan functions on the opposite side of the wall separating the studio space from the rest of the apartment.

The fan frequently turns on to maintain the temperature, the operating sound drowns out into the background. However, the initial spark to initiate the system is pierces the acoustics of the space.

The audio was captured at a medium distance, from within the studio's workspace.

### **Footsteps**

Living with me is my roommate, which at the worst of times brings with him a lot of commotion.

These recordings are of his footsteps from around the house as I work within the studio.

Movement within the main hall of the apartment is frequent, the footsteps can be easily heard from the confines of the studio. The break in the silence proves to be reliably distracting.

The audio was captured at a distance, within the studio's workspace.

### **Keyboard Typing**

The clattering of the keyboard's keys.

The typing can be heard bursting from the keyboard while work is underway.

Similar to the mouse clicks, this sound is frequently created by me. the clattering of the keyboard can lead to loosing your train of thought.

The audio was captured at a close distance, within the studio's workspace.

### **Miscellaneous Bang**

The banging of an object or objects.

These recordings have been sourced from around the space, for example, the clattering of pots or pans from the kitchen often intrude on a quiet working session within the studio space.

These sounds occur frequently around the apartment, they can be clearly heard from within the studio space. Their randomness distracts you from your work, as you curiously ponder the source of the sound.

The audio was captured at a distance, within the studio's workspace.

### **Water Running**

Turning on the tap in either the kitchen or washroom.

The splashing of running water from within the bathroom or kitchen.

The many reasons for turning on the tap to run water has provided ample distractions when studying within the studio space.

The audio was captured from a distance, within the studio's workspace.

### **Curated Audio [Pad]**

This curated audio clip is 20 seconds.

A long, droning pad gathers momentum as the sound begins to swell as it almost simultaneously fades away.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the library.

### **Curated Audio [Synth]**

This curated audio clip is 10 seconds.

An arpeggio loops for a few seconds, then, it suddenly ends.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the library.

### **Curated Audio [Voice]**

This curated audio clip is 10 seconds.

An amalgamation of sampled audio of voices were combined from all three spaces, these voices were anonymous.

Recording of the curated audio clips was conducted within the space, using a medium sized speaker to boom the pre-rendered audio into the library.

### **Longplay**

The longplay recording is 10 minutes.

The longplays curiously capture the ambiance of the environments.

All 5 recordings take place in different locations from around the library.

## 03.09-16

This week has started productively. The finishing touches are being put onto the spectrogram handbook, with a few late additions being added to reinforce the experience for the laymen, the intention here is to invite them into the experience. As established in last week's installation, certain guides have been constructed to preface the handbooks. Lowering the barriers has been the sole intention of creating and implementing these guides. With a quick crash course established, the view will be educated to a basic understanding of the content, empowering themselves to draw their own conclusions or observations.

## COMPARISONS & INSIGHTS

[WHAT'S THIS ALL ABOUT?]

### (INTRO)

The comparison's and insights section will provide a valuable deep dive into the visual implications of these standardized audio recordings. The curated audio was designed to be diverse in its playback through all three instalments. Additionally, the recording conditions were encouraged to accurately represent the environment. The acoustic ecology of spaces was a major study within this body of work, it is within this comparisons and insights section that the research comes to life.

Moving forward, the curated audio samples will act as a means of comparison. Firstly, five particular recordings were conducted, using each of the three unique curated audio samples. The curated pad sample was played and recorded within the space for 20 seconds, while both the curated synth and voice were played and recorded for 10 seconds. These five individual recordings have been amalgamated, creating a visually dense spectrogram. This has been done for each of the curated audio samples, within each of the individually studied spaces.

This publication will first highlight the combined visualizations with the intent of providing a visual overview of the spaces. Next, each of the curated audio samples, unique to Jimmy's Coffee will be visualized in the standard format.

It is encouraged to draw your own conclusions on the implications that these spectrograms might have.

### (CONCLUSION)

It is clear that there is a wide variance between the visual noise that is depicted within each of the spaces. Jimmy's coffee inherits much of the ambiance that constantly swirls around the coffee shop. The Toronto Reference Library falls somewhere in the middle - it hosts the curated audio quite well, as there is little distortion of the visualization. However, the intricacies within each of the audio samples are sometimes drowned out in the visualization. As for the studio recordings, the lack of ambient noise has provided a strong platform for the audio to sit upon, this comes out clearly within the visualizations.

Ultimately, I am happy with the results of this comparative experiment. I believe the selection of the curated audio works well in its diversity, each of the sounds are unique in their structure, frequency range and theme. The visualizations themselves act as a strong metaphor for each of the spaces, visually, you are able to quickly digest the happenings of the space. The acoustic ecology of each of these environments has been clearly displayed through this series of visualizations.

Combining the five recordings has worked well in amplifying the visual intensity of these spectrograms. Although accuracy has been sacrificed in the process, the next pages will display the separated visualizations of each of the recordings taken in Jimmy's Coffee.

--

The next pages will demonstrate how the combined visualizations will function within the spectrogram handbook.

## CURATED PAD [COMBINED]

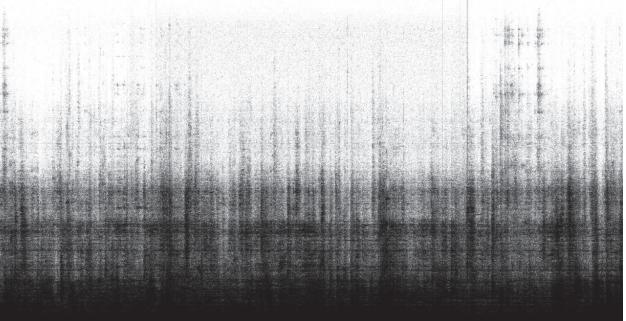
The curated pad spans for 20 seconds within each of the recordings. The audio was created to swell in two places during playback, while maintaining a discrete audio signature. Distinguishing the curated pad audio sample within the top two visualizations - Jimmy's and the Reference library, becomes quite difficult in comparison to the studio recordings. Extrapolating from these general observations, it is clear that the ambiances of the top two spaces have contributed to a large amount of distortion within the visualizations.

Focusing on Jimmy's visualization, there is a lot of congestion in the low to mid ranges, resulting in the intense blacks that litter the lower half of the spectrogram. Naturally, the bustle of a coffee shop would contribute to a great deal of noise, drowning out the unpronounced audio clip.

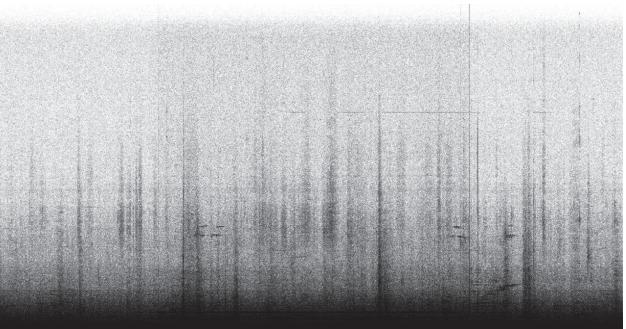
The Reference library finds itself somewhere comfortably in the middle of the other two spaces. It can be concluded by the heavily washed grey background that there was in fact quite a bit of background ambience within the space, although it has been set into the background of the space for the most part. The peaks of the curated pad reveal themselves in the later portion of the spectrogram, around the 7 second mark. However, without the studio as a point of reference, it would be difficult to distinguish the similarities between the top two spaces.

Finally, the personal studio space reveals hints of the pad sound, however subtle it is, the lack of background noise allowed for a clean recording, later resulting in a clean visualization. The pad can be seen swelling at two points most prominently, with a bit of a low frequency hum plaguing the lower portion of the spectrogram.

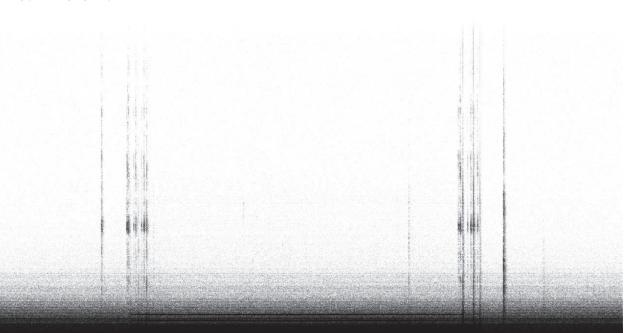
JIMMY'S COFFEE



TORONTO REFERENCE LIBRARY



PERSONAL STUDIO



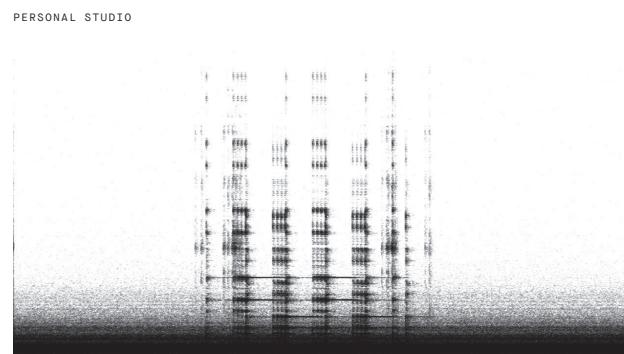
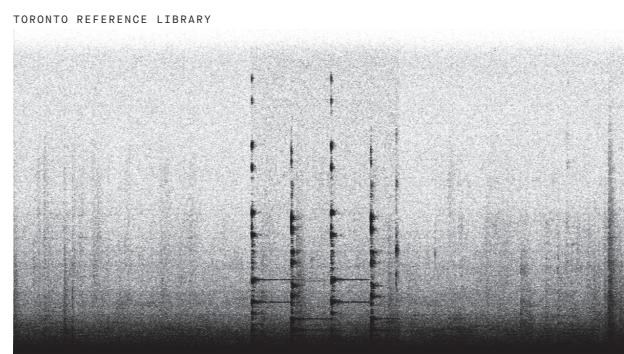
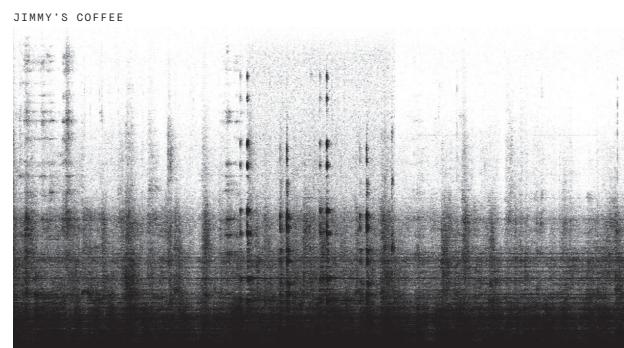
## CURATED SYNTH [COMBINED]

The curated synth spans for 10 seconds within each of the recordings. The audio was created to peak sharply, in rapid succession. This arpeggio of sorts was designed to be easily distinguishable, even in crowded, noisy environments. Using the personal studio visualization as a point of reference, the audio leaves a unique signature that punches through the ambiances of all three spaces. This visual can be identified clearly in all three of the visualizations.

Jimmy's visualization falls victim to the crowded acoustics of the space. However, the curated synth audio manages to pierce some of the lower frequencies, resulting in the upper half of the spectrogram revealing the synth. The ambiances of the coffeeshop have dominated the lower portion of the visualization, although the curated synth still peaks through down there because of its varied intensity.

The Reference library hosted the audio quite well. Although the space has been washed in grey, the punctuation of the curated synth audio stands strong within the visualization.

As for the studio space, it provides a strong canvas for the visualization to stand up against. The intricacies of the sound can be clearly seen here as the white background showcases the line work through nearly the entire spectrum of frequencies.



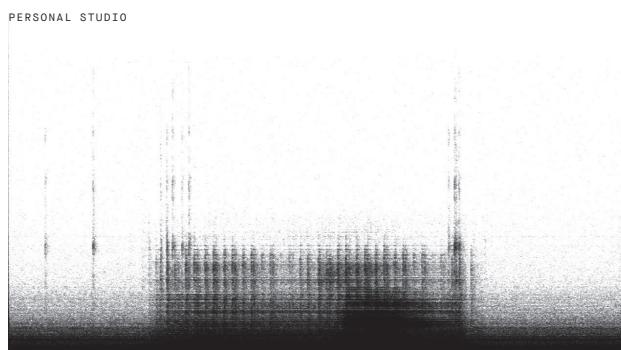
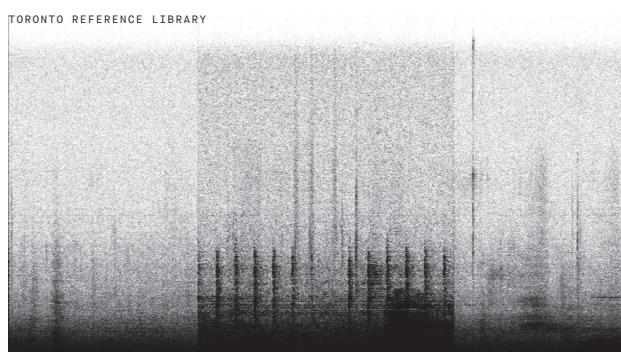
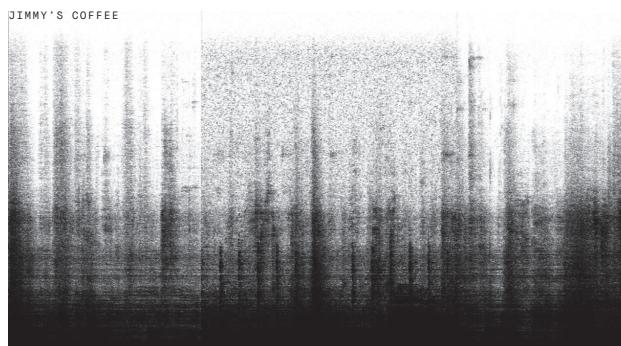
## CURATED VOICE [COMBINED]

The curated voice spans for 10 seconds within each of the recordings. The audio was created to test the dynamics of the human voice when played back within each of the spaces. The intent with each of these curated sounds was to bring a unique auditory signature to the forefront, the human voice was the last logical fit in the trio. The studio recordings reveal a strong presence in the low to mid range frequencies,

The unique qualities of the curated voice audio are almost completely lost in the ambiances of Jimmy's, it is difficult to visually distinguish the particular peaks or valleys created by the presence of the voice within the space. The intense blacks flood the bottom of the spectrogram, washing away any unique attributes that the voice may have brought to the space.

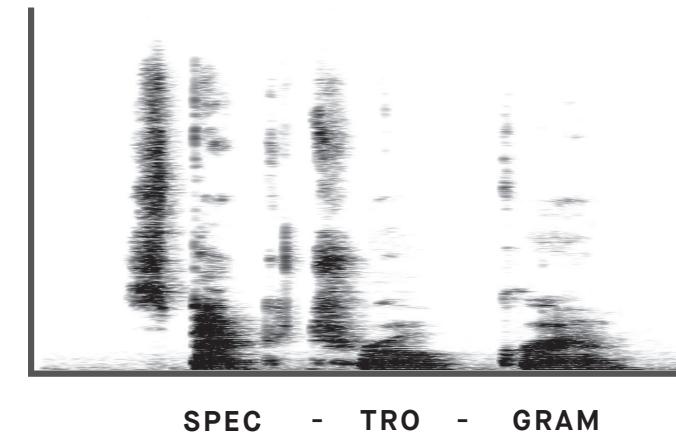
The Reference library provides a strong grey washed background for the voice to sit upon. The ambiances of the library are constant, but not intense enough to destroy the visual properties of the voice.

The personal studio recording dances across the bottom third of the spectrogram, the curated voice is heavily comprised of low to mid range frequencies. The striations within the visualization show a staggering of the voice playback, as if the speaker is not confident in what he is saying.



## HANDBOOK TUTORIALS

Additionally, the Spectrogram Handbook has been equipped with a few basic tutorials to ensure viewers are able to digest the content provided. The guides first prime the viewer with the basic anatomy of a spectrogram, it also visually demonstrates the vocal articulation of a spectrogram that has been visualized. To the right, you will see these examples as they appear in the handbook.



SPEC - TRO - GRAM

### Frequency

**Measured top to bottom.**

[22k - 0k hertz]

### Time

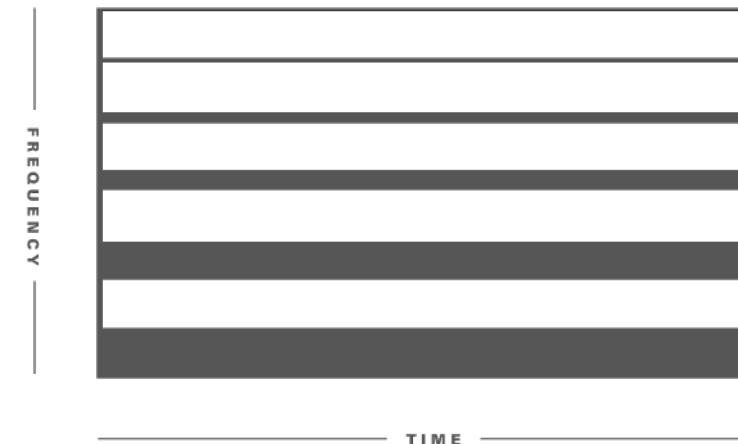
**Measured left to right.**

[represented in seconds or minutes]

### Intensity

**Measured in decibels.**

[represented by intensity of visual]



## 03.16-23

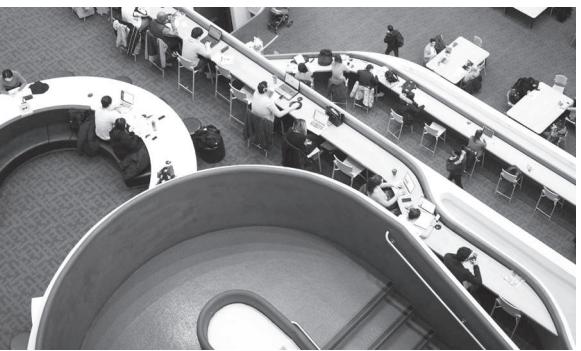
The few remaining pieces of the spectrogram handbook are planned to be polished off this week. That being said, it will be important to focus my undivided attention on the video grid. Currently, the video grid is scheduled to begin next week. As a whole, the progress of the grid has been trailing behind the other deliverables for this project. The footage is scheduled to take place early next week, with the editing scheduled to begin immediately after. This timeline leaves me with a couple weeks of editing, last minute changes, and a bit of time to begin gradex preparations.

Additionally, the rather slow development of the video grid has been in part to the time allocated to the printed deliverables. Both the Spectrogram Handbooks and the Audio Graphic posters are nearing completion. With the printed deliverables out of the way, the video grid project will receive my undivided attention.

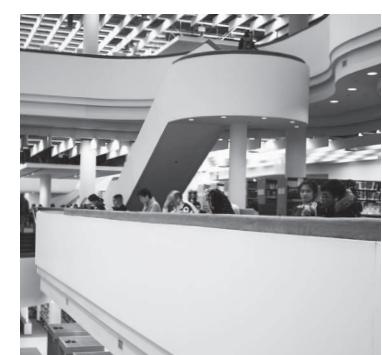
## ENVIRONMENTAL DOCUMENTATION

The final component of the spectrogram handbooks was the photographic documentation. These photographs would arm the viewer with a burst of visual context before diving into the bulk of the content. The photographs have been treated similarly, for the most part. The page has been structured loosely, with the left comprising of photographs that give off the general vibe of the space, and the right focusing on the construction assemblies of the space.

194 03.16-23



195 WEEK TWENTYFIVE



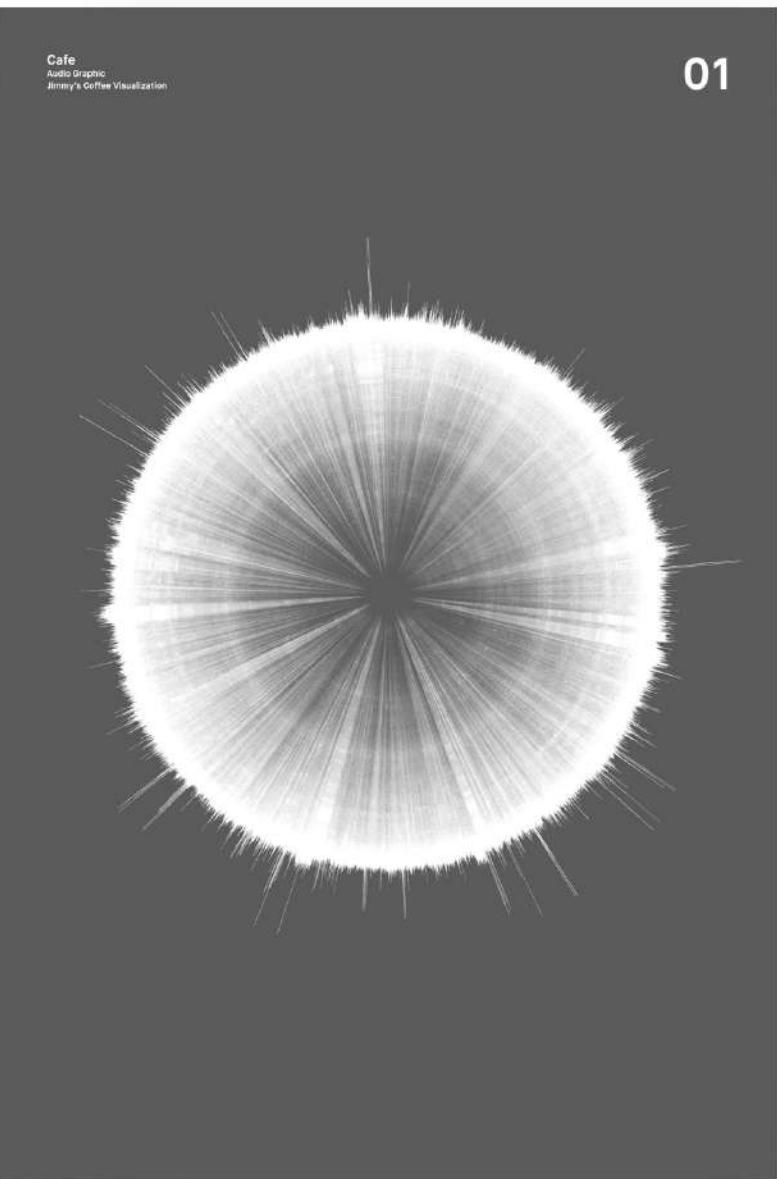
196 03.16-23

## AUDIO GRAPHIC (REVERSED)

Moving forward, the issue of viewer engagement has been put to the side for a while now. As this project progressed, the need for an initial element of intrigue has grown larger. Working with the audio graphic posters this week, the solution presented itself clearly. The idea here is to have a blueprint-esk aesthetic echoing the front of the posters.

197 WEEK TWENTYFIVE

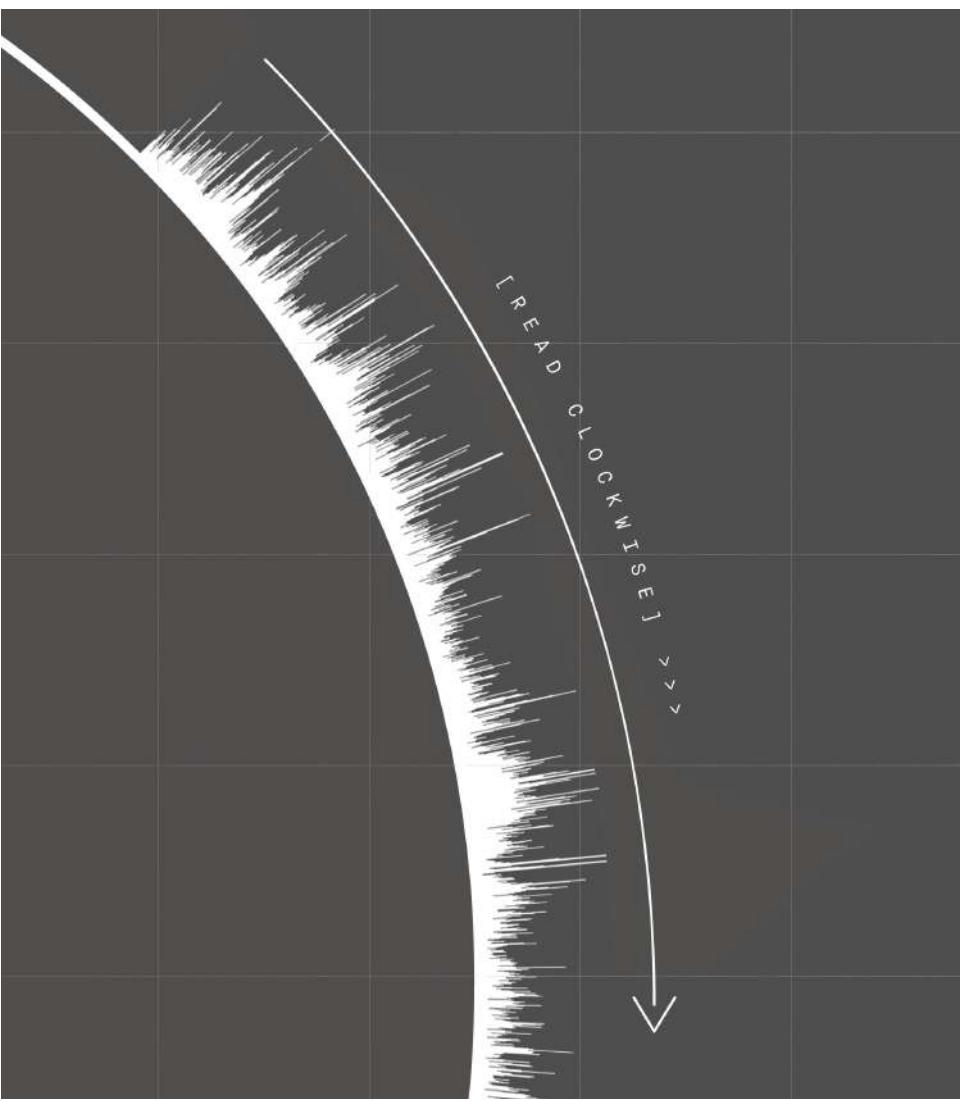
198 03.16-23



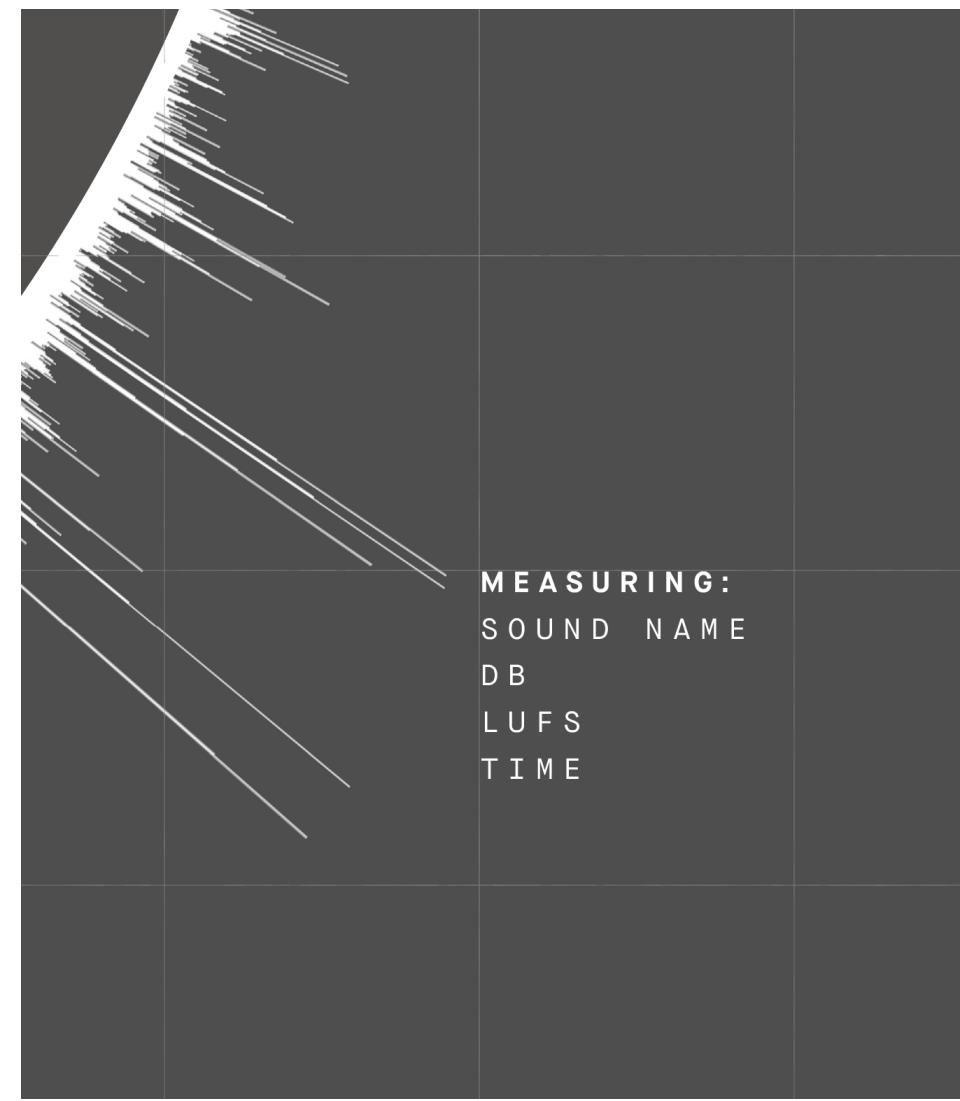
199 WEEK TWENTYFIVE



200 03.16-23



201 WEEK TWENTYFIVE



## 03.23-30

The few remaining pieces of the spectrogram handbook are planned to be polished off this week. That being said, it will be important to focus my undivided attention on the video grid. Currently, the video grid is scheduled to begin next week. As a whole, the progress of the grid has been trailing behind the other deliverables for this project. The footage is scheduled to take place early next week, with the editing scheduled to begin immediately after. This timeline leaves me with a couple weeks of editing, last minute changes, and a bit of time to begin gradex preparations.

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# AUDIO GRAPHIC

## DETAILED INFORMATION

Providing viewers with an opportunity to explore the inner workings of the graphical posters has been one of the more prominent challenges during the visualization stage of this project. Ultimately, providing detailed information that opens the door for the viewer to better appreciate the details of the visualization was key to the success of this work. This information is slated to be installed on the back part of each of the visualizations, as hinted at in last week's journal entry.

**10 minute longplay recording, visualized**

**32-bit PCM data, 2 channels @ 44100 Hz**

### 01 Cafe

Mom. (max): -9.83 (LUFS) at 00:04:23.965

Short (max): -15.54 (LUFS) at 00:00:07.988

c\_d1  
grinding coffee

c\_a1  
banging portafilter

SAMPLE AT PEAK (DB): -2.49  
RMS LEVEL (DB): -22.56  
AVERAGE VALUE (DB): -130.88

Mom. (max): -10.25 (LUFS) at 00:00:00.732  
Short (max): -16.95 (LUFS) at 00:00:00.732

Mom. (max): -15.59 (LUFS) at 00:00:04.087  
Short (max): -17.84 (LUFS) at 00:00:04.459

c\_e1  
misc banging

SAMPLE AT PEAK (DB): -8.08  
RMS LEVEL (DB): -20.76  
AVERAGE VALUE (DB): -92.09

Mom. (max): -14.40 (LUFS) at 00:00:00.558  
Short (max): -18.94 (LUFS) at 00:00:01.725

Mom. (max): -14.74 (LUFS) at 00:00:02.601  
Short (max): -17.07 (LUFS) at 00:00:02.601

c\_b2  
misc banging

SAMPLE AT PEAK (DB): -8.15  
RMS LEVEL (DB): -22.18  
AVERAGE VALUE (DB): -94.71

Mom. (max): -10.81 (LUFS) at 00:00:03.135  
Short (max): -16.07 (LUFS) at 00:00:03.135

Mom. (max): -18.14 (LUFS) at 00:00:00.558  
Short (max): -24.97 (LUFS) at 00:00:00.744

c\_c1  
misc banging

SAMPLE AT PEAK (DB): -0.00  
RMS LEVEL (DB): -14.09  
AVERAGE VALUE (DB): -72.30

Mom. (max): -11.05 (LUFS) at 00:00:00.810  
Short (max): -16.82 (LUFS) at 00:00:00.810

**10 minute longplay recording, visualized**  
**32-bit PCM data, 2 channels @ 44100 Hz**

—

## 02 Library

Mom. (max): -12.41 (LUFS) at 00:07:29.353  
Short (max): -18.10 (LUFS) at 00:07:29.539

I\_a1  
Misc Bang

SAMPLE AT PEAK (DB): -0.00  
RMS LEVEL (DB): -12.36  
AVERAGE VALUE (DB): -65.90

Mom. (max): -15.54 (LUFS) at 00:00:00.418  
Short (max): -24.29 (LUFS) at 00:00:00.418

I\_a2  
Shuffling Chairs

SAMPLE AT PEAK (DB): -0.00  
RMS LEVEL (DB): -16.38  
AVERAGE VALUE (DB): -78.50

Mom. (max): -9.40 (LUFS) at 00:00:02.415  
Short (max): -15.18 (LUFS) at 00:00:02.415

I\_a3  
Sorting backpack

SAMPLE AT PEAK (DB): -0.91  
RMS LEVEL (DB): -19.78  
AVERAGE VALUE (DB): -73.97

Mom. (max): -11.64 (LUFS) at 00:00:01.487  
Short (max): -18.24 (LUFS) at 00:00:02.230

I\_b1  
Anonymous Chatter

SAMPLE AT PEAK (DB): -14.82  
RMS LEVEL (DB): -27.42  
AVERAGE VALUE (DB): -100.38

Mom. (max): -19.40 (LUFS) at 00:00:01.487  
Short (max): -23.27 (LUFS) at 00:00:03.483

I\_c1  
Anonymous coughing

SAMPLE AT PEAK (DB): -10.21  
RMS LEVEL (DB): -26.78  
AVERAGE VALUE (DB): -100.07

Mom. (max): -17.44 (LUFS) at 00:00:01.858  
Short (max): -23.16 (LUFS) at 00:00:03.901

**10 minute longplay recording, visualized**  
**32-bit PCM data, 2 channels @ 44100 Hz**

—

## 03 Studio

Mom. (max): -3.57 (LUFS) at 00:05:52.387  
Short (max): -9.34 (LUFS) at 00:05:54.987

s\_a1  
chair moving, creaking

SAMPLE AT PEAK (DB): -4.45  
RMS LEVEL (DB): -21.44  
AVERAGE VALUE (DB): -88.28

Mom. (max): -17.83 (LUFS) at 00:00:01.301  
Short (max): -23.45 (LUFS) at 00:00:03.530

s\_a2  
misc banging

SAMPLE AT PEAK (DB): 0.00  
RMS LEVEL (DB): -6.63  
AVERAGE VALUE (DB): -51.68

Mom. (max): -7.71 (LUFS) at 00:00:00.929  
Short (max): -15.28 (LUFS) at 00:00:03.530

s\_a3  
keyboard, typing

SAMPLE AT PEAK (DB): 0.00  
RMS LEVEL (DB): -23.45  
AVERAGE VALUE (DB): -95.32

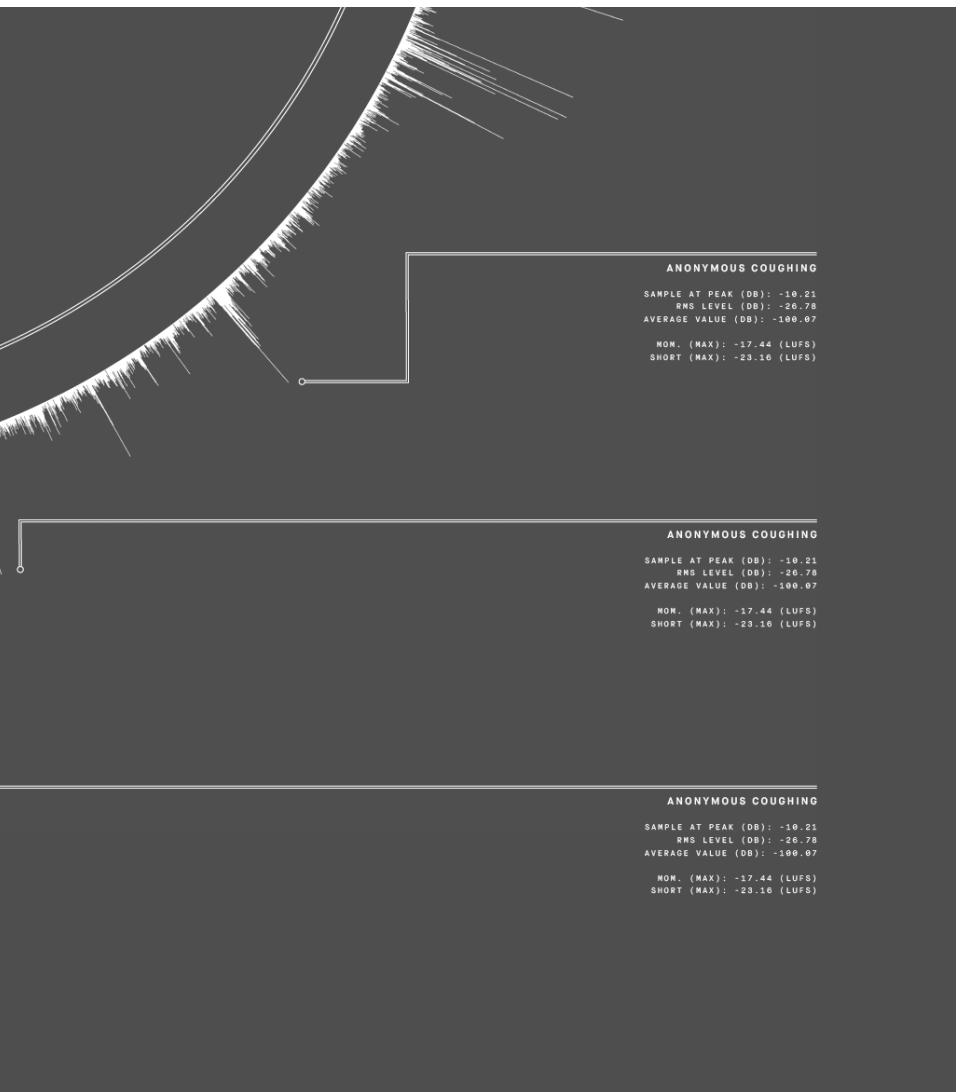
Mom. (max): -16.24 (LUFS) at 00:00:01.858  
Short (max): -20.50 (LUFS) at 00:00:02.694

s\_b1  
keyboard, typing

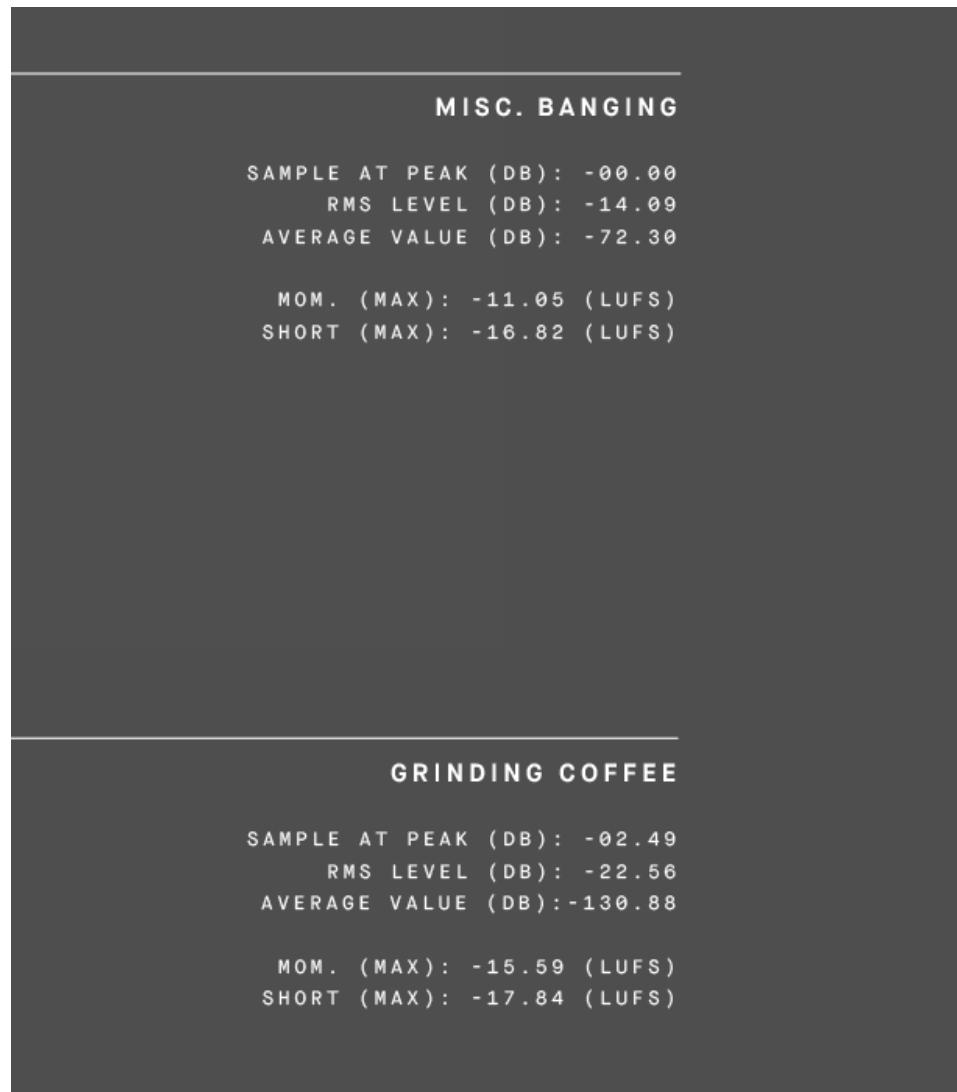
SAMPLE AT PEAK (DB): -1.12  
RMS LEVEL (DB): -28.54  
AVERAGE VALUE (DB): -110.08

Mom. (max): -19.04 (LUFS) at 00:00:00.744  
Short (max): -23.39 (LUFS) at 00:00:02.508

208 03.16-23



209 WEEK TWENTYFIVE



## 03.30-06

Down to the wire. This week will see the continued filming of the video grid. Additionally, the continued progression of the art direction for the video grid. While the grid progresses, I thought it was important to recalibrate myself to the timeline. Logistically, I believe most of the work is where it needs to be, both the spectrogram handbooks and audio graphics are comfortably print ready. Now, as far as I am aware, I am on track for a clean finish, but just as a point of reference, I decided to spend some of the early hours of this week creating a final month timeline. Starting from now and extending to logistical information regarding GradEx.

### Days / Hours

Monday April 2nd - Monday April 23rd

= 22 days

3 Hours spend on thesis per day (light / realistic workload)

= 66 hours

### Weekly Breakdown

#### 03.30-06

- video grid**
  - finishing content curation
  - editing / art direction
- audio graphic**
  - finishing touches
  - test prints
- spectrogram handbook**
  - finishing touches
  - test prints

#### 04.13-22

- video grid**
  - completed
- audio graphic**
  - completed
- spectrogram handbook**
  - completed
- process book**
  - caught up
  - finishing touches
- gradex**
  - logistics sorted out
  - final preparations

#### 04.06-13

- video grid**
  - finishing touches
- gradex implementation logistics**
  - gradex implementation logistics
- audio graphic**
  - high quality print
- spectrogram handbook**
  - high quality print / bind
- final presentation**
  - completed, rehearsed

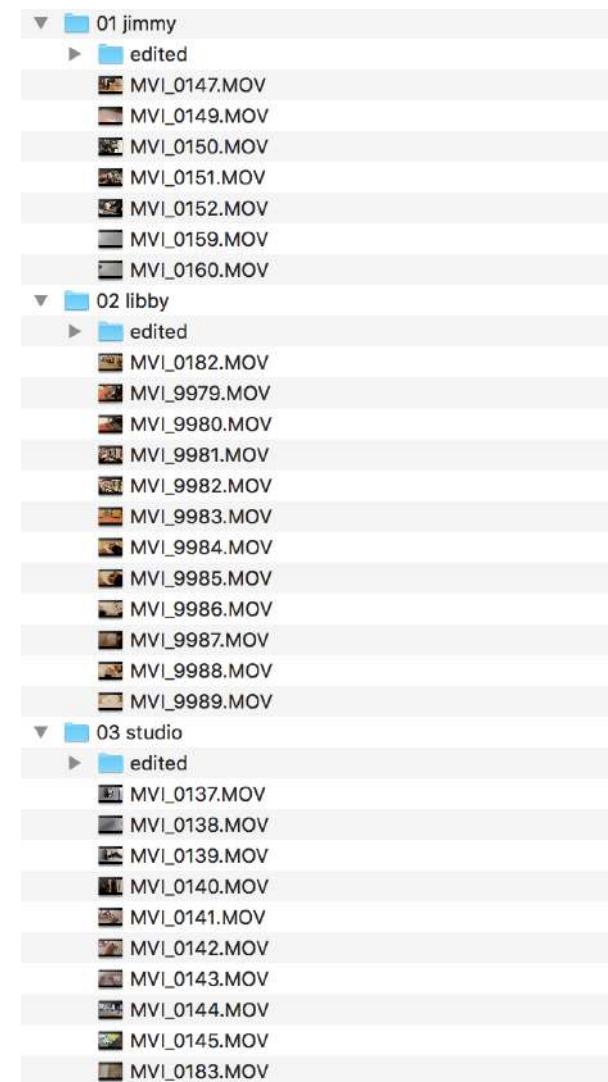
#### 04.22-gradex

- gradex**
  - logistics completed
  - setup established
  - material presentation ready
- process book**
  - high quality print / bind

## VIDEO GRID

The entirety of the filming process has been completed. With the files imported, there is need for a bit of light editing. All 15 of the video clips will be treated the same. Each of the clips will be looping in black and white for 10 seconds. The scenes selected have been considered to fit two criteria, firstly, the intention was to provide as little similarity between visuals as possible. Secondly, it was important to select actions that would benefit the intention of this experiment.

Stripping away all of the color from the footage highlights the actions themselves. While it also echoes the aesthetic here, the purpose was to let the audio direct the visual content.

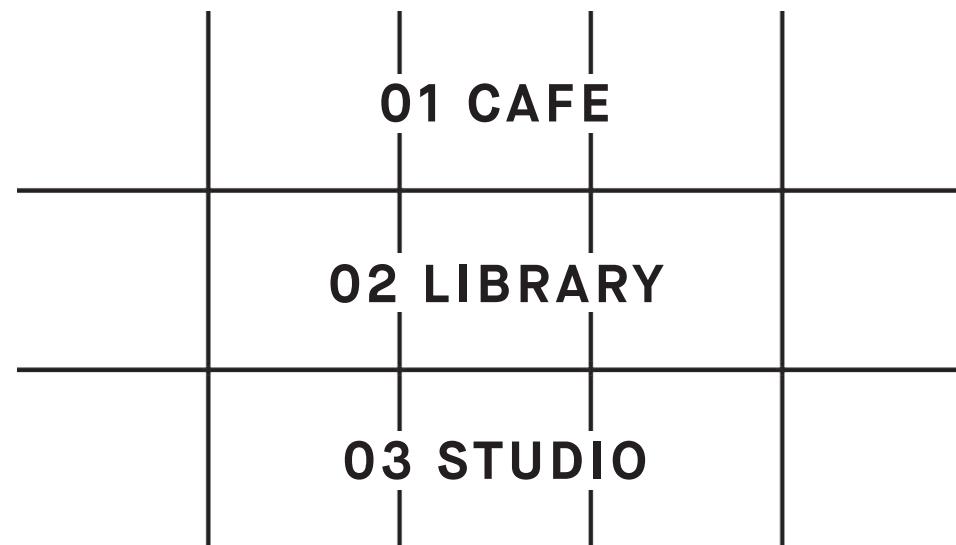
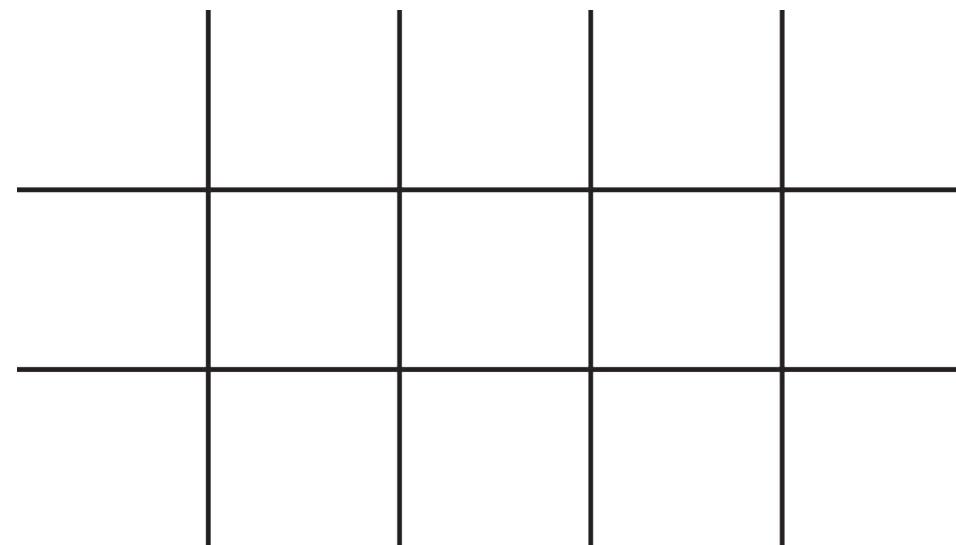


## BUILDING THE FOUNDATION

After editing the content down into 10 second loops, it was time to start importing them into premiere. This is where the grid would take form. Firstly, I threw a quick grid together that matched the aspect ratio. Each block came out to the size of 385 x 360.

3 locations, 5 unique video clips for each.

The grid began to take shape.



# COMPOSITION

The files were introduced to the grid layout, resized and looped. Working with the pacing of the pacing of the composition took many iterations. The intention was to create an experience that was both approachable by the uninformed viewer, all the while building up to a rewarding and thought provoking climax.



## 03.06-13

This week will see the completion of many of the lingering projects that remain up in the air. The spectrogram handbooks will be printed, documented and included within this process book, additionally, a second process book will be rendered out that includes the highlights of his semester. This book will be on display at GradEx, as as a means to eliminating much of the bloat that comes with this full length process book.

## VIDEO GRID TITLE SEQUENCE

The grid will be prefaced with a short title sequence, reinforcing the clinical, DIY documentation aesthetic that is present throughout the project. This title sequence will drive the viewer's understanding of the project to a point of greater understanding, before immersing them within the video grip itself. The goal here is to briefly educate the viewer all the while visually demonstrating the aesthetics reinforced throughout the entirety of the visual content displayed. There won't be color here, there will be small text, and a bit of hand writing. The audio will also play a role in preparing the viewer/listener for what they are about to experience. I will be utilizing the already recorded and treated voice lines that are being used in the voiceovers for the posters, as well as some synthetically generated audio, paired with the sourced sounds gathered during the length of this project.

To the right, the introduction begins with a animated title sequence that aims to introduce the project. Sequentially, these images are intended to act as thumbnails for the animation.

Visualizing Auditory Distraction

A STUDY BY RYAN GERADA

O1 CAFE

A STUDY BY RYAN GERADA

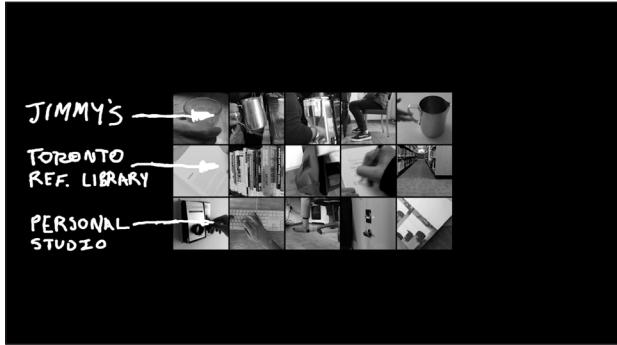
O1 CAFE  
O2 LIBRARY  
O3 STUDIO

A STUDY BY RYAN GERADA



Next up, the sequence, guided by the narration of voice of Toby Keymer takes the viewer on a brief video tour of the spaces. First, visually introducing them to the spaces, all the while being briefed on the objective of this project. Originally, the intention was to simply have the video grid speak for itself, looping endlessly, allowing viewers to come and go as they please. However, I thought the grid needed a short preface, and it was through this title sequence that the context was established, ultimately allowing for a more immersive experience.

Lastly, the video grid is introduced at a reduced size, as Toby directs you to the purpose of this experiment, and prepares you for the final outcome itself. The animated drawing introduces the structure of the grid, letting the viewer understand the composition more quickly, as opposed to having them figure it out themselves during the viewing experience.



That's all she wrote.

I feel comfortable with the amount of documentation that has been presented within this book. It is my hope that greater insights or inspirations come of this work, as I will most definitely be continuing my studies in the field of sound. The next pages will introduce you to my candid thoughts on both the course, and the results of my work for the past 8 months.

I'm happy to conclude this documentaion right here, just like this.

Thanks for reading.

## CONCLUDING THOUGHTS

The handbooks have been submitted for printing, the finishing touches have been applied to the audio graphic posters, and the video grid is in the process of exporting - what better time to share my thoughts on the project as a whole, and where this work will be going in the future. Firstly, the value that this course has provided has been unlike any other that I have experienced at OCAD. The depth and quality of work is demonstrated throughout the class, as I have recognized the clear growth of my peers. It is the encouragement and support of both my peers, and instructor that has allowed me to develop this project to the state in which it has been presented.

Working through the many obstacles, most of which being self inflicted has strengthened my resolve, it is my goal to continue to hone those skills - skills in which this course fostered.

Thanks a lot for the help Steve, you're an excellent instructor, it was a pleasure to work under your guidance.

## LET'S TALK ABOUT SOUND

Audio.

I liked the concept of focusing on a unfamiliar medium when starting this project, audio has long been an interest of mine, whether that was experienced through music, design or ambiance of spaces. The decision was made quickly, I would be studying sound for the next 8 months - now what?

With the early stages of research aside, I still recall struggling to find a real sense of life in the project. My understanding of audio was weak when I started my research, actually, I'd go as far as saying I knew next to nothing. The constant here was a prevailing hunger for more information, one of the successes of this process was letting curiosity take the lead, a bunch of inspiration and knowledge stemmed from that.

Of course, the turning point emerged in the wake of identifying a focus, or a problem to direct the (at the time) pointless recording. Recording those spaces was what came naturally to me, it was almost instinctual. It made sense to me to start recording random stuff. Looking back, I think that was pretty cool, it was definitely a lot of fun. Additionally, it helped keep me engaged with the project, as I've heard the struggles of 4 months of static research. I suppose some students take a liking to that sort of thing, but it has never been my strong suit. Come to think of it, that early, while mindless, experimentation helped in more ways than I have previously credited it for. That was great, it was fun, I'll be doing more of that in the future.

Setting out to discover the intricacies of sound has enabled many unique outcomes, some of which I wish I had explored more, and other's that turned out to become failures. Reversing the emphasis of this project to let the sound take the lead was one of my early considerations, as I recall, that was one of the first major decisions I had to make in terms of the final outcomes. Was this project going to visual or auditory? Off the top of my head here, I can say with certainty that a auditory, experience based work would have been a wonderful experiment, in fact, it is one that I am excited to embark on in the future. Letting the visuals take the backseat, similar to how the audio plays a supporting role in this rendition of the investigation would have allowed a whole host of exciting media. I can imagine a dimly lit room that invites its guests in to experience a volley of auditory distraction, output through a surround of high quality playback devices. I'm beginning to think of the work as a 3 part performance.

Part One:

What does this room sound like?

Microphones identify the unique acoustic ecology of the space, that signal is then input and visualized in real time for the guests to experience. I see this being presented through projection.

Part Two:

What does distraction actually sound like?

As opposed to showing viewers, as demonstrated in the fully realized version of this work: Visualizing Auditory Distraction. They are instead bombarded with audio, similar to how the voice lines have been treated.

Part Three:

Do these two outputs work together?

In this dimly lit room, where both lighting and visuals take the backseat, would it have been possible to create a powerful experience that communicated the intention of this project?

I'm not positive about that one, but I believe it would have been a blast to pull together.

## RESTRICTING ACCESS

Excluding certain key elements has been a constant in the progression of this work. More specifically, disallowing viewers complete access to the information presented. This is largely a product of intention. Through this project, I have worked to establish a delicate balance between providing the necessary information to understand the basics of what's going on here, however, I believed one of the successes of the project is the unfamiliarity of this content.

Knowing this, it made sense to exclude some of the details as to not dispel the intrigue. The most difficult decision I had to make during this project was how much I was willing to let people in. This was difficult, and I struggled with it constantly. I've come to realize that this hasn't been fully explored in this process book, so I figure there's no better time than now.

Through the 8 months of developing this project, there seemed to be a constant tug of war between inviting guests in to the riches of this information, giving them every opportunity to explore as their hearts desired. However, I was plagued by this reluctance to do that. Through the support and critique of my peers and instructor, I believe the right balance was achieved here. As I've previously stated in this process book, there was a point in time where audio had no part to play in this work. Although I think that is an interesting avenue to explore, it may not have been appropriate for the audience in which this is being displayed. I understand that I am being vague in my description of what audio I'm speaking about exactly, and also which audio I ultimately chose to include, and why. Allow me to explain.

During the early stages of collection, there was a desire to render a huge collection of audio, these sounds would be displayed in a similar fashion to what you have seen here. My early thoughts on the drastic decision was reinforced by my misunderstanding of the audience that would be viewing this work, as well as the context in which it was going to be presented. Ultimately, as my understanding began to grow, I started to foster the concept of providing narration, or a guiding voice. Through this voice, a clear opportunity to include audio to provide further context began to take shape. So, I quickly went from no audio to a narrator that would dispel some of the mystery behind the work, which was almost counterintuitive to how I saw the project developing at the time, as well as some of the source material that these visuals were based on.

Everything started to snowball from there, my reluctance began to collapse as my understanding grew further, it just made sense to hold the hand of the viewer, just enough so they know what's going on. I definitely didn't have that in the first versions of this project, and ultimately I'm glad this was the direction that I went. Including the 3 individual voice lines paired with the unique sounds of each space will add a nice touch to the depth of the work.

## MOVING FORWARD

I'm excited at the thought of expanding this work. With the foundation in place to expand into different spaces, explore different sounds, and enhance the overall tone of the work through interaction. Realizing these visualizations in print has brought with it a beautiful sense of scale, the textures come to life on paper, they've really turned out nicely. However, taking visuals that have been curated from a new set of audio provides an opportunity to broaden the limits of this aesthetic that has been confined to the boundaries of posters and publications. Instead, an interactive, tactile project will realize the visual nuances of these visualizations, bringing with it an opportunity to introduce generative media at the same time. As I have previously stated, the ability to utilize modern technology in a way that helps convey the intricacies of our auditory surroundings in a visually impactful format brings with it a lot of inspiration and encouragement to pursue that project in the future.



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RYAN GERADA

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