Andrew Yu

Email:
Ay7731@princeton.edu
Phone:
(469)-226-0855
Address:
2529 Scenic Drive, Plano, TX 75025
Linkedin:
www.linkedin.com/in/ayu100/

Education

Princeton University / Princeton, NJ — *08/2022 - 05/2024*
Master of Architecture
- *Princeton University Fellowship (2022 - 2024)*

Syracuse University / Syracuse, NY — *08/2017 - 05/2022*
Bachelor of Architecture
- *Summa Cum Laude*
- *Minor for Real Estate*
- *Syracuse Full Tuition Merit-Based Scholarship (2017-2022)*

Work Experience

Princeton University / Princeton, NJ / Assistant-in-Instruction — *01/2024 - 05/2024*
Instructor for ARC204, introduction to Architectural Design working with Anda French, Paul Lewis, and Erica Goetz. Led desk crits and aided with organizing reviews.

Toyota / Plano, TX / Business Internship — *05/2023- 08/2023*
Intern responsible for the Dealership of the Future Project in collaboration with Toyota and Gensler. Collected research pertinent to the design of the Dealership of the Future at Toyota.

Gensler / Dallas, TX / Architectural Internship — *05/2023- 08/2023*
Intern responsible for the Dealership of the Future Project in collaboration with Toyota and Gensler. Helped design the framework for future Toyota facilities at Gensler.

Corgan / Dallas, TX / Internship — *06/2022- 08/2022*
Summer intern for the aviation sector involved in research and design for the DFW airport.

AYConnect / Austin, TX / Startup Venture — *06/2020 - 03/2023*
Independent venture into video production and social media. Accumulated over 350,000 subscribers and 40 million views across multiple platforms.

Syracuse University / Syracuse, NY / Undergraduate Teaching Assistant — *08/2021- 05/2022*
Workshop and Event coordinator working with Dean Michael Speaks and Professor Kyle Miller.

Humphreys & Partners Architects / Dallas, TX / Internship — *06 - 08/2021, 06 - 08/2019, 07 - 08/2018*
Summer design intern involved with schematic design, land planning and code research.

nArchitects / New York City, NY / Internship — *02 - 03/2020*
Spring intern working with nArchitects in collaboration with the Syracuse Internship Program. The experience was cut short due to the COVID pandemic.

Atema Architecture / New York City, NY / Internship — *01- 02/2020*
Spring intern working with Ate Atema in collaboration with the Syracuse Internship Program. Ate closed his personal practice in February.

Atelier Z+ / Shanghai, China / Internship — *05 - 06/2019, 06 - 07/2018*
Summer intern involved in drawing diagrams and building models. Also a member of the team that won the San Lin Bridge Competition.

Honors and Affiliations

AIAS / Syracuse — *08/2017 - 05/2022*

Syracuse University Full Tuition Scholarship Recipient / Syracuse — *08/2017 - 05/2022*

Princeton University Fellowship / Princeton — *08/2022 - 05/2024*

Skills

AutoCAD	arcGIS	3D Digital Fabrication
Adobe Illustrator	V-ray	Wood Working
Adobe Photoshop	Lumion	Video Editing/Creation
Adobe InDesign	Enscape	Sketching
Adobe After Effects	Microsoft Excel	Drafting
Rhino3D	Model Building	Substance Alchemist
Revit	Grasshopper	DIVA

PORTFOLIO

ANDREW YU

2020-2024

CONTENTS

cantonese dried fish

bird watching

salt flats, salt water, shakes

anthracite filters

brine deposits

views beyond the sea

freshwater returns

yellow croakers

chinese herring

rawas

trains on a track

plumes from below...

exhausted back into the earth

and again...

Heat creates gradations in the water

Coagulation

geothermal pumps from seismic movement

reverse osmosis

Flocculation

[1] Machine Inefficiency

Anachronistic Dim Sum

Spring 2024

Type: Urban Design / Farm-To-Table Restaurant
Location: Salton Sea, California
Category: Academic Work
Instructor: Jesse Reiser
Role: Individual Work

Machinic efficiency reduces the human role in production by lowering energy expenditure in favor of productivity within a process. This thesis challenges the notion of engineered efficiency by "architectural-izing" the machine and its byproducts to create a series of happenings that merge industrial processes with human rituals. Sited in the man–made accident that is the Salton Sea, this thesis approaches crisis, not through resolution, but rather by redistributing the existing site conditions.

Machine Inefficiency

Equilibrium is not Static // Salton Sea, California

This thesis is sited in the Salton Sea, a man-made body of water 35 miles in length and 15 miles in width that was accidentally created when the canals that irrigated the Imperial Valley burst. While the Salton Sea was once a desert, after it flooded, it became a terminal lake because it had no evident outlet. This condition proved to be detrimental in the long-term because the Salton Sea, fed by the outflow of the Imperial valley, became the final destination for salt and pesticides. Whereas in the mid twentieth century, the sea hosted a new ecology and became a tourist destination, by the seventies the saline proved to be fatal to fish and the sea started to have an odor. Furthermore, because of the strict water restrictions, the outflow of the Colorado river was redirected to cities in California such that the Salton Sea began to evaporate at a rate faster than it could be replenished. The sea is problematic because if it were drained or flooded, this would only exacerbate issues already present in the area. While solutions have been discussed for decades, the state of California remains at a stand still. This notion of resolution is, however, always conceptualized as a means to an end. Whereas equilibrium is often misconceptualized as a moment of stasis, it is in actuality a state of constant contention, requiring precise forces to counterbalance one another. Machine Inefficiency proposes an inherently inefficient water desalination plant that removes salt from the sea at the same rate that the sea receives salinated water to keep the sea in its perpetual state; a state of equilibrium. In its preservation, opportunities for human ritual can arise.

Photographs from the Salton Sea, Photographed by Andrew Yu

The Inefficient Machine from Beyond the Salton Sea

Machine Inefficiency
Sprawling in the Salton Sea // Salton Sea, California

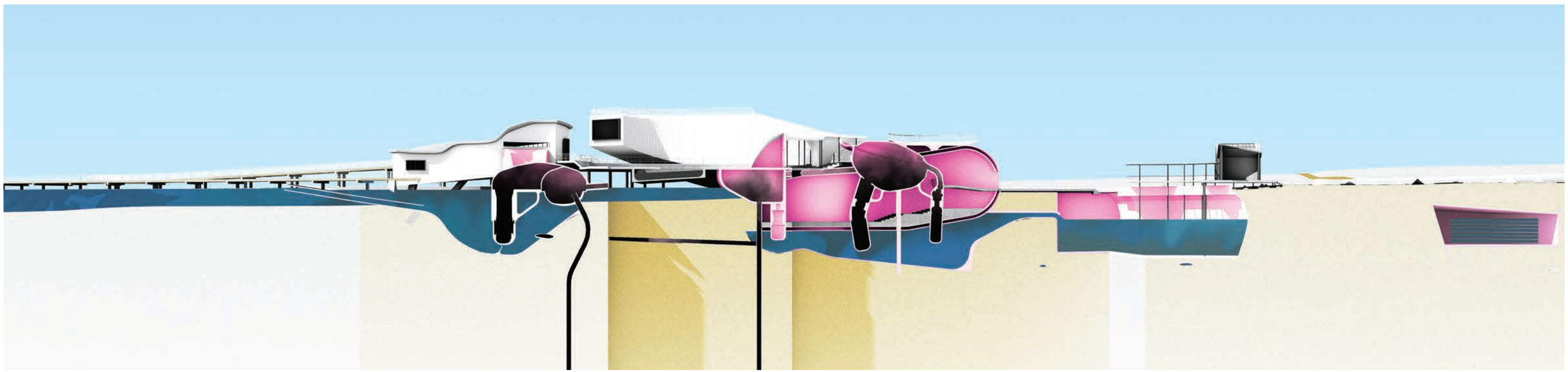
Broken into components, the industrial process of desalination involves the filtered intake of water, followed by the addition and subsequent mixing of a coagulant to the water, which acts as a bonding agent for solids present in the water. When passing through the flocculation channels, the water is then further mixed so that the solids clump together before getting pumped through an anthracite filter. At this stage, anything solid within the water has now been extracted from it and what remains in the water is only the saline and chemicals from the sea. The water is then passed through a series of reverse osmosis filters that use high pressure pumps to force water across a semi-permeable membrane so that fresh water can be separated from the remaining contaminants. Because these pumps can only filter around 95% of its intake, the 5% left behind becomes hypersalinated. The separated freshwater is pumped into a collection pool heated by a series of geothermal heat exchangers before it returns back to the Salton sea.

As fresh water is returned to the sea, the goal is to reintroduce species of fish and rebuild an ecology that can be sustained by the effort of the desalination plant. As for the hypersalinated brine water, it flows into a series of salt pans, one foot in depth, so that when left to evaporate, an immense amount of salt can be harvested. Evaporating brine within salt pans, which is a practice that dates back to the Roman Empire, relies on an exchanging of energy with the sun, the progenitor responsible for life as we know it. Furthermore, depending on the chemical composition that the salt was exposed to, it can affect the flavor of the salt similar to the concept of a terroir with respect to wine. What results is a unique type of salt that can be harvested from the Salton sea.

For my thesis project, I paired this method of harvesting salt with the curing of fish, a method of preserving fish in Chinese culture that further brings out the umami flavors. Fish are covered and marinated for several days in a vat of salt before being wrapped and spread out across a plate to be dried out by the sun. Not only does this method of curing preserve the fish but as a result, it becomes sweeter and more aromatic. Cantonese people often use preserved fish in fried rice dishes for these very reasons.

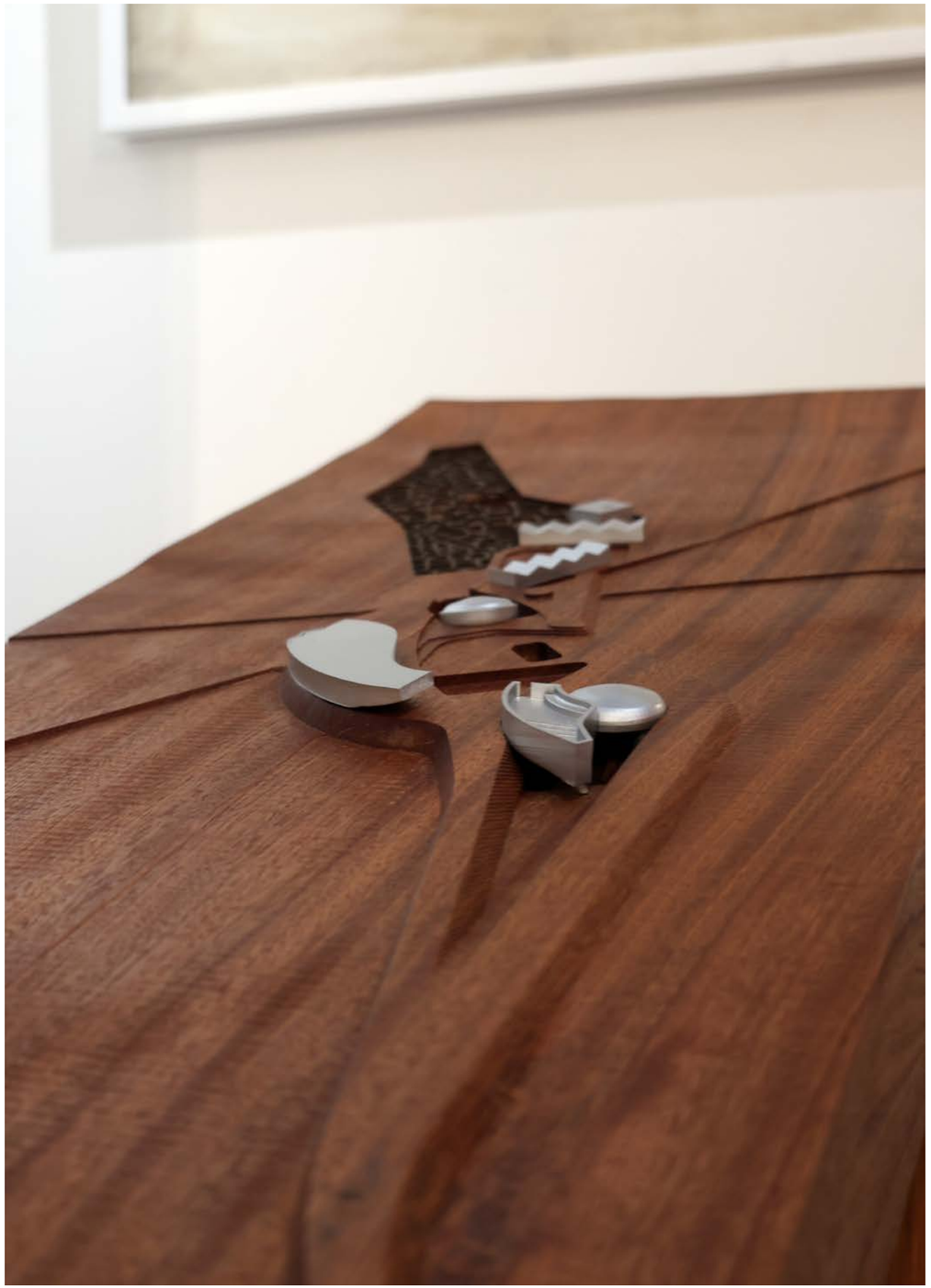
Oasis from Beyond the Salton Sea

Oasis from Beyond the Salton Sea



The Inefficient Desalination Processing of the Salton Sea keeps the Salton Sea in Permanent Stasis

Machine Inefficiency Exhibited at Cheryl Hazan in Tribeca, New York City, March 29th - April 19th



Site model Milled into Walnut

The Space for Sun Drying FIsh

The Flocculation Machine

The Coagulation Machine

Model Table Milled into Mahogany

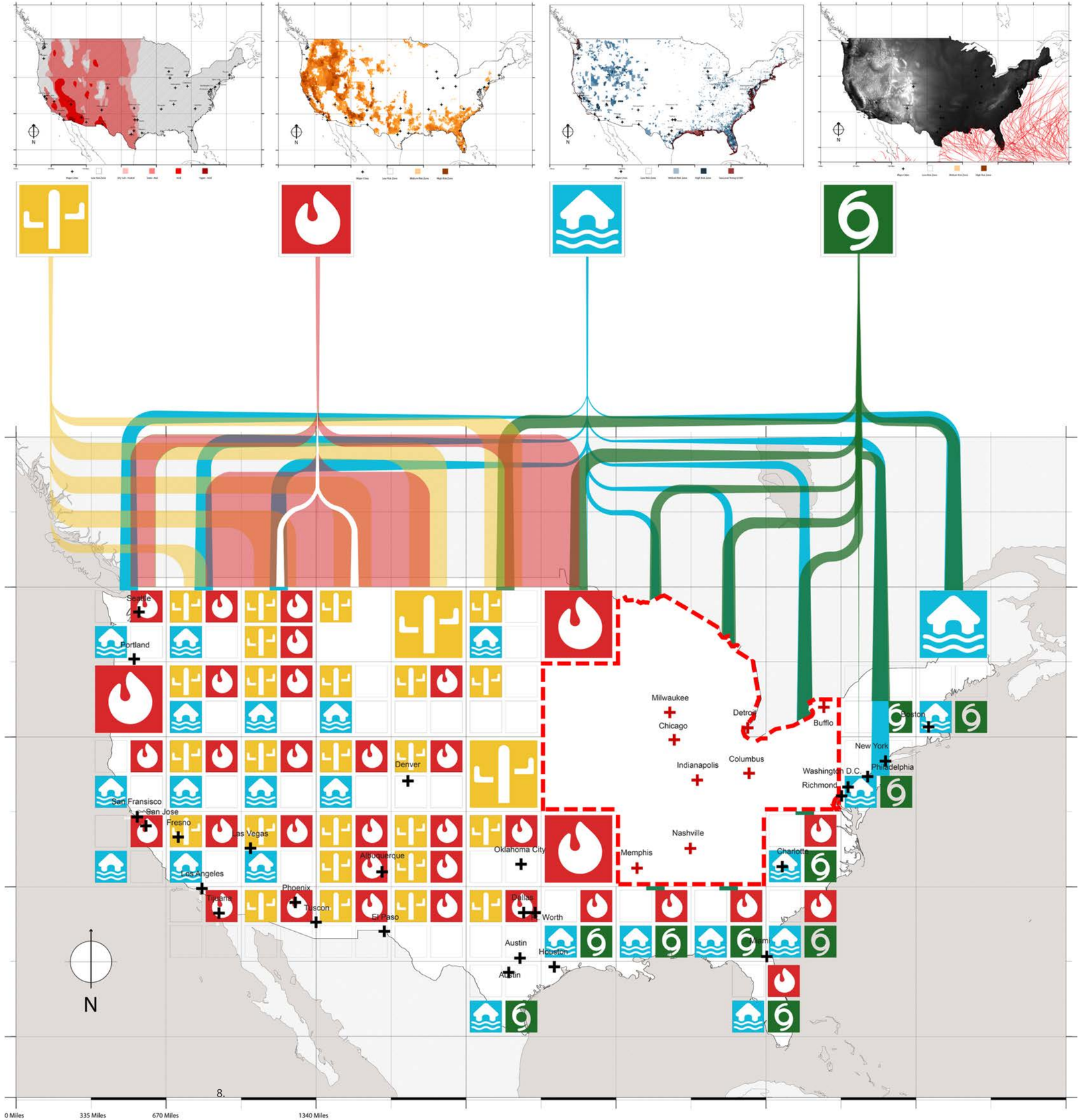
[2] CLIMATE HAVEN: DETROIT

A Projective Approach to Climate Change

Fall 2021

Cities, particularly along the coast of America, have been growing at a rapid pace throughout history. Places like New York City, LA, and Houston take in hundreds of thousands of migrants every year; they become integrated into the life force that sustains these cities. The migration towards these megacities is the result of the poor economic conditions and lack of employment opportunities, all too typical across America. However, rather than addressing the losing situation that is the degradation of the rest of the country, architects, politicians, and planners remain fixated on remedying the needs of expanding cities. While the importance of these cities cannot be underestimated as they are essential to the current American economy, the lack of attention given to the American heartland has led to a polarity in the quality of cities outside of the limelight. However, the Midwest is extremely relevant to America, especially when planning for the future. American megacities are flawed; their geographical locations make them extremely vulnerable to climate change. Warmer summers and drier conditions along the west coast have led to an increase of 800% in high-severity wildfires since 1985. Cities along the West coast are also at threat of being affected by earthquakes. Meanwhile, on the East coast, as the annual sea levels rise, flooding is becoming increasingly common. New York's sea level, for example, increases by an inch every 7-8 years. Additionally, hurricanes have cost cities along the East Coast $138 billion dollars in damage in just 2018 and 2019 alone. The density of these cities has also made them extremely vulnerable to issues such as pandemics, as has been demonstrated with the ongoing COVID-19 pandemic. Finally, with 40% of the United States being susceptible to desertification, the majority of which is located around the breadbasket, the country is set to lose a lot of fertile land. With the current infrastructure not being capable of handling these massive implications, at what point is the investment no longer worth the returns?

Type: Urban Planning / Urban Design
Location: Detroit, Michigan
Category: Academic Thesis Project
Instructor: David Shanks, Yutaka Sho, Nina Sharifi
Role: Collaborative Work with Wentao Liu



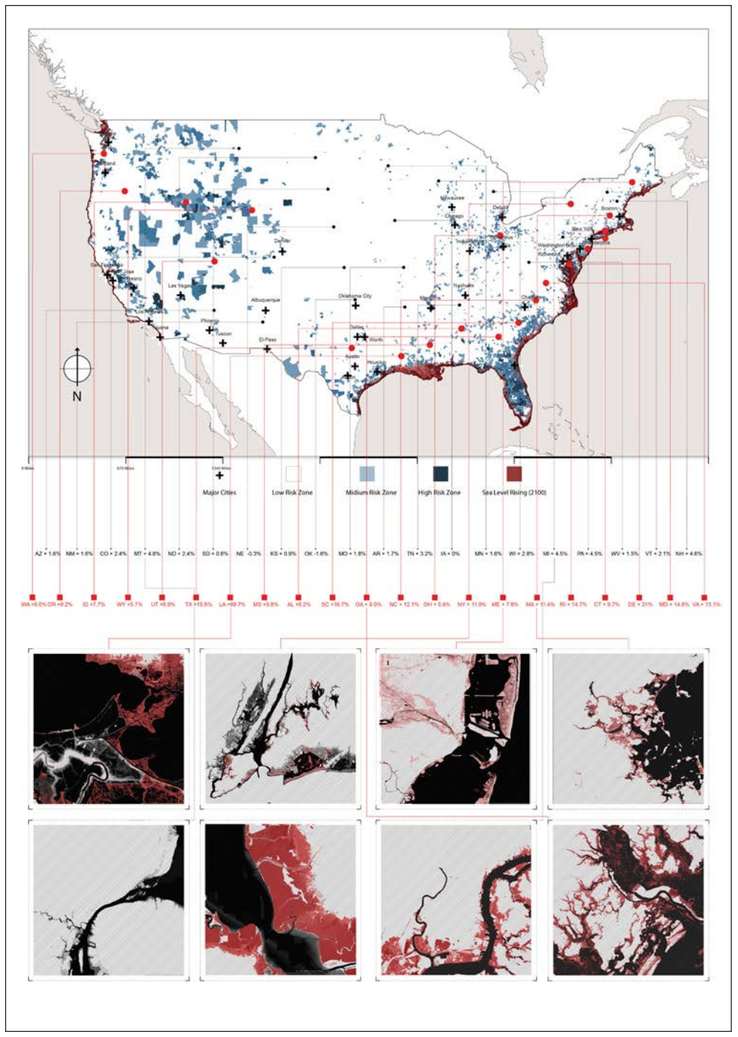
US Climate Data Comparing the Coast to the Midwest

A Projective Approach to Climate Change

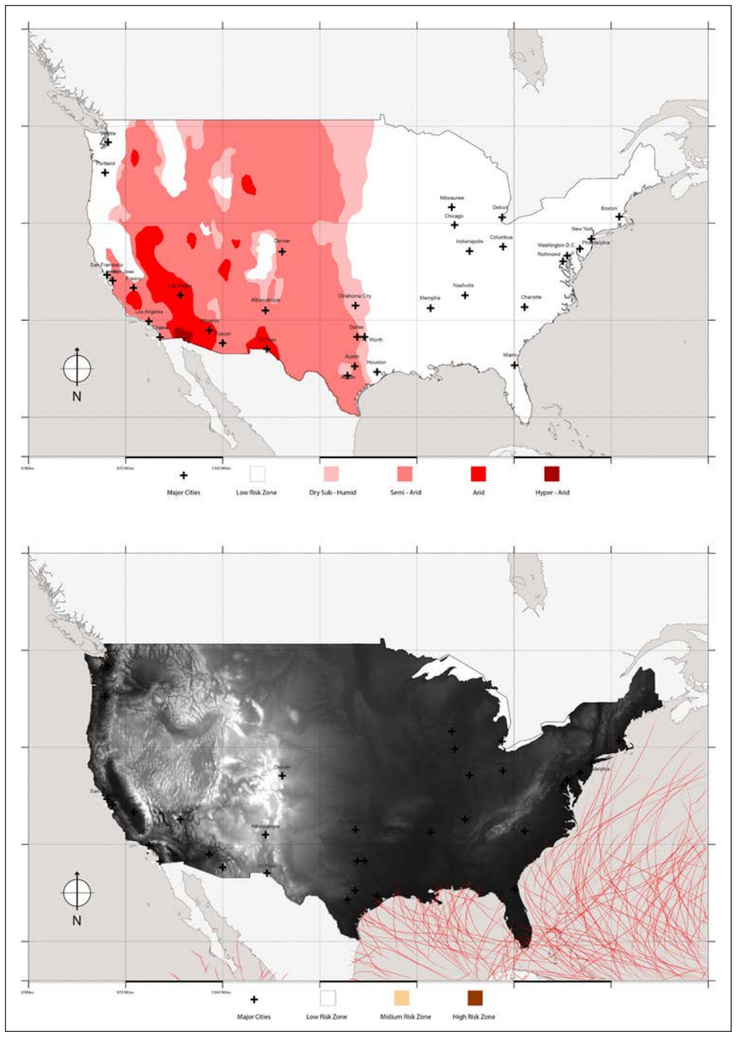
It is estimated that by 2100, as many as 13.1 million Americans will be at risk of losing their homes as a result of climate change, potentially resulting in a population upheaval similar to the Great Migration of the 20th century.Midwestern post-industrial Rust Belt cities are the least susceptible to climate change because they're geographical distance from the coast, their elevation hundreds of feet above sea level, and their proximity to the Great Lakes, the largest source of freshwater in the world. Furthermore, the large amount of existing infrastructure and vacancy that has come to define these cities could be adapted and reimagined for incoming climate refugees. Therefore, the post-industrial Rust belt city could become a potential safe, climate haven for the future of the United States. The issue is that these cities are widely dilapidated; they have some of the lowest household incomes and the highest emigration rates in the country. Cities like Detroit, Cleveland, and Pittsburgh have shrunk tremendously in population and wealth since their peaks in the 20th century.

The failure of the city has to do directly with the failure of the infrastructure to serve the city. The infrastructures of these cities were built for the use of millions of people; however, urban planners didn't predict the mass exodus of hundreds of thousands of majorly white families toward suburbia during the 50s and 60s. The loss of tax revenue directly affected their productivity and economy because they didn't have the funds to maintain their infrastructure. Additionally, their infrastructure was planned in correlation with the redlining of American cities. As such, minorities who were already disproportionately segregated, saw their communities get seized by the government and torn apart for highways. Thus, when white families left the city in flocks and occupied the surrounding suburbs, they left the city in the hands of those that they had disenfranchised. Additionally, a lot of properties defaulted, making urban blight commonplace within the post-industrial city.

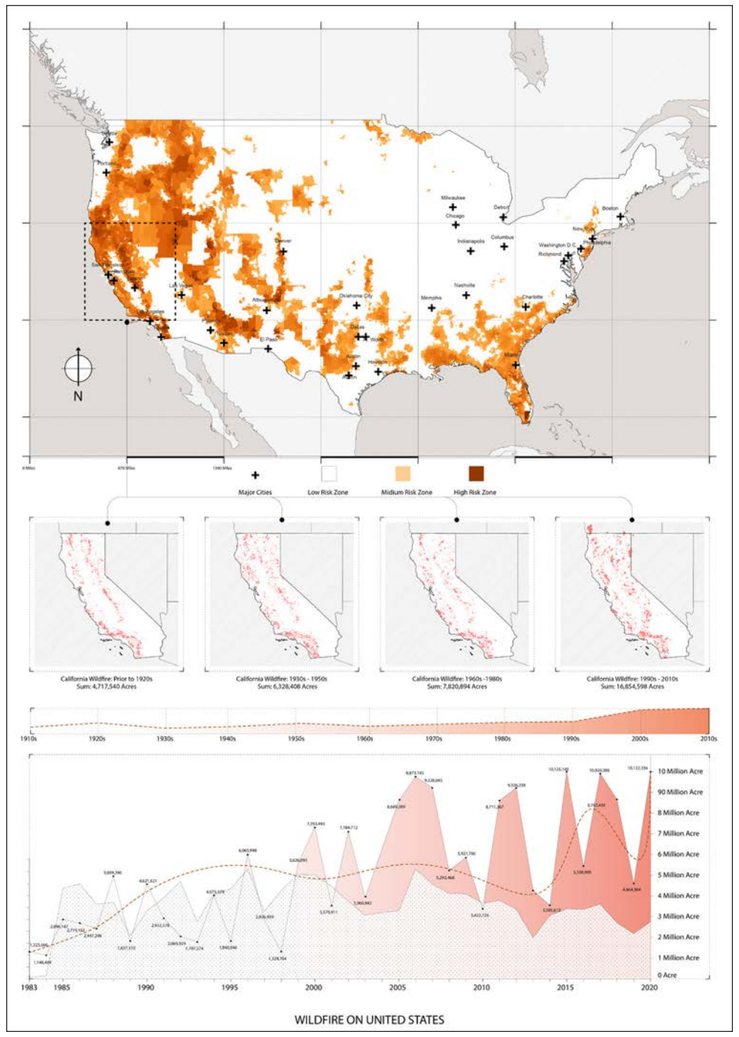
Flooding Data
Main Map Drawn by Andrew Yu; Supporting Diagrams Drawn by Wentao Liu



Hurricane Data
Main Map Drawn by Andrew Yu; Supporting Diagrams Drawn by Wentao Liu



Wildfire Data
Main Map Drawn by Andrew Yu; Supporting Diagrams Drawn by Wentao Liu

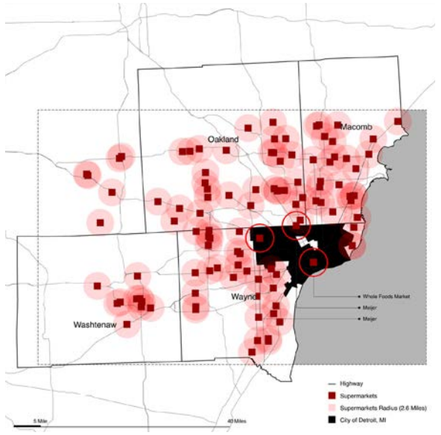


Diagnosing Detroit: Infratstructural Degradation

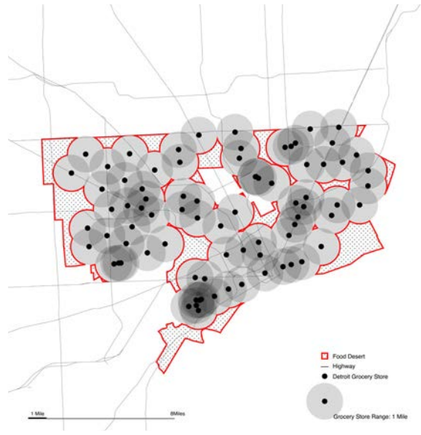
Climate Haven // Detroit, Michigan

We looked to Detroit to understand the typical Post-Industrial city. Quickly, we identified that its decline correlated with the building of highways. This is because the highways facilitated the emigration of middle class families out of Detroit. Additionally, these highways were planned over redlined communities; Corporations like the Federal Home Loan Bank Board (FHLBB) and the Home Owners' Loan Corporation (HOLC) redlined communities that were deemed hazardous. Communities that fell under this category were denied access to financial services such as banking or insurance, services such as health care and even access to supermarkets. As such minority communities have been torn apart. The loss of strong communities like the Black Bottom neighborhood and Paradise Valley has led to a disinvestment within minority populations. After the white flight, the city was left in the hands of the communities that have endured the most discrimination. This has led to poor education, low income, a lack of access to fresh foods, and a lack of access to public facilities like hospitals, among many other issues within the city.

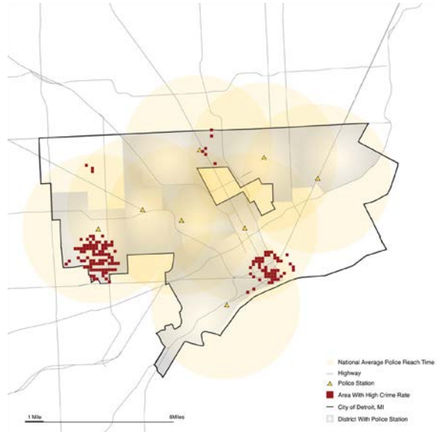
Michigan National Grocery Map



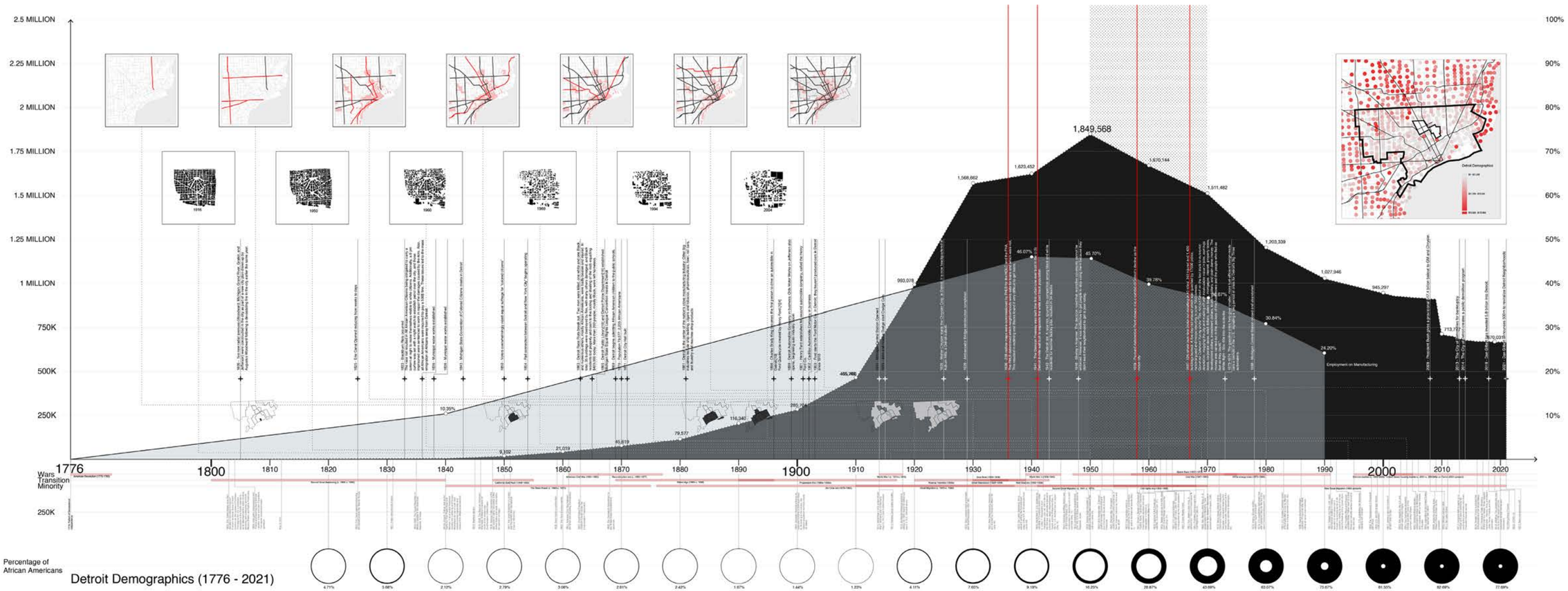
Detroit Food Desert Map



Detroit Police Access Map



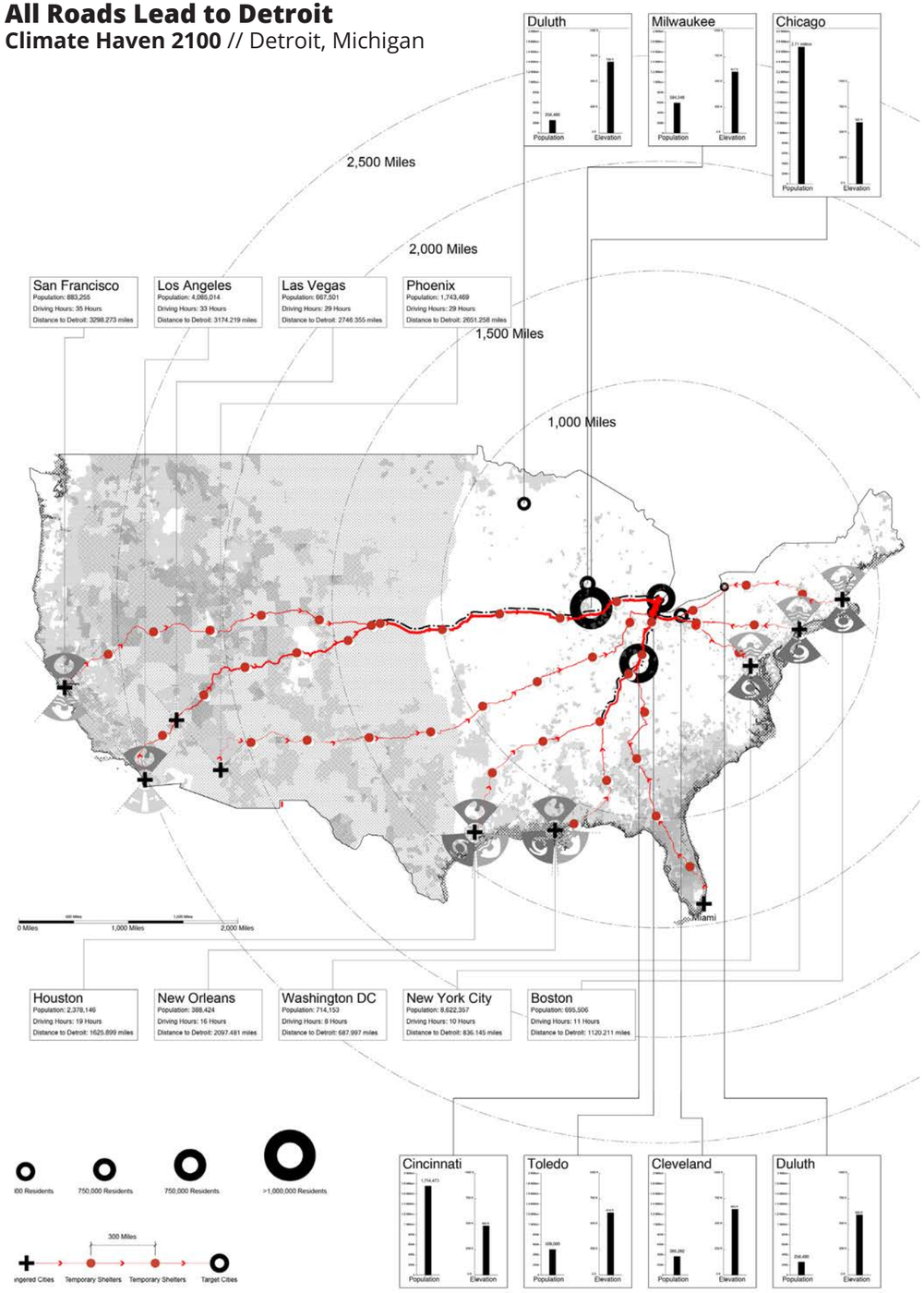
Maps and Research by Andrew Yu



Timeline, Data, and Research Done by Andrew Yu; Graphical Style Done by Wentao Liu

All Roads Lead to Detroit

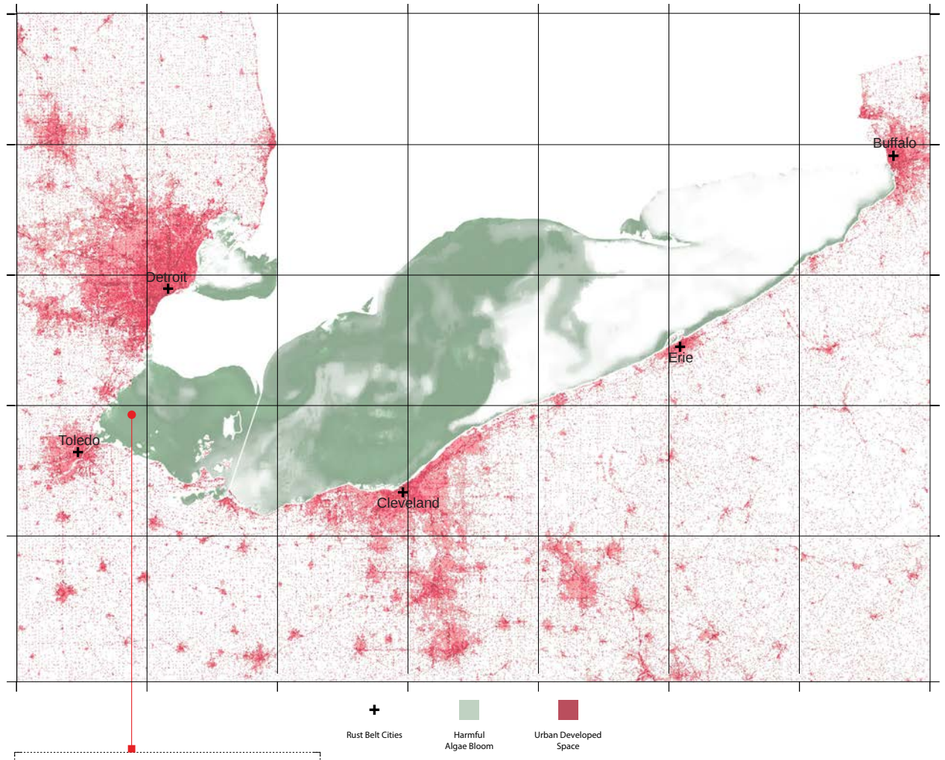
Climate Haven 2100 // Detroit, Michigan



Research and Data Diagrams by Andrew Yu; Map Diagram by Wentao Liu

Protecting Lake Erie

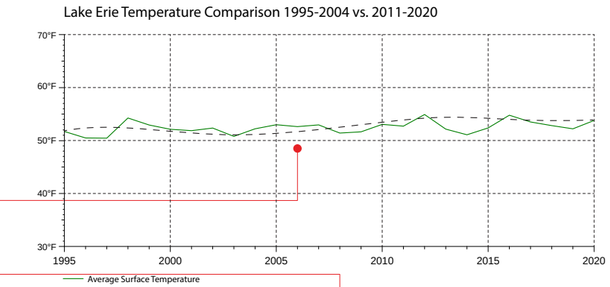
The Great Lakes // Detroit, Michigan

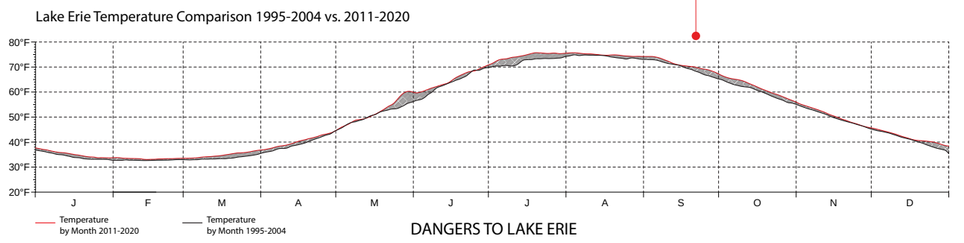


The Great Lakes provide drinking water to millions of people, serve as habitat for hundreds of species of fish, birds and invertebrates, and provide countless opportunities for recreational activities.

Harmful Algae Bloom (HAB) results from pollutants and residue from factories. Unlike regular algae, they have a chemically film and are toxic to humans and animals. They directly affect the fish population within the lake and destroy the Lake Erie habitat.

The temperature in Lake Erie has gradually increased as climate change made our Earth warmer. Such subtle changes drives the indigenous species out of their habitats; furthermore, the migration of species have been affected by temperature changes.



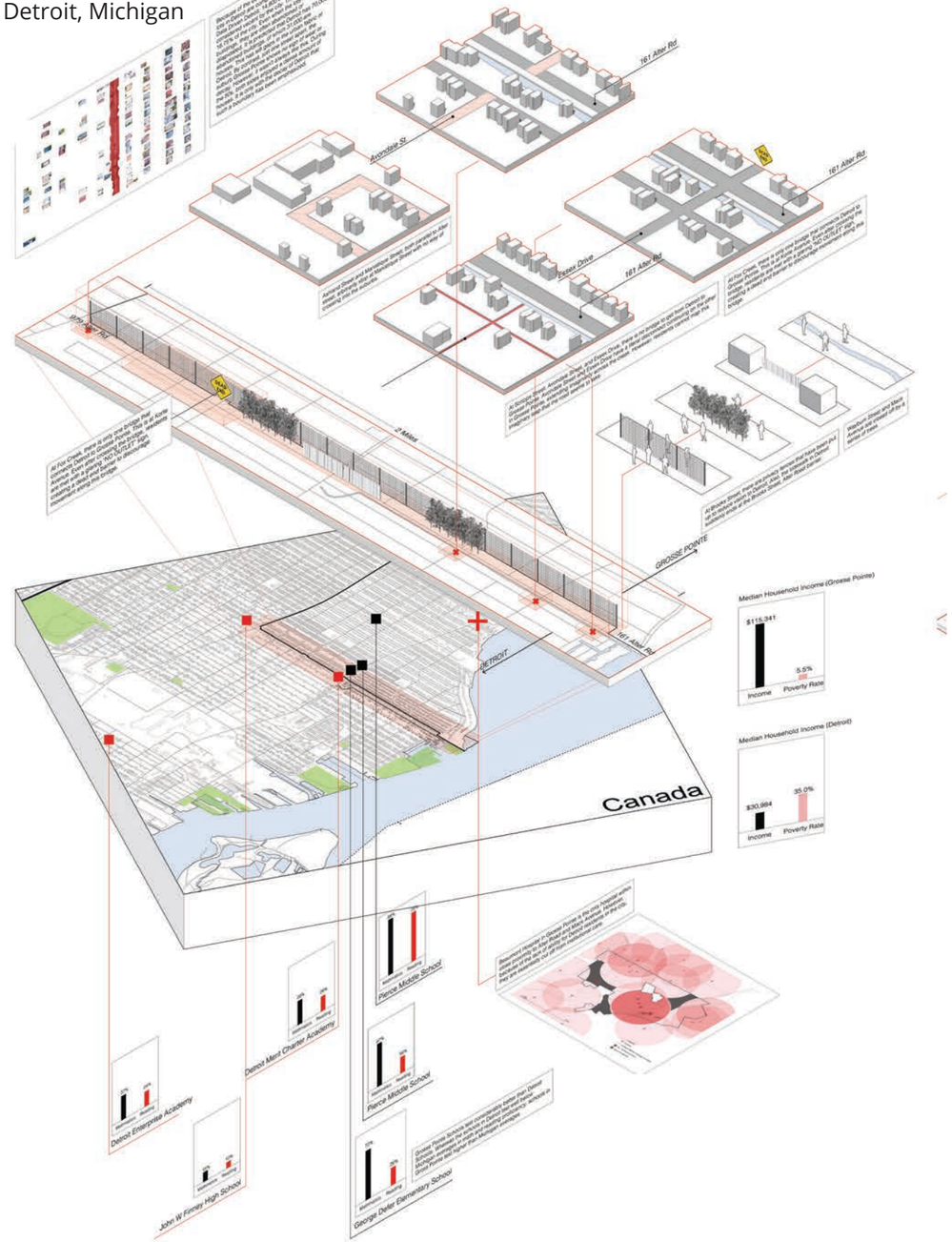


Research and Diagrams on Lake Erie Done by Andrew Yu

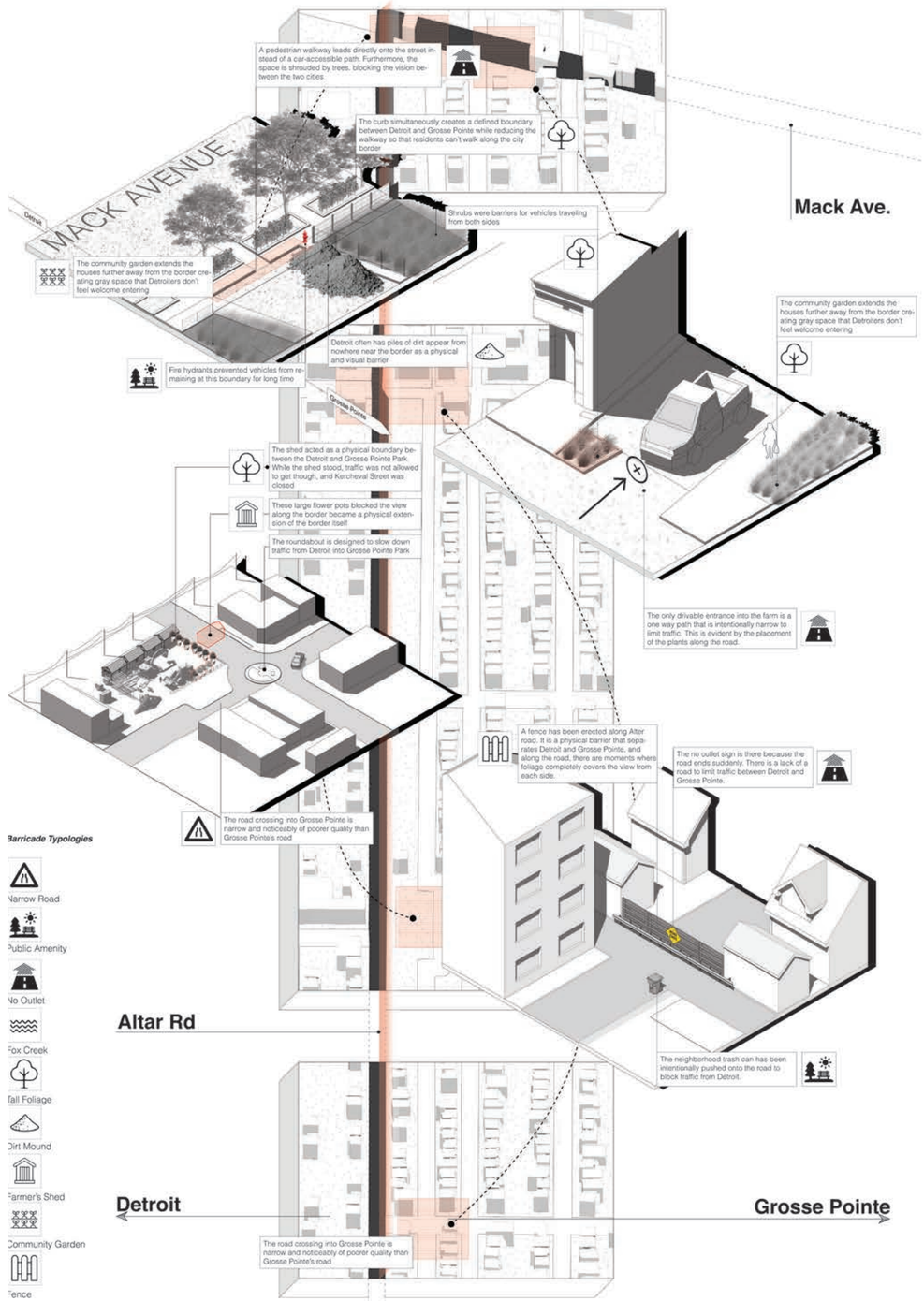
The Detroit - Grosse Pointe Boundary

Boundary Conditions //

Detroit, Michigan



Research and Supporting Diagrams Drawn by Andrew Yu; Map Axon Drawn by Wentao Liu



Research and Supporting Diagrams Drawn by Andrew Yu; Map Axon Drawn by Wentao Liu

[3] TRENTON ISLES BARN

Collaborative Barn Raising

Fall 2023

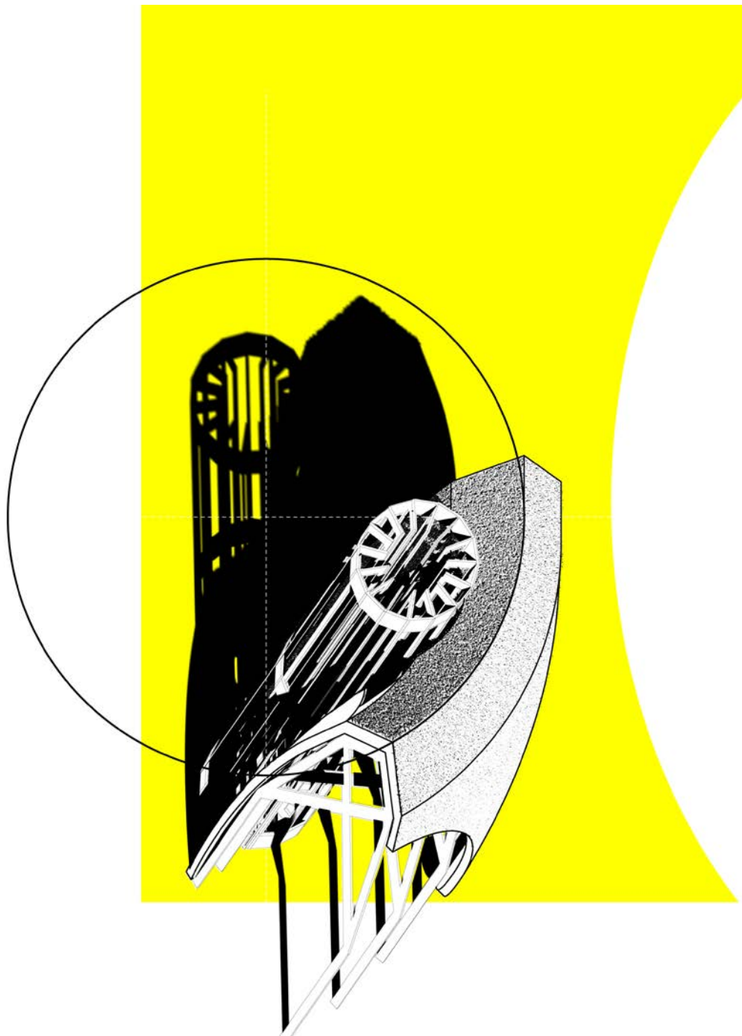
Type: Community Garden Barn
Location: Trenton, New Jersey
Category: Academic Work/Community Outreach
Instructor: Erin Besler, David Cronin, Peter Mačák, Marie Baretsky
Role: Collaborative Work with Kirill Volchinskiy, Isabela Doberenz, Joshua Pisors, and Alan Acevedo

This raising of the barn was simultaneously a pedagogical exercise and performance itself. Because we were a large group assembling a single object, we were cognizant of how the amount of work that each of us contributed to the project would not be reflected once the barn was assembled because our names would be listed next to each other as equals despite the inevitability of the inequivalent distribution of work. This loss of agency upon accreditation influenced us to design and build this barn in a purposeful and performative way. Throughout the process of the project, we played caricatures of ourselves, leaning into our emotional and educational bias. We also tried to eliminate autonomy by explicitly defining everybody's role. For example, with the design of the barn, we assigned one person to model out the project while the rest of us four would iteratively give instructions on how to design the barn. The explicit nature of us, the designers and builders, was muddled by the amount of time and different degrees of dedication required to learn how we would assemble the barn that we designed. The barn, thus, became pedagogical, literally requiring us to learn how to shingle and steam-bend to complete the design, but also demonstrating the disconnect between design, material, and fabrication. It was donated to the Trenton Isles in Spring of 2024.

Trenton Barn: Fabrication

Collaborative Barn Raising // Trenton, New Jersey

In our design process, we proposed a doubly-curved barn that would then have to be shingled and pierced by a silo built from larson trusses. WHowever, the silo was lost to budget and time constraints on our part. Nonetheless, the construction of the doubly-curved barn required a great amount of ingenuity on our parts to be realized. We split the barn into three modules so that it would fit on a moving truck. Otherwise, we were focused on realizing as much of the design as possible with the rhino model as sacrosanct. Because the maximum size of plywood on our CNC was 4'x8', we could not CNC out the trusses for our barn. Instead we resorted to steam bending to achieve the curve for our trusses. This process involved splitting the 2x4 into two smaller joints because we were attempting to bend the wood along its long side, against the grain. As such, the wood also required a day of soaking in detergent, which made it more pliable.

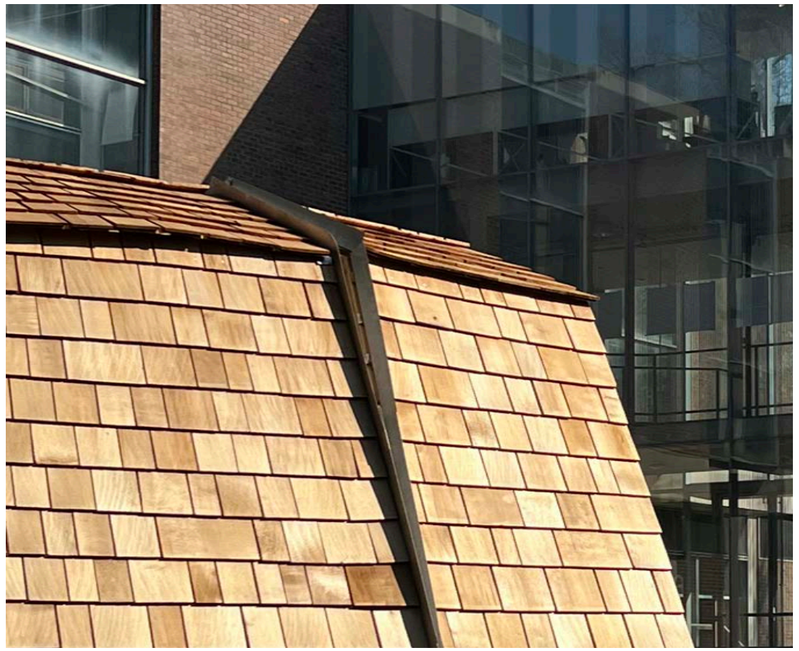


The Circular Tying of the Barn; Drawing by Kirill Volchinskiy

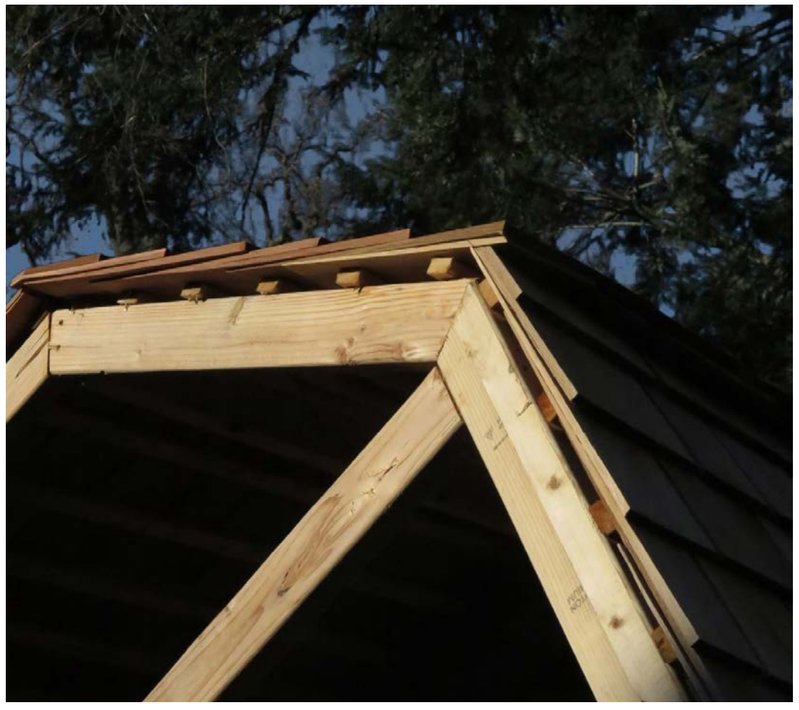
Fabrication of the Barn: Assembly of Steam Bender, Splicing 2x4s, Soaking of Wood, Steam Bending, Clamping, Shingling

After it was bent, the wood needed to be clamped to a jig to obtain the curve and then screwed with other pieces that we had to angle and finagle with at the shop to create the trusses. Then we had to mark out the placement of the trusses on the ground, followed by the addition of a frame so that the singles could be attached. To build the frame, we found pliable weathering strips, which sometimes also required on-site steam bending to achieve the curve in plan. Furthermore, because of deadlines, we built our barn during the winter months at Princeton, frequently working through the night in rain, mud and chilly weather. Once we completed the frame, we started shingling the barn. We also installed metal plates so to weather proof each side of the modules. The barn was completed in March of 2024.

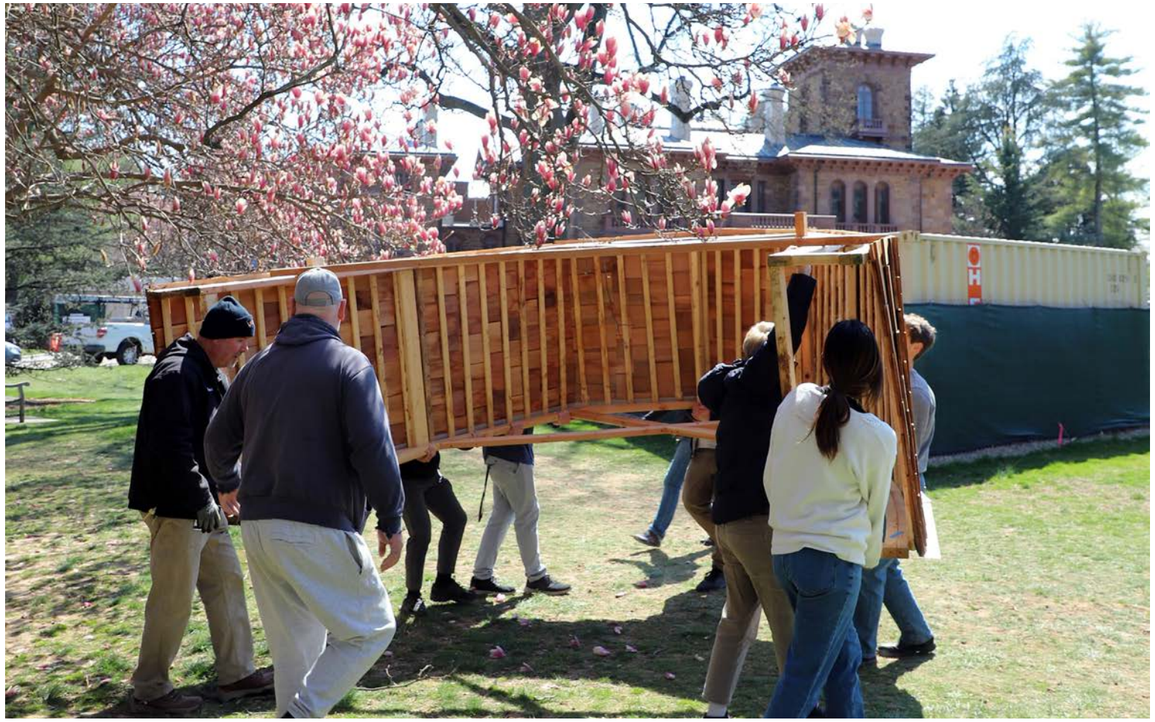
The Trenton Barn Fully Assembled



Shingles at the Trenton Barn



Uncompromised Structural Joints Made Possible through Steam Bending



Lifting the Barn under Historic Saucer Magnolia Tree

Turning the Barn so that it could be Lifted

Attachment of 2x4 handles to Aid in Transport of Barn to Loading Truck

[4] RE:HAVEN

Revitalizing Mott Haven

Spring 2020

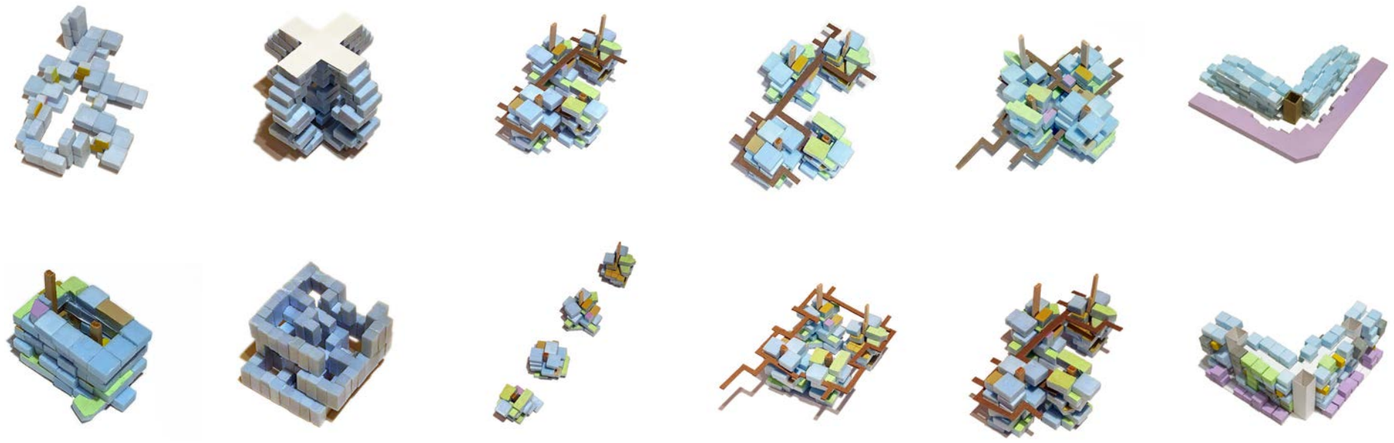
Type: Housing/Mixed Use
Location: New York City, New York
Category: Academic Work
Instructor: Angela Co
Role: Collaborative Work with Dara Jin

RE:Haven, a project done in collaboration with our New York Study Abroad Studio and a Real Estate Class, was an integrated studio that required a comprehensive understanding of architecture and real estate. We were tasked with developing a project that could take on the systemic issues in Mott Haven, follow New York zoning guidelines, and be economically viable. The duality of interests raised by the, at times, conflicting roles of the architect and developer presented an interesting challenge for us because the altruistic (and albeit slightly narcissistic) purpose that architects often envision themselves having is often limited by the pragmatic, monetarily driven field that is Real Estate.

Understanding Mott Haven: Analysis of Mott Haven Demographics

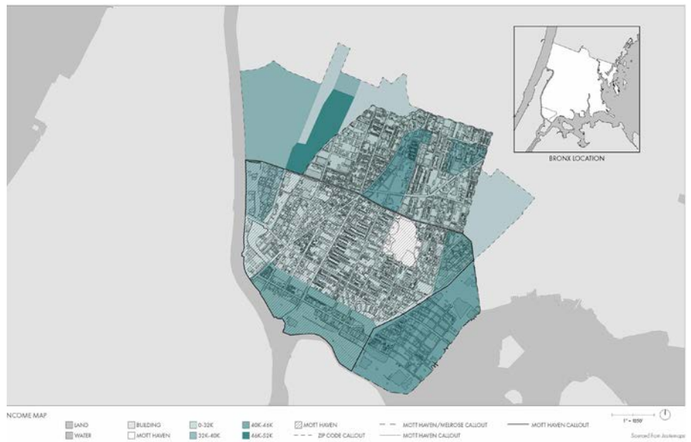
RE:Haven // Mott Haven, New York

In Mott Haven, there is a 42% poverty rate, the median household income is only 25,489 dollars, and only 59% of the population has a high school diploma. In fact, Mott Haven has the lowest income and education rates while having the highest and obesity rates and exposure to pollution in the state of New York. These issues are only amplified by the high crime rate in Mott Haven. These issues, propogated by underlying institutional racism, have only pushed the wealth gap further apart.



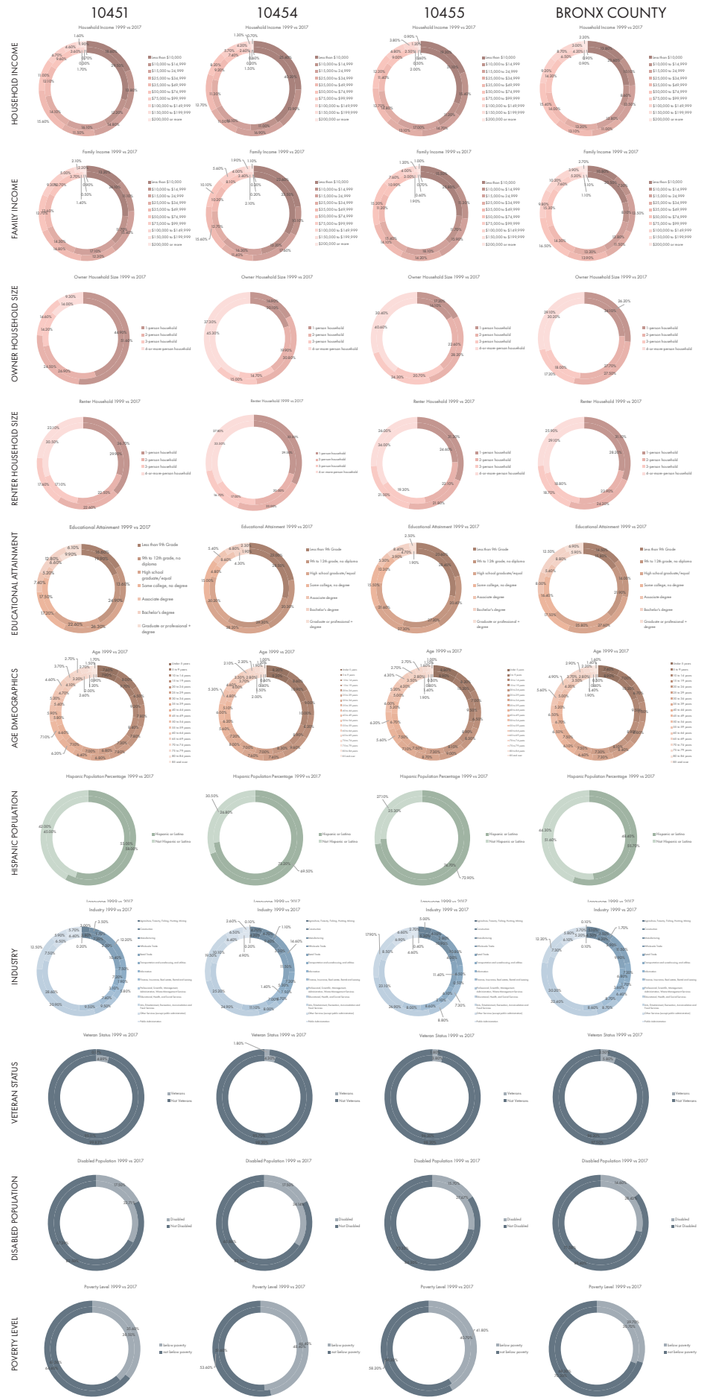
RE:Haven Study Models Made by Andrew Yu and Dara Jin

Mott Haven Zip Code Map Drawn by Andrew Yu



Mott Haven Income Map Drawn by Andrew Yu

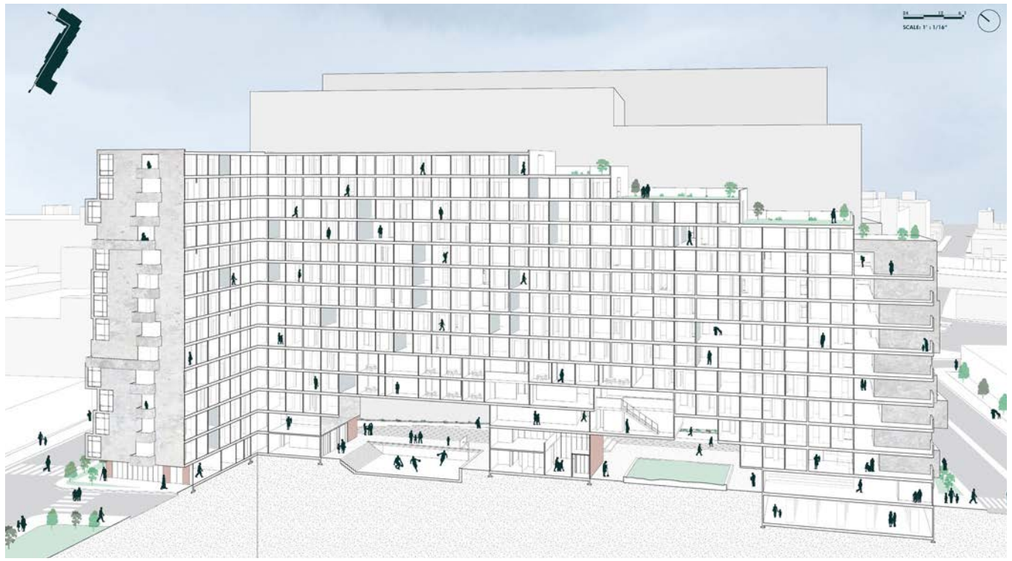
While it cannot be resolved in a single apartment design, architecture can act as the catalyst for change to begin to occur. Through research on alternative approaches to living such as communal housing, as well as modular housing units to make the price of living more affordable, my partner and I began imagining an affordable apartment complex that could act as a pivotal turning point for the revitalization of Mott Haven.



Mott Haven Demographics Gathered by Andrew Yu

Designing for Mott Haven: A Community Oriented Approach
RE:Haven // Mott Haven, New York

RE:Haven sets out to create a lot more open space, develop a new community hub, bring in more green space, address systemic problems by creating a safer and more welcoming community, repurpose spaces without dislocating previous tenants, and provide amenities that are easily accessible and helpful to the community.



Sectional Perspective Drawn in Collaboration with Dara jin

Elevation Drawn in Collaboration with Dara Jin

RE:Haven Typical Floor Plan

40% of the apartments were allocated to supportive housing. As for the designation of program, the first floor was designated for the aforementioned public programs, the second through fourth floors were a mix of commercial program and residential units, and the fifth through fourteenth floor were designated for residential units. Furthermore, each unit was designed with maximum efficiency in mind.

Typical and Corner
Studio Unit
Drawn by Andrew Yu

Typical and Corner
Two Bedroom Unit
Drawn by Andrew Yu

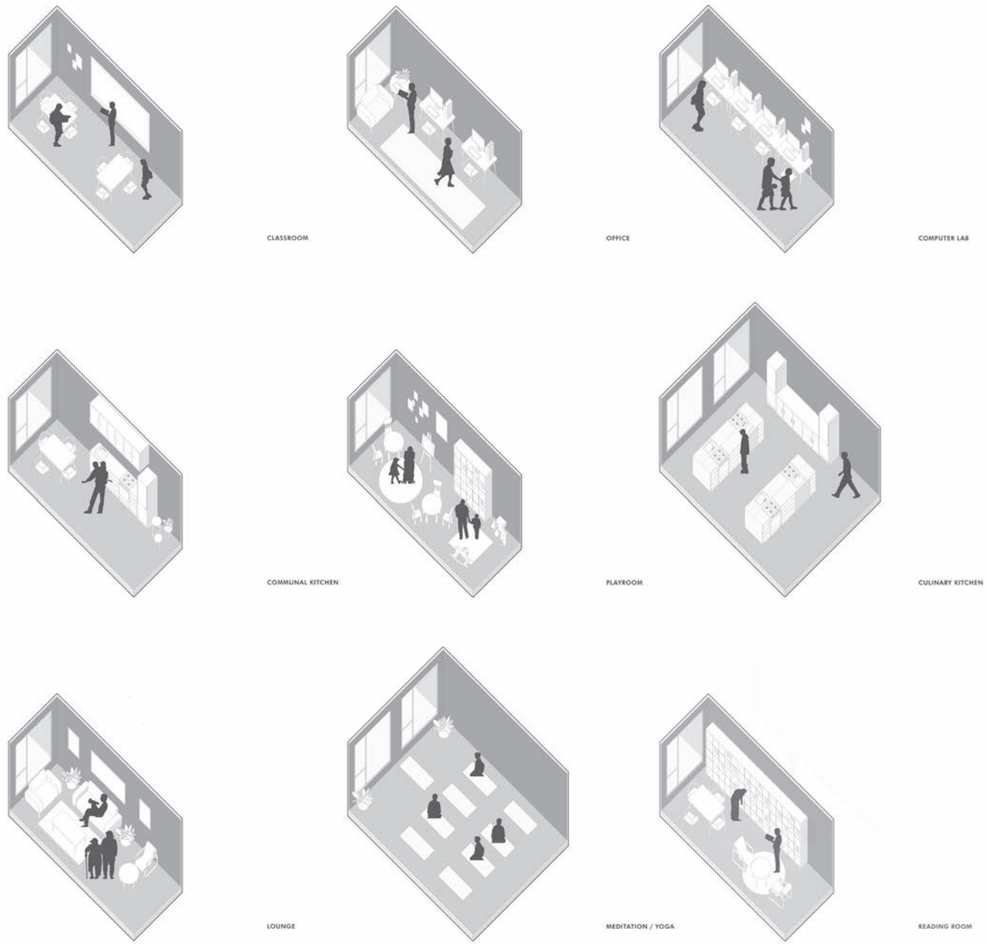
Typical and Corner
Three Bedroom Unit
Drawn by Andrew Yu

Typical and Corner Four
Bedroom Unit
Drawn by Andrew Yu

The Communal / Void Spaces

RE:Haven // Mott Haven, New York

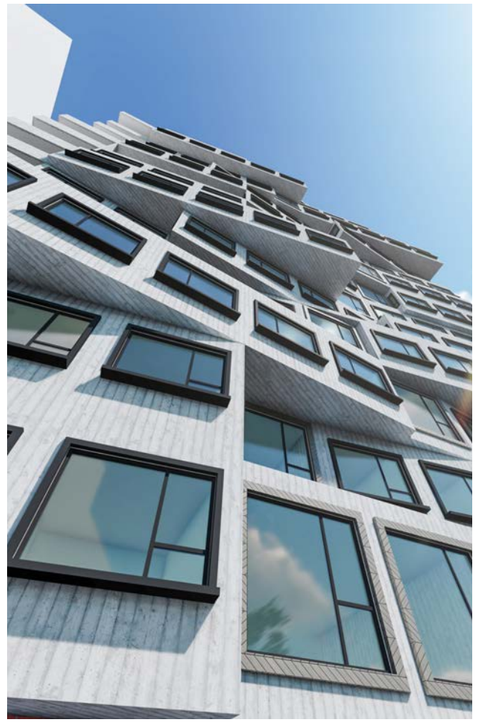
Within each floor we designed void spaces in between apartments; these spaces ranged from 10 feet by 24 feet to 20 feet by 24 feet. These shared spaces were meant to have a flexible and adaptable program, fitted to the requirements and desires of the community.



Communal / Void Space Program Examples Drawn by Andrew Yu

Our void spaces would give the residents autonomy and the opportunity to decide what their community needs within a neighborhood where the government municipality has routinely neglected its residents. Possible programs are a communal kitchen, reading room, playroom, and classroom. Ultimately, we wanted to give the community a voice while improving the community aspects of apartment living.

RE:Haven Exterior Rendered by Andrew Yu



Facade Detailing Rendered by Andrew Yu

RE:Haven Exterior Rendered by Andrew Yu

RE:Haven Balcony Rendered by Andrew Yu

[5] BORGO DIGITALE

Schoolhouse Collective

Spring 2020

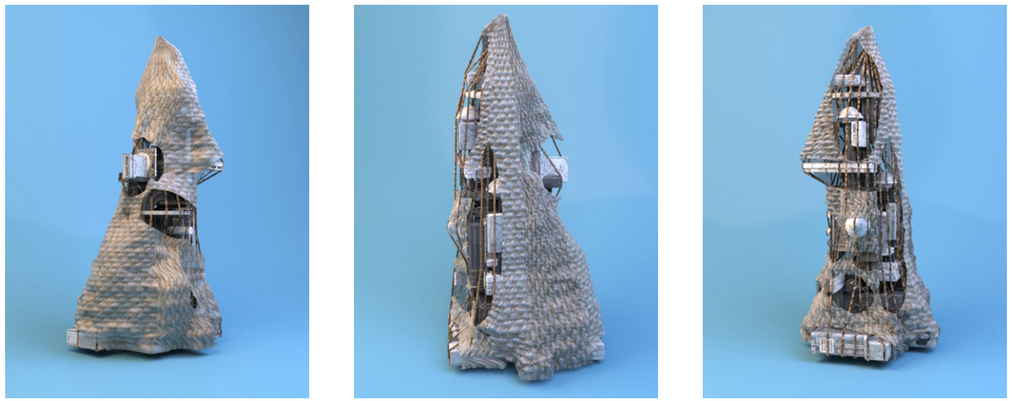
As the world shifts from a human-centric environment to a technological one, we begin to question what it means to be a human. Human and technology have a symbiotic relationship which creates a codependency with us using technology to remain connected and technology needing us to have a purpose. We must be re-educated on what it means to be "human". Technology will teach us morals and values that will call for equity. The roles of technology and humans are reversed so that technology programs the human consciousness. With an automated society the role of the human is not clear. Our function no longer is to survive, but to live with one another in this shared economy. For this to become commonplace we must nurture the concept of togetherness from a young age. Through new tools of virtual learning and shared spaces we can restructure our society. Because the focus of the world has shifted from humans to technology, our interpretation of what it means to be human is extrapolated through the interactions that humans have with technology and the interactions that technology have with humans. The cooperation involved in processes of categorization and reorganization inform artificial intelligence about inherent human biases which are then extrapolated and reimposed in an attempt to mimic and create new vectors of communicating what it means to be human, completely informed by a machine learned aesthetic.

Type: School / Mixed Use
Location: Castiglione d'Orcia, Italy
Category: Academic Work
Instructor: Daniele Profeta
Role: Collaborative Work with Mason Malsegna

The IoT: AI Generated Images

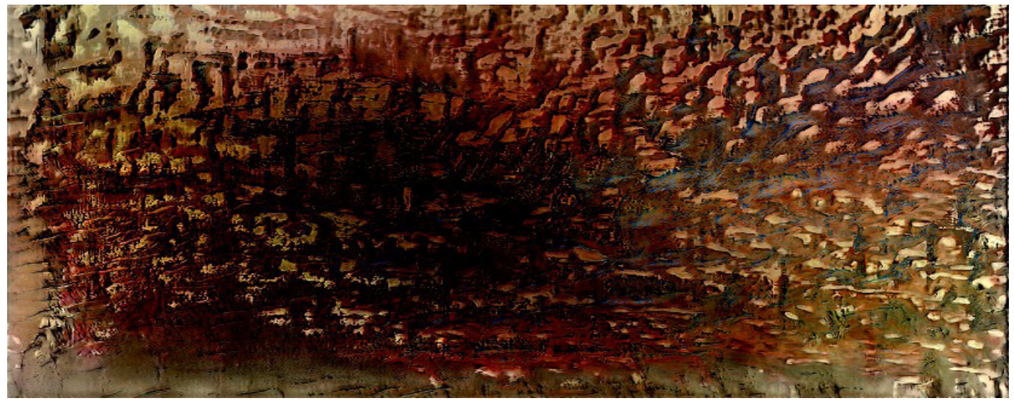
Borgo Digitale // Castiglione d'Orcia, Italy

In the first exercise, we constructed an object to be expressive of the various tensions and shifts that come with implementing a 5G network to connect all infrastructures through the IoT. The wire in the object holds together all of the components that are needed to support this network, becoming a piece of infrastructure in itself. While the wire provides structural support for the components, the partially transparent fabric wrapper helps to define various spaces within the object and unify the piece. The zones of uncertainty created by the negative space formed around the fabric wrapper led us to develop a composition in our still life in which blocks are carved by photogrammetry scanned 3D models to create sculptural reliefs that hint at digitallly understood, distorted versions of objects.



A Monument to the Internet of Things Drawn by Andrew Yu

Negative Space Photogrammetry Scanned Composition Drawn by Andrew Yu



Original Textures Drawn by Andrew Yu and Regenerated using AI to make Hybrid Image Texture Maps

Through these preliminary studies that we conducted, we discovered the formal qualities of a negative surface that has been carved away by digital interpretations. Utilizing artificial intelligence, we began to explore machine interpretations of images by allowing for the machine to hybridize images we provided.

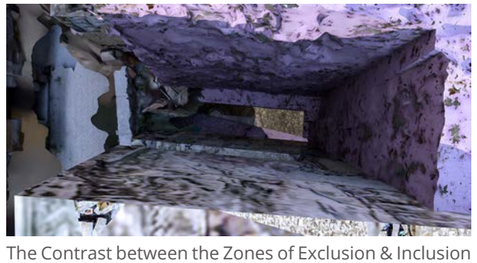
Approach to Castiglione d'Orcia
Borgo Digitale // Castiglione d'Orcia, Italy

From these AI generated series of studies, we devised two zones for our schoolhouse. These two zones, a technology exclusion zone and a technology inclusion zone, appear unstable when juxtaposed next to one another. Within the technology inclusion zones is a program focused on the cycle of categorization and reinterpretation of images and knowledge. This is in an attempt to algorithmically understand the human biases. On the contrary the technology exclusion zones promote a program of human interaction and coexistence where students will have to negotiate with one another rather than with an algorithm.

Birds Eye View of the Schoolhouse Rendered by Andrew Yu

Borgo Digitale in the Context of Castiglione d'Orcia
Drawn by Mason Malsegna

Schoolhouse Front Facade Rendered by Andrew Yu



The Contrast between the Zones of Exclusion & Inclusion
Drawn by Andrew Yu

Schoolhouse Front Facade Rendered by Andrew Yu

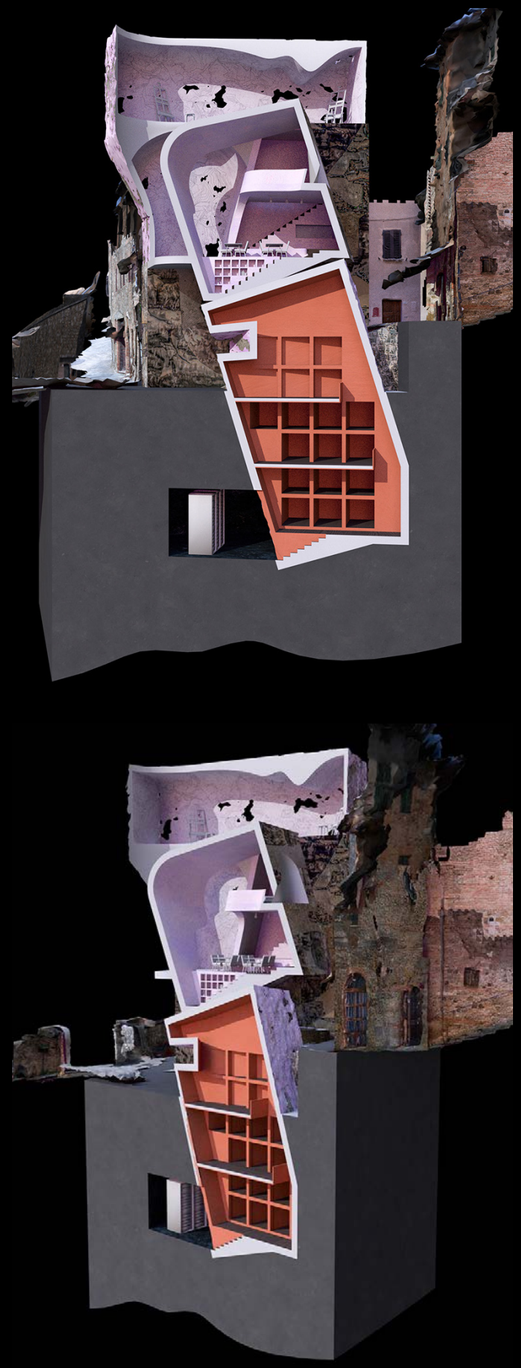
Schoolhouse Underground Entrance Rendered by Andrew Yu

The Categorization Pods and AI Gallery

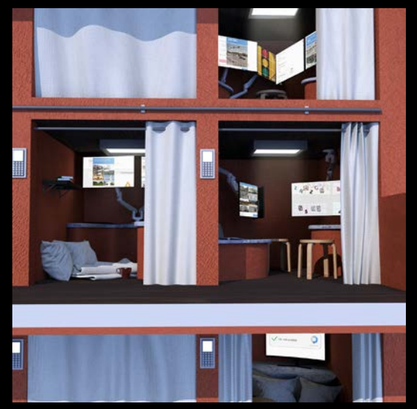
Technology Inclusion vs. Exclusion Zones // Castiglione d'Orcia, Italy

The categorization pods are spaces where students categorize a series of images in an interaction similar to recaptcha human verification services. Through the continued categorization of images, human biases are recorded. The series of salmon colored vertical cubicles along the wall reference the San Cataldo Cemetery and givesthe space a technically constructed quality that is separate from the rough exterior materials. The video room is where algorithmically produced videos are reinterpreted by students. This room is mirrored in upper floors through the porous gallery and lounge space above, where the square punctures are repeated at a different scale.

Schoolhouse Fragment Modeled and Rendered by Andrew Yu



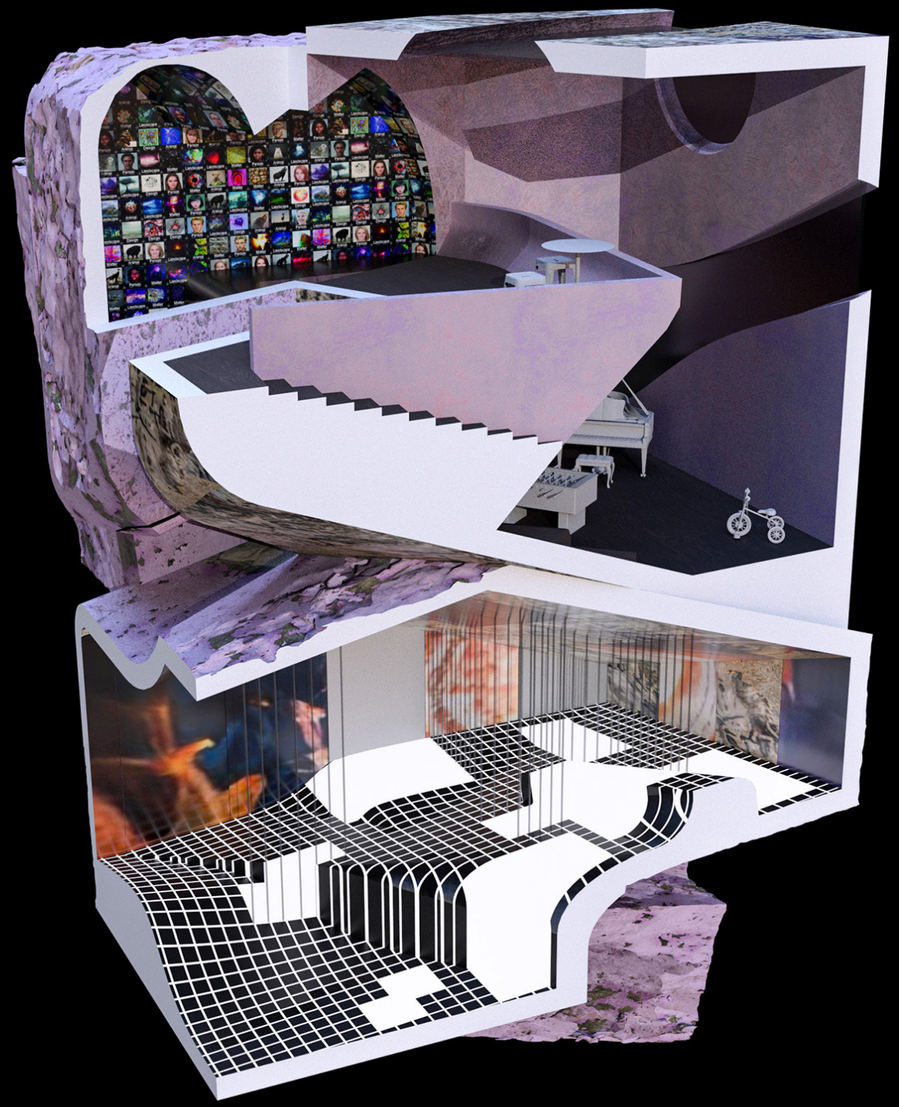
(Top-Down):
Gallery, Lounge, Categorization Pods
Rendered by Andrew Yu



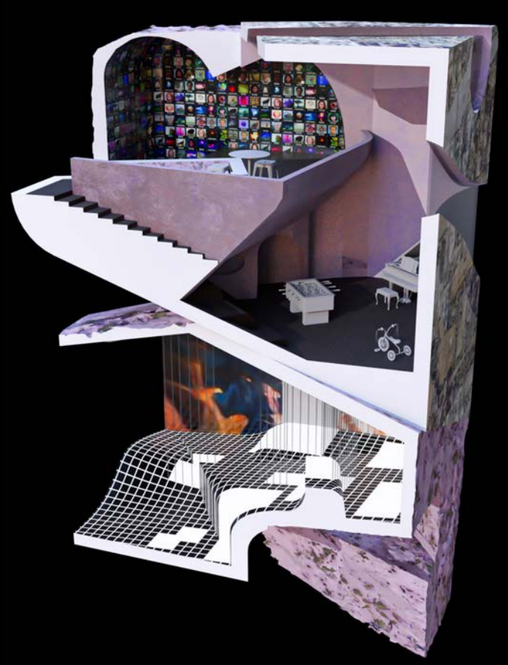
Digital Image Processing Room
Rendered by Andrew Yu

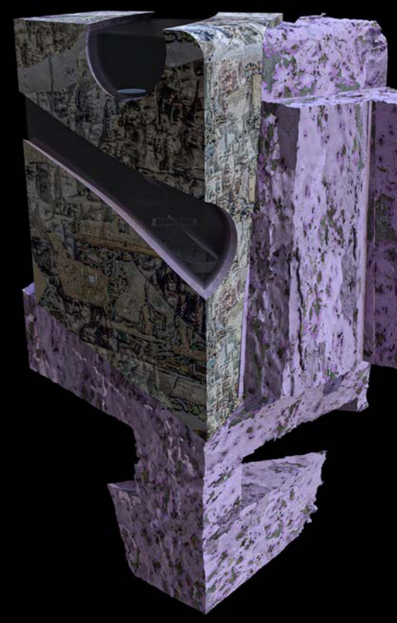
The Algorithmic Interpretation Video Rooms
Technology Inclusion vs. Exclusion Zones // Castiglione d'Orcia, Italy

While we want to explore the interactions that humans have with technology, it is important for us to also promote human to human interactions while learning what it means to be human. In this view we see two distinct materialities at play with one another that create various tensions within our project. In this fragment we see a digital image processing station and a video room included in the technology inclusion zones, and a lounge space that belongs to the technology exclusion zones. The video room promotes interpretation of algorithmically produced series of videos from the students.

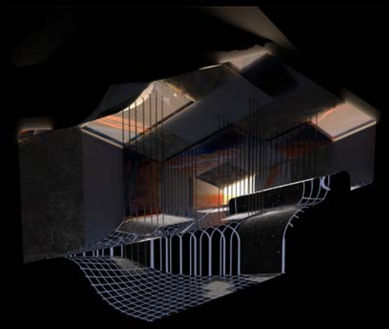


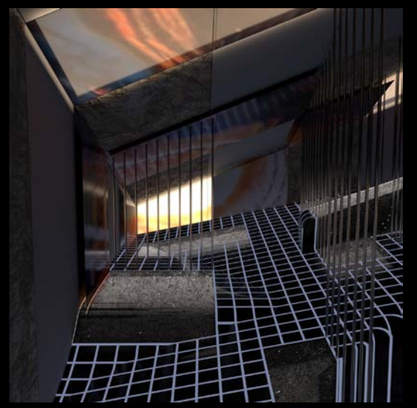
Schoolhouse Fragment Modeled by Andrew Yu and Mason Malsegna; Rendered by Mason Malsegna

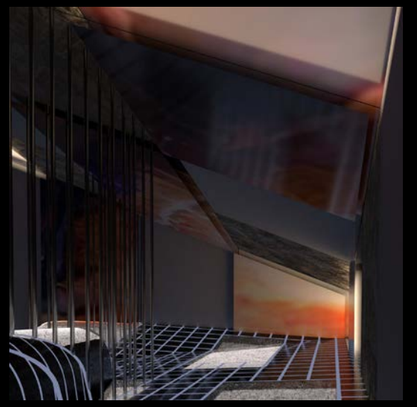




(Top-Down):
Processing Station, Lounge, Video Room
Rendered by Mason Malsegna







Digital Image Processing Room
Rendered by Mason Malsegna

[6] A BOWL OF NUCLEAR SOBA

Embracing Contradictions

Fall 2022

Type: Urban Design / Farm-To-Table Restaurant
Location: Inujima, Japan
Category: Academic Work
Instructor: Jesse Reiser
Role: Individual Work

The island of Inujima is, by every metric, dying. Only 50 people inhabit the island, of which, their average age exceeds 70 years old. Furthermore, because it was formerly a granite quarry, much of the land has been excavated and is in a poor state for growth. There have recently been attempts to repurpose Inujima through projects such as Kazuyo Sejima's Inujima Art House Project, and this project is another attempt at giving the island new purpose. The idea behind my project is to use the byproducts of nuclear power to produce a bowl of soba noodles. It follows a farm-to-table ideology, ritualizing it specifically to the island of Inujima. Formally, the project is separated into two components; the portion excavated out of the granite is where the initial procession begins and where food gets processed. In the grass-scape is where an intense ecology is created by the overlapping conditions of steam and heat coalesce with one another to grow the crops associated with a bowl of soba, before it is cooked in the restaurant.

Gradation within Growth

A Bowl of Nuclear Soba // Inujima, Japan

My ambition was to create a gradation in the soil which would act as different terroir that would affect the flavor profile of food growing on the landscape depending on its location. I aimed to do this by deploying steam and heat released via smoke stacks dispersed around the site. Furthermore, I wanted to build and improve the quality of the soil by building an actual ecology, interdependent on a multitude of species. Therefore, rather than producing a unicultural farm, the plants that are actually edible are in the minority, intercropped across a selection of plants that are grown only to support an ecology. Selectively, over the course of time, vegetables are planted in the pockets and they are spread about the site via natural ecological methods based on their viability within the ecosystem at that moment in time. Though my farm is inefficient, and thus completely contradictory to the efficiency associated with farming today, and also contradictory with the inherent efficiency of the nuclear power plant, my ambition is that my project engages in the contradictions between the perception of nuclear power, nature, and our relationship with both because it parallels, not only Japanese culture, but with our very existence.

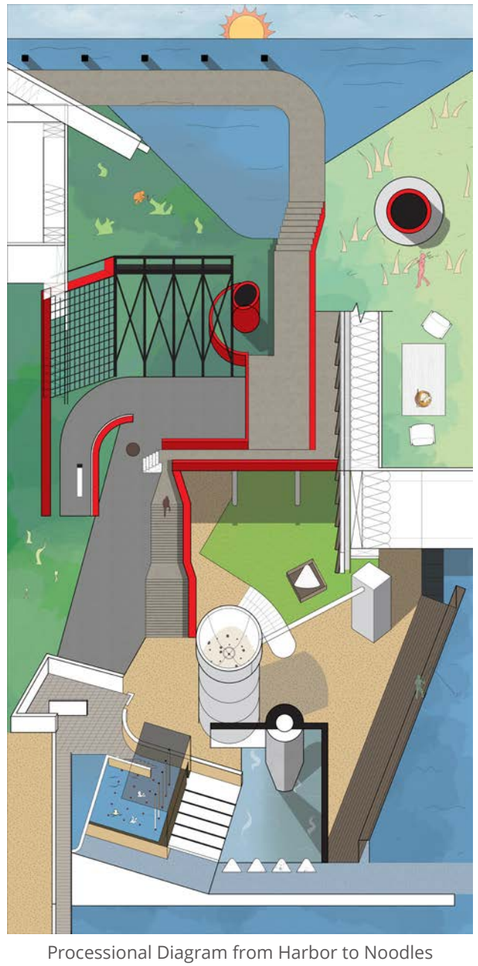
Plan of the Complex System Required to Manufacture One Bowl of Soba Noodles

Fall Variant

Winter Variant

Spring Variant

Summer Variant



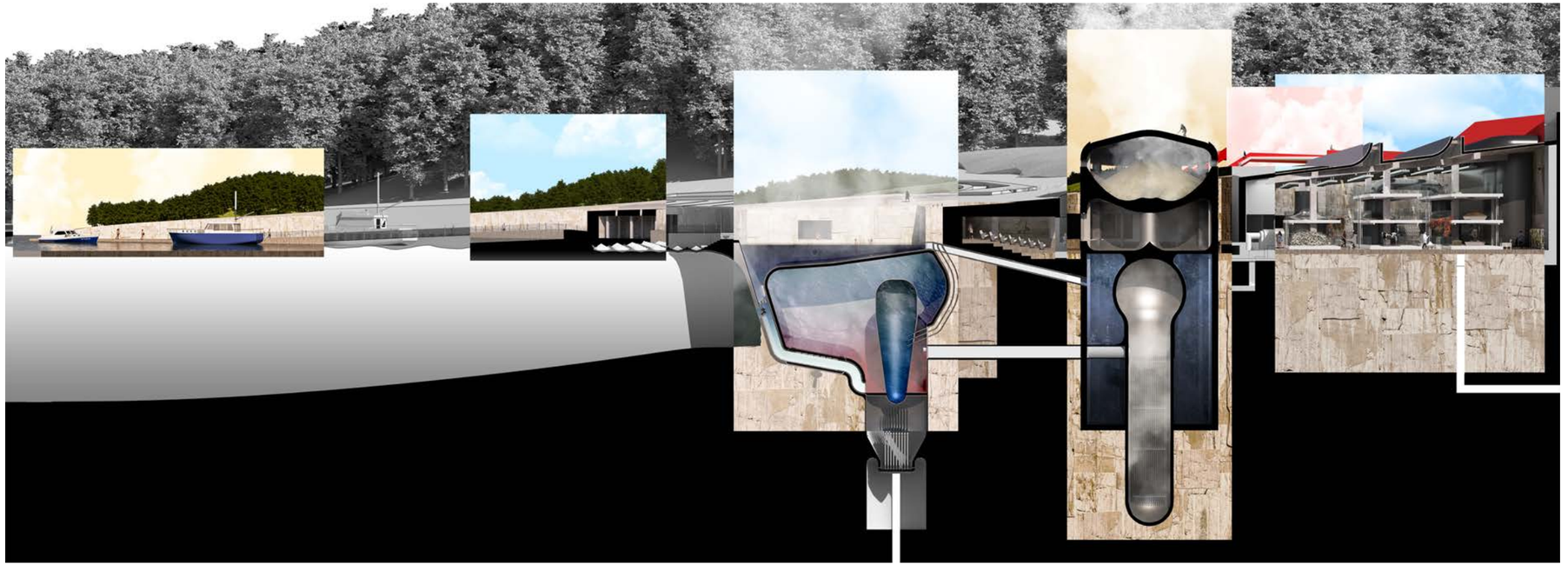
Processional Diagram from Harbor to Noodles

Gradations within the Soil Caused by Steam Plumes

The Process Behind the Soba in Section

A Bowl of Nuclear Soba // Inujima, Japan

As for the procession throughout this space, I see it as ritualized and specific to Inujima because of the history around the butchering of animals prior to the Meiji Restoration. Because the Japanese had historically thought of the killing of animals as a staining of the soul, butchers were subject to the third class in the Japanese caste system, and the subsequent discrimination of the Burakumin class is still felt today. My procession reconstitutes this relationship with food. A person moving through this space would enter the gap between the two granite slabs, and get changed so that they can bathe first in cool salt water within the dark and humid granite cave. They then exit this bath and bathe in the heated onsen directly above the nuclear reactor exposed to natural light, cleansed of any impurities that they brought with them. Finally, they walk out of the granite section via a red staircase, entering a foreign ecology affected by the red plume stacks. Along the path that they walk, they experience the gradation and the collision between nature and the artificial before finally walking to the wood house where they eat their bowl of noodles, forming a connection with the food that they eat.

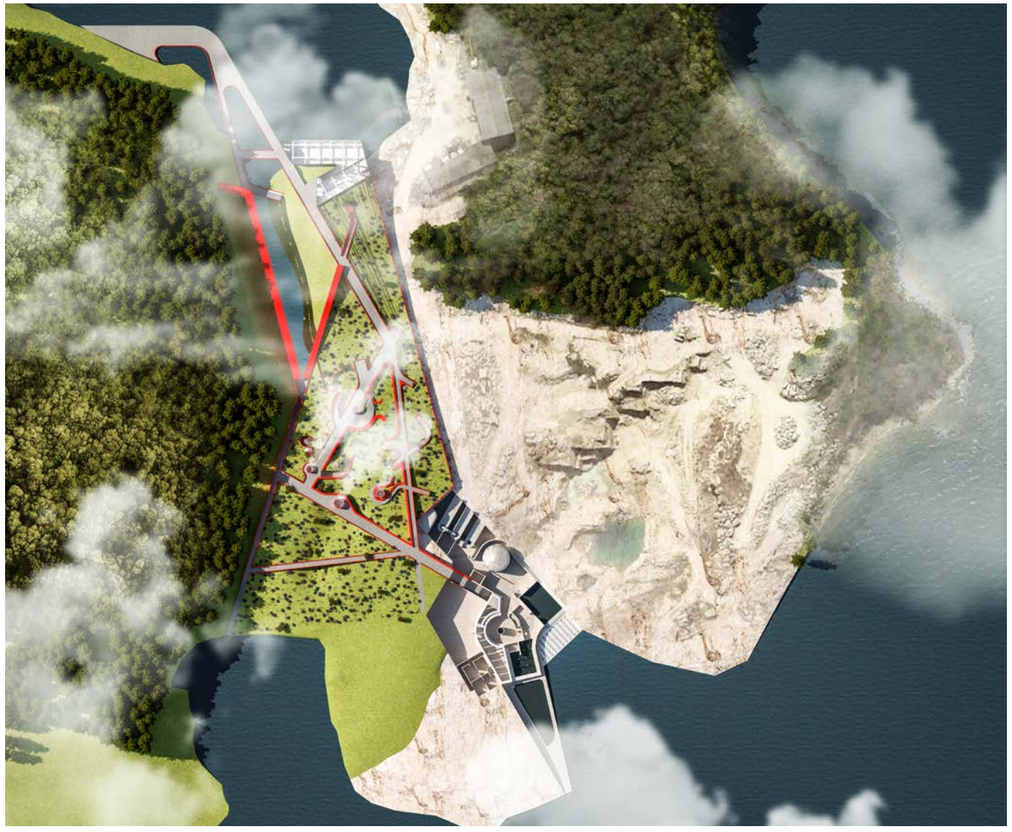


Section of Space Excavated Out of the Granite Quarry where Much of the Nuclear System is Lodged

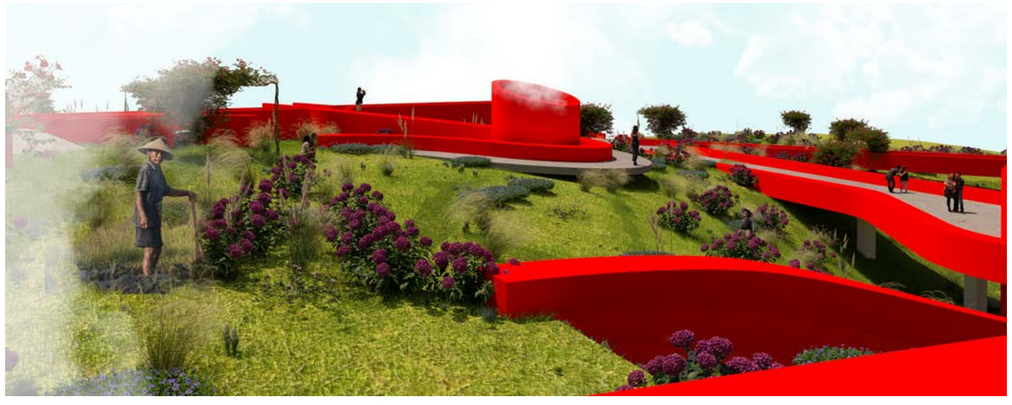
Section of the Farm where Pockets for Steam Plumes would Affect the Surrounding Soil Conditions to Create Gradations within the Fields to Harvest the Best Tasting Soba

Views from a Nuclear Garden

A Bowl of Nuclear Soba // Inujima, Japan



Rendering of the Aerial View of the System Behind the Nuclear Bowl of Soba



Rendered Perspective of the Garden Responsible for the Nuclear Bowl of Soba

Rendered Perspective of the Garden Responsible for the Nuclear Bowl of Soba

Rendered Perspective of the Restaurant and Departing Dock

[7] ENSEMBLE THEATRE

Renegotiating the Theatre

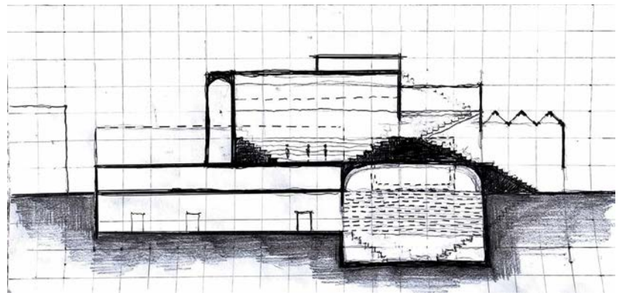
Spring 2021

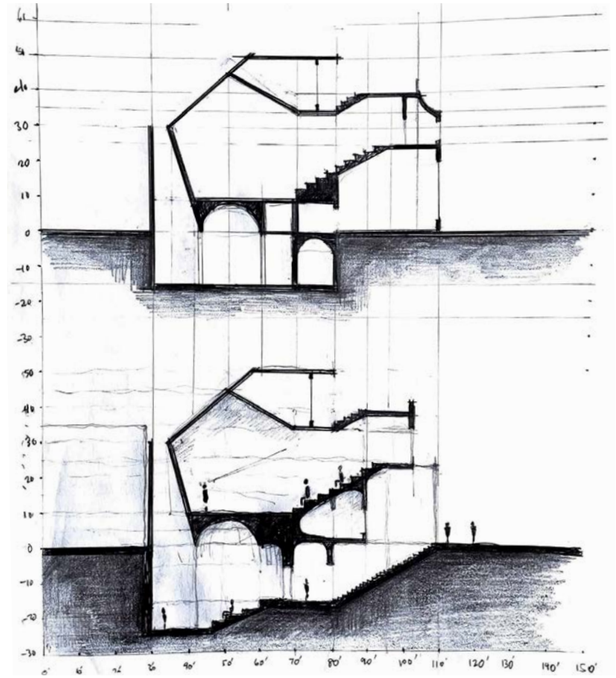
Competition: King + King Competition Finalist
Type: Performance Center
Location: Auburn, New York
Category: Academic Work
Instructor: Terrance Goode
Role: Collaborative Work with Alexander Michel

The Ensemble Theatre is a multi-venue performance center located in the heart of Auburn, New York. The idea of the project is to create an architecture that represents the composite nature of the theatre . Whether it be the many stories a theatre house contains or the many individuals who make up an individual show, the theatre is about a collection of individuals forming a cohesive, yet multivalent whole. Like a machine, it requires the cooperation of many moving parts. The Ensemble Theatre expresses this heterogeneity through the architectural expression of programmatic relationships.

Designing the Ensemble Theatre
The Crown of the City // Auburn, New York

The 338-seat main theatre house is designed as the hearth of the project. In both plan and section, it sits within the center of the project. Supplementary program wraps the theatre volume, encasing it within a solid perimeter. On the exterior, the wrapping is expressed through a metal-fin system that shrouds the materiality of the theatre volume. From afar, the theatre volume rises from its encasing to crown the project.



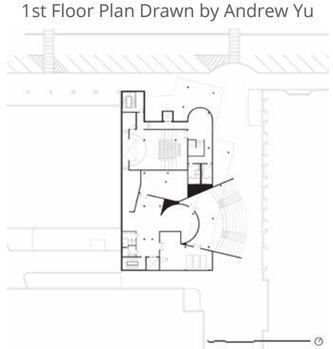


Preliminary Sketches Drawn by Andrew Yu

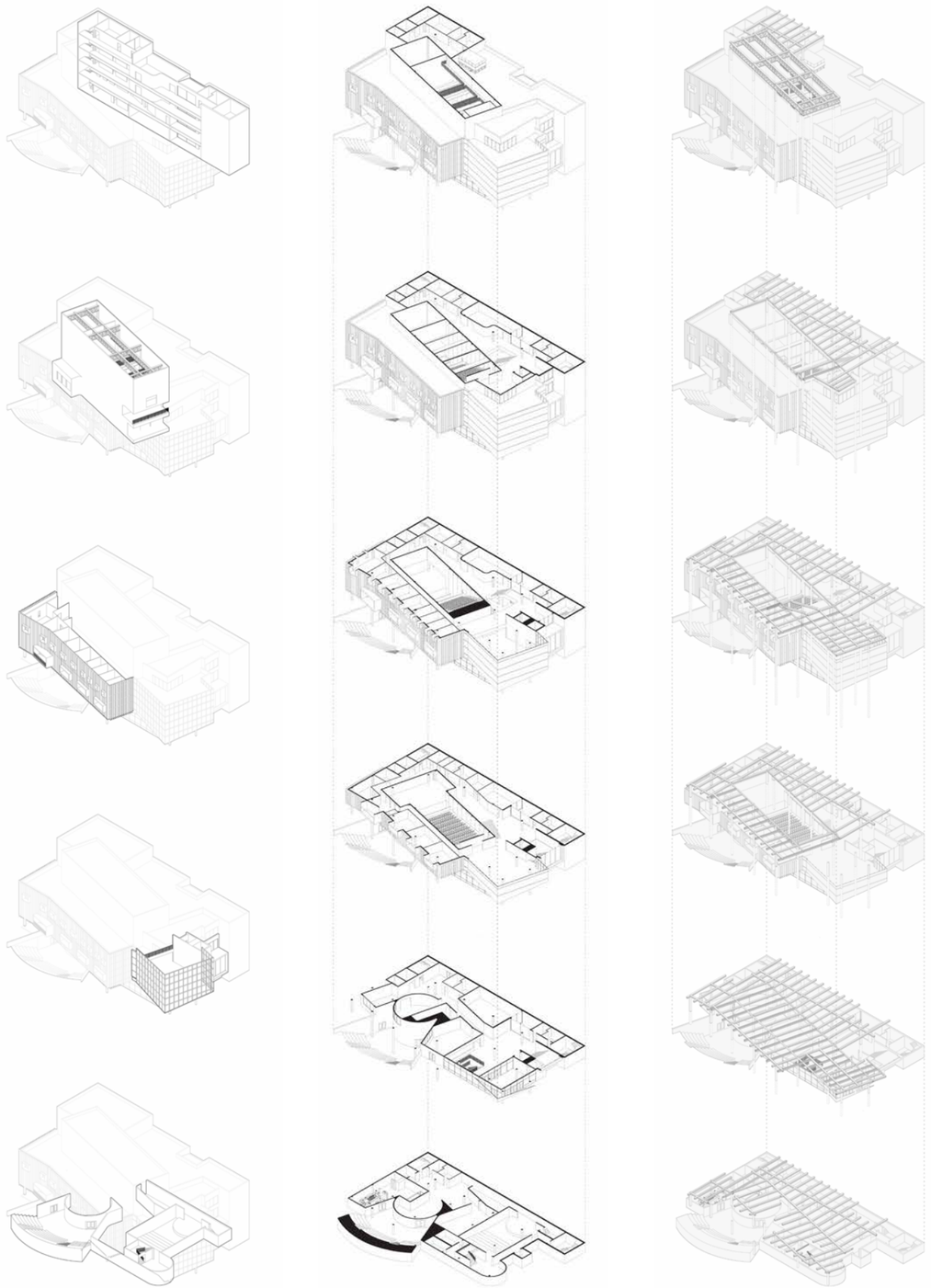
3rd Floor Plan Drawn by Andrew Yu

2nd Floor Plan Drawn by Andrew Yu

1st Floor Plan Drawn by Andrew Yu



Below Ground Plan by Andrew Yu



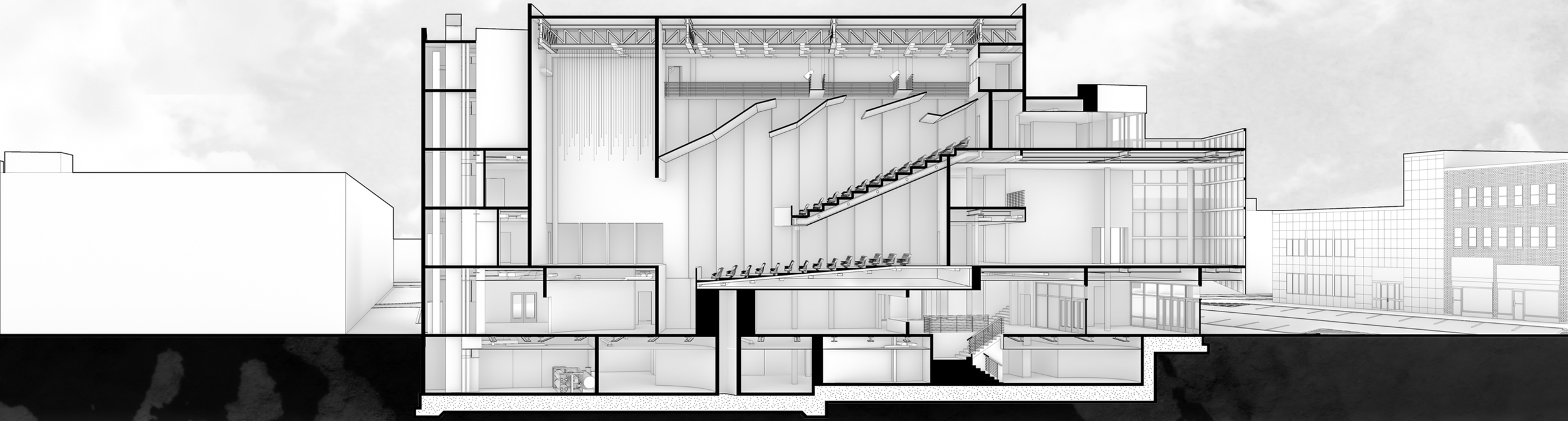
Diagrams Modeled and Drawn by Andrew Yu; Lineweights Done by Alexander Michel

The Program Behind the Ensemble Theatre

Connecting Back to Auburn // Auburn, New York

On the street level, the project is adjacent to Genesee Street, one of the main streets of Auburn, and the Exchange Street Mall, a small public walkway connecting Genesee Street with Lincoln Street. At the corner of the project, below the theatre lobby, is a glass facade leading into the lower lobby. This facade has entrances facing both adjacent streets, and dissolves the boundary between interior and exterior through its transparency. On the interior, this lobby space connects to a cafe, book and gift shop, and circulation to both upper and lower programs. Further along the Exchange Street Mall, the facade is interrupted by an excavated space that serves as a public outdoor amphitheatre.

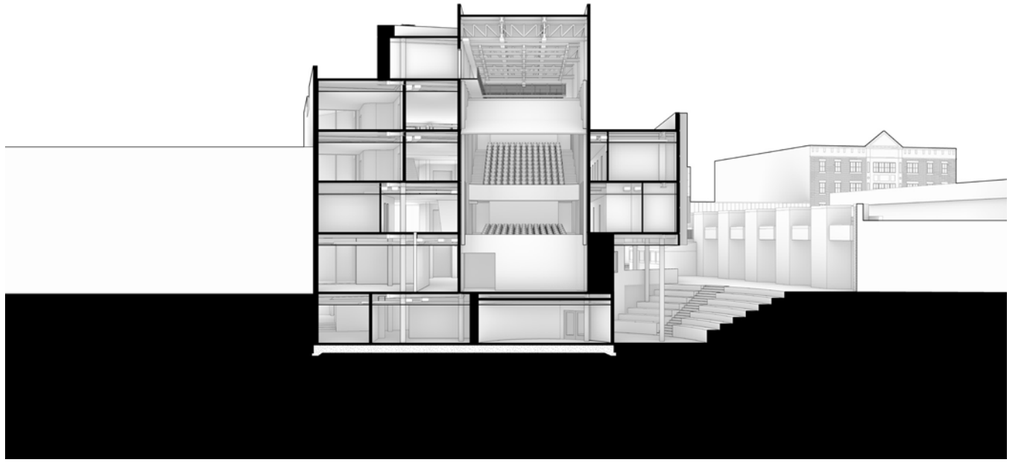
The amphitheatre formally engages with the mall, gesturally reaching out into the space. The amphitheatre operates as an outdoor performance space, and while not in use, provides a location for public gathering along the Mall. The lowest level of the amphitheatre leads into the below-ground floor of the project, containing an 84-seat multi-use auditorium, back of house spaces for service, and the mechanical and electrical equipment rooms. The auditorium is the only public program below ground, entered through a staircase in the main lobby. The auditorium is backed by a large light well that extends up against the existing adjacent building throughout the entirety of the project. On floors above, this light well is exposed through a floor-to-ceiling glass wall.



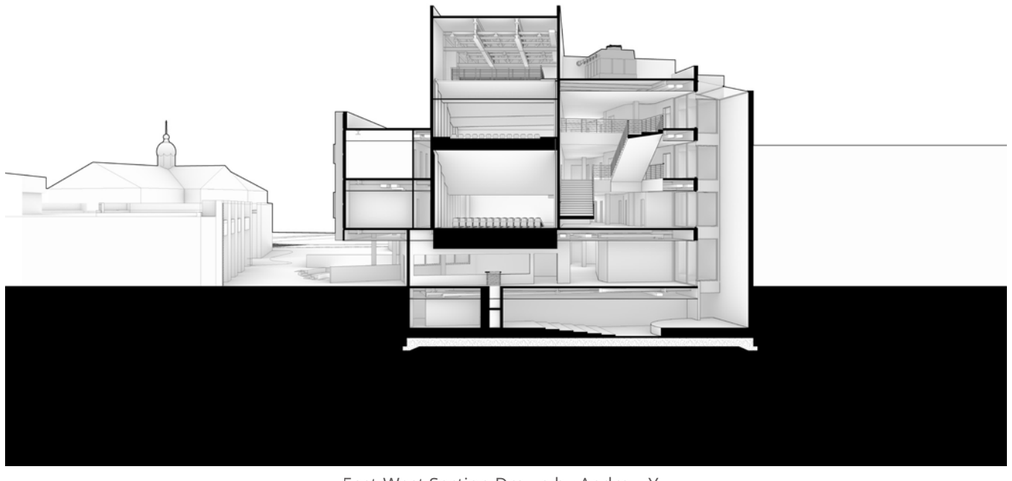
North-West Section Drawn by Andrew Yu

Designing the Ensemble Theatre
Exterior Conditions // Auburn, New York

During the day the front volume has a soft, translucent surface; at night the volume lights up from within, projecting the interior onto the facade and acting as a beacon to downtown Auburn. The amphitheatre connects the theatre to the rest of the public, activating the street. By bringing people to the ampitheatre, the adjacent mall is also activated.



East-West Section Drawn by Andrew Yu

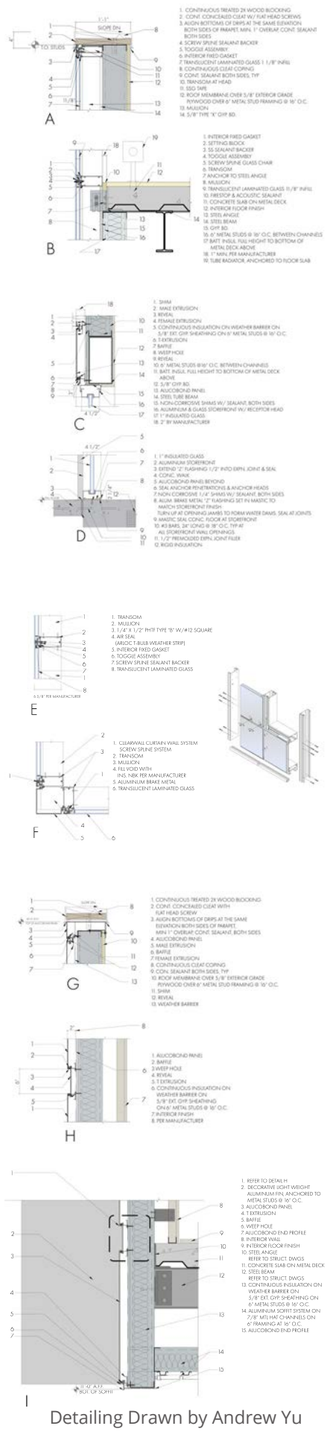


East-West Section Drawn by Andrew Yu

Daytime Axonmetric Rendered by Andrew Yu

Nighttime Axonmetric Rendered by Andrew Yu

Outdoor Amphitheathre Rendered by Andrew Yu



Detailing Drawn by Andrew Yu

[8] VAULTING WALLS

Brick Computational Fabrication

Fall 2023

Type: Robotic Assembly
Location: Princeton, New Jersey
Category: Academic Work
Instructor: Arash Adel
Role: Collaborative Work with JoJo Ma and Yuki Cao

The realization of a parametrically and computationally generated brick wall through digital and robotic fabrication presented multiple challenges that required a breadth of knowledge to be acquired related to the material property for successful assembly and design. Thus, as knowledge was acquired, whether it was through physical or computational experimentation, it was then implemented chronologically, affecting the design cyclically. The overall framework of the labor involved in computational design is similar to traditional design methodologies in the sense that it is also non-linear, following a cyclical workflow where parts of the design are influenced by external critical information. However the difference comes from the objectivity of this information; whereas in traditional approaches to design this information is fed from a client, a professor or some subjective interpretation of the design, in computational design, the information is a conclusion that is only drawn after trial-and-error. That doesn't, however, mean that with computational design, the designer lacks agency to enact subjective design decisions. Rather, the designer's role is secondary to the material's properties as it pertains to its assembly via a robotic arm. Therefore, computational design is an objective data-informed approach to design, and the architect's role becomes the curator of said data.

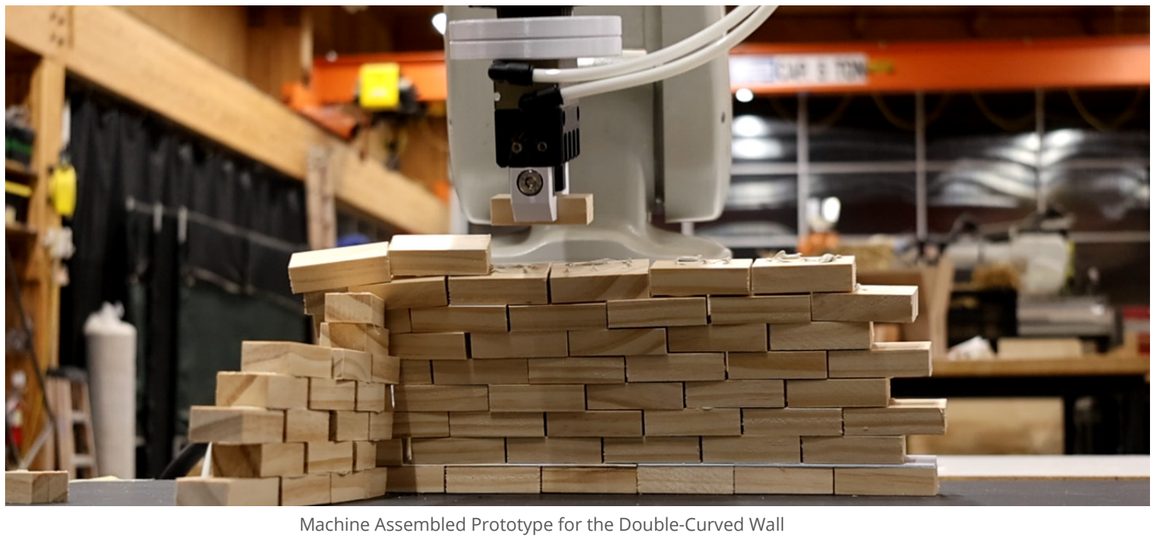
Double-Curved Brick Vaulting Walls

Learning from Computational Fabrication // Princeton, New Jersey

Breaking down this project chronologically, hardships stemmed from the difficulty in grasping the material's physical properties, the translation of a strictly computational script to robotic fabrication, the scaling of the fabrication from the small robotic arm to the large scale robot, and the physics of the fully fabricated brick wall. Further challenges would have arisen if we were given an empty canvas, rather than a pre-written script. This script, while bridging a gap of knowledge which itself would likely require weeks of further training, influenced every group's design dramatically because it became the basic lexicon for further intervention. All-in-all, the challenges experienced were rooted in a lack of knowledge and experience from the entire group regarding brick, robots, and computational coding.

Hand Assembled Prototype for the Double-Curved Wall

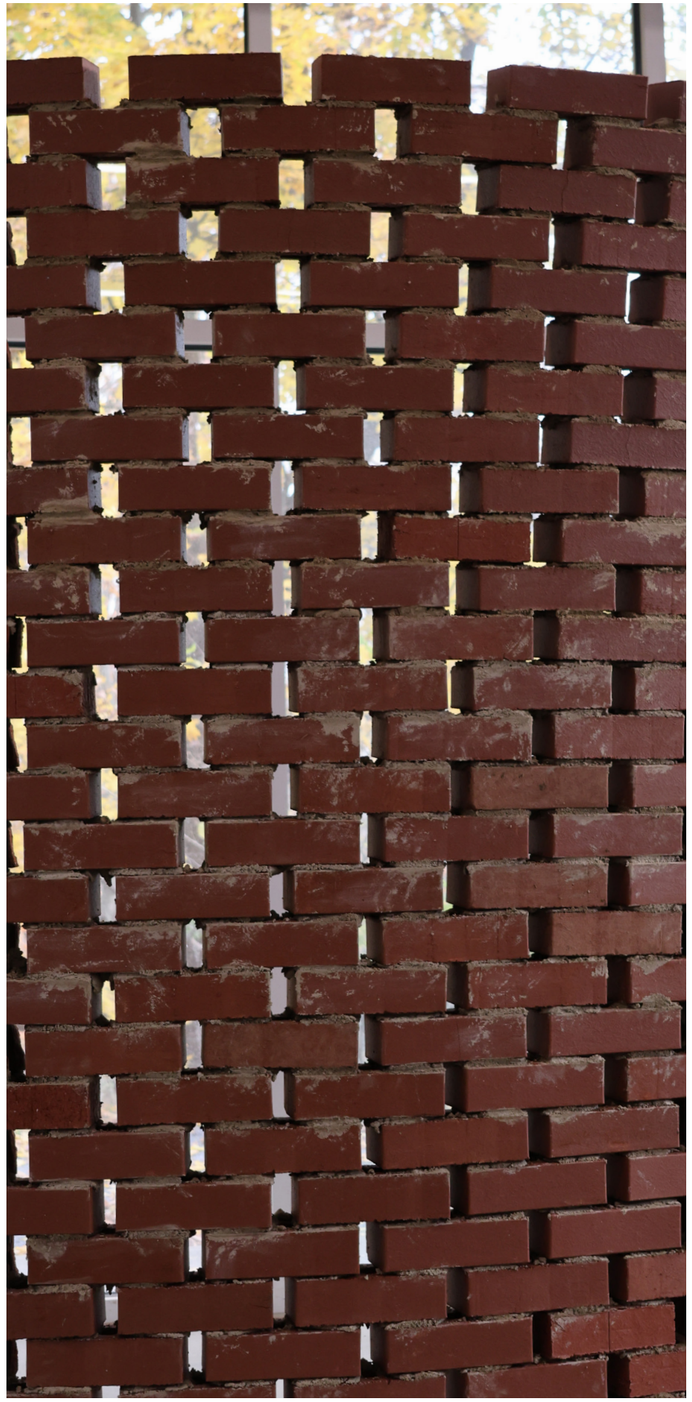
Jig Developed After Learning from the Machine



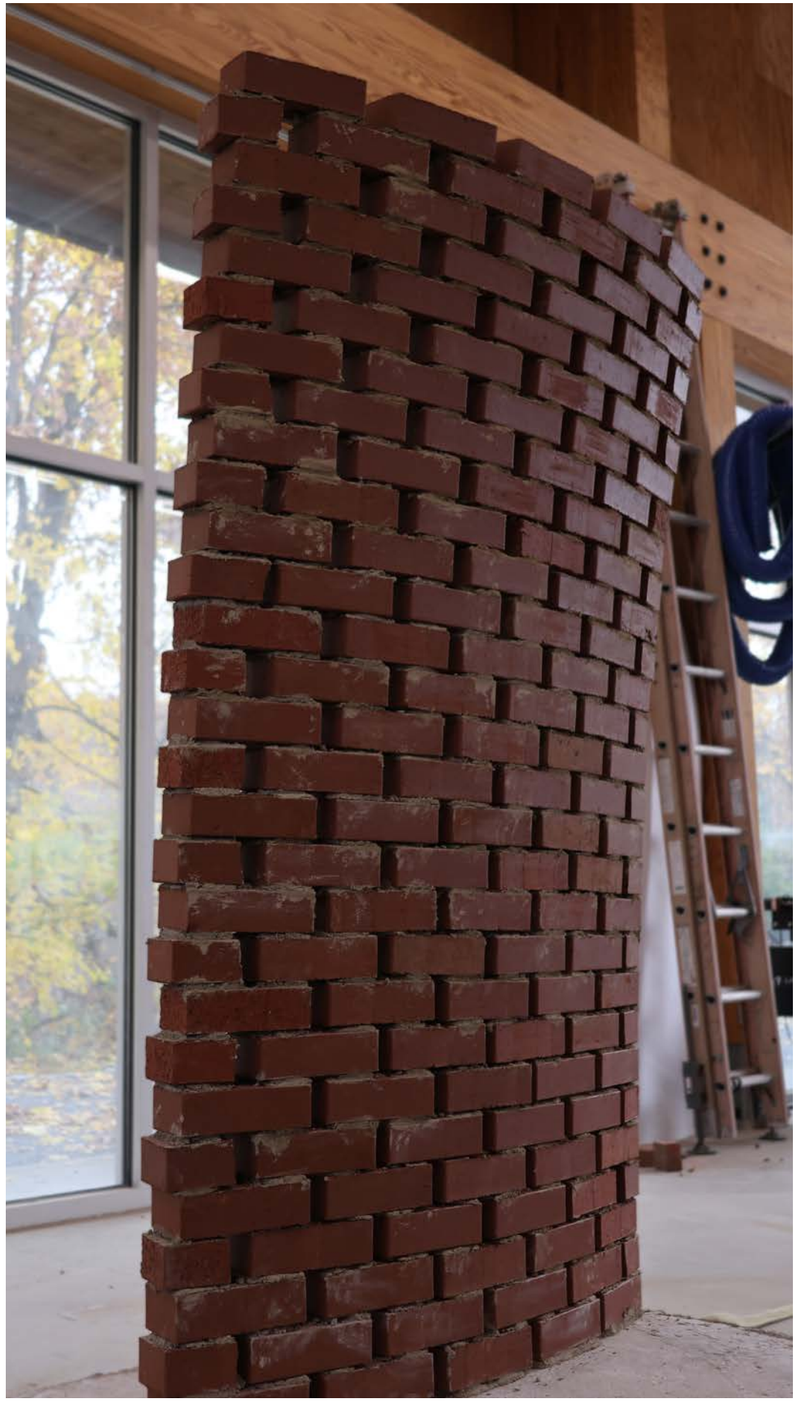
Machine Assembled Prototype for the Double-Curved Wall

Robotic Arm used for Full-Scale Fabrication of the Double-Curved Wall

Detailing of the Brick Double-Curved Wall



Openings in the Brick Double-Curved Wall

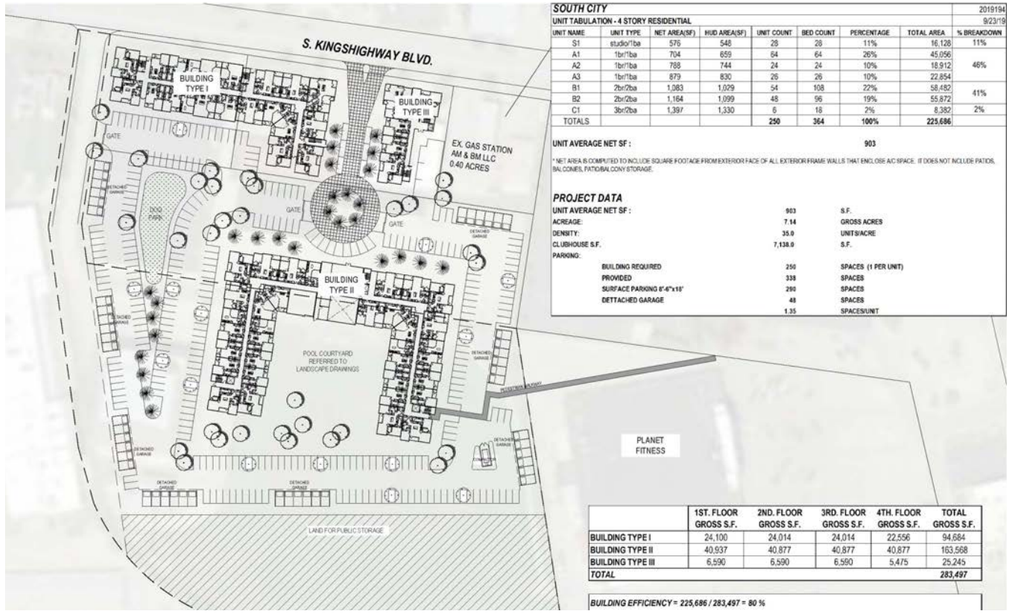


Structural Stability in the Brick Double-Curved Wall

[9] INTERNSHIP EXPERIENCES

Dallas, TX | Shanghai, China | New York City, NY

Summer 2018 - Present



Site Plan Drawn and Designed by Andrew Yu

Elevation Drawn and Designed by Andrew Yu

Humphreys Architects & Partners

Dallas, TX // Summer 2018, Summer 2019, Summer 2021

This project, called the SOGRO Apartment Complex, is located in Saint Louis, Missouri and was originally designed in the summer of 2019. As a member of the design team, I was responsible for designing the site plan, the building plans, and the elevations. I designed the project according to the required unit mix, and organized the site plan to maximize parking efficiency while including amenities such as a dog park, a roundabout, and a large courtyard.

Landscape Plan Drawn by HPLA

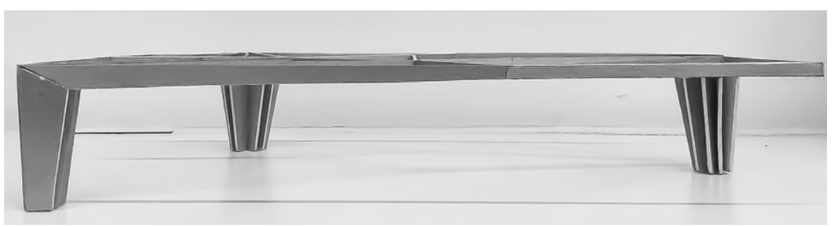
Render Done by Diamond Graphic Design Company

Atelier Z+

Shanghai, China // Summer 2018, Summer 2019

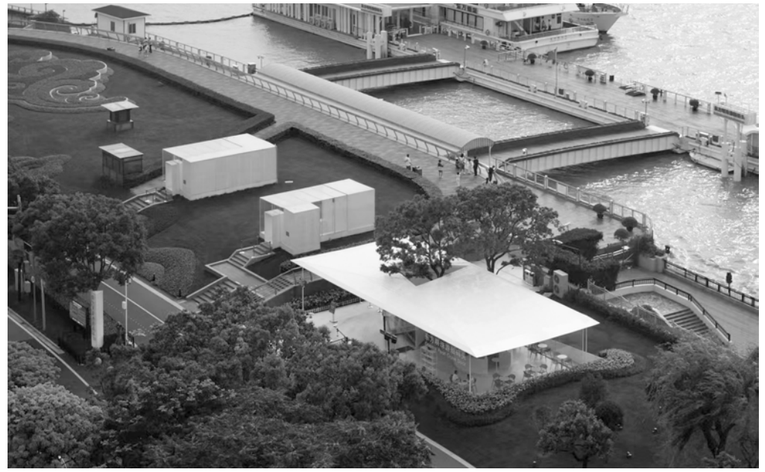
In the Summer of 2018 and 2019, I worked at Atelier Z+ in Shanghai, developing diagrams, renders, 3D models, and physical models for the studio. During my first stint, I also contributed to the team that won the Sanlin Bridge Competition.

This is a pavilion that was designed in the Summer of 2019. The overall concept was to minimize the structure supporting the roof by using three columnar trunks. Additionally, we wanted a tree to interrupt the roof through the triangular aperture. I was in charge of producing the physical models. After extensive modeling, the structural system was switched to a grid of thin, steel columns so that the roof appears to float. The pavilion finished construction in 2021.



Preliminary Models Created by Andrew Yu

The Tree at the Center of the Pavilion



An Aerial View of the Pavilion, Built 2021

The Pavilion During the Final Construction Phase, Built 2021

A Closeup View of the Pavilion, Built 2021