

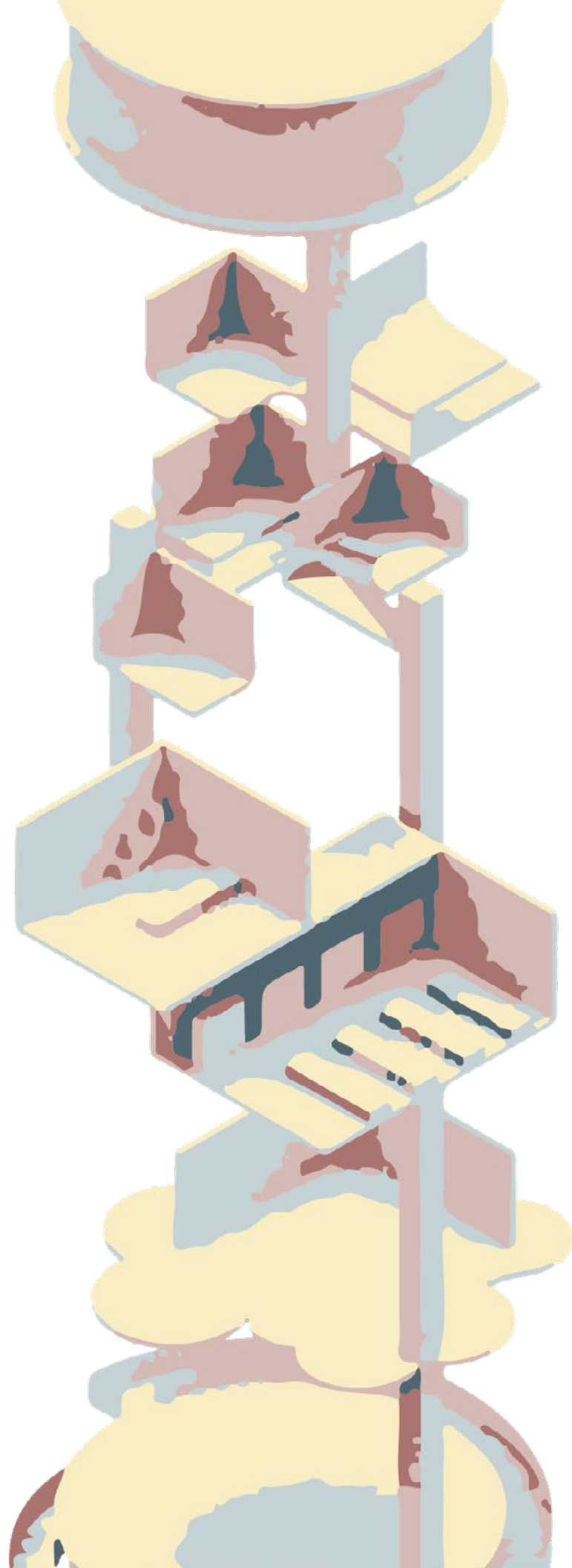
**GSAPP
PORTFOLIO**

2023-2024



Jinyue Han

M.S. Advanced Architecture Design



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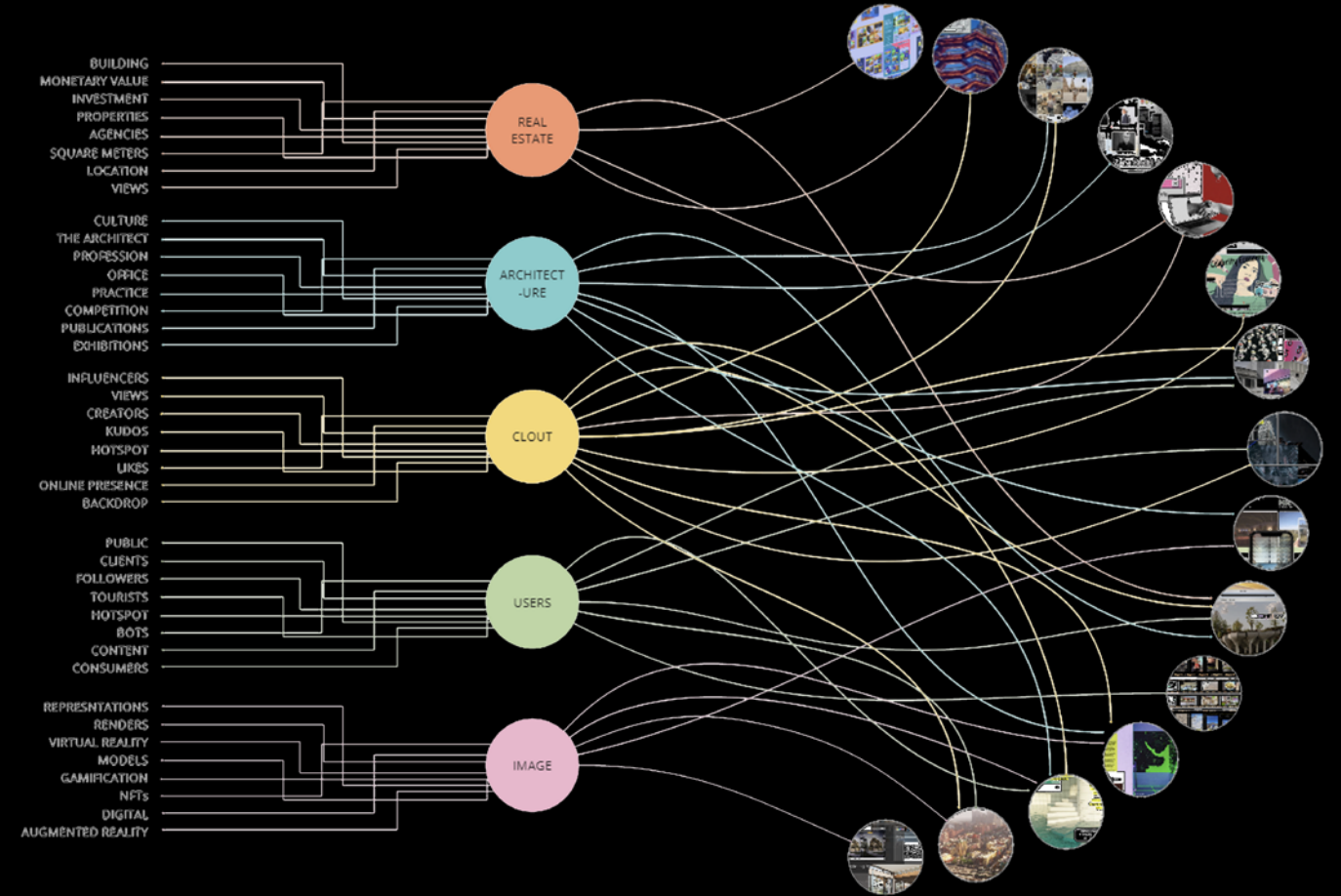


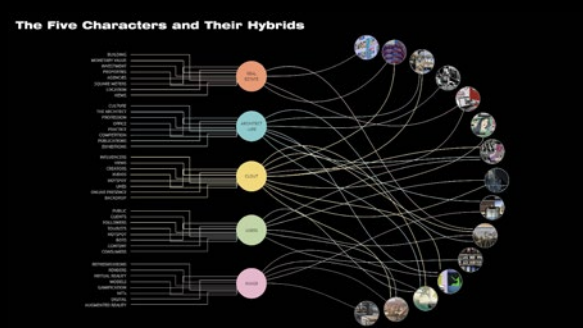
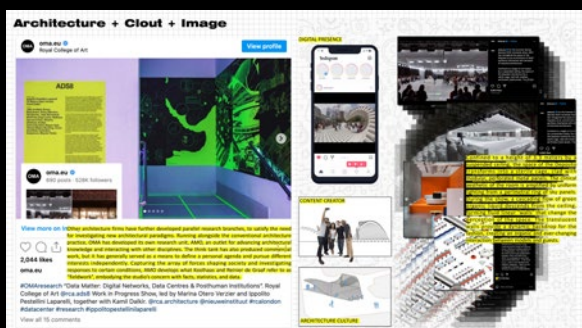
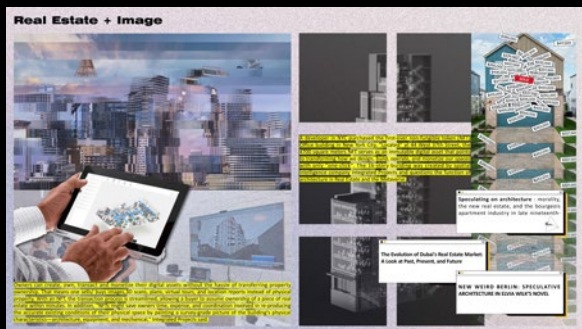
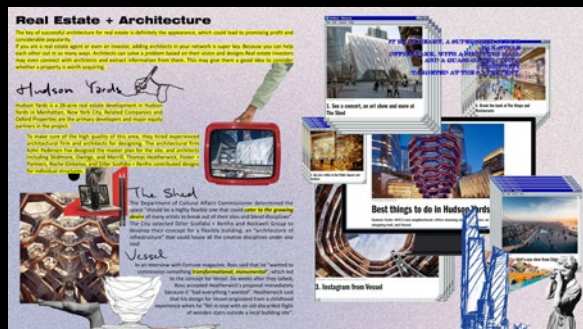
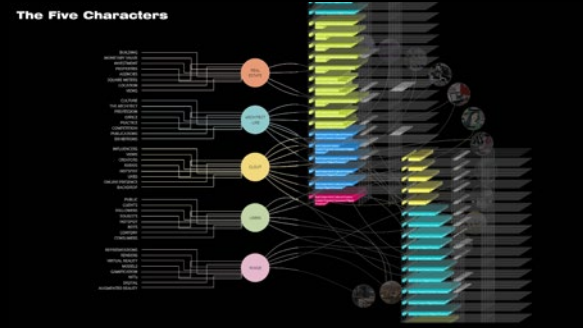
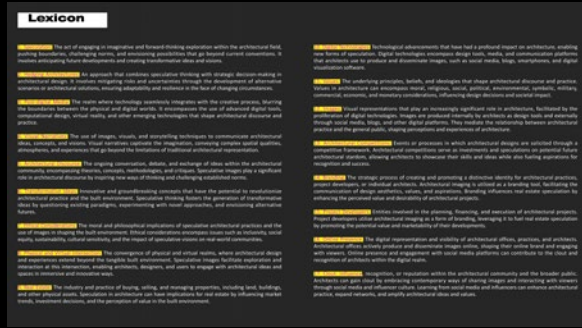
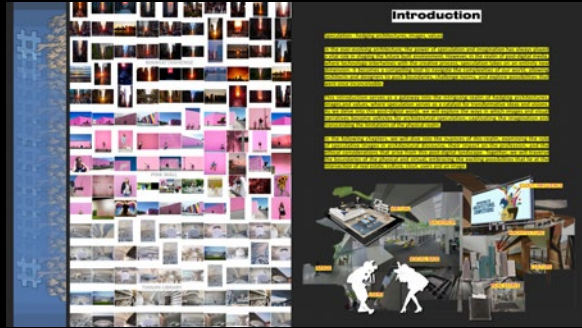
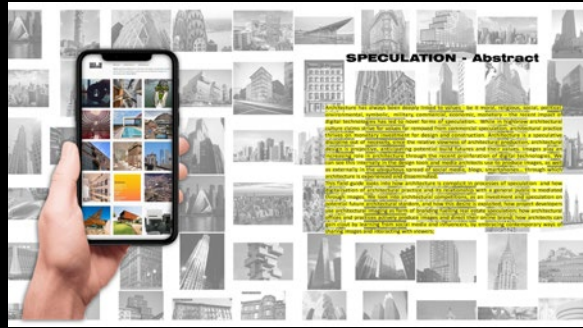
01 Digital.lab

Adv Arch Design Studio
Summer 2023
Type : Digital Architecture Design
Instructor : Michiel Helbig/Corneel Cannaearts
Role : Group Work

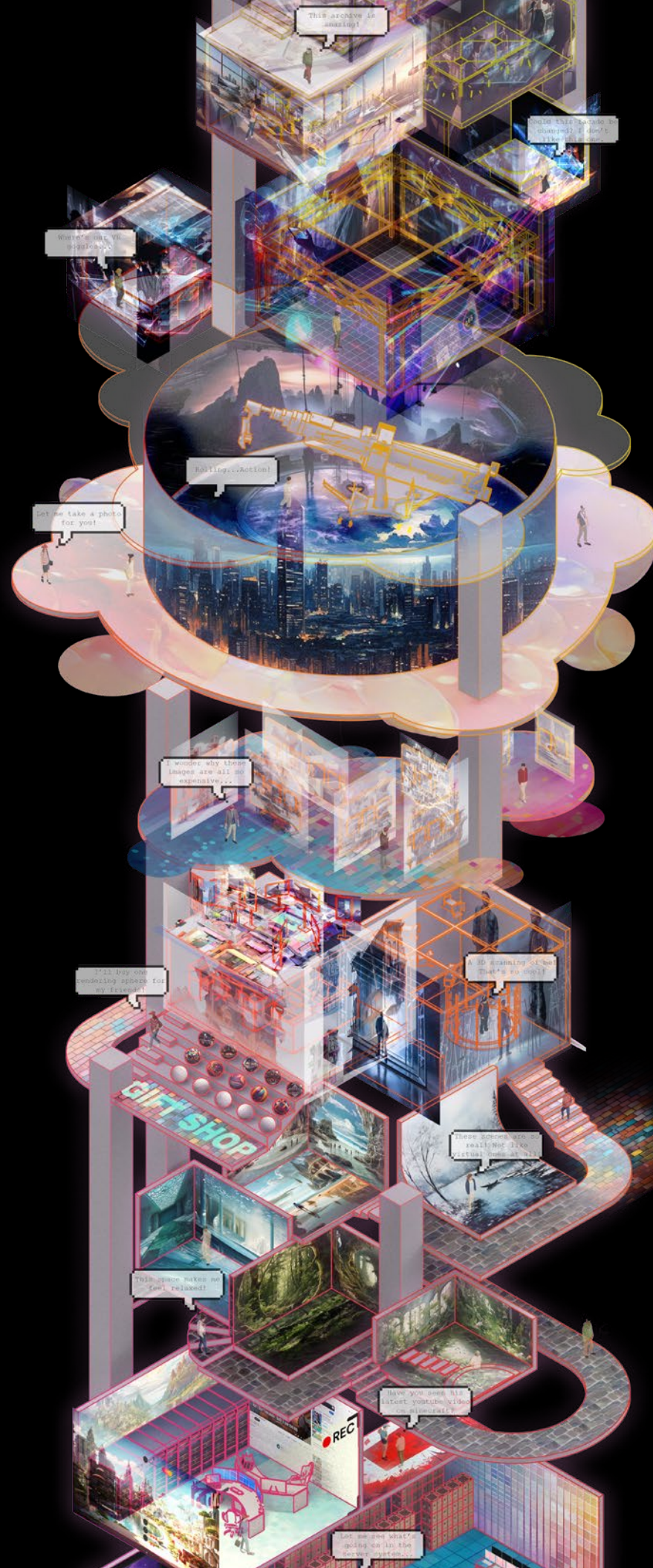
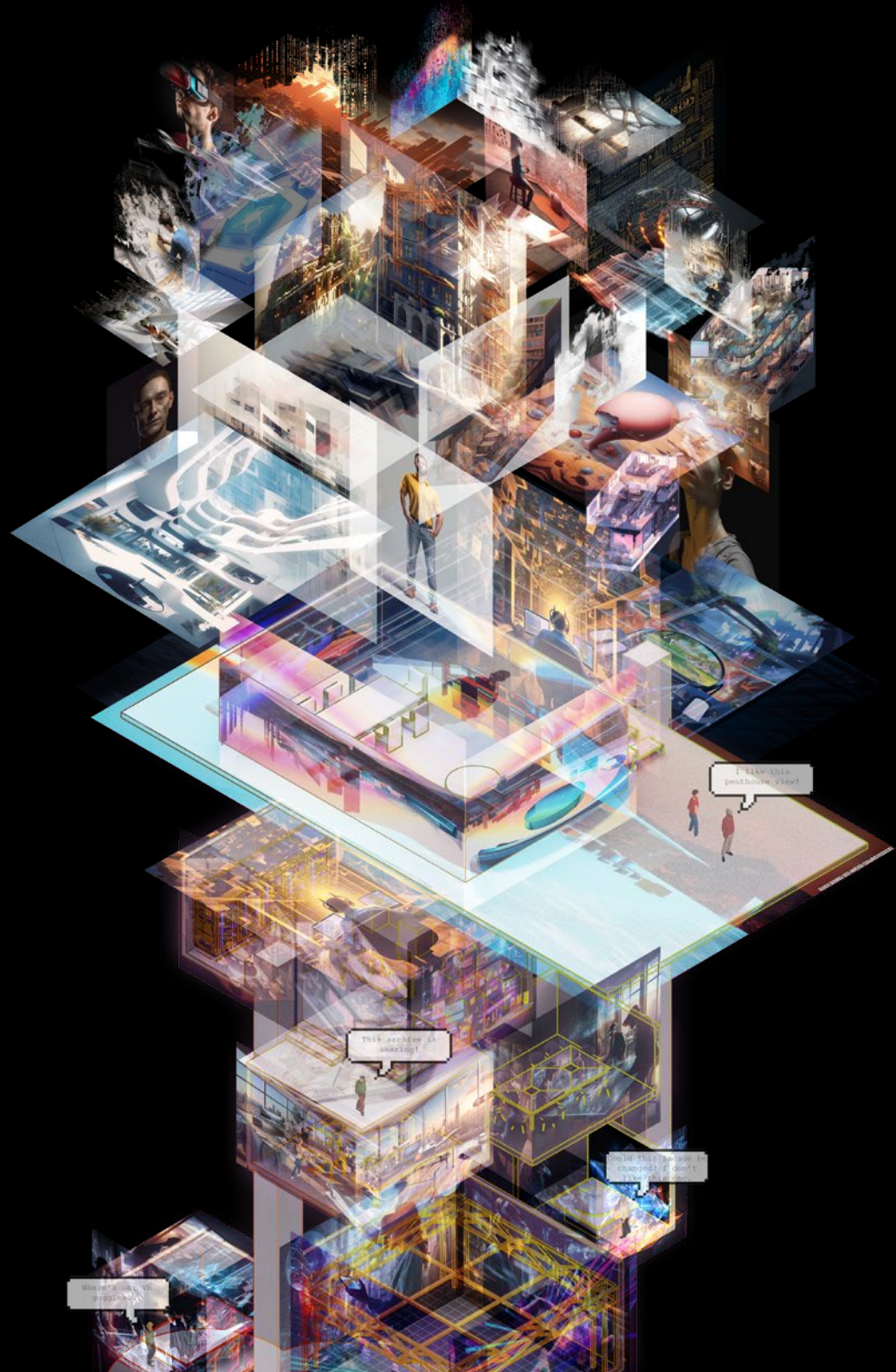
In the rapidly evolving landscape of today's world, the significance of the digital realm has reached unprecedented heights, permeating various industries and transforming the way we perceive and interact with our surroundings. The realm of architecture, once bound by traditional practices, has now become a canvas for cutting-edge technologies, pushing the boundaries of creativity and innovation. Embracing this transformative trend, our group embarks on a visionary project that presents a groundbreaking architecture office with three captivating zones: Cloud, Click, and Craft. Each zone embodies a distinct facet of the architectural world, weaving together the wonders of digital technology, the craftsmanship of human ingenuity, and the power of collaborative storytelling through media.

Our project embodies the convergence of the Cloud, where digital technology reshapes the landscape of architecture, the Craft, where inspiration and craftsmanship thrive, and the Click, where the architects' narratives come alive in the captivating realm of media. This extraordinary fusion is not just a testament to the industry's remarkable evolution, but a reflection of our unwavering commitment to excellence, creativity, and collaboration in an ever-evolving architectural landscape. Our studio tower stands tall, radiating innovation, inspiration, and a celebration of the human spirit's ingenuity, beckoning architects and enthusiasts alike to embark on a captivating journey into the boundless world of architectural dreams.





This project creates the studio tower for an architecture firm that purely pursues the digital perspective of architecture, especially architecture that only exists as images, models and systems. The application of digital tools and techniques varies widely, from expensive NFTs to surrealistic architecture arts, to holographic projection for visualization, to construction games like minecraft. These projects explore the boundaries between reality and virtuality, challenging or becoming part of the conventional stereotypes associated with architecture. At the heart of this digital world are algorithms, which reshape our way of thinking and offer innovative options for the future development of architecture. Not everything has to be confined to reality or entirely fictional. Embracing these technological advancements allows architects to envision novel solutions and create spaces that were previously unimaginable.



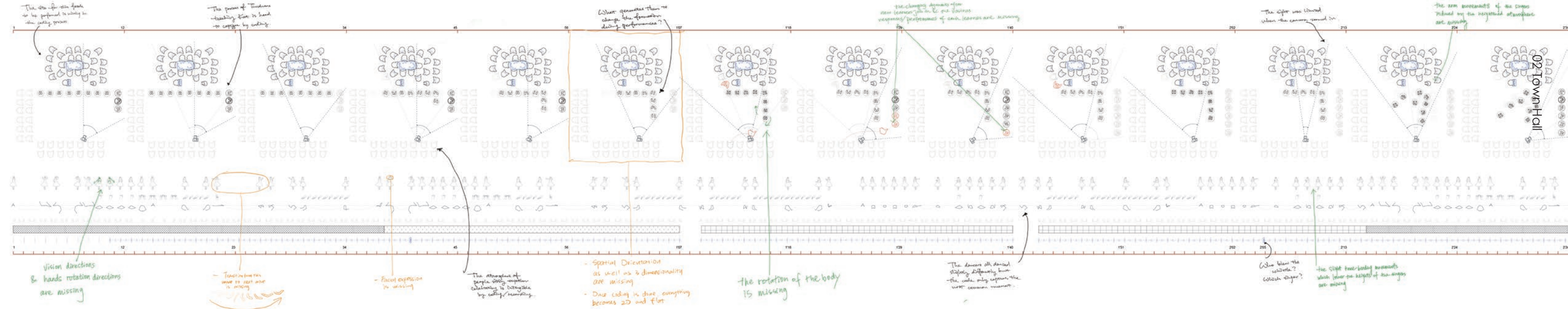
These back spaces of rooms are showing spaces are designed and calculated by algorithm, run by data, powered by servers, as the role of traditional designers being replaced. They're scenes and back stage behind the images that they produced. These drawings reveal many perspectives that involves speculation by hedging digital architecture using new technologies such as. They're attempting to picture the vision of the extreme situation if the society and industry pursue and see AI and technologies as solution of space designs.



01 Digital Architecture

02 Architecture

All images used in this drawing, except the model, were generated by AI.



02 Town Hall

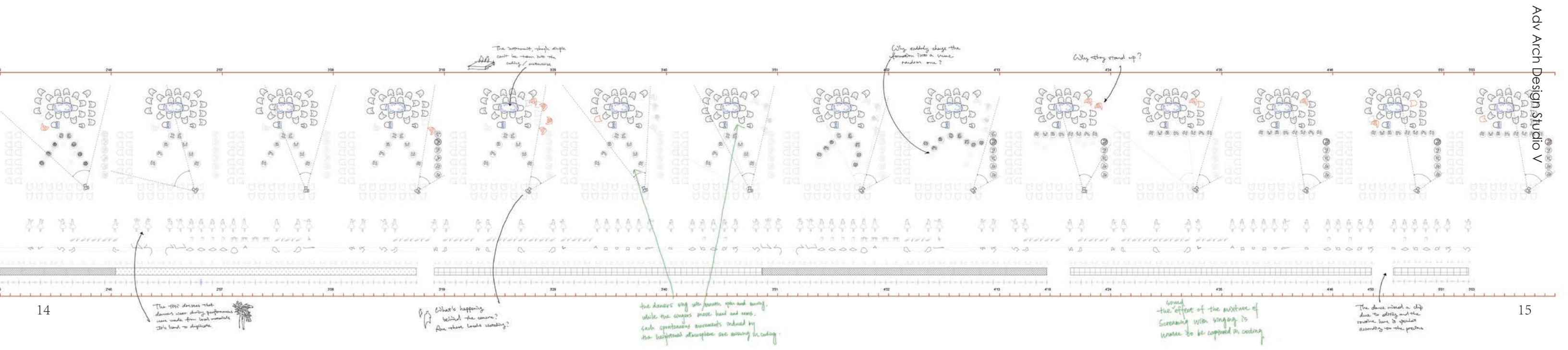
For Recording Intangible Heritage

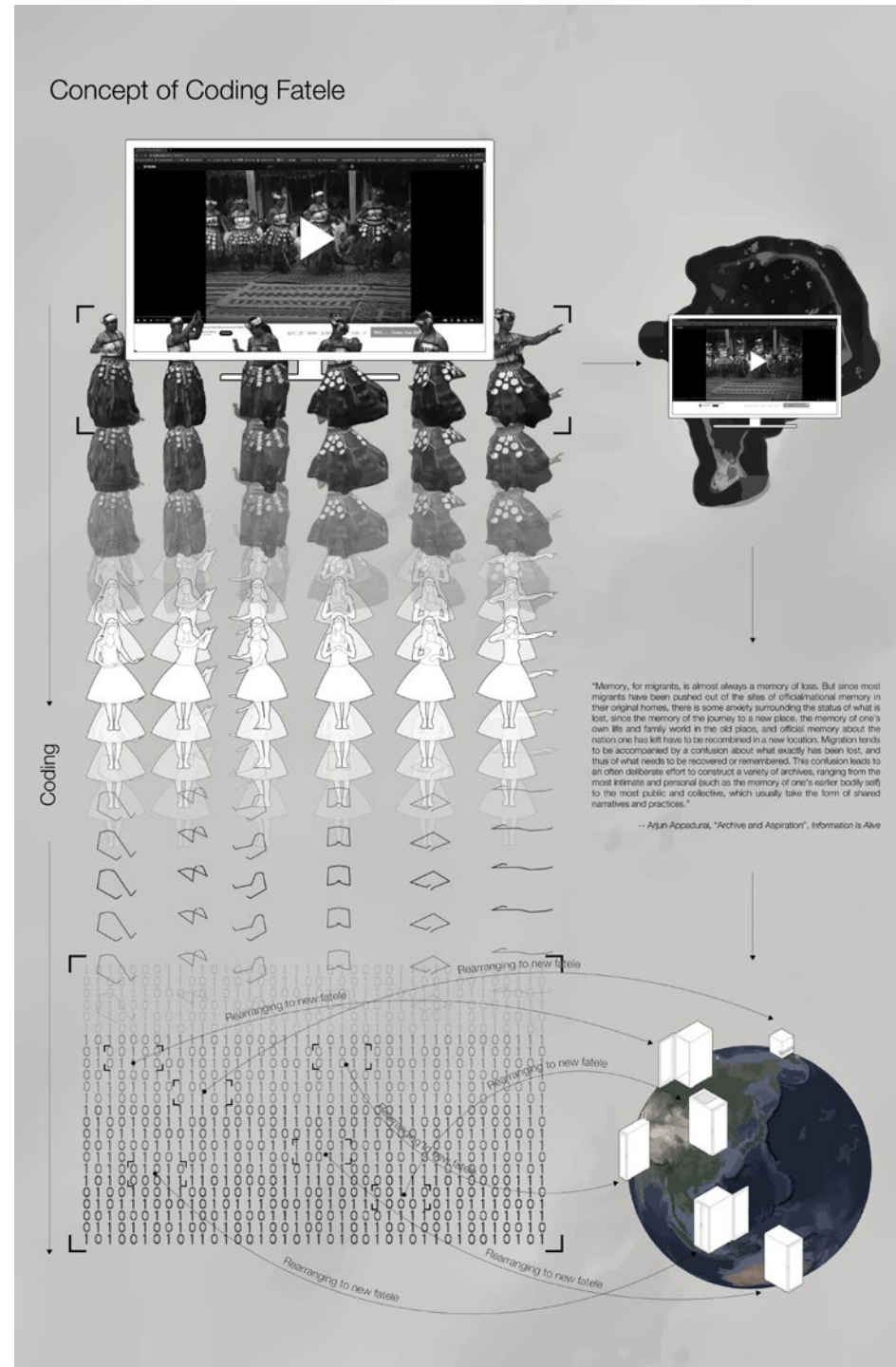
Adv Arch Design Studio V
Fall 2023

Type : Recording Museum Design

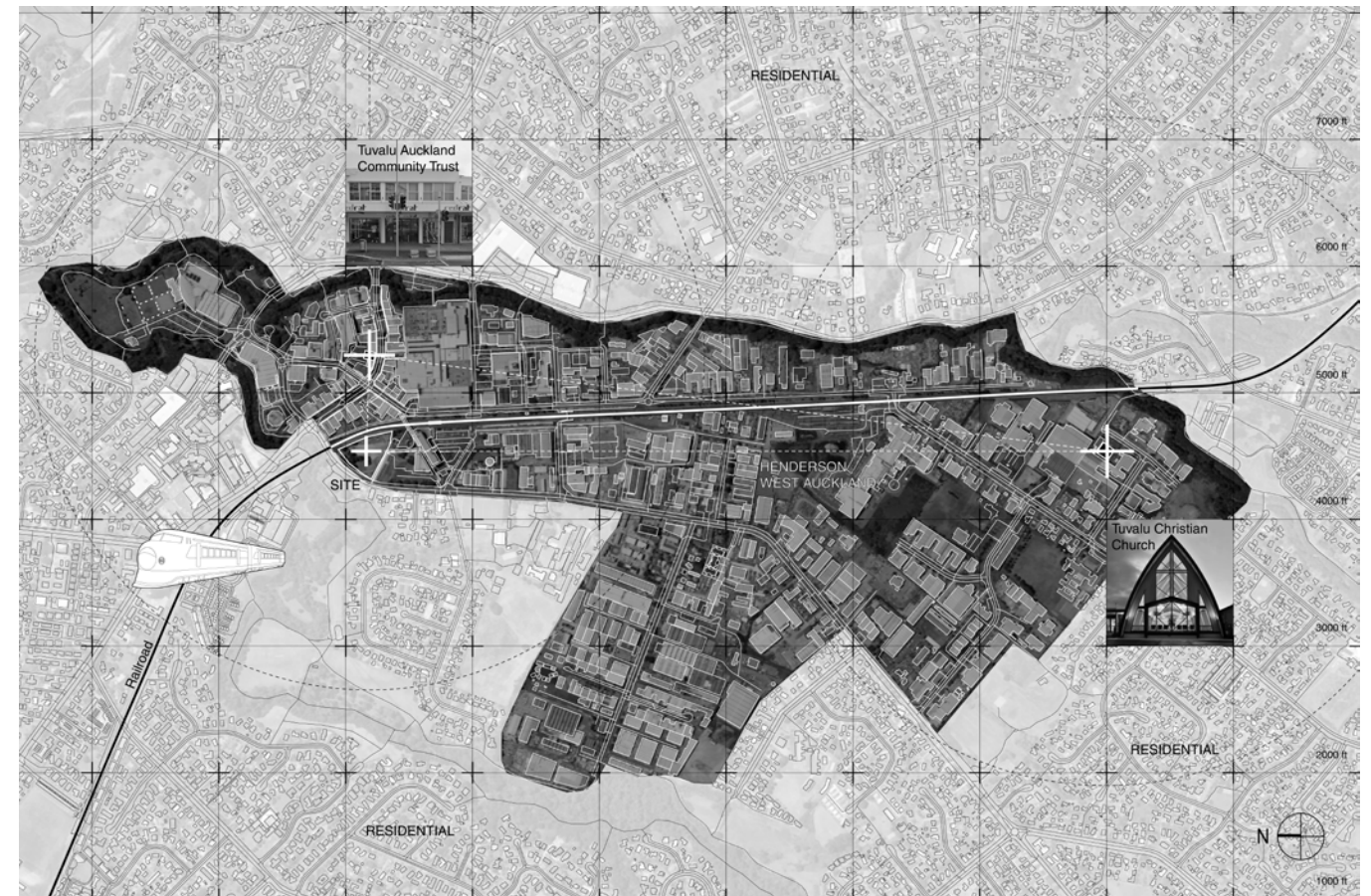
Instructor : Marina Teresa Otero Verzier/Farah Alkhoury

Role : Group Work

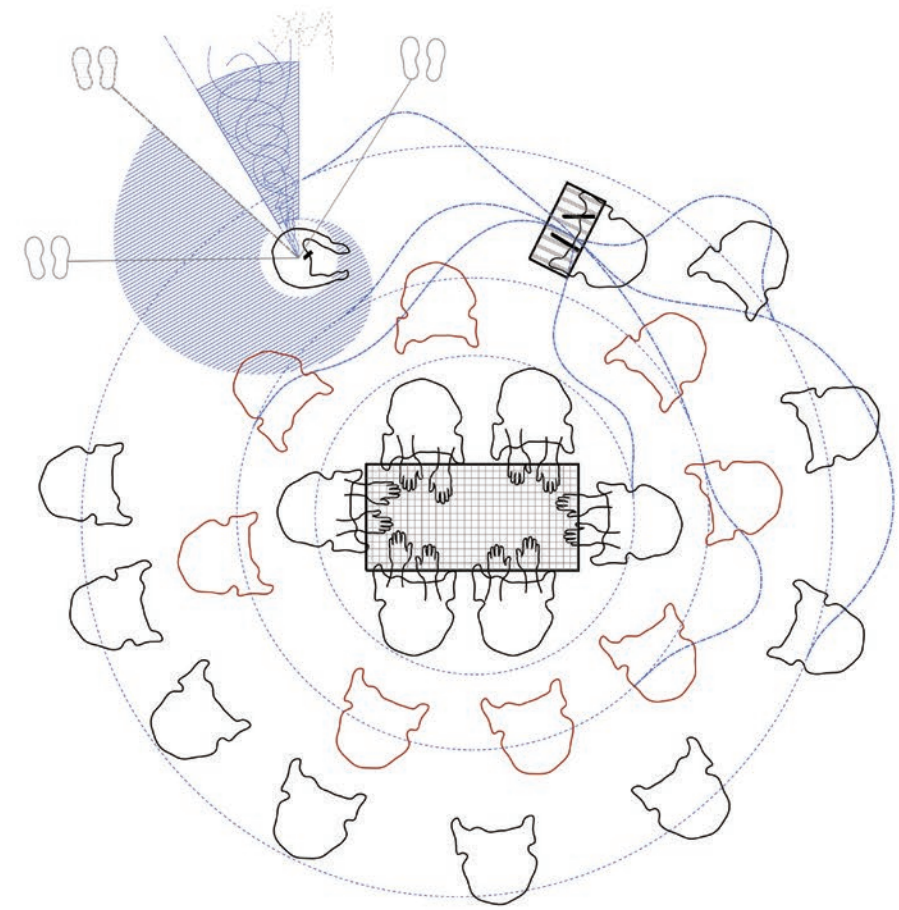
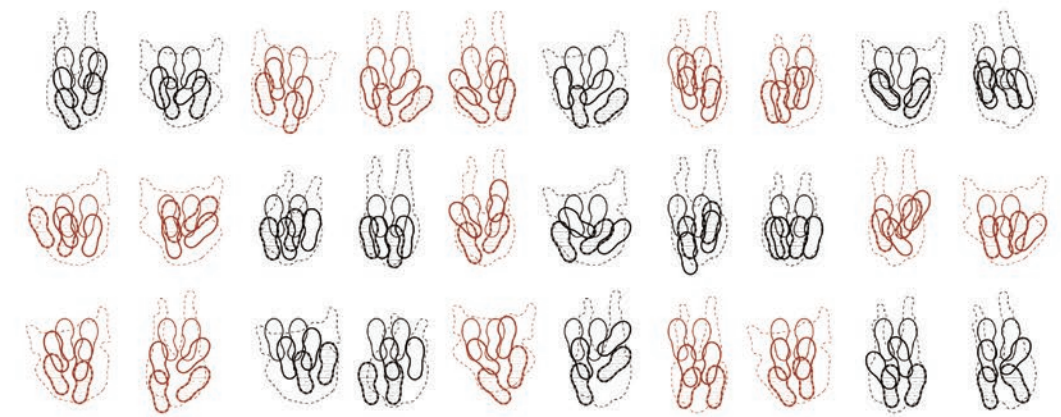
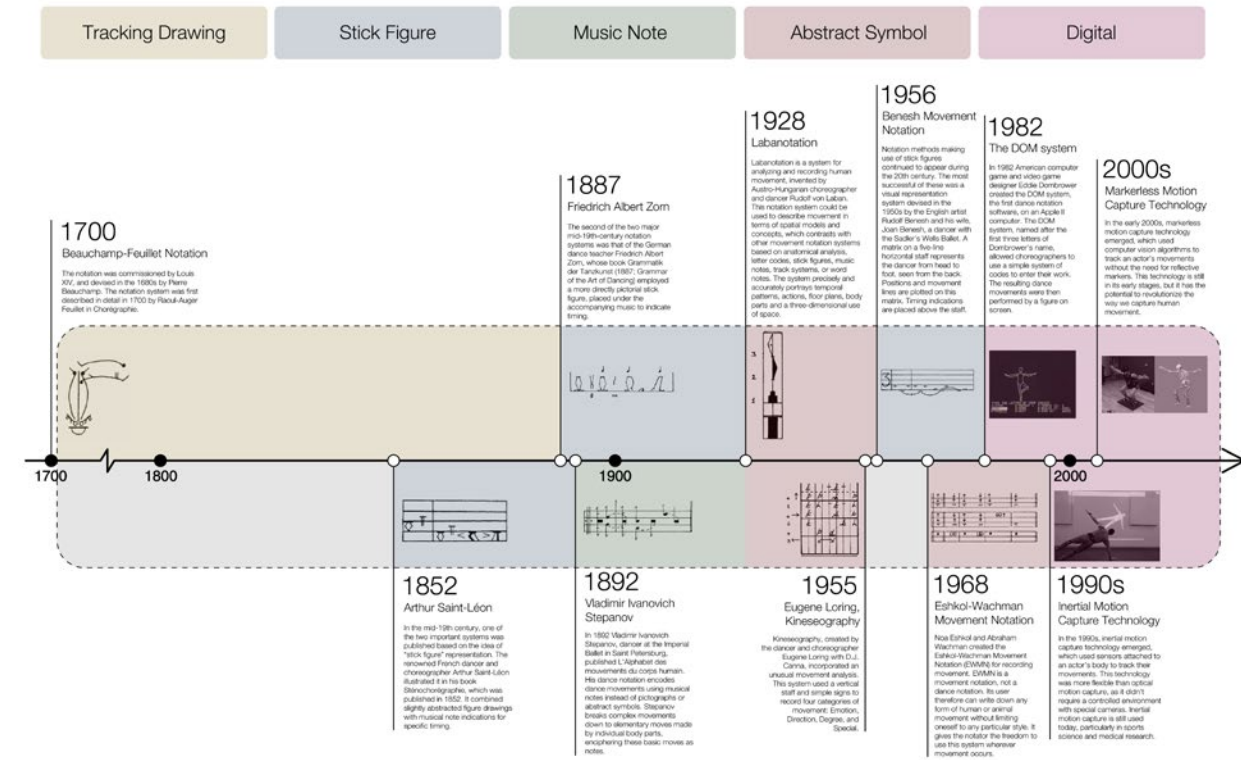




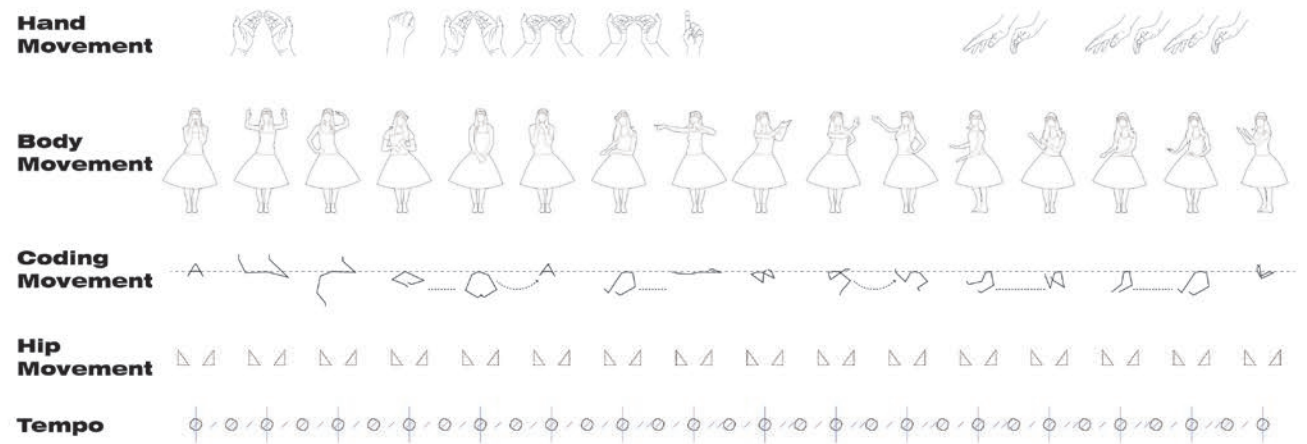
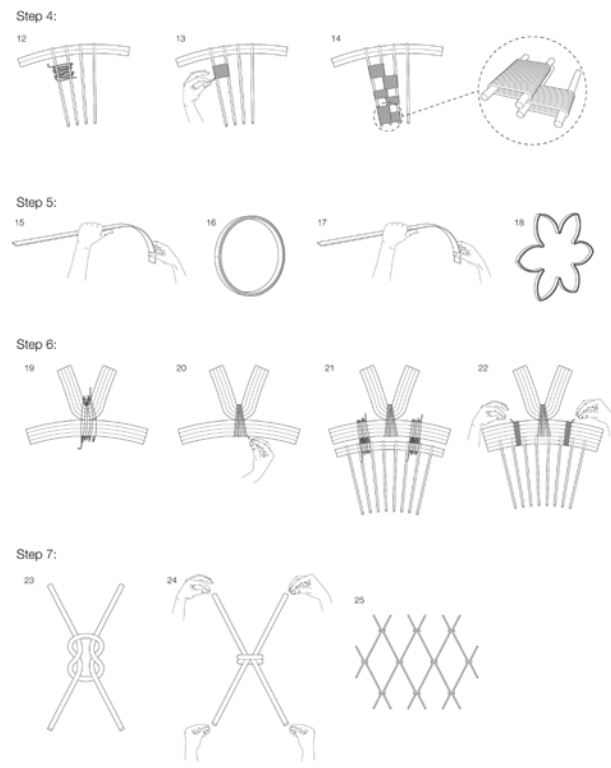
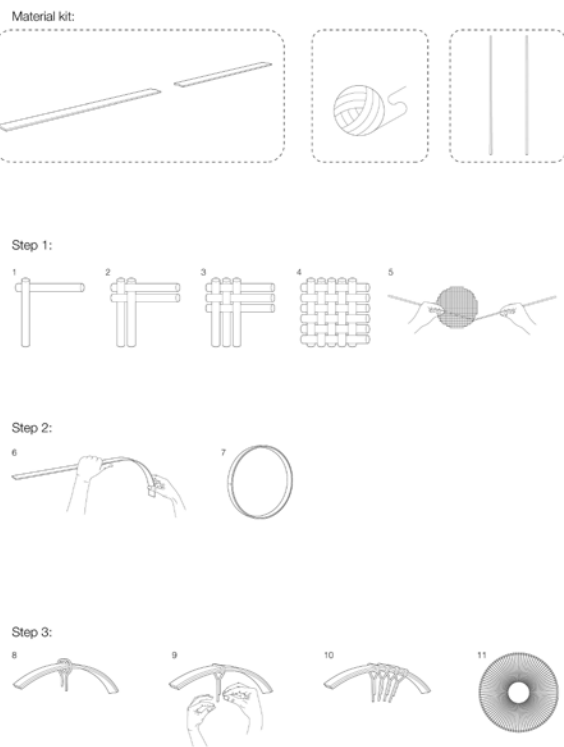
Our clinic's collective goal is to inspect Tuvalu's government announcement of its plans to create a digital twin of its submerging nation by digitizing its tangible material. Tuvalu's ambition to upload themselves to the metaverse follows the preservation of its memories and sovereignty. Our project explores this complex terrain by considering how to preserve Tuvalu's heritage beyond what's tangible, which is its intangible cultural heritage.



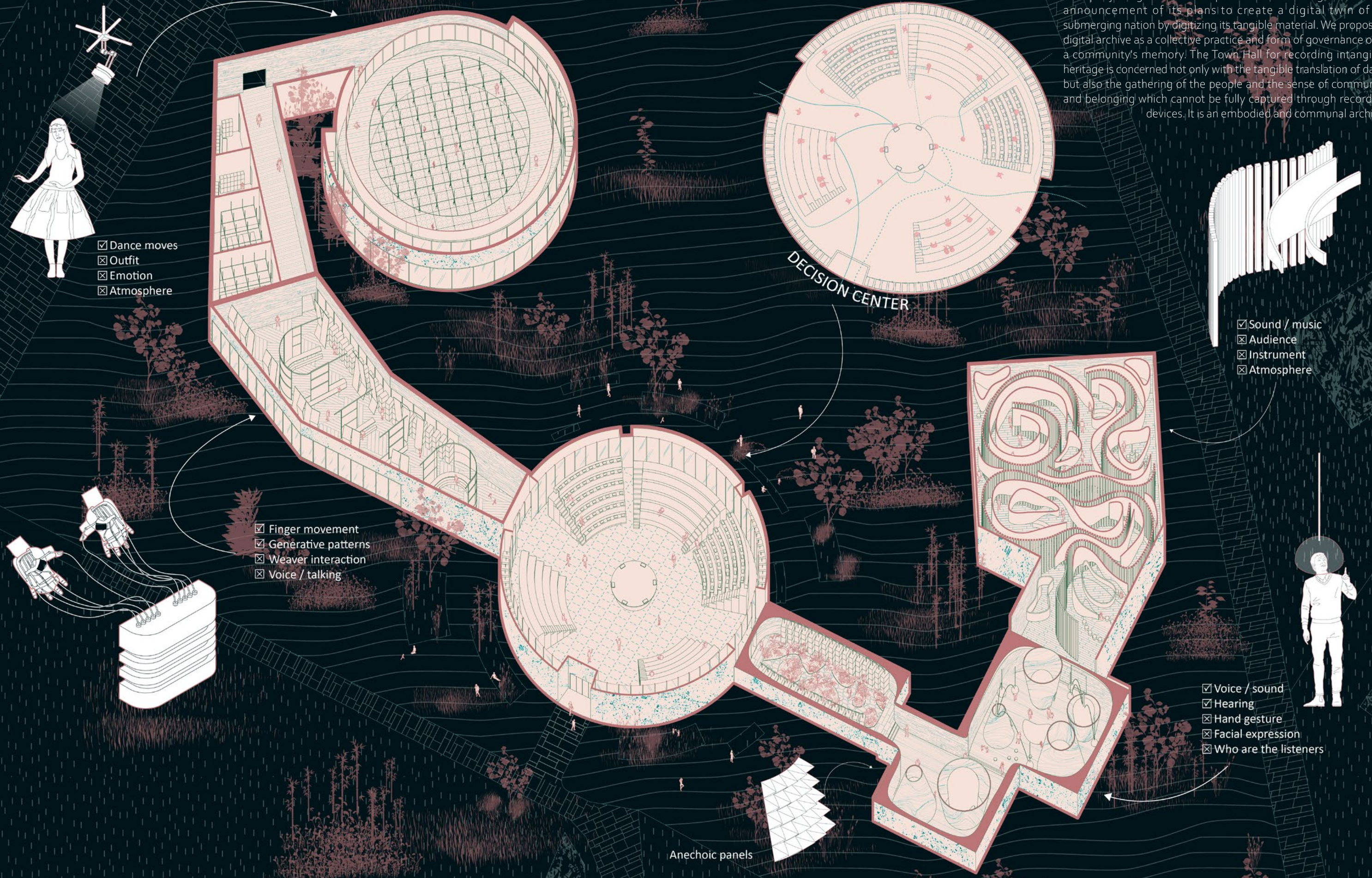
Movement Notation / Technology History



Fafetu Weaving Manual



The project goal is to respond to Tuvalu's government announcement of its plans to create a digital twin of its submerging nation by digitizing its tangible material. We propose a digital archive as a collective practice and form of governance over a community's memory! The Town Hall for recording intangible heritage is concerned not only with the tangible translation of data, but also the gathering of the people and the sense of community and belonging which cannot be fully captured through recording devices. It is an embodied and communal archive.



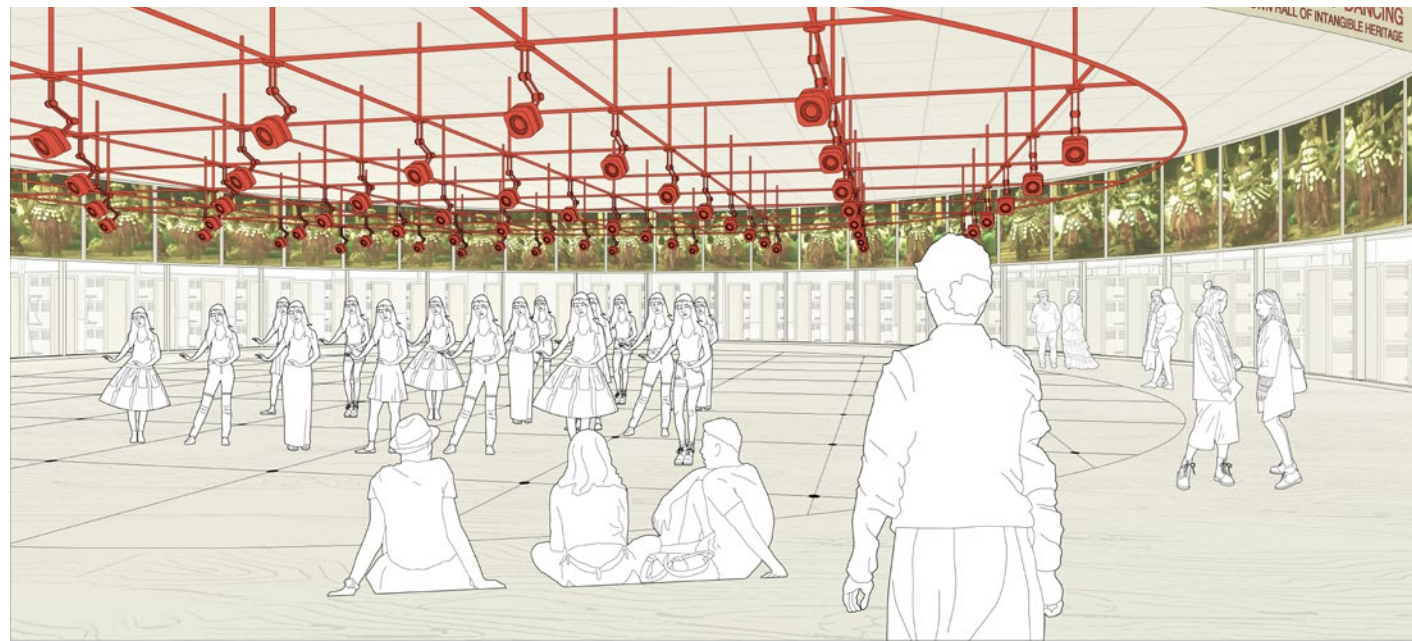
- Dance moves
- Outfit
- Emotion
- Atmosphere

- Finger movement
- Generative patterns
- Weaver interaction
- Voice / talking

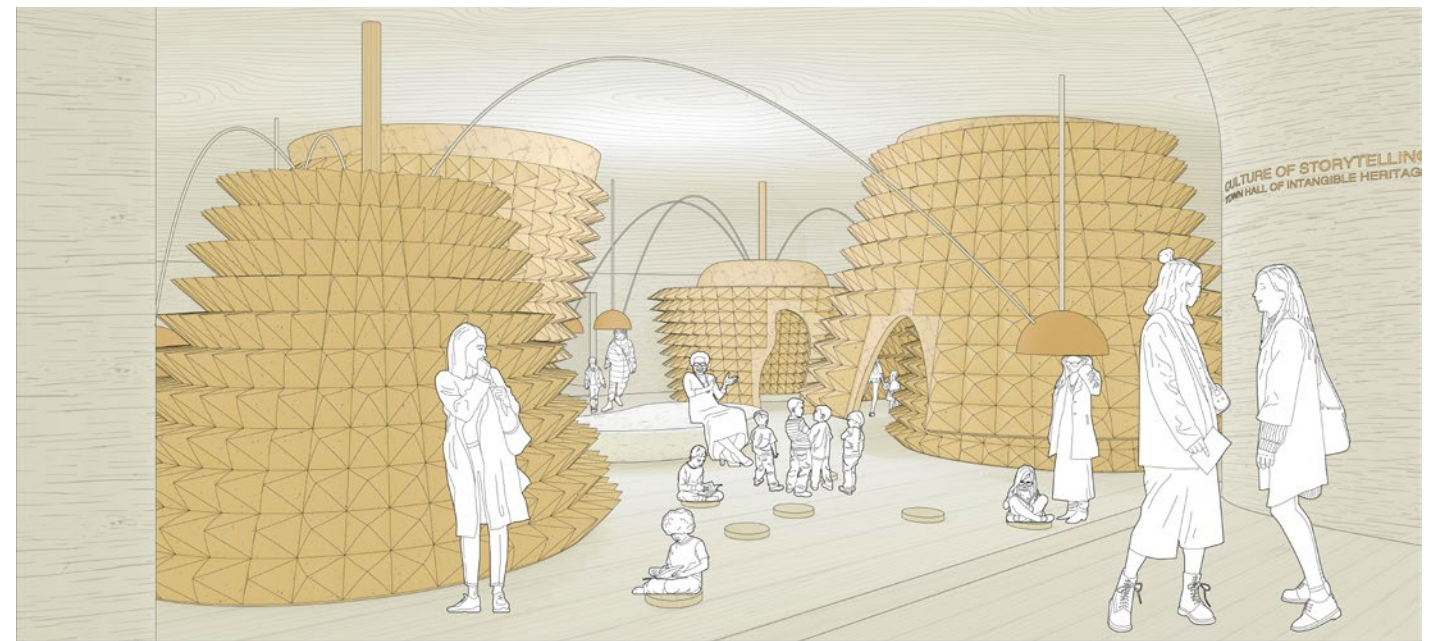
- Sound / music
- Audience
- Instrument
- Atmosphere

- Voice / sound
- Hearing
- Hand gesture
- Facial expression
- Who are the listeners

Anechoic panels



Dance Information
 Excerpt from a Lauvian Falele that Princess...
 Number of the...
 Total Duration: 0:37



Voice Memos of To Aso o te Patau: the Day of the Bomb

Speaker: Penileta
Author: Liliifenua o Penileta, Aukilani
Recorded Date: 04/16/23
 This was the day my island Funafuti was bombed by the Japanese in the war.

Fuafalosa Natano
Author: Funafuti Community
Recorded Date: 04/15/23
 Well today is... the patau, which brings... Funafuti together as one whole family.

Peter Mogaemie
Author: A book about Tuvalu and the second world war
Recorded Date: 04/15/23
 When the bombs fell, the next morning, cuz it was dark when the... in the daylight, people would just say "what has happened",... know, and they really got to... so they started moving the next day.

Veisamoa Manoa
Survivor: Aso o te patau: She was a teenager when the... arrived at Funafuti in 1942. Funafuti became a significant... navy and airbase for the...
Recorded Date: 04/10/23
 And the ships started coming in, 2 sometimes 3 at a time... the Lagoon. They tied up all the way to the passage of Funafuti. Some people ran to the... because it's the biggest building... Funafuti at the time. As soon as the... bomb fell on the church, it... started... of April and it has... Funafuti. It was the day that Funafuti survived the bombing.

NOTES:
 Written in the Tuvaluian and Kiribati languages. The late composer of this song hails from the island of Nui in Tuvalu, hence the Kiribati language in the song.

Chorus:
 B B B B G#m G#m G#m F# F# B B B B B G#m G#m G#m G#m F# F# B

Meaning:
 Tuvalu e hehe, Tuvalu e hehe. This word is building.
 Tuvalu e hehe. This word is building.
 Tuvalu e hehe. This word is building.



Weaving Information
 Total Weaving Time:
 Designer: Captain Elio Boreham
 Pattern Size:



Song Information
 Excerpt from the song TERIKAI
 Singer: Captain Elio Boreham
 Total Duration: 4:04

NOTES:
 Written in the Tuvaluian and Kiribati languages. The late composer of this song hails from the island of Nui in Tuvalu, hence the Kiribati language in the song.

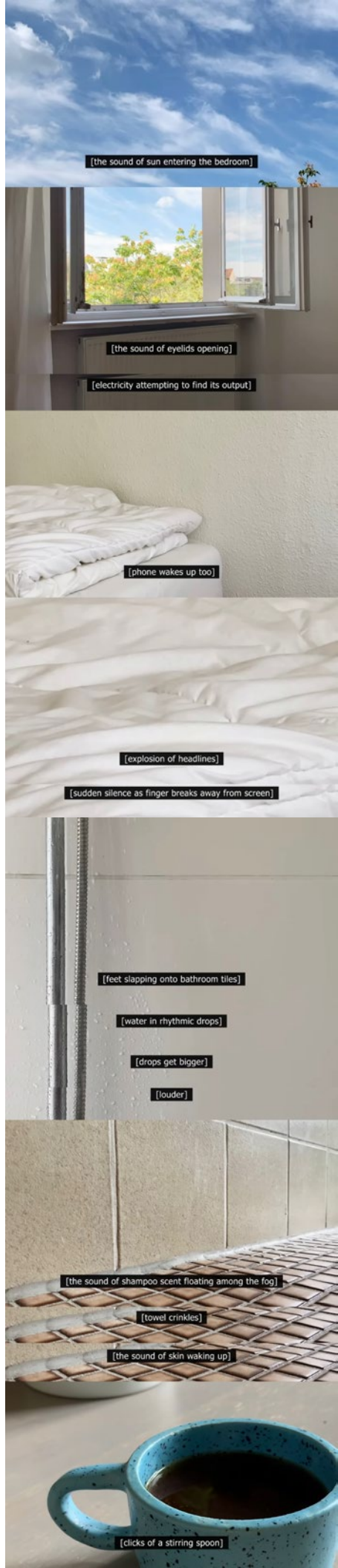
Chorus:
 B B B B G#m G#m G#m F# F# B B B B B G#m G#m G#m G#m F# F# B

Meaning:
 Tuvalu e hehe, Tuvalu e hehe. This word is building.
 Tuvalu e hehe. This word is building.
 Tuvalu e hehe. This word is building.



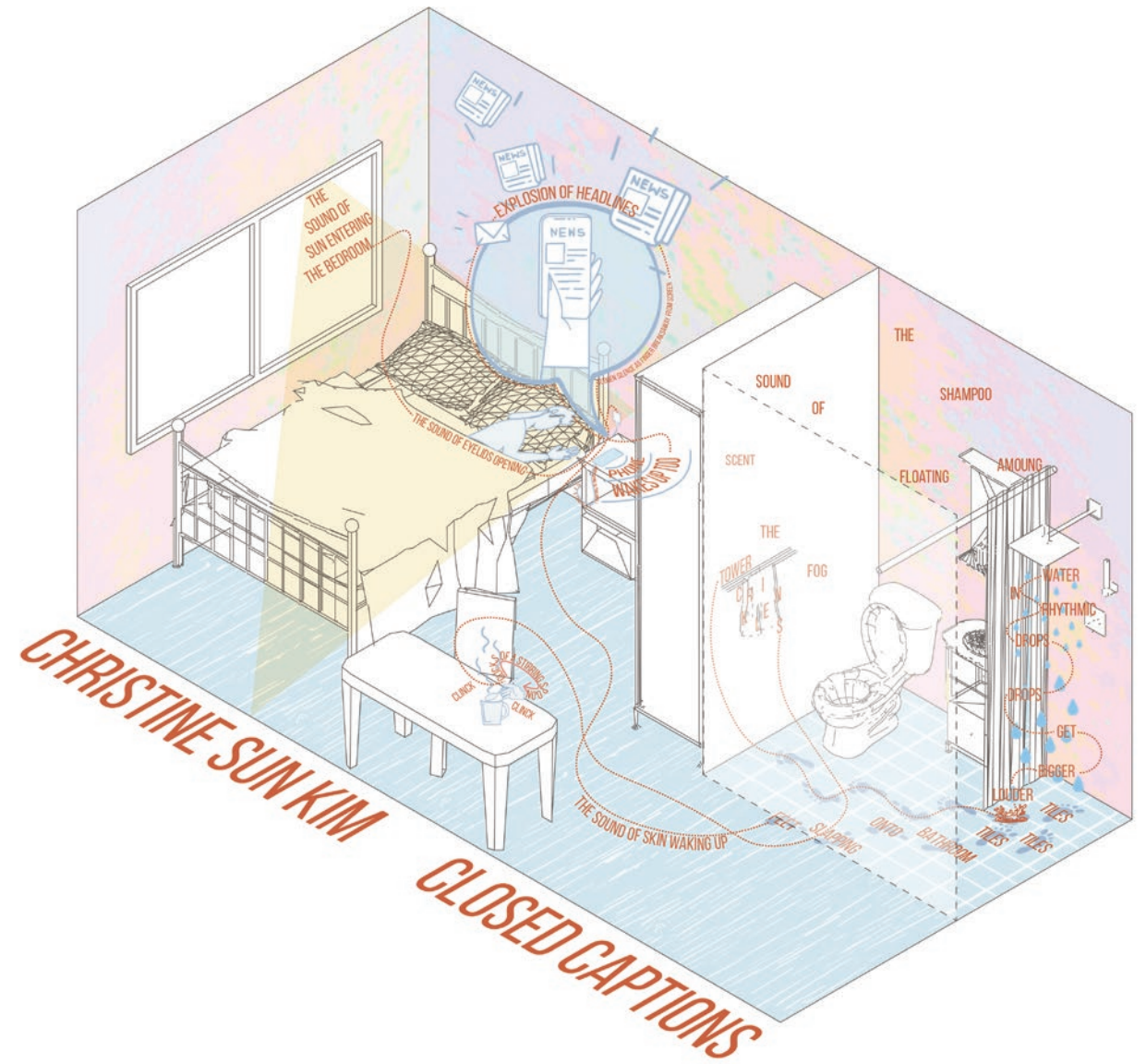
03 Captioned City

Adv Arch Design Studio VI
Spring 2024
Type : Disabled Artist Community Design
Instructor : Irina Verona/Jennifer Carpenter
Role : Group Work



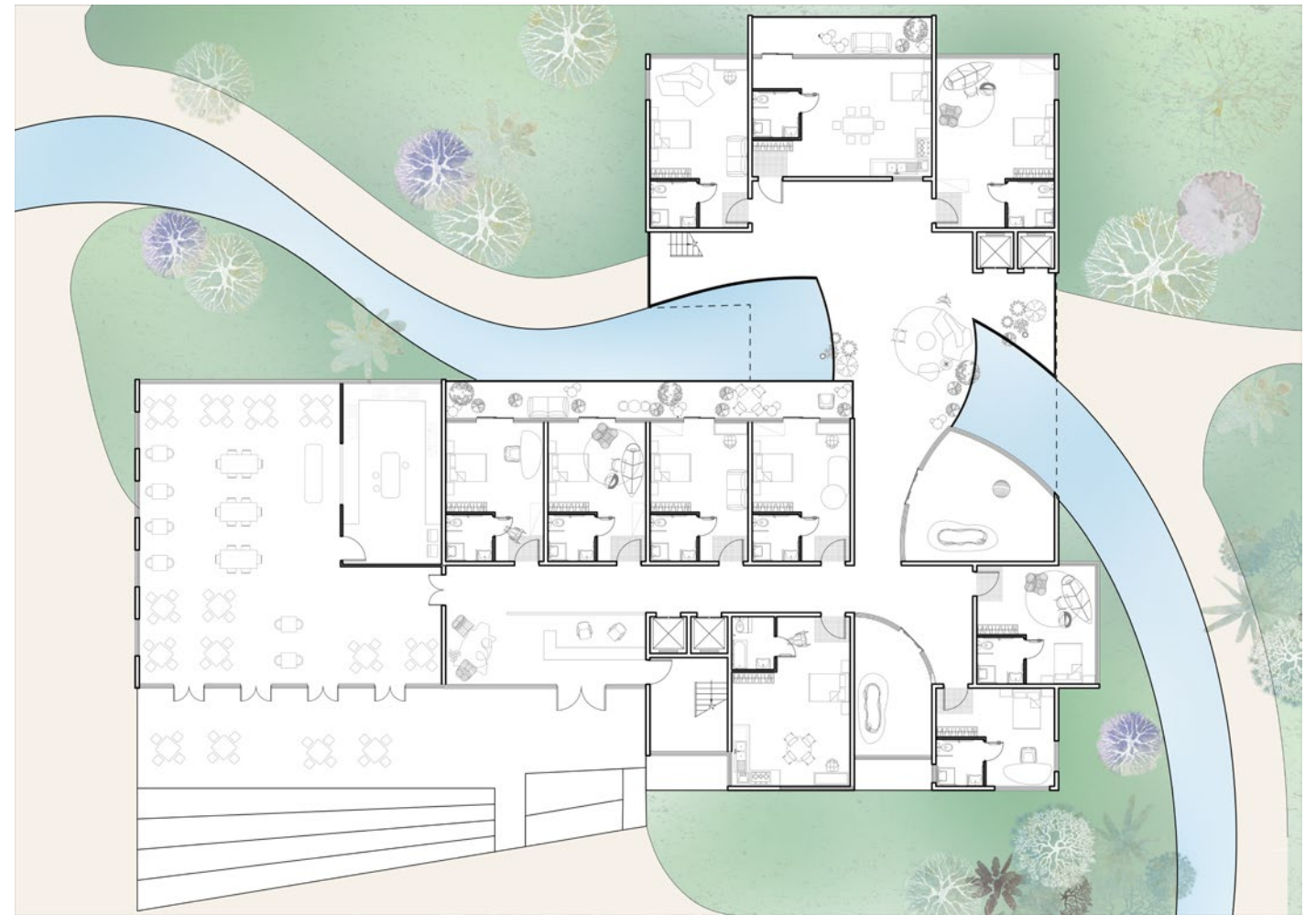
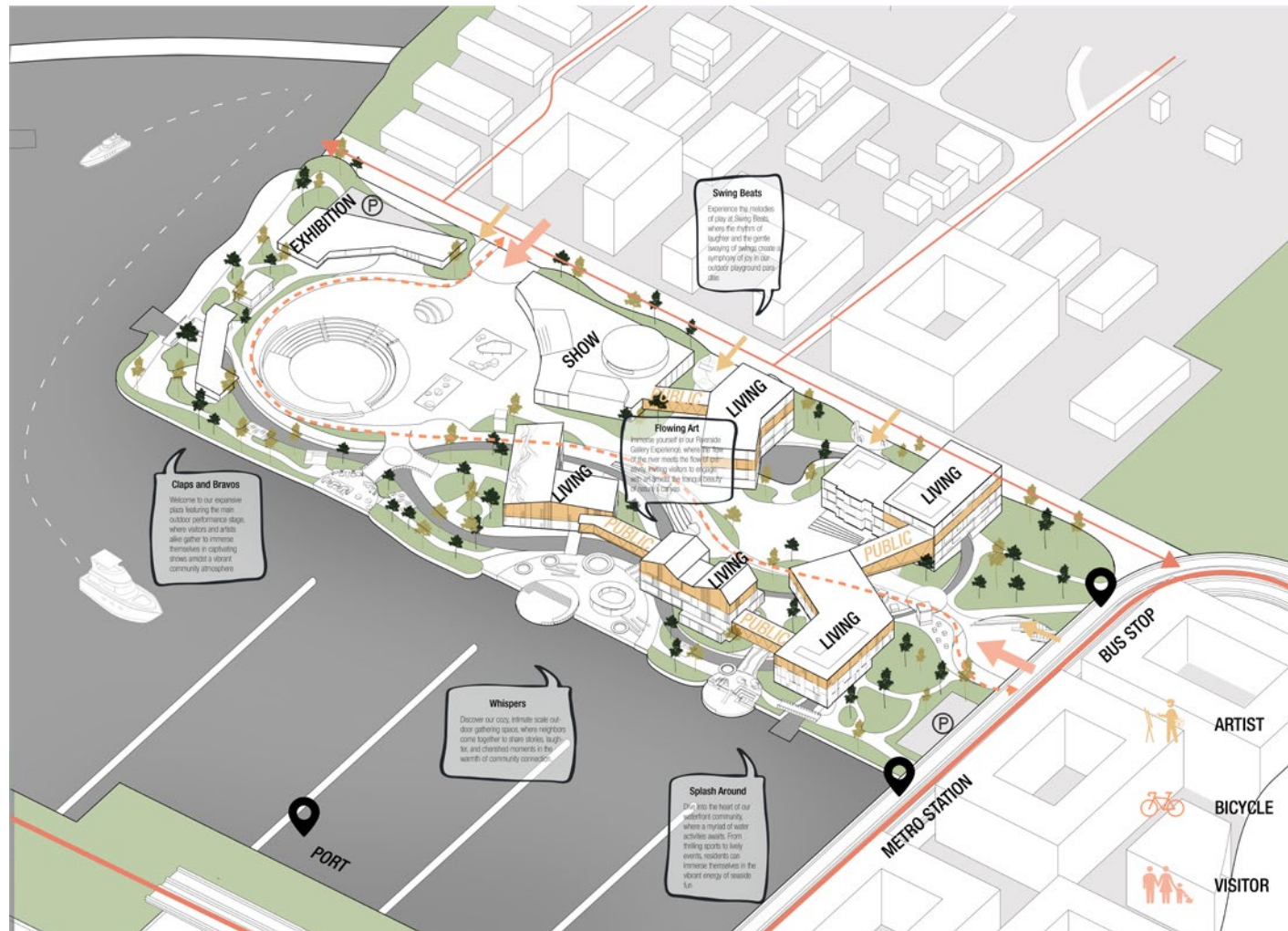
Case Study Christine Sun Kim-Closed Captions

As a deaf individual, Christine found it challenging to comprehend captions in movies, especially when they included descriptions of music. In response, she created a series of artworks featuring captions, ranging from her daily morning routine to scenes of urban spaces. Despite being born deaf, her descriptions often include sounds that don't actually exist or produce audible noise. However, this unique perspective results in descriptions that offer more detail and inspiration than those typically imagined or noticed by hearing individuals. imagined and noticed.



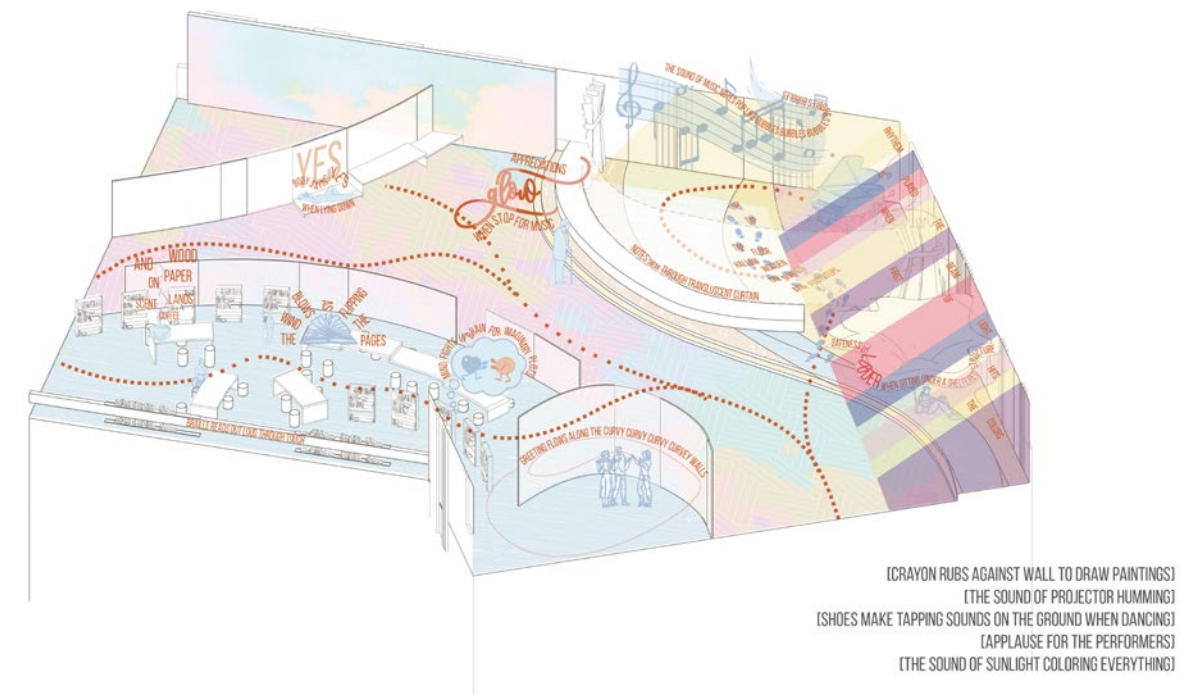
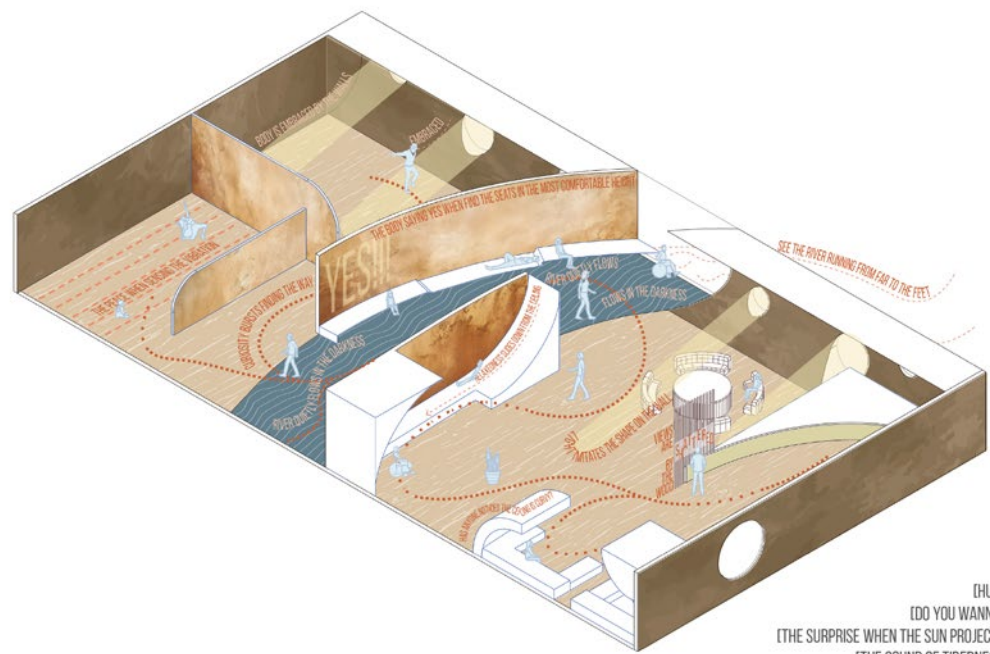
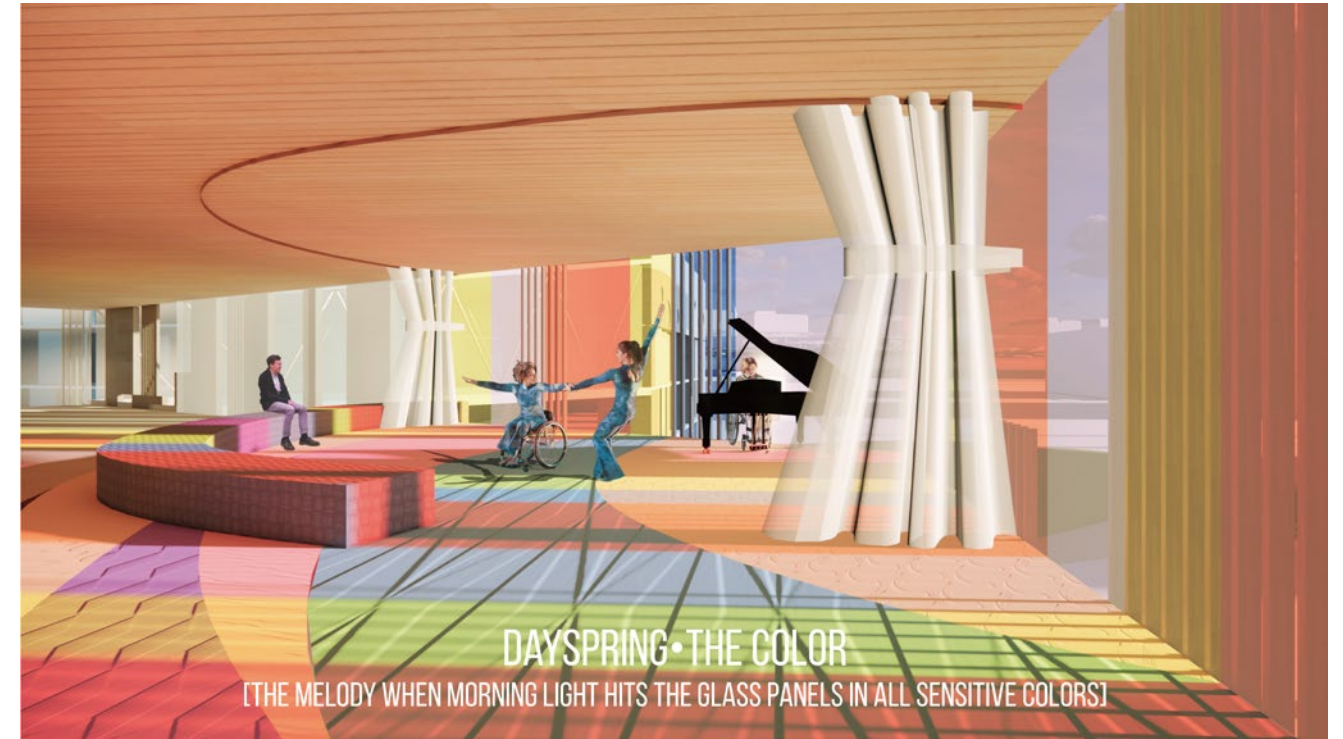


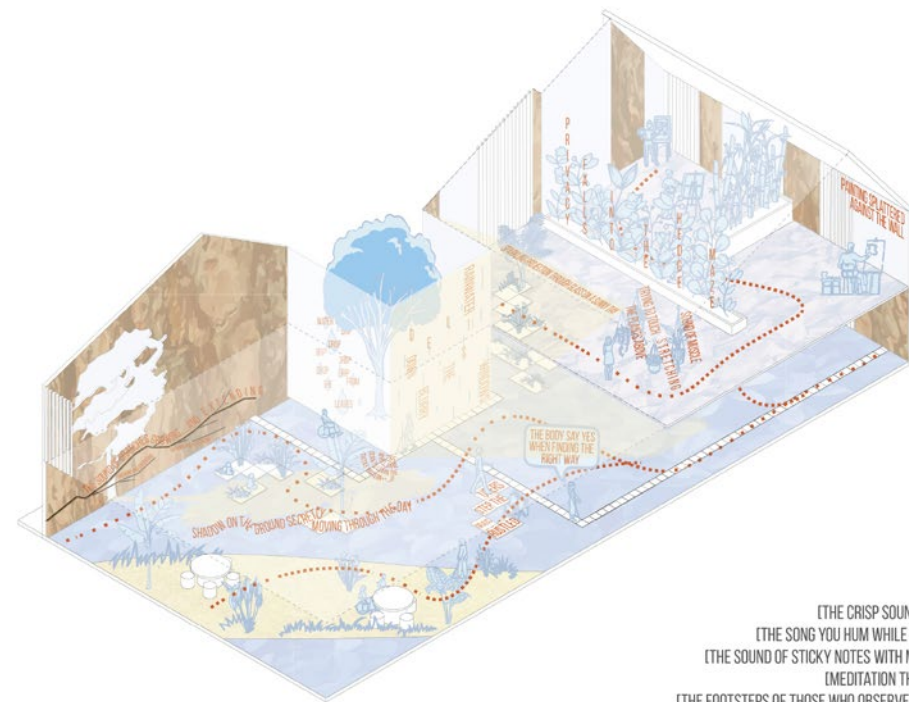
Disabled spaces are designed to be inclusive and accessible to all individuals, regardless of their abilities or disabilities, by creating environments that can be experienced and appreciated by everyone. This inclusivity is achieved through multi-sensory design strategies that cater to a diverse range of sensory experiences.



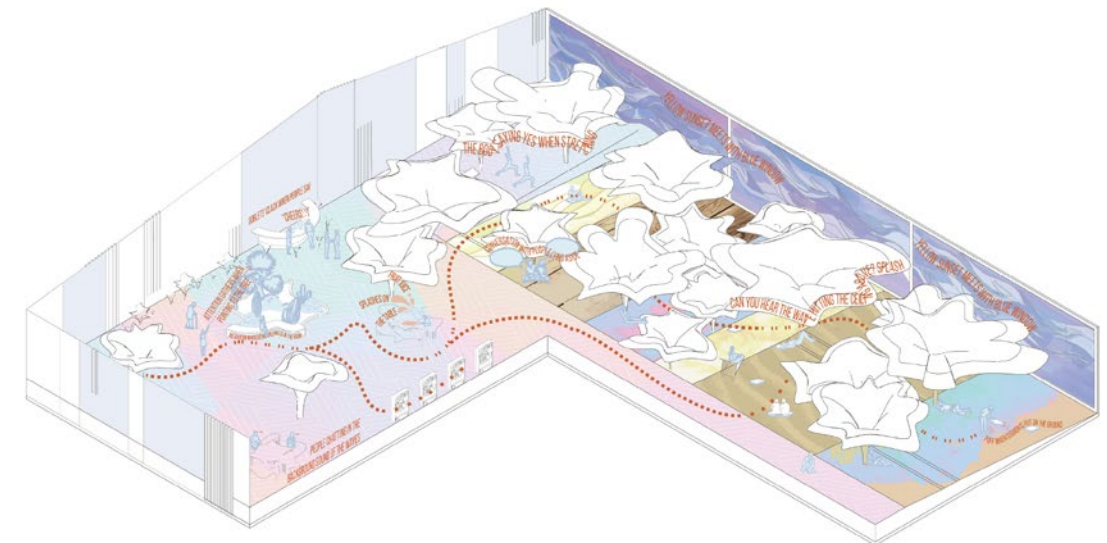
Since we respect disabled people's different preferences in feeling comfortable in spaces and atmospheres, rather than categorizing spaces based on traditional functions, such as 'reading room' or 'workspace,' we advocate for an approach that encourages artists to explore and engage with spaces based on their unique body characteristics and qualities. By naming spaces according to these characteristics, we aim to create an environment that is welcoming and comfortable for all. These public rooms serve as gathering spaces for artists, fostering interdisciplinary communication and inspiration, while trying to form a sense of community and belonging.







[THE CRISP SOUND OF STEPPING ON DRY LEAVES]
 [THE SONG YOU HUM WHILE HARVESTING YOUR OWN CROPS]
 [THE SOUND OF STICKY NOTES WITH MESSAGES STUCK TO THE WALL]
 [MEDITATION THOUGHTS TO THE WATER SOUND]
 [THE FOOTSTEPS OF THOSE WHO OBSERVE TREES THROUGHOUT THE YEAR]



[USING INSTALLATIONS AS SOUND AMPLIFIERS FOR MUSICAL INSTRUMENTS]
 [THE SOUND OF SYMPHONY HARMONY]
 [THE DRIP-DROP OF WATER DRIPPING DURING SUMMER SHOWER]
 [THE SOUND OF WHEELCHAIR WHEELS ROLLING OVER WOODEN TACTILE]
 [THE SOUND OF BOOKS BEING PUT BACK ON THE SHELF]



Tactile Model

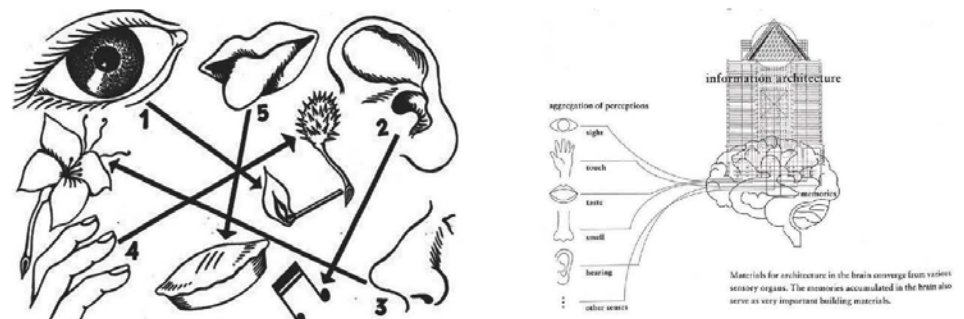
Captioned Model

MORE THAN TYPICAL: MULTI-SENSORY FOR BOARDER RANGE OF EXPERIENCE

How can spaces help people with disabilities feel the surroundings by engaging them through multi-sensory design?

The majority of architecture is designed for the eye of the beholder, and tends to neglect the non-visual senses of hearing, smell, touch, and even taste. Therefore, there is a growing recognition of the importance of addressing the diverse sensory needs of individuals, especially disabled people, which arouses the topic of disabled spaces. Sensory sensitivities, such as excessive or low sensitivity to stimuli, are common challenges faced by people with disabilities. These can range from heightened allergic responses to anaphylaxis, where certain senses may be overactive or inactive. This design also benefits everyone from the neglect of senses which is partially blamed for a number of problems faced by many today including everything from presenting difficulties for disabled people to sick-building syndrome (SBS) and seasonal affective disorder (SAD).

Similar to people, spaces themselves can be seen as living entities as well, with the same inherent rights to be comfortably utilized by every individual, including those with disabilities. Disabled spaces emphasize that it's acceptable to not feel oneself every second or to be less sensitive to certain perspectives, and therefore, spaces could address the unique characteristics in its own time. By respecting that, it enables architects to create environments that are more engaging and inclusive for individuals with diverse sensory needs. The rhythm of an architecture can be felt by occupants as a result of the architect's composition – or arrangement of all the sensorial qualities of space. By arranging spatial sensorial features, an architect can lead occupants through the functional and aesthetic rhythms of a created place. Architectural buildings for all the senses can serve to move occupants – elevating their experience.



Upper Left: The order of priority of the eight senses in experience.
Lower Left: Senses needed to experience architecture and memories.
Soliman Elsamman, M. A., Abdel Ghaney Morsi, A., & Hosney Radwan, A. (2021). *The importance of Multisensory Architecture tools in designing learning spaces for visually impaired children*. 6(30), 134-147. doi: 10.21608/mjaf.2020.29836.1610



Right: A child plays with multi-sensory toys on a wooden wall. Source: Ekkachan Eiamanawattana

How is multi-sensory expanding the range of feeling?

Architect Richa Malhotra emphasizes the role of architecture in empowering spaces and creating harmony between the environment and the user. She describes sensory design as the intertwining of human perception, memory, and imagination to enhance the design and experience of a space. By engaging multiple senses simultaneously, such as sight, sound, touch, and smell, designs aim to create environments that cater to a range of sensory needs and preferences. For example, incorporating elements like soundscapes or interactive features can create more engaging and inclusive environments for individuals with different sensory needs. By doing this, the project not just focuses on providing convenience to disabled people, but also enhances and encourages the rich interpretation and experience of space to all communities and individuals by magnifying every perspective of the space speaking for itself. Since architecture has been taught to refrain from redundancy by the classic "less is more" theory, it would be fun to incorporate clues and hints in all sensory layers that architects designed by their own interpretations and intentions to let the space have strong characteristics to increase its legibility. Though strong, there is no authorized answer in design and encourages a more inclusive and diverse understanding of spaces. The gives the users the opportunity and space for self-regulation which is essential for the final goal of disabled space, foster and self-regulation.

This concept encourages design with a sense of ambiguity and redundancy, allowing users to discover and interpret the space in their own way. Incorporating this into architectural design can not only address the needs of individuals with disabilities but also enriches the experience for everyone, leading to more engaging and inclusive spaces that invite exploration and personalization. It allows for a deeper emotional connection besides functional between people and their environments, fostering a sense of belonging.



Left: A room covered in pink soft fur. Source: Pantan

Middle: Sunlight hits on tinted window and projects colorful shadow. Source: Art Installations by Daniel Buren



Right: Children playing in a multi-sensory room for blind. Souce: Ekkachan Eiamanawattana

Tactile in architecture: Just a navigation system?

Tactile bricks are everywhere. Originating in Japan, an engineer developed sensory pavers in 1965 for a friend experiencing vision loss. These bricks feature raised bumps that offer guidance to visually impaired individuals near streets, doors, or other points of interest. Another increasingly popular form of sensory paving is the use of parallel lines, which help guide individuals with visual impairments by indicating upcoming turns or changes in direction when using a walking stick or cane. This concept can extend to brick inlays or other architectural surfaces on walls, where braille can also be integrated. **However, are tactile paving systems limited in their function and lack of customization for blind individuals? Can it be multi-sensory as well?**

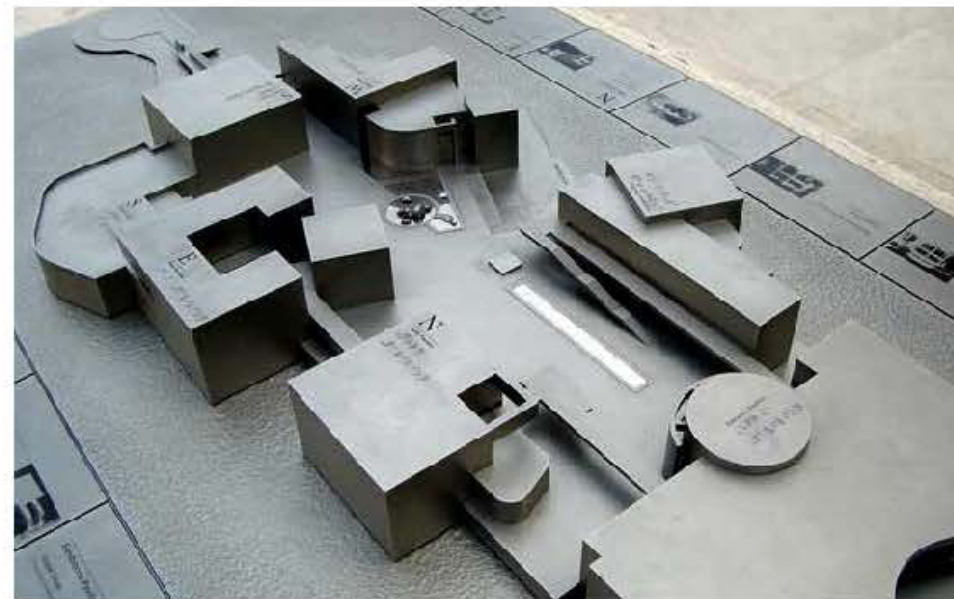
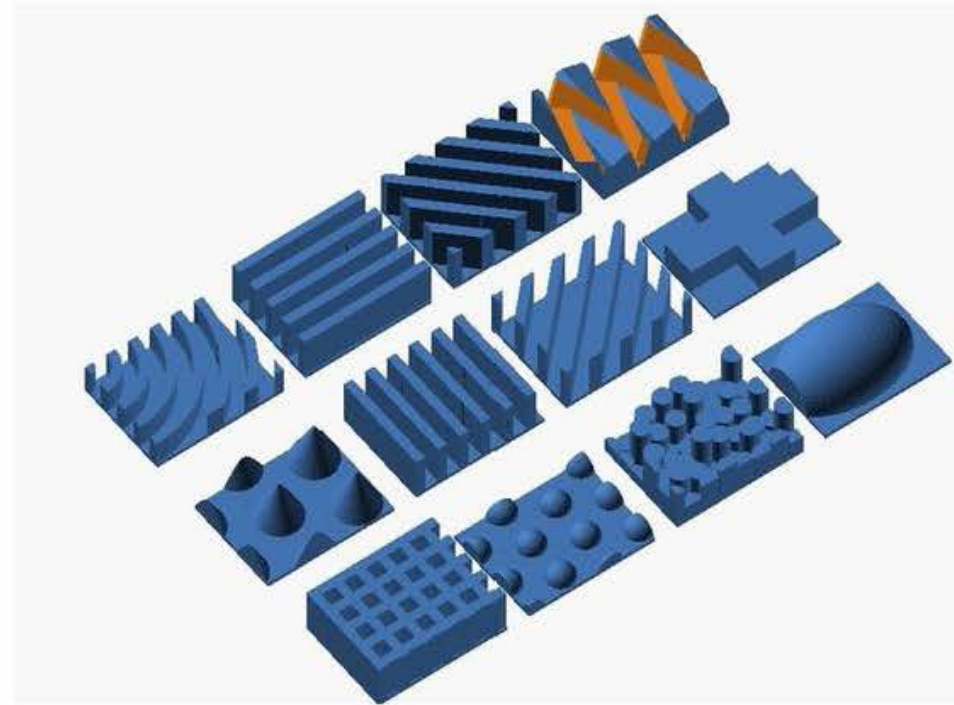
Function:

At the Getty Museum, a metal tactile model of the entire architecture is located at the entrance, with braille labels on each building's rooftop introducing its function and exhibition. By exploring this model through touch, visitors can gain a preliminary understanding of the space. They can feel the shape of the walls, ramps, roofs, and facades, allowing them to form a mental map of the site before physically exploring it. This approach transforms the navigation experience from focusing solely on the immediate path beneath the white cane to a more comprehensive overview of the entire site.

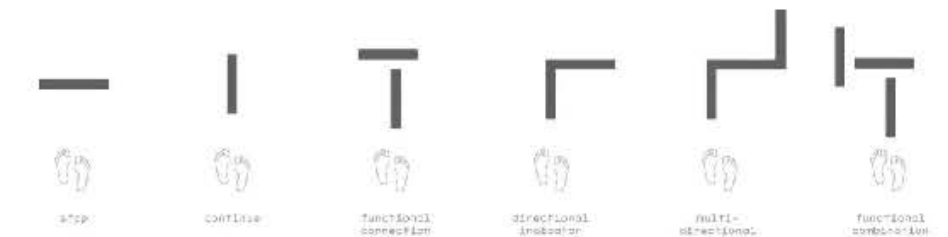
Customized:

In the residence designed by So & So Studio for a visually impaired woman in Thiene, Italy, the focus was on creating a natural process of way-finding. Each daily activity was treated as a node on the house map. To effectively communicate their design decisions for practical use, the designers developed a specific language by arranging floor panels. And by integrating a textured stone tile into the floor pattern, they highlighted these nodes and established a customized functional navigation system. In this way, panels are given definition through being put into the whole floor plan and become more than the guide for circulations, but also an indication of space in all dimensions.

As an experiment in our design project, Captioned City, we incorporated various types of tactile elements in the Tree Room to enrich the touring experience. This system includes a branch on the wall that serves as a handrail and tactile guide, traditional wood tactile elements on the floor for walking, large grass tactile areas for resting, and hanging plants from the ceiling for visitors to look above and touch. When combined, these elements create a multi-sensory experience that engages touch, sound, and scent.



Upper Left: Low-Vision Tactile Textures arranged in grid. *Source: Pinterest*
Lower Left: Tactile model of the Getty Museum. *Source: Wikipedia*

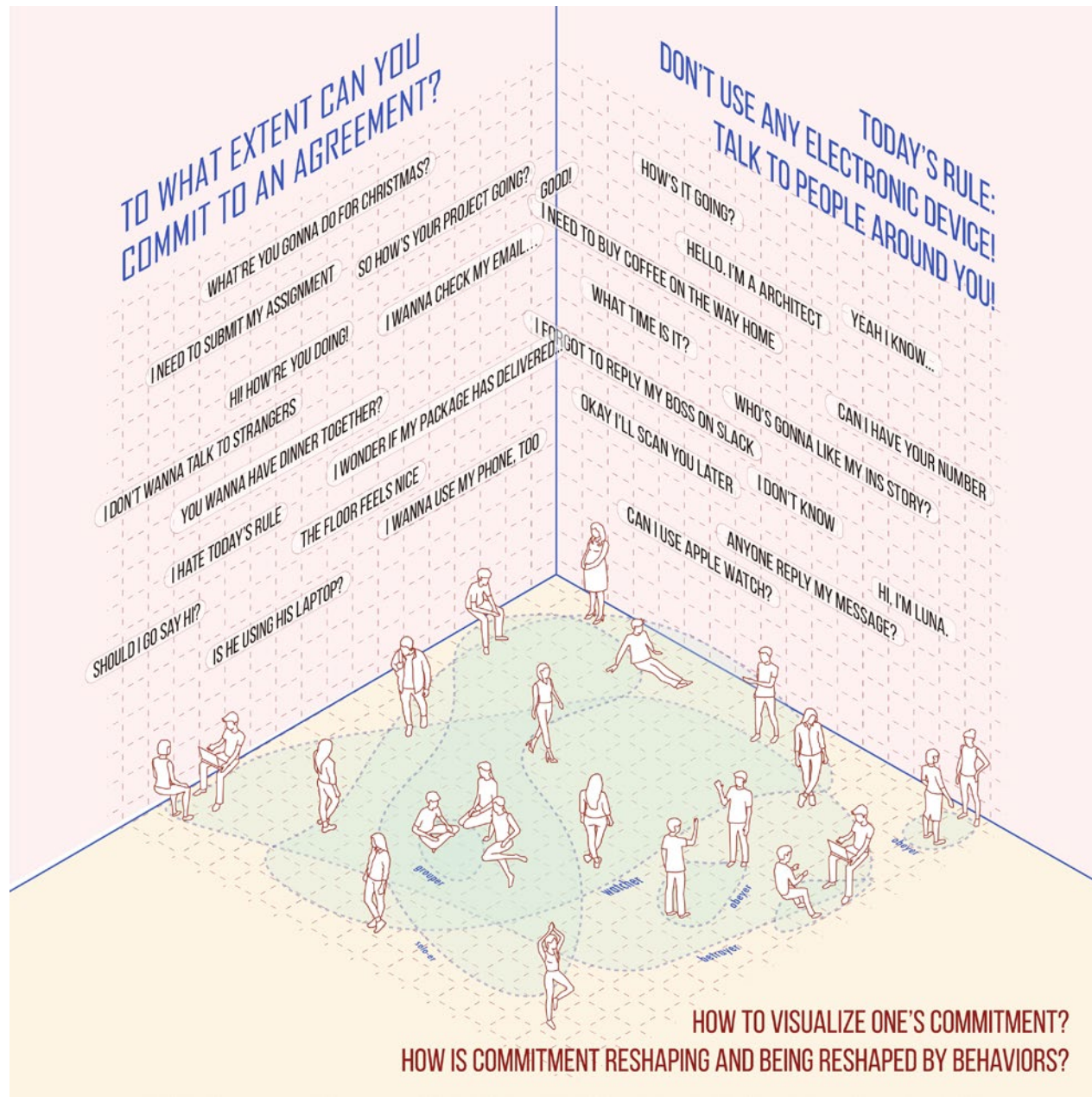


Right: The floor and the navigation system So & So designed for a visually impaired woman. *Source: https://www.archdaily.com/897946/teaching-a-blind-client-how-to-read-her-new-home-so-and-so-studio?ad_medium=gallery*



04 Focusing Mode

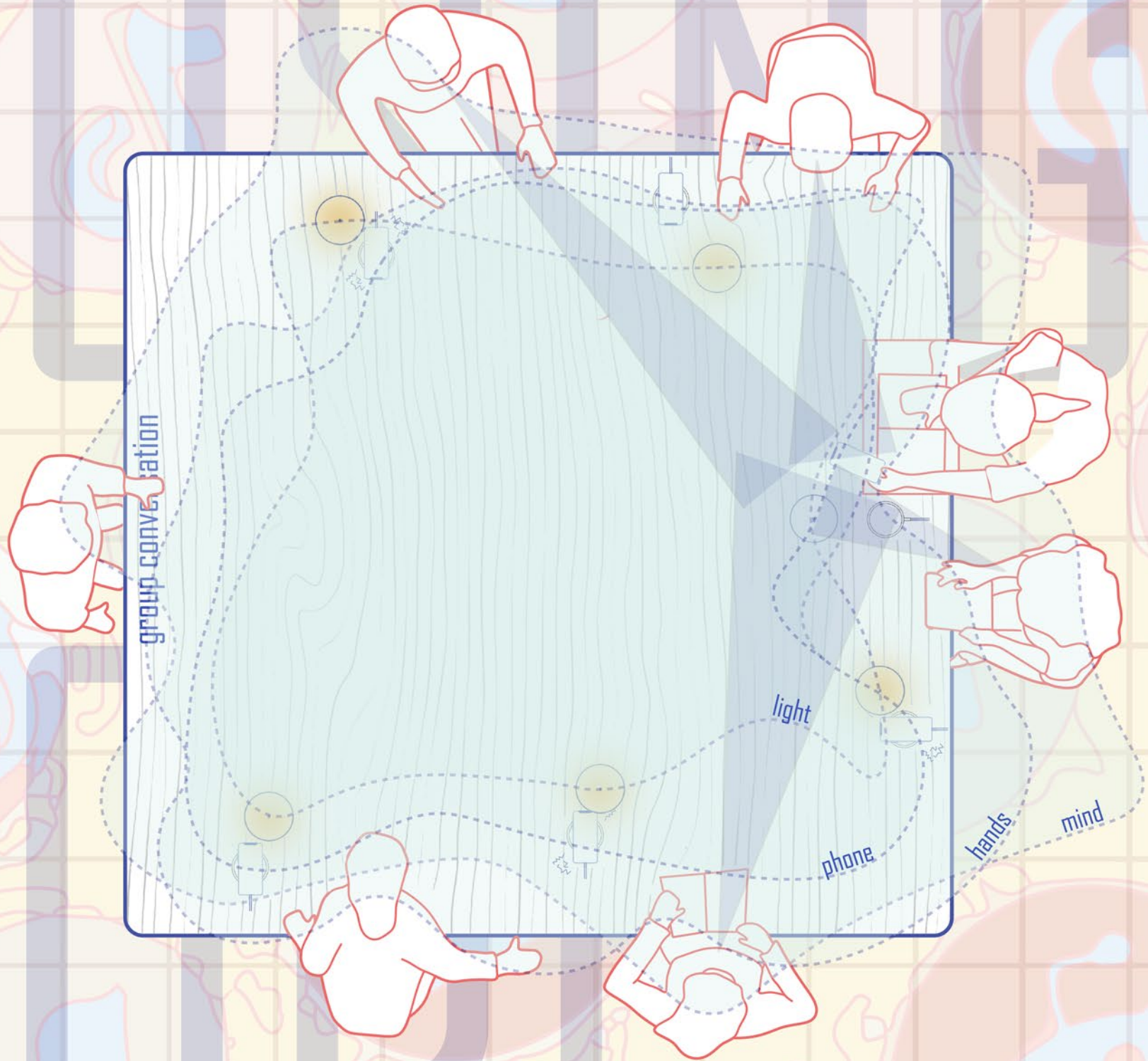
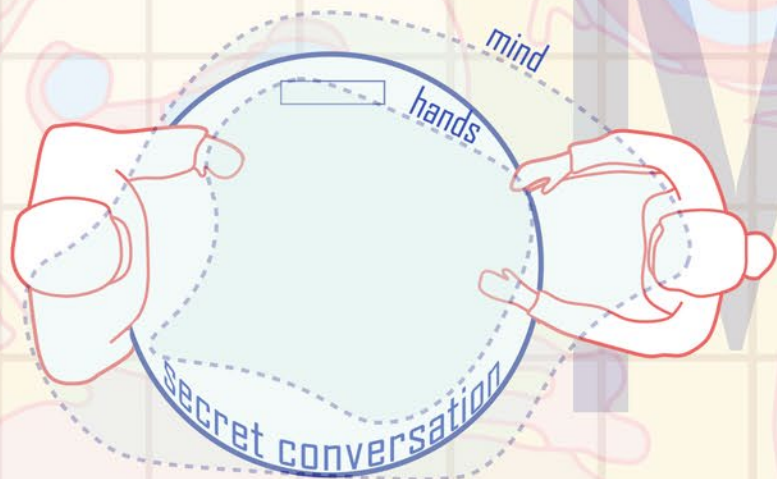
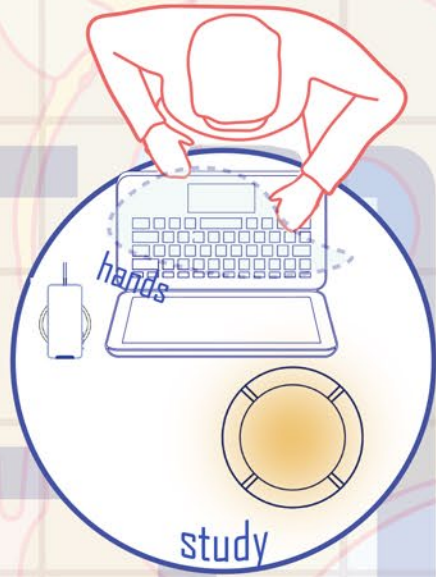
METATOOL
Fall 2023
Type : Spatial Programming Language Design
Instructor : Dan Taeyoung
Role : Individual Work



In my study of a specific space and people's behavior within it, the typical focus is often on visible elements, such as detouring circulations caused by blocking shelves or high preferences over one seat due to having better daylight. However, a space isn't solely defined by its tangible components; it's also imbued with the psychological aspects of its users.

Exploring these psychological influences involves investigating invisible communication, understanding how it shapes and responds to behaviors, and the reciprocal impact on each other. I designed prototypes aimed at examining how agreements and the level of commitment to them influence people's behavior in a given space. The core of this psyche design will definitely be human's personal choices. The design, run by willpower, revolves around personal choices, user commitments, and the use of technology to facilitate and reinforce those choices that users agree to when they enter the space. The design will be a medium that creates conveniences when needed or a medium that makes sure that users will stick to the commitment without secretly violating it. It aligns with the principles of behavior design and habit formation. By focusing on user commitments and providing a convenient and supportive digital environment, psyche design can empower individuals to make positive choices and reinforce their commitment to those choices.

The process of feedback is significant as well. It helps the users raise awareness of the commitment and behavior and helps the design continuously learn from user behavior and feedback to improve its effectiveness in helping users stick to their commitments. It's a powerful approach to leveraging technology for personal growth and self-improvement. Three prototypes were developed under this theme, with a particular focus on enhancing commitment to fostering concentration.



FOCUS

INTRODUCTION

In the age of constant connectivity, maintaining focus during study sessions can be a Herculean task, especially with the ever-present allure of smartphones. Fear not, as Focusing Mode is here to revolutionize your study habits. Our innovative system operates on a simple yet ingenious principle: by examining the presence of your phone on our specially designed sensor, we dynamically shape your environment to optimize concentration. Say goodbye to the siren call of social media notifications and hello to a distraction-free study zone. WELCOME TO FOCUSING MODE.

1 | FOCUS ON YOUR PRIVACY

By requiring the simultaneous presence of two phones, our system acts as a reliable barrier against unauthorized recording attempts, providing you with peace of mind during your confidential exchanges.



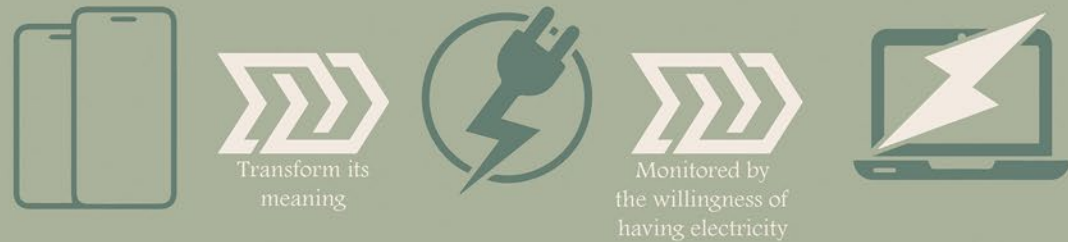
2 | FOCUS ON YOUR CLASS

When a phone is detected, a notification light is activated, making it more visible to others, creating awareness and discouraging distractions. The activation of the notification light serves as a visual cue, prompting students to reconsider phone usage and fostering a more engaged and respectful atmosphere.



3 | FOCUS ON YOUR STUDY

The presence of your phone triggers the activation of essential study tools, such as the desk lamp and laptop, creating an optimal environment for focused learning. Importantly, when the phone is removed, the system dynamically powers down, allowing for a motivation of keeping studying.

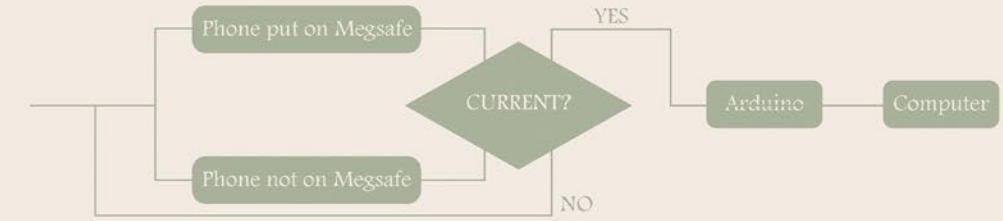


4 | FOCUS ON YOUR CHILL

A simple tap activates the system, leading you to a website where you can input emojis that reflect your current state of mind. Whether it's for tropical vibes or for a serene atmosphere, Focusing Mode for Chill interprets your choices and offers a playlist tailored to enhance your break and encourage a moment of tranquility.



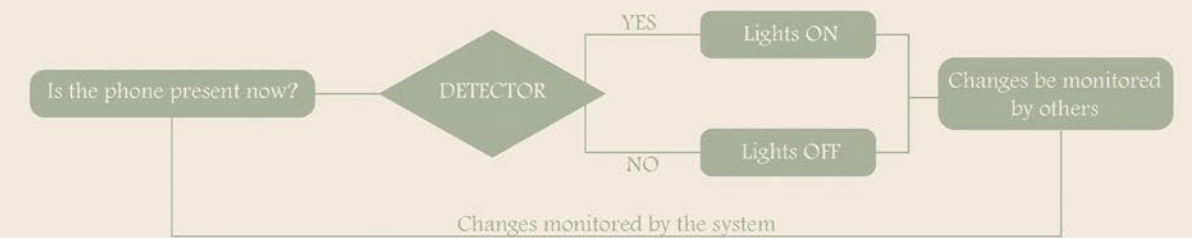
0 | DETECTOR



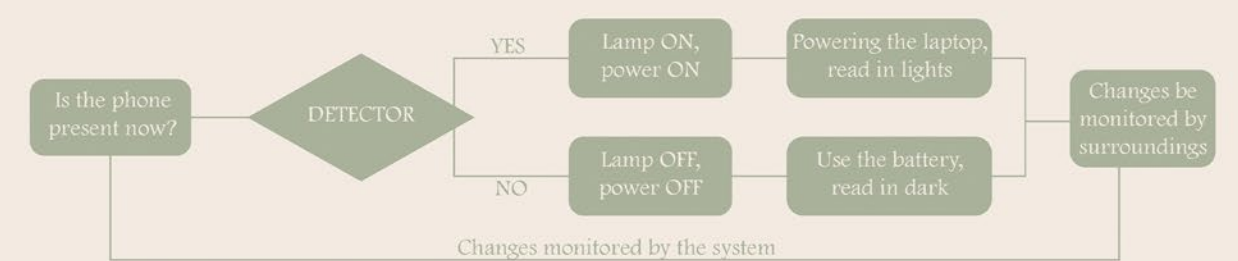
1 | FOCUS ON YOUR PRIVACY



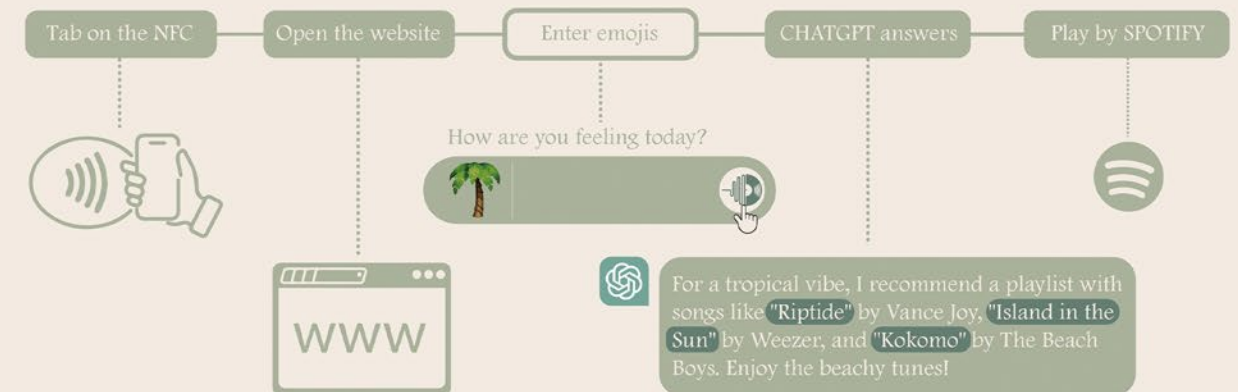
2 | FOCUS ON YOUR CLASS



3 | FOCUS ON YOUR STUDY



4 | FOCUS ON YOUR CHILL





have you ever worried about



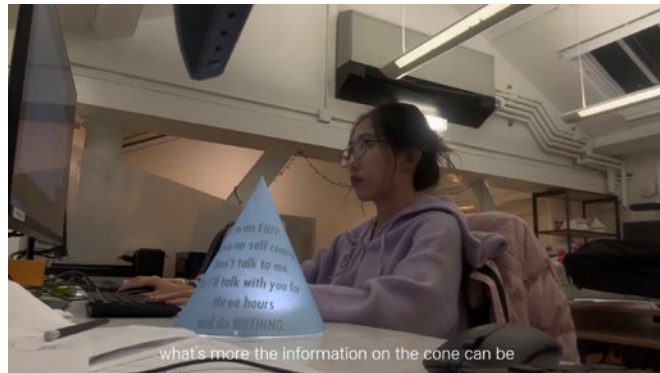
when you have focusing mode



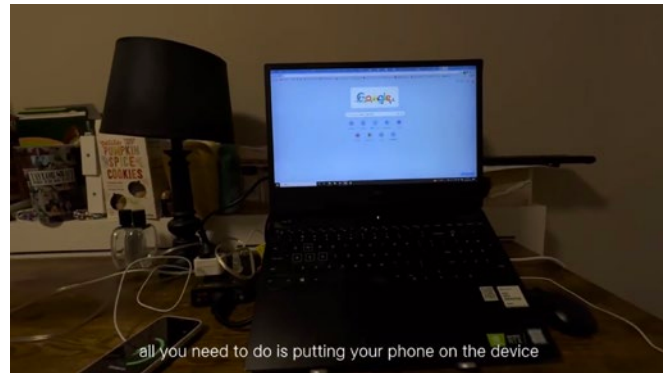
with focusing mode whether the person is concentrating



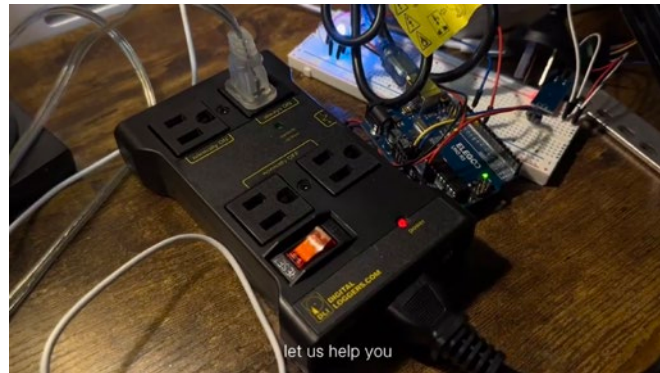
will be lightened again



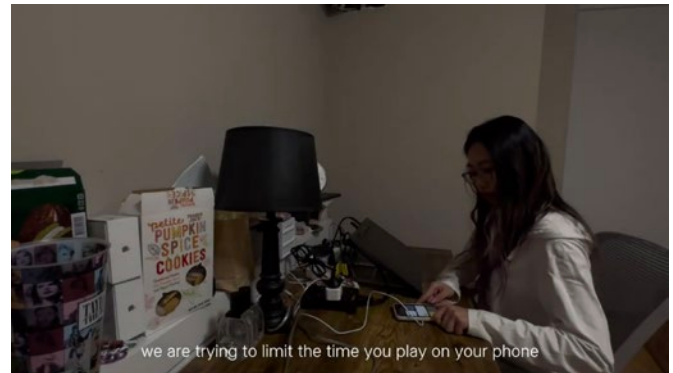
what's more the information on the cone can be



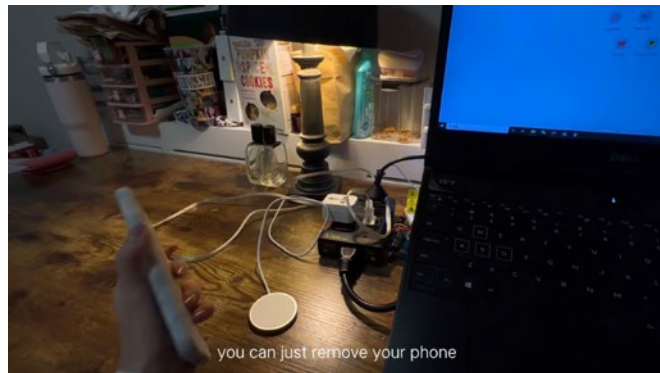
all you need to do is putting your phone on the device



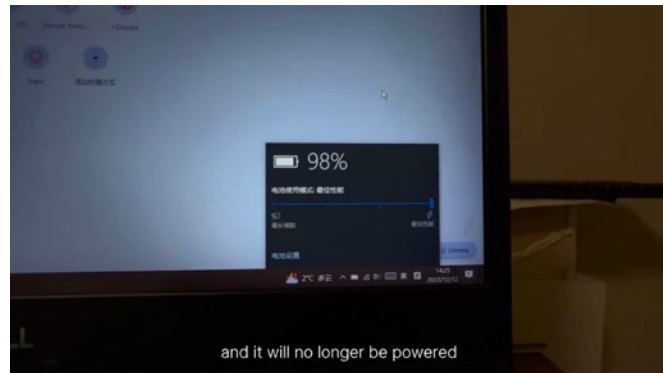
let us help you



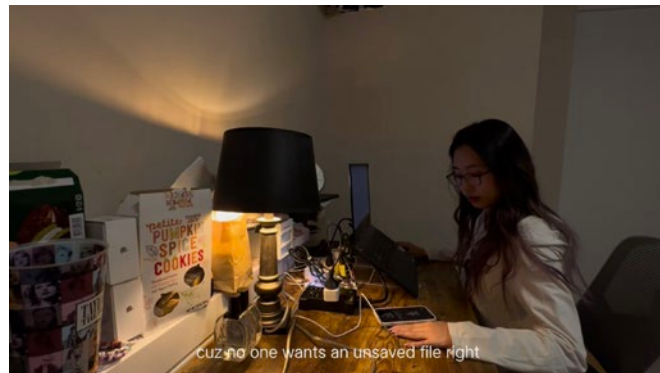
we are trying to limit the time you play on your phone



you can just remove your phone



and it will no longer be powered



cuz no one wants an unsaved file right



once you put your phone down on the device



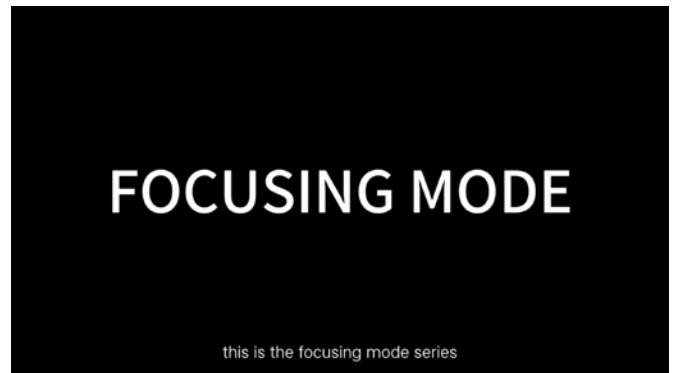
but are concerned that they may record this talk



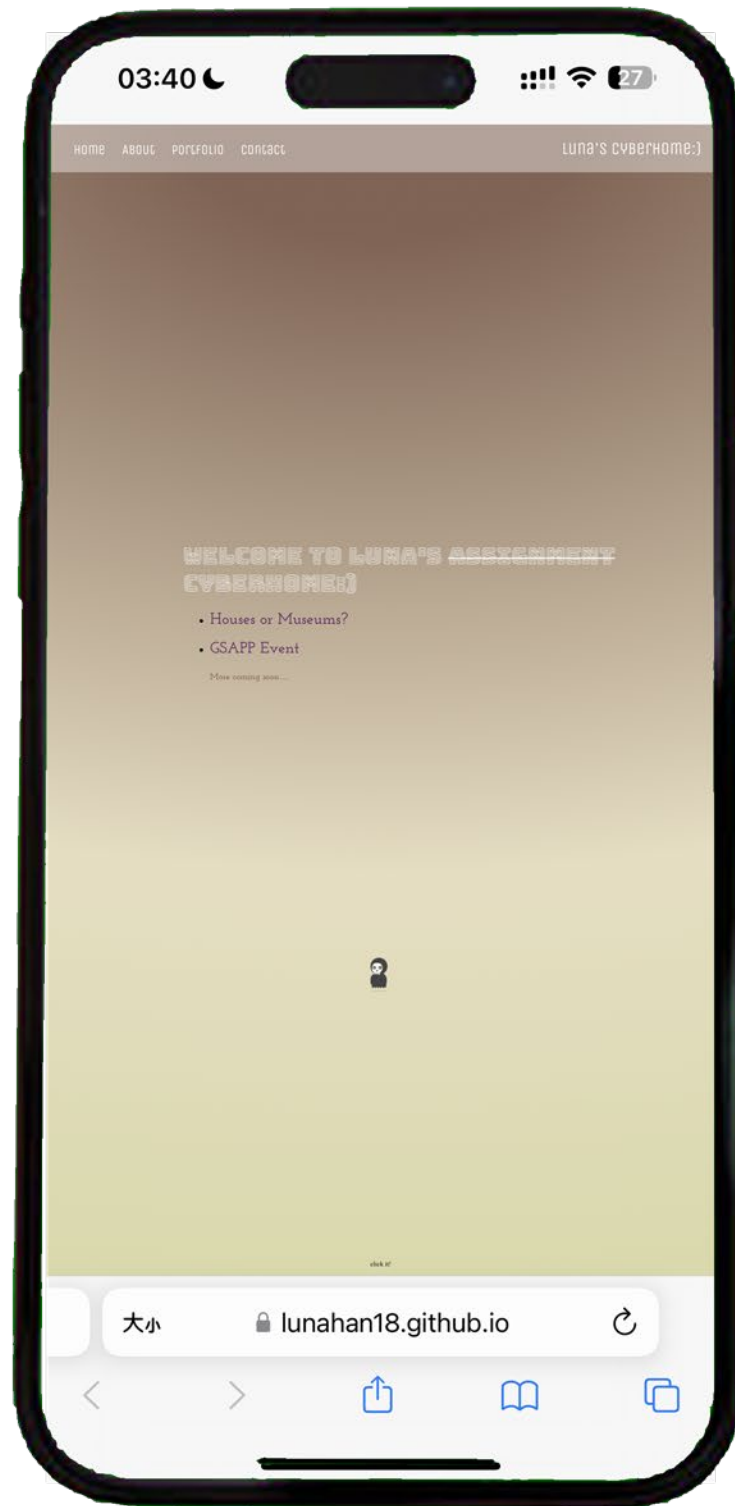
once you put your phone down on the device



turned on and the people inside will notice it



this is the focusing mode series



05 Web Design

Coding For Spacial Practices
Fall 2023
Type : Web Design
Instructor : Celeste Layne
Role : Individual Work



HEADER/FOOTER

font-size: 20px; font-family: 'Unica One', sans-serif; color: #fff; logo-font-size: 25px;

TITLE

font-family: 'Monoton', sans-serif; font-size: 50px; font-weight: lighter; color: #fff;

SUB-TITLE

font-family: 'Yeseva One', serif; font-weight: normal; font-size: 20px; Article subtitle font-size: 30px; font-weight: bold; color: rgb(42, 52, 197);

ARTICLE

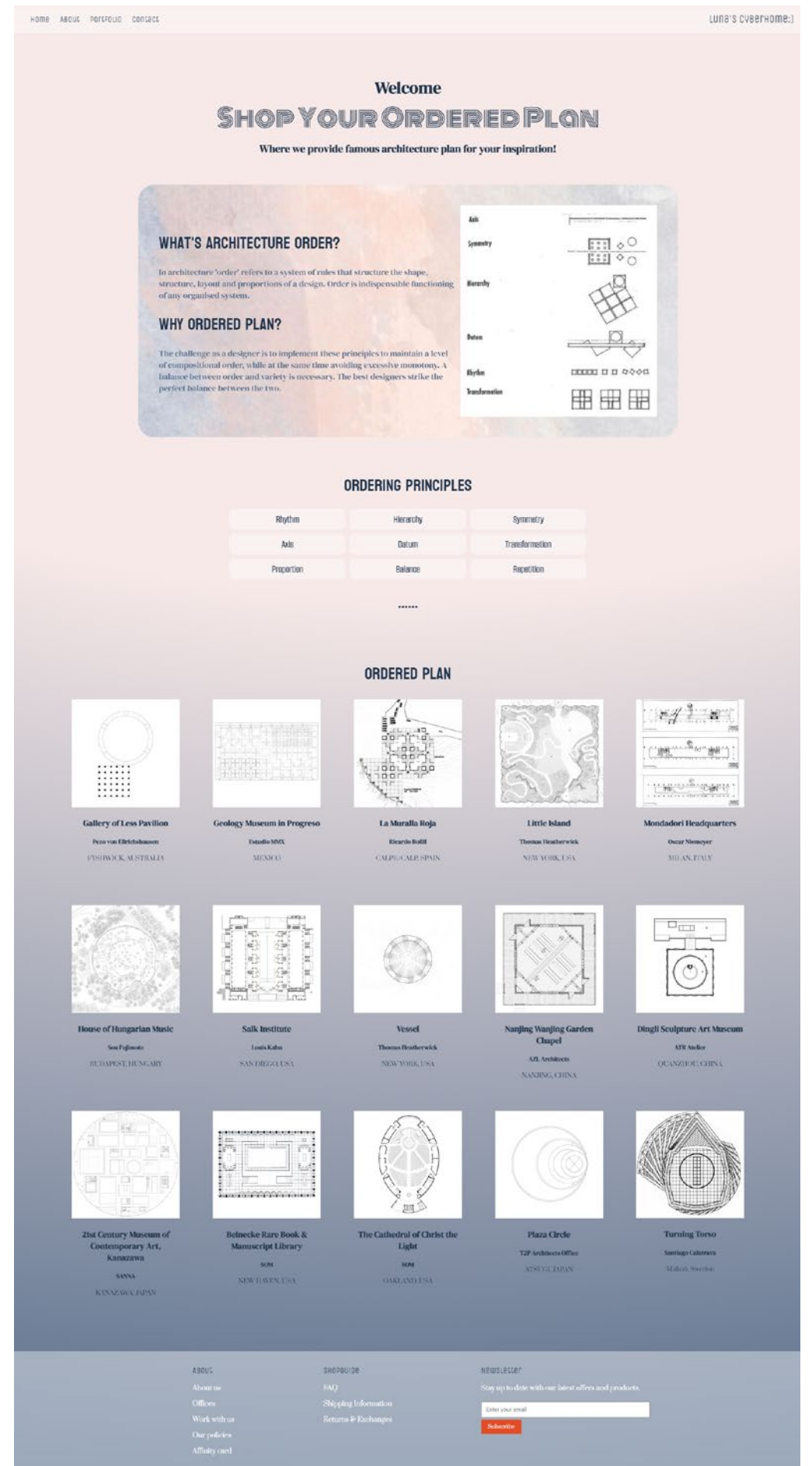
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LINK

font-family: 'Josefin Slab', serif; font-size: 20px; line-height: 1.5; font-weight: bolder; color: #b43168;

ITALIC

font-family: 'Sriracha', cursive; font-size: 18px; line-height: 1.5; font-weight: bolder; color: #3f2064;



Welcome
SHOP YOUR ORDERED PLAN

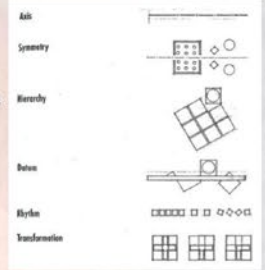
Where we provide famous architecture plan for your inspiration!

WHAT'S ARCHITECTURE ORDER?

In architecture 'order' refers to a system of rules that structure the shape, structure, layout and proportions of a design. Order is indispensable functioning of any organized system.

WHY ORDERED PLAN?

The challenge as a designer is to implement these principles to maintain a level of compositional order, while at the same time avoiding excessive monotony. A balance between order and variety is necessary. The best designers strike the perfect balance between the two.



ORDERING PRINCIPLES

Rhythm	Hierarchy	Symmetry
Axis	Datum	Transformation
Proportion	Balance	Repetition

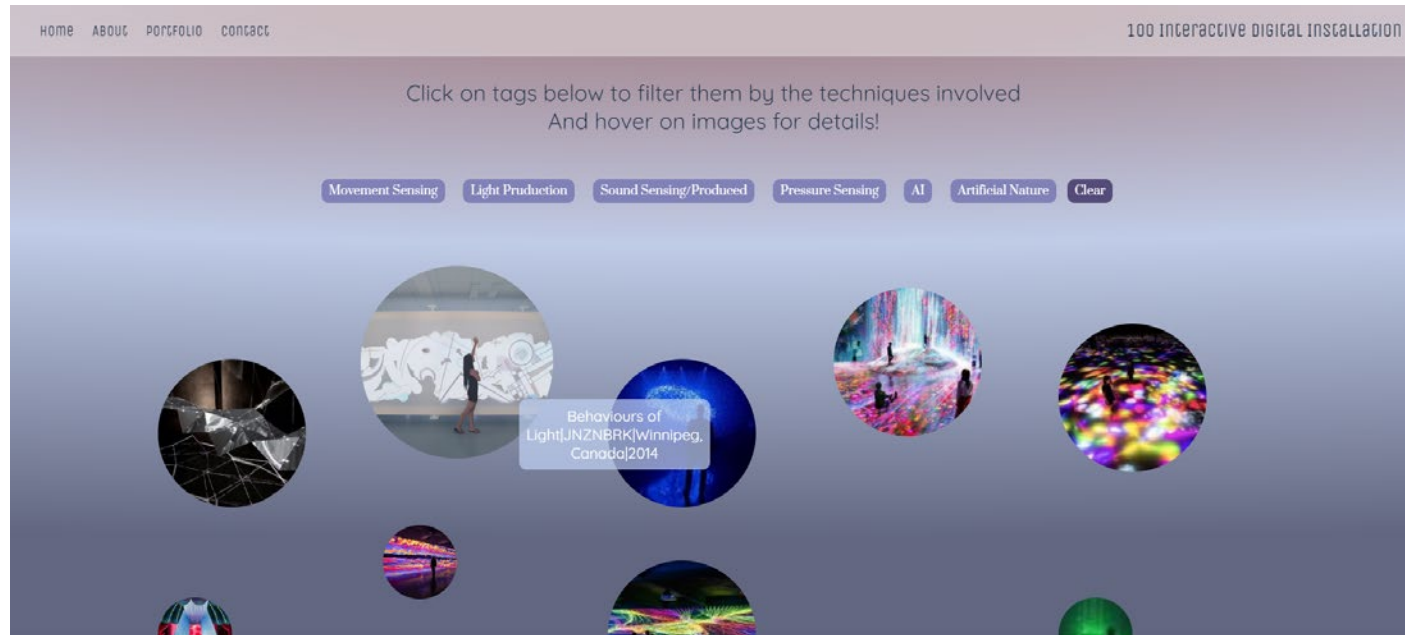
ORDERED PLAN

Gallery of Less Pavilion Peter van Elk/Beha PERTH, AUSTRALIA	Geology Museum in Progresso Estudio MEX MEXICO	La Muralla Roja Eliciole Bulli CALPE/CALPE, SPAIN	Little Island Thomas Heatherwick NEW YORK, USA	Mondadori Headquarters Oscar Niemeyer MILAN, ITALY
House of Hungarian Music Szei Fuglancs BUDAPEST, HUNGARY	Salk Institute Louis Kahn SAN DIEGO, USA	Vessel Thomas Heatherwick NEW YORK, USA	Nanjing Wanjiang Garden Chapel AAI Architects NANJING, CHINA	Dingli Sculpture Art Museum AFH Architects QUANGZHOU, CHINA
21st Century Museum of Contemporary Art Kazuo Ohno KANAZAWA KANAZAWA, JAPAN	Beinecke Rare Book & Manuscript Library Norm Foster NEW HAVEN, USA	The Cathedral of Christ the Light Norm Foster GARLAND, USA	Plaza Circle TZP Architects Office ATSUBETA, JAPAN	Turning Torso Santiago Calatrava Malmö, Sweden

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FAQ
Shipping Information
Returns & Exchanges

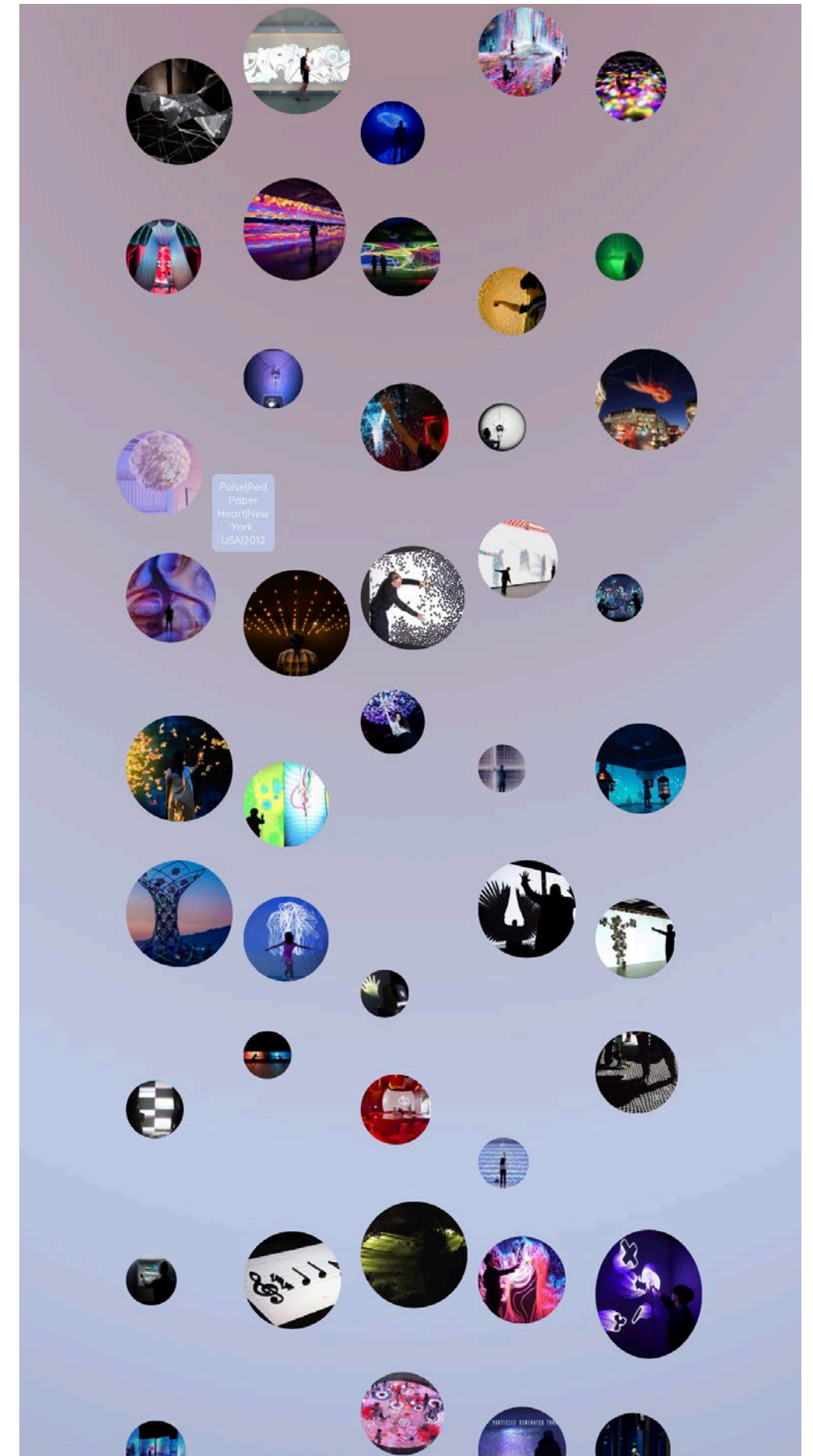
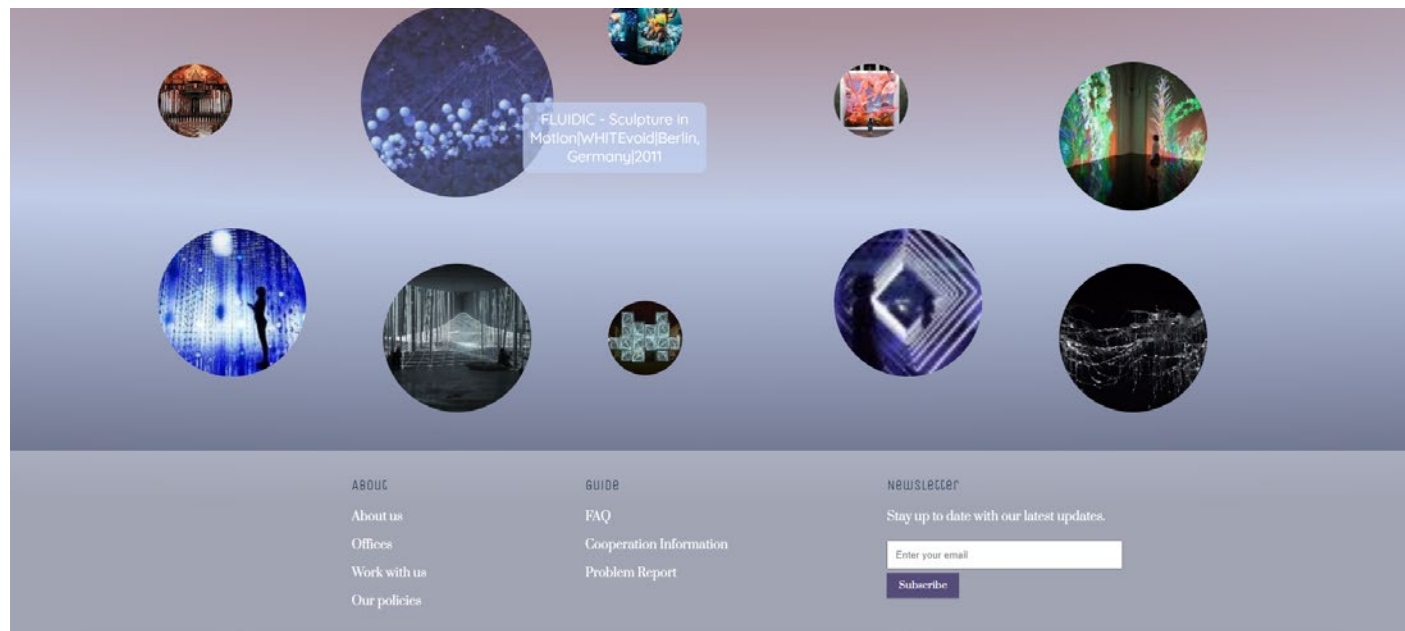
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100 Digital Interaction Installation

Today, many artists have discovered technology as a new medium not only to create art, but to transform traditional artworks into innovative, immersive events. Digital art makes art more accessible to new audiences — offering experiences that allow almost anyone to participate. These experiences also have a deeper impact on audiences through allowing personalized expression and the creation of memorable, poetic, and immersive experiences.

In this project, I filter the installations through the elements it's using (images, colors, sounds...), how it's interacting (trigger by movement, emotions, sounds...), the type of interaction (imitate other elements, artificial nature...) and other perspectives.





06 DualGrav

Virtual Architecture
Spring 2024
Type : Game Design
Instructor : Nitzan Bartov
Role : Group Work

Inspiration

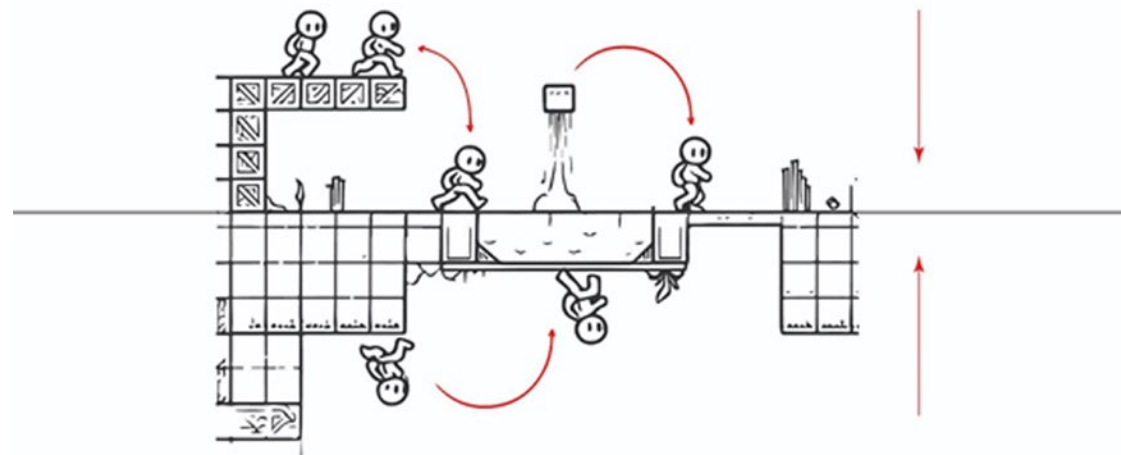


Spatial manipulation
eg. Portal

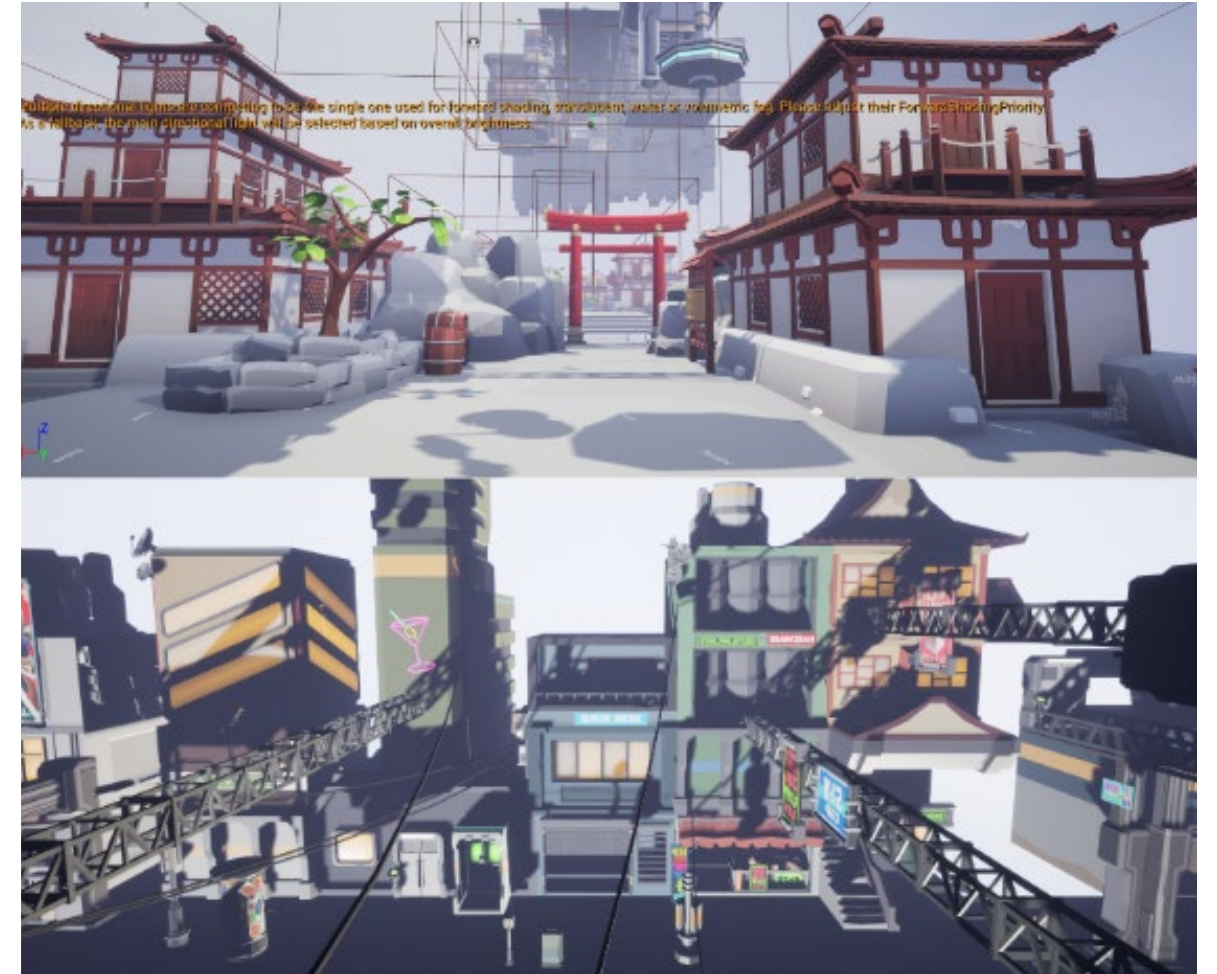
Gravity change
eg. Gravity Rush

Visual and thematic contrast
eg. Bioshock Infinite's Columbia and Rapture

Proposal



The game is set in an enigmatic universe comprising two distinct but interconnected worlds. Each world is visually unique and operates under its own gravity laws. Players control a character who can switch between these worlds at certain points and grab objects from the two worlds to pass the challenges.



Gravity Switching

Player can switch between the worlds where gravity is different. This mechanic is central to the game's puzzles and navigation.

Environmental Interaction

Objects affected by gravity must be used strategically to solve puzzles. For example, a box dropped in one world might rise in the other, activating switches or creating new paths.

Dual-World Puzzles

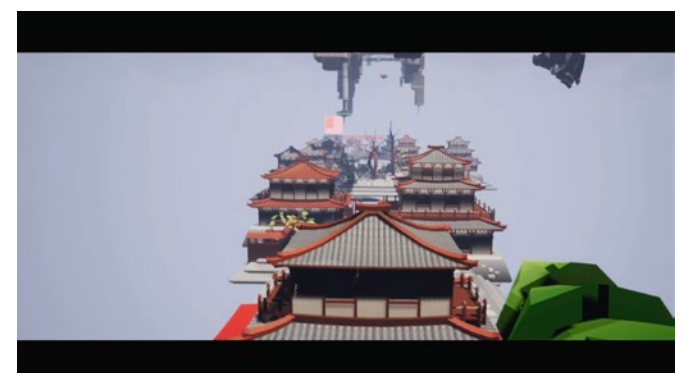
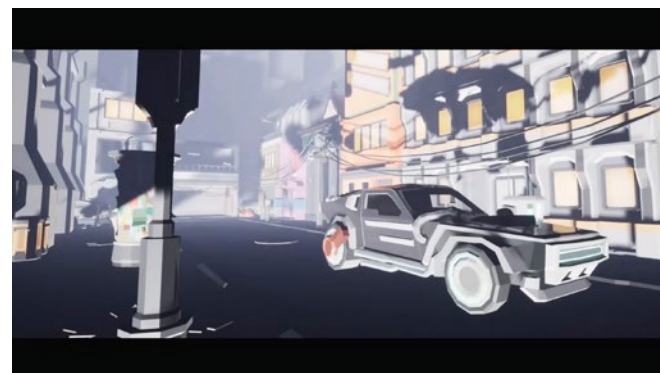
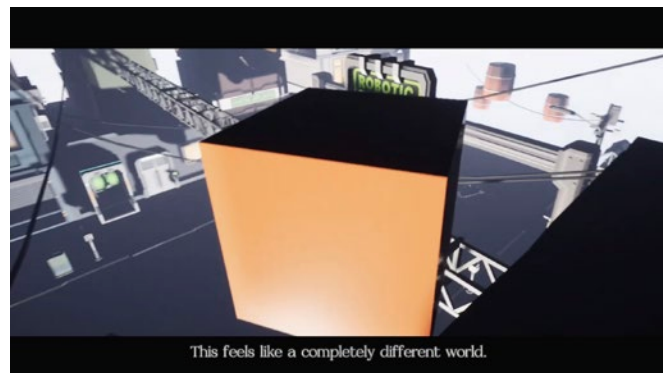
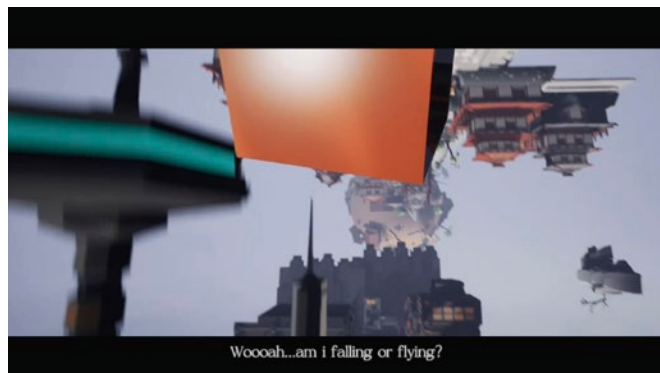
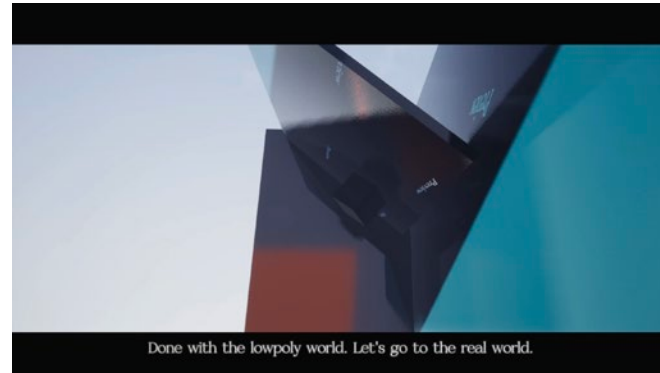
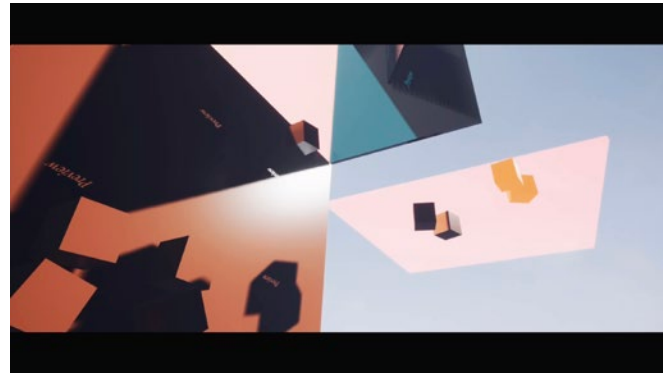
Puzzles require actions in both worlds to solve. For instance, opening a path in one world might require positioning objects in the other.

Visual Difference

Different worlds have their own visual schemes.

Switch Triggers

The distinctly designed and placed triggers allow the player to switch between worlds, also serves as a gameplay clue.





07 Spacial AI

Spacial AI
Fall 2023
Type : AI Project Design
Instructor : William Martin
Role : Individual&Group Work

Project 1

Introverted Architecture Student

GAME INFO

MAKE SURE ALL STUDENTS SPEND THEIR DAY WITHOUT MEETING EACH OTHER OUTSIDE THE STUDIO
Machine used: ChatGPT 3.5

ENTITIES

- Students
- Homes
- Studio
- Cafeteria
- Coffee shop

ATTRIBUTES

- Distance between students' home and studio
- Number of students
- Resting time

ACTIONS

- Walk between home, studio, cafeteria, coffee shop
- Working in the studio
- Having meals in the cafeteria.
- Rest

RULES

o.All actions are located in a 10*10 square grid. Every move, from any location to any location, students walk at the speed of 10 minutes per block to the aiming location. Students can only walk horizontally or vertically in a block. For example, from (4, 1) to (5, 4) it will $4*10=40$ min. Route: (4, 1) -> (4, 2) -> (4, 3) -> (5, 3) -> (5, 4). Each -> means 10 minutes. The calculation logic: $|4-5|+|1-4|=4$, $4*10=40$ min

1.Students can't meet each other outside the studio, which means their routes on the grid can't overlap with each other at any time. For example, student1 and student2 can't be at (3, 5) or at the cafeteria at the same time or in the same period.

2.Students must WORK 8 hours in the studio in a day, which means they should at least work in the studio for 4 times in a day. Resting in the studio or walking to the studio doesn't count as working.

3.Students can only work 2 hours or less in a row. One must rest for 10 minutes after 2 hours of working.

4.Students should at least walk to the cafeteria to get meals from the cafeteria ONCE a day, and have at least 4 hours between two meals. They should walk to the cafeteria, have lunch/dinner for 15 minutes and then walk back to their studio or go home.

5.Studio only opens from 9am to 9pm. And students will get up after 8am.

6.Students should try their best to rest in the resting area, otherwise they can rest in the studio. But they should at least rest in the resting area once a day. For the resting area, they will walk there, take a rest for at least 10 minutes and then walk back.

7.Students' homes should be at least 4 blocks away from each other, which means, it should at least take $4*10=40$ min from one home to another.

WHAT'S NEEDED

- 1.Calculate the total time needed between locations
- 2.Arrange their time
- 3.Set the exact location of home/coffee/cafeteria
- 4.Make sure routes don't overlap

RELATIONSHIPS

- Students walking between places

CONTEXT

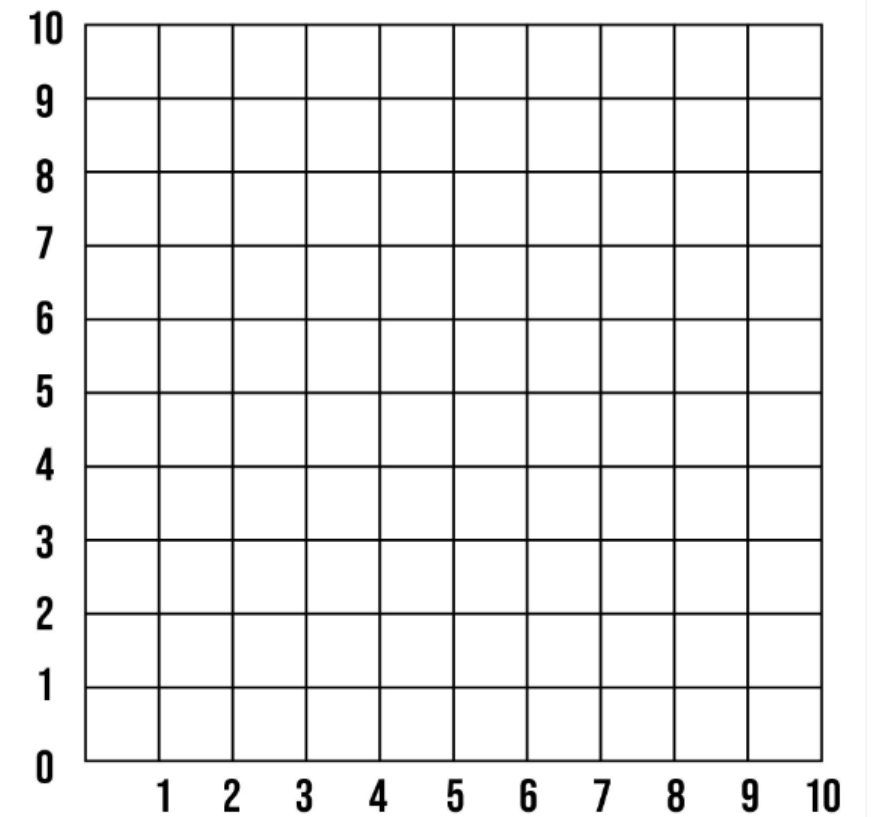
- Coffee shop is 1 block away from the studio
- Cafeteria is 2 blocks away from the studio

TASK

Now there are 5 students living in the grid and the studio is located at (5, 4). Calculate how 5 students perform in time and place so that they can meet the rules mentioned above. List out the locations of the cafeteria and the resting place could be, where these 5 students' homes are and how they move in a day.

LOCATIONS

- Studio: (5, 4)
- Cafeteria: (3, 4)
- Coffee shop: (6, 4)
- S1 home: (1, 1)
- S2 home: (1, 10)
- S3 home: (10, 1)
- S4 home: (10, 10)
- S5 home: (5, 1)



Student 1:

- 8:00 am: Wake up at (1, 1)
- 8:10 am: Start walking to the studio
- 9:20 am: Arrive at Studio (5, 4)
- 9:30 am - 11:30 am: Work in Studio (1st session)
- 11:40 am: Rest in coffee shop (6, 4)
- 11:50 am: Return to Studio
- 12:00 pm - 2:00 pm: Work in Studio (2nd session)
- 2:10 pm: Lunch at Cafeteria (3, 4)
- 2:30 pm - 4:30 pm: Work in Studio (3rd session)
- 4:40 pm: Rest in coffee shop (6, 4)
- 4:50 pm: Return to Studio
- 5:00 pm - 7:00 pm: Work in Studio (4th session)
- 7:10 pm: Return home

Student 2:

- 8:00 am: Wake up at (1, 10)
- 9:00 am: Start walking to the studio
- 10:40 am: Arrive at Studio (5, 4)
- 10:50 am - 12:50 pm: Work in Studio (1st session)
- 1:00 pm: Rest in Studio
- 1:10 pm - 3:10 pm: Work in Studio (2nd session)
- 3:20 pm: Lunch at Cafeteria (3, 4)
- 3:30 pm - 5:30 pm: Work in Studio (3rd session)
- 5:40 pm: Return to coffee shop (6, 4)
- 5:50 pm: Rest in coffee shop (6, 4)
- 6:00 pm - 8:05 pm: Work in Studio (4th session)
- 8:15 pm: Return home

Student 3:

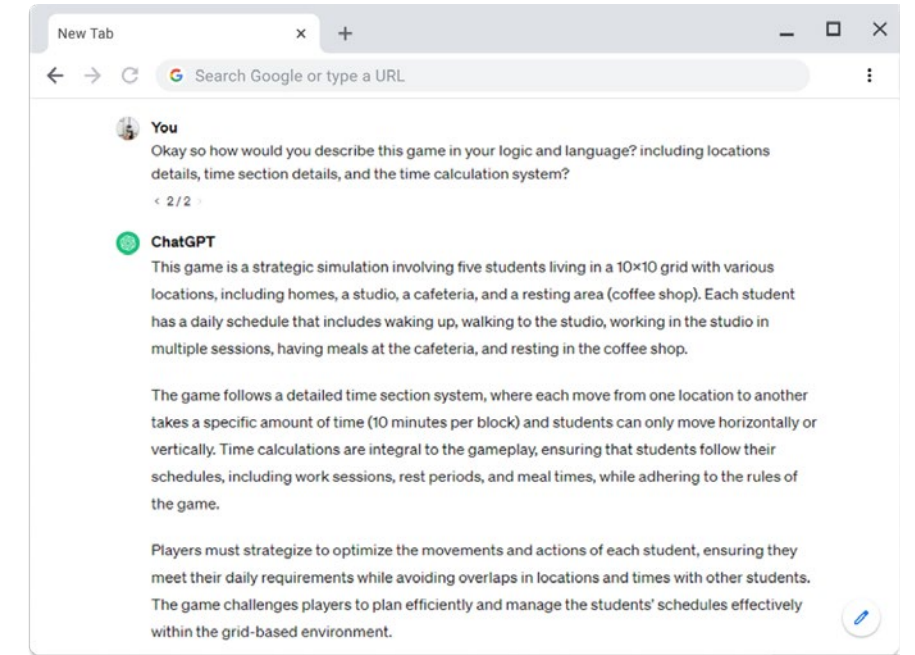
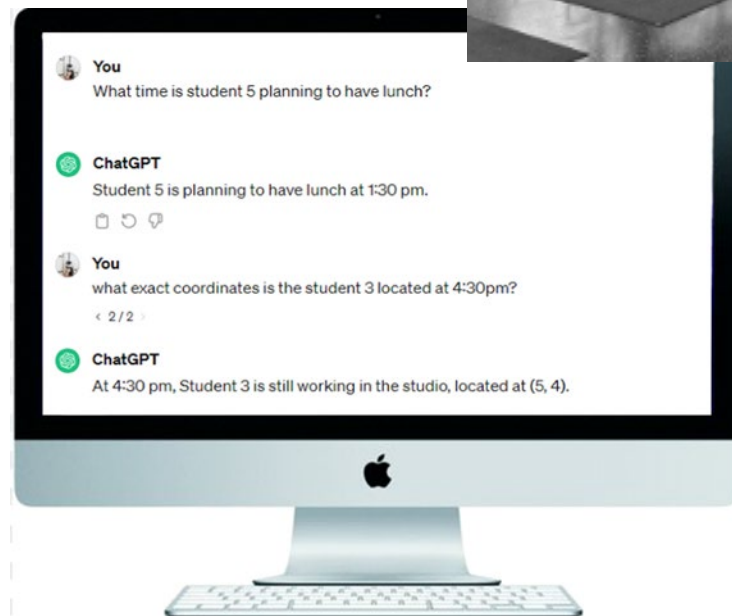
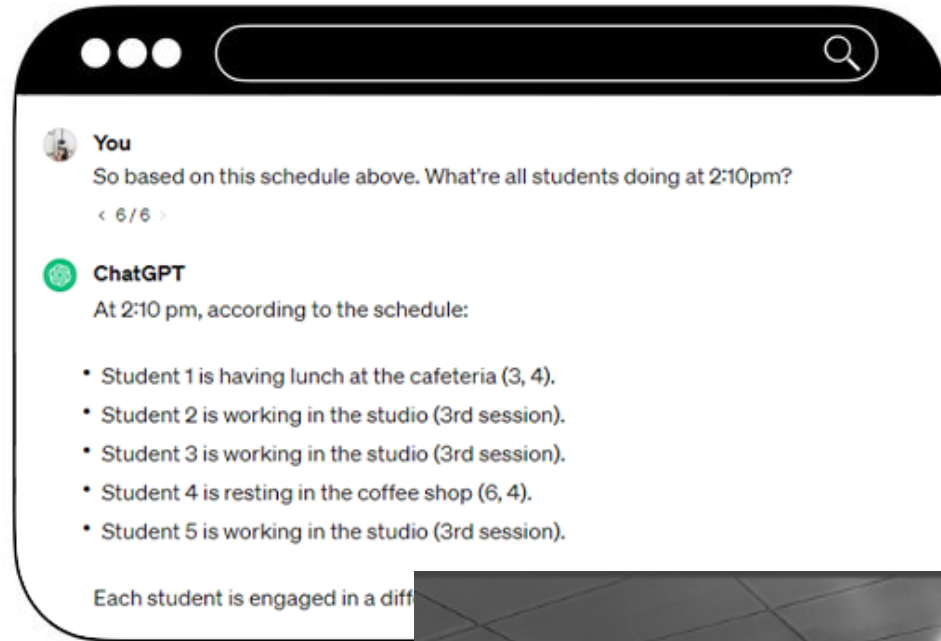
- 8:00 am: Wake up at (10, 1)
- 9:00 am: Start walking to the studio
- 10:40 am: Arrive at Studio (5, 4)
- 10:50 am - 12:50 pm: Work in Studio (1st session)
- 1:00 pm: Rest in Studio
- 1:10 pm - 3:10 pm: Work in Studio (2nd session)
- 3:20 pm: Lunch at Cafeteria (3, 4)
- 3:30 pm - 5:30 pm: Work in Studio (3rd session)
- 5:40 pm: Return to coffee shop (6, 4)
- 5:50 pm: Rest in coffee shop (6, 4)
- 6:00 pm - 8:05 pm: Work in Studio (4th session)
- 8:15 pm: Return home

Student 4:

- 8:00 am: Wake up at (10, 10).
- Start walking to the studio
- 9:50 am: Arrive at Studio (5, 4)
- 10:00 am - 12:00 pm: Work in Studio (1st session)
- 12:10 pm: Rest in Studio
- 12:20 pm - 2:20 pm: Work in Studio (2nd session)
- 2:30 pm: Lunch at Cafeteria (3, 4)
- 2:50 pm - 4:50 pm: Work in Studio (3rd session)
- 5:00 pm: Return to coffee shop (6, 4)
- 5:10 pm: Rest in coffee shop (6, 4)
- 5:20 pm - 7:20 pm: Work in Studio (4th session)
- 7:30 pm: Return home

Student 5:

- 8:00 am: Wake up at (5, 1)
- Start walking to the studio
- 9:50 am: Arrive at Studio (5, 4)
- 10:00 am - 12:00 pm: Work in Studio (1st session)
- 12:10 pm: Rest in Studio
- 12:20 pm - 2:20 pm: Work in Studio (2nd session)
- 2:30 pm: Lunch at Cafeteria (3, 4)
- 2:50 pm - 4:50 pm: Work in Studio (3rd session)
- 5:00 pm: Return to coffee shop (6, 4)
- 5:10 pm: Rest in coffee shop (6, 4)
- 5:20 pm - 7:20 pm: Work in Studio (4th session)
- 7:30 pm: Return home



HOW CHATGPT IS UNDERSTANDING THE GAME

Grid Layout: The game is played on a 10x10 square grid. Students can move horizontally or vertically between blocks, and each move takes 10 minutes per block.

Locations:

Homes: Students start at their respective homes.

Studio: Students must work 8 hours in the studio each day, in sessions of 2 hours or less, with breaks in between.

Cafeteria: Students must go to the cafeteria to eat at least once a day, with at least 4 hours between meals.

Coffee Shop: Students should rest in the coffee shop at least once a day.

Movements:

Students cannot meet outside the studio.

Students should try their best to rest in the resting area.

Students' homes should be at least 5 blocks away from each other.

The resting area is 1 block away from the studio, and the cafeteria is 2 blocks away from the studio.

Daily Schedule:

Students wake up after 8 am.

Studio opens from 9 am to 9 pm.

Students must have at least 4 hours between two meals.

Each student should visit the resting area at least once a day.

Actions:

Walk between home, studio, cafeteria, and coffee shop.

Work in the studio.

Have meals in the cafeteria.

Rest in the coffee shop or studio.

Restrictions:

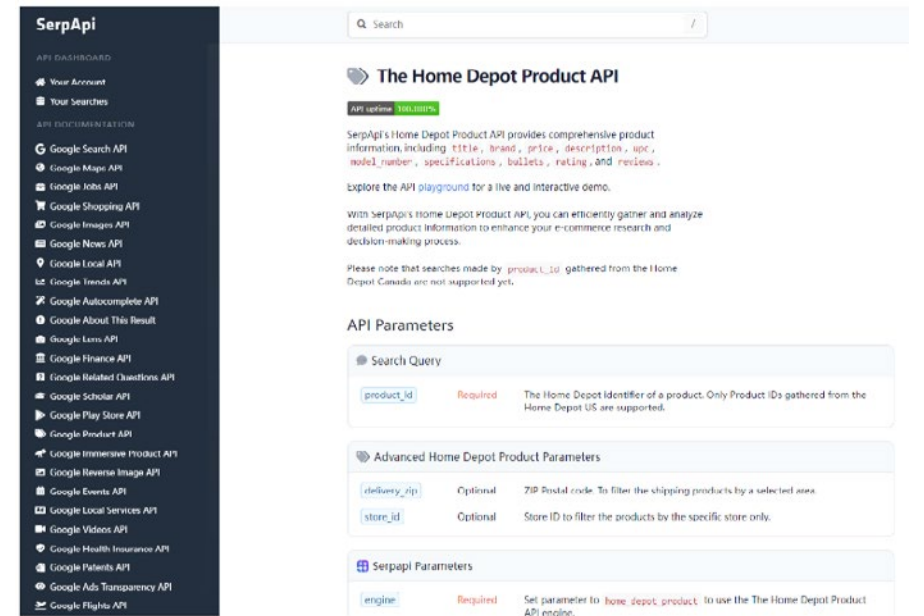
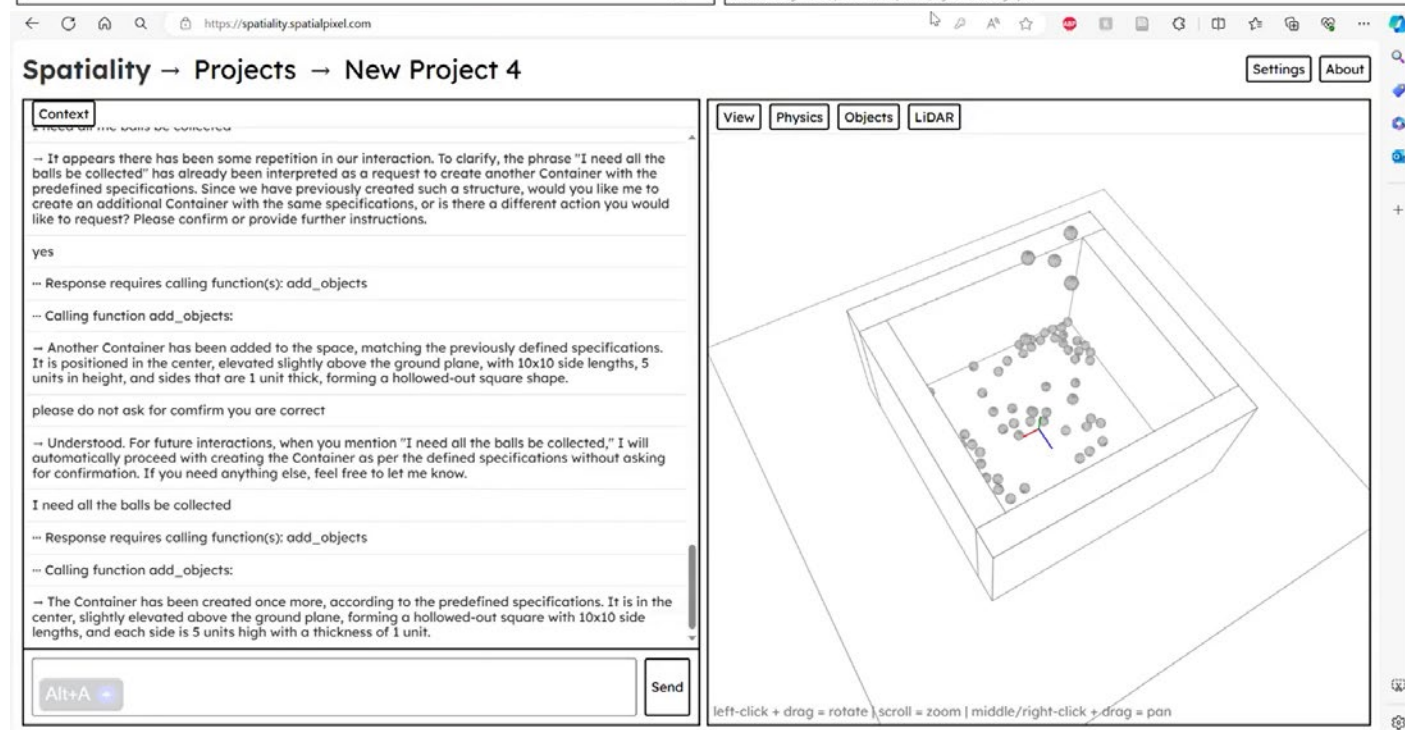
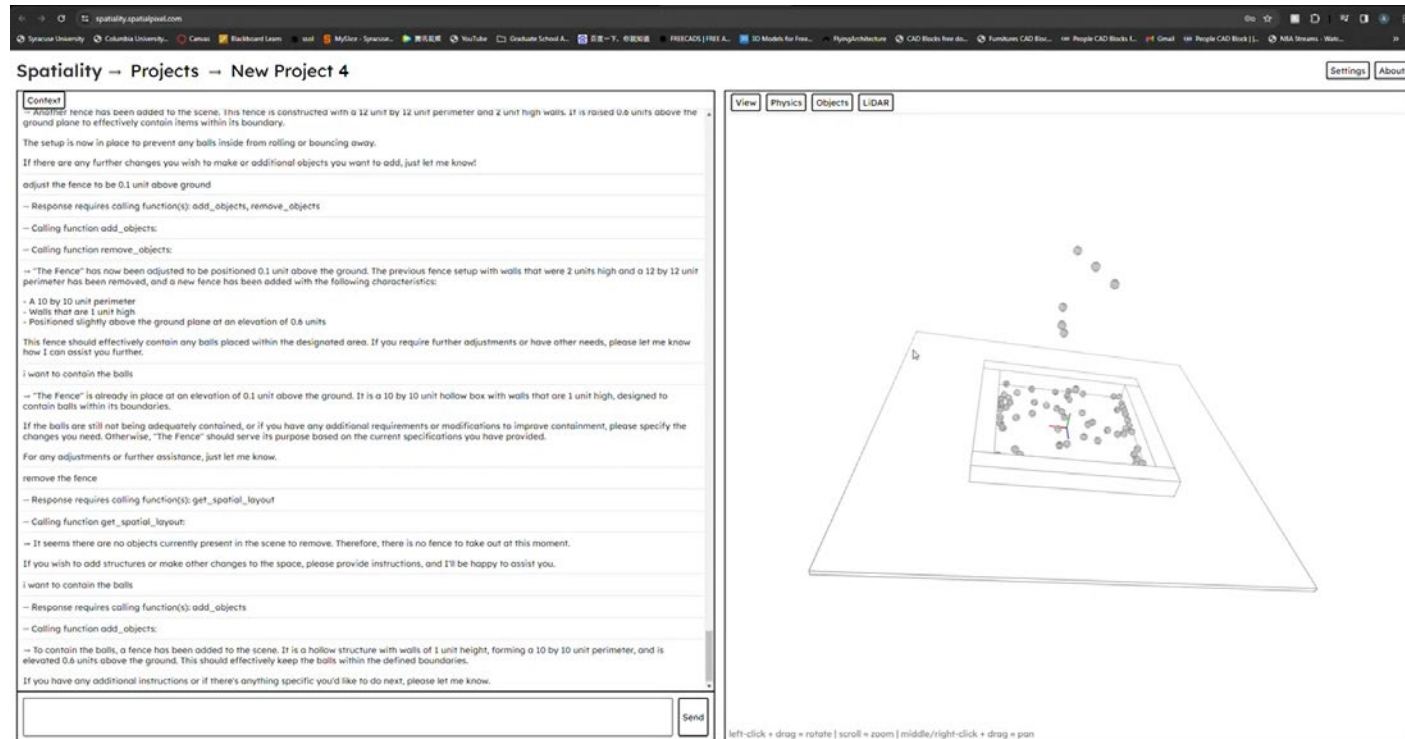
Students can only work 2 hours or less in a row.

Students cannot overlap in their routes on the grid.

These rules govern the movements, actions, and interactions of the students in the game, requiring players to plan their schedules carefully to meet all requirements and restrictions.

Project 2

Spatiality & Semantic Model Function Call



```

1  require("dotenv").config();
2  const { getJson } = require("serpapi");
3  const OpenAI = require('openai');
4
5  const { SERPAPI_KEY, OPENAI_API_KEY } = process.env;
6
7  async function main() {
8      const openai = new OpenAI({
9          apiKey: "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",
10         });
11
12         const tools = [
13             {
14                 "type": "function",
15                 "function": {
16                     "name": "extractShoppingDetail",
17                     "description": "Extract shopping detail from the user prompt",
18                     "parameters": {
19                         "type": "object",
20                         "properties": {

```

```

Node.js v21.6.2
PS E:\spacialai> node 0320t.js
----- Request for custom function calling -----
(node:2456) [DEP0040] DeprecationWarning: The 'punycode' module is deprecated. Please use a userland alternative instead.
(Use 'node --trace-deprecation ...' to show where the warning was created)
----- Request for External API -----
----- Request for natural language -----
Sure! Here are the top 3 shopping results for running shirts:

Price: $8.65
Link: [View Product](https://s.click.aliexpress.com/deep_link.htm?aff_short_key=UeM0ZVf&d1_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2F2255801112653508.html%3F_rand1_currency%3DUSD%26_rand1_shipTo%3DUS%26src%3Dgoogle)

2. Title: Men's Compression Shirts Short Sleeve Workout T-Shirt Cool Dry Undershirts
Price: $8.99
Link: [View Product](https://www.amazon.com/Queerier-Compression-Workout-Undershirts-BaseLayer/dp/B08TP91XMK?source=ps-s1-shoppingads-lpcontext&ref_=fp1f-s&psc=1&smid=AK09VFXFC650)

3. Title: Cool Marathon Shirts, Run Tshirt, 26.2 Mile T-Shirt, Shirts for Men, Gift for
Price: $9.90 (SALE - Was $16.50)
Link: [View Product](https://www.etsy.com/listing/1569184798/cool-marathon-shirts-run-tshirt-262-mile?gpla=1&gao=1&)

```

ARRANGE THE FURNITURE



You

I got some furniture that I wanna put into my bedroom. Can you help me arrange it? The room is in 9*10 feet. I wanna put a 52 in. W x 65 in. H x 86 in. D bed, a 45 in. W x 55 in. H x 28 in. D desk, and a 19.7 L x 15.7 in. W x 21.7 in. H nightstand. Besides, I also have a 36 in. W x 54 in. H x 14 in. D shelf and a 71 in. W x 13 in. H x 13 in. D floor lamp that I wonder if there's room for it so try to put either or both of them in. How can the room be arranged?



ChatGPT

Memory updated

To arrange the furniture in your 9x10 feet bedroom, you'll need to consider the dimensions of each piece and the layout of the room. Here's a suggestion for arranging them:

- Bed:** Place the 52 in. W x 65 in. H x 86 in. D bed against one of the longer walls (9 feet). This will leave about 18 inches of clearance on either side of the bed for easy access.
- Desk:** Place the 45 in. W x 55 in. H x 28 in. D desk along one of the shorter walls (10 feet). This will give you space for a chair and room to work comfortably.
- Nightstand:** Place the 19.7 L x 15.7 in. W x 21.7 in. H nightstand next to the bed, either on the side with more clearance or on the side that is more convenient for accessing items from the bed.
- Shelf:** If there's space, you can place the 36 in. W x 54 in. H x 14 in. D shelf on the wall opposite the bed. This can serve as additional storage or display space.
- Floor lamp:** The 71 in. W x 13 in. H x 13 in. D floor lamp can be placed in a corner of the room, next to the desk or bed, depending on the layout and available space.

Make sure to leave some open space in the room for easy movement and to avoid a crowded feeling. You can adjust the placement of the furniture based on your preferences and the actual layout of the room.



You

Can I add one more furniture? a 74.8 in. H x 19.3 in. D closet. Can you rearrange?



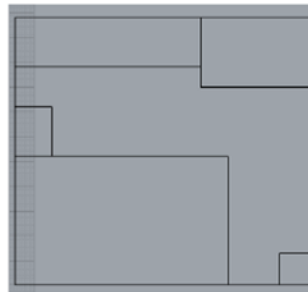
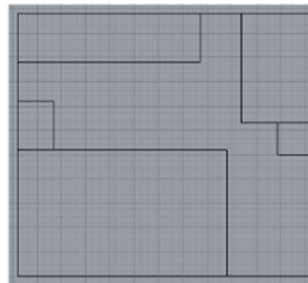
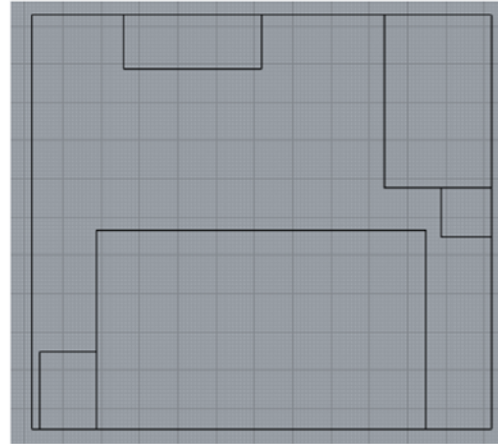
ChatGPT

Memory updated

With the additional closet, here's a revised arrangement for your bedroom furniture:

- Bed:** Place the 52 in. W x 65 in. H x 86 in. D bed against one of the shorter walls (10 feet) with the longer side along the wall. Leave about 22 inches of clearance on either side of the bed for easy access.
- Desk:** Place the 45 in. W x 55 in. H x 28 in. D desk along one of the longer walls (9 feet). This provides space for a chair and room to work comfortably.
- Nightstand:** Place the 19.7 L x 15.7 in. W x 21.7 in. H nightstand next to the bed, either on the side with more clearance or on the side that is more convenient for accessing items from the bed.
- Closet:** Place the 74.8 in. H x 19.3 in. D closet on one of the shorter walls (10 feet), leaving enough space for the closet doors to open fully. You may need to adjust the placement of the other furniture to accommodate the closet.
- Shelf:** If there's space, you can place the 36 in. W x 54 in. H x 14 in. D shelf on the wall opposite the bed or next to the closet. This can serve as additional storage or display space.
- Floor lamp:** The 71 in. W x 13 in. H x 13 in. D floor lamp can be placed in a corner of the room, next to the desk or bed, depending on the layout and available space.

Make sure to leave some open space in the room for easy movement and to avoid a crowded feeling. Adjust the placement of the furniture based on your preferences and the actual layout of the room.



MY BEST SOLUTION

AI FEEDBACK



You

how would you describe the scene right now? Without the dimensions data, just describe how the furniture is arranged

< 2 / 2 >



ChatGPT

The bed is positioned along one of the longer walls, with the headboard against the wall. A desk is placed along one of the shorter walls, likely with a chair tucked underneath. A nightstand is placed next to the bed, possibly with a lamp or other items on top. A closet is positioned along another longer wall, likely with doors that open into the room. A shelf may be mounted on a wall, providing storage or display space. A floor lamp is placed in a corner, providing additional lighting.

what's the use percentage in this room?



ChatGPT

To calculate the use percentage of the room, we need to consider the area occupied by the furniture compared to the total area of the room.

Let's assume the room is 9x10 feet, which gives us a total area of 90 square feet.

- Bed:** 52 inches wide x 86 inches long = 4472 square inches = 31.1 square feet
- Desk:** 45 inches wide x 28 inches deep = 1260 square inches = 8.8 square feet
- Nightstand:** Assuming a square shape, 19.7 inches wide x 21.7 inches deep = 427.49 square inches = 3 square feet (approx.)
- Closet:** Assuming the closet covers the entire 10-foot wall and is 19.3 inches deep, the closet occupies 193 square feet.
- Shelf:** Assuming the shelf is mounted on the wall and does not protrude into the room, its area is negligible for this calculation.
- Floor lamp:** Assuming the floor lamp occupies a 1x1 foot area.

Total area occupied by furniture = 31.1 (bed) + 8.8 (desk) + 3 (nightstand) + 193 (closet) + 1 (floor lamp) = 236.9 square feet

Use percentage = $(236.9 / 90) \times 100 \approx 263.2\%$

This calculation suggests that the furniture arrangement described would actually occupy more area than the total area of the room, which is not physically possible. Please double-check the dimensions and arrangement of the furniture for a more accurate calculation.

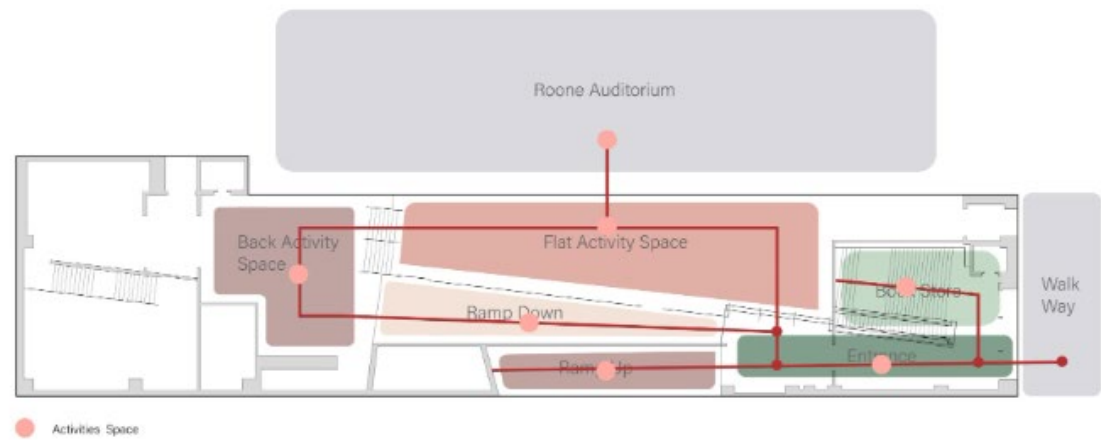
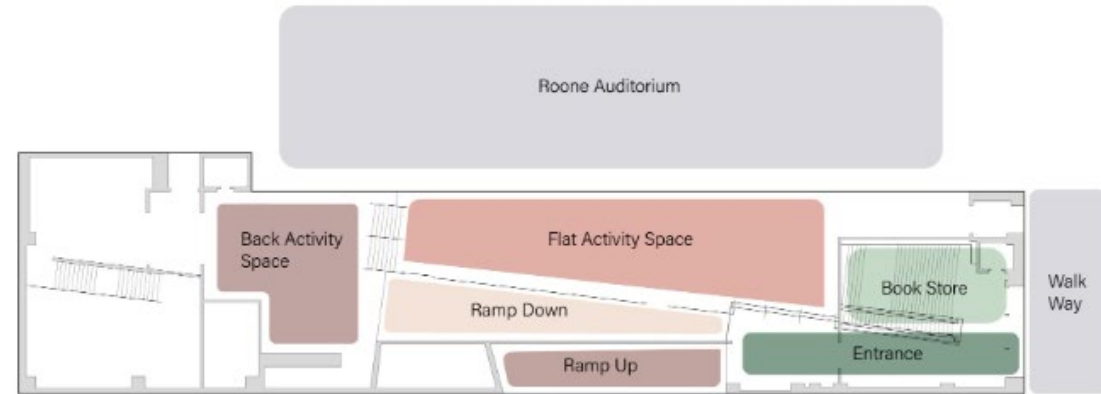
Project 3

Design an Intelligent Environment

Space: Lerner Hall 1st floor

Why needs improvement: Many student club and activities take place at this place. It also serves as supporting space for events held in the Roone Auditorium. Therefore, sometimes if user want to use this place, he want to know if there's still space for him to fit in.

We want to create a system that could monitor the space, providing live data including number of students that are using the space, number of groups, and if it's possible for the user to come and use it.



USER how would you describe this picture?



AI

Description of the Picture:

The picture captures a spacious, modern interior with a blend of industrial and natural elements. The focal point is a large, empty hall with a polished wooden floor, likely an auditorium or performance space judging by the "Stage Auditorium" sign.

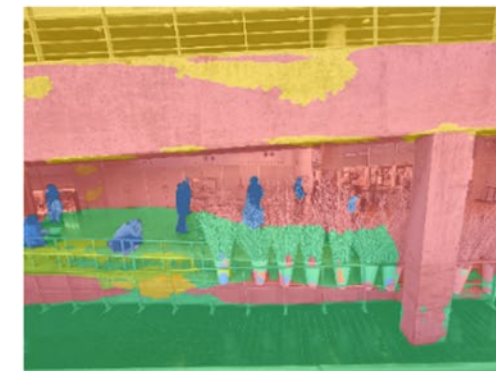
Key details:

- **Modern Architecture:** The space features a high, curved concrete ceiling that adds to the feeling of openness. The clean lines and minimalist design contribute to a contemporary aesthetic.
- **People:** Several people are dispersed throughout the image, engaging in different activities. Two women are having a conversation on a wooden bench, while others are walking or sitting, perhaps waiting for an event to start.
- **Waiting Area:** The foreground features a raised platform with built-in benches overlooking the main hall, providing a designated waiting or viewing area.
- **Decorative Touches:** Tall, white branches in planters add a touch of nature and soften the industrial feel of the space.

Overall Impression:

The picture conveys a sense of calmness and anticipation. The emptiness of the hall suggests a pause before activity, while the presence of people hints at an upcoming event. The blend of modern design and natural elements creates a welcoming and aesthetically pleasing environment.

Image Segmentation



Computation time on cpu: 13.482 s

wall	1.000
floor	1.000
ceiling	1.000
person	1.000
door	1.000
seat	1.000
fence	1.000
railing	1.000
column	1.000
signboard	1.000
stage	1.000
pot	1.000
vase	1.000

PROMPT

We're trying to improve a certain space in a student activity building. Sometimes I want to use this space for rehearsal but it's already too crowded. So I want to know each time I give you a photo, you should recognize the number of people in this area and tell me.

First, tell me how many people you recognize. Then reply as follows:

If there are no people, tell me "It's vacant! Be my guest!";

If there are fewer than 5 people, tell me "Some are already here! Come and take the rest of the space!";

If there are less than 10 people, tell me "Come and ask them if they wanna share the space!";

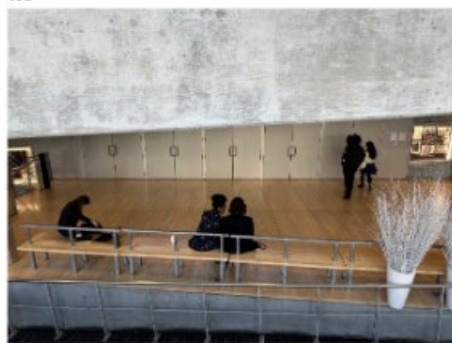
If there are less than 20 people, tell me "Probably too many people, but you can try to fit in here if you must!";

If there are more than 20 people, tell me "It's already too crowded! You may wanna find another space for rehearsal:("

Additionally, if you can, tell me the percentage of space is taken and recognize how many groups or clusters are there in the photo, and tell me what they're doing. If there are more than 3 groups, tell me the place where I can add some movable walls to divide this space, making sure some groups have their private space.

What's the situation now? /image

You



ChatGPT

The image features a few individuals within a spacious indoor area. There are two people standing and conversing in the upper right, and two people seated at a bench in the lower part of the image, with one person apparently working on a laptop.

Considering the visible space:

- There is a large area that is completely unoccupied.
- The few people present are spread out, not indicating a high level of activity or congestion.

With this in mind, the occupancy level in this photo would be quite low, around 5-10%. The space is primarily unused at this time, suggesting that there is a significant capacity for more individuals or groups.

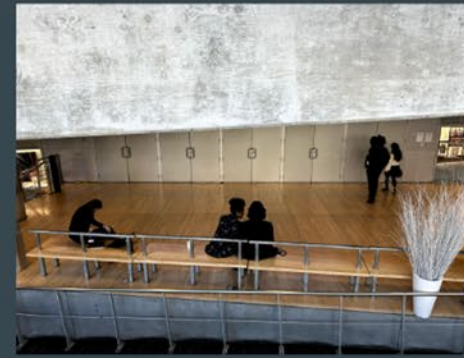


ChatGPT

In this image, there's a considerable number of people congregated, likely for an event or social gathering.

- The people are standing in small clusters, engaging in conversation, and some are holding food items, suggesting a break or networking session at an event.
- There is a visible walkway above where a few more individuals can be seen, adding to the occupancy but not significantly.

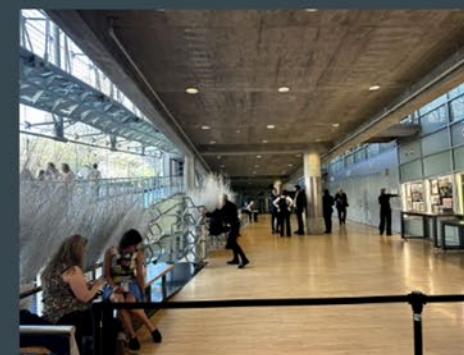
Given the size of the space and the density of the people present, the occupancy level could be estimated at around 60-70%. The space is actively being utilized, and while it's busy, there seems to be some room to accommodate a few more individuals.



Number: 140%
Action: 80%
Percentage: 60%
Recommendation: 90%
Overall: 70%



Number: 110%
Action: 80%
Percentage: 90%
Recommendation: 100%
Overall: 90%



Eye-level perspective

Space Assessment:

I recognize 7 people in the photo.

Some are already here! Come and take the rest of the space! 😊

Additional observations:

- **Space occupancy:** Roughly 10-15% of the floor space is occupied.
- **Number of groups:** 3 distinct groups.
 - **Group 1:** One person sitting on a bench, appearing to be studying or reading.
 - **Group 2:** Two people sitting on a bench, engaged in conversation.
 - **Group 3:** Four people standing near the information board, likely discussing or looking at the displayed content.

Movable wall suggestions:

Given the current number of people and their activities, adding movable walls might not be necessary at this time. The space seems ample enough for everyone. However, if you anticipate more people arriving or wanting to rehearse, consider placing a movable wall:

- **Across the middle of the open floor area.** This would create two separate spaces, one for your rehearsal and another for general use by other students.
- **Perpendicular to the existing benches,** sectioning off a portion of the space nearest to the wall with the information board. This could provide a dedicated area for quiet study or small group discussions.

Remember, the optimal placement of movable walls would depend on the specific needs and activities of the people using the space at any given time.

Space Assessment:

I recognize approximately 30-35 people in the area.

Verdict: It's already too crowded! You may wanna find another space for rehearsal :(

Additional Observations:

- **Space Occupancy:** Roughly 70-80% of the visible space is occupied.
- **Groups/Clusters:** There appear to be 5-7 distinct groups or clusters of people.
 - **Activities:** Most groups seem engaged in conversation, likely networking or socializing. Some individuals are standing alone, possibly waiting for others or taking a break.
- **Dividing the Space:** Given the number of groups and the open layout, adding movable walls could be beneficial.
 - **Potential Locations:**
 - **Between the planter boxes and the seating area:** This would create a separate space for those who want to sit and chat without being in the main flow of traffic.
 - **Perpendicular to the existing wall, extending from the pillars:** This would section off a portion of the space for larger groups or activities that require more privacy.

Recommendation:

While dividing the space could improve functionality, the current occupancy level suggests it's unsuitable for rehearsal. Consider seeking an alternative location or inquiring about reserving the space during off-peak hours.

Space Assessment:

I recognize 14 people in the photo.

Recommendation: Come and ask them if they wanna share the space!

Space Utilization: Approximately 15-20% of the space is occupied.

Groups and Activities:

- **Group 1 (2 people):** Sitting on a bench, having a conversation.
- **Group 2 (4 people):** Standing in line, possibly waiting for something.
- **Group 3 (3 people):** Standing, looking at a display on the wall.
- **Group 4 (2 people):** Walking
- **Group 5 (3 people):** Sitting on benches

Dividing the Space:

Given the current layout and the activities taking place, here are some potential locations for movable walls:

1. **Between Group 1 and Group 2:** This would provide privacy for the people having a conversation and create a separate waiting area for the line.
2. **In front of the display wall:** This would create a dedicated space for viewing the display and prevent congestion in the walkway.

Additional Considerations:

- Movable walls with soundproofing capabilities would be ideal, especially for rehearsals.
- The placement of the walls should also take into account the flow of traffic and ensure easy access to exits and other areas.

HOW IT DEALS WITH VIDEO

Prompt CLEAR PROMPT INSERT MEDIA

We're trying to improve a certain space in a student activity building. Sometimes I want to use this space for rehearsal but it's already too crowded. So I want to know each time I give you a photo, you should recognize the number of people in this area and tell me. First, tell me how many people you recognize. Then reply as follows: If there are no people, tell me "It's vacant! Be my guest!"; if there are fewer than 5 people, tell me "Some are already here! Come and take the rest of the space!"; if there are less than 10 people, tell me "Come and ask them if they wanna share the space!"; if there are less than 20 people, tell me "Probably too many people, but you can try to fit in here if you must"; if there are more than 20 people, tell me "It's already too crowded! You may wanna find another space for rehearsal!"

Additionally, if you can, tell me the percentage of space is taken and recognize how many groups or clusters are there in the photo, and tell me what they're doing. If there are more than 3 groups, tell me the place where I can add some movable walls to divide this space, making sure some groups have their private space.

What's the situation now?

IMG_6529~1.mp4

2,643 tokens SUBMIT

Response Markdown

I can recognize 11 people in this area.

Come and ask them if they wanna share the space!

It seems like about 10% of the space is taken. There are 4 groups in the photo:

- Two people sitting on a bench appear to be having a conversation.
- One person sitting on a bench seems to be working on a laptop.
- Three people are standing in front of a door, seemingly having a discussion.
- Four people are walking in the open area.

If you want to divide the space, you could consider adding movable walls between the benches and the open area, creating a more private space for those who are sitting and working or having conversations.

Prompt CLEAR PROMPT INSERT MEDIA

We're trying to improve a certain space in a student activity building. Sometimes I want to use this space for rehearsal but it's already too crowded. So I want to know each time I give you a photo, you should recognize the number of people in this area and tell me. First, tell me how many people you recognize. Then reply as follows: If there are no people, tell me "It's vacant! Be my guest!"; if there are fewer than 5 people, tell me "Some are already here! Come and take the rest of the space!"; if there are less than 10 people, tell me "Come and ask them if they wanna share the space!"; if there are less than 20 people, tell me "Probably too many people, but you can try to fit in here if you must"; if there are more than 20 people, tell me "It's already too crowded! You may wanna find another space for rehearsal!"

Additionally, if you can, tell me the percentage of space is taken and recognize how many groups or clusters are there in the photo, and tell me what they're doing. If there are more than 3 groups, tell me the place where I can add some movable walls to divide this space, making sure some groups have their private space.

What's the situation now?

IMG_6528.mp4

1,463 tokens SUBMIT

Response Markdown

I can recognize 16 people in this photo. Probably too many people, but you can try to fit in here if you must.

It seems about 15% of the space is taken.

There are 4 groups of people:

- A group of 3 people is standing in the middle of the space, talking to each other.
- A group of 5 people is standing on the right side of the space, chatting and looking at their phones.
- Another group of 5 people is standing in line on the right side of the space, probably waiting to enter the auditorium.
- A group of 3 people is walking on the left side of the space, appearing to be leaving.

You can add some movable walls between the group in the middle and the group on the right side, and between the group in line and the group that's leaving, giving each group some privacy.

VISION

Large Parties Detected
Estimate Occupancy : 60%

- Analysis Occupancy and Activities
- Analysis Spatial Relation
- Trigger Result

Lerner Space
Now: Busy
Large Party Going

Availability:
Small Groups: 5
Medium Groups: 1
Large Groups: 0

COLUMBIA ISIPA
Center on Global Energy Policy
COLUMBIA UNIVERSITY

COLUMBIA GLOBAL ENERGY SUMMIT 2024
Navigating Global Challenges to Accelerate the Energy Transition
APRIL 16, 2024 | New York City

April 16, 2024
7:30 am - 5:00 pm
ADD TO CALENDAR

Lerner Hall
Columbia University
SEE LOCATION ON THE MAP

Register
Register for the Livestream >

Lerner Hall 1st Floor

Camera 1, Camera 2, Camera 3, Camera 4

- Camera Position
- People Detected



08 Building the new nature

Analysis of Ishigami's designs

Arguments
Summer 2023
Type : Arguments Paper
Instructor : Gabrielle Printz
Role : Individual Work



Nowadays, architects and urban societies are engaged in this ongoing discussion about how our living spaces can better align with the natural world. But what defines the relationship between architecture and the environment provided in nature? Sociologist Bruno Latour (2012) argues that we have to recognize that we live in an environment characterized by a profound blurring of the distinction between the natural and the artificial, but at the same time using technology in nature still used to be perceived as interference by man. As Picon says, maybe the man is adapting the concept of nature to cope with the challenges we face, especially in the urban context (Picon, 2015, p. 257). However, while some architects are treating modern architecture as an invasive element that's the opposite of nature, Ishigami is seeing architecture as nature itself and even trying to rebuild it. Depicting a book inside a book, Ishigami writes in *Plants & Architecture*: "While the formulation architecture-and-landscape typically suggests buildings within a larger encompassing environment, I have chosen to consider them both the same level...Instead of regarding lakes and rivers and hills and forests and fields as far from the built environment, I am seeking ways to design so that nature comes close enough to be indistinguishable from architecture" (Ishigami, 2008, p. 101). As a result, I will be discussing three key features employed in Ishigami's designs: shape, texture, and time.

Mimicking shapes can offer a straightforward approach to help architecture blend into its surroundings. In contrast to the way of combining biophilic elements together like others, Ishigami's approach stands out as he doesn't confine himself to replicating individual elements but sees the entire forest as an inspiration, which he then translates into the arrangement of architectural components. In KAIT Workshop, his successful move of using seemingly randomly arranged columns in different scales and covering the columns with a flat ceiling definitely contribute to the realization of his concept of mimicking a forest when the design reflection extends to the project and its surroundings (Liotta, 2018). By reframing architecture as an integrated one, Ishigami captures the essence of a forest and reinterprets it within the built environment. This vision disrupts the conventional notions of architectural composition and instead, highlights the organic irregularity of nature. It is through this holistic approach, he evokes the sense of wandering through a natural grove, where the randomness of the columns mirrors the organic diversity of trees in a forest.

Besides shape, texture also plays an irreplaceable role in the process of imitating landscape. A representative instance of this dynamic can be observed in the Serpentine Pavilion project. Here textures have heightened significance, particularly evident in the unconventional choice of materials and their arrangement. The innovative use of stone panels on the rooftop challenges conventional design norms, defying the expectation of lighter materials dominating the uppermost portions of a structure. By simulating the gentle outline of a hill, the Serpentine Pavilion conceals its expansive interior space under a natural camouflage. This strategic use of curve lines and textured stone panels works in unison to evoke the notion of a seamless transition from architectural creation to the enveloping landscape while the tactile roughness of stone panels and the organic curvature of the rooftop collectively serve as a homage to nature's intricate textures and forms.

Beyond the conventional architectural attributes, the often-overlooked dimension of time stands as a significant component in the transformation of architecture into a natural entity. This often-neglected factor, in my perspective, holds the key to completing the transition from constructed form to an organic extension. The essence of time has many dimensions, spanning from the historical journey a site has traversed to the potential future it might unfold. In the project of House & Restaurant, it is not only the shape and texture that matters. The intention of this architecture with a sense of enduring existence—"as if it has been there and will continue to be there for the longest time"—highlights the essence of time in design (Ishigami, 2014). The incorporation of soil and dirt onto the architecture's surface transcends being a mere texture; it becomes a representation of time's passage. Each particle carries the weight of history and the entirety of nature's evolution. It serves as a tangible embodiment of the timeline that these elements have witnessed, telling the narrative of nature's journey through countless centuries. Another example is the Water Garden. By moving trees from a surrounding site and rebuilding a new home for them, Ishigami is continuing the timelines of these plants and lives after being cut down for a new hotel to be built (Komrsová, 2021). In this way, the garden intermingles different time spaces: a presence of former, existing, and future layers of landscapes (Kajita, 2019). For this project to seamlessly integrate into the natural continuum, it must exhibit resilience in the face of the natural elements. Rain, sun, changing seasons, and lives passing through its spaces collectively contribute to the gradual entwining of time into its very existence and the Water Garden has proved its success through all these transitions after years of changes.

In summary, Ishigami's approach challenges the conventional distinction between constructed spaces and the natural world. Rather than considering nature and architecture as disparate entities, he advocates for their fusion, creating an environment where the boundary between the two becomes imperceptible. Ishigami's philosophy underscores that architecture, when seamlessly integrated with nature, not only coexists but also enhances the natural environment. This approach encourages a holistic reimagining of architectural design, fostering a coalescence that encapsulates the ethos of nature within the constructed realm.

By dissolving the boundaries between architecture and nature, we're starting a transformation. Architecture ceases to exist in isolation; it becomes an agent of connection and harmony. As the line blurs between the man-made and the organic, architecture has the capacity to evoke a perception of our environment. In essence, the integration of architecture and nature shows a future that is both timeless and forward-looking. It celebrates the unity of all living beings and underscores the necessity of harmonious coexistence. As we navigate the complexities of this rapidly changing world, this transition offers us a more sustainable and balanced future—a future where architecture is more than just shelter.



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09 Transscalarities Case Studies

Analysis of Rebirth Bricks and Zhuhai Huafa Contemporary Art Museum

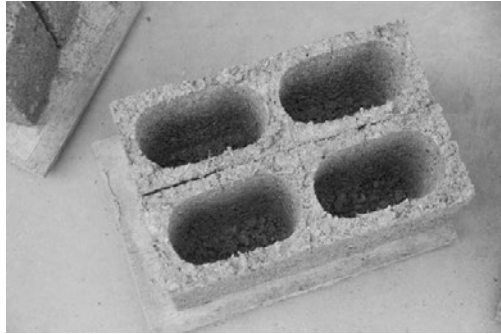
Transscalarities

Summer 2023

Type : Case Study Paper

Instructor : Iván-Nicholas Cisneros-Rangel

Role : Individual Work



Rebirth Bricks: the Expansion of Our Stories

Everything substantial is quantitatively conserved, including materials. However, there will come a day when materials are depleted, and all that remains is garbage. Consequently, as one of the most polluted industries worldwide, architecture and construction are striving to recycle materials from different perspectives and the rebirth brick by Jiakun Liu is among them.

Using broken bricks from the ruins as aggregates mixed with wheat branches, the rebirth brick was first created as a response to the devastating earthquake in Wenchuan in 2008. Besides being considered as a substance produced under emergency circumstances, the invention that rebirth bricks experimented has consistency with the evolution of construction materials in China around 2010 in view of low-carbon and environmental protection. Due to the severe environmental degradation, China has made a commitment internationally on reducing carbon emissions which triggers the evolution politically. Red bricks are previously the most conventional material for houses but actions were taken years before the regulations banning the use of red bricks were officially implemented in 2018 when professionals highlighted the damaging effects of coal-fired brick production on air quality. It was during this transition that the rebirth brick emerged, providing a solution for repurposing existing red bricks, serving as decorations and symbols in the architecture to continue the traditional style of Chinese buildings. Jiakun especially responded to this in the West Village Courtyard by laying the rebirth bricks on the rooftop utilizing the hollow as flowerpots for plants. Arguments are around the energy put into the remake of decorations compared to simply decay. However, when considering the carbon cost of brick firing and the necessity for ornaments and separate walls in roughhousing, it becomes imperative to reconsider how this durable material can and should be reused and repurposed to maximize its useful life while minimizing waste carbon.

Besides the political and environmental reasons that provoked the appearance of rebirth bricks, there are also territory factors that lie under their non-replicable patterns and texture of them. Nowadays, China is constructing over 2 billion square meters of architecture annually primarily composed of concrete, steel, and glass curtain walls transported across the nation, while the rebirth bricks use local broken bricks and wheat branches delivered to the regional factory from fields nearby the entrance of this rural area. That's when bricks became a material that's both personal and vintage for villagers. Therefore, with the aim of preserving patterns and memories, rebirth bricks evoke a sense of reminiscence and nostalgia among the elderly who currently living in concrete-surrounded buildings. They allow the continuation of what once existed, adding organic elements such as wheat branches and straws, aligning with the concept of "rebirth." Concerns about the unrefinement of the texture of newly-built structures may arise, but personal preferences, particularly among local elder residents, can result in unique and non-identical outcomes.

The life of the architecture is in the expanse of time and space. It is within this expanse that descendants find a place to live and create their own stories. By utilizing recycled materials like rebirth bricks, we not only extend the lifespan of a brick or a piece of wood, but also weave together the timelines, memories, and stories of Earth and each individual who walks upon it.

SOURCE CITED

Shen Qiaorui, Wang Lin, Feng Yu. (2023). Analysis of the New Regionalism Typology Thoughts in Liu Jiakun's Works [J]. *Urban Architecture*, 20(06): 150-152. DOI: 10.19892/j.cnki.csjz.

Transscalar politics and environmental studies of critical regionalism architecture: Zhuhai Huafa Contemporary Art Museum

In the era of globalization, there is a growing interest in appreciation for embracing the locals. One notable example of this approach is the Zhuhai Huafa Contemporary Art Museum, designed by Ábalos + Sentkiewicz. The museum not only exemplifies the recognition of the locals but also responds to it on a larger scale.

During its design phase, the concept of the Cultural Maritime Silk Road was first purposed and Zhuhai was recognized as the starting point to enhance the connection between local and foreign cultures, which encourages the architects to make the museum as a result of the desire to harmonize physical space and purpose by blending the traditional enclosed atmosphere typically associated with museums with a vibrant and celebratory ambiance in the open air.

The highlight section is the tree-shaped column in the courtyard that originated from local people's customs of forming a group in circles under a tree shadow. Beyond its cultural significance, this form also holds political relevance. The policies declared the entire city area as the Special Economic Zones in 2010 encouraging more businessmen to start their business here. As a result, with additional response to tourism, the patio under canopies protected by surrounding buildings with a magnificent panoramic lookout on the rooftop is considered to form a comfortable and shielding space for gatherings, representing the situation of Zhuhai at that time. However, there are some debates surrounding certain territorial aspects. The architects' attempt to incorporate elements from local traditional residential architecture, known as Wok Ear House, raises questions about the effective translation of local forms into their design, highlighting the challenges foreign architects may encounter designing in foreign regions.

Apart from the visual character that forms of these tree structures, it is important to interrogate how their design incorporates climate and building coding through a thermodynamics approach to design, the intentional control of the local climate also significantly shapes the final outcome of a project and this museum serves as a remarkable example of how it addresses multiple aspects in response to its environment. In addition to providing protection from intense and uncomfortable solar radiation, especially during the summertime, with skillfully managed dappled daylight, it also plays a vital role in the building's ventilation and cooling system. The design, meticulously crafted in a thermodynamically calculated shape, cleverly directs the cool northeast night breeze from the canopy to the courtyard level through the hollow branches, effectively utilizing the radiative cooling effect on the canopy surface and refreshing the courtyard. For shiny daytime, the warm air naturally rises due to the lower pressure above, further enhancing the building's ventilation system.

What's more, the column is a part of the water collection as well. The climate of Zhuhai allows for the canopy surface to cool below the dew point temperature at night, leading to the condensation of water vapor into dew droplets that gather and flow down the hollow branches, generating up to half a liter of dew per square meter each night. Moreover, during rainfall, the canopy directs rainwater down the hollow branches into the trunk to the patio where water will be pumped into the deposits. However, concerns remain about potential flooding in extreme weather conditions, such as typhoons, with substantial rainfall in a relatively short time.

In conclusion, the design of the Zhuhai Huafa Contemporary Art Museum speaks volumes as a prime example of engaging with its context while also contributing to the broader global architectural conversation. Its forms and techniques showcase an innovative approach to creating a space that naturally interacts with its environment.

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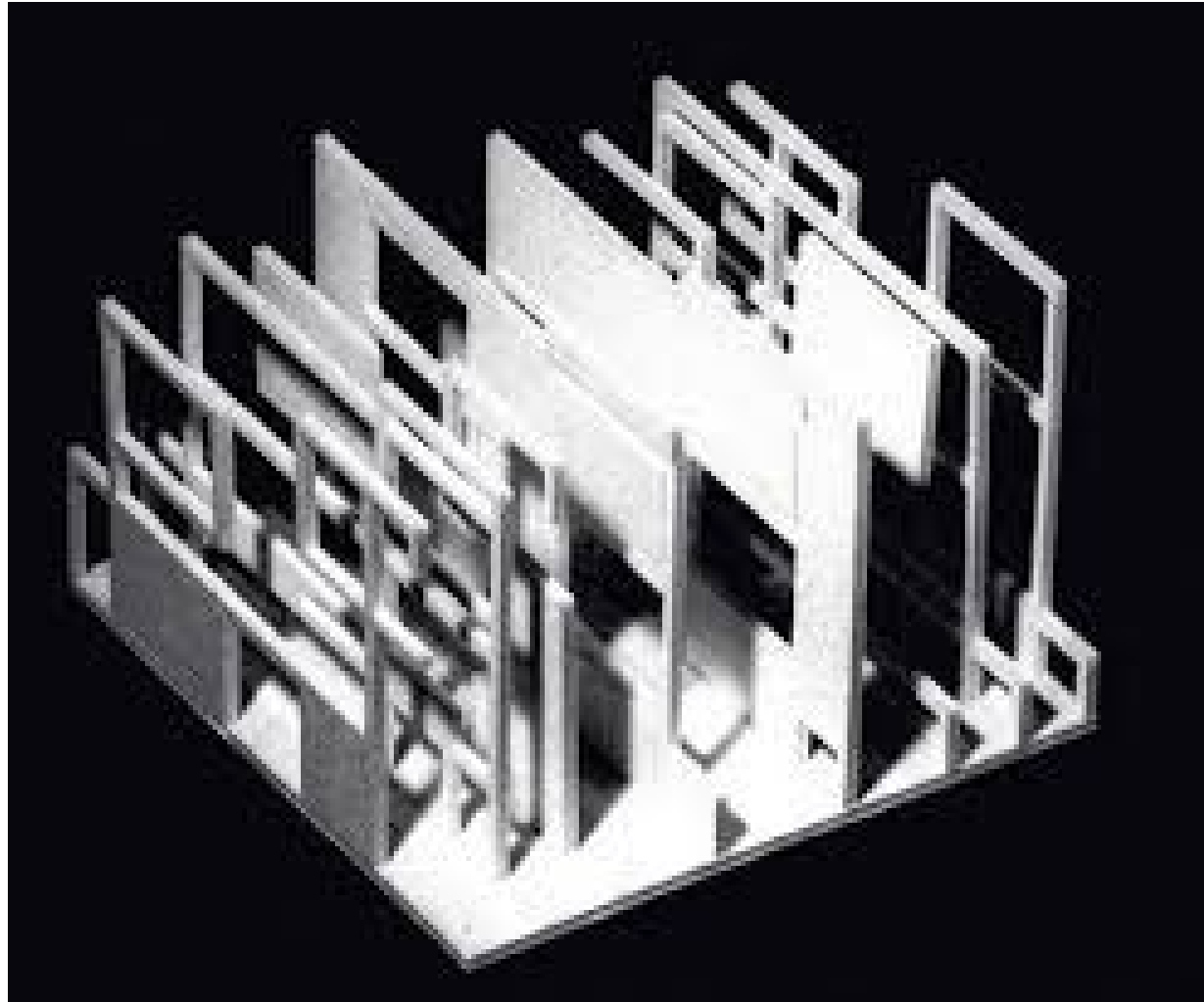
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10 See Through Space and Time

Study on *Transparency: Literal and Phenomenal*

The History Of Arch Theory
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Instructor : Mark Wigley
Role : Individual Work

In the 1950s, a cohort of young individuals congregated at the Texas School of Architecture in the United States, under the leadership of Bernhard Hoesli and Colin Rowe. Driven by skepticism towards functionalism and the prevailing "International Style," they embarked on the exploration of alternative teaching methods for modern architecture that challenged the mainstream.

The theoretical concept of transparency emerged during Colin Rowe and Robert Slutzky's tenure at the Texas School of Architecture and was subsequently detailed in a book bearing the same name. This classic issue in architectural theoretical research has garnered widespread attention and study among architectural scholars. The journey of formulating and publishing this theory was demanding and intricate. It underwent a developmental trajectory, transitioning from the realm of painting to that of architecture, from theory to method, and from teaching to practical application. Despite its challenging inception, the concept of Transparency continues to exude robust vitality, maintaining its relevance in contemporary architectural discourse. Therefore, this article is trying to analyze aspects that influenced and shaped the article Transparency: Literal and Phenomenal, which later was commented by other critics and became the main article of the book Transparency, and how it was conceived by the industry while became a huge influential theory in the study of architectural orderings.

FROM ART TO ARCHITECTURE

To illustrate the potential impact of transparent organizational principles, Rowe drew comparisons between Cubism and other painting styles. He argued that artworks featuring transparent organization offer a more intricate visual experience, open up multiple avenues for interpretation, and lay the groundwork for the subsequent integration of these principles into the field of architecture. After recognizing transparency in the art industry, Rowe and Slutzky believed that this kind of characteristic also exists in architecture. In this situation, transparency inspired by Cubism, evolved from a quality found in painting to a unique perspective on architectural form. This transformation allowed architects to explore new dimensions and possibilities in their work, mirroring the innovative and multidimensional aspects of Cubist art.

After establishing the art definitions of literal and phenomenal transparency, Rowe extended these concepts to the realm of architecture. In architectural contexts, literal transparency is centered on materials, light, and the depth of space, while phenomenal transparency shifts the focus to structure, hierarchy, and the shallower dimensions of space. And he pointed out that what they are really interested in is the transparency of phenomena aligning with human perceptual laws. Gropius's Bauhaus as a comparison with Le Corbusier's villa at Gachet are cited as examples.

One of the most distinctive features of Bauhaus architecture lies in its prominent use of glass curtain walls, facilitating with abundant natural light. Emphasizing the modern functional perspective advocated by the modernist architectural school during that era, the interiors of Gropius's designs stand in sharp contrast to traditional European buildings, which often had limited sunlight and darker interiors rooms. Gropius's houses incorporate larger windows, prioritize natural lighting and ventilation in their layout, and endorse a row-oriented arrangement. As depicted in the image, the transparent glass curtain wall intuitively reveals the internal structure of the building space, achieving a sense of physical transparency.

This kind of spatial liberation praised by Sigfried Giedion is regarded by Colin Rowe and Slutzky as a mere manifestation of physical transparency, which is caused by the effect is caused by the material properties of glass rather than through careful design, and the achievement of the transparency of the phenomenon they admire does not necessarily require glass, which often appears in Corbusier's works.

Though using the same material, glass, Corbusier's emphasis on the use of material properties differed from Gropius's approach. Gropius concentrated on the transparent qualities of glass in his design, employing large-area glass curtain walls to segment horizontal interface floors into vertical layers. Conversely, Corbusier placed greater importance on the flat properties of glass. This directional approach to material selection and utilization highlights the intricacies involved in achieving phenomenal transparency. Le Corbusier's five points of architecture serve as the foundational framework for realizing this concept.

From the comparison above, we can infer that the Bauhaus's construction relies on the visual attributes arising from material and special structure choices, with minimal consideration for structural features and complex spatial order. In contrast, for Corbusier, architecture is the designer's expression of the profound structure of the world and the times. The experience of architecture involves understanding this deep structure inherent in architecture. This deep structure corresponds to "spatial order," resembling the definition of phenomenal transparency.

The article emphasizes Villa Gachet's success especially in working in all axes: "Corbusier had indeed succeeded in alienating architecture from its necessary three-dimensional existence. " Personally, I agree with the perspective of appreciating Villa Gachet from the authors' point of view. However, I question whether the perceived shortcomings and disadvantages are as severe as Bauhaus has been judged. The Bauhaus leans towards expressing a transparent or translucent picture effect reminiscent of Cubist paintings. However, within the three-dimensional system, the presence of the Z-axis allows for a clear separation of originally contiguous spaces. Additionally, the extensive use of glass eliminates the need for imaginative spatial relationships that were present in the picture, removing the "half-covered" effect. This straightforward presentation may be too direct for the audience, subsequently reducing the tension within the space. Nevertheless, when examining the Bauhaus without the demand for phenomenal transparency, such concerns cease to exist.

The choosing of Le Corbusier's work as the representation of phenomenal transparency is not random or arbitrary, but its reason could be dated back to Rowe's personal background. Rowe contends that European architecture has undergone a process where its original ideological and sociological content has been entirely stripped away, transforming into a universal mode of living. This adaptation is often seen as the optimal form suited for the collective activities of civilized capitalism. While superficial style explanations may appear capable of capturing the formal principles of modern architecture, Rowe argues that they lack the depth needed for thorough architectural analysis and research.

ORIGIN

As an architectural concept, transparency has roots surprisingly in the world of modern painting, initially as an artistic quality that eventually evolved into a distinctive perspective on architectural form. Its origins are closely related with the Cubist movement in the art industry, which emerged as a response to the artistic developments of the 19th century, particularly the work of Cézanne, as artists who's popular for seeking new ways to represent the volume of objects.

As Cubism developed, it broke the limitation of the stereotypical traditional practice of depicting objects from a fixed viewpoint and then confining them to a two-dimensional painting plane. Instead, it began to restrict depth and compress the compositional space toward the picture surface. Various techniques were employed to eliminate the illusion of three-dimensional space, and the use of opaque, contrasting colors intensified the sense of spatial depth and projection. This compression of depth space gave rise to a novel visual attribute: the significance of the position of graphic elements took on a dual meaning. The intersection, overlapping, interlocking, and construction of ever-changing and larger forms provided the groundwork for diverse interpretations within the realm of Cubism.

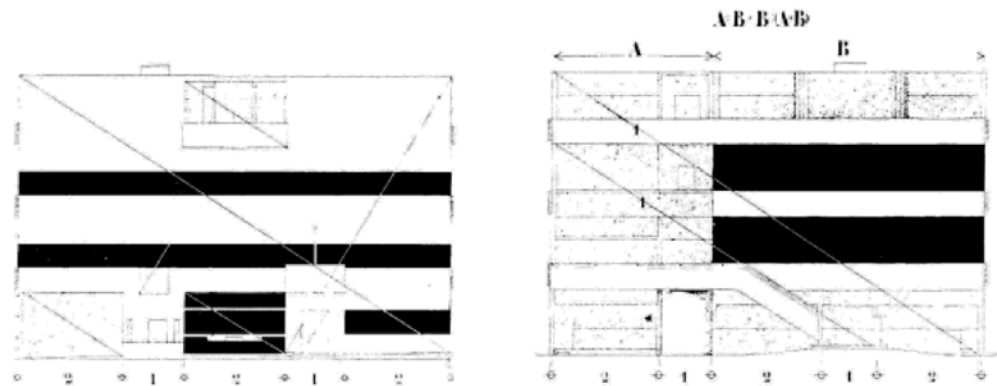
The argument on "Transparency" draws on analogy as it positions itself in contrast to Cubism. Three sets of paintings were specifically chosen for comparative analysis: Picasso's "The Clarinet Player" and Braque's "The Portuguese," both depicting figures in the Cubist style and abstract form. The objective is to scrutinize and contrast distinctions based on a shared expression form. Moving to a different facet, Robert Delaunay's "Synchronic Window" and Juan Gris' "Still Life" show distinctions in composition and color, prompting a detailed comparative exploration within the same expression form. In the third grouping, Moholy Nagy's "La Sarraz" and Fernand De Léger's "Three Faces" delve into the differentiation between physical transparency and phenomenal transparency.

The author defined La Sarraz as literal transparency for it conveys a more intuitive expression. As for phenomenal transparency, the author chose Léger's artwork "Three Faces" as a noteworthy example. The composition consists of flat color blocks and evocative image fragments. Léger adeptly employs techniques such as the strategic overlap and interweaving of diverse color blocks, the incorporation of multi-level grids, the subtle suggestion of spatial interfaces, and the dynamic interplay of shifting viewpoints, and the nuanced modulation of the relationships between these color blocks. These compositional choices and dynamic shifts work in harmony to create a visual experience rich in transparency and depth, allowing viewers to perceive intricate and far-reaching spatial dimensions within the artwork.

"While Moholy seems to have flung open a window on to some private version of outer space, Leger, working within an almost two dimensional scheme, achieves a maximum clarity of both 'negative' and 'positive' forms. By means of restriction, Leger's picture becomes charged with an equivocal depth reading, with a value singularly reminiscent of that to which Moholy was so sensitive in the writings of Joyce, and which, in spite of the positive physical transparency of his paint, Moholy himself has been unable to achieve."

Hence, the author contends that a prerequisite for delving into the concept of transparency is a grasp of fundamental distinctions. One pertains to the characteristics of tangible materials, exemplified by elements like glass curtain walls, while the other involves organizational attributes. Consequently, the author introduces the concepts of physical transparency and phenomenal transparency. In interpreting the author's research foundation, one could posit an interpretation of the transparency concept, speculating whether the author implies that architecture need not depend solely on the existence of physical materials but can convey its essence through an abstract form, detached from reliance on pure modeling.

Moholy-Nagy said his "transparent paintings" became completely freed from all elements reminiscent of nature, and the author quoted him directly: "I see today that this was the logical result of the cubist paintings I had admiringly studied" This progression is intricately linked to Le Corbusier's subsequent discussions on architectural spatial expression.



According to Rowe, relying solely on stylistic descriptions without delving into the underlying ideologies is insufficient for a nuanced understanding of architecture. This approach falls short, particularly when attempting to provide a precise and comprehensive introduction to the works of architects like Le Corbusier, as it overlooks the essential ideological and sociological dimensions that shape their creations. Rowe aimed to transform the prevalent superficial atmosphere within the architectural world through his innovative exploration of the works of the modernist master, Le Corbusier. Both being representative figures in modern architecture, Le Corbusier's works hold distinct advantages and possesses unique qualities that contribute to their charm. Colin Rowe sought to analyze and explain these qualities, striving to create a method of understanding the beauty inherent in Le Corbusier's works that goes beyond verbal expression. Le Corbusier's architectural strengths lie in various aspects. His ability to seamlessly blend form and function, his economical use of space, thoughtful consideration of materials, and innovative structural approaches are some of the key advantages. What sets Le Corbusier apart is the harmonious integration of these elements into a cohesive and aesthetically pleasing whole. In Colin Rowe's focused study, he deliberately suspended considerations of function, economy, materials, and structure, choosing to concentrate solely on the examination of form. This meticulous attention to form may be seen as the foundational intent of transparency theory—an effort to articulate and understand the intrinsic beauty found in the logical and rational language of architectural expression.

Therefore, it can be argued that the entire theory of transparency is rooted in the appreciation of Le Corbusier's works and forms. Acknowledging the objective distinctions between the two, I find the analogy employed in the comparison somewhat inappropriate. Analogies entail reasoning where two objects, with certain identical or similar properties, are inferred to be similar in other aspects. This form of reasoning is subjective and may lack the robustness of truth. Therefore, stringent logical argumentation is essential to validate any conjecture.

Strictly speaking, Bauhaus architecture and Villa Gachet have different functions, designed to meet distinct functional requirements as well. For Villa, it has its main principle of providing a more comfortable living space, which makes it can be seen as living space and supporting space. Conversely, there is no apparent order in Bauhaus' principles of composition. All functional distributions appear to hold an equally significant position, with the size of the occupied area determined by their respective functions, like classrooms and studios. This composition principle makes it challenging to apply phenomenal transparency effectively. Their differences extend to the interior layout, exterior facade shape, and overall building orientation. Consequently, I believe the analysis of these examples lacks the precision evident in the earlier selection of paintings.

Moreover, I propose that a more suitable comparison could be drawn between Gropius House and Villa Gachet. Gropius's deliberate use of transparent glass in his design reveals a thoughtful consideration of the structure, aesthetic function, and spatial interface of the house. This comparison might also extend to Villa Gachet.

The book throughout shows it's influenced by several philosophical minds. For example, while "literal transparency" could be understood easily by its text meaning, the use of "phenomenal" is influenced by Edmund Husserl. In traditional philosophy, particularly in the Kantian tradition, there is a distinction between the way things appear (phenomena) and the way things are in themselves (noumena). Kant argued that we can only know phenomena, as our knowledge is limited to our perceptions and experiences. Husserl, in contrast, sought to redirect philosophical attention to the phenomena themselves.

Edmund Husserl's definition of phenomena is central to his phenomenological philosophy. In the context of phenomenology, a "phenomenon" refers to any object or event as it appears to consciousness. Husserl's approach involves a systematic examination of the structures of consciousness and the way phenomena present themselves to the experiencing subject.

He suggested that we must get rid of the intuitive and common sense view that we believe every day, because perception cannot integrate reality into fragments. The correct method is to concentrate on the specific phenomenon and intuitively understand its essence. Everything can be achieved by observing it quietly. This method is "phenomenological reduction", returning from sensory experience to pure phenomena.

In the 1930s, the foundation of phenomenological philosophy laid the groundwork for the "Transparency" concept we recognize today, making a crucial distinction between "literal" and "phenomenal" transparency. The term "phenomenon" can be traced back to Hülsey's phenomenological philosophy. In 1941, Siegfried Gideon explored the relationship between painting and architecture in his book "The Architecture of Time and Space." He analyzed how the Bauhaus school building, with its glass corners, possessed a quality of "transparency." By 1944, George Keeps employed Gestalt psychology principles to articulate the original definition of transparency in "Visual Language." In 1955, Colin Rowe and Slutsky completed "Transparency 1," a work where they dialectically developed the concept of transparency based on the theoretical foundations of their predecessors. Le Corbusier's strong association with Cubist painting, later evolving into Purism, positioned his architectural works as a key practical support for subsequent transparency theories.

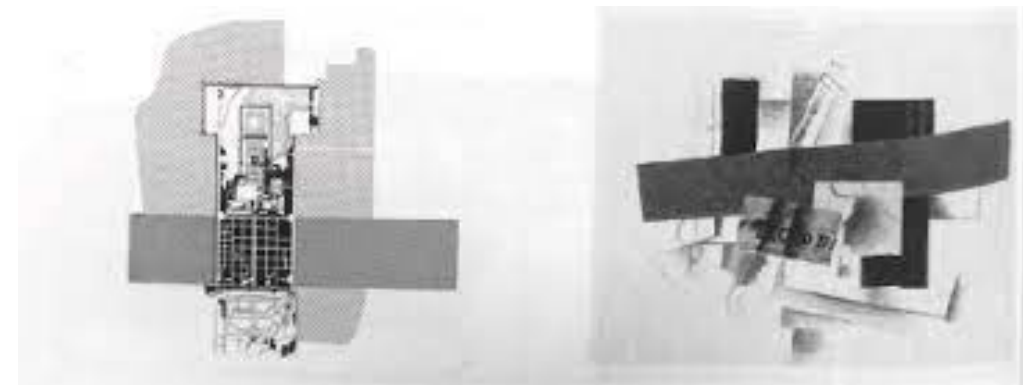
Besides the exact word used for naming and definition, the form of transparency theory was strongly influenced by Gestalt psychology developed and flourished at that time. Gestalt psychology was born in 1912. In view of the connection between transparency and Gestalt psychology, here is a brief explanation of visual principles from Chapter 5 of "Gestalt Psychology". The classic principles of the gestalt theory of visual perception include similarity, continuation, closure, proximity, figure and ground, and symmetry and order (also known as prägnanz). For space to produce the effect of transparency, we should first assume and acknowledge the existence of Gestalt psychology - that is, when we see multiple fragments of something, we will automatically imagine and complete its whole; when we see multiple sets of information, the complete image of each set of information is automatically recognized and imagined separately. Transparency is to use the limitations of this observation method to make the information on an observation surface as rich as possible and conflict with each other, allowing people to imagine different spatial images.

When it comes to writing methods, the writing of "Transparency" was probably influenced by Sir E. H. Gombrich as well. Gombrich's "what they knew and what they saw", "what they saw" is "as it is", accurately presented, and "knowing" is a cognitive diagram of rationality combined with experience. The writing approach in "Transparency" mirrors that of Gombrich in two significant ways. Firstly, it avoids talking about cultural symbols and maintains a distance from structuralism. Secondly, it perceives art as the "formalization of perception," with no emotional attachment. In a manner similar to the way of discussing "genealogy," the writing assumes an academic stance.



INFLUENCE & CONTROVERSY

The book not only invented the theory and brought the transparency theory to the public discussion, but also marked the beginning of this legendary while dramatic teaching activity. The article "Transparency 1" was completed in 1955 but was not published until 1964. Upon release, it immediately encountered fierce criticism from fellow scholars and architects, sparking an intense debate on transparency theory. Its sequel, "Transparency 2," published only once in 1971, experienced neglect, excluded even from Rowe's own anthology. It is understandable and expected in a way that the publication of "Transparency 1" challenged the dominance of the Bauhaus school in the United States, led by one of the most influential architects, Gropius. Rowe's comments on Gropius in the book were excessively harsh and critical, aiming to underscore the "superiority" of Cubism while also disparaging Constructivism paintings. The article's language affects readers, making it challenging to objectively assess the significance and contributions of different architectural schools and styles within the classification. Besides the extremely harsh language, the limitations of the transparency theory itself are also often attacked. One is because of the limitations of the analysis perspective. When analyzing Le Corbusier's architecture, viewpoint limitation has "frontality". In addition to geometric features, the real architectural experience also has time and space relationships. And a single perspective interpretation will undoubtedly restrict the rich spatial qualities of the building. Another contentious aspect lies in the critique of hierarchical limitations within the theory. When the author analyzes Le Corbusier's architecture, in order to facilitate the reflection of transparency, the author conducts analysis from the facade and plane respectively, rather than a three-dimensional interpretation, which is a one-sided interpretation of the geometric characteristics of the real architectural space. Personally, I see some of these critics reasonable; not only logically, but also judge it when taking the high popularity of Gropius' work and proposition at that time.



CONCLUSION

Regarding the transparency theory, in addition to proposing a new way of interpreting modern architecture, it is also a new perspective for observing architecture, a way of viewing architecture that transcends history and modernity. Transparency theory can be used to explain both modern architecture and classical architecture. This shows that transparency is one of the basic theories of architecture. Transparency is not a lofty utopian theory, but involves specific and practical discussions on function and form. It is a natural concept that comes from the field of architecture.

As it is said in the conclusion of the book: "It is not intended to suggest that phenomenal transparency (for all its cubist descent) is a necessary constituent of modern architecture, nor that its presence might be used like a piece of litmus paper for the test of architectural orthodoxy. It is intended simply to give a characterization of species and also to warn against the confusion of species." In reality, the "ambition" of the two authors, distinct from the controversy and revolution it ignited, extends beyond a mere distinction in the definition of transparency. Their broader objectives are to distinguish modernist architecture, reflect on modernist architecture and modern architectural teaching, and develop their own architectural design and teaching systems. The controversy surrounding transparency theory serves as a catalyst for a more profound reevaluation and restructuring of broader aspects within the field of modern architecture. If transparency is defined as allowing people to perceive a series of different spatial locations at the same time, compressing the depth of space, and creating visual phenomena that penetrate each other and can be interpreted in multiple ways, then physical transparency and phenomenon transparency are not actually completely different. The distinction, the transparent interface is actually very helpful in creating the hierarchy and ambiguity of the space.

For architecture and architectural design, the presence of a particular architectural theory should never mark the end of a discussion, but rather the inception of a fresh round of discourse. Instead, the true value of a theory lies in its endurance in academic debates, its continuous generation of novel concepts, and its practical application in architectural design. What is more important for a theory is to persist in its academic discussion, constantly introduce new ideas, and apply it to architectural design practice. As an artistic state extracted from Cubist painting, transparency will inevitably be narrowed into a visual design technique dominated by rationality after the technique matures. Even so, in the process of theoretical research, the academic status of physical design methodology has been consolidated. From this perspective, these explorations still have extremely important positive significance. Rowe and his followers thus created a new method of exploring modern architectural forms, and formed a questioning spirit and pursuit of formal meaning in design courses. After analyzing the origins and how transparency evolves throughout the time in different history periods, including the critical thinking and arguments around it, we're having the capacity to see its undoubted influence and the adjustment it performed to fit in the social and territory background, which empowers us to establish a clearer, more transparent path for future architectural designs.

