

Discussion on why architecture changes and what factors causes it.

ARCHITECTURE

CULTURE ECOLOGY

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Previous portfolio

Cultural ecology, raised by J·H·Steward in his book " the theory of culture change," is an interdisciplinary theory of Anthropology and Biology which is used in Architecture in recent years. Culture ecology emphasis on the causation of culture change. According to the theory, human society is influenced by different factors, including values, social organization, economic system, and physical environment, whose impacts are decreasing progressively. Architecture, both in terms of the built environment and spirits, can be of influence and be influenced in this dynamic system.

#The Dynamic System#

The theory provides us clues about how architecture is made into what is today. To find the reasons, we should dive into studying the factors mentioned above and what they have changed with time changing.

As part of the environment,
architecture is of influence to human society by effecting human culture.

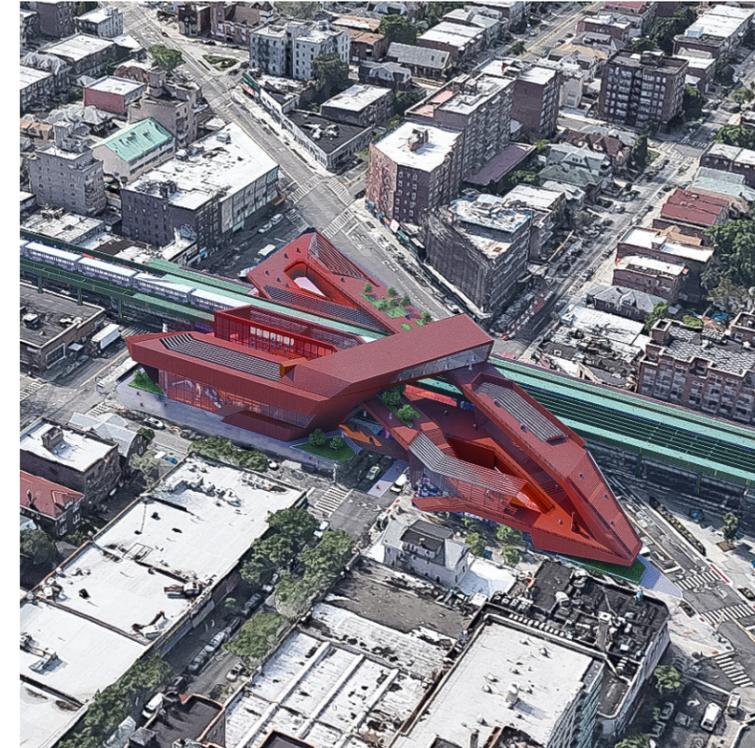
Jackson Height in New York is the container of ethnic integration, cultural conflicts and fusions while art breeds itself. The stage of the street is the stage of the ethnic sprits. The Jackson Height street performances of various art groups held almost every weekend. On the one hand, due to the lack of proper planning, most art groups can only rehearse in small spaces such as laundry rooms and perform in chaotic street crowds. On the other hand, these details inspired us to get rid of the idea of traditional stage design and reconstruct the relationship between the place of performance and the audience.

#Radiate Influence#

As a transportation hub, subway stations and bus stations will bring massive flows of people to this district, so that the new project has the opportunity to become a showcase for the entire city. In addition, due to the lack of planned public activity spaces, it is easy to establish initial attractiveness for tourists in nearby districts by increasing the natural environment and improving public facilities.

As a type of cultural phenomenon,
architecture is influenced by other counterparts.

How creative art could be when different racial people work together?
How could architecture present this change of need?



Street Theater.

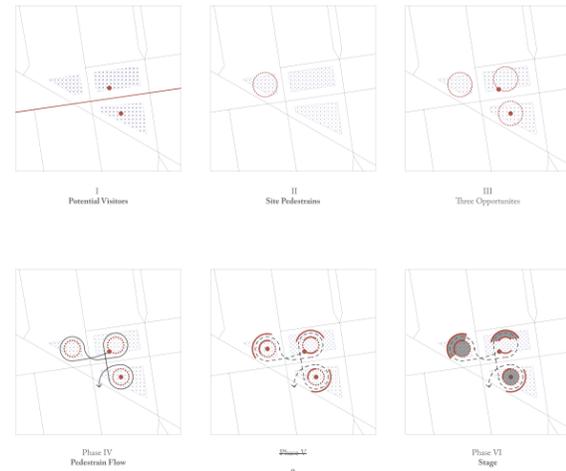
Free-formed performance | Relationship between audience and performer | 50/50

New York, US.
2021,6
GSAPP Studio IV: Remix
Critics: Eric Bounge & Mimi Hoang
Yingjie Liu, Yufei Liu

Street Theater

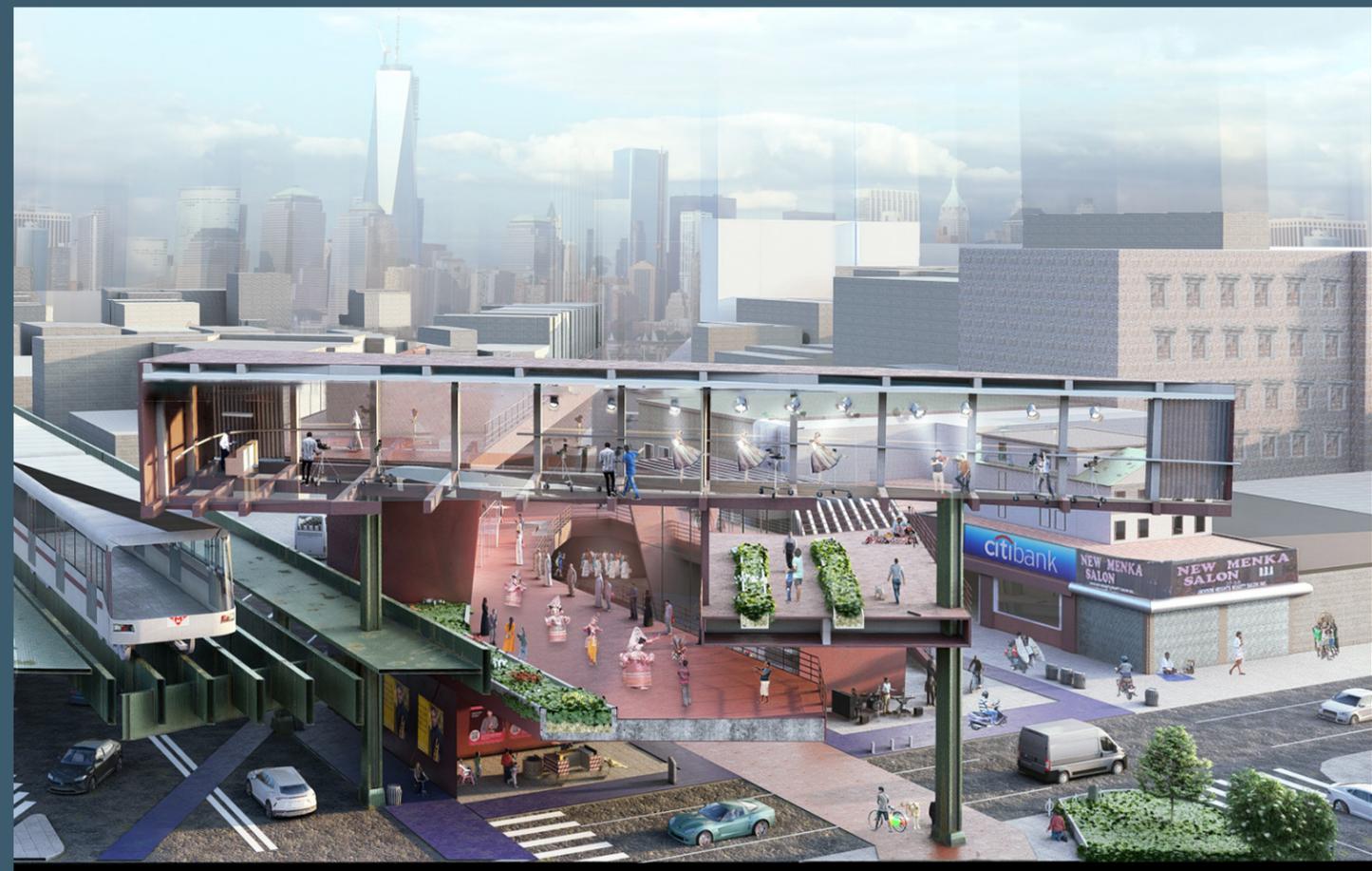
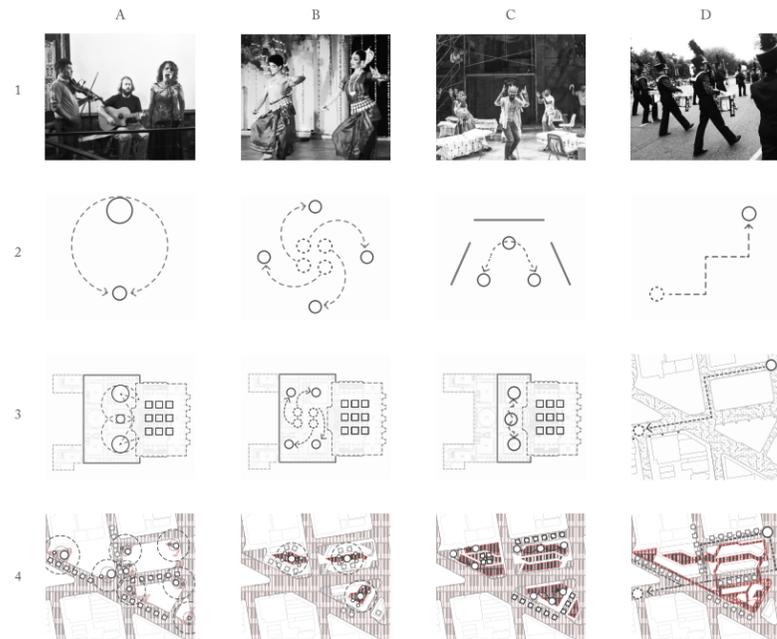
Design generation

By extracting site's influential information including transportation flow and green space. The design uses one **continuous line** to connect three opportunity circles and creates a special **performing flow with kinetic stages** scattered along the line.



Development Process

Analyzing and combining existing local performance forms such as street performance, diversity-plaza performances and parades, we preset the four most frequently occurring performance topologies on the site.



Story Board

The illustrated story book shows possibilities of a blurring identity of pedestrians, audiences and performers, a remix of performing spaces with ordinary life use spaces: back stages with exhibition, prop rooms with cafe house.

Continuous multi-level stage

The pedestrian loop links all the internal and external spaces, connecting the existing streets, front and backstage, natural environment and the station to form a special experience journey, remixing people's life and performance experience.

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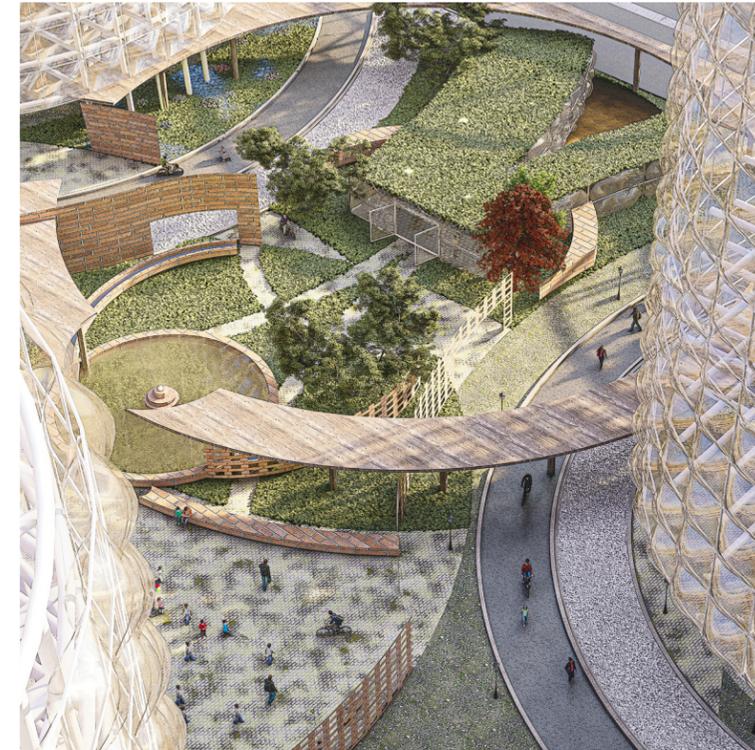
When different circles intersect, it brings influences from both sides. “Common circle” is actually one of the compulsory classes in GSAPP, which helps students engage in conversations about diversity and inclusion. The public housing projects in New York are notorious for racial isolation and high crime rate. For the site, the Gowanus housing, it is also facing the risk of Gowanus canal flooding. A dead body was found in Gowanus canal September, 2021. After Sandy ravaged New York, the city government proposed the use of public property including 35 public housing to release the flooding pressure. And the Gowanus housing is one of them.

#Diversity Inclusion#

Using a circle as a graphic starting point, this design hopes to transform the green space system of Gowanus housing into a people-friendly resilient rainwater garden. The main strategy is to design a series of sewer overflow retention tanks that act as a VRF system for the existing buildings and integrate it with an improved facade skin for the indoor thermal comfort to improve residents' living experience and achieve lower carbon footprint from a lifecycle assessment perspective.

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architecture is influenced by other counterparts.

Did architecture cause culture isolation?
How could architecture stimulate spontaneous interaction?



Common Circle

Public housing|Energy Circulation|Diversity inclusion
2021,9
New York, US.
GSAPP Studio V: Future Public
Critic: Stephen Burks
Yingjie Liu

Circle Relationship.

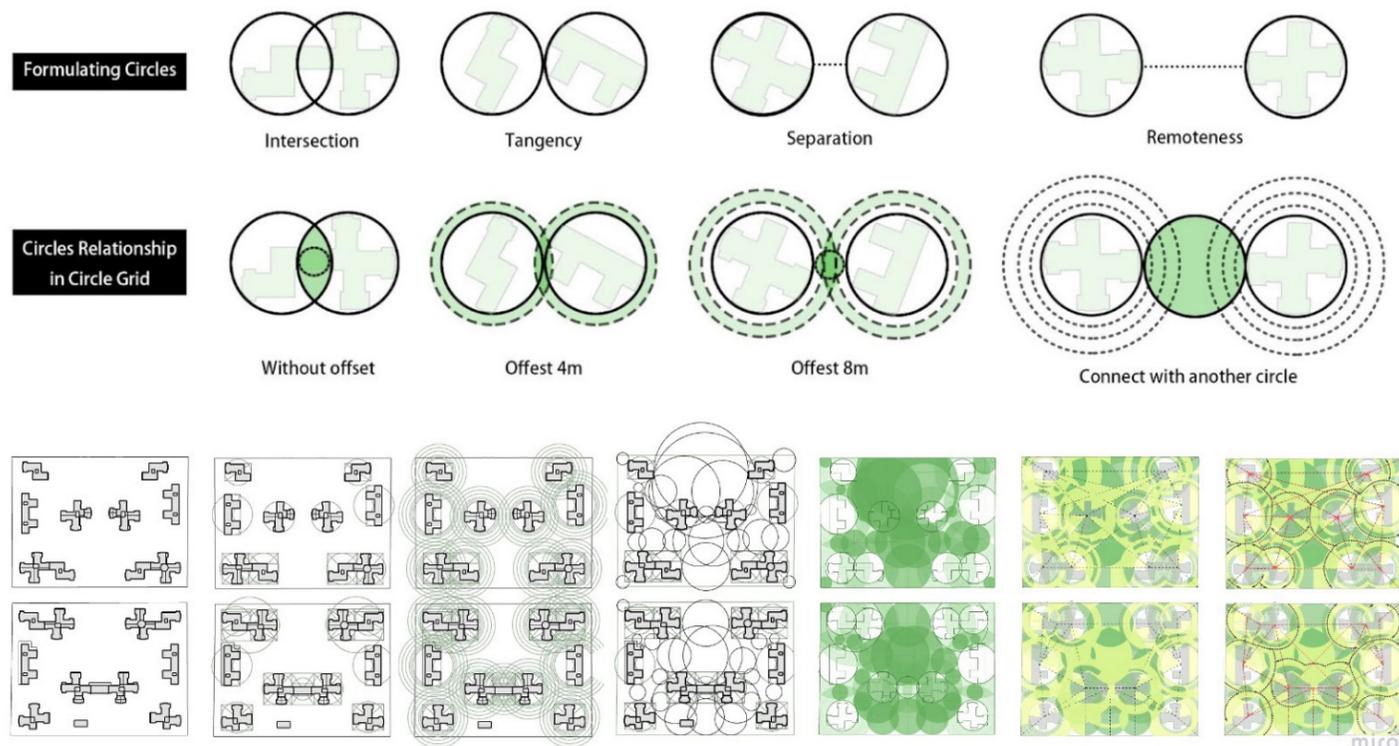
Could the intersection between two circles cause overlapping of heart?

Flooding risk
The flooding risk is rising. As suggested by the New York Flood Hazard Mapper, Gowanus houses are always facing flooding risk from Gowanus canal. In 2019, the government sponsored a sandy renovation project which designated Gowanus houses as one of backup-retention tanks to release system pressure.



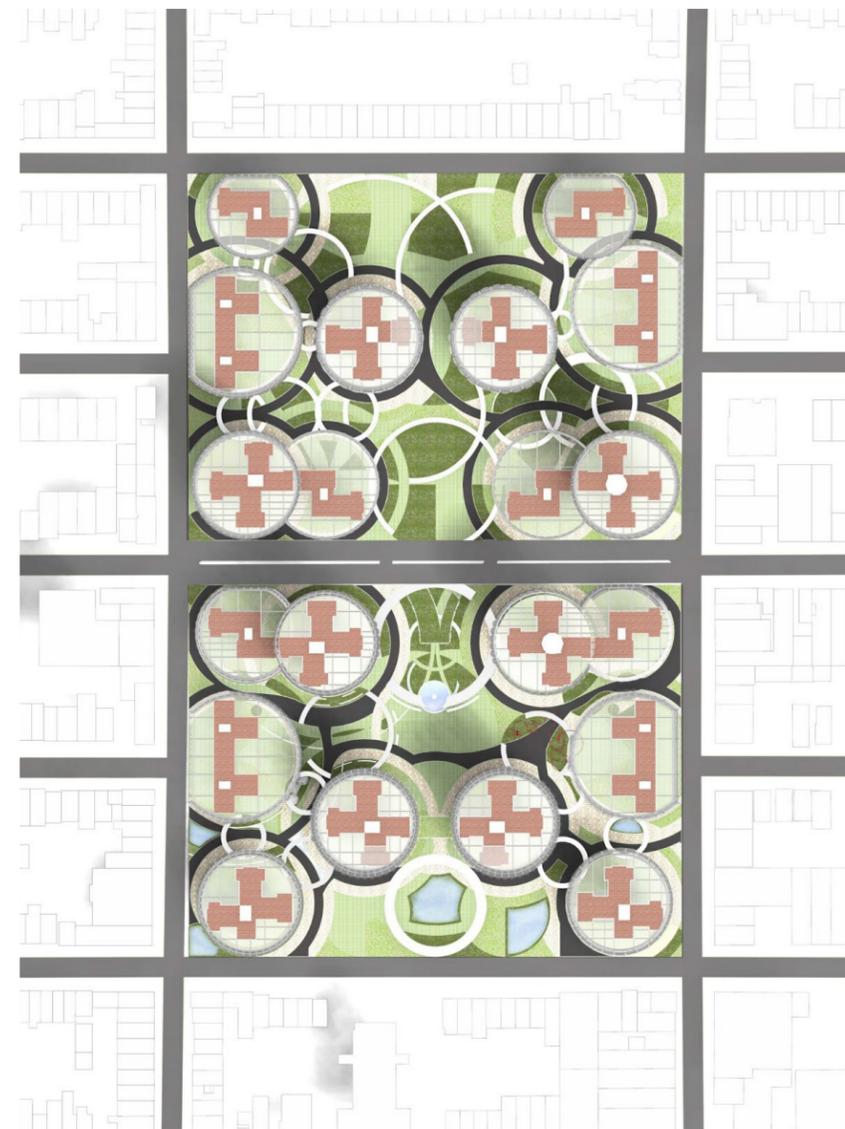
Development Process

When two circles intersect, it brings opportunities from both sides. This is the ordinary four different relationships of circles. By formulating a single building as a circle, we can defy the interval space by this interactive circle grid. Offsetting the basic circles or connecting the remote circles with another circle can create intersection space.



Circle grid.

Could the grid of master plan influence more than the design?



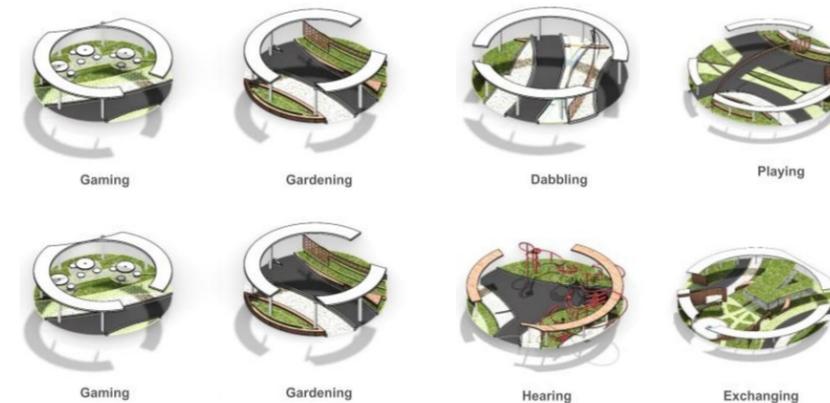
Porous pavement

The multi-level rainwater garden purification and collection system is designed to collect more than 160000 square meters of rainwater, which is twice the requirements of NYC Housing Authority.



Nuanced Parks

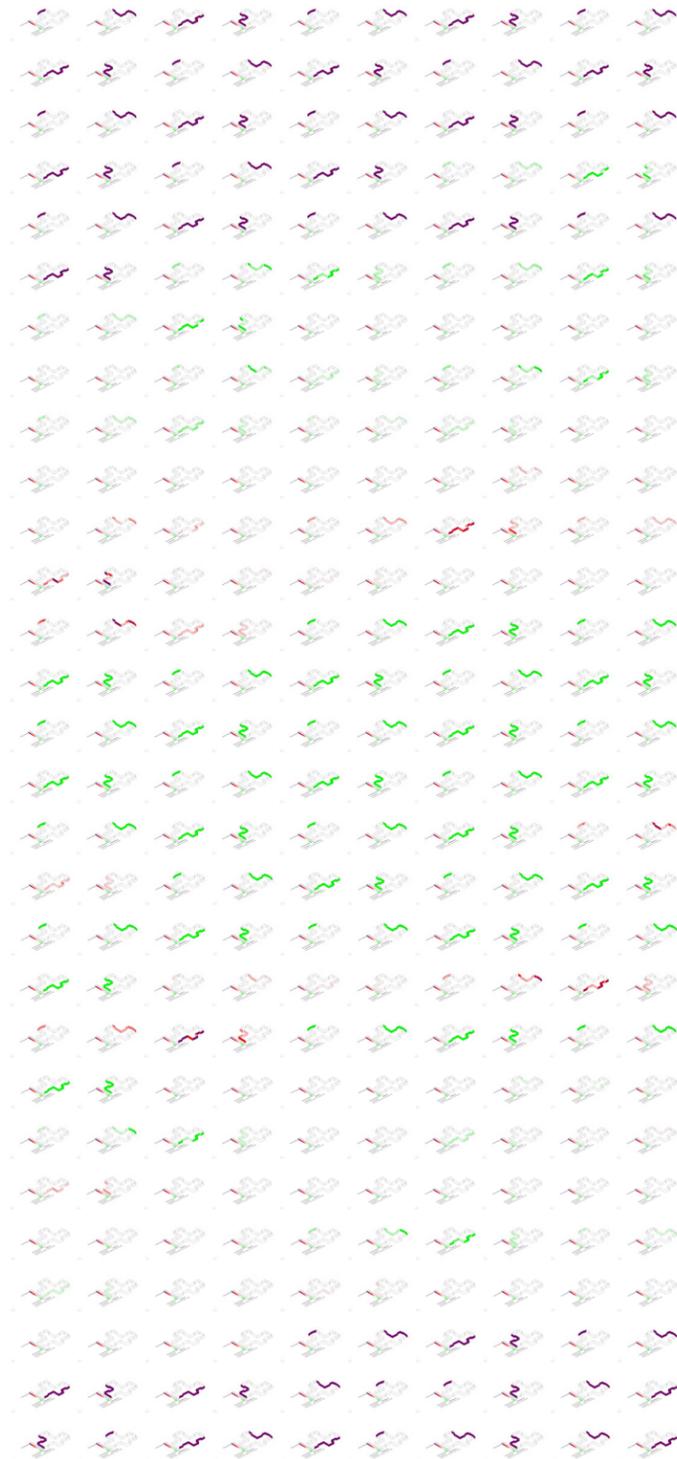
By updating the existing functions and inserting new functions. Residents who share the same interests, at the same ages or even don't have any similarities before will have serendipity to share this nuance, talk and know each other and therefore strengthen community bundage.



Technical documents.
How could a skin change by radiation influence?

Envelope system.

The whole process is analysis in the video bottom right. The envelope system is designed to use ETFE as material. It can achieve better energy performance as the ETFE system is switchable with a triple layer system. It employs reflective printing patterns on the middle layer and the inner and outer layer. The middle layer position can be moved, making it geometrically overlap, either with the inner or outer layer. This allows adjustment to achieve a partial percentage of light transluence or total coverage. Through simulation to formulate the schedule of ETFE envelope of the building.



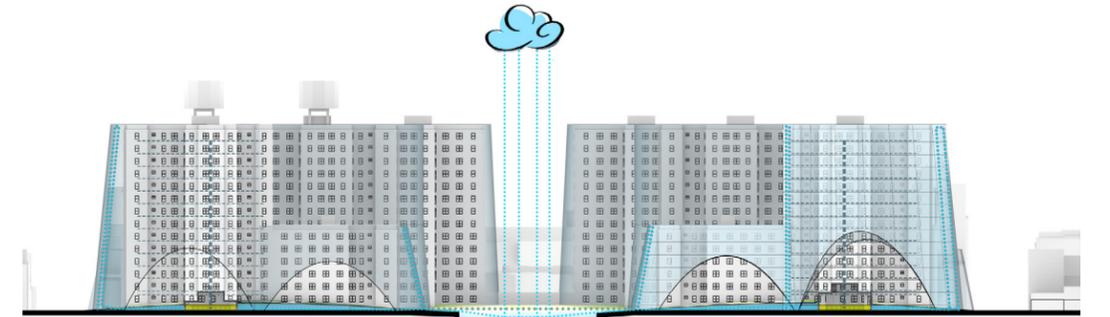
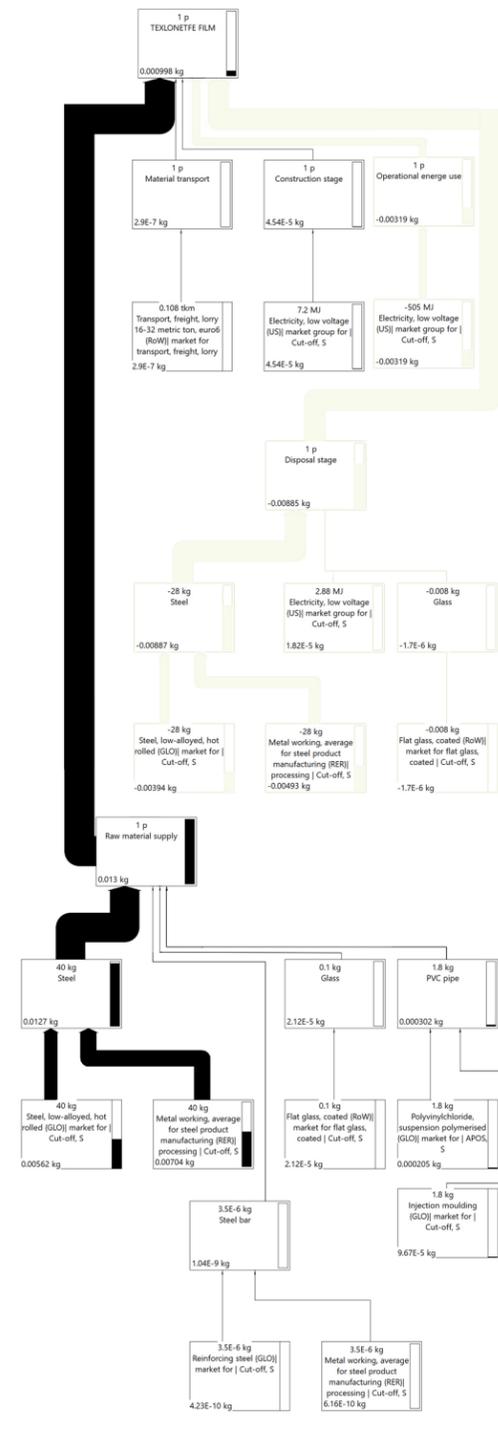
Water and energy circulation

The rain water storage can also be used as water cool system cool sources and the energy saving is simulated in the video bottom right.

LCA Assessment

From production to disposal, the analysis shows the carbon footprint of construction can be remedied after 5 years adapting the new system.

New Economic Structure and Commercial Models.
What Kind of Tourism is Good for the Village?



Cooling & Heating Units Making sure the circulation water is cool enough
30mm Daily Precipitation Stormwater retention tank 6800m³ for daily water cooled AC heating transform
Cooling & Heating Units Making sure the circulation water is cool enough Larger surface to achieve Double layer cooling



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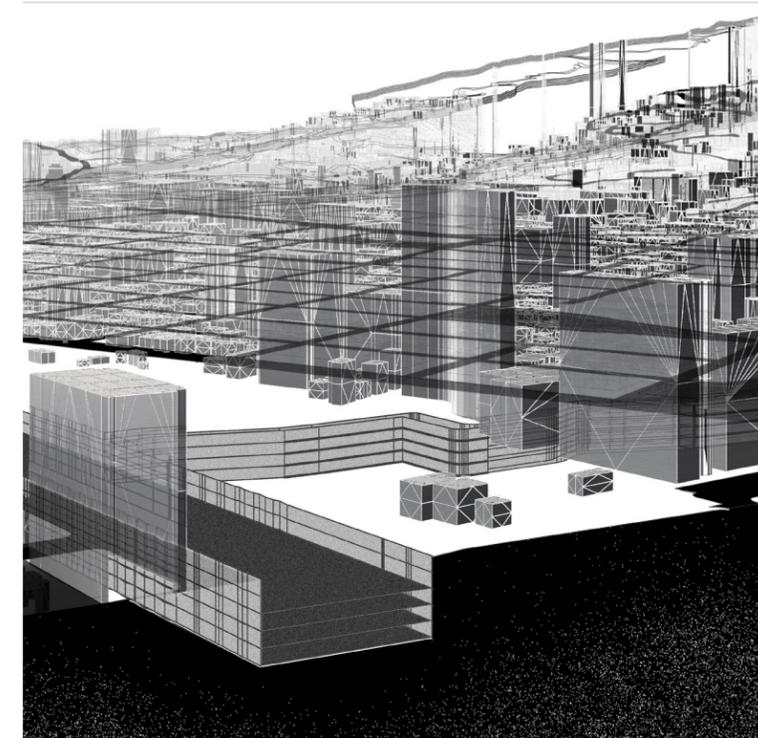
Ola I ka wai, in Hawaiian, can be translated as water is life. All life forms on Hawaii island rely on a spade of gushing water. With the spring meanders, it identifies the space, nurturing culture and practicing liberty. However, the original Hawaiian water system is infected,invaded, even erased by another artificial liquid with the practice of systematic colonization. Water is confined within cement walls, rejected outside the asphalt skin, and regulated in plastic pipes. With the inseparable, ongoing violence of urbanism and militarism, a new petro-based Hawaii was debuting recklessly with a greedy black glowing. Batteries, soldiers transported from petrol-engine, road networks, electricity, carpet, printing machine, tables and chairs, countless, omnipresent.

#Excavate Truth#

By looking through the eye of this hydrocarbon mixture, we are able to reveal this invisible hand, its direct and further impact and ruminate on our attitude toward climate, conservation and justice.

As a type of cultural phenomenon,
architecture is influenced by other counterparts.

How can one liquid erase the other one?
Can design empower the reclaiming of culture?



O La I Ka Wai

Hawaii non linear|Water restoration|Post petroleum design
2022,3

Honolulu, US.

GSAPP Studio VI: Water studio

Critic: Mario Gooden

Yingjie Liu, Ralph Cheng

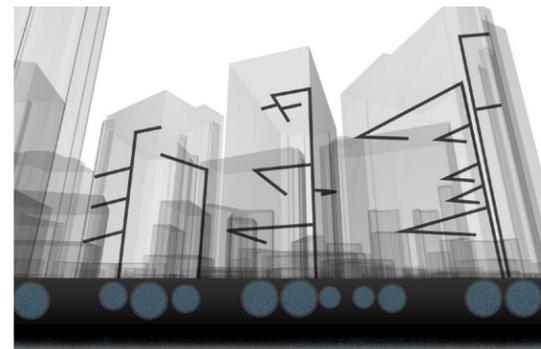
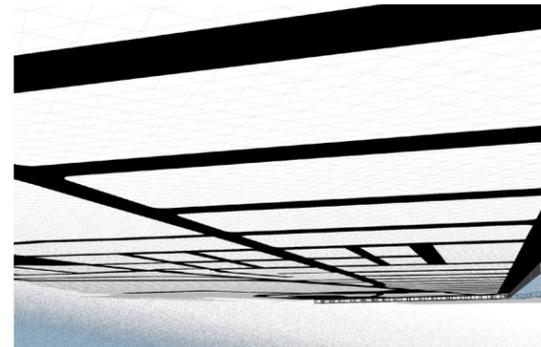
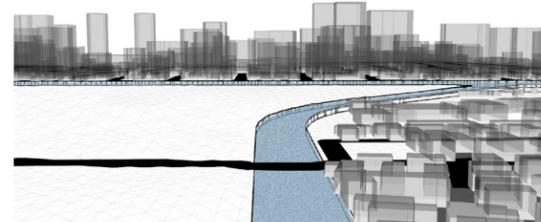
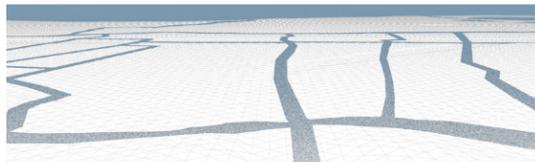
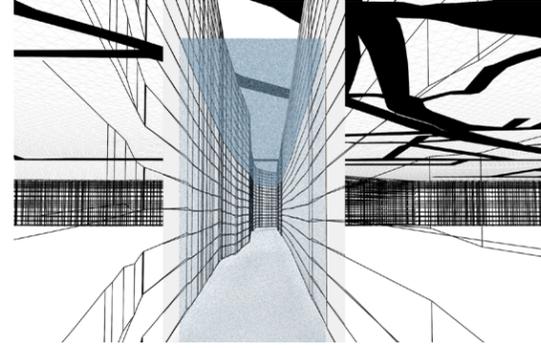
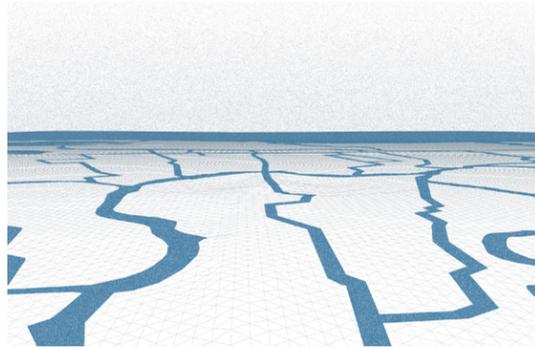
Eye of water vs Eye of petroleum.
When comparing through two non-human eyes, we are able to excavate colonial practice.

Water has become a **knowledge system** that creates every stories of Hawaiian people. However, the system was **replaced, controlled and polluted** with the practice of **colonization**. The settlers cut the source of water by filling the creeks and drain the ground with the canals. The concrete structure of the canals has become

a **scare** on the Manoa streams. Places like Ala Wai golf course were not applied with the new system, turning the fertile land into waste land. With the Hotels on the coast blocking the direction of the sea, the spirits and the stories of Kanaka lost themselves in the middle of drained waste land provided.

The Waikiki beach was the cross section of seawater and freshwater where the nutrients gather and nourish the intertidal creatures. But now it is covered with the new petro-base system. The impermeable surface refrains the freshwater getting into the ground. These two kinds of water have never met here since then.

In the time of water, land and water alternate their position freely. Kanaka learned to use this hydro space as fish ponds. Sadly, these places were replaced by resorts and hotels, which were secured by the patrobase transportation web and supported the water extracted and transported with the pipelines.

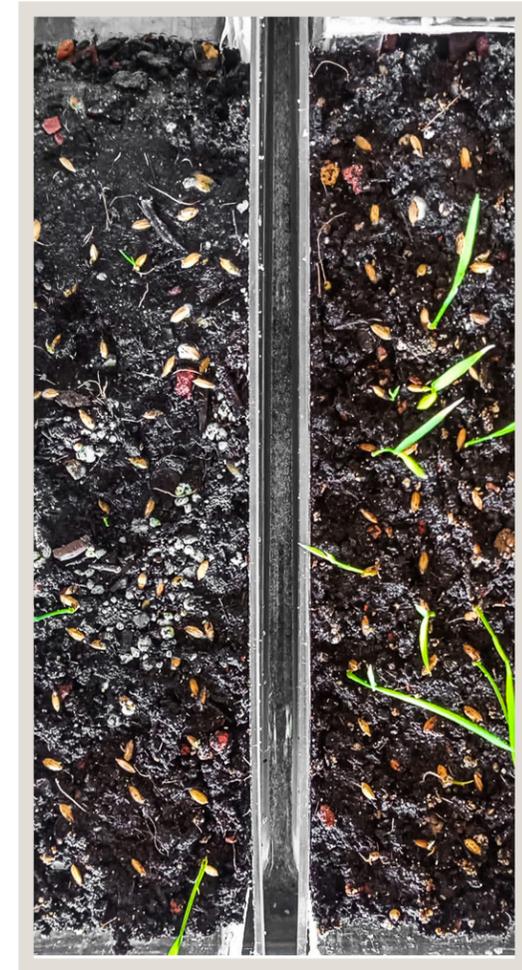


Hydrology Apparatus
What does petroleum based material really affected?



Control experiment

The experiment simulates the different performance of impervious and permeable pavement in rainy days and polluted leakage conditions.



Two tests

In Experiment one, left figure shows when the two pavement undertake the same volume of water flowing from T-pipe, the water flow on the impervious pavement formed as a stream and crashed into the land around the road. Experiment two, when putting the blue test pigment on the top of the two kinds of pavement, the pollution of impermeable pavement caused more serious transmission, and the volcanic stones and soil under the water permeable pavement played a good filtering role to ensure the normal growth of rice as shown in the right figure.



Depetroleumized machine.
Low tech vs high tech.

Urban scale inter-
vene

In 1921, with the construction of the Ala wai canal, its concrete wall became a scar on the manoa stream. Connect the canal with surrounding greenland could:
a) reclaim the Aahupua'a form mountain to the sea.
b) decrease the risk of flooding by providing more than 6 million m³ water storage potential.
c) solve the urgent risk of 20 % of Hawaiian fresh water sources



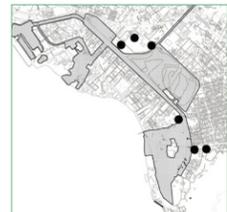
① Canal as scar



② Connect the greenland



③ Detention basin



④ Water storage



Hello from the other side.
What does petroleum based system really affected?

Sink Palaza

A sinking platform at the intersection of the two boi treatment pools is set. Through the comparison between the polluted water from canal in left pool and the first stage purified water in the right pool here, the design of the platform cut a section through the ongoing petro violence in the form of water pollution and hazards contamination.



Post petroleum post card
A redecoration of the vintage fort derrsusy post cards as propoganda to call for depetroleumized action.



Translucent staris

A set of stairs around the DAF tank cut through the original parking lot floors, and expose the layer by layer of petroleum based products including asphalt, cement, pvc. As the highest newly built building in the site, Walking up the stairs, people can see the whole ahupuaa and hear the water and mud separated into what they were 100 years ago.



Depetroleumized
process

Based on Higo's paper in the 1980, the Genki Ball project is officially approved by the Hawaiian government to use for Ala wai canl water restoration project. It was made by mixture of the Effective microorganism solution and mud to make the Lactic acid bacteria, photosynthetic bacteria and Yeast to have long lasting effect for water restoration. A solid waste recycle center and sludge treatment center are also designed for the whole process.

Post petroleum com-
munity

The floating grass carpets, small old new Aina, will serve as catalysts for the original aquatic communities in Hawaii, an inverse colonization of the water system will be achieved with the action of the whole community.





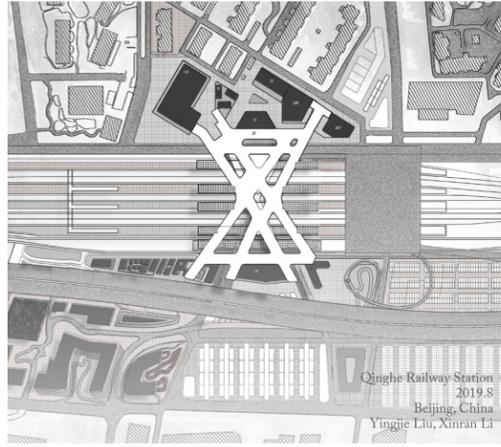
The Spaning Units
2018.3
Beijing, China
Yingjie Liu, Lu Liu, Ruyi Xiao



The Spaning Units
2018.3
Beijing, China
Yingjie Liu, Lu Liu, Ruyi Xiao



Qinghe Railway Station
2019.8
Beijing, China
Yingjie Liu, Xinran Li



Qinghe Railway Station
2019.8
Beijing, China
Yingjie Liu, Xinran Li



Longquan Tourism Planning
2020.6
Beijing, China
Yingjie Liu
Excellent Graduation Design



Additive Digital Design With SCI-Arc China Initiative
2020.10
Shanghai, China
Yingjie Liu

RESUME

EDUCATION:

2021-2022| Columbia University | Master of Science in Advanced Architecture | NY, US.
2015-2020| Beijing Jiaotong University | Bachelor of Architecture | Beijing, China.

AWARDS

2020|Asian Design Award Ecological, Healthy and Sustainable|Silver Prize
2019|National University Real Estate Innovation Competition|Best Design
2019|UIA-CBC International Universities Construction Competition |Third Prize
2018|National Undergraduate Program for Innovation and Entrepreneurship|School Award

EXHIBITIONS

2019|Archifor European Design Exhibition
2018| Beijing Construction Festival

Photoshop	Rhino	Vray	<i>Processing(JAVA)</i>
Illustrator	Grasshopper (C#)	Lumion	<i>Unity(C#)</i>
Indesign	MAYA	Enscape	<i>Visual Stuio</i>
AfterEffects	Revit	Figma	<i>Figma(JAVA)</i>

#Wave Chaser#

The idea of modernity has been deeply planted in architects' minds, but the market and culture of architecture change rapidly, as we are now in a time that changes more quickly than ever. As new media are shaping people's aesthetics, classical modern architecture practice needs to be reformed. The investigation into the causality of architecture is to trace how the new logic comes into place. Knowing the change will bring architecture and architects new opportunities.



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