

SONORITY IN ARCHITECTURE

by
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thesis requirement for the degree of
Master of Architecture

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis.
This is a true copy of the thesis, including any required
final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically
available to the public.

ABSTRACT

Situated between music and architecture, this thesis explores the notation, design, and performance of sound space. In the middle of the twentieth century, composers began to include spatial directives in their musical scores. They introduced a lineage of conservation, communication, and conception of spatial meaning in sound. This strategy of notation, as used by Karlheinz Stockhausen and John Cage, demonstrates a working relationship with space that is rooted in the discipline of architecture. As a synthesis of the research, installation projects build the experiential component of this thesis. The design and performance of these sound based installations amplify depth, movement, and change. These unique qualities of sound complete what other media fail to represent, and can significantly inform the ocular-centric design process in architecture. Ultimately, this investigation brings temporality into current architectural discourse by considering sound as an essential component of space. Through the act of listening, this thesis seeks to engage the sonorous layer of architecture and to enrich our experience of the world.

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ADVISOR

Andrew Levitt

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COMMITTEE

Fred Thompson

Dr. Robert Jan van Pelt

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Thank you to my extraordinary family: I am too lucky to be part of your lives.

to
the
complete
perfectionist

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"Do we need windows anymore?"

Fred Thompson

Sonority in Architecture, 2009
sound installation, thesis defence

PREFACE

April fifteenth; ten a.m. The lights are off and the defence commences. Waiting outside is an enthusiastic group of professors and friends. Two by two, their curious ears travel through the threshold of black curtains and into the photo studio. The irony is invisible yet penetrating. They are advancing into an immersive space of sound and darkness, in a room that otherwise worships photography and light. This installation offers a more balanced perception and definition of space, especially around a design culture that is fascinated with vision. Architecture is not only a visual art, but essentially, a spatial art. The challenge is inevitable. To convey a spatiality of sound in a visual medium like this book really involves the workings of our two senses. And the search began, for an effective language to communicate an imagination, experience, and conception of sound space.

*

The struggle in forming this book lasted for more than six months. I was convinced that the subject of sound space needed special attention, perhaps in a form that imagined sound. I wanted anyone encountering this book to become immediately engaged and curious by its presentation. There was an abundance of research; ranging from a multitude of performances, creation of installation projects, to notes on lectures and readings. For almost two years, I was immersed in sound space and realized that physical and aural experiences were crucial to my understanding of it. Sandwiched between the roles of a creator and writer, I wanted to be both. I was more than capable of preparing and cooking up this experiment, with sound and in space. It became almost unconscionable to produce a written description as an entity external to sound, because I needed to communicate in the same way that I experienced sound space. Soon after, it was clear I needed to pursue the book for its effects, and through it, encourage an extra-visual imagination of space.

The content of the textual notation spans the last two years. It is a transcription of my entire investigation, chronicling my physical and theoretical experiences between visual and sound space. Little was certain

SONORITY IN ARCHITECTURE



"Why is hearing believing, why can't seeing be believing?"

Andrew Levitt

Sonority in Architecture, 2009
sound installation, thesis defence

PREFACE

about the formal outcome of the book, and yet I was confident. The journey was empowering; as a student architect who was taught to only look at space, sound was not more than a remedial science of the interiors and concert halls. My active engagement with the topic welcomed experiences of temporal and spatial attributes of sound, which are significantly different from those perceived by the eye. From attending a performance of *Bird Cage* by John Cage to producing site surveys of sound in Melbourne, these experiences taught me that listening is about the awareness of how and what I choose to hear. Negotiating the role of a writer, I was cautious with my freedom to manipulate this progression of curiosity, questioning, and reflection. I believe the value of this research, for both myself and those who discover it, is in how it has changed me. To convey it truthfully its chronological sequence would need to be intact.

In the forming of the transcript, I was confronted by decisions that might either compromise or embody the journey. A small move in the organization would change the timing of my experiences. The transcript was in a complete format that read as a journal. It was ready to be woven into this book as a way to organize different audio tracks, time events, and to eventually make a spatial experience. As a result, the book encompasses both visual and aural presentations, a conscious craft with temporality and spatiality. While the flow of words such as this text is standard and clear, it would be difficult to imagine and directly transform this into a sound installation. I did not want to shoehorn sound space into a form that was never designed for it. That would not be an accurate way of addressing the cyclical, transitory, and changing patterns of sound. I was painfully conscious of this, and as a result, I was not able to take the act of forming for granted.

In an architectural drawing, a page is not an abstract plane but a projection and extension of it into the real world. As such, this mode of representation is both an effective way to work with and think about a space that is beyond the page. Orthographic drawings of plans and sections show specific cuts; they are an extension of our visual imagination into the world. On paper and in thought, architecture exists comfortably in a totality of space. When I encounter a building, I make my way through it in a path each time. The built form awaits my visit through it, and with multiple visits, my experiences compile into a summation of the whole, but never quite reach it - as it is physically impossible to be at everywhere at once. These fundamental

SONORITY IN ARCHITECTURE



*"Do you know what happens when I am in a concert,
and it's really beautiful? I close my eyes and I touch."*

Dr. Robert Jan van Pelt

Sonority in Architecture, 2009
sound installation, thesis defence

PREFACE

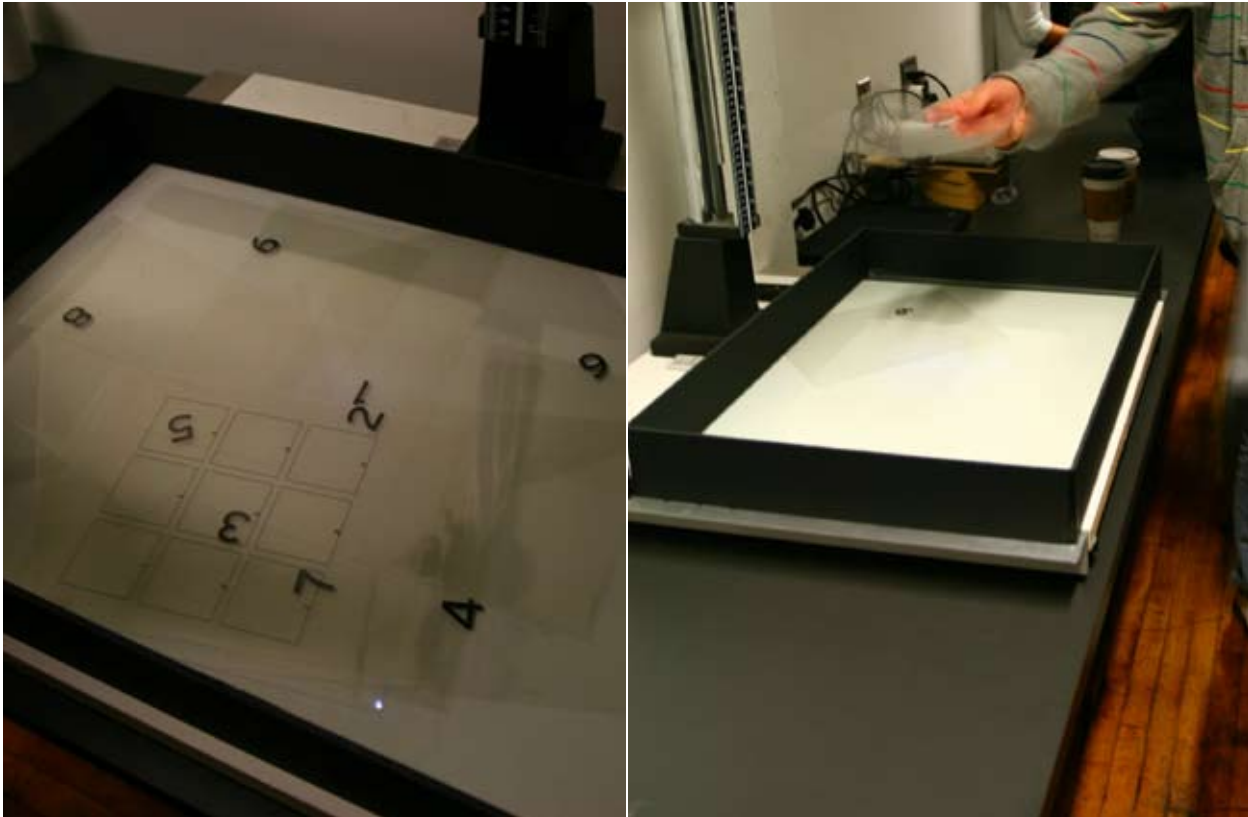
principles of architecture refreshed my struggle and drove the conception of the book further, where each page had the potential to be a spatial and temporal drawing of sound.

I continued to examine this book as a spatial experience. The function of the English alphabet requires first a reading movement of left to right, up to down, and page to page. In this general navigational flow, each page is visited only once. Relating the text to an architectural space however, requires a treatment of the text that allows possible revisits to each page. As a proposition, I introduced the 9-square form, a framework to organize the reading of the text (the transcript), the listening of the text (the compact disc), and the placement of the listening of the text (the spatial positioning of speakers).

Working with the physical confines of bookbinding, conceptually, the order of the text is enriched by the 9-square form. Each square is now a unit for the transcript to spatially weave through, moving first from page to page, from left to right, and from top to bottom. The reading movement of the squares has a different hierarchy from the text they contain. As a result, the relationship between the two is a cross section of nine different points in time of my journey. Like occupants of an architectural space, readers must choose their own path through the text, but each page is also then opened up for possible revisits. A synthesis of the notation in the final sound installation, the reading of the text was recorded on nine separate audio tracks, one for each square.

John Cage instructs performers to drop transparencies in order to create a spontaneous and temporal notation. It may sound irrational, but one way to understand temporality is to avoid translating it to a permanent form. Architecture may be frozen music, but it is also flowing music. In the abstract world of the imagination the concept of space may be static, yet lived space flows continuously in time. In *Variation II*, Cage abandons a fixed form of prescribed sounds and thus produces unpredictable performances. He celebrates listening as the final and necessary experience in lived space. When time is an active agent in the musical notation, one which alters its formal organization, temporality becomes a quantitative and qualitative component of the composition. In order to frame sound space as a totality of both content and form, I utilized the same technique of dropping transparencies, and thus situated this thesis between a visual permanence (of form) and an aural

SONORITY IN ARCHITECTURE



"How many of you hear a concert and say: I saw a performance?"

David Lieberman

Sonority in Architecture, 2009
sound installation, thesis defence

PREFACE

experience (of time). With every drop of the ten transparencies, the notation shuffles its nine squares on every page of this book.

*

On April fifteenth, I drop a new notation and study it carefully. At five minutes to ten, I walk around the photo studio and configure the sound space of this moment.

Notations: OPERATION

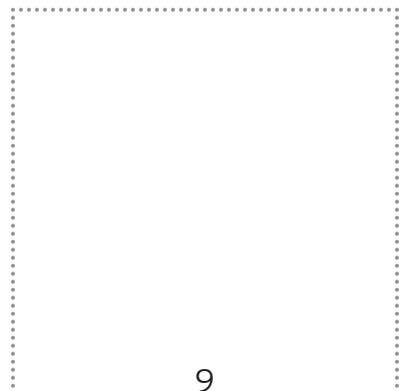
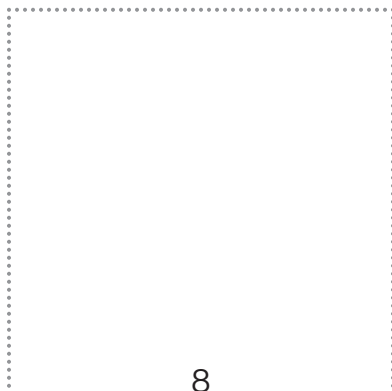
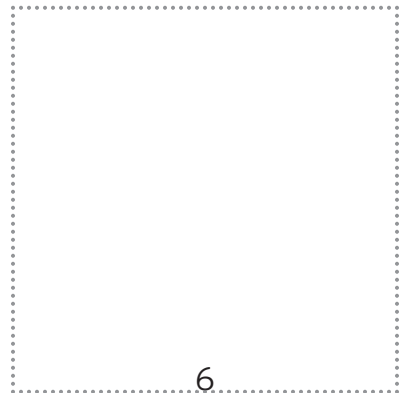
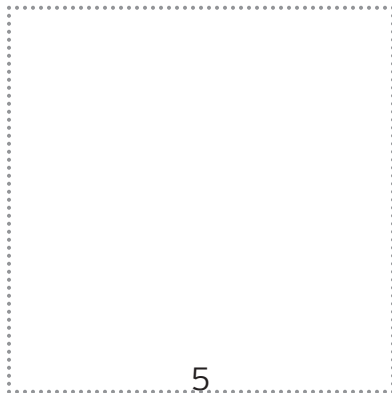
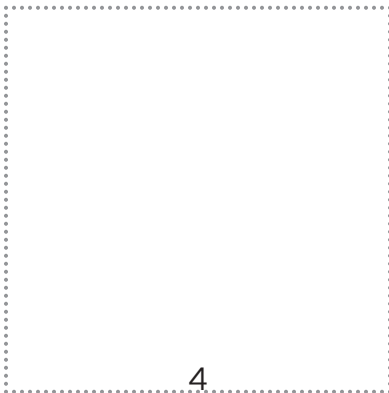
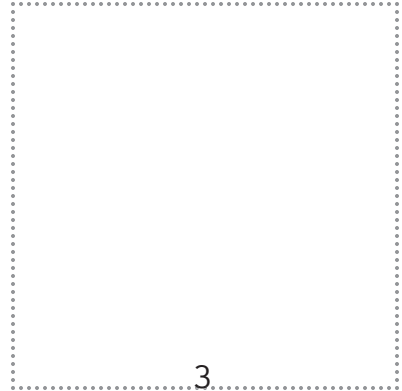
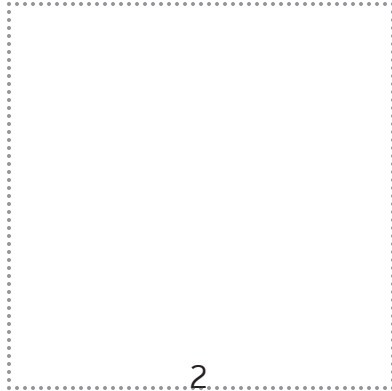
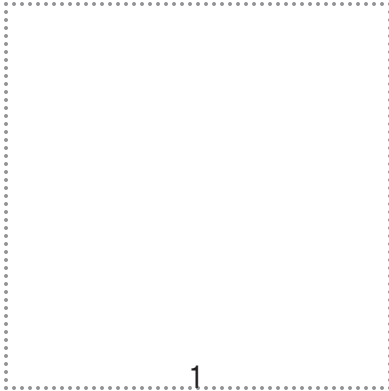
To set up the event space, layout nine speakers and sound players in a three by three grid; ensure there is space enough for people to walk through and amongst speakers. In the back pocket of this book is a compact disc of nine audio tracks; make necessary copies or uploads to be played on nine sound players.

Found in the front pocket are ten transparencies: one printed with nine squares, and the remaining nine with a large number each. To generate one possible notation, drop all ten, one at a time in any order, on a surface, superimposing them to create a spontaneous pattern of squares and numbers. Transcribe the result onto a suitable medium. This notation will be used to organize the performance.

Studying the notation, first consider the transparency printed with squares as a plan of the nine speakers in the event space. Correlate each square to a speaker in the space. Second, highlight any squares that overlap with any of the large numbers. Note these numbers and play the respective audio track number at a reasonably loud volume. Third, note all the remaining squares and their smaller numbers within. Play each of these audio track numbers at whispering volume. For instance, if the resultant notation does not have any large numbers touching or within any squares, then it suggests that the nine speakers are all at whispering volume. Lastly, the speakers should be pointed in directions that are similar to the orientation of all the involved numbers as per the notation. Play.

FACING PAGE: An image of one of the ten transparencies. It shows a 9-square grid, each representing a speaker and an audio track at whispering volume. This is to be interpreted as a plan of nine speakers, spaced apart at the performer's discretion.

Notations: SPACE



FACING PAGE: An image that superimposes nine of the ten transparencies. Each large number represents an audio track on the compact disc found in the back pocket. These are voices of texts.

Notations: SOUND

1

2

3

4

5

6

7

8

9

Notations: TEXT

January fourth, notes

What is Research? Pick key words, and find etymological meaning.

Are we experiencing less physical communal affairs nowadays? How can a communal affair allow individual identity at the same time?

January seventh, notes

Steven Heimbecker is interested in the acoustical and visual mapping of a fixed point in an environment. The soundscape (sonic environment) is presented as a kind of fixed spatial sculpture, which is played back by four speakers. Coincidentally, his *Songs of Place* is a perfect case study for my thesis' rationale:

x, y, and z axes are explored through the emerging and disappearing of water in the sound space.

Sound space: what are the key spatial qualities of sound space? Explain what happens in a few works?

How can a surface manifest space, from two- to three-dimensional? By making a

my thesis. He expresses his keen interest in acoustics. He stresses the importance of working tools and introduces me to two computer programmes: Ecotect (for acoustic analysis) and Odeon (for simulating interior acoustics). I think I should learn a computer program for working with sound, but I

sound from elsewhere, reveals the unheard. There are two schools of soundscapes; editable and as is. The research team has decided to make soundscape recordings of the Royal Botanical Garden in Melbourne, as an exercise to generate info and sound, to compare a Western garden with that of the Japanese (as

At the concert hall, I always find it difficult to listen with my eyes open. Sound fills the space and yet I am visually separated from the performers on stage. This makes it difficult for me to understand my own body as a part of the musical space. In my work, I try to maintain the agents of sound (such as

The meaning of the world was once told; but now, full of uncertainties.

What is the magical moment in the experiencing of architecture?

At the Pantheon, I lose my sense of self - my ego is not important anymore; at the donut shop, I find refuge from the freezing weather outside;

September twenty-third, research notes

Nigel Frayne: acoustic ecology developed from Simon Fraser, based on the work of Murray Schafer. This questions how to think, talk, and work with sound. What differentiates between design and art? Is *design* simply working with existing materials, and *art*

and Dr. van Pelt

If the main intention of my thesis is neither representation nor methodology, how should I structure such a thesis? I have applied haptic theory in installation projects, and I have applied sound mapping to the design of sound spaces. I cannot find a thread to loop through theories, practices,



*Facing north, I stand in front of the windows at home
and I look back at my school and its surroundings.
Where is the window I peeked out of just minutes ago?
When I was at school and staring at my home, I saw
the same relationship of a subject and context - of my
home and its immediate environment. It is intriguing
to see what I once could not see.*

St. Paul's Cathedral, London, 2002

Notations: TEXT

Scape has a Latin root that means an abstracted space, where any number of prefixes is available and anything can be the space.

How are the inner and outer worlds related? How can I identify my mindscape, and create transformative experiences through music? What are the invisible or

our senses are cut up and each one is considered as a single entity. The installation is a visual and acoustic score of a point in place. Visually, the horizontal bands are symbolic of a fragmented world. Each band depicts a specific cardinal direction and type of event and sound: person walking, car passing by, bike

sound, the surface translates into resonances in space. Installations may reveal their immediate conditions, whatever their means of insertion. They may interfere or exemplify site. In sociology, the term *participatory observation* is to occupy space through observation. Site analysis is finding

need to articulate what it is I want to do.

February seventeenth, notes Echo is a phenomenon that is immersive, grand, and lively. I have many memories of music making, and some are strangely spellbinding and echoic. After the initial surprise of the returning sounds, the cause and effect

the Teimu project is funded for.)

August thirteenth, research notes - Homo Faber: modeling architecture, conference What is the role of a model? Is it only a facsimile of the design product?

A good model, drawing, or mapping reveals things you could not have known. The

speakers) either dispersed or hidden.

June first, research notes Art Clay shows many projects that follow the trajectory of generating sound content by extra-musical means. In some ways, this resonates with certain works of Cage, like *Ryoanji*. The emphasis on process has very little to

beside the hot dog stand, my hunger will cease soon enough. These experiences remind me of satisfaction, calm, of not wanting anything. But can we knock out the ego whenever we want to?

How can I integrate sound and light in a space? Perhaps I can create a place for me to defocus. Is there a soundtrack

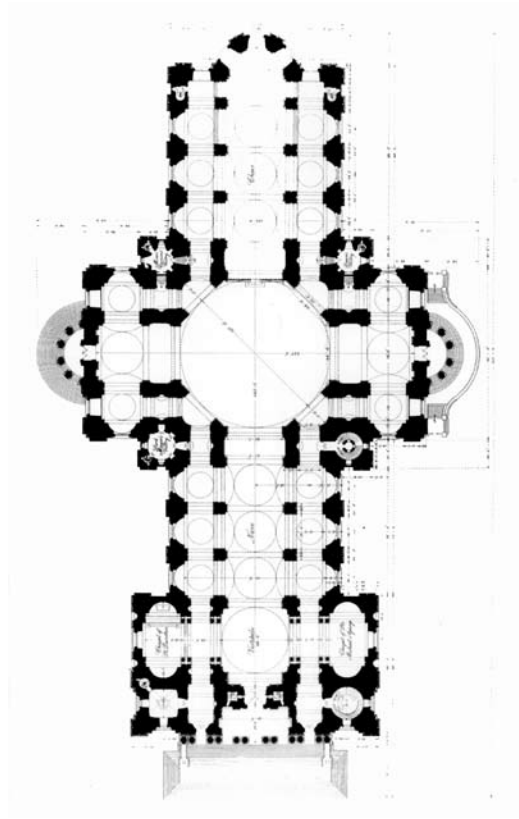
creating something new?

After his presentation, Frayne conducts a soundwalk with us. The aim of the exercise is to focus our attention on listening: identifying the content, quantity and quality of sounds. He suggests we keep our gaze at forty-five degrees to the ground while walking. By limiting our visual

and my works.

What did I find in my research about technique or theory?

For four months, I conducted many case studies of spatial sound compositions. These mark a turning point for musical notations and their change from scoring an abstract musical space to scoring a physical space. In John Cage's



In the distance, I hear the singing of the boys' choir. I maneuver my way from the aisle to the nave and face the choir. In a fraction of a second, I realize I am moving through two different spaces - the visual and acoustic. Why do they not align?

St. Paul's Cathedral, London, 2002 (LEFT) and the ground floor plan (RIGHT)

Notations: TEXT

unconscious experiences in space?

What happens at the intersection of inner and outer mindscapes? Will it be an empathy, where perception of space is obtained and reflected in the mind? What other elements are there?

January ninth, notes

Mindscape signifies an

strolling, bird chirping and flying, and tree swaying. The tension between the visual and acoustical is apparent: sight and sound fight to inform an event. At times both collide or present at once, and this unison becomes a kind of climax that reminds me of my exercise of synchronizing by listening. At last, there is

something about the site to inform us and our design. Where will we position the body, the audience, and the work?

I need to make careful choices as I craft sound spaces: Why are they in a certain frequency range? Why not amplify the highs, the lows? After a certain degree of questioning,

becomes clear: from the sounding of a piano key to a distant answer. Subsequently an infectious cycle of action and reaction continually feed sound for sound. It is satisfying to play in such a space; the prolonged sound decay time probably allows tones and overtones to harmonize. Is that why singing in the shower

drawing or model is not only a representational tool, but a design tool.

What marks the end of a design? As a student, it has been implicit that the building is the end. But with sound, the end of a creative project is the inhabitation of the space and its effects.

I am unsure whether there

do with product; therefore, Cage and others are creating a method of composition.

June eleventh, *Bird Cage* by John Cage

Staying true to form in studying Cage, I make no effort to find out what *Bird Cage* is about. In the end, it is about the act of listening and letting sounds be sounds.

to accompany light? Are there lights to accompany music? Are there architectural precedents?

March fourteenth, notes

Heart Sutra: emptiness is form, and form is emptiness.

Why fixate?

How do the senses operate and prioritize in the learning of a piano composition? Sight

field, we can be more attentive to sound.

At the beginning of the soundwalk, I let my ears guide me, replacing my eyes. I am finding and localizing sounds in environments but am too occupied to identify their contents. Walking by the bus shelter gives me a sudden heightened sense,

theory of indeterminacy and chance operation, the polemic between performer and composer is questioned. Notations no longer show a linear and abstract time, but the real and experienced one. Cage's compositional technique employs a set system, data, and information that drive the outcome. His



The visual world stimulates our unconscious, just as music brings or provides inner reflection. Is it possible to reverse the paradigm of vision and imagination, so that vision is the resulting byproduct?

Mindscape, 2007
montage, thesis symbol

Notations: TEXT

abstract space, view, or perspective. The intent of the thesis is to bring greater awareness of the self and to demonstrate the influences and affluences of the spiritual (the workings and powers of the invisible world) within and around us.

The dialogue between inner and outer mindscapes can be

the irony of a cut up person walking, depicting the many ways in which our senses are represented and utilized in our daily lives.

Music is an experimental art; I can make mistakes and not hurt anyone. It is a different story in architecture.

Heimbecker's other performance, a purely sound

I consider less the specific musical composition or spatial organization, and more the philosophy behind every available choice.

I site my investigations within the armature of existing architectural spaces. After studying some compositions of John Cage, I am interested in the methodology

makes the perfect singer? Do all sounds blend together? It is safe and comforting to be in the company of this richness of tones. The long reverberation time surrounds me; I am immersed in a maternal energy that is always accepting and never judging.

An echoic space becomes personified and it immerses

are over-arching research questions in the conference. It is only clear that an array of approaches come together to find form and narrative.

What are the possible effects and limitations of physical versus virtual modeling? Could the same assignment be modeled in each medium and the outcomes compared?

It generates no expectations and yields unknown outcomes. As soon as I arrive at the OCAD auditorium, I see seven harpsichords arranged freely in the middle of the auditorium. Twelve speakers are placed around the perimeter at even intervals. It is like musical chairs, in that people seem to be possessed by listening.

dominates as the visual score directs the prescribed ways of playing - also it is reinforced by hearing and touch. When it is memorized, sight can be almost completely obsolete while hearing and touch are indispensable.

March fifteenth, notes

Great art and architecture (including love) briefly knocks

because the vertical surface amplifies the surrounding lower frequencies. When we walk up the hill to a park, we hear reflective sounds from the ground. As we walk away from the traffic behind us, the hill we stood on also reflects these distant sounds to us. This is when the traffic drone becomes completely imagined,

design process often includes an extra-musical context, and as a result, is interdisciplinary in nature. Because it considers the physical and spatial qualities of music making, the subsequent performances show a unique contrast from Western art music. When sounds are freed from their traditional and structured



I am cutting the bamboo to the lengths specified in my sketches. They make close to perfect tonal instruments. Three hours later, I group all the bamboo at hand into a line of ascending tones (from C, C#...to B). Some of the bamboo pieces make tones that fall in-between the Western scale.

Echo, 2007
light/sound installation, thesis setting

Notations: TEXT

expressed in terms of personal (within) and spatial (without) dimensions.

January thirteenth, notes I am addicted to flying, to losing my sense of self in a collective. What does this mean in architecture, in music?

January eighteenth, notes The visual world stimulates

piece, is in the Rotunda. There is one speaker in front of each column in a circular arrangement. It is like a symphony of recorded sounds from a point in space, and the rhythm of cars crossing. There is at least a good half hour of listening; is there any editing? Is this really only a point and shoot version of soundscape

(not of metaphysics or phenomenology), but a way of thinking about design that uses indeterminacy as a creative process to produce uncertain outcomes.

What are the similarities and differences between an architectural plan and a musical score?

They are both codified

everything within.

In the performing world, musicians describe a space by its liveliness. This refers mostly to reverberation time and the concept of sound delay: whether the space is *alive* or *dead*. In the Oxford English Dictionary, the term *Echo Room* was first used in radio broadcasting in 1933,

Did not Marshall McLuhan say the medium is the message? How does the medium affect process and outcome? At the conference, there is no discussion of human experience as the end for building. Why cannot physical models serve as a means to understand our experiences? Do we even know for whom

Immediately, this strikes me as a shifted spatial paradigm of performer and audience; they are both in the same space, and they are at one. There is no boundary between sound and listener. From listening, I gather the three thematic soundscapes: birds chirping, recited poetry, and ambient street noises. I am

out ego. I am momentarily at one.

Jung says let's be enlightened not by imagining light, but by making darkness conscious. Emptiness is when content does not dominate.

March sixteenth, notes What are my resources for sound equipment in Cambridge? I need help.

and I try to locate a sonic pattern from my available library of sounds: the sea side. At the end of the exercise, my experience goes from attentive listening to having my ego rest and become content. I switch from scanning actively for sound events to using a kind of sinking or peripheral listening - much like the way

ways, the music is no longer prescriptive, but descriptive. In this way, Cageian music is not goal but role oriented.

Cage and his contemporaries show different ways of thinking and creating music through space, and a parallel practice in architecture seems to be missing. I believe that to some degree, the arts are



In Greek mythology, Echo is a character appearing in the works of Hesiod, Homer, Longus, Nonnos, Moschus, and Ovid. It is paradoxical that Echo, as a mythic figure, does not have a definitive story of origin. Are not myths tales of origins? Is this because Echo, in the form of both story and phenomenon, does not manifest herself until the word and sound return? As a literary device, echo is not a distortion but the absence of intent.

Echo, 2007
light/sound installation, thesis setting

Notations: TEXT

our unconscious, just as music brings or provides inner reflection. Is it possible to reverse the paradigm of vision and imagination, so that vision is the resulting byproduct?

January twentieth, lecture notes

In-between spaces: indefinite, indefinable, flux.

In the dreams and symbolic

recording? After five minutes of listening, I start to find rhythmic and melodic pattern from the cars. Do listeners inherently find pattern when they listen? I effortlessly transfigured the rhythm from cars into birds singing.

DC's performance involved the use of a joystick, an interactive controller for x,

instructions.

One is primarily spatial and the other temporal.

In what ways do I navigate through a planimetric drawing, and on the other hand, through a musical score? The score has a fixed sequence; it is a defined temporal product waiting to be performed. The formal construction of the

to produce artificial sound delays and echoes for a more life-like effect.

A visit to the karaoke bar can provide a ready-made experience with echo. A simple turn of a dial on a machine will add or subtract echo to my amplified voice. Increasing or decreasing echo artificially and electronically

we are building anymore?

At least a physical model is a more pro-active way of working out problems. It sits there, confronting the designer. With a digital model on the screen, you can easily mask and ignore issues by manipulating the viewpoints. What are consumerism and marketing doing to our design

not sure how many different tapes are at work - too many to decipher. The themes seem to generate countless combinations, suggesting a superimposition of different situations of space. There is no order to be found, and no pattern to be analyzed. Thanks to a matrix capable of electronically shuffling the

March seventeenth, Winton
After introducing my project, I gain a more concise description of intent and project: To find a new sight or experience in existing spaces, through the animation and spatialization of sound.

March eighteenth, notes

The time has come for me to write down thoughts that have

I would listen to an orchestral performance.

I am surprised by how quickly a soundwalk can bring contentment to my ego; why have I not experienced this in my daily encounter with the visual world?

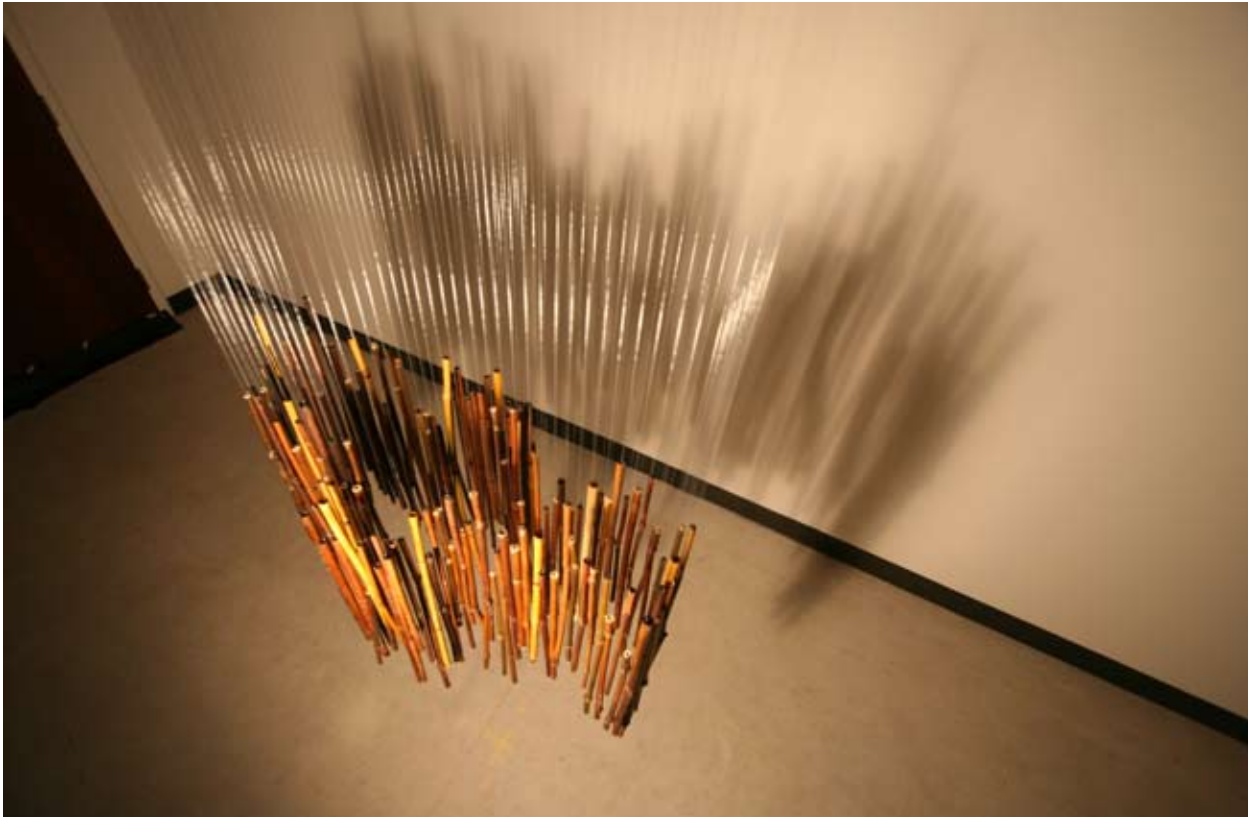
Frayne asks each of us to construct a sound content map. On a blank page, we write

connected and are always affecting each other. As a summary, experimental music:

Starts with an explicit premise of transformation;

Promises outcomes that are diverse;

Orients as role- and not goal-driven; (about process rather than product)



I have an urge to affect with discovery, in realizing that there is a little bit more room in the world that did not seem possible. I am not sure what form this would take, whether it is a feeling, a thought, a sound, an accident? The idea of discovery suggests a certain change or act of transformation, internally or externally. I imagine that this would occur in a space with an indefinite and indefinable character. Change must be a characteristic of such a space.

Echo, 2007
light/sound installation, thesis setting

Notations: TEXT

world, the psychodynamic is the anatomy that cannot be seen: known as the psyche by Freud, Adler, and Jung. This anatomy is invisible, and yet it informs everything. The idea of the unconscious can be understood as the uncontrollable aspects of human lives. It is the unknown and mysterious. No

y, z axes, directional, and rotational patterns. The whole thing looked funny. What is the sound doing? How much should or can sound art transcend and stand alone as an art piece? The orchestration of multi-channel spatial sound is not refined yet, especially how to use it in a coherent narrative.

score is fixed in sequences - about to or already happened. The plan is an imaginary whole; it is waiting for me to navigate through it in any number of ways. Point of observation (phenomenology?): In architecture, a narrative is constructed through the act of observing and perceiving. Would the spaces exist

(changing the decay time of sound) is a tool used to alter the boundaries of sound space. By manipulating the reverberation time, I can stand in a karaoke room and sing into the sound space of St. Paul's Cathedral. In the music industry, echo is as fundamental to sound engineers as perspective is to

culture? Do we want to build a long-lasting impression, for a few seconds of attention span, for our eyes, or for more? August twentieth, *Sonic Pool* Concept for my first spatial-sound composition: using short sounds to establish a sense of space (through reverberation); a person walking from afar, water

tapes, my brain can be at rest. Golden moments arrive when the intersections of the tapes resonate: two or more people reciting poems in a forest, and a quiet bird chirping near a highway. Cage is not interested in producing the same quiet bird chirping near a highway, static as a form, but allowing these elements come

been swirling in my mind for the past two months. I should look into putting my thesis on hold, while I open myself to learning about contemporary music and the practice of sound space. I can pursue this as a research exchange to RMIT in Australia. I will have to take four postgraduate courses.

down and identify the things we hear. In a few minutes, I have sixteen items on my page. I expand on each item, determining what produces the sound, its duration and pitch. Very soon I realize that beyond seeing, listening is a way of being. In elementary school, I remember walking an incredibly straight and narrow

Factors in more than the ego How can I proceed with my thesis without making it a self-fulfilling prophecy? How can my findings encourage more questions and further research? I came across computational and generative design in different areas. While at RMIT I learned the basics



On a computer screen, we always work in a two-dimensional world. The third dimension is a kind of portal, where the z axis shoots out-of or into the screen. I cannot similarly deny the three-dimensional quality of sound, where the z axis is the height of space. There is no non-spatial sound.

Echo, 2007
light/sound installation, thesis setting

Notations: TEXT

matter how hard I try, my ego cannot know the unconscious entirely. The unconscious is not reachable and cannot be directly apprehended, because it only manifests and does not reveal. Since a part of our psyche is neither in time nor space, perhaps it is not organized in a linear and sequential fashion.

What if each speaker plays a different sound space? Directional sound can become boring. It is too predictable. May fifteenth, *Echo Chapel*
I am given a small space in the riverside gallery to expand on my *Echo* installation. I rework the design so that by treating the past two installations as layers, I apply them both to

without phenomenological encounters? What are the strategies of optic and haptic vision? The optics scan for form and outline, and haptics sink into a surface. Methodology may not be the right word here, because the strategy is not a means of external production, but also an internal process

architects.

In Greek mythology, Echo is a character appearing in the works of Hesiod, Homer, Longus, Nonnos, Moschus, and Ovid. It is paradoxical that Echo, as a mythic figure, does not have a definitive story of origin. Are not myths tales of origins? Is this because Echo, in the form of both

approaching, submerging in water, violent current, zooming out, gasping for air. The sound software screen will be the visual score of this composition.

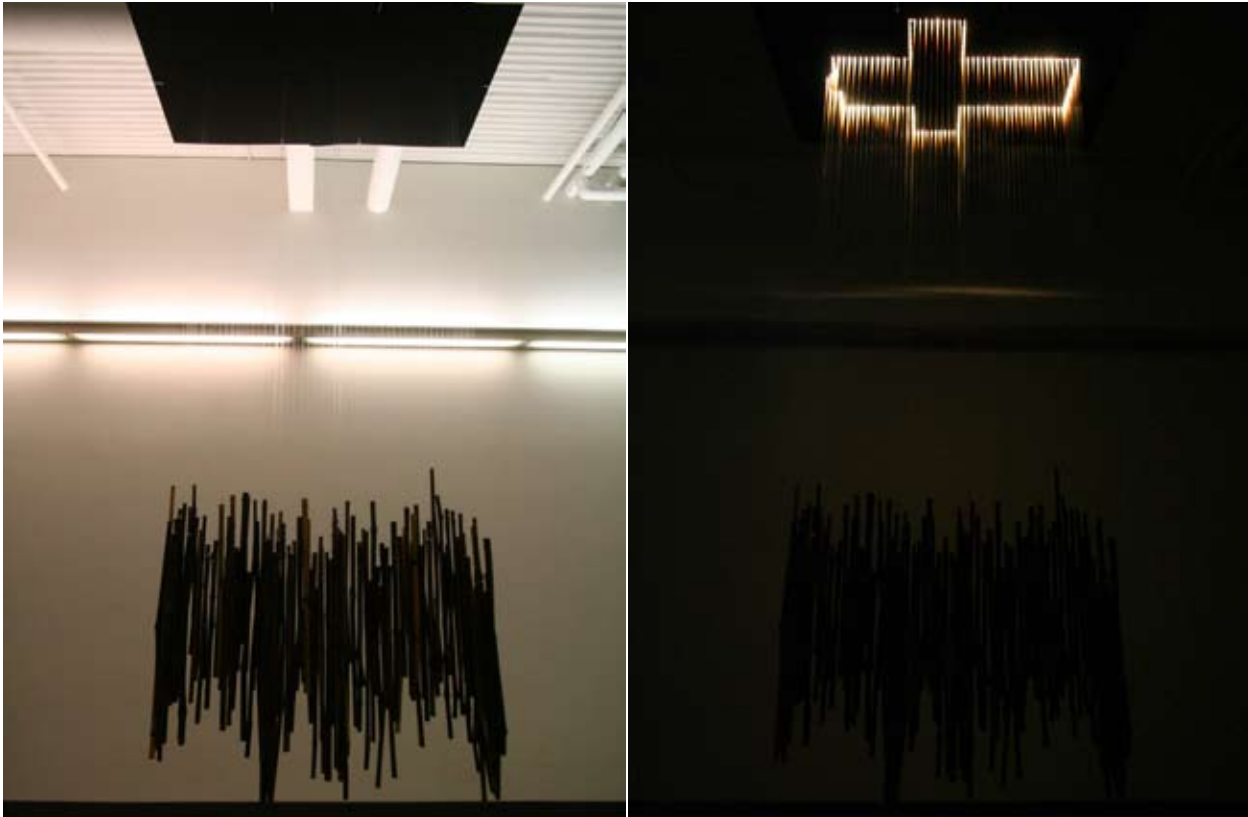
August twenty-first, Hewes
My teacher, who is a spatial sound composer/artist, tells me he can never go to the cinema. It is too painful for him

together for each listener. Tomorrow, if I listen to *Bird Cage* again, the quiet bird may have flown away or I may find other birds to be more attractive. With harmony also comes cacophony; there are times when sounds are violent in character. When the composition is not crafted, anything can happen.

March nineteenth, notes
Come back, mind. What kind of house will I be creating?
March twentieth, research
Evelyn Glennie's *Touch the Sound* is a documentary on a deaf percussionist who listens through her body. It is possible to condition our bodies to pick up and localize vibrations.
March twenty-first, notes

path to and from home. I always found myself staring at the ground while walking, after which shifting visual shadows linger. Perhaps I walked that walk so many times that it was no longer visually stimulating, and I turned to listening by restricting my field of vision. An interesting term came up. Similar to the notion of a

of parametric modeling and attended a corresponding conference. I am reminded of the similarities I find between parametric modeling and experimental music: the mandate of process to the designer, and the conception of time as qualitative and quantitative change. A better responsiveness to the user



Sight dominates over other senses in the ways architecture is imagined and created. The Greeks viewed knowledge as having clear vision, and in the Renaissance, perspective made the eye the centre of world. As the nature of representation is only a part of the whole, are we to neglect other senses? Does this suggest a desire to leave other senses homeless?

Echo, 2007

light/sound installation, thesis setting

Notations: TEXT

Dreams can be seen as a mirror that reveals our ego, or what we are. Dreaming can be an imaginative and independent act. How is it possible to make someone dream in physical space?

Symbols have neither a start nor end to them, they cannot be *finished with*, and they promise more than they reveal.

the third one. This will be a sound and light installation. May sixteenth to thirty-first, *Echo Chapel*

During these two weeks, I spend day after day with a clear intent: designing and materializing the armature for making the sound and light experiences. McNair is an invaluable voice throughout

through perception. I do not think the reading of the floor in *Echo Chapel* would have been *haptic* without the initial *optic* reading of the bamboo, which leads to the perception of *moiré* on the floor.

Time is a defining character of this work - am I trying to slow down the modern obsession with speed? There

story and phenomenon, does not manifest herself until the word and sound return?

Noted as a mountain nymph without a defined parentage, Echo is a nymph punished by Juno for using her conversational talents to distract and keep her from discovering her husband's infidelity.

to sit through the conflicting visual and sound space. He urges that we should always try to create spatial pieces that are provocative yet correct and real.

August thirtieth, notes The word *rendering* seems to carry different visual meanings; from a much more haptic outcome (about

Spatially, this is an engaging work, but semantically it is removed from the tradition of Western art music. That lineage of form reliance and harmonious sonority has been systematically deconstructed through indeterminacy. The sounds are there simply for listening, and they are liberated from the composer's

What kind of house am I testing?

What materials will I be using?

Who am I building this for?

I want to use the south exit stairs for the site of *house*.

Since there are five landings here, I am calling this project: *5 landings*.

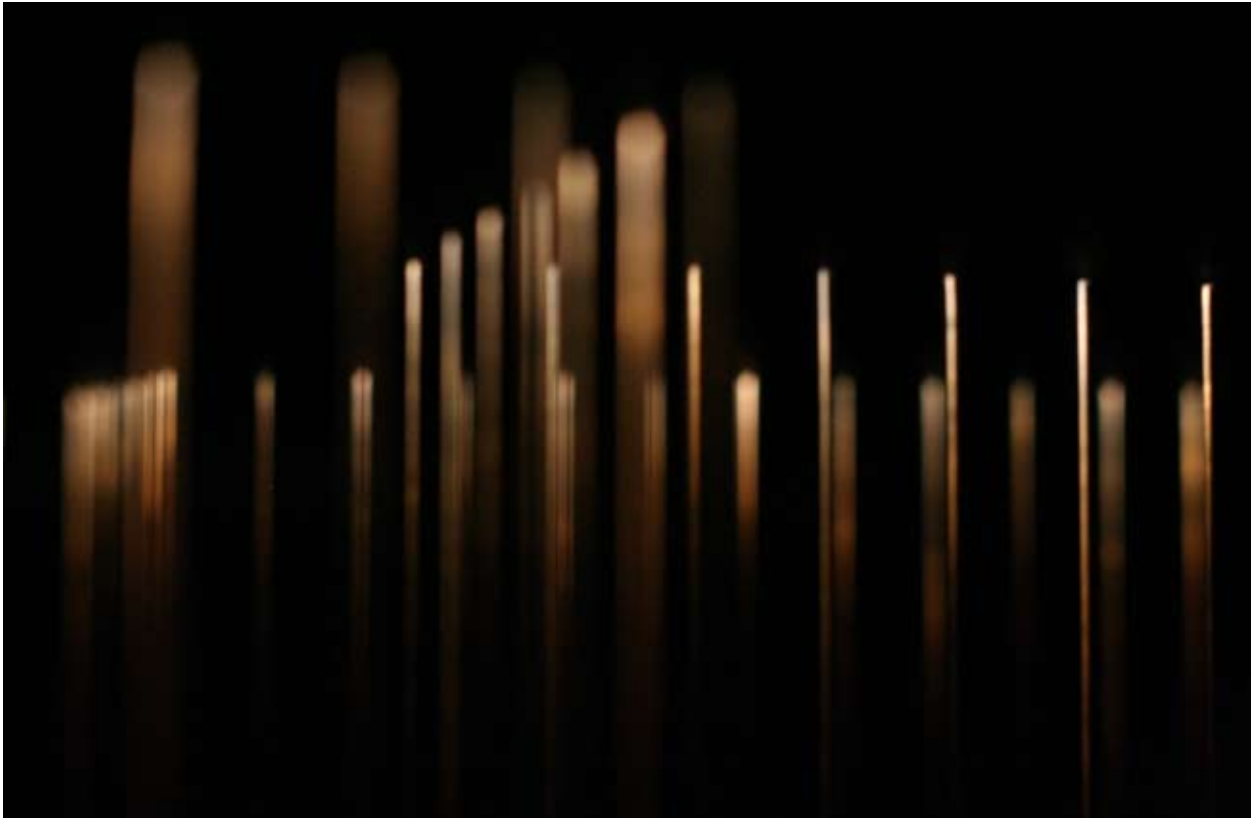
The house will be a collection

landmark, there is *soundmark*, which are the sounds unique to a community. When was the last time someone talked about the soundmark of a place?

I am slightly puzzled by Frayne's use of the word composition. He calls the content map a soundscape composition. As a student

and the environment, that is feedback generated from the site of intervention. I have been exploring the parallels between new music and architecture, without my knowing.

I realize I have finally and completely pushed myself into another field of unknown. After this journey, my search



I want to create an experience that reintegrates sight with the other senses, perhaps through materiality and temporality. How can I defocus the eye and represent a slowing light, a materialized light?

Echo, 2007
light/sound installation, thesis setting

Notations: TEXT

One can choose to see the world as signs or as symbols; a window is an opening for light and ventilation, but it is also an awakening, as light is symbolic of knowledge and consciousness. To make people dream while they are awake, is like an act of fantasy. It is the closest condition the ego

this time. We talk about everything from design to paint. My original intent was to create a very dark space with an enormous sound space. I am missing a link with the bamboo sculpture, but I trust that the connection will come to me while I am building the armature with Hossak, the gallery volunteer.

is something fascinating about creating a work that is too rich to be reduced to a photograph. October twenty-second, Merce Cunningham
He speaks about his work and influences. *Contextual catalogue* is the work revealed through time. He started as a tap-dancer and his teacher,

As a literary device, echo is not a distortion but the absence of intent. February nineteenth, old notes
I am a flautist at a provincial ensemble workshop at UBC. We are all working very hard; we spend hours everyday preparing for a radio broadcast concert and a CD recording.

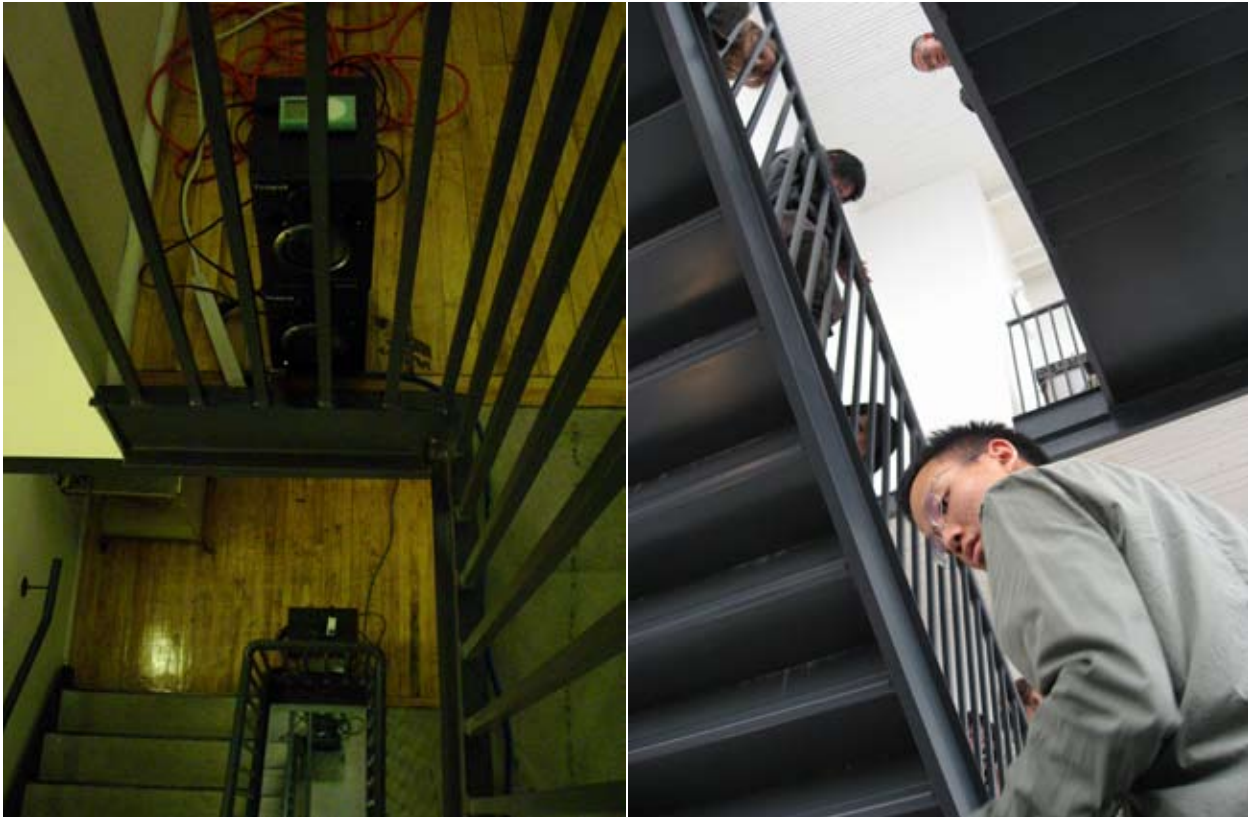
surfaces and shadows: found in hand drawings), to optic qualities (about form and outlines: to acquire exciting views.)
Is it useful to actively engage in the space before it is built? How about sonically speaking?
Should we learn to condition our ears with an architectural

organization (a lack of structure) or feeling (a lack of aesthetics or harmony). My friend Yang later explains that she found it very hypnotic, as if she was sucked into a dream. Time flows differently; without an order or structure to measure against, there is nothing to gauge time. The birds could sing for fifteen

of sounds to be found in a house, and will be grouped by our five senses, each on a landing.
I am creating this for an audience, and they will be visiting the house through listening. As much as sounds come to them, their ears will be traveling through the height of the stairwell with

in architecture, composition is a design activity. To him, this implies an organization of sounds, be it intentional or not. I understand it as far as an act of documentation, which locates sounds as I perceive them. He is also immensely interested in the effects of sounds, in an urban setting.

for self through a discovery has surprisingly landed me on a new current of questions and uncertainties. I am arriving at a point that is interdisciplinary, along the philosophical thinking behind design and uncertainty. Is this both the spirit and curse of research?
What is the role of uncertainty



My teacher cites the mythology of the twelve great labors of Hercules. He kneels before each task and then rises to defeat it. The act of kneeling emphasizes his humility, his willingness to open up, to receive something greater than himself and from the unknown. He listens.

5 Landings, 2007
sound installation, house as thesis

Notations: TEXT

can get to receiving from the unconscious.

I seem to be interested in the formless, but how can I articulate it? Am I referring to ideas, intuition, or experience?

The architectural world is often based on a Cartesian model of space, which is measured from the whole and represented in

June fifth to eighth, *Echo Chapel*

Sascha Hastings, curator, offers me the entry location in the gallery. My quadrant will be made into a small room, slightly larger than a household bathroom. The armature is bound by two moveable walls, backed by a permanent gypsum wall,

Mrs. Barrett, left him with a deep sense of *doing*, outside of technique and style. He met John Cage at Cornish college, where Cage was an accompanist for Cunningham. Cage famously remarked: *You're playing everything perfectly, let's go on and make a few mistakes.* Cage would improvise at practice,

During breaks, a few of us like to meander in the backstage area of the Chan Centre. We are particularly drawn to a concrete stairwell that spans two to three floors. Instinctively, we find ourselves singing every melody that comes to our voices. In spite of the otherwise claustrophobic interior, we find refuge in the

design? How can we integrate our ears and our designs? Can we be trained to consider the sounds of spaces just as Classical musicians must internalize the twelve-tone scales and harmonies? Can I have an *ear* similar to an eye for design, to hear or see geometries and materials? We care a lot about the figure

minutes, followed by three seconds of cars driving by. Listening puts the mind at ease and stops us from seeking outwardly. It is interesting that Yang mentions the dream-like quality of *Bird Cage*, because dreams are predominantly visual in their expression of symbols. The performance was at times completely visual,

five landings.

March twenty-third,

5 landings

My audience will be blindfolded.

Let's allow our eyes to rest.

March twenty-sixth,

5 landings

The sound studio at school is an ironic space to work in: how is it possible to compose when there are footsteps

According to Murray Schafer, the four characteristics of sound on people are:

Acoustics: what the sound is; Psychoacoustics: how the sound is perceived; Semantics: what the sound means; Aesthetics: if the sound appeals

Principles of soundscape design:

in an act of design?

December thirtieth, notes

John Cage - without an expectation and goal in mind, there is no perfection.

February twelfth, notes

The Grand River has been frozen for weeks. After another freeze-thaw cycle this weekend, the river began to shed its frozen skin early



Juhani Pallasmaa writes that building is not an end in itself, but the means to encounter - through phenomenology. In that line of thought, without people and their experiences, buildings are insignificant.

5 Landings, 2007
sound installation, house as thesis

Notations: TEXT

parts. A planimetric drawing shows a specific condition in the entire design and is a method of conveying and building a project. In this way of working, architects are constantly removed from the whole project, but towards a defined product in the end. This working method looks at space as a quantified

and covered by a new ceiling constructed of two by four inch studs, black foam core, black tape, and three metres of black velvet curtains. The armature is a black box containing light and sound components. In what ways can I connect the bamboo sculpture to its surrounding space - so it manifests beyond

showing interdependency and independence; not everything is completely given up to freedom or chance, there is still interdependency between sound and movement. His prepared piano expands on that non-restricting experience, where sounds do not fit expectation. Sensing has the ability to really stick

sound space through music and singing. I may bring in a recorder tomorrow to record our singing.

February twentieth, *Echo*
I work on my installation in a vacant room beside Coneybeare's. I will need to visit and see samples of available bamboo in Cambridge and Kitchener.

and ground relationship. What about the ground, the void, the without? A strategy to develop the haptic eye, or the stable eye, is to transform a flat surface through light by highlighting and imagining the ground (not the figure). What are the consequences of shifting from optic to haptic reading, when no focus is

because certain sounds have strong imageries. Not all spaces require elaborate aural representations. In our culture, we are conditioned to use vision to gather information from the world. Visual cues are less fleeting than those from other senses. Sight has become the sense that confirms reality, and

above, laughter, and the HVAC system hissing away? Work is coming very slowly. I have a conceptual narrative for the house in which a series of events unfold aurally, by an imaginary body of sound that moves from landing to landing, and passes by the audience. March twenty-ninth, *5 landings*

(Structure)
Textural, vertical: background, midground, foreground;
Temporal, horizontal: inter-onset, timing and predictability;
Spatial, depth: perceived size of room, interior or exterior
(Control)
Diffusion: highly intelligible or blurred; Crosstalk: wanted 'diffuse' and unwanted

this morning. The surface reminds me of ugly terrazzo and suddenly, I shrink to the size of an ant. The broken ice pieces are so densely packed they hide all sightlines to the water beneath. Is the river a moving conveyor belt, or is the city sliding away from it? Is it dangerous to look at? I gaze. I am mesmerized. Two



"In traditional Western art music, the logic in structure is the basic musical form of A-B-A, which is loosely the visual equivalent of an arch or pyramid. Why can we watch TV for four hours and not listen for four hours? How do we build patience?"

Frederic Rzewski

Echo Chapel, 2007

light/sound installation, Cambridge Galleries

Notations: TEXT

entity, measured and mapped in hundreds of drawings. What about the qualitative aspects in space, the effects of the outcome? Are these qualities also portrayed in the drawings, and if not, how are we to expect them to magically appear without expressing them to the builders?

I have an urge to affect with a sculpture?

A day before the opening, my friend Rubin visits and offers help. In the afternoon, when McNair passes by and greets us, I confess I bought twelve mini-incandescent bulbs. I wish I could quickly build a circuit and imbed them into the bamboo. I do not know exactly why I purchased them

and stay with us.

To undertake a chance operation is to accept that something beyond myself will inform the work. Let's open up my imagination.

Mr. Cunningham, what are the means of evaluating your own work? How do you reflect upon the success or failure of your work? He politely asks

February twenty-first, *Echo* I found the perfect bamboo at Pier One Imports. I cleared all their stock.

February twenty-second, *Echo* I am cutting the bamboo to the lengths specified in my sketches. They are sized like piccolos, and they make close to perfect tonal instruments. I run to my desk to get some

given?

September fourteenth, research notes

What is the role of projecting art in public?

Are we masking anything?

What are the consequences?

Site specificity means how space and site consciously become work.

Matthew Ngui speaks

sound is a predominant footprint that accompanies vision. There is an underlying hierarchy in our sensual perception, and sound informs us from the background. It is evident that Cage has inverted this phenomenological condition, by placing sound in the foreground and visual images as the shadows in our

I cannot find enough help on sound installation. It would be great to control sounds from one master mixer, but how is this possible? There is not enough time to think about the methodology; I need to finish the recordings today.

April second, *5 landings*

I am exhausted. I cannot listen attentively anymore,

'focused'; Authenticity: real materials performed realistically 'taking sounds seriously'

I am invited to perform in John Cage's *Musicircus*, at an arts festival in Melbourne. The site is inside the atrium of Federation Square, and the brief is to create a sound space using the built-in sound

hours pass by, and I realize that no food is more repulsive-looking yet comforting than a bowl of Chinese dessert soup, deliciously served in front of me.

I put on my jacket and run outside. What does it sound like? Arriving at the Main Street bridge, I find myself in a natural pianola. The ice



Music is an experimental art; I can make mistakes and not hurt anyone. It is a different story in architecture.

Echo Chapel, 2007
light/sound installation, Cambridge Galleries

Notations: TEXT

discovery, in realizing that there is a little bit more room in the world that did not seem possible. I am not sure what form this would take, whether it is a feeling, a thought, a sound, an accident? I may not find out until much later. The idea of discovery suggests a certain change or act of transformation, internally and

in the first place - I just know if I have time, it will be the first thing to do. While I am hanging the bamboo pieces one by one into the centre of the armature, I send Rubin to learn about circuitry. That night, we quickly solder a circuit and test it out.

June ninth, *Echo Chapel*

Day of the opening, we

me to repeat my questions, later he replies: *Make another one*. Applause fills the auditorium. Here is a teacher of experience, who encourages the discovery of something new and unexpected. He is a true adventurer. Do not worry whether it is good or not, just make.

In a classical ballet (like Swan

stickers for labeling. Three hours later, I group all the bamboo at hand into a line of ascending tones (from C, C#...to B). I lose my perfect pitch after the first hour, and I suspect this is because my ear is not trained to hear microtonal intervals. Some of the bamboo pieces make tones that fall in-between

about engagements yet he uses sound not from undifferentiated sources but in a pointillistic way. The connections seem to be more visual than aural. The level of immersive engagement is questionable (a very game-like approach), when the perception or understanding of work is so fixed to specific

minds.

August ninth, Murray Schafer
I wake up at five a.m. to get to the seven a.m. performance of Schafer's *Music at Wilderness Lake*. We gather on a miniature island called Tom Patterson, and are flanked by trombone players on the river banks to our left and right. The performance begins and after

but I am thankful I have all my recordings done. I need to re-record the sounds in the kitchen, the levels are too low. As soon as I bump up the volume, the background noise shifts to the foreground. Noise is a problem.

April third, *5 landings*

I have imported all the typical sounds of a house; the

system. My visit to the site left me pondering for days: the spatial-sound system of sixteen speakers currently plays muzak! Do we want to hear elevator music or is this a decision made for us?

How can I design a sound space that would respond to the range of sounds in the day?

pieces are flowing in a unified stream like an indeterminate score, awaiting their sounding at the bridge. They are indeterminate in pitch, occurrence, and rhythm. Is this not a natural performance of experimental music with a complimentary dynamic visual score?

What if the concept of time



What experiences are visible to some and invisible to others? What kind of tension can be placed with visible and invisible elements in a space? Is something emerging? What is the role of time in the becoming of an experience?

*Echo Chapel, 2007
light/sound installation, Cambridge Galleries*

Notations: TEXT

externally. I imagine that this would occur in a space with an indefinite and indefinable character. Change must be a characteristic of such a space.

January twenty-fifth, Levitt
My teacher cites the mythology of the twelve great labors of Hercules. He kneels before each task and

continue to finish every detail on the armature and the sculpture. I abandon my real-time sound component and resort to a simpler, continuous sound space of water dripping in a cave. Three hours before the doors open, we finally finish the basics, and clean the dust and debris out of the small space. We close

Lake), there is a spiritual or transcendent aspect to the work which stands by itself, detached from the performance. And then there are contemporary works like Merce Cunningham's, where he liberates the spiritual tie for a sensual-instinctual one, suggesting that dance of any kind can fill the spirit. When

the Western scale. The piano at school is very out of tune, so I play my flute for tone comparisons. Finally, by comparing the sounds of each piece of bamboo with a reference note on my flute, I arrange the twelve absolute pitches in our Western scale on definite points, and the microtonal ones in-between.

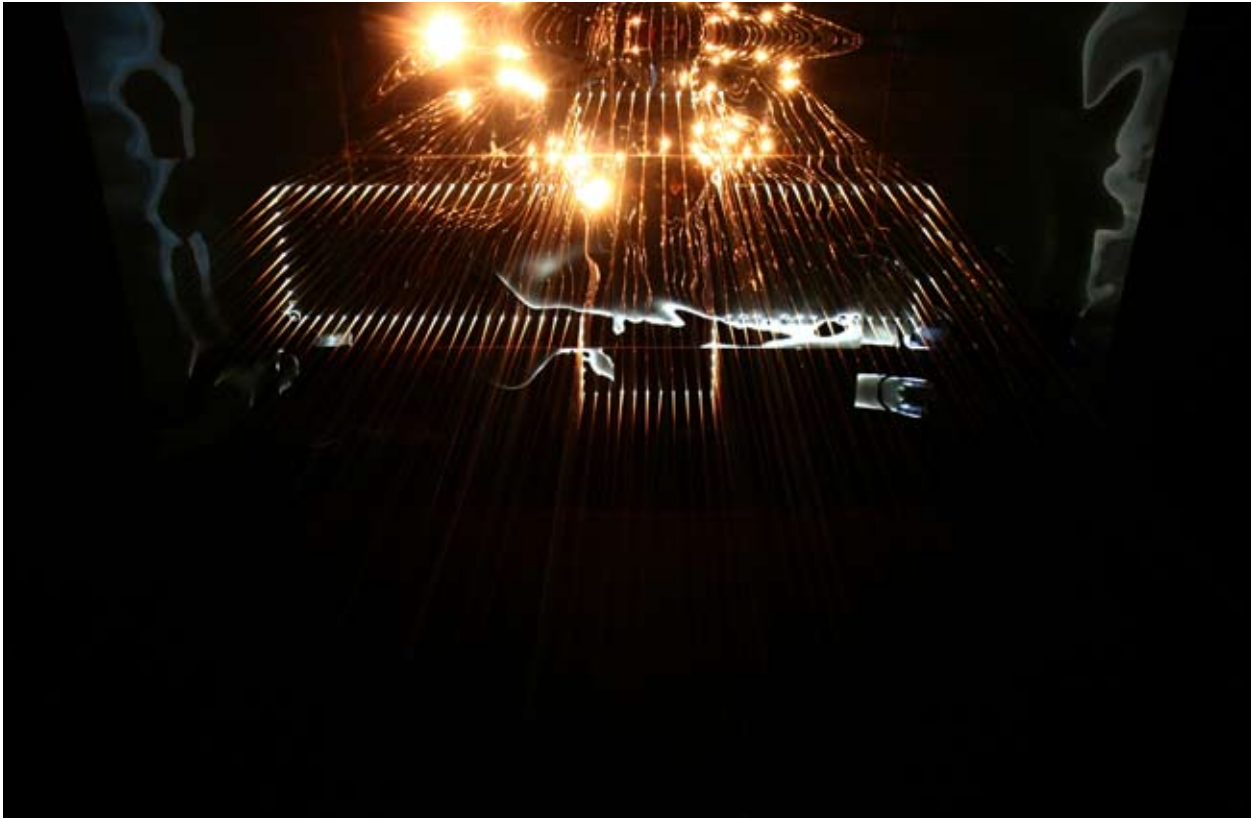
points in space.
Change; surprise: unknown expectation
Gregory More: game space is the subset of space of the world. Why bother? Perhaps the game space (sound space, for instance) is unique, allowing us to experience the world differently. That is the gap in research I may be filling

a short duration, a soprano sings from a boat in the lake, paddled by a male companion. Her singing is not only a spatially shifting element in the environment, but her vocal technique creates bursts of high notes which echo from afar. The sounds of the trombone sometimes evoke quacking ducks; and while

washroom, kitchen, and the dining room. They are the parts of programme where sounds of a sensual character can be most visual. The last landing will be a turning moment in which a shift occurs from the acoustic-visual space into an entirely sound space. All the landings will become sonorous.

Architecture has to function for people and to make them feel comfortable. I propose: Architecture has to function for *listening* and make the sonic experience a comfortable one. Our listening in space has become unconscious by default, to allow us to focus on other things. This needs to change. I feel an urgency

in a conventionally framed or exhibited work is opened up for speculation? What if no-one knows for sure when the intended sound space will begin? For how long it will play? To what extent is the experience immersive? Am I suggesting the possibility of an audience arriving to the space and not hearing or



I chose three symbols as a starting point: the river, the underwater, and the subway. Why are the symbols only visual? I realize the need to fight my predispositions in visualizing architecture.

Echo Chapel, 2007
light/sound installation, Cambridge Galleries

Notations: TEXT

then rises to defeat it. The act of kneeling emphasizes his humility, his willingness to open up, to receive something greater than himself and from the unknown. He listens.

January thirtieth, lecture notes

In *The Cat*, Dr. von Franz explains the mythology and epistemology of the cat as a

the curtains, and we listen to the large cave we are in. The amazing accident happens - a visual moiré appears on the ground. The dilation of my pupils completes the sound space; with time, drops of sonic water accumulate into a legible pond. I am moved to tears.

The experience of echo at St.

it happens, it is in a magical moment (without thinking) that it becomes alive.

Just make another one? I wish architecture were less permanent and more temporal.

October twenty-fifth, notes
I am asked to think and create a parametric model of my sound work. I constantly ask myself,

February twenty-third, *Echo*

My hands are full of calluses and are hurting from the cutting yesterday. More to cut today...

February twenty-fourth, *Echo*

The foam-board of the cathedral's plan is hanging from the ceiling, with fishing lines fastened around the plan. The lines hang freely,

- how can I acquire a sonic experience of submerging in water without getting wet?

How is space sonically activated or charged?

September seventeenth, research meeting

Humans attune to pitch much more easily than to the other parameters of sound (loudness, timbre...)

accompanying the soprano, the brass tune from different notes to the same one, creating a magical resonance and a heightened spatial awareness. This is a performance with spatialized acoustic instruments; a composition whose surrounding space is an essential component of the work.

April fifth, *5 landings*

I am very worried. Synchronizing has become a risky chance in this installation. I do not have the knowledge or software to make what I want. I need sound playback machines, perhaps CD players, perhaps ipods. I need five of them, and five speakers, and five...

to pay more attention to our listening, or soon we will lose this neglected sensibility and forfeit our sonic DNA.

Frayne shows us the process of soundscape design. The raw sound material is sourced and recorded around the building, along its cardinal axes. It is then electronically processed, to the point that I cannot

knowing the intentions? But they will be listening; they will be actively seeking sounds *in* space for sounds *of* space - is that not the significance? Am I recreating nature? But I am not god, and I am not only a designer of things. I am also a designer around things, changing their experiential contexts. Am I not predicting



I am introduced to throat singing from the documentary Genghis Blues. This type of singing originates in Tuva. The technique requires the embouchure to produce two distinct notes together. This reminds me of the role of harmonics in determining the character of a sound (timbre - tone colour, e.g. piano sound vs. violin sound). The idea is that each sound is not a singular entity, but a unique combination like a sonic DNA.

Echo Chapel, 2007
light/sound installation, Cambridge Galleries

Notations: TEXT

symbol. A creature so ordinary to us reveals its richness and depth in the symbolic world. On the chalkboard, my teacher draws several lines that resemble the outlines of two fingers, pointing and touching horizontally at the tips. This is drawn to describe a relationship between human instincts (impulses

Paul's Cathedral has finally come back to me in a full circle. The bamboo sculpture, a representation of the sound space of St. Paul's, has finally expanded beyond itself. June nineteenth, notes There is a curious aquarium filled with small cubes at the Pearson Airport. The bottom of the tank is steel polished

what is its primary structure? Is it time or volume? What is secondary? Where do I want to see changes occur in the visual model? I need to set up what Cage would call the interdependency, the interrelationships, before I can let myself go, let my design present me with the unexpected.

resembling a sort of sea creature, like a jelly fish. In the evening, I will drill two one-eighth inch holes into the bamboo pieces, tying each with a fishing line until they complete the outline of the St. Paul's Cathedral. Drilling on the top part of the bamboo would destroy the instrument, so I need to drill right below

Eye movements reflect brain activities; scanning and sinking. Are these not the physical manifestations of optic and haptic visions? September eighteenth, notes Maybe a physical landscape can be translated into the shifting spatial qualities of a sound piece. Sound from air to water;

After the performance, I take a leisurely walk with friends and I listen to the ducks. In the midst of the quacking, I suddenly shake myself awake from associating the quack with an unnatural, man made sound. It was metallic, and wrong. I felt guilty my association happened in a natural setting, and that my

April sixth, *5 landings*
I am desperate; I will find and use anything I can. I have become an opportunity feeder, and consume anything I can find. I have finally found all the materials I need for this installation.

April seventh, *5 landings*
I am not completely certain whether I want to play J.S.

recognize the origins of the sounds. This is a process of abstracting real sounds, by giving them an electronic character. Generally, soundscapes are not meant to arrest, control, or confront people; they are designed to remain in the background. On a computer screen,

the unpredictable? Is that still considered unpredictable? Chance? Let's discover. I want to learn everything about an indeterminate sound space. Where and what are you? I walk further south, and I hear the high frequencies more clearly than the muffled mids and lows. I can now hear the full range of pitches



*How can I connect the bamboo sculpture to its
surrounding space - so it manifests beyond a sculpture?*

Echo Chapel, 2007
light/sound installation, Cambridge Galleries

Notations: TEXT

from our physical body and development) and psyche (mental development). At the tip is the union of the two curves, as knowing that cannot be quantified. A simple sketch can embody such poles, between the physical and the mental, visible and invisible. What experiences are visible to some and invisible to

to a mirror finish. It is mesmerizing to look at, as the visual space is extended twice by the mirrored images. July twenty-third, notes Since the House as thesis project, I am fixated on the metaphors I can create with combinations of words: the sounds of smell; sounds of light; lights of sound. This is

October twenty-sixth, *Musicircus* I am awfully sick. Luckily I live close enough to the atrium, and in the spirit of Cage, I am liberated from the act of performance. What are the spatial qualities, or defining features of a sound space? Tonight, while *Sonic Pool* is playing, I realize sound

the first bridge on each bamboo. February twenty-fifth, *Echo* I have been hanging bamboo flutes for hours at a time, but as I watch them swing, chills go down my spine. Coincidentally, the cathedral plan (a cross) has twelve wall surfaces along the perimeter, which is also the number of pitches in the

water allows us to sense vibrations through our skin much more efficiently than air does. Would sound projection in water require pitch adjustment? I should speak to synchronized swimmers, they must know. They must have a separate track for underwater playback. September twentieth, notes

own hearing was not free from the conditioning of my living environment. An evolution in listening and sonic iconography has occurred over the course of human civilization, through the act of urbanization and living increasingly in man-made environments. As our sonic world is increasingly filled

Bach's Prelude and Fugue as the last music piece. I am deliberately splitting up five voices to be played on each landing. Bach would not like this, and that is a daunting risk I am taking. I will play to a silent metronome and record the prelude five times. Hopefully, playing out on five different sound players

we always work in a two-dimensional world. The third dimension is a kind of portal, where the z axis shoots out of or into the screen. I cannot similarly deny the three-dimensional quality of sound, where the z axis is the height of space. There is no non-spatial sound. As the architectural discourse

as if I am an audience at the symphony orchestra. The ends of the bridge are flanked by the river's retaining walls, creating a natural amplification. It is an urban speaker, in a natural and sonic phenomenon. How far do the sounds travel? The armature is composed not of magnets or wood, but of roads, buildings,



Day of the opening, we continue to finish every detail on the armature and the sculpture. I abandon my real-time sound component and resort to a simpler, continuous sound space of water dripping in a cave. We close the curtains, and we listen to the large cave we are in. The amazing accident happens - a visual moiré appears on the ground. The dilation of my pupils completes the sound space; with time, drops of sonic water accumulate into a legible pond.

Echo Chapel, 2007
light/sound installation, Cambridge Galleries

Notations: TEXT

others? What kind of tension can be placed with visible and invisible elements in a space? Is something emerging? What is the role of time in the becoming of an experience? February sixth, Thompson
Perspective is a visual word. Common sense is where all senses are at common, at equal value.

not going anywhere.
July twenty-third, Harvey
Sound mapping is conditional to the chosen parameters: frequency, amplitude, duration, timbre. Why map? What am I trying to find out about the space to be mapped? I love reverberant spaces; my teacher refers to such spaces as rich immersive

space is not simply an act of listening, but the tactile qualities resulting from the composition. Sound spaces give a definitive haptic reality to the otherwise ethereal world of sound.
December twelfth, Downton
I have been trying to untangle a stubborn knot in my thesis: what form should it take? For

Western scale. Naturally, I positioned each absolute pitch (C, D, E...) to hang on a fishing line, drawing from the mid point along each wall surface from the plan. This allows the microtonal bamboo to be framed in-between. Sonically, the bamboo instruments form a continuous musical space in which each one corresponds

Can I use landscape as a spatial notation for a sound composition: turning *Ryoanji* (the temple of the peaceful dragon in Kyoto, Japan) into a sound space?
It seems that the less humane the design process is (through thinking and working), the less haptic the result.
September twenty-second,

with unnatural and artificial sounds, unconsciously they remain in our memory of sounds. I realized what civilization has done to me: I cannot enjoy a duck's quacking without an irrational association with metals.
Who is going to ensure this lineage of natural sounds is not broken before our ears?

simultaneously will allow me to synchronize close to perfection.

April ninth, *5 landings*
I wait until the janitors leave and I sneak all my equipment into the stairwell. I carefully time each of the five recordings with the sound software at school, and I include fifteen minutes of music before the

is predominantly organized by vision, particularly through the use of CAD and related computer programmes, is there a need to care for sound as an essential component and not simply an attribute of space? *Sound space* is a curious term; sound itself carries qualities of a physical space, so why do we need to

walls, water, and the weather: an indeterminate soundscape. Any effort to scan across the ice and study its fluid score cannot predict where, how, and when the ice will tickle the ivory - the flapping rebar and swinging metal sheets - the bridge has a surprising underneath. The sounds of water, trains, and traffic all



At the Pantheon, I lose my sense of self - my ego is not important anymore; at the donut shop, I find refuge from the freezing weather outside; beside the hot dog stand, my hunger will cease soon enough. What is the magical moment in the experiencing of architecture?

Echo Chapel, 2007
light/sound installation, Cambridge Galleries

Notations: TEXT

Mind-space is modeled in the mind's eye, where space becomes perspective

Interval has a Latin root: the space between walls.

I chose three symbols as a starting point: the river, the underwater, and the subway. These are arranged in a triptych vertically, with the metaphor of descending into

environments: washrooms, building eight's concrete stairs.

My teacher suggests I conduct an impulse response analysis, or a strong sound source in a rich immersive environment. For example, popping a balloon and analyzing its reverberation tail. Perhaps I can then map the result with

months, I have programmed my thoughts and work to focus on methodology, because I consider it to be the primary interest of academia: the investigation of methods for future applications. I have been arguing internally with this authority, because it seems to leave little room for creative forms. I feel uneasy

to a pitch, and the totality forms a complete octave.

I am staying late; I want a quiet moment with the installation.

I am thankful the build was carried out successfully. I have looked at it from every possible angle, except from the floor up. I have unconsciously designed according to an early sketch.

research notes

Ros Bandt: a professor at Melbourne University. How does one make art and situate it? How is it possible to use the same process to create different outcomes? It is not about me and my ego, but me and the world.

Space and sound: sound is temporal and space has

September twenty-fourth, Dr. van Pelt

I am unable to articulate what my project and thesis is. Clearly, I have a lot of information to digest and analyze. I am unhappy with the models of reducing or restructuring toward a singular narrative in order to convince. I was never interested in

installation as an overture. I can then synchronize the five playbacks and also allow time for the audience to enter. First, I press play on the first player, and then when I arrive on the second landing, I press play on the second one. It is not as easy as I hoped. The ipod shuffle does not playback instantaneously with the

attach the word *space* after *sound*?

I am drawn to the different characteristics and physical states of water. Like sound, water has qualities of fluidity and temporality. Water is a material that changes through time and space. It can be effective to illustrate the temporal emergence or

carry a similarly recurring pattern, always familiar but never mechanical. I am in awe of this indeterminate urban speaker: what an innocent and beautiful work of nature.

March fourth, notes

Page numbers break the whole into successive parts, unifying them with a prescribed and linear order of understanding.



What is the role of a model? Is it only a facsimile of the design product? A good model, drawing, or mapping reveals things you could not have known. The drawing or model is not only a representational tool, but a design tool.

*Echo Chapel, 2007
light/sound installation, Cambridge Galleries*

Notations: TEXT

ourselves, for discovery.
Why are the symbols only visual? Where is sound or music? After these questions, I realize the need to fight my predispositions in visualizing architecture. I feel a relief, but lost myself in the imagination of space through sound. I reach for my ipod and play Mozart's *Adagio* of *Gran Partita*

the space, with materials...
I have a sudden obsession with the visualization of sound, like harmonic mappings.
July twenty-fourth, lecture notes
Saeid Nahavandi from Deakin University is an expert in augmented reality. AR is a computerization and extension of human activity

creating something for the sake of meeting standards; and I feel exponentially worse when my academic writing reads dry, analytical, and permanently separate from sounds themselves. In academia, the exchange of information is facilitated by an orderly and prescribed set of standards. A structured

How can I slow down light to showcase this sound sculpture? How can I slow down light?

February twenty-sixth, *Echo*
School activity is resuming after the spring break. I have some very powerful and professional lamps from ACM, and they now sit on the black foam. Danger strikes: the

physical properties (height, depth, density). It is difficult to work with both. The score is a snapshot of both time and sound.

Bandt's ARC Australian sound project was conducted because the written acoustic history is vastly incomplete. The visual and aural worlds both exist within their own

focusing on one or two theorists, in having them inform one major work. I have created multiple installations and a mosaic of research that is interdependent and independent.

I create sound spaces in existing spaces that were not designed for sound.

October first, Dr. van Pelt

push of a button (like a tape cassette would). It has one to two seconds of lag time. I rearrange the ipod shuffles to the first two landings. After two hours of rearranging files and setup, I am ready to go again. This time I realize it is impossible to synchronize to even half a second because the players and speakers are

disappearance of form. When I look at the ocean, perspective dissolves into the horizon.

October first, notes
Time magazine (November twenty-eighth, 2005, page ninety-three), Herzog and De Meuron: *...the fragrance was not an attempt to go head to head with J-Lo. [We] very strongly insist on*

They are my mind's most faithful servants. Title-page, why should you see the world more than your friends? Page forty does not envy your privileged position, but is sick of always being prefaced by thirty-nine. There are at least thirty eight other friends before you, dear page forty.

March fifth, notes



Game space is the subset of space of the world. Why bother? Perhaps the game space (sound space, for instance) is unique, allowing us to experience the world differently. How can I acquire an experience of submerging in water without getting wet?

Earthbound - Unbound, by Ingo Maurer
Lester B. Pearson Airport, Toronto, 2007

Notations: TEXT

through a pair of computer speakers. There are spatial qualities in this music; the sense of emergence, a voice appears from without and weaves from one instrument to another.

February eighth, notes
What is the setting of the project or thesis? What locates it?

and sensing into the virtual world. He presents layers of time and space mappings of a production plant; a temporal and spatial representation of information (an abstracted space and time of a real environment).

Why should we computerize human activity? Through analysis and simulation of

five-chapter form is merely a blank chart to fill-in, which can be easily compared and archived.

I have to start somewhere, and having no form seems to be worse than bad form. Subject matter alone cannot exist unless it is framed.

My teacher untangled this knot for me: *the form of the*

paper is burning, and bamboo falling one after another. I must fix this for the next few hours.

February twenty-seventh,
Echo, Mr. Thompson

A day of critiques for two different masters studios. As I open the door to my installation, an unexpected flock of classmates run to

parameters. Not connecting the two suggests they are worlds that do not include one another. The aural world is ephemeral and temporal; our aural cultures and traditions are free to change.

Michael Fowler: a specialist in twentieth and twenty-first century electro-acoustic music. He shows a project

I have come to realize that while working with sound, what really matters is the experience that I may be offering and not the resulting compact disc. The recording, usually a reduction of the entire work or sound space, is similar to what a photograph does to a building. The sounds in the composition are not

too far apart. I decide to hold onto the first player, to attach the left headphone into my left ear, and to walk up the stairs with it. I realize that by playing separate recordings in my left and right ears, I can synchronize to perfect stereo quality. Two identical sound files playing in different locations bring a wholeness and

architecture's potential to reach all the senses. You can touch it, you can feel it, you can see it, you can smell it.

Where is hearing? Listening? Not only is the product important, but also the effects and potential to change or touch someone.

October sixth, notes
I sit in the viewing gallery

Dear works, can you step outside of your limelight? I invite you to own your environment, and in order to do that you need to be on the edge. You need to become less of a centrepiece for me to experience you, for us to be one.

March ninth, notes
How can words become more



If an installation is continuously repeated, would it not drive neighbors mad? Would the work become nuisance instead of art, if sounds were allowed to continually excite or affect the nervous system of the listeners? Does this sound space become too predictable? If this is a piece of visual art hanging on a wall, at least I can avert my eyes and ignore it. It is difficult to ignore sounds.

Adam Simmons performs at *Musicircus*, by John Cage
Melbourne International Arts Festival, 2007

Notations: TEXT

The metaphysical or subtle body is a layer that is invisible and cannot be pointed at. It is significant when an unconscious element becomes conscious, moves from immaterial to material. The body can be mapped in different systems: bones, muscles, nerves, circulation, among others. In Chinese

supply and materials, these tools can save us time and money in the end. This research lab is about finding and extracting information from space. Nahavandi and Burry's *Aegis Hyposurface* in 1999 is an example, a wall installation that draws feedback from the people standing in front of it.

thesis should not hinder its persuasiveness. It should compliment and help support the research and argument. A master's student is to demonstrate a mastery of a chosen field; do not reinvent the wheel.

December twenty-eighth,
Sonic Pool

What is the spatial progression

every available piece of bamboo and blow into it. I am shocked by the enthusiasm. I have everyone sit on the floor while I present the project. My teacher says the piece is its own conductor, and he advises I should look into the origin of conducting. I cannot stop myself from gazing at the ethereal body of the hanging

by John Cage called *Ryoanji*, in which Cage interprets the landscape as a musical topography instead of a geographical one. Why should anyone *sonify* a garden? Actually, why not?

I have not read any scholars critiquing the legitimacy of the *Music of the Spheres*; is that not music from an extra-

products necessarily, and they do not encompass anything more than themselves in the grander scheme of the works they are in. I can pull down a book from the shelf and admire the book itself, and I can look at a compact disc and be unsatisfied without listening to it. Sound is used primarily as a catalytic material, and

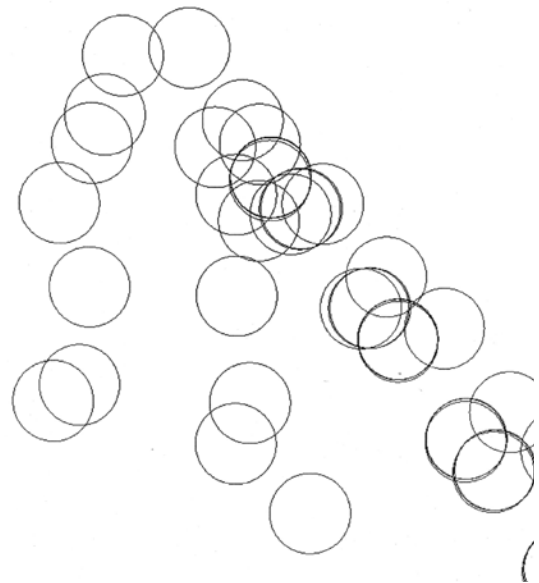
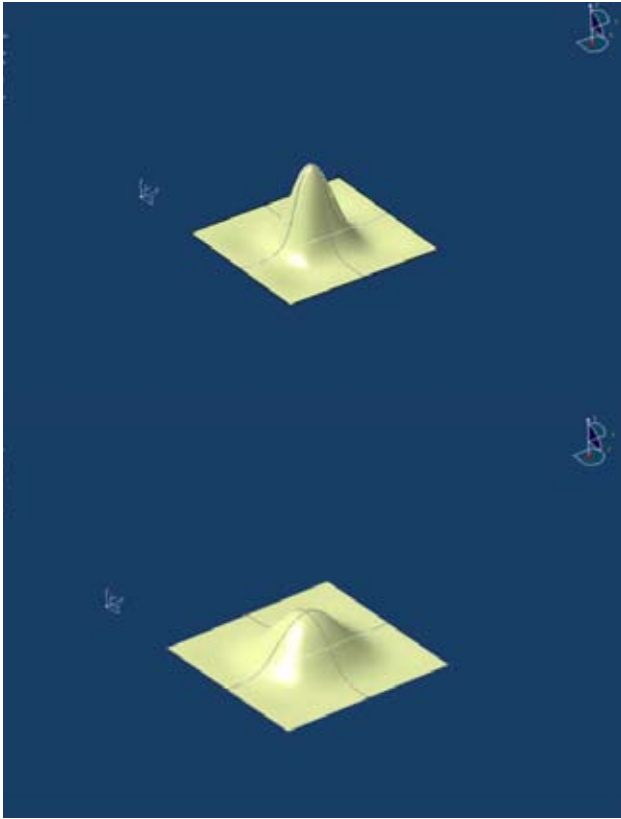
completeness to the listener upon synchronization, with a stereophonic sound space. This sonic puzzle continues up to the fifth landing within fifteen minutes.

April tenth, *5 landings*

On the day of the presentation, I keep my audience in the hallway with a bag of fleece headbands as blindfolds.

of the Perth Swan Bells and watch volunteers ring the bells located at the centre of this tower. The entire structure is swaying because of the force generated by the pulling. There is a concise exhibition on the history of time. It begins in ancient Egypt and the first measurement of time using the sun and sundials.

than textual representations? When does a static visual medium lose its permanence and flow with time? The score for a sound space is a time-object, which can be visited in the same order during each performance. It is a representation that has a determined time-sequence, pointing at the same thing



The visual and aural worlds both exist within their own parameters. Not connecting the two suggests they are worlds that do not include one another.

Variations III, by John Cage; realized by the author's notation (RIGHT) and its performance (LEFT)

Notations: TEXT

medicine, the meridian system of pressure points is another example. The mapped body can have multiple boundaries depending on the chosen layer and the changing envelope. How is it possible to show these qualities as if we were to experience each map?

Maya Lin's *Vietnam memorial* invites a physical descent,

Nahavandi uses haptics to personify robotic machines, by projecting human consciousness into virtual space through computer controlled objects. *He is haptically driving the platform. He is using the machine to feel the virtual world.* In the future, he asserts the possibility of touching the unborn baby, for

through this sound space?
What is the length of the piece?

Five identical seconds? Ten different ones?

What is the time in which the transformation completes?

January twenty-fourth,
lecture notes

Design ecology: how to design a system which takes care

fishing lines.

February twenty-eighth,
Levitt

My teacher encourages me to spend more time with the means of documentation. I find a box of black garbage bags and tape them together to form curtains on the windows. With Li's help, interesting photographs came

musical context? Fowler plays *Polytope* by Xenakis, which has an interesting geometric map of allocations of sounds. He maintains that at certain points, sounds do not come from the speakers themselves, but from between, beyond, above the speakers. This is madness! How does sound vibrate in empty space?

the point of inquiry really ends slightly before I give it permanence.

Through sound, space, and form, the site of intervention opens up to new speculations. October eighth; Levitt and Dr. van Pelt

After reading Zuckerkandl's *Sound and Symbol*, I am reassured by several

Everyone is excited. I run down and up, up and down like a rat, but just cannot be as fluent as my practice last night. I keep running outside to ask for more time. Finally it is adequately done, with a player out of sync by about one quarter of a second. In a serious manner, I read a short disclaimer which discourages

However, because daylight does not continue through the night, this method lacks continuity. The exhibit then moves onto sandglasses, water clocks, and candles - these all have the common characteristic of using a flowing substance to measure time. The declining height of the material indicates a loss

and away from itself. This is a sound space.

March nineteenth; Levitt, Dr. van Pelt, Thompson

Absence of intent: be playful.

Abstract: to play with boundaries;

Subject of research: to generate time.

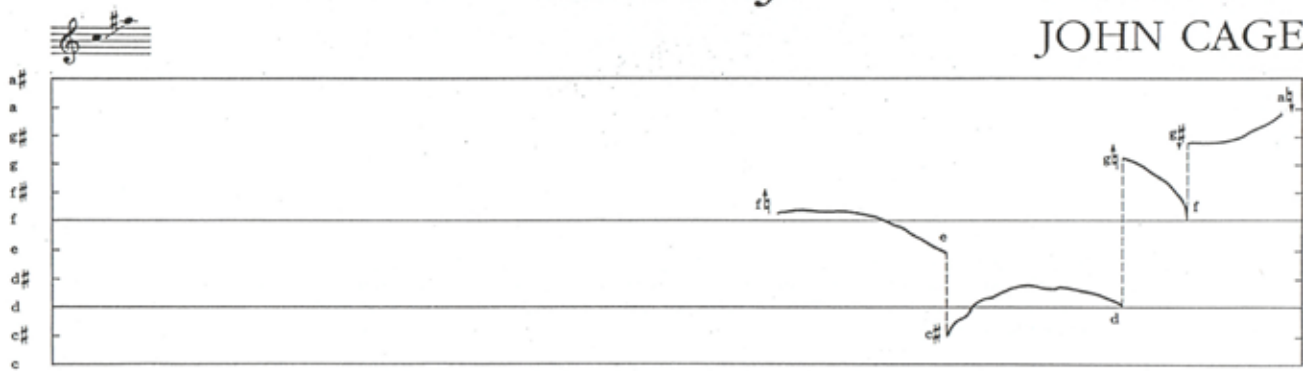
Thesis: for eternal birth.

This thesis has no beginning

2

RYOANJI

JOHN CAGE



Why should I experience and learn outside of my subject, my ego, the known, and step into the dark side? Would the journey allow certain degrees of detachment, or reflection? Who talks back? It is no longer silly to question: what does the brick want? Allow the design to talk back to me. Thinking about the whole and understanding how a design can change an existing situation develops an interest outside of myself. In a way, designers need to be nobody in order for the design to talk back, and let it speak to others.

*Ryoanji for oboe, by John Cage (TOP) and
Ryoanji in Kyoto, Japan (BOTTOM)*

Notations: TEXT

manifested in the procession through a sloped landscape, a quiet walk.

February thirteenth, notes

Do we need more than just a roof and a meal? Our psychic health is dependent on our understanding of and connection to our unconscious. What do we gain from this connection?

other archiving purposes, and operating robots for medical procedures across great distances.

July twenty-ninth, notes

I am at the Melbourne International Film Festival. Norman McLaren, a Scottish-Canadian experimental film animator and maker, directs great story-telling with

of itself as nature does? In Field Operation's *Fresh Kills*, how the system works is more important than what it looks like in the end.

January twenty-ninth, Velikov
The cartography used in architecture and music are codified languages. We need an understanding of space and time in order to read

out.

March first, *Echo*

I sit down with the installation and start to sketch. What is the programme of this thing? What does it do?

March first, notes

What is the programme of my thesis? In the Grove Music Encyclopedia, the first definition is *details of*

The art is in the void: the figure and ground relationship; the spacing: the empty space in a work of calligraphy; the timing: the temporality of approaching and leaving an experience; the sonority: the sounding of a space.

Nigel Helyer: sounds of fire or water are soothing because there are just enough sonic

unreferenced thoughts I have. Situating sound in space gives the space a bodily-spatial tendency, or in my notes I refer to a *haptic* quality. What strikes me is that someone like Zuckerkandl, without the practice of spatial-sound installation, understands the significance of sound space is beyond that of three-

anyone with height phobia from staying in the space. I read that movement combined with shifting sounds in space can sicken the mind and body - especially when overdone. Mozart's *Adagio* of *Gran Partita* serenade is playing - it sets a peaceful atmosphere and is a great introductory piece. The installation goes

of time.

Water and sound are in the temporal domain.

October nineteenth, *Sonic Pool*

Cameron Tonkinwise's students often project themselves into their work to understand their designs. I am familiar with this sense of projection into an imaginary

and no end; no-one can evaluate its success or failure. When in doubt, drop the transparencies again, make another sound space.

The space of sound is also that of time, change, and movement. I am at the right moment, angle, sound, and time; I am always receptive. Nothing is good or bad. Motion



Frayne asks each of us to construct a sound content map. On a blank page, we write down and identify the things we hear. In a few minutes, I have sixteen items on my page. I expand on each item, determining what produces the sound, its duration and pitch. Very soon I realize that beyond seeing, listening is a way of being.

*Forty-Part Motet, by Janet Cardiff
Stratford Summer Music Festival. 2008*

Notations: TEXT

Facing north, I stand in front of the windows at home and I look back at my school and its surroundings. Where is the window I peeked out of just minutes ago? When I was at school and staring at my home, I saw the same relationship of a subject and context - of my home and its immediate environment. It is intriguing to

inanimate objects. Is this an earlier instance of Nahavandi's projection of human into inanimate things?

Horizontal Lines shows lines moving across a two-dimensional surface, but seems to have qualities of spatial compression and expansion. A moving flat screen can seem spatial.

them. In Western art music, musical space has always been notated in an abstracted space. The experience is only complete after a linear unfolding of sound in time. However, the experimental music movement explored the notation of sound in physical space. Each sound is now given a spatial attribute.

the entertainments to be offered, listed in order of performance. The programme of a performance is similar to the table of contents of the thesis.

March sixth, notes

A house for three octaves.

A wall for four ears.

March seventh, research

I am introduced to throat or

patterns that one does not dominate the others. We impose structure on sounds, to pin it down to a recognizable object. But is this always necessary? Cannot sound simply be sound?

Most audio walks are linear. How is it possible to suggest listening to sounds in a non-linear way: mosaic? multiple

dimensionality. There is also the *dynamic spatial* quality of sound, which is able to induce change in a fraction of a second. I am deeply touched by his words as they sum up the rationale for my projects. For *Sonic Pool*, I chose water as the main sound in order to amplify space as a temporal and dynamic (changing, fluid)

well and everyone claps.

I have approached this project, house as thesis, less as a functional program and visual form, and more as a testing ground to push the limits of blurring physical and imaginary space. I tried the method of organized sounds in multiple points in a space. From this installation, I learned

space, especially from my own undergraduate design studios. I also find myself imagining an experience during the design process of sound spaces. However, I can more easily step into and out-of the space simply by listening to my work.

Why should I experience and learn outside of my subject,

is not continuous to the eye; I blink and I gaze, my mind resolves the visual fragments into a flow. I close my eyes; the fleeting images of change too easily escape.

Sound is a form of energy that is always transformed and never created or destroyed. Sound vibrates through my body to my ears; there is no



"Cage would improvise at practice, showing interdependency and independence; not everything is completely given up to freedom or chance, there is still interdependency between sound and movement. His prepared piano expands on that non-restricting experience, where sounds do not fit expectation. Sensing has the ability to really stick and stay with us."
Merce Cunningham

HPSCHD, by John Cage
OCAD Auditorium, Toronto, 2008

Notations: TEXT

see what I once could not see. Is this a phenomenological example of the unconscious, the wholeness of which I can never grasp? Vision is over-rated; vision alone is limiting. In *Jung and Yoga*, Judith Harris positions yoga practice as an act not of competition or performance, but patience. I am waiting until something

Synchrony is a light and sound animation; after two minutes I watch not the projection screen but the space around it. Due to the size of the screen and the intensity of the different colors of lights, the animation seems to have a spatial dimension: the work bleeds into the entire cinema. July thirty-first, research

Site specificity may have many parameters to it: such as history, culture, geography, spatial quality, architecture. Does a work need to be rooted in each of these aspects for it to be site specific?

January thirty-first, Levitt
The rationale of my thesis includes an intention of restoring spatial richness,

overtone singing from the documentary *Genghis Blues*. This type of singing originates in Tuva. The technique requires the embouchure to produce two distinct notes together. This reminds me of the role of harmonics in determining the character of a sound (*timbre* - tone colour, e.g. piano sound vs. violin

points in space?
If an installation is continuously repeated, would it not drive neighbors mad? Would the work become nuisance instead of art, if sounds were allowed to continually excite or affect the nervous system of the listeners? Does this sound space become too predictable? If this is a piece

state. This further explains my increasing interests in Cage's indeterminacy for form and organization. I have pushed my thesis to the edge, and moved what seems to be a static, permanent art-form into a realm of temporality and change.

I am very visually oriented, probably from my cultural

that the ear is great for localizing sounds horizontally, and not vertically. The vertical axis becomes an element of loudness and softness, signifying respectively the nearness and farness of the sound source.

April twentieth, Open Ears festival

Frederic Rzewski says that

my ego, the known, and step into the dark side? Would the journey allow certain degrees of detachment, or reflection? Who talks back? It is no longer silly to question: what does the brick want? Allow the design to talk back to me. Thinking about the whole and understanding how a design can change an existing

anatomical component to close them. Natural sound vibrations are uniformly continuous; I am consciously listening and my ears are registering the endless flow. My ear is a more suitable instrument for perceiving the qualities of time, change, and movement in space.

Am I predisposed to finding



At the concert hall, I always find it difficult to listen with my eyes open. Sound fills the space and yet I am visually separated from the performers on stage. This makes it difficult for me to understand my own body as a part of the musical space.

Twilight, 2008
light/sound installation, Harbourfront Centre

Notations: TEXT

begins to happen of its own accord.

February fourteenth, old notes

On a Sunday, I venture around the city of London and arrive at the doors of St. Paul's Cathedral. I suppose a service is starting, and I see worshippers filing in. In the distance, I hear the singing of

meeting, Harvey

Frank's thesis is on physical interaction with sound through toys. His literature review consists of different schools and styles of interaction with sound, and how they come to define the thesis. He finds that children get bored with his four pre-selected sounds; they want more.

through learning about sound space and its behavior.

February twenty-sixth, notes

Aalto once said *form is nothing but the wish to create ever-lasting spaces*. So if my work is neither product- nor form-driven, am I creating ever-fleeting spaces?

April twentieth, *Confession Booth*

sound). The idea is that each sound is not a singular entity, but a unique combination like a sonic DNA.

March eighth, notes

A possible rationale to situate the thesis is to note the dominance of sight over other senses in the ways architecture is imagined and created. The Greeks viewed

of visual art hanging on a wall, at least I can avert my eyes and ignore it. It is difficult to ignore sounds.

Emily Thompson's *The Soundscape of Modernity*: sound is information; it is the transmission of communication. The diagrams and models are all non-linear. Thompson, an American, wrote

upbringing and education in architecture, or maybe I simply cannot be more aural than visual, unlike many sea creatures. Seeing orients me in this world, and some days it tantalizes me with déjà vu. It leaves me pondering for hours: when was I here? Then there are times when familiar feelings resonate through

in traditional Western art music, the logic in structure is the basic musical form of A-B-A, which is loosely the visual equivalent of an arch or pyramid. Why can we watch TV for four hours and not listen for four hours? How do we build patience?

There is something about the figure-ground relationship

situation develops an interest outside of myself. In a way, designers need to be nobody in order for the design to talk back, and let it speak to others.

Reflectivity in design is what water is to fish.

What is the role of self and ego in a design exercise?

Perhaps I should explore

the pattern in things, because I am an animal of thought and consciousness? The space of sound wants me to listen, but it does not need validation from my mind. Am I still an animal of thought when I do not analyze? This thesis is now at the boundary of visual and time media. Text is a figure that is well suited



Dear works, can you step outside of your limelight? I invite you to own your environment, and in order to do that you need to be on the edge. You need to become less of a centrepiece for me to experience you, for us to be one.

The Weather Project, by Olafur Eliasson
Tate Modern, London, 2003

Notations: TEXT

the boys' choir. I maneuver my way from the aisle to the nave and face the choir. I advance about ten steps and stop. I am crying. In a fraction of a second, I realize I am moving through two different spaces - the visual and acoustic. Why do they not align? I am not certain where I am anymore and, without hesitation, I

Scott's thesis is on traditional soundscape methodology, through the modeling of a Japanese garden. My teacher suggests structuring his thesis so that an overall aim is supported by multiple objectives, to allow extracting into individual documents. This would allow him to break it down into multiple papers.

An Interactive sound space, a bag, a holder, a container of private thoughts revealed through the creation of sound space. The amplitude (loudness) of sound is in relation to the listener's distance from the bag. Potentially, there can be three scales: whispers (from afar); slightly louder (walking

knowledge as having clear vision, and in the Renaissance, perspective made the eye the centre of world. As the nature of representation is only a part of the whole, are we to neglect other senses? Does this suggest a desire to leave other senses homeless?

March ninth, notes
Spaces designed through

the book from 1900-33. That is when the practice of acoustics formed and subsequently found its reverberant science. Culturally, this was the height of sonic effects from industrial revolution: production of cars and air conditioners; sounds were largely byproducts and were not considered in the overall design processes.

sound: she sounds exactly like my friend; what is the title of this song? Similar to seeing, listening is also a way of being. The act of receiving sounds confirms I am here and alive. Is this not reason enough to make spaces only for listening? Whether the sounds are designed or natural, it is the possibility of receiving a

that I want to get at without full clarity. What is it? Am I interested in dissolving the relationship between object and subject, performance and audience? I suppose I am referring to two principles at once: the art of immersion and the sonority of space.

At the colloquium, I question whether sound installations

practice-based research. Should my research *fit* the formal standards set by the academia? Or should my research inform its own formal organization? What is research, and is it not about discovery? Would the act of *fitting* suggest a set of pre-determined outcomes? If form and content are

to amplify change in space; words are made up of letters and elements that are able to be reconstructed. The space of change produces different meanings from the elements in the textual system. It is satisfying even though I will never see it completely.

March twentieth, notes
My peers are stuck in the



I am very visually oriented, or maybe I simply cannot be more aural than visual, unlike many sea creatures. Seeing orients me in this world, and some days it tantalizes me with déjà vu. It leaves me pondering for hours: when was I here? Then there are times when familiar feelings resonate through sound: she sounds exactly like my friend; what is the title of this song? Similar to seeing, listening is also a way of being. The act of receiving sounds confirms I am here and alive.

The Grand River, Cambridge, 2009

Notations: TEXT

listen with my eyes closed. February fifteenth, notes What is the void between visual and acoustic space? The setting is echo, where the auditory perception of space becomes conscious (in an otherwise and usually unconscious context). The thesis can be framed to explain the void between the

My teacher presents his doctorate work in progress: acoustic environment is a relatively new topic and it could not be entirely recorded until recently. August sixth, research meeting *Villa Lante* is a historical example of deliberate sound space in a garden setting.

towards); and the loudest (arriving at the bag while triggering a sensor). Beyond the concept of an interactive design, this plays with the roles of indeterminacy, semantics, and identity. As the voice recording plays back in an indeterminate order, each participant can inherit any of the pre-recorded

the eyes speak to the language of vision, and such a world is flattened if it is only represented on a two-dimensional plane. March tenth, notes I want to create an experience that reintegrates sight with the other senses, perhaps through materiality and temporality. How can I defocus the eye and

As our cities got louder, the need to deaden them strengthened. Companies are providing soundscape services, just as architects provide design services. There is a demand for this work now, not as a function of an architectural discipline. Bernhard Leitner: architect

deliberate sound space that enriches an architectural experience. In the end, sound spaces demonstrate not only that listening reveals a layer of architecture, but that it grounds me and my body. October twenty-first, Levitt As a review, I look over my notes and realize my thesis is not only about representation

are site-specific since they cannot be archived completely, without missing a significant portion of the work. The recording becomes completely flattened; the filtration of the sound space into a left and right channel recording is stereophonically similar to a recording of Britney Spears. Scanner from UK is interested

indivisible, would a particular formal structure only allow a particular type of content? I have never questioned my building designs such as: if you are the lobby, describe your job. How do you want to be treated? What can you offer? Can we use sound to represent or design a space that visual

validation of their work. It is a pity to paralyze creative ideas with self-critical thoughts from tradition, permanence, and the search for significance is overbearing. We learn, forget, and make; the space of imagination needs nurturing and cannot foster when it is too constrained by the daunting lineage of authority.



"Mr. Cunningham, what are the means of evaluating your own work? How do you reflect upon the success or failure of your work?" He politely asks me to repeat my questions, later he replies: "Make another one."

St. Paul's Cathedral, London. 2002

Notations: TEXT

visual and acoustic space. The crucial moment is when the acoustic or sound space knocks me out. I lose myself. The journey from echo to another sound space would allow me to lose my sense of self, and then return and perhaps discover something. I see Professor Seebohm in the hallway and we talk about

What is the lineage of deliberate sound spaces? Dr. Michael Fowler presented at a soundscape conference at the University of Regina. There is a distinct difference between treating work as sound analysis versus art (which stands alone and posits as the end of inquiry). Sonic *shakkei*: borrowed

confessions. Each voice is like an identity or persona, a piece of clothing involuntarily put on by the installation, and the experience is strengthened by the attendance and perception of the surrounding audience. For a moment, the participant loses a sense of self and relates to the voice as if it were their own.

represent a slowing light, a materialized light? March eleventh, reading Juhani Pallasmaa writes that building is not an end in itself, but the means to encounter - through phenomenology. In that line of thought, without people and their experiences, buildings are insignificant. March thirteenth, notes

and artist, initiated design- and art-based research in sound trajectories and the dimensionality in sound. In the 1960's and 70's, the world of sound recordings was still mono. Fidelity in public space; where is the care and craft of sound and its accurate communication?

or methodology, but about a physical relationship to architecture: finding the threshold between this relationship of physical and mind spaces, penetrated by sound. These spaces open our ears, and extend the symbol of entering a physical space by listening. December fifteenth, Levitt

in the space between two people conversing, or the counterpoint of two voices. He records two people talking on the phone. As much as this is about space, it also implies a certain political or social underpinning and intrusion into private space, and the manifestation of this in public space.

images cannot deliver? There is a difference between the sound *in* space and sound *of* space. To argue for spatiality, one needs three axes - perhaps that is why in *5 landings*, I am drawn to the z axis (going up and down); in *Echo Chapel*, the sound plays from the floor; and in *Sonic Pool*, the

March twenty-second, notes Music and architecture tend to be over-structured languages, which the brain invented and loves. Harvey once told me when visual perspective was first available on computers, architects immediately flew to the sky and the clients demanded a landing right at the entrance.

REFLECTION

It is daunting to conclude a thesis which has an open form and which creates multiple outcomes. This thesis is designed to generate indeterminate notations and performances; and these moment-specific operations complete the thesis book. They are a living process of understanding, working, and experiencing sound space. No single performance can conclude the thesis and therefore it is difficult to form a conclusion.

The challenges that confront sonority in architecture are evident in the ensuing discussion, during which several participants resort only to visual techniques to communicate their experiences and thoughts on sound space. This is a significant indication of the permanence of visual thinking, which challenges the communication of a temporal-spatial experience like sound. The reality of this challenge persists throughout the discussion and provides an important and inadvertent commentary on the thesis.

When the participants draw sketches and diagrams of sound, they adapt the conventional use of drawing to communicate sound space. Though drawing is fundamental to the imagination of space through sight, its visual content becomes less dominant in the discussion of sound. The participants no longer draw representations of the visual qualities of space, and therefore extend this technique beyond the limits of the visual.

Finally, the thesis was performed on April fifteenth. This performance concluded with an extensive discussion among Andrew Levitt (AL, advisor); David Lieberman (DL, examiner); Fred Thompson (FT, committee); Dr. Robert Jan van Pelt (RJ, committee); Yiu-Bun Chan (YB, candidate); and many guests.

*

AL:
So is everybody here?
David Lieberman will ask the first question.

DL:
Yiu-Bun, you have been somewhat unconventional, so will I.
Aurality sets a different group of challenges for us, in both constructing and understanding architecture. Of course, in order to understand and appreciate echo

REFLECTION

and sound, we need a surface of resistance. We need that which bounds and limits in sound and space, and in fact allows us to hear it. Much has been written of Odysseus, but the leather bag, of Aeolian vessels and harps, little is written about the leather bag, that which contains the sound. We have a sound installation constructed on a 9-square grid that is formed with the first referential point or point of navigation in your text and in your work. But what of the 9-square grid do we refer to the architectural tradition? Was this 9-square grid a faith of European numerological tradition? Does it refer to the ba-gua, to the five elements, to the feng-shui master may begin to analyze? And to look at the uniqueness of the combination of perhaps, indeterminacy, one that I find, if you will somewhat arbitrarily set in this room, and is there a spot or directionality for each of these speakers? I think at this point there is not. Perhaps, there should be. You brought a model of directional speakers. There is little to do with containers or limits of this space, but rather, your proximity to the origin of sound. Is that about the intimacy of conversation, if you and I might have over the table? The gathering of congregation in this room, which, I'm happy that you're in other than the normative condition of the critics in the front row facing the wall, talking to the wall, where everyone listens to the sound from there at the back of their heads. I'm trying to identify this fine edge of what might be architectural practice and compositional practice in terms of music and sound. Indeterminacy, here we have a performance of Bird Cage at soundaxis on the wall, certainly, comes out of John Cage in contemporary or in music, if can we use that label? It probably has a more mature set of actions or conditions out of art practice, at which the installation I can show you afterwards is not unlike the projection of light on the floor. It also goes back to the Eastern culture that first refers to indeterminacy. In fact, you refer to Bach, you refer to the art of fugue, and Bach, who is indeterminate in determining volume and timbre. Now in the reading of volume, it's quite simple condition, but timbre is not. What do we mean by colour, by texture? And also in certain musical text, you used the word - envelope - and I might change that to container, or where I started in my ramble about seven or six minutes ago on limits and boundaries, and in the necessity of a surface of resistance, which allows us to hear and as architects, allows us to compose. I will give you another option. I would concur with you that is implicit in your text, is the idea that aurality is...

inaudible

...this is said in the utmost respect and generosity for what I think you have been in a remarkable journey in this work. So can you turn to architecture for a moment, and the 9-square grid?

YB:

Isn't there another option?

everyone laughing

DL:

No, no that's true. I'll give you another option which is about indeterminacy. An indeterminacy which has been, it's far differently than in music or philosophy and

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physics. And there is a strange way which indeterminacy, difference in its definition by mathematicians and philosophers. There are certain critics who have linked them to the techniques of literary deconstruction. A deconstruction in literature, which was a failed exercise and tries to favor in the architectural discourse. So yes, I'll give you a choice. I would like you to give us and reveal your critical objective thought of the reason of synthesis of either the 9-square grid or indeterminacy. Here's your choice.

I'm not nice, but I'm generous.

everyone laughing

YB:

Hm. May I have a moment?

DL:

Yes

YB:

silence

Okay, I might have to meander my way through it.

I would like to explain the process of how I come to the 9-square.

At the very beginning, it was not a conscious connection to any of the references you gave. It was not a European numerology or ba-gua. The intent came out of a desire to think both visually and aurally. How to see or listen beyond a page? The 9-square came out of an investigation or conception of the page that is not just a page, which is an architectural way of thinking. When you draw a plan, you're projecting from that page into the world. I imagined how a page is normally filled; through left to right, up to down... The challenge was to not only come up with a plan or a strategy, to organize the text and the sound and the space, but to also somehow represent that sound is really about the spacing. I wanted to somehow separate a page - to give space between the texts - for the reader to read through it, or walk through the sound space.

And then at the same time, I'm not a linear thinker so I may need to circulate, and that was also the same time when out of that ideology, that sound exists in the spacing, and I want to create space by exploding the text so people can walk through the book - then translated into how text would be potentially heard. With squares... it's almost like a cross section of the sound part of the thesis. At the beginning of the thesis is a page of 1-2-3-4-5-6-7-8-9, and it was an organization to place my journal,

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a stream of consciousness, into this grid. Conceptually, not only is this representing what you're listening to within the space but also a way to almost visually, penetrate each page. When you listen to each audio track singularly, you are visually going through the book into one square at a time. And as with architecture, the challenge is to think about form that is not based in visual sense, that form can be legible but at the same time temporal.

DL:

The reading of text is a temporal act. It follows the necessity of the visual. But even when we read silently, we listen to our own voice.

inaudible

I will turn this to my colleague.

FT:

Yiu-Bun, I am humbled by this experience. I find it difficult to brief on it; I wish the way you approach sound space would continue.

inaudible

Do we need windows anymore?

silence

RJ whispering to Bob: Would you be able to turn the camera to the floor?

YB:

My first response would be, yes, we need windows. A window - that lets light in. But if I were to think of a window that lets sound in...then...

Is your question about whether we can live in a totality of sound space?

FT:

My question is...

RJ moving around

It wasn't about this place so much. You talk about the architect uses perspective as the acoustic engineer uses echo. To me, the architect is what the acoustic engineer is. This is not so much about the goal of the architecture, as what is the role of the architect - this whole performance posits. This, you have two poles; you have space, and there is no container. You know the space I'm talking about.

FT miming on the wall with his index finger, he draws 間 "space" and 間 "spacing"

YB:

Yes

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FT:

That's why when you talk about form - you talk about spacing and you use the word form; I wish you would use the word forming.

YB:

Hm. Sure.

FT:

As I come back to the question. I don't think there is an answer, as I say, I probably asked this because of a curiosity from myself, my own understanding of something to do with the distinction between the goal of architecture and the role of the architect.

YB:

Even in the way the thesis is organized, it is definitely not product-driven.

FT:

Right. But at the same time, during the performance and when I sat here you said to me, what were your expectations. And I said, I didn't know.

YB:

Yes and I said, great!

everyone laughing

FT:

And then we began to go on about the text. All of a sudden it struck me. When I came in here I was absolutely shocked...
I am shocked.

RJ:

I'm going to draw architecture.

RJ drawing on the floor a 2m by 0.5m planimetric drawing of St. Paul's

The only piece of your thesis that was vividly understandable was your caption, because it was not split up. Your visit to the St. Paul's, can you read it to us?

YB:

Sure, if I can find it.

RJ:

It's on page fifteen or something like that...

I'm trying to create a true plan of St. Paul's...

This is a little longer here than here. It's about the relationship of...something like that.

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YB:

Okay I'm going to read the short one.

RJ:

It's the one where you have the plan of it.

YB:

"In the distance, I hear the singing of the boy's choir. I maneuver my way from the aisle to the nave, and face the choir. In a fraction of a section, I realize I am moving through two different spaces, the visual and acoustic. Why do they not align?"

RJ:

Where were you?

RJ handing YB a chalk

YB:

I entered...

YB drawing a 1m long dotted line inside the sketch of St. Paul's, on the floor

...and I stopped...and I listened...and I stopped and I was shocked...and as I was walking down here, I was crying...the entire way.

DL:

Did you ever stop and sit, to listen to the choir?

YB:

I was standing.

RJ:

Where I see the issue here is that, it has to do some way with the thing here.

RJ pointing at the 9-square, the book projection on the wall

The 9-square of course contains the cross. When you come to early Christian texts, what you often get is that the Bible sometimes is written out in nine squares. But then, these texts are privileged right there. Yeah? Because in the text of the bible, we have the Annunciation of Christ. So what is the cross, because we are coming back here to the cross. Traditional interpretation of it, you see quite often in images of the crucified Christ, is that it has two major dimensions; one from bottom to top, which goes from earth to heaven, and it embraces the whole world - which is very different in the metaphysics of it.

RJ running into a speaker

Sorry.

REFLECTION

When you did this, you are basically in the visual world. The singing actually occurs here - in the choir. The directionality of the space is exactly opposite to the church. The choir sits like this, they face each other, and in this space, the directionality is one of width - and not of length or depth. I think that is the clash where architecturally, of the same, if you go to Byzantine architecture, where ultimately in the St. Marco in Venice is most famous because the compositions, by Gabrielian songs, was always done to understand the church with its width and not its depth. And this is what in English church architecture, is somewhat unrealized. The composition of the aural space, in the church, has a fundamentally different kind of direction than that of the visual space. What you tried to do was you bring them in one line, but it doesn't work, because still, our ears are going towards a lateral space, and it's not opening up in that direction.

So I would like you to now speculate on the design of the choir; is this the correct way to do it? Or if you were to design in any space, the space for a choir; would you turn it into a Byzantine way or do you think the whole argument is actually too abstract to be taken seriously?

everyone laughing

DL:

I wish I had the offer to answer.

YB:

Oh, feel free to.

everyone laughing

I will follow you.

everyone laughing

DL:

Would you like a few minutes to think?

Can I violate the rules, Professor Levitt?

AL:

No, it's up to you.

Go ahead if you want to, Yiu-Bun, if you want to speak or if you want to pause some more.

YB:

I would like to take some time.

DL:

Let me try to give you some minutes of pause.

REFLECTION

By the way Fred, I did say certain things to... I believe with your impression of the window, opening to a portal, is spot on. To return a moment to the cross, in the verticality of the relationship between heaven or earth, it is exemplified in the impression that light emanate from the grail, or does the grail capture the light of heaven's, which in fact goes back to the sixteenth century, which speaks of the notion of the all embedded, descends from heaven, is also the potential for equal.

But as we speak to the verticality... RJ spoke of the horizontality of the aurality. It comes to the origins of modern architecture, at the Villa Savoye, Rossi, rather, Corbusier makes a window - the plane on the terrace that is so wide, that embraces the horizon, fundamentally changes our relationship to architecture. I may argue that the place of architecture is the space of the horizon, and the window makes it all possible. It is the horizontal axis the motion sweeps. I too had similar experience at St. Paul's. Many years ago I happened to wander in. But I sat down, because the full choir wasn't there, just a small version. A three-voice choir, families were there, no one else. Sitting there, I was in another time, another place, I need not close my eyes or be in the dark, because, aurality was privileged sense, of both time and space. That speaks to the occupancy of architecture, rather than exploring form.

Does that give you time to think?

YB:

Yes.

everyone laughing

Unfortunately I'm not an expert on acoustics. It was just a completely different field and beyond my scope of research. But I will address this with my best ability; I apologize if I make some mistakes.

I think the characteristics of the way that sound is projected through the length and not width is that if someone is standing here and speaking in this direction, while the listeners are here, the first sound response you get is called - direct sound wave? It travels the fastest from the sound source to the receiver.

YB drawing two solid arrows pointing from the crossing to the nave, inside the St. Paul's sketch

And then you get a sense of the space through the reflected sound sources.

YB drawing four dotted arrows from the crossing, to either sides of the transept, and then to the nave

And so, when sound is projected through the width, more waves are going directly to the listeners. When it's projected the other way...

YB drawing a zigzag line between either sides of the choir

...it just enormously explodes the sense of distance, because you don't get much of the direct sound waves. And I think what I experienced there was just so big, the

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sound space was so big, that it was almost like this...

YB drawing a large bubble that encompasses the entire plan of St. Paul's on the floor

...and it was beautiful. It works very cleverly with the program, because it's so big that it makes you humble. You sit down, you sing, you listen, and you just feel that there is something so much bigger, than life.

inaudible

AL:

I have a question. Can you speak a little bit about the difference between sound and music, or a point at which things touch? And if there is a difference, what does that mean in terms of architecture?

YB:

silence

Am I allowed to take more time?
Is this already too long?

silence

everyone laughing

Okay, I know what that means.

DL:

Let me help you out again.

AL:

Wait, just, do you need help right now?

YB:

Sound is this

YB drawing a circle of 0.5m radius on the floor

...and music is this.

YB drawing a small bubble within the circle

I think music is sound. And how this bubble is determined... one thing is by culture. When you play Western culture music to a non-Western audience would know

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absolutely nothing about it. This is partly because music is a prescribed thing with concepts or practices behind the sound, which makes the bubble. John Cage and experimental music started to blur this, and he said you know what, it's not going to be prescribed, so mysteriously anymore.

YB drawing a squiggly line that superimposes the outline of the bubble

The scores are going to be descriptive.

YB drawing an arrow pointing from the bubble to a letter-sized square, named descriptive

In traditional Western music, we get the score without instructions for non-musicians. But with the descriptive practice, they put, they had an operational sheet, which opens it up for anyone to practice and experience.

AL:

Can I ask you a question based on this diagram, where is human speech?

FT:

Good luck.

YB:

I would use a transparency sheet, and drop it.

AL:

Okay round two.

DL:

A moment of silence, is the most articulate speech, one way or another. But with John Cage, I would say between music and sound, suffice to think contemporary or new music seems to actually expand beyond your sound bubble. Where we speak of indeterminacy and your references in your text are much more about Merce Cunningham, because Cunningham is much more about the individuality of human experience. Perhaps not the necessity of the instruction that dates back to art practice, of the flux movement or perhaps earlier, but Cunningham is to my mind, profoundly architectural. Architectural, in something close to my own interest of subjects in architecture, performing arts, and fine arts. So now can you turn to Fred's distinction of forming rather than form, because Cunningham speaks to the indeterminacies, or the chance encounters in the occupancy and tenancy of space, in physical space. I think that might be the crux of the thesis, and you may have to step beyond. There is a normalcy of your grid which I think is problematic. I think the work is stronger than the 9-square grid allows it to be. Perhaps its okay you discovered in the difficulty of multiple readings of text, because in fact, it is quite normatively formatted once you follow your sequence. But the extraordinary thing about Cage's stories or Cunningham's notation and their extraordinary partnership... how does one in fact make notation that is either prescriptive or instructive. It identifies the territory ie, the opportunities of architecture.

REFLECTION

The question then resides, in Cunningham or chance of performance, how does that figure in your work?

YB:

What do you mean by figure?
I used to see it as a very visual word...

DL:

Why don't you start with that, I see it as a very visual word? It goes back to...
How many of you hear a concert: "I saw a performance."
I like you to stand on your work, as a critique of your own work.

YB:

The text documents a very personal journey going from the first term of masters to about now. The first and second audio tracks on the CD, if you listen to them or read the book, I struggled, for a very long time to learn to speak about, work with, and think about sound in a spatial dimension.
I wanted to get a new perspective on space...

FT hissing

...and I didn't even realize that I was so programmed to think about space in visual terms, and...

DL:

And yet you return to the visual. You come back...there are couple other things here. Reference to Janet Cardiff, Forty-part motet, it's temporal and aural, I will argue it is a-spatial. You also refer to a number of twelve-channel sounds; Bird Cage, Leitner's work with that, even with locally, Murray Schafer, acoustic ecology with Nigel Frayne, you do mention Darren Copeland.

And they all talk about spatialization of sound. I want your critical take on...

YB:

The spatialization of sound?

DL:

...rather than visualization. And you immediately return to the visual.

YB:

May I ask how I immediately return to the visual?

DL:

What you said, I see.

FT:

You used the word perspective.

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YB:

Yes, when I started...
Oh.

FT:

That's why I hissed.

YB:

Yes, I was quoting myself from the first and second squares, before I was interrupted.

AL:

That's when you were lost.

everyone laughing

YB:

Yes, exactly. I could expand on it.
The spatialization thing is that... there's an entry in the text where I talk about this conflict between visual and acoustical. I felt I had to take a position. I remember growing up and going to piano concerts, I always had a huge problem with placing my eyes. They were just everywhere, I didn't feel comfortable with them. And I think because of the concert hall tradition, you are always visually separated. They are there, and you are here. And so visually, you are territorialized, but not through sound space. You are still part of that space as much as someone sitting in the first row. The spatialization of sound is a way to erase that boundary, to be more conscious about relating your body with the sound - that you are part of one space.

DL:

Do you have any examples? Do you know of architectures that may have in some way addressed or accomplished that which you see?

YB:

Well, yes, it is starting to show. I guess I will quickly address this: in the spatial configuration of concert halls. I see more and more that, if this is the stage, usually audience is over there, but with contemporary concert hall designs, they are usually much more spread out now. The stage is not so much pushed to the back, but to the front.

DL:

What about Renzo Piano's design of il Prometeo, where the performers are in a temporary installation like an ark. The audience is in fact at the centre surrounded by performers. Xenakis in his original stage of Oresteia does the same thing, or?

RJ:

Can I jump in on this one? I have a question for you.

You know what happens when I am in a concert?

REFLECTION

RJ walking over

And it's really beautiful?

RJ holding YB's hand

I close my eyes and I touch. That is what happens when music really touches me.

DL:

That's another reference from his text: "Touch the sound".

RJ:

Touch; every year I do the Holocaust. I'm going to draw the plan of a place; I will draw over this one. Ending up in a wooden barrack in the middle of nowhere... right there.

RJ drawing a rectangle of 2m by 0.5m on the floor, outlining the longitudinal axis of the nave, crossing, and choir of St. Paul's

Right, forty metres.

everyone laughing

Now I have a problem. Everyone knows exactly what to expect, because everyone's seen the pictures. My problem is how do I get people to be touched, to de-program them from seeing ten-thousand pictures of this place? How do I get them to look at this place, quote unquote, fresh eyes, gaining a new perspective? So what I do, and this is a follow up to your last question. I go to it in the middle of the night, to Auschwitz in the middle of the night, and I go through the back entrance - means it doesn't look like the big gate. Crawl under the barb wire, there is a place where I know you can go under, and we enter the barrack like this. The wooden barrack, the big door, what happens is that I open the door, and it is completely dark. And I take them into the barrack at night. I wanted in some way to be able to listen to the place. And the only way I have ever been able to teach myself to listen to a place is to do the following thing. Because it is completely dark, because there is an obstacle in the centre, which is the heating ducts with two little chimneys, we need to have a guide. So what I do is I go in here, I open the door, and then the only choice I have is to go sideway in, and I ask Duncan to take a second person, with thirty or forty people, and we go in like this, into a place like that,

RJ holding Duncan's hand and stepping on the 2m by 0.5m rectangle

Until we fill up the whole barrack, until we touch the other person. And then we sit down. And I ask them to remain, and be hand in hand, while we sit down, and then listen to silence. So I don't exactly know why is it, that we can only hear the silence in this space, when we've turned our bodies laterally, when you actually engage that sense of touch. Which I think is essential in the understanding, ultimately, of being touched by sound.

REFLECTION

YB:

Acoustically, if you were to sit like this...

YB squatting on the 2m by 0.5m rectangle, facing in the long axis

...you would hear, even if you make the slightest sound, it would bounce off the short dimension and come right back to your ears. And that's why when you do this...

YB still squatting, pivoting to the short axis

...the sounds disperse, at least dynamically a couple times softer. It seems logical that you would only be able to get to a relative notion of silence when you face the short axis, in which your ears rest next to your neighbors, further dampening sounds. And also in regards to touch, through the research journey of this thesis, I first looked at haptics through Juhani Pallasmaa, and from him I jumped to Alois Riegl, and he had a prominent theory about haptic vision and optic vision. And for him, there is a distinction between looking at something and sink into it, or scan it. And I didn't know how this is true in sound. So about six months later, while I was doing research in Melbourne for one of my installations, I conducted sound survey maps. It was in a laneway, kind of like this drawing actually, and I would just stand there for weeks. I had my own schedule where I would walk there, stand for half an hour at a time, and then go back to school. For weeks, I would draw and draw with my eyes closed. Through doing that exercise, I realize that sound is incredibly haptic. That even with my eyes closed, I could feel and sense that through listening, someone is walking towards me as if I could feel that person.

DL:

Well Yiu-Bun, absolutely, you refer to Evelyn Glennie...which...

YB:

Yes, ok so here is the distinction between reading about an idea and actually sensing or feeling it. And I think that's why I talk about Merce Cunningham, because in one of our conversations, he emphasized that sensing has the remarkable potential to stick with you. And especially working with sound, you have to listen to it, you have to hear it.

DL:

Can I break rules again?

AL:

Fred, do you need to say anything?

FT:

Yes. I want to ask RJ something which will lead to my question: Do you remember the smell?

REFLECTION

RJ:

Less so, the smell is... not very often, but the thing I remember is the breathing, and relationship of the silence of the place. Because that is a surprise - smell is not a surprise.

But sound is a surprise.

FT:

That's my question.

You say on page fifty-nine, of an intention of restoring the richness of space. What destroyed that richness?

At the same time I want to take a chalk.

everyone laughing

FT drawing many strokes on the floor in two groups, 聰明 "wisdom", and then pushing into a fishing line

AL:

Watch your feet, Fred.

FT stretching more fishing lines

FT:

Is that alright, Sue?

YB:

Save the ipod!

everyone laughing

SUE:

Yeah that's alright. That stroke is more that way.

FT:

Okay?

YB:

The first part to that is the awareness or the consciousness to, listening in space. I think the richness was not to its full potential in the past was simply because we were not listening. And, Murray Schafer has responded to this with his notion of soundscape, listening to the environment, the sonic environment. And another part would be a lack of way of working with the sound qualities of space.

inaudible

FT:

In the Oxford English dictionary, it defines wisdom as "soundness of judgment", not

REFLECTION

sightness of judgment. Somewhere along the past, things have changed. I think a lead is from this part:

FT pointing to the bottom part of 聽 on the floor, 心

YB:

The heart.

DL:

Of course this is...

FT:

Sorry.

I don't know what this part means. This is sun. But does anyone know what this means?

FT looking at Sue

SUE:

I don't think that's a word.

FT:

Listening is soundness. Something has changed and I don't know what it is, but that's the question you will be asking in the future.

YB:

I think the connection is resonance.

FT:

But at the same time, you need to connect it with sight.

FT pointing at characters

YB:

Yes

FT:

See that's when I think you started talking about your conflict, to you, between seeing and hearing is that conflict that doesn't necessarily have to be a conflict. The balance is off. That's why I asked RJ about smell, and he said he couldn't remember but then he goes into all the tar, to see who's there. It's not just sight and sound, but it's the balance. Rational means balance. It's not one thing, but it cuts across a wider context. We have an especially difficulty because we have to visualize space. Seeing is believing.

DL:

Hearing is believing.

REFLECTION

AL:

Why is hearing believing, why can't seeing be believing?

FT:

You can. My point is rational is the ratio. And Yiu-Bun talks about it as we talk about the meaning of a conflict.

RJ:

Still, when Thomas goes to Christ after his resurrection, Christ asked him to touch.

FT:

It's not one or the other, but all.

DL:

But hearing is a physical act, and seeing is not. Again, I refer to Evelyn Glennie: "Touching the Sound." Which is why...

FT:

I would dispute that, especially when we're talking to each other.

DL:

But you said talking.

FT:

When we're talking to each other, it's the eye to eye. You don't talk with your mouths but talk with your eyes.

DL:

Aurality tactility, visual tactility, or physical tactility...

FT:

Tactility can be the matter of spacing, but it doesn't have to be the connection.

DL:

Agree, which is soundness.

AL:

I would like to donate my question to everyone in the room, and would like to open up the conversation now so people can participate who have been waiting for some time now. Because we've seen an unconventional presentation and could extend the conversation. Are there any comments, questions?

Silences?

GUEST 1:

I think my question is: What did you hear in your own space? What did you perceive?

REFLECTION

YB:

I heard my thesis.

everyone laughing

I heard my thesis. I was able to exercise my listening as a way to navigate the designed space, and with my physical position... with control, I was moving through the space of sound. The difference spaces of sound.

silence

Are you all tired?

GUEST 2:

The installation, was it your personal expression of what you want to achieve? How did you interpret for somebody who doesn't know anything about your thesis to experience the installation? Was this what you were telling people? Or what you think other people should experience?

YB:

Oh no, there is absolutely no preconceptions. Part of the operation is by chance, if I wanted to stage this, I could have. It's really not about me. It's very little about me.

GUEST 2:

So how do you think somebody like me, I didn't know anything about your thesis. What would you think I would experience?

YB:

I don't know. It doesn't matter. It's what you can pick up.

GUEST 2:

What are your hopes then?

DL:

Maybe the question is what are your experiences, to the people who came and didn't know anything about this?

GUEST 2:

My first reaction was confusion, to be honest. So, it took quite a while for me to kind of interpret the space, and kind of, become part of it, not understanding what the sound was about, why the different volumes and the spatial relationship of the sound in the space. I mean, you kind of have to interpret that, and by the end of it, you only start to get inkling what it's all about. For you, you were very intimate with it, so you had an understanding of why you did it. But for someone who just walks into the space by chance, it was confusing experience.

REFLECTION

YB:

I suspect, back to our conversations, that it has to do with our visual bias. That suddenly when you're in a space of sound you don't know what to do.

GUEST 2:

Exactly, I was wondering what your interpretations were.

YB:

It's hard to compose something, stage it and expect it to get the exact same reactions. It's not something that I intended to do.

AL:

Are there any other comments?

GUEST 3:

I have a question following GUEST 1, what kind of character made you feel the way you felt there? Can you name the factors of the sounds that you hear? Can you measure them? Can you detect them? We as architects want to reach the depth, and to create this kind of sound spaces. Shouldn't they be measurable or detectable? Are there measurable elements?

YB:

Measuring what? Psychoacoustics?

GUEST 3:

The factors, that you received. That only in that space you felt that.

silence

YB:

It's very difficult to work with sound, because it is temporal, you make it and it's gone. And not until recently that we are able to, quoting my consultants, record all of this, in the similar fashion that we listen to it all. In a way, it's not how I addressed it. It wasn't in my intention to map out these physical properties. My personal take from the beginning was to try and understand what it is like to listen in space, or understand how it is that we are able to think about it in a temporal-spatial construct.

GUEST 4:

I was curious, when you are talking about sound as temporary, right now; this is a completely different experience, when the sound is turned off. Is it true that if that church designs were based on choirs, and when the choirs are not there, then there is a missing element there in the experience, in architecture? And I was wondering, when it comes to designing a space where a sound is incorporated into it, how do you pull off that aspect? Because visual is permanence, it stays there and I feel that sound is a relic, you are always trying to hold on to it like a memory or something, and even when you're hearing it, it's like a note going away. You are always trying to grab something; you are never actually containing it.

REFLECTION

YB:

Well you can't. You can design in a way so that you can encourage a certain sonic pattern to occur. But you can't hold on to it. hm...

DL:

Do you dream with sound or in vision?

YB:

Well, in my text, I mentioned that symbols come across as mostly visual.

DL:

See I'm not a musician but I dream with sound, often.

YB:

That's great!

everyone laughing

GUEST 5:

I have a question about the combination of the senses and experience. In your installation, are you trying to elevate sounds so that it is something almost pure, so that we are not experiencing the rest? Turning off the lights, we are trying to dim the visual effects of the experience? And with RJ, he was mentioning holding hands, is that to sort of elevate the experience of touch in order to bring you out from being into yourself, into your surrounding environment, so you experience something deeper? So would the turning off the lights then raise sound? Are you trying to dim one of the senses so the others are heightened?

YB:

Yes

GUEST 5:

Is it in your installation that is about the sound needs to be pure? When you turn off the lights, people started talking so they bring something else to it. So is it about the combination of the senses or just the sound that we are hearing?

YB:

It is a bit about both. The focus of the thesis is on sound, so naturally, it is about sound. My approach to the way that we listen is partly due to the way we're conditioned to perceiving space, primarily through sight. I've done some sound walks, and usually the first instructions are to keep your eyes at forty-five degree down to the ground, to dampen the visual stimulations. This installation was conducted in the darkness because it's a response to how we are visually predisposed.

GUEST 6:

I'm not an architect but as a musician, someone who knows a little about sound and acoustic ecology. The installation, I felt I wanted to experience it individually. I

REFLECTION

walked around and with my eyes closed, and I felt a very different sensation as to where I was. As I was moving around, the walls were at different places, the floors and ceilings too, and so that was the first time when I listened to it. And then when that was changed, when you created the second piece, I was in a different space. That was something that hasn't been talked about yet, which I was surprised - this being an architectural project, about space and sensations, of where the walls are. With people talking, they were looking for something different. A lot of the people were talking: what is this, what is that, looking at things. I wasn't here anymore; I was somewhere else. This is not really a question; it is just my impression of this without an architecture background. I have done lots of sound walks blinded, where you have different sense of where you are. What is the sound, where is it coming from? So that wind is not wind, it becomes something else. I really felt I want to do it alone.

YB:
Well, you're very welcome to.

everyone laughing

GUEST 6:
I want to take a long time.
That's just my impression.

DL:
Can I continue to misbehave?

AL:
Pardon?

DL:
Can I continue to misbehave and say, maybe one final thing?

AL:
Sure, I think after this comment, we'll have to...

DL:
I want to say, thank you.
It was a pleasure to listen.

inaudible

YB:
Thank you.

applause

FT:
That was not the sounds we came for.

REFLECTION

AL:

So now we are going to discuss the work, follow up with Yiu-Bun and then we will come and discuss the results.

everyone exiting

GUEST 7:

Congratulations Yiu-Bun. I have a question for you but wanted to ask you personally.

YB:

Please.

GUEST 7:

During the entire question period, I was sketching and sketching. Your notations show nine squares, but in the installation space, the 9-square become nine points in space. In fact, there are only four squares of spaces here, not nine.

YB:

Good question. I think that when you sketch, you are drawing a representation of the visual armature of sound space. That is a visual representation once removed from the notation, which is an aural representation of space. I am a bit surprised about this, but the discrepancy may indicate an example of the void between visual and sound space.

I mentioned in my first answer that by separating a page of texts into nine sections, sound can be visually demonstrated as the spacing in architecture. On a white piece of paper, a planimetric drawing of a square-shaped room of four walls and a singer standing in it, would look like four black lines that wrap around a white square, a figure and ground relationship. The outline of the singer, most likely a dot, would be in the middle of the white square. The black lines are the visual container of walls, and so where is the sound? The sound is probably everywhere within the white square, but it is also affected by the four lines. So, the spacing between the four black lines is interdependent with that which is visually contained.

Relating this example to the textual notation in the book, the 9-square is a representation of the sound space and not the visual one. If you look closely, the squares are filled with words and not drawn in solid lines. The impression of outlines is created by the silhouettes of the texts. So where are the four visual squares (in this armature space) shown on the textual notation then? Well, let's

REFLECTION

bring back the inverse relationship of visual container and spacing. If the 9-square is the sound space, then the in-between relationships of the squares must be the visual containers. In the example of the square-shaped room, it makes me think that a line is not an isolated entity, but it is sandwiched between the whites. In the real world, I see a wall as an entity but less visible are the spaces into which it divides, on both sides of it. As a result, the visual space must be an in-between condition of the 9-square, which are actually the four intersecting, un-filled strips that look like a pound sign (#). The intersections create four points, which I would argue are the four squares in the installation space here.

If you are still not convinced, let me remind you of your question about why the 9-square are only dots in this armature space...

There are actually two different but related inverse relationships at work here, between visual container and spacing, and between the sound notation of 9-square and its visual realization of nine dots here. If you can accept that the discrepancy is simply the gap between representation and the real sound space, that nine squares on the page will be nine dots in the space, then would this not justify the four intersecting dots of (#) as four squares in the installation space here?

The 9-square form is built around a sonic experience, the sound space. Try not to think of it as a visual representation of the space, but think of space aurally and imagine how sound may fill a room.

silence

Okay, let me try to explain this in visual terms...

Think of this discrepancy as a question of scale. The operations in the book do not dictate the spacing between speakers, which is left for the user to decide. Now imagine that each of the nine squares is say, the nine speaker boxes. If you place all of them right up against each other in a 9-square grid, you would get the same image as the 9-square notation.

So how can you walk around it now? You need to spatialize the sound for experience. The farther you pull apart the nine speakers, the more the squares then become dots.

GUEST 7:

Oh, I can visualize that.

Okay, can you then please point to me where the columns of light are placed in the 9-square grid of your book?

silence

YB:

Do you still remember the singer in the square-shaped room with four walls?

REFLECTION

GUEST 7:

Yes, in your example of the hypothetical drawing?

YB:

Exactly, there are nine of them here.

FACING PAGE: According to Murray Schafer (Soundscape, 1994), the four characteristics of sound on humans are acoustics; psychoacoustics; semantics; and aesthetics. These four classifications are made in an attempt to understand how and why people react differently to sounds, and to what extent are the differences culturally or individually based.

SOUND CONTEXTS

ACOUSTICS

Shafer: *What the sound is*

What are the physical structures of sound?

Interests the physicist and engineer

e.g. The sound of a car horn is a steady-state; reiterative; predominant frequency of 512 hertz and 90 decibels.

In its true sense, anything pertaining to the sense of hearing, but, as commonly used, firstly, the branch of physics concerned with the properties, production, and transmission of sound; and secondly, the quality of a building as regards its suitability for the clear hearing of speech or music. (OMO, acoustics)

PSYCHOACOUSTICS

Shafer: *How the sound is perceived*

What do I hear?

Interests the physiologist and psychologist

e.g. The sound of a car horn is shocking and very loud.

Psychoacoustics is concerned with the relationship between the physical characteristics of sound (e.g. intensity, physical location in space) and what is actually perceived by the listener (e.g. loudness, perceived position in space). It is also concerned with the ability to discriminate between different sounds. (OMO, hearing and psychoacoustics)

SEMANTICS

Shafer: *What the sound means*

What is the message of sound?

Interests the linguist and communicator

e.g. The sound of a car horn means "get out of my way!" or "I've just been married!"

Semantics is concerned with the content in sound and what it conveys to listeners.

AESTHETICS

Shafer: *If the sound appeals*

What are the contrasting ideals of sound?

Interests the poet and composer

e.g. The sound of a car horn is annoying and unpleasant, or festive and exciting.

Aesthetics is the ideals of sound that is defined collectively (by culture) or individually (by subjectivity). It is concerned with the contrast of beautiful and ugly, pleasing and displeasing sounds.

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NOTES

John Cage: Electronic Music for Piano, 1965

Electronic Music for Piano ¹⁹⁶⁵ by John Cage → worked extensively w/ pianist David Tudor
 - score = a complete written A4 (on stockholm hotel paper) descriptive (of post creation) dancer ⊕ Merce Cunningham
 - references: (notes) 1. music for piano 4-84 (another piece) / or other ♯?
 2. K.M.P (Keyboard, muted,) - timbre changes
 3. amplified + varied ^{electro-} pianos (real-time) 2 ♯ — record + played
 4. "Observation" imperfections on paper → music for piano ¹⁻¹⁹ produced/notated from imperfections on pieces of paper
 5. star charts on staves
 6. contact mic. to record + manipulation of sounds → Atlas Elypticalis ¹⁹⁶¹⁻²
 Etudes Australes ¹⁹⁷⁴⁻⁵
 star charts on music staves, w/1-chng (how many stars used)

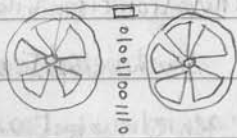
* sig: the making of "your" own score.

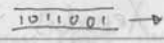



Instruction	A	Variation	A	① look @ repetition
	A'	Repetition		② # of distinctive elements
	2	2		(words) ^v New/Repetition/Variation x 3
	3	3	(numb.) 2/3 x 2	
	A''	Variation	A _n	3. A = {a, 2(a _n), 3(a _{n+1})}
	2	2		as mathematic formula
	B	New		

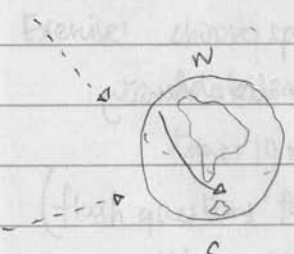
thematic
 sig. deriving structure from words;
 then assign meaning to symbols (A, 2...)
 = transformation of sounds through piece ^{time}

NOTES

Karlheinz Stockhausen: Hymnen, 1967

Hymnen: Stockhausen 133 min. 

- for 4 tapes, using all national regions (world divided into 4 regions)
- 1945-8 magnetic tape invented
- ∴ rise of electronic studios — in radio stations
- made in VDR in Germany, Cologne (W. Germ. Radio) became head of studio for 10 years.
- tape compositional technique
 - recording: real sounds or oscillators (sine...)
 - editing: cutting and pasting tape.
 - Scale: stuck, #cm = time
 - channels: 1 = mono  →
 - 2 = stereo  →
 - 4  →  (after cutting, editing)
- idea of piece: Hymnen (1967-68)
 - as if listening to anthems as one flies around world.
 - use of short wave radio
 - travel very far b/c wave is v. small/short, not susceptible to interference/absorption (from bldgs, materials...)
 - can pick up constellation-reflected waves

Sw-radio 

∗- way of connecting w/ world

- to greater part of universe
- ∗ spirituality + intuitive music
- accepting creative ideas are often unknown to composer

NOTES

Karlheinz Stockhausen: Kontakte, 1959-60

4'33" (1952)^{US} Europe → 2 most influential new music

Kontakte (1959-60) by Stockhausen (35 min)
 ↓ www.stockhausen.org

1959 - 4 channel tape
 1960 - added instruments (piano, percussionists...)

- he broke away from contemporaries, by incorporating tape + electronic music.
- Kontakte (German): contact, instrumentalists "synchronizing" w/ tape.
- body of sounds merging to form 1
- percussion as continuum b/t pitch + noise

skin
metal
wood

pitch
pure frequency

noise
lots of overtones e.g. tam tam

recognizing sound events

easier harder

- dialogue of pitch-noise continuum b/t tape + instrumentalists
- Organization/composition:
 - moment form: 16 sections, each depicting a motive
 - contact
 - serial composition: organizing material in a piece to be used.
 - ↓ can make entire piece a series + relationship
 - ↓ e.g. durations, dynamics, register, rhythmic intervals
 - hexachords (6-note scale)

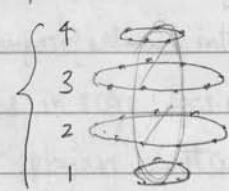
[# as scales] parameters	1 4 3 5 2 6	ie. the DNA of piece. * one can serialize pitch (from tone → #, to generate more tone)
	4 1 6 2 5 3	
	3 6 5 1 4 2	
	5 2 1 3 6 4	
	2 5 4 6 3 1	
	6 3 2 4 1 5	

NOTES

Karlheinz Stockhausen: Pole für 2, 1970

Pole für 2 (1970) by Stockhausen (b. 1928-)

- used vibrations in short wave radio (⊂ electronic music/sound)
- wrote for Osaka World fair; built pavilion for this piece
- Pole: idea of opposites, 2 extremes
- amplifying instrument sounds + projecting sound spatially
- speaker structure / sound projecting route

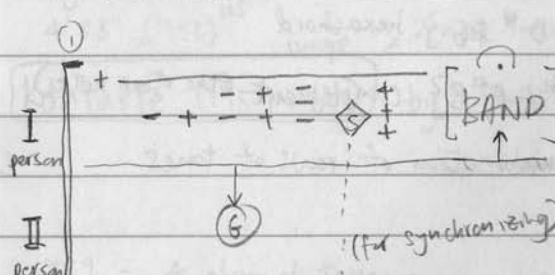


- prescriptive score (all details)
 - ⊂ symbols for "transformation in sound"
 - ⊂ for sound projectionist

parameters in sound

- duration
- dynamics
- register
- segmentation (rhythm)

1st bar in score



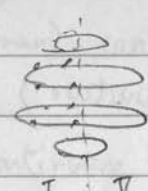
assign 1 parameter to symbol

each one is an event.

⊂ duration
⊂ dynamics
⊂ register
⊂ segmentation

∴ transformation @ each o.

sd projectionist [articulating sound in space]



spatial

⊂ + high in space
⊂ - low


def'n of instruments (⊂ + interaction w. sound)

NOTES

John Cage: Ryoanji, 1983

John Cage: Ryoanji 1983

- music translation of garden. → extra-musical.
- programmatic: narrative of garden.
- music is self-referential; its how we react to the sounds.
- * - garden is in Kyoto, @ temple called Ryoan-ji in 16th c.
(temple for dragon)
- ↳ karesansui: dry garden.
- 山, 水 (suggestive/metaphorical landscape)



15 rocks

5, 2, 3, 2, 3

Japanese prefer
odd #'s; numerology

rocks + raked gravel.

- inspired Cage after his visit.

Score - used 15 rocks in ^{musical} graphic notation

- ① traced outline of rocks + assigned pitches
- used I-Ching (64 hexagrams)
to generate random numbers 0-64 from his questions
- to compose without intent, relinquishing the ego
- pages in score does not suggest order of playing,
of players, etc.
- ② - gravel translates to rhythmic/percussion score
- Cage likes to compose by remaining himself; by chance.

glissando (i, pl)
(continuous melodic pitch)

e.g. - how many glissandi in first path?
e.g. starting/ending pitches?

he took to Europe in 1950's. } Berio
aleatoric music } Boulez
Stockhausen

NOTES

Karlheinz Stockhausen: Refrain, 1959

Stockhausen Refrain 1959

Refrain (mus.) means to reiterate
e.g. - pop music structure
intro - verse - chorus - verse - chorus - bridge - outro

Form - Binary (2 parts)

A — B c as refrain

fixed trills

[Refrain] is moveable throughout piece, but fixed d bit (A+B)

Piano celeste } Non Theatre.
Percussion } vocalizations
 } theatrics.

dynamics are symbols from the notes (notation)
7 diff. sizes

later used in opera cycles.

NOTES

John Cage: Variations II, 1961

Variations II john cage. info

6 lines
5 dots
from transparency.

parameters in music

str. structure: how many things per event
p. oc: point of occurrence
timb timbre: tone colour; quality of sound
d duration: how long of event
amp amplitude: loud, soft
f frequency: high, low pitch

lots are events
draw I from dots to lines

1] $E_1 = 10''$ (from assigned to e.g. 30
6 more #'s

2] substitute found numbers into parameters for "map"

E_1 :
d = 16
f = 50
timb = 25
amp = 12
p of oc = 40
str = 9

3] E_1 is defined @ 10'' 9 dots \rightarrow struc.

* use data to define parameters.

- Cage + interpenetration.

overlapping / layering of events

NOTES

John Cage: Variations III, 1964

listening = sound unfamiliar :- present

contemporary music - structured? - episodic
- programmed

John Cage = Variations III

1964

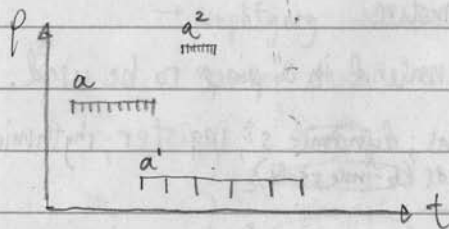
[sampled from Björk's Frostic; album Versperitio]

- structured loosely A - [B] - A
- coined "indeterminate" = fixed scores hinder creative instincts and spontaneity. (50's -)
- spatial layout in notation from musical time to real time
ie. the page is the musical space; no prescribed order.
- ≠ traditional staff + notes = symbols denoting specific note + time + int.
- how to represent time?

fixed object
obsolete
→ performers
as composer
PROCESS

in music = sound unfolds in time

- indeterminacy / chance / simultaneity musostic word poetry



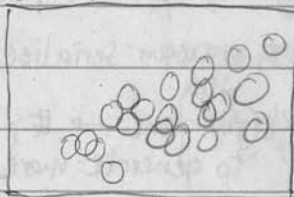
a - sample of Frostic

a' - augmented + lower pitch

a² - diminution + higher pitch

} manipulated through
sampling
filtering

→ SCORE



42 circles cut
throw + print
from copier.

→ can be translated for music/film/design
process: count # of intersecting circles
e.g. 3 1 2 3 5, then assign
meaning to numbers. (parameters)

The temple bells stop

but the sound keeps coming

out of the flowers

Matsuo Bashō