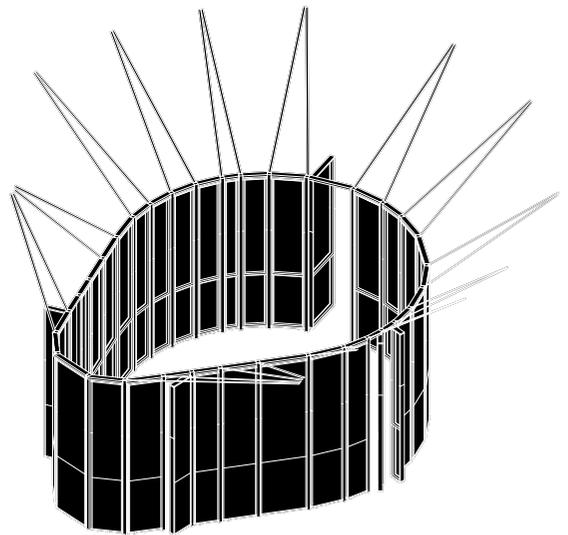


THOMAS  
TSANG

SOUNDING  
ARCHITECTURE



DESIGN FOLIO  
FACULTY OF  
ARCHITECTURE  
UNIVERSITY OF  
HONG KONG

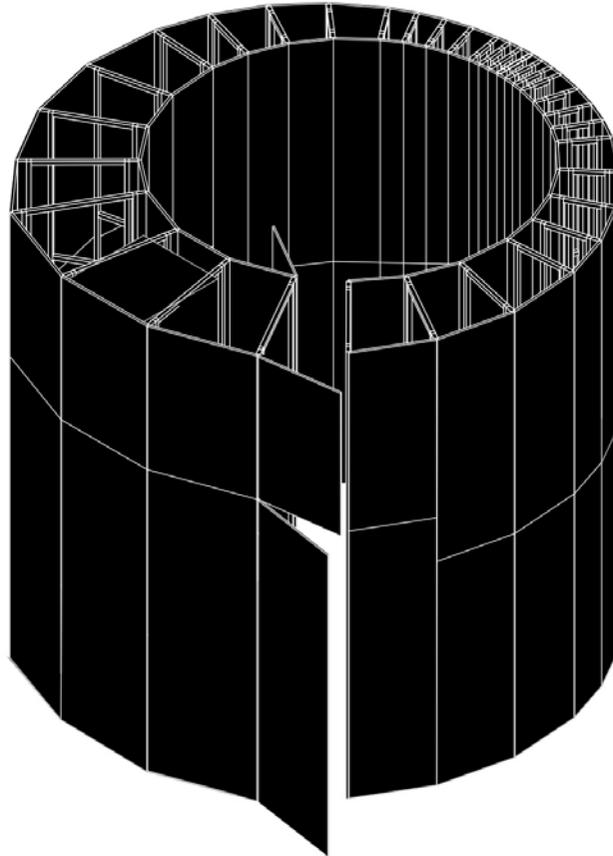
# Content

4	Project Details
12	Summary of the Work and its Significance, Originality, and Rigor
19	Originality
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26	Significance
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# SOUNDING ARCHITECTURE

7th Shenzhen and Hong Kong  
Bi-City Biennale of Urbanism/Architecture

DEHOW PROJECTS [www.dehow.com](http://www.dehow.com)



Height : 4000 mm  
Diameter : 4000 mm

---

*Sounding Architecture:*

**Sounding Architecture is an installation and performance of architecture and music inform each other in surprising ways, challenging disciplinary notions of tradition and experimentation, expanding the boundaries of both practices.**

## Project Details

### Author

Thomas Tsang

### Title

Sounding Architecture

### Output

Design

### Function

Architectural Sound Installation

### Location

Shenzhen and Hong Kong

### Exhibition Title

A Room with 33 Doors; A Room with 33 Tables

### Venue

UABB Biennale and

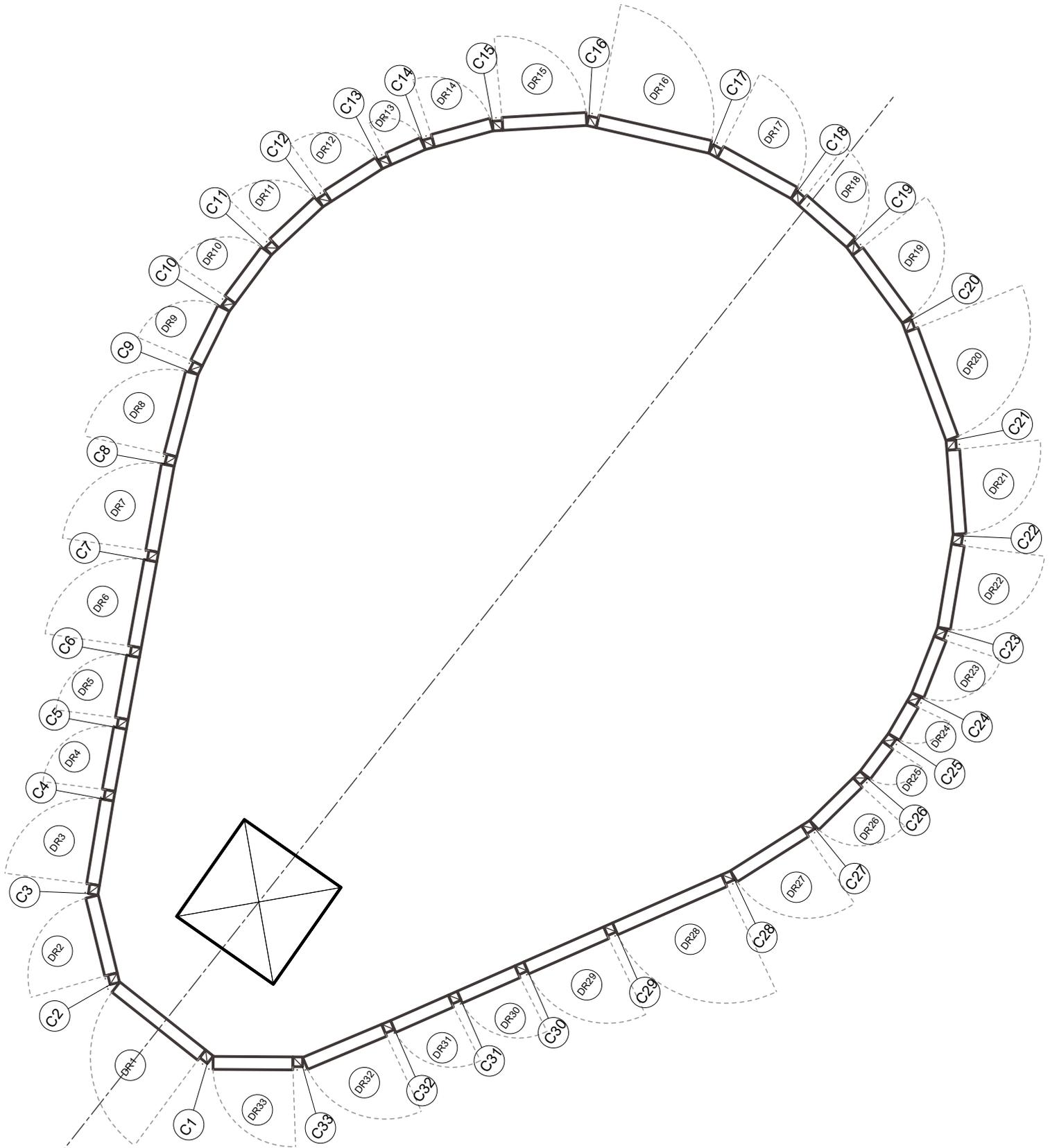
University of Hong Kong Loke Yew Hall

### Dates of installation

2017-18



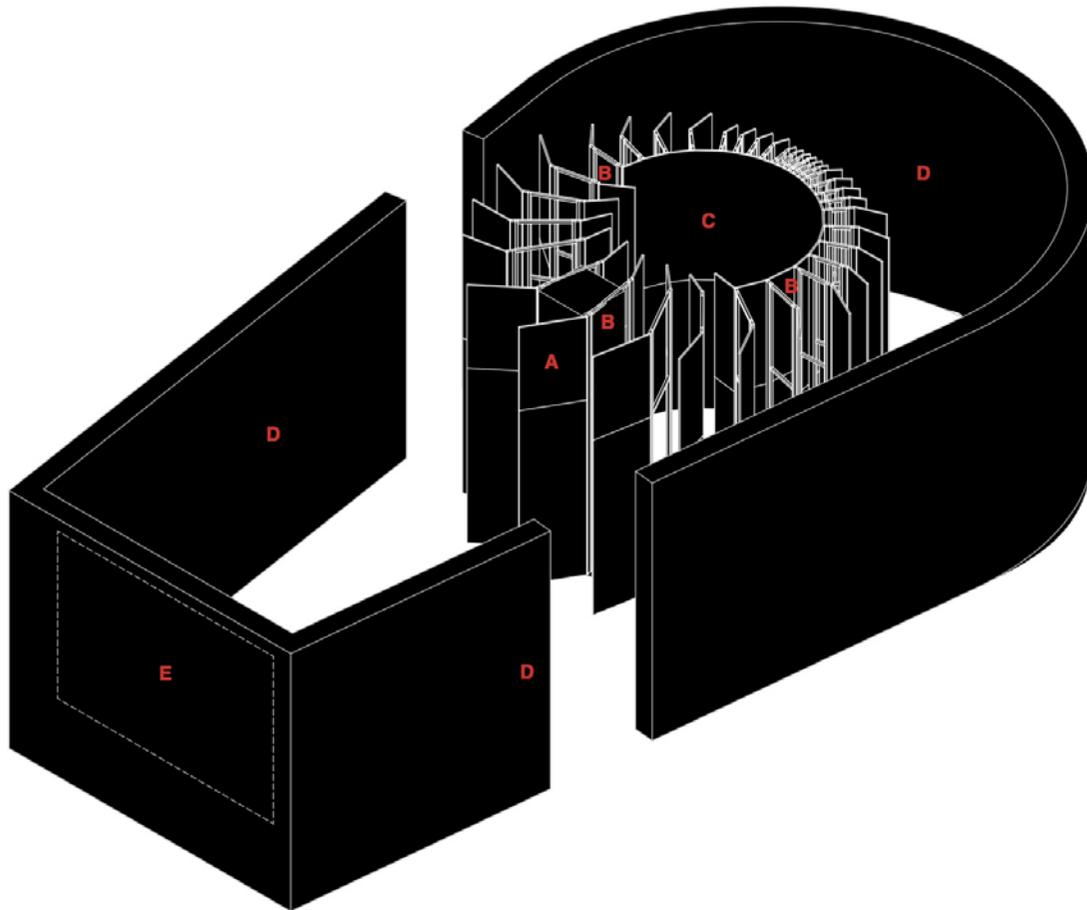
<sup>1</sup> Exterior View



# SOUNDING ARCHITECTURE

7th Shenzhen and Hong Kong  
Bi-City Biennale of Urbanism/Architecture

DEHOW PROJECTS [www.dehow.com](http://www.dehow.com)



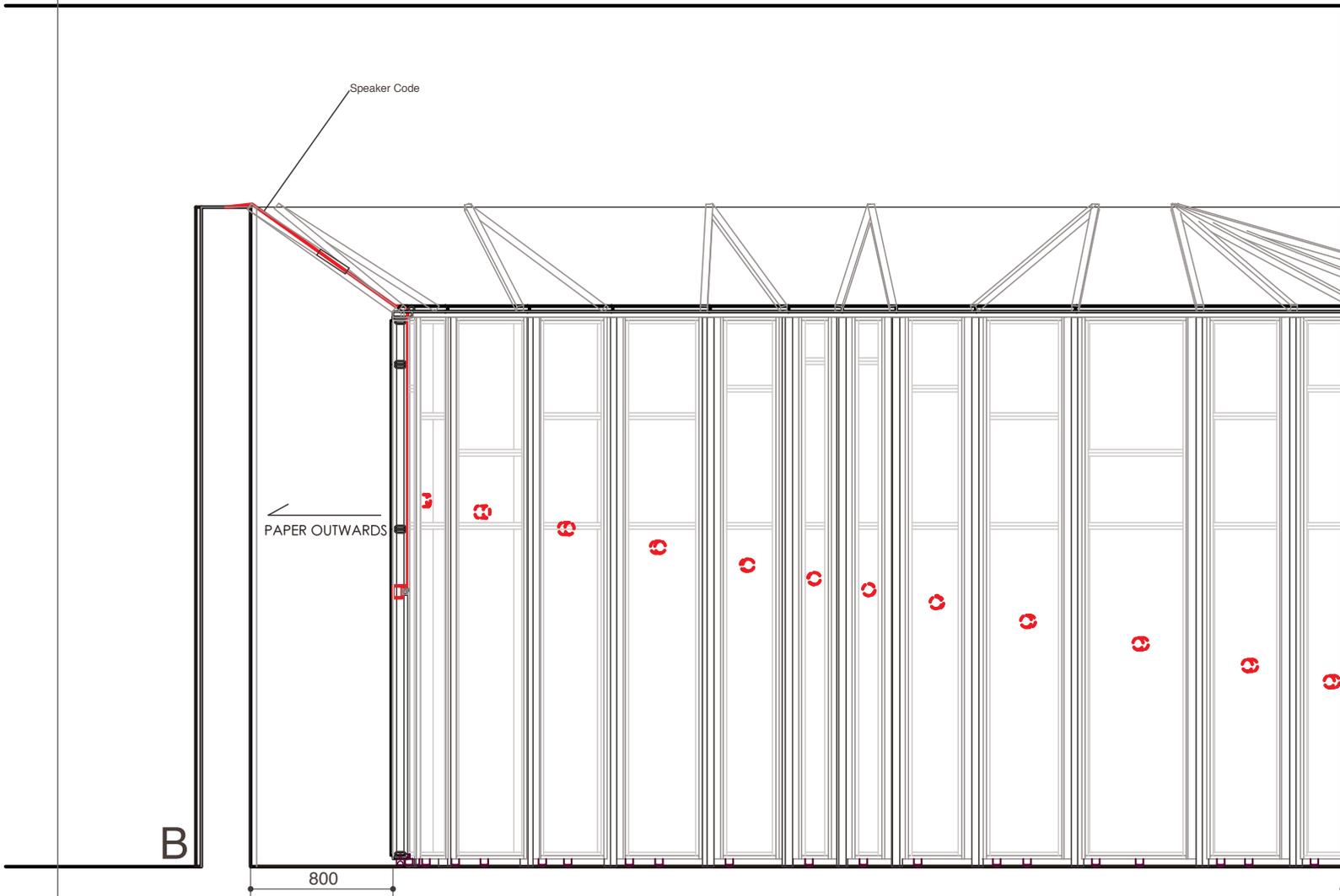
- A Structure: Wood and Paper
- B Lightings
- C Audio Speakers
- D Process Documentations
- E Projection Wall

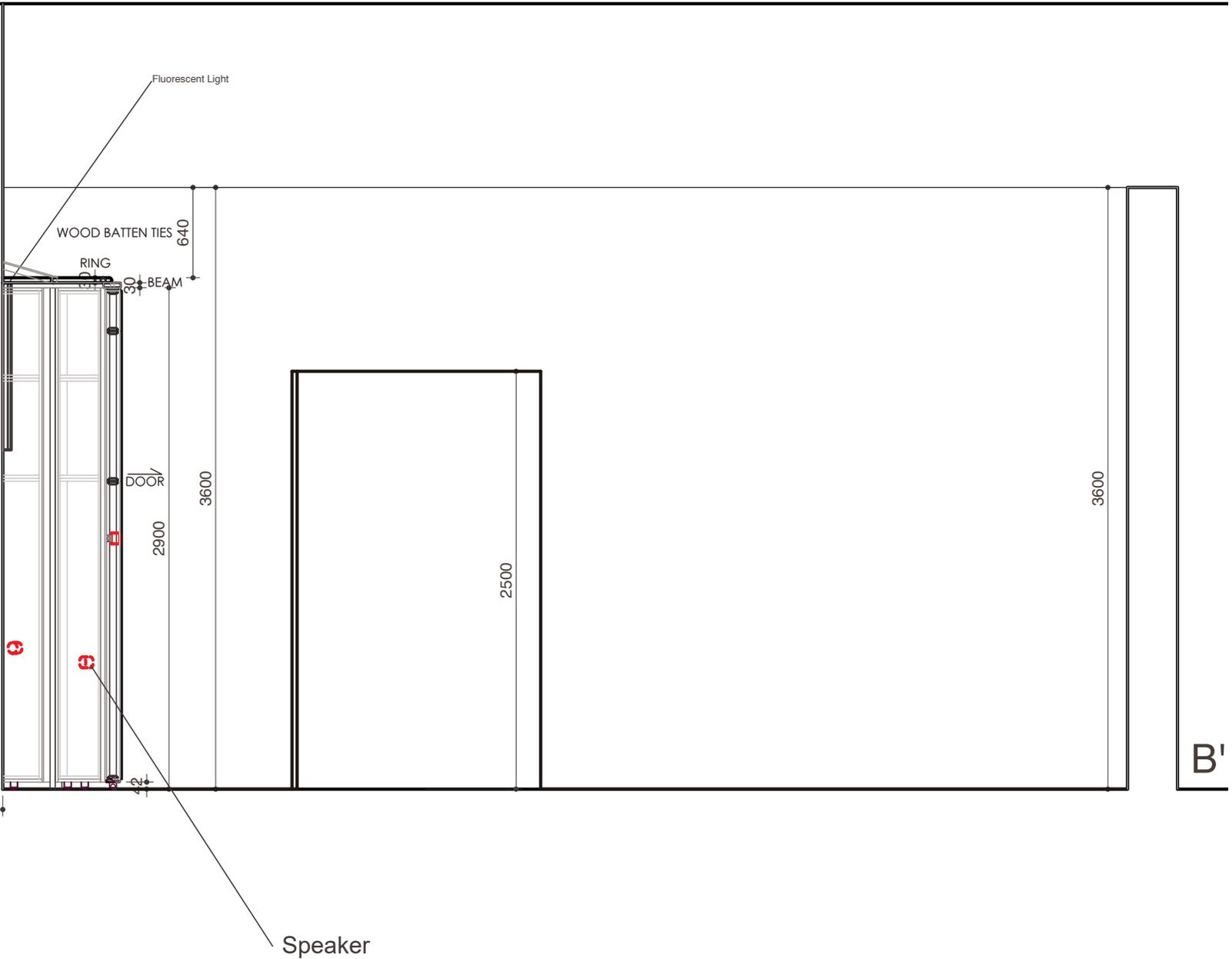
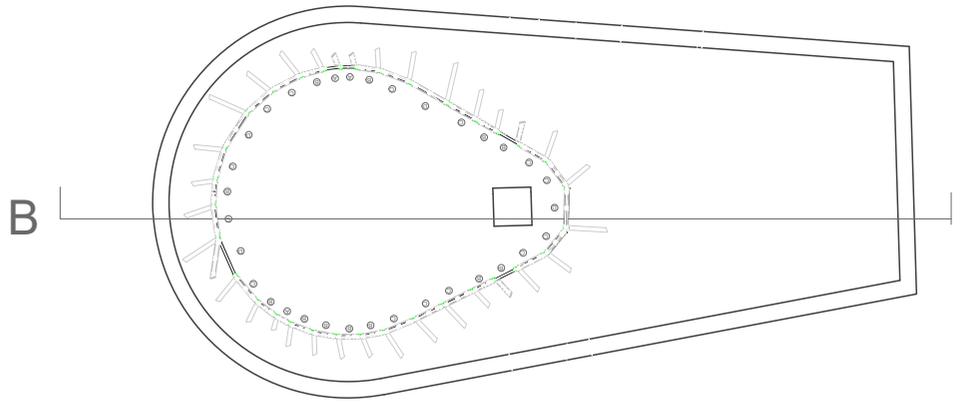
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### *Sounding Architecture:*

Sounding Architecture is an installation and performance of architecture and music inform each other in surprising ways, challenging disciplinary notions of tradition and experimentation, expanding the boundaries of both practices.

<sup>1</sup> Plan  
<sup>2</sup> Poster





<sup>1</sup> Section Drawing with speaker locations





## Summary of the Work and its Significance, Originality, and Rigor

Sound may be invisible, but it is no less an architectural material than wood, glass, concrete or light. It is shaped and contained by design. By the same token, sound describes an environment—be it an open space, enclosed area or dedicated building. To help our students and the community at large become aware of the limited dialogue on the subject of sound and space, *Sounding Architecture* critically and creatively examines the liminal space where architecture, sound, and music overlap.

Presently, sound is rarely considered in design practice except for concert halls or lecture rooms (this is the domain of sound engineers or acousticians).

Anyone who has heard a piece of music in a space can learn to be sensitive to the fact that the architecture is a contributing factor to the acoustics and, therefore, the sonic fabric of the music as it unfolds in a space. This is fine, but it does not address the fact that the built environment is ostensibly an instrument under all sonic conditions—anywhere, anytime.

Hong Kong also inspired us to revisit Cage's work critically. The extreme forms which the built environment takes here in Hong Kong compels us to rethink of architecture as shaping the soundscape in a dramatic, even harmful way. Think of the density of the urban grid, the tunnels of sound that run through the city, or the pervasiveness of construction sites. These characteristics of the city determine its soundscape and require new forms of investigation

informed by the expertise of musicians and sound experts as well as new types of architectural practice to counter. In building the basis for such a practice, the aims to not only sensitise the audience to the mutual implication of sound and the built environment, but also offers new ideas to professionals and policymakers as they address the question of a “sound” built environment.

# 發聲建築 Sounding Architecture

an installation by Thomas Tsang

only the breaths of  
favorite poems  
herein  
by Ken Ueno

Exhibition  
A2111  
Factory Building  
Nantou Ancient City

Fri  
15  
dec  
2017

PERFORMANCE

World Premier  
5:00pm — 5:30pm  
7:00pm — 7:30pm

For ten vocalists with battery-operated megaphones stationed within the exhibit space for Thomas Tsang's Sounding Architecture installation at the Shenzhen Biennale of Urbanism/Architecture 2017.

Use a stopwatch (smartphone). Each line represents 5 minutes. Transitions between staves should be gradual - take ~1-2 minutes.

1 房間  
33 門  
20 發言者  
10 表演者

room  
doors  
speakers  
performers

design: delhow projects

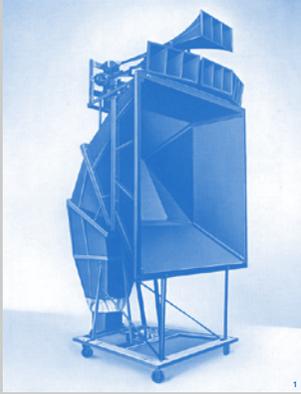
15



for information on  
Sounding Architecture



# TOWARDS A MANIFESTO: SOUNDING ARCHITECTURE



1. Giorgio Nanni, *Monocore*, 2014
2. *2014 Performance*, 2014
3. The author's sketch, Ken Yeung, at the Architecture Museum, Beijing by Yeung, Hong Kong, 2014

SYMPOSIUM  
PERFORMANCE

## TOWARDS A MANIFESTO: SOUNDING ARCHITECTURE

University of Hong Kong  
Rayson Huang Theatre

THU 22.09.2016  
18:30-21:00

This symposium brings together the HKU Department of Architecture and the Department of Music. The concept behind this project is collaboration and research. To develop a unique project dealing with sound and space, creating a dialogue between two distinct disciplines in architecture and music, which will advance international

research into this field and have tangible benefits for non-specialists from the general community.

Sounding Architecture is funded by HKU



Interdisciplinary Knowledge Exchange Project, supported by HKU Department of Architecture and Department of Music with KE partners, including the Hong Kong New Music Ensemble and Spring Workshop, to collaborate in a series of workshops and talks culminating in an installation, exhibition, and performance in 2017. This artistic and research collaboration will reach both established and new audiences for music and art in Hong Kong.

18:30 | INTRODUCTION

18:40 | PANEL 1 | INSTRUMENT |

**Ken UENO**  
Associate Professor  
Department of Music | UC Berkeley

**Thomas TSANG**  
Associate Professor  
Department of Architecture | HKU

**CHAN Hing-yan**  
Professor  
Department of Music | HKU

19:15 Q&A

19:25 | PANEL 2 | WORKSHOP |

**Eli MARSHALL**  
Visiting Faculty  
Department of Music | Cornell University

**Deborah WAUGH**  
Assistant Lecturer  
Department of Music | HKU

**Nasrine SERAJI**  
Professor and Acting Head  
Department of Architecture | HKU

20:00 Q&A

20:10 | PANEL 3 | PUBLIC |

**Kingsley NG**  
Assistant Professor  
Academy of Visual Arts | HKBU

**William LANE**  
Artistic Director  
Hong Kong New Music Ensemble

**Giorgio BIANCOROSSO**  
Associate Professor  
Department of Music | HKU

**Sony DEVABHAKTUNI**  
Assistant Professor  
Department of Architecture | HKU

20:45 Q&A

20:55 Closing Remarks

# Sounding Architecture Manifest

Issue 1  
December 2017

The editors of Sounding Architecture Manifest (SAM) invited

contributors to reflect on sound and architecture for our collage

publication. We were especially keen on collecting contributions

that were unique and diverse; writings, poems, photos, blue-

prints, musings, drawings, scores, etc. This publication features contributions from

experts from across the arts and sciences on the unique practice of sound and space.

## About

Sounding Architecture critically examines the liminal space where art, architecture and music might overlap. Research in this case takes the form of bold new initiatives in cross-disciplinary collaborations, as historically, sound and architectural principles are discretized, rarely considered as contingent overlapping parameters in each field, though, in truth, they are. Anyone who has heard a piece of music in a space can learn to be sensitive to the fact that the architecture is a contributing factor to the resonance and, therefore, the music enfolded in a space. With the realization that architecture is ostensibly an instrument in all sonic conditions, architecture can then be factored into the musical composition.

## 4 A note for only the breaths of favorite poems herein

Rome Prize and Berlin Prize winner **Ken Ueno** is a composer, vocalist and sound artist, shares his poetic reflection on hybrid between music and architecture.

## 7 An interview with 3 questions for Boonserm Jok Premthada

**Boonserm Jok Premthada** based in Bangkok, shares his observation where sound in architecture is part of the atmosphere that evokes our senses.

## 8 Speech Ornament

**Raviv Ganchrow's** work researches the interdependencies between sound, place, and listening, aspects of which are explored through installations, writing, and the development of pressure-forming and vibration-sensing technologies.

## 1 Sounding Door

**Julijonas Urbonas** is an artist, designer, researcher, engineer, and Vice-Rector for Art at Vilnius Academy of Arts, where he works on sonic and performative aesthetics of daily objects and spaces.

## 5 Camillifonie

**Manfredi Beninati** is an Italian visual artist and librarian. He briefly studied law at the University of Palermo before switching to film studies while also working in the Italian film industry as an assistant director.

## 9 Illegal architecture (voiceless and Ruins (silent architecture) Excerpt from "Sounding"

**Roan Ching-Yueh** is a renovator, curator, educator and architect in Taipei, discussed the relationship between sound and memory.

## 2 Five Manifestos for Sounding Architecture

**Kung Chi Shing** is a composer, music activist based in Hong Kong, discusses the phenomenology of sound in our environment.

## 3 On Bayreuth

**Giorgio Biancorosso** is Associate Professor of Music at the University of Hong Kong. He is the author of *Situated Listening: The Sound of Absorption*. His research concerns the history and theory of musical aesthetics, film music, and the history

## 6 The Echo

**Rob Voerman** consists of installations, paintings, and other related works.

## 3

able to connect with the present, it is another factor that you or stimulates you. It is all about interaction and movement, the interaction with people, with time, with space beyond, what is behind.

## 5

take environment for granted, we take space for granted. Building, or a physically constructed space, or man-made space, is like the opposite of nature. But somehow, that man-made structure also include this interesting human energy. When you build something, you also trap the builders' energy inside that.

2 Kung Chi Shing

Five Manifestos for Sounding Architecture

An interview by Thomas Tsang on 23 November 2017 at Senses

self-discovery as much as a reflection of a mental capacity. By the same token interpreted as a phantasmagoric quality

from Situated Listening (Oxford

likely, disingenuous course an important of Bayreuth. But, equation of absorption fascist or authoritarianism from being an abuse of power. The history of the film industry, and thus comp



Giorgio Biancorosso: On Bayreuth

Giorgio Biancorosso is an Associate Professor of Music at the University of Hong Kong. He is the author of *Situated Listening: The Sound of Absorption*. His work on the history and theory of musical aesthetics, film music, and the history of global cinema. Biancorosso is moving to the University of Rome and will teach in the Department of Music from 2018. He was a Mellon Fellow at North Carolina State University in 2011-2012. He is a Professor in the Music Department at Columbia University in 2011-2012. He is also a member of the Executive Committee of the Hong Kong Music Association. He is the Chairman of the Hong Kong Music Association. He is a member of the Programme Committee of the Young Researcher Award in 2010.

two sounds, and engineer in the room I

He I did, h one system

was calculation."

Rob Voerman: Echo

# Sounding

HKU  
Gamelan +  
HKU  
Percussion  
Ensemble

# Architectur

# in concert

Curator  
Thomas  
Tsang  
Musical  
Directors  
Deborah  
Waugh +  
William  
Lane

Ken Ueno  
Chan Sze-rok  
John Cage  
M. Arham Aryadi  
Du Yun

only the breaths of favorite poems herein 2017 for ten vocalists with megaphones and 20-channel audio installation

The Ghost Chase 2018 for mezzo-soprano, piccolo, percussion & gamelan gong kebyar

Ryuanji 1983-85 for flute and percussion

Dimension 2018 for selected Javanese gamelan

How are you doing, the future that has never left 2017 for video projection

Loke Yew Hall  
The University  
of Hong Kong

8 pm

# Apr 26

2018



The University of Hong Kong  
Department of Architecture  
Landscape City Architecture

DEPARTMENT OF MUSIC  
THE UNIVERSITY OF HONG KONG



## 2018 Spring Lecture Series In—Progress



# Sounding Architect

22 March 2018  
6:30pm

Rm730 7/F Knowles Building  
The University of Hong Kong  
Pokfulam Road, Hong Kong

The Department of Architecture invites the 2018 Spring Lecture Series. The aim of the series is to provide a platform for architectural practitioners to share their experiences and insights with the public. The series will be held in the form of a series of talks, which will be followed by a discussion and a Q&A session. The series is open to all members of the University of Hong Kong and is free of charge.

No registration is required.  
All interested persons  
please contact:  
Enquiry: 39436326

Sounding Architecture is an installation and performance of architecture and music. It is a project that challenges disciplinary boundaries and explores the relationship between the foundations of both practices, and to offer the public a unique experience of musical performance and the utilization of objects.

The concept behind this project is collaboration and research. To develop a unique project dealing with sound and space, creating a dialogue between two distinct disciplines in architecture and music. Sound is the shared common ground for highly desirable architectural material than most of other elements, or light which can be shaped and controlled by design. Presently sound is rarely considered in design practice, except when designers are asked to plan concert halls or theatre acoustic specifications for their projects. This project for the 2018 Spring Lecture Series will explore the relationship between architecture and music through a series of talks and music expanding the boundaries of both disciplines.

Thomas Tsang  
Associate Professor  
Department of Architecture

Introduction  
Nasrine Seraji  
Professor and Head  
Department of Architecture

Respondent  
Giorgio Bianconi  
Associate Professor  
Department of Music  
Director, Society  
in the Humanities

for the Shanghai Project 21. The Sounding Architecture project is a series of practices offer to illuminate the interior practices with the Hong Kong New Music Ensemble Workshop and Department of Music, The University of Hong Kong. To explore the concept of alternative collaborative artistic practice and music expanding the boundaries of both disciplines.

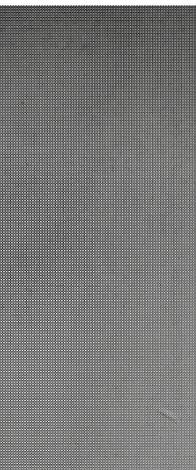
This project has been supported by the Knowledge Exchange Fund of the University of Hong Kong and Seed Funding by the Dean's Office.

1 Sounding Architecture in Concert Poster

# Originality

Artist and composer John Cage recognised this. Inspired by zen principles, he left behind traditional notions of organised sound and dedicated venues to explore the value of spontaneously occurring sound (whether in a natural or built environment). Musicians, architects, artists, and curators around the world are still grappling with Cage's legacy. Only, they do this separately.

Sounding Architecture counters this tendency by promoting bold new initiatives in cross-disciplinary collaboration. The first impact of the project, then, will be the creation of a collaborative platform, based in Hong Kong, that will outlive the project itself. The platform will enable artists,



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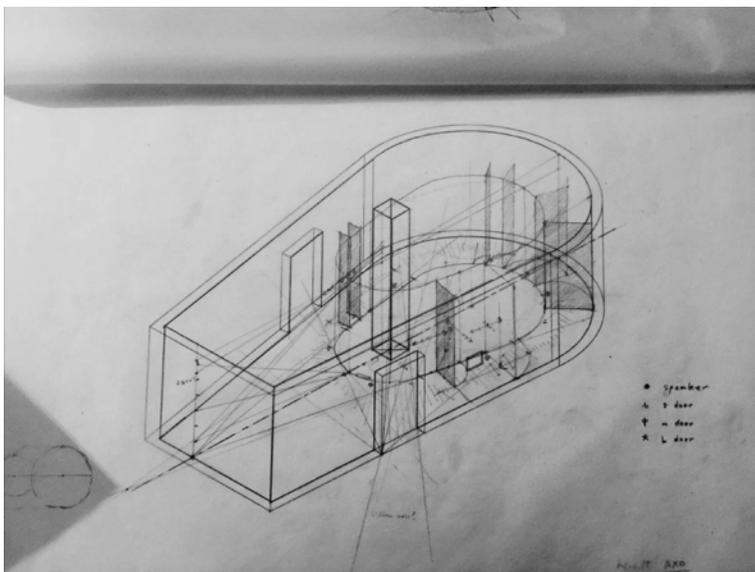
The University of Hong Kong  
Department of Architecture  
Landscape City Architecture Institute

musicians, architects, and curators to contribute to the city's cultural scene in this new and exciting area of research-based practice.

Research, in this case, takes the form of bold new initiatives in cross-disciplinary collaborations, as historically, sound and architectural principles have been treated separately, and have rarely been considered together except as contingent overlapping parameters.

Anyone who has heard a piece of music in a space can learn to be sensitive to the fact that the architecture is a contributing factor to the acoustics and, therefore, the sonic fabric of the music as it unfolds in a space. With the realization that the built environment is ostensibly an instrument under all sonic conditions, architecture can then be factored into the musical composition (and vice versa).

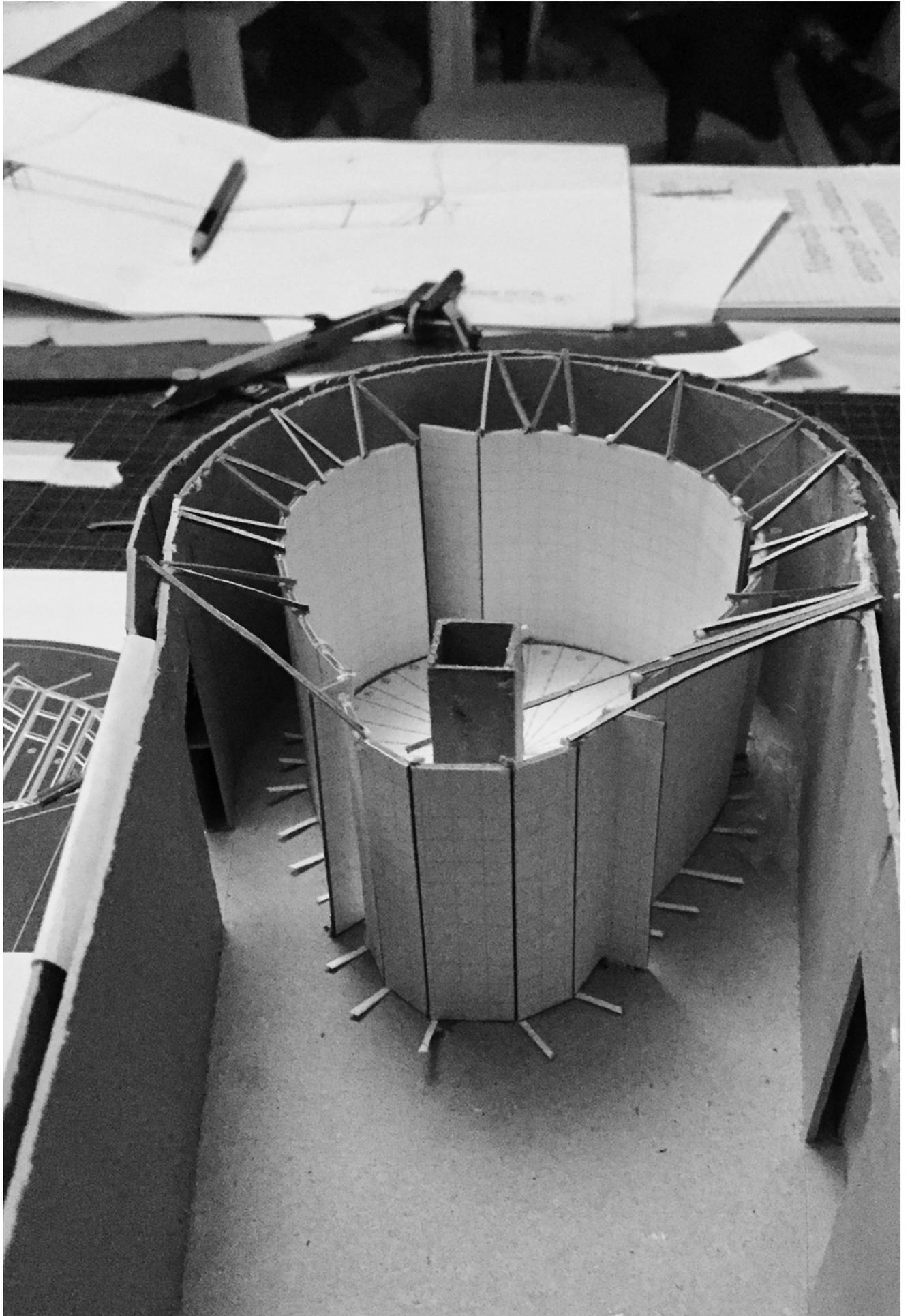




## Research Questions

- Can the relationship between sound and architecture, the extreme built environment on its sound ecology?
  - How can traditional modes of architectural production be 'hybridized' with contemporary art and curatorial practices, and how can this create an opportunity for collaborations?
  - How can these qualities also be presented as temporal performative architectural materials (especially art, oration, theatre, and live music)?





## Rigor

The project was an opportunity to rethink and forged discussions to focus on ways to encourage the collaboration between architecture and sound specialists, interdisciplinary in that it brings together research on sound and design as developed in traditionally separate units.

Key design methods included:

- Historical, cultural and social fieldwork to establish the programme, form, location and material of the architecture.
- Critique received knowledge about architectural acoustics, sound design, and composition from multiple perspectives
- Develop in-depth knowledge of the connections between specialist disciplines and professions—architecture theory

and practice, music theory, performance,  
composition, sound and interior design—  
that are normally pursued separately



## Significance

To create knowledge that will be accessible to everyone interested in the fate of our urban environment. In facilitating collaborative experiences it will compel participants to devise a language that cuts across the specialisms of each discipline involved. Working together with these leaders in their fields, this project aims to reach a broad range of participants within the community and across media in order to:

- Critique received knowledge about architectural acoustics, sound design and composition from multiple perspectives
- Play a leading role in the new, burgeoning interdisciplinary area of sound arts and design thinking

- Develop connections between specialist disciplines and professions—architecture theory and practice, music theory, composition, performance, sound and interior design—that are normally pursued separately
  - Develop a platform for sound and architecture specialists to engage in collaborative projects
  - Raise awareness about the mutually binding relationship between sound and architecture among both professionals and the general public
  - Develop descriptive and conceptual tools for assessing the city's architecture and advising authorities from the perspective of the relationship of the urban buildings to sound.

## Dissemination and Evidence of Peer Review

My project was widely disseminated textually and visually in architecture publications, and it has significantly contributed to academic research within the discipline of architecture.

The collaboration internationally acclaimed composer Ken Ueno is a Rome Prize and Berlin Prize winner who works at the intersection of music, theatre and performance art. He has extensive experience in exploring sound and space in innovative ways through international collaborations, installations, performances, and new compositions. William Lane, won the Award for Young Artist (Music) at the 2013 Hong Kong Arts Development Awards in recognition of his contribution to arts development

in Hong Kong. As an advocate of new music, he promotes the work of local composers and introduces the music of many overseas composers to Hong Kong audiences. His ensemble, HKNME, is at the cutting edge of contemporary music and has been building the way to international acclaim since its inception in 2008. Renowned composer Kung Chi Shing is Artistic Associate (Music) Consultant to WKCDA, a development project that aims to form an international-grade arts and culture hub in West Kowloon. His insight into the construction and negotiation of cultural spaces, and proven commitment to the growth of the Hong Kong art and music scenes, has added further depth to this project. Outcomes has been in form of workshops, publications, new compositions, performances, and site-specific installations and public artworks.

1

Exhibition Installation:

*Sounding Architecture:*

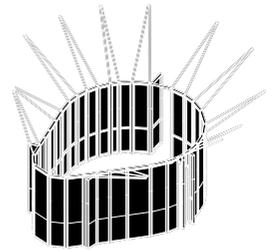
*A Room with 33 Doors (2017-2018)*

7th Bi-City Biennale of Urbanism\Architecture (UABB)

UABB

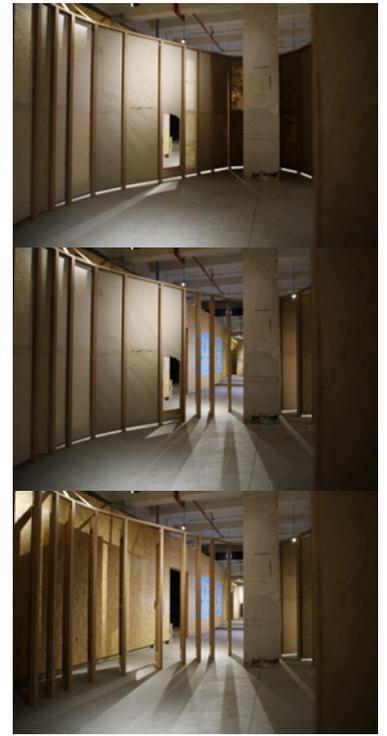
Nantou Old Town, Shenzhen

15 Dec 2017 - 17 Mar 2018



Dehow Projects:  
A ROOM WITH 33  
DOORS, 2017.

An exhibition featuring Thomas Tsang and Nanamu Hamamoto's installation *Sounding Architecture: A Room with 33 Doors* with Ken Ueno's composition *only the breaths of favorite poems herein* for ten vocalists with megaphones and a 20-channel audio installation. Included a live performance on opening night by members of the HKU Percussion Ensemble, HKU Music PG composers, and other HK musicians/composers. The exhibition was visited by more than 500,000 people.



Dehow Projects: A ROOM WITH 33 DOORS, 2017.

Dehow Projects: 'Only the breaths of favorite poems herein' performance composed by Ken Ueno, Sounding Architecture, 2018.



2

Performance and Installation:

*Sounding Architecture in Concert (2018)*

Loke Yew Hall, HKU, 26 April 2018

[Poster](#)

Program included the world premieres of HKU PG composer Chan Sze-rok's *Ghost Chase* (2018) and Indonesian composer M. Arham Aryadi's *Dimension* (2018), both commissioned and performed by the HKU Gamelan. The Hong Kong premiere of Ken Ueno's composition *only the breaths of favorite poems herein* for ten vocalists with megaphones and a 20-channel audio installation (2017) was performed by the HKU Percussion Ensemble alongside Thomas Tsang's installation entitled *Sounding Architecture: A Room with 33 Doors*. Other works included the Hong Kong premiere of Pulitzer prize winner Du Yun's *How are you doing, the future that*

*has never left* (2017) for video projection utilizing Tsang's drawings qua graphic notation exploring new possibilities of transcribing oral traditions, as well as John Cage's *Ryoanji* performed by musicians from HKNME.









# Sounding Architecture: Inter-Disciplinary Studio at HKU

2017 New Interfaces for Musical Expression (NIME) Conference  
May 15th to May 19th at Aalborg University Copenhagen

**Álvaro Barbosa**  
Dean and Associate Professor  
Faculty of Creative Industries  
University of Saint Joseph  
Macao S.A.R, China  
abarbosa@usj.edu.mo

**Thomas Tsang**  
Associate Professor  
Department of Architecture  
University of Hong Kong  
Hong Kong S.A.R, China  
howtsang@hku.hk

## ABSTRACT

Sounding Architecture, is the first collaborative teaching development between the Department of Architecture and the Department of Music at the University of Hong Kong (HKU), introduced in Fall 2016. Composed of 67 students and 6 tutors, at the start of their studies, the Year 2 students of the Bachelor of Arts (Architectural Studies) (BAAS), received a year of basic training in the foundation courses. they were able to experiment with sound, shape and materials with no specific goals, except to construct a sound instrument and develop a set of drawings that informs both construction and performance depending on their individual suitability and finding. This was followed by practical work in the workshops led by composer Ken Ueno (UC Berkeley), composer Eli Marshall (Cornell University), percussionist Deborah Waugh (HKU) and fabrication laboratory manager Donn Holohan (HKU), all accompanying their disciplines.

In this paper we present critical observations about the studio after a final public presentation of all projects in the 29th of November 2016. The Review was conducted with demonstrations by groups of students supervised by different tutors, in each case focusing on a different strategy to create a connection between Sound, Music, Acoustics, Space and Architectural Design. There was an assumption that the core working process would have to include the design of a new musical instrument, which in some cases became the final deliverable of the Studio and in other cases a step in a process that leads to a different outcome (such as an architectural design, a performance or a social experiment). One other relevant aspect was that Digital technology was used in the design and fabrication of the physical instruments' prototypes, but in very few cases, it was used in the actual generation or enhancement of sound, with the instruments relying almost exclusively in acoustic and mechanical sound.

## Author Keywords

NIME, Architecture, Design Research, Inter-disciplinary Teaching, Design Studio, Prototyping

## ACM Classification

H.5.5 [Information Interfaces and Presentation] Sound and Music Computing.

## 1. INTRODUCTION

Architecture and Sound have been approached in many different ways [1] [2]. On the other hand, the design of New Musical Interfaces for Music Expression (NIME) is an established research field with conferences and peer-reviews publications for over 15 years [3]. However approaching this topic from the perspective of Architectural Design, as a pedagogical exercise, is an innovative and substantial contribution to the field. Nevertheless, one should always keep in mind that the most successful musical instruments, such as the piano or the violin, took centuries to be developed until

they become perfectly fine-tuned and sophisticated, as we know them today. Even with the advances of modern digital tools for design and prototyping, as well as University level knowledge supervision and references, the expectation of what can be achieved in one semester needs to be framed into an adequate perspective. Even so, the projects developed by the students tackled, in an empirical way, some of most relevant research topics in the field of Sound and Music Computing [4] or Auditory Display [5] [6]. The projects explored issues such as sonification, collaborative music instruments, multidimensional interaction design, wearable music instruments, performance, notation, collective improvisation, collaborative composition, participative performance or generative sound.

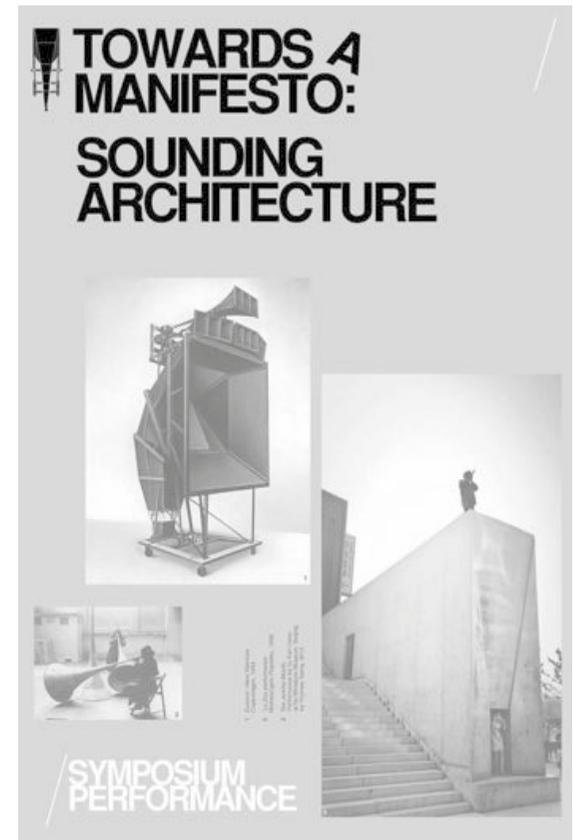


Figure 1. Sounding Architecture Symposium held at the University of Hong Kong, Poster. 22-Sep-2016

## 2.2 Collaborative Music Instruments

Group 2, supervised by Miho Hirabayashi, included 5 projects developed under the theme of Collaborative Music Instruments. This is an extremely important research topic in contemporary musical instrument design, especially in the digital domain. The students tackled some of the major issues that arose from designing instruments that were meant to be shared by several performers. The following 3 projects stand out:

### 2.2.1 Wall Euphony

Wall Euphony is a wall design that incorporates a shared musical instrument. A wall that encases several "Kalimba" musical interfaces separates the performers. The performers react to what they can hear across the wall replicating a behavior as if they were in a room trying to listen to what is happening in another room, but communicating and interacting musically with the other peer. This Design, not only served the purpose of a captivating performance, but also could be considered as a prototype for a model, which could be developed into a real-world product that could make sense as an interior-architecture strategy.



Figure 4. Wall Euphony by Shívangi Das and Wing Tung Wong

### 2.2.2 The Tandem Breeze

The Tandem Breeze is a Multi-User wind instrument in which the performers face each other connected by the body of the instrument to their mouths. By extending or compressing a sliding mouthpiece into each other's direction and blowing into it, the performers can create pitch variations that combine an organic coupling of their body movement and gesture, with the combinations of distinctive musical notes. The instrument has a dramatic performative effect providing an intense interaction between the players and a unique sonic experience.



Figure 5. Tandem Breeze by Janice Chu and Raphael Galvez

### 2.2.3 The Sandwich

The Sandwich is a percussion instrument that explores multiple materials providing a variety of timbres that allows for extensive creativity while performing. It is designed to be shared by two performers facing each other and a reacting to gesture and

expressions that can be seen through the instrument. From all the instruments designed in this class this was the one that provided the widest range of timbre variety, almost as if the music was in "color" while the others were in "black & white".

### 2.3 Sonification

Group 3, supervised by Ryo Fujimori, included 5 pieces that had in common the concept of sonification as form transposing to sound a range of perceptual information that results from a physical behavior or movement. From these projects we can single out 4 performances:

#### 2.3.1 Paper-tearing

Paper-tearing is a semi-automated device that explores the idea of capturing and amplifying the sound of a cutter tearing paper. It is a dramatic installation that was used in a performance that induces some sense of danger. The acoustic sound projection was very subtle but once amplified properly it becomes a very engaging and powerful sonic experience.



Figure 6. Paper-tearing by Xiangning Wang, Hoi Yin Yeung and Charlene Lau

#### 2.3.2 The Clear Box

The Clear Box is a device that has the goal of sonifying water waves, by mapping the cyclic vertical movement from a set of floaters positioned along an aquarium into a rudimentary xylophone. The system is very ingenious and has the potential to create a very tight and clear mapping with an extremely musical outcome, as long as the mechanics of the prototype can be improved with better robustness.



Figure 7. Clear Box by Oi Tung Lam and Xinhao Chen

#### 2.3.3 The Black Box

The Black Box is a performative wearable structure that reacts and adapts to the movement of a full body performer enclosed within the object construct. The structure resembles a human size accordion that is played with full body movement and by inflating and compressing, it blows out a stream of air that will trigger whistles, bells and rudimentary wind chimes for a musical effect.

## 2. SOUNDING ARCHITECTURE PROJECTS

The Year 2 Coordinator was Thomas Tsang and projects were developed in groups supervised by Miho Hirabayashi, Ryo Fujimori, Wei Tseng, Jae Lim and Sony Devabhaktuni, each one introducing a distinctive approach towards the Sounding Architecture studio. In the beginning of the semester the students were challenged to answer the question "Can we understand architecture or building as form of a music instrument where the design might not necessarily be performed exactly how it was conceived?". The goal was to search for latency or gap between building and performance, by trying to understand how a building is being used in the same way an instrument could be used and performed. In the early foundation of architectural education, the body and the relationship of the 1:1 scale is addressed. In that sense, this project reinforces how building can be closer to us.

The process resulted from discussions and open-ended questions to the students, such as: "Are architects able to perform their architecture?" or "By performing, do we get to reflect on our work and understand through research where it can be developed further?". Since the majority of our students play traditional classical instrument (mainly Western) and contemporary music is not part of their repertoire, the students' understanding of sound is more based on what is given to them, as opposed to being discovered. Architecture design works in the same way in terms of the discovery process.

In addition, the basic requirement of Year 2, is to get students to develop a discourse on inter-disciplinary practice, which is highly supported by the University's 3 pillars agenda<sup>1</sup> and the basic requirements of the defined learning outcomes:

- Develop awareness of design and finding problems via design.
- Training of basic skills of drawing and modeling, developing observations on the concrete part of the everyday to a form of abstraction.

In this paper, we present a critical review of the projects developed during this course.

### 2.1 Participative social interaction and music notation

Group 1 was supervised by Thomas Tsang and included 6 projects that developed diverse works with the common denominator of drawing inspiration from seminal master works of experimental and electroacoustic music, proposed by the course supervisor. The projects followed different approaches focusing on a unique aspect that was crucial to the music piece they were assigned. We can highlight the following 4 projects:

#### 2.1.1 Silence is not universal

Silence is not universal is an installation that explores the importance of silence as an element in music composition and more importantly as form of tuning in other senses. To test some of the ideas, the students developed a device that allows two people to look at each other's face depriving them of other senses by minimizing peripheral vision and ambient sound.

The experiment was carried out in the busy streets of Hong Kong with several subjects. This conceptual prototype has several possible directions for further developments, but for these students the importance of exploring these concepts, specially in the public place, is relevant to understanding how music can be composed, and most importantly getting familiar with the notion of designing spaces of intimacy in the public place, as defined in the term "no-place" by the French anthropologist Marc Augé [7].



Figure 2. Silence is not universal by Minia Cheung and April Soo

#### 2.1.2 Bench Automata

Bench Automata is a sophisticated installation that also explores the social interaction in the public space. The students developed an elaborate foldable bench that reacts when a person sits on it, with a low pitch vibration that will trigger tactile and sonic perception. The purpose was to test how subjects react and interact with this bench in a public space. To create the sound effect the students used electronic components, when realizing that the physical structure of the object could not provide a loud enough acoustic sound. This is an approach to generate sound that was not used by any other groups and that has tremendous potential to be explored in future developments of this Studio. The students also used wireless digital tracking to better analyze the behaviors of the subjects.

#### 2.1.3 Sounding Column

Sounding Column is a musical interface that hangs from above and provides different pads for percussive performance. The device itself does not introduce novelty but the students took the opportunity to explore Notation as a form to organize sound during a performance. The notation developed by the students was adapted to this specific instrument and guided them during the performance presented live. Exploring the relevance of notation as a language to compose and perform organized sounds was an important and meaningful experience to these architecture students.

#### 2.1.4 Double Front

Double Front is a percussion instrument made out of galvanized steel that provides different textures, based on the shape and areas of resonant boxes. With microphone amplification it provides an engaging sonic experience that can be further explored in the future.

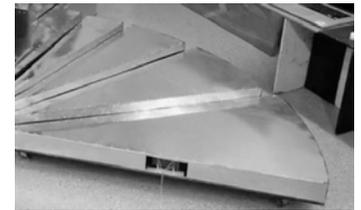


Figure 3. Double Front by Francis Cheung and Nicole Yung

<sup>1</sup> The HKU 3 Pillars Agenda (Accessed in 17 April 2017): <http://www.sppoweb.hku.hk/vision2016-2025-our-three-pillars.html>

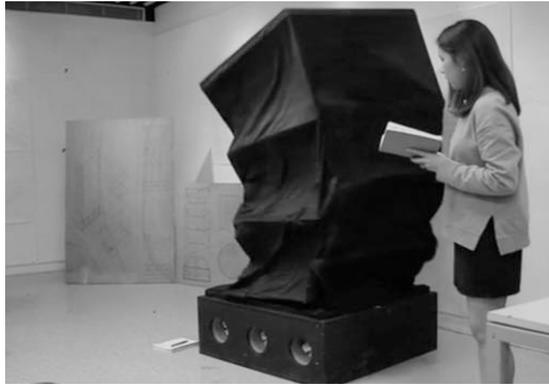


Figure 8. Black Box by Talia Lam and Du Hoi Ming

### 2.3.4 Tensionball

Tensionball is possibly the most inspiring system developed in this section, since it explores the mapping of extremely complex pendular cyclic movements with a completely mechanic acoustic system that convincingly sonify the nuances and expressiveness of the ball's movement. By introducing a wider variety in the sound sources triggered by the movement, the system can introduce even more emphasis on the sound specialization in order to produce an immersive sonification experience.

## 2.4 Instrument Design for an Ensemble

Group 4 supervised by Wei Tseng, was also divided in 6 groups of students, approaching the instruments' design so that these must become part of a performative ensemble. Each instrument contributes to a section of a musical piece and plays its role in an integrated and complementary way, to the ensemble. The musical instruments followed diverse approaches that range from windpipes triggered by the movement of a helix to a large-scale music box or a human scale seesaw triggering glass marimba keys.



Figure 9. Seesawphone and The Music Recorder by Bertha Leung, Chi Yan Tam, Ming Yan Ho and Wing Ching Yuen.

## 2.5 Wearable Musical Instruments

Group 5 was supervised by Jae Lim and explored a rather unique approach in Music Instrument Design by introducing as a project topic the notion of wearable music Instruments, a topic that has been relatively less explored in this area, but with inspiring examples such as Nick Cave's Soundsuit [8]. Three groups of students developed wearable sounding devices that encases more than one performer, are mobile as a vehicle and produce musical sounds, either as a result of moving parts or by the acoustic modulation performance voices within the structure of the Suit. In particular the experimentation with voice in this type of structure is very fruitful for architecture students, since it gives then a unique perspective on the issue of acoustic spaces to be cohabited by human.



Figure 10. The Howl, Ditto and Epidermal Being by Gina Park, Zackary Yuen, Sherry Cheung, Gracia Wong, Chinghey Chan, Daniel Stiensmeier, Yukuan Guo, Hiu Tung Lui, Lydia Chiu, Natalie Lai and Kevin Lai

## 2.6 From Form to Architectural Space

Group 6, Supervised by Sony Devabhaktuni, included 3 groups of students and followed a more traditional approach in terms of what an Architecture Studio usually addresses in an Architecture School. The students were challenged to develop an acoustic music instrument that derived from an existing classical string instrument, but expanded in space, scale or dimensions. The instrument resulted in expressive designs that could be performed live. After that, the students isolated certain visual perspectives of the instruments' form that provided reference and inspiration for a real design of a building, which became the final deliverable of the studio.

## 3. CONCLUSIONS

The experiment of introducing a multidisciplinary approach into an Architectural Studio at HKU primarily had the goal of expanding the students' minds and provides inspiration for creative and innovative Architectural Work. However, the results surpassed this goal, by providing the students with a valuable experience in Sound and Acoustic Centered Design, which will inherently create a competitive advantage on their skills and knowledge as future practicing architects. On the other hand, from the perspective of NIME, the development of new and original ideas of Interfaces for Music Expression, was a rewarding result, in the sense that fresh and original approaches for established problems, were introduced and suggested from a totally different perspective, then they would have been developed by Musicians, Computer Scientists or Engineers (as they usually are in NIME). In future editions of this Studio the pedagogical and Artistic perspective of this work, can benefit from a stronger inspiration in music and acoustics, as well as from the introduction of multidimensional interaction strategies, the use of sensor and contact microphones to capture the inner sounds of materials and the use of acoustic sound as triggers for additional layers of sound processed digitally.

## REFERENCES

- [1] Blesser, B., & Salter, L.-R. (2008). *Spaces Speak, Are You Listening?*. MIT Press.
- [2] Pallasmaa, J. (2013). *Eyes of the Skin Architecture and the Senses* (3<sup>rd</sup> Edition). Somerset, NJ, USA: John Wiley & Sons.
- [3] Jensenius, A.; Lyons, M., eds. (2017). *A NIME Reader: Fifteen Years of New Interfaces for Musical Expression*. Springer. ISBN 978-3-319-47214-0.
- [4] Bernardini, N., Serra, X., Leman, M., & Widmer, G. (Eds.). (2007). *A roadmap for sound and music computing*. The S2S2 Consortium.
- [5] Kramer, G., Walker, B., Bargar, R. (1999). *Sonification Report: Status of the Field and Research Agenda*. International Community for Auditory Display ISBN: 0967090407
- [6] Hermann, T., Hunt, A., & Neuhoff, J. (2011). *The Sonification Handbook*. Logos Verlag Berlin.
- [7] Augé, M (1995). *Introduction to an Anthropology of Supermodernity*. Verso. ISBN 1859840515
- [8] Brooke, W. (2015). *Medium and Meaning in Nick Cave's Soundsuit*. The First-Year Papers (2010 - present). Trinity College Digital Repository, Hartford, C.

4

Symposium:

Towards a Manifesto:

Sounding Architecture (2016)

Rayson Huang Theatre, HKU, 22 Sept 2016

[Poster](#)

Speakers included:

Giorgio Biancorosso

Chan Hing-yan

Sony Devabhaktuni

William Lane

Eli Marshall

Kingsley Ng

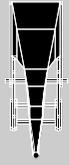
Nasrine Seraji

Thomas Tsang

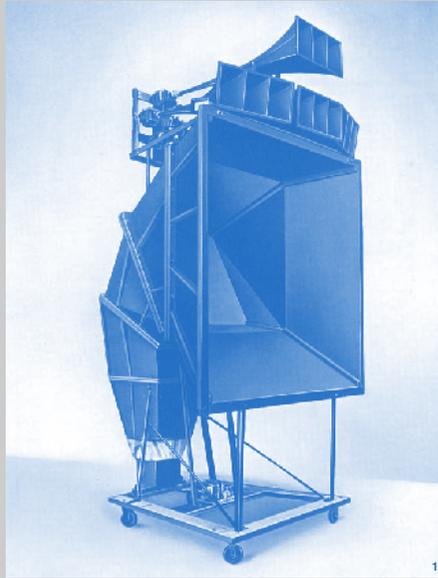
Ken Ueno

Deborah Waugh





# TOWARDS A MANIFESTO: SOUNDING ARCHITECTURE



1



2

1. Eames' Hans Werble  
Copenhagen, 1954.
2. Lo, Zoo performance  
Michelangelo Pistoletto, 1968.
3. The Vericho Mouth,  
Performance by Ken Yeang  
at the National Center for  
Performing Arts, Beijing  
by Thomas Tseng, 2013.



3

SYMPOSIUM  
PERFORMANCE

# Appendix

## Funding

TSANG, Thomas and  
BIANCOROSSO, Giorgio; with  
West Kowloon Cultural District  
and Hong Kong New Music  
Ensemble  
“Soundtecture: Density as  
Intensity”  
HKU Interdisciplinary  
Knowledge Exchange Project  
Fund  
Collaboration with the  
Department of Architecture and  
Department of Music  
2019-2021. Funding: 200,000  
HKD (Pending)

TSANG, Thomas and NEGLIA,  
José Vicente, with Spring  
Workshop and Hong Kong  
New Music Ensemble  
“Sounding Architecture”  
HKU Interdisciplinary  
Knowledge Exchange Project  
Fund  
Collaboration with the  
Department of Architecture  
and Department of Music,  
2016-2018. Awarded: 200,000  
HKD

TSANG, Thomas, UENO, Ken,  
and CONNERY, Majel.  
“Hong Kong Graft”  
Mellon Artist in Residence  
Fellowship  
Newhouse Center for the  
Humanities at Wellesley  
College, 2016-2017.  
Supported by the Andrew W.  
Mellon Foundation

Related publication by the  
designer

TSANG, Thomas and  
BARBOSA, Álvaro

“Sounding architecture:  
inter-disciplinary studio at  
HKU”

NIME 2017 - New Interfaces  
for Musical Expression  
Aalborg University  
Copenhagen, Denmark,  
2017.

Performance by the artist  
collaboration:

TSANG, Thomas and  
DU, Yun. with Los Angeles  
Philharmonic

“Cinematic Notation #4”  
(Drawing). TBD (Music)

Walt Disney Concert Hall,  
Los Angeles, 2019 (World  
Premiere)





<sup>1</sup> Sandwich in Bucharest,  
Thomas Tsang, 2018





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Graphic Design:

Milkshake

The Department of Architecture educates students in an active culture of service, scholarship and invention. Uniquely situated at the crossroads of China and global influence, the Department takes the approach that design is best explored from a sophisticated understanding of both. With a multidisciplinary curriculum emphasizing technology, history and culture, students gain broad knowledge and skills in the management of the environmental, social, and aesthetic challenges of contemporary architectural practice. With opportunities for design workshops, international exchanges, and study travel, graduates of the Department of Architecture are well prepared for contribution to both international and local communities of architects and designers.

