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COLUMBIA GSAPP
MASTER OF ARCHITECTURE
CLASS OF 2026

EXPERIMENTS

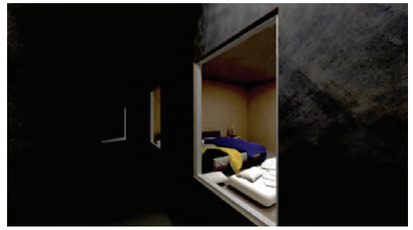
TABLE OF CONTENTS

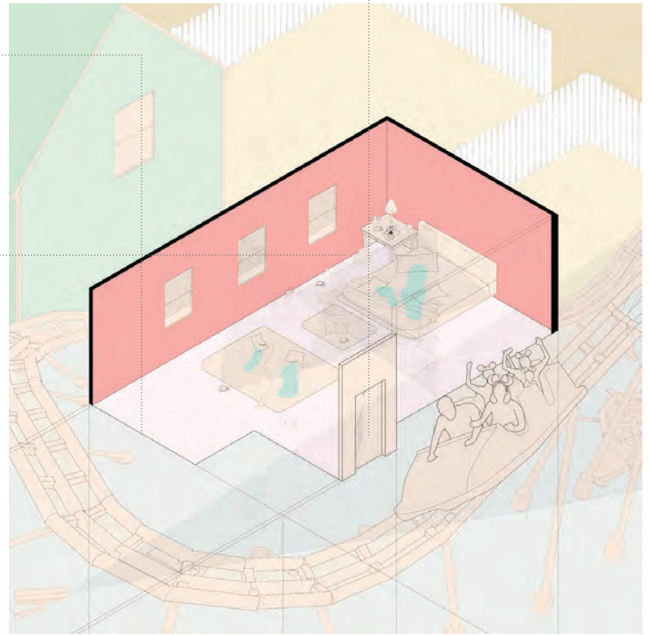
01. *slice of celebration*

CORE STUDIO II / SPRING 2024
CRITIC: JARRETT LEY

In 2019, the Disney-created town of Celebration, Florida made headlines as the site of a grisly family murder. A fast food meal in a suburban house, discarded kitchen knife and daughter's pillow, and the subsequent findings of mummified corpses tucked tranquilly in the upstairs family bedroom laid out the broken picture of the perfect American family. As the father lived a normal life tending to work, purchasing Happy Meal dinners for his children, and slipping into the bloodied mattress alongside his deceased wife every night, the rise and fall of the Todt family explicates the meaning of surburbia, the American dream, and what it means to play a part in the "happiest place on Earth".

This studio proposes a new attraction at Disney World that brings America's macabre fascination with a suburban family murder to life in a murder dinner theater. Through choreographed encounters with the site of murder starting with an intimate dinner facing actors in a family who will no longer exist, this dinner theater combines the culture and aesthetic of Disney with forensic crime scene processing into an architecturally coordinated rupture of the picture perfect American suburban family. "Slice of Celebration" retools how reputational, corporate, cultural, and societal damage implicates the performance of suburbanity and theater of Disney and the home.





ANALYSIS OF A MURDER

With forensic photography, detailed crime reports, and town of Celebration standardized floor plans, an accurate recreation of the crime scene at the time of death situated forensic photographers, dead bodies, and the relationship between the suburban town and Walt Disney World.

MODEL OF A MURDER

To unlock the relationship between Disney and murder, an eerie dollhouse reconstructing the events of the Todt family murder includes the duration before and after the deaths -- from when Anthony Todt consumed bottles of sleep-inducing allergy medication, to the upkeep of an alive family via the purchase of McDonald's Happy Meals for his children, to the nightly ritual of falling asleep with the mummified body of his wife in the primary bedroom every night. Inside the vibrant shell of a Disney dollhouse is a shattered suburban family.

INTO AN ARCHITECTURAL RUPTURE

The witness of a murder over evening cocktails and a backyard barbecue. Slicing into a juicy, medium rare steak in front of mummified corpses saturating a bloody mattress. Cherry tarts drift by on a forensic conveyer belt as an autopsy is being performed in a cold room. "Slice of Celebration" sits on Main Street USA as a murder mystery dinner attraction, churning out two hours slots of an evening dinner show explicating an architecturally machined rupture of peaceful suburban life into an uncomfortably real horrow show. In this show, theatrics dissect the picture perfect American family into another attraction at the happiest place on Earth.

ANALYTICAL MODEL

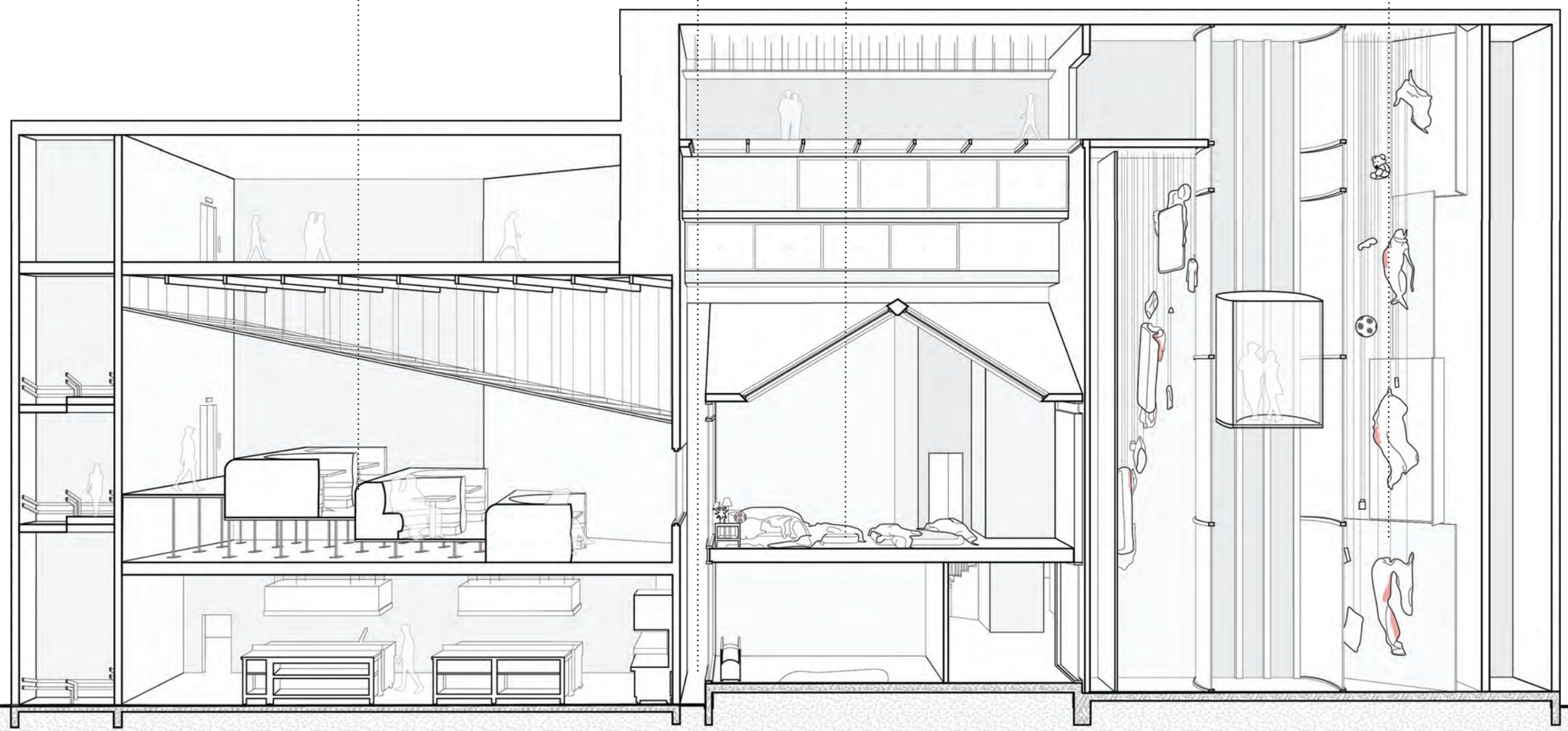
RIDE ELEMENTS

DINNER THEATER

PEEPHOLE APPETIZERS

VOYEUR STROLL / THE REVEAL

AUTOPSY DESSERTS

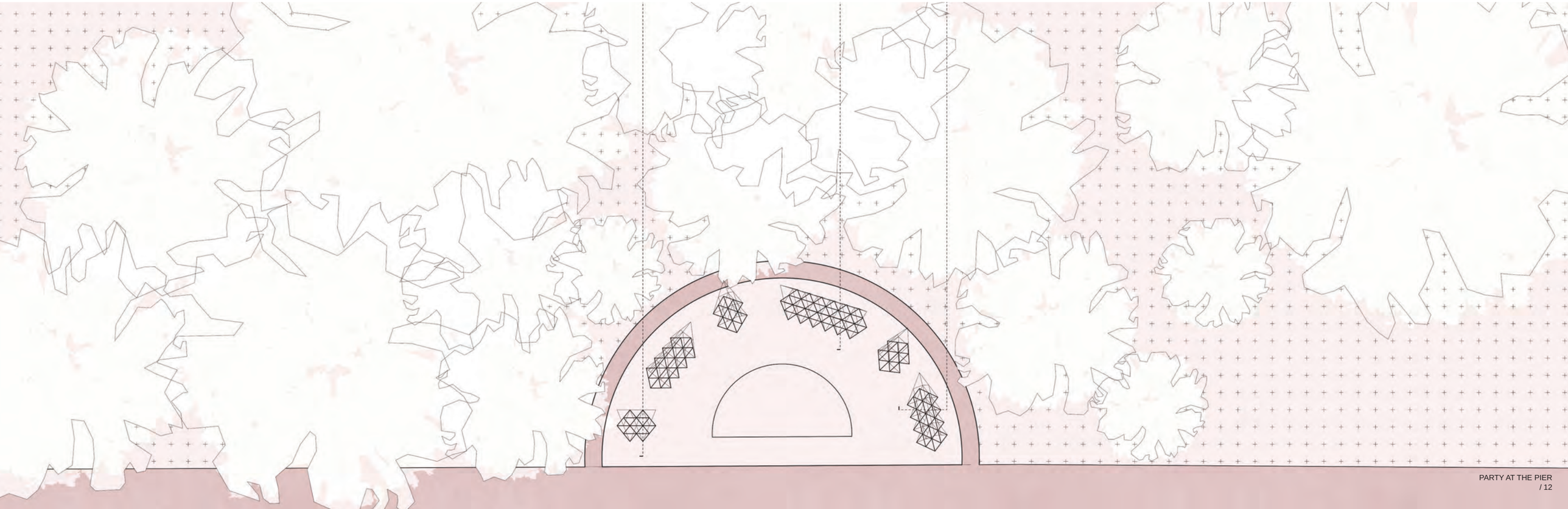


02.
party at the pier

CORE STUDIO I / FALL 2023
CRITIC: CARLOS MEDELLIN

Home is multi-scalar, a combination of rituals from the past to the present to be carried into the future and the lessons embodied in different forms. From a lasting memory in a death ceremony to hopeful new beginnings on a picnic on a pier, this project embraces culture and identity to transcend traditional notions of architecture into design-forward thinking. Critical investigations started from the notion of a cultural ritual: what is it? How is “culture” performed, situated, considered, analyzed, understood, or even constructed? Only from then on can design provide meaning beyond shape.

The final project adapted cultural rituals and applied it to multiscalar design interventions at a specifically designated site: the Christopher Street Piers. Where sailors had discreet encounters as prominent cultures were silenced, then celebrated, and silenced again, the studio questioned where architecture slots into questions on cultural identities and how critical institutions seamlessly intertwine with contextual histories. Just as individual identities fluctuate on top of a cultural foundation, the site of the piers and the pilgrimage for Chinese food tell the story of young couples, friends, families, and sailors on the quest for liberation.



RECONCILE THE HISTORY

After visiting the piers every day for two months, this storyboard details the ruminations of walking along Christopher Street and passing by the same Chinese restaurant every morning, every afternoon, and every evening. This contentious site is rich with history -- LGBT+ history, Native American history, and even mine as I sat and ate those $6 wontons. All of these histories coalesced into a profoundly personal story at the site: scret meetups between sailors in the 1800s, devastating loss and death in the 1980s, and an attempt to rebuild through gentrification in the 2010s. How can me and my gentrified Chinese takeout lunches reconcile this loss?

OLD PIER 48

Spatial acts of defiance have always been part of the history of the piers.

At the semi-circle at Old Pier 48, this project proposes a series of foldable structures deployed to create private space in a public environment.

Folded down for tight knit date nights or all raised up for a party at the pier, the structure is intentionally mobile to designate personalized space as an act of revealing and reclaiming what was lost to / in generations prior. The space of the piers is no longer permanent property of government institutions who privatize, exclude, and shame people to occupy the waterfront -- all are welcome and all are encouraged to participate.

Transcience and temporality resonate within both the foldable structures and the history of the piers.

Transcience from the populations that have inhabited the space and left the space through acts of spatial defiance have the opportunity to reclaim the space. The foldable structures are ideally made of a water-resistant vinyl and scrap wood, however the materiality is flexible depending on the available material being salvaged within the surrounding context of Greenwich Village.

03.
collective courtyard: single parent housing

Sharon and her son needed a new home. Grandma Victoria and her daughter Sarah moved to the unit next door afterwards. Brittany's not due yet but needed somewhere safe and accessible for her hybrid job. In this new housing development in West Harlem, single parent families and their support systems collectively thrive under their naturally made, comfortable new community. A built-in preschool, spacious courtyard, and central conference center to observe children safely playing below are prominently featured. Affordable, spacious, safe, and sustainable -- visual sightlines connect families to the slopes and curves of New York to ensure families never lose sight of their cherished communities.

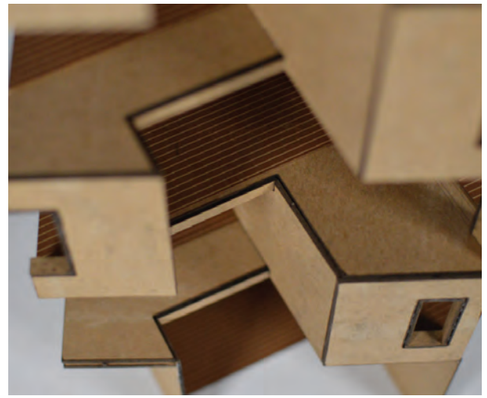
SITE ANALYSIS

Taking advantage of the sightlines and visual phenomena betwen 127th and 128th street, a sectional cut from the rowhouses on Convent Avenue distinguishes public versus private space and introduces a new program area: garden. Where gardens are both public and private, indoor and outdoor, free and to be paid, the combination of conditions becomes a main element in the development of the project.

FLOOR PLANS

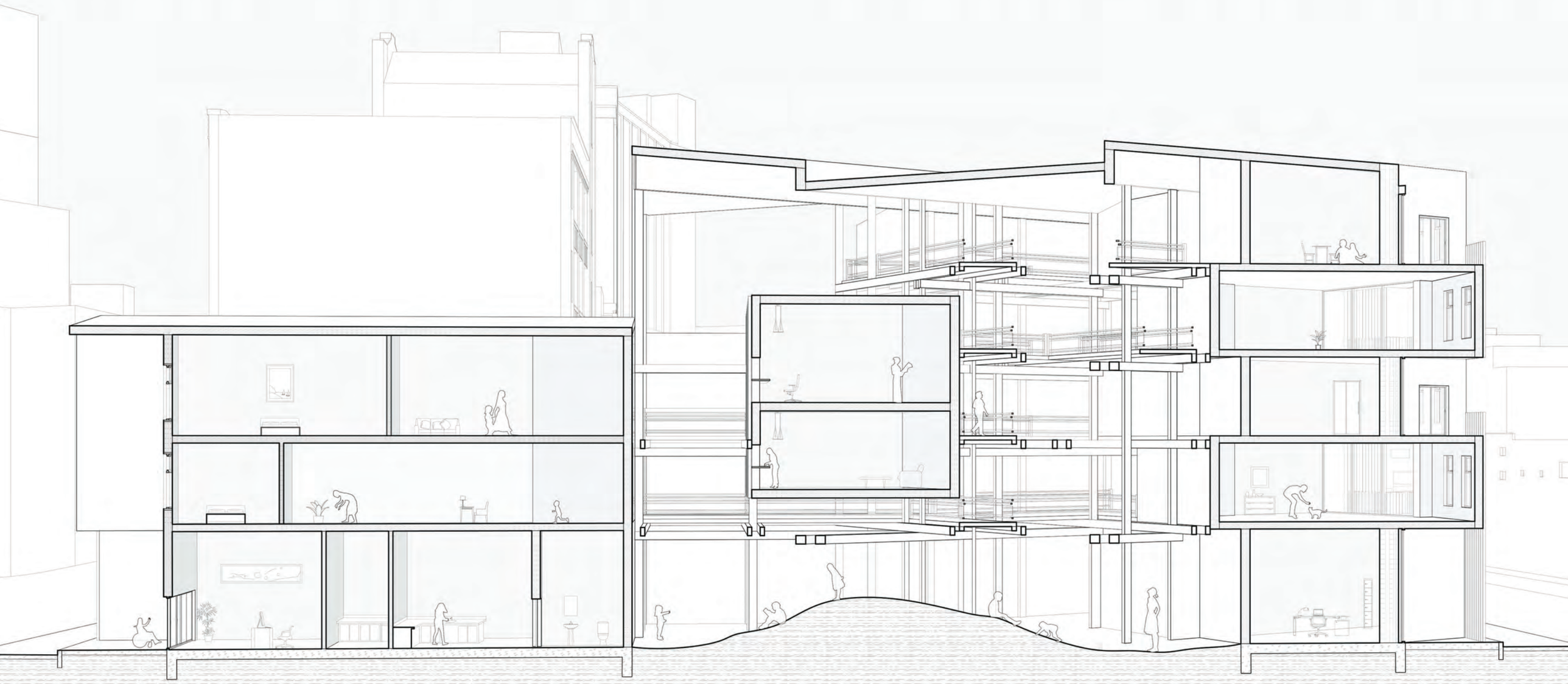
Ground floor programming includes a preschool and daycare that provides before and afterschool care for mothers needing somewhere to drop off children. Underneath a coworking tower, children can climb and play on a gentle hill providing child-sized entertainment depending on the roof-to-hill overheard clearance proportions.

Mothers can observe their children in a coworking room for virtual or hybrid employed parents with visual sightlines drawn from the surrounding context. Alternating hallways per floor level provide a “chutes and ladders”-like circulation strategy, offering short and long ways to liven up daily commutes and stimulate wayfinding skills for young children.



SECTIONAL PERSPECTIVE

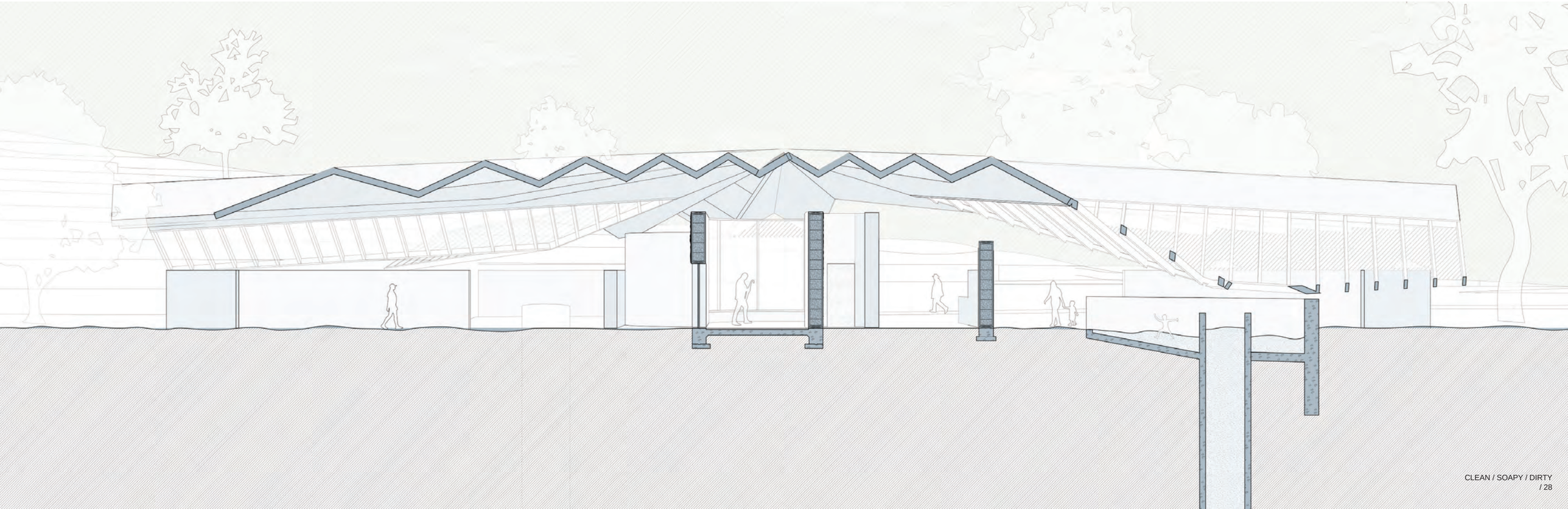
Natural materials such as 3-ply and 5-ply cross laminated timber (CLT), lime-based paint in lieu of carcinogenic acrylic-based paint, and fabric-based insulation products where wall thicknesses do not allow adequate R-value insulating properties ensure that young children and their parents can safely explore and flourish in their new home environment.



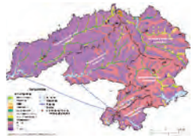
04.
clean / soapy / dirty

Nestled between the Bush Kill and Dry Creek just west of the Ashokan Reservoir, climate projections from the Federal Emergency Management Agency and National Weather Service anticipate a high likelihood of flooding within a 30 year period. Most of FEMA's flood projections range on a scale from 100 to 300 years, thus rendering this plot of land in immediate danger of flooding and irreparable harm to the West Shokan hamlet in the town of Olive, New York. Today, this land ranges from bone dry to overwhelmingly flooded with published turbidity reports challenging the understanding of clean versus dirty water. If the water is clean enough to overspill from New York City's heavily policed and intensely surveilled Ashokan Reservoir, then the reservoir, the creeks and land, the plants and public programs, and everything the water touches must be clean as well.

However, this water is filled with harmful chemicals to coagulate rainwater and river pollutants or "floc." Local agricultural soil is infiltrated with leaded soil and salted "floc" water. Residents cannot file flooding insurance claims on toxic chemical pollutants and byproducts from the city's desperate efforts to clarify the water. Riddled with concerns for this land and its future, abandonment is not an option. Instead, efforts to construct on the land with its inevitable destruction in mind demonstrate continued resiliency and determined articulate design choices that will not rescue the land itself but will forge a new commons. This project, titled Clean / Soapy / Dirty, proposes a water filtration laundromat and communal gardens attached to the public programming of the Town of Olive's Department of Recreation. Where clean water is accessed via public wells, dirty and soapy water gets filtered by companion planting and phytodegradation as toxic pollutants naturally convert into less toxic or entirely clean water as the process (and residents' laundry) rinses and repeats.

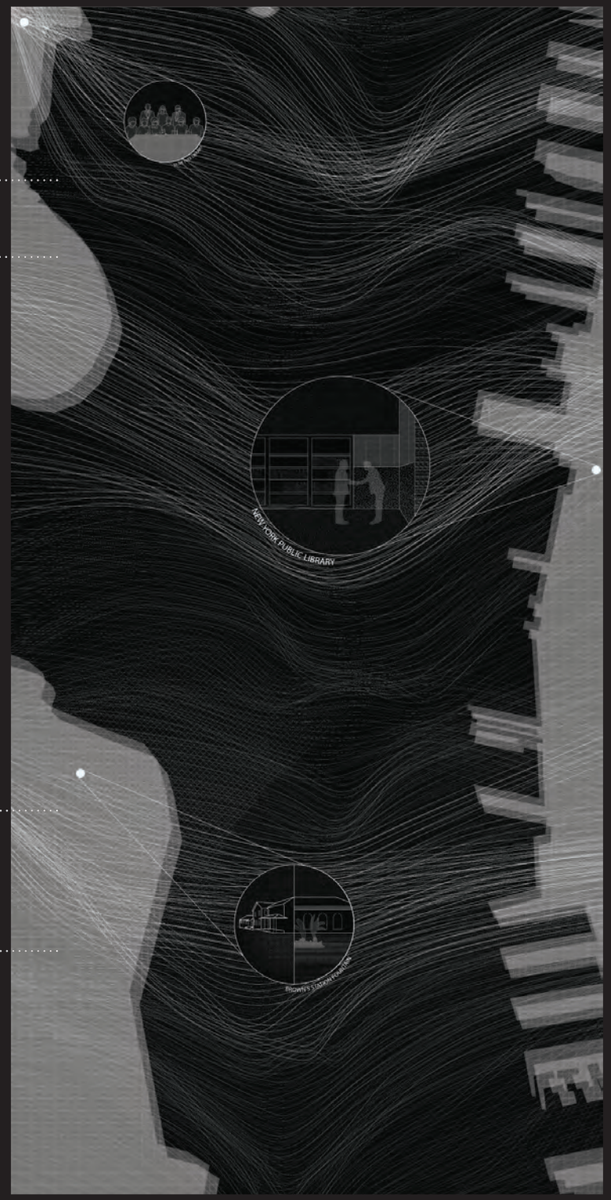


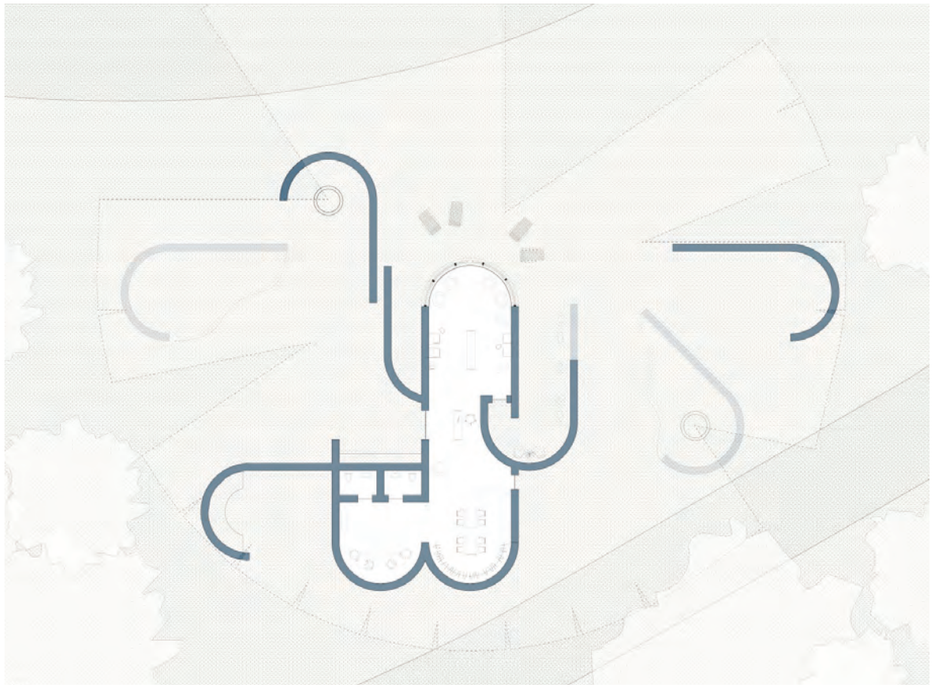

SAFEGUARDING OUR WATER SUPPLY
The Catskill Watershed
Water for New York's Millions.

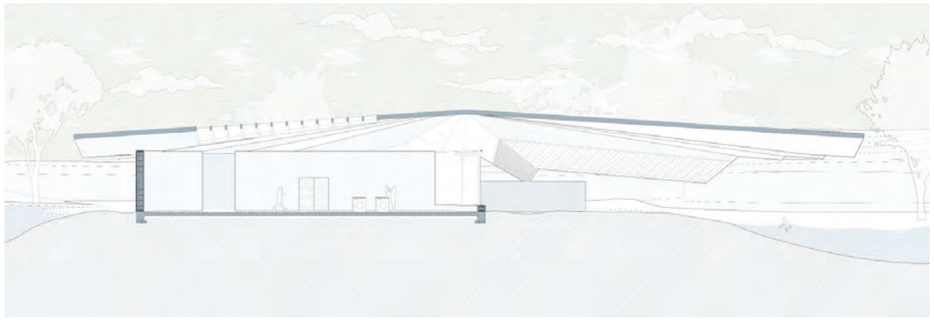



Ashokan Reservoir Watershed


OLIVE


NEW YORK PUBLIC LIBRARY
Brown's Tavern Hotel

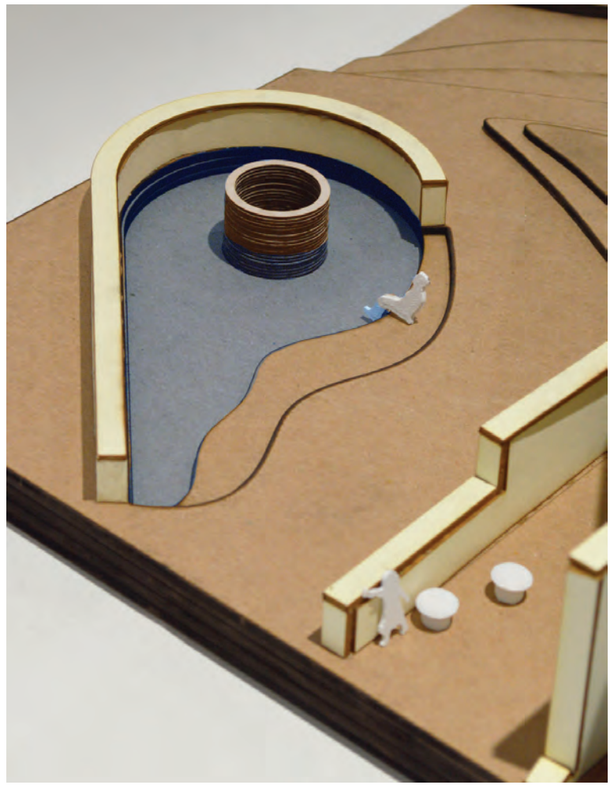




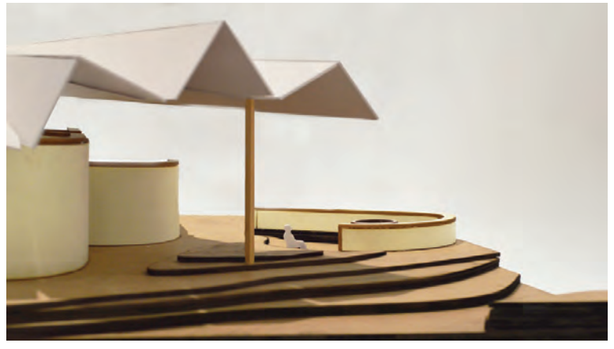
LAUNDRY AS COMMONING

Here, clean water is freely accessible and specifically for the community. Clean water to participate in community building activities such as clothes mending workshops, sewing classes, dry cleaning sessions, and so much more bring together residents instead of dividing them. As the city of New York historically polluted and gatekept precious water resources away from watershed and reservoir towns, the laundromat unites residents. Residents share their communal resource -- fresh, clean, pure water -- and actively participate in transforming their built environment.

SECTIONAL MODEL
- exterior -



SECTIONAL MODEL
- perspective -



BOOKLET

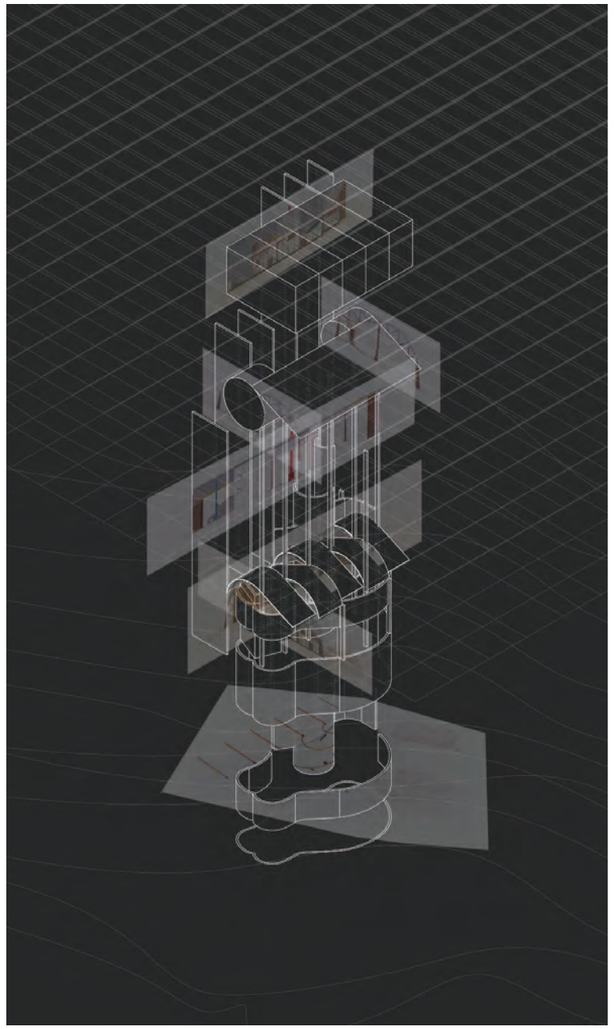
“*While flooding will occur and inevitably will cover the site, thoughtfully designed contours shape the infiltrating flood water and its toxic contaminants into specially pooled valleys that protect and save adjacent structures for as long as possible. While the pools and clean water wells provide access to facilities, the main facility – the laundromat – is an inherent conglomeration space. This space is the heart of the project. This space visualizes the generations of displacement, conversations of water and water politics, and negotiates a new commons where water is equitable. Water is free. Water is conscious. Water is clean. Water is distributed to those who need it most – the young and the old – and water brings people together in communal garden plots to nurture and feed families instead of displacing and breaking. Water is beautiful and ephemeral and flowing. Most importantly, water is ours.*”

SHORT EXCERPT FROM ESSAY IN BOOKLET

05.
transcript as masque: building dna

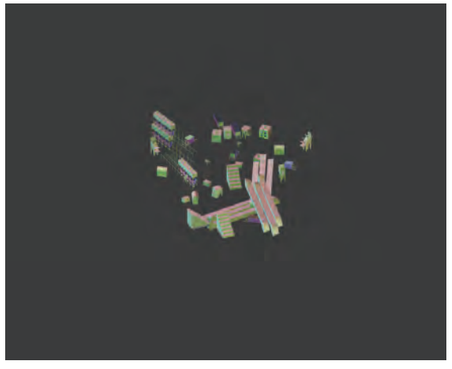
ADVANCED STUDIO V / FALL 2025
CRITIC: MICHAEL BELL

Through Stanley Saitowitz's Transvaal House, each component is dissected into its individual masque-like components. From the painted trusses to the glass to the front gate that pushes open and open and open into the back door, the Transvaal House is understood as a combination of masque-like objects assembled from recursively structured building materials. DNA and its double helix structure in combination with the front gate that never seems to close, new programs and new modes of living are stripped and processed through the agar gel of Earth's atmosphere. It culminates in a strand-by-strand understanding of how gel electrophoresis breaks down the typology of a truss, the typical use of a pane of glass, and how contemporary livelihoods hang from platform to platform in cloudy pools of Earth's atmospheric agar gel and the biochemical currents of Earth's building blocks of life.



GRID TO ORGANIC

Understanding the Transvaal House requires combining two systems: the organic grid and the inorganic grid. Orthogonality is only particularly relevant when constructing the house but, as it sits on the vast South African landscape, the house's shape is intentionally unintentional. The analytical drawing to the left reorients the House as the median between both grids, taking advantage of the freedom and utility of each other's spatial organization systems before implementing new architectural disruptors.

HEJDUK'S MASQUES

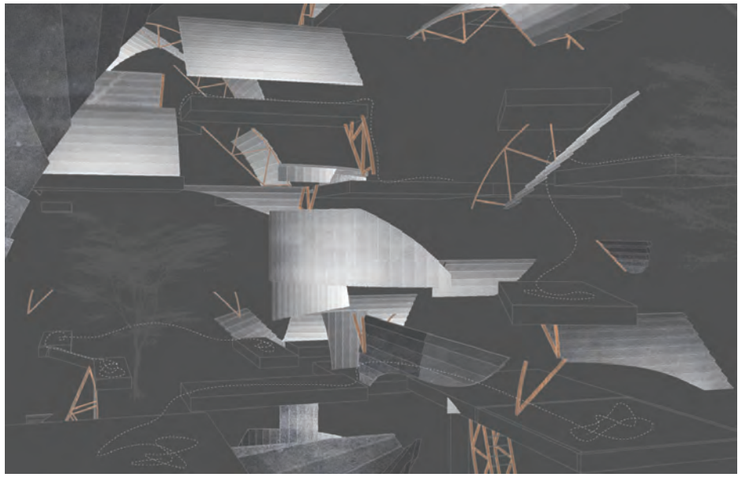
Each "masque" is tied to a character in a stereotypical suburban-rural town in somewhere-America that follows the same script every day: if the chicken never caws at 5AM every morning, the farmer never wakes up, the teacher never gets her eggs in the morning, the chef never gets a client, the judge never goes to work, thus the town never functions. Every action has a strict, predetermined relationship to its predecessor. The analytical digital model reconfigures the relationship of the characters and masques as a function of space over time.

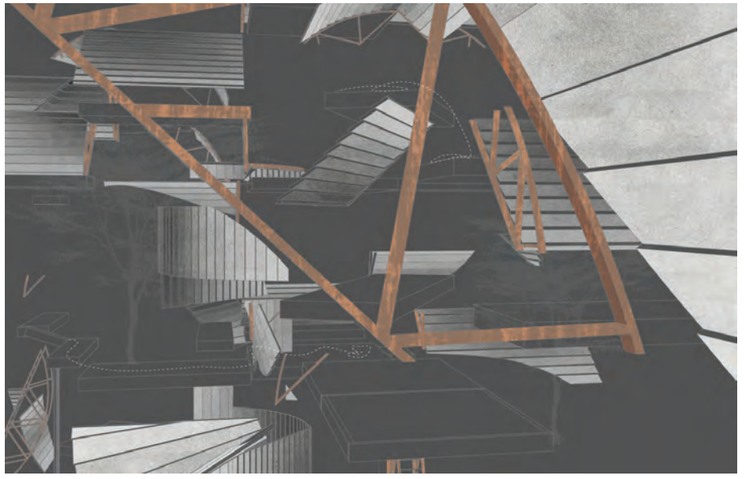
AS TRANSCRIPT

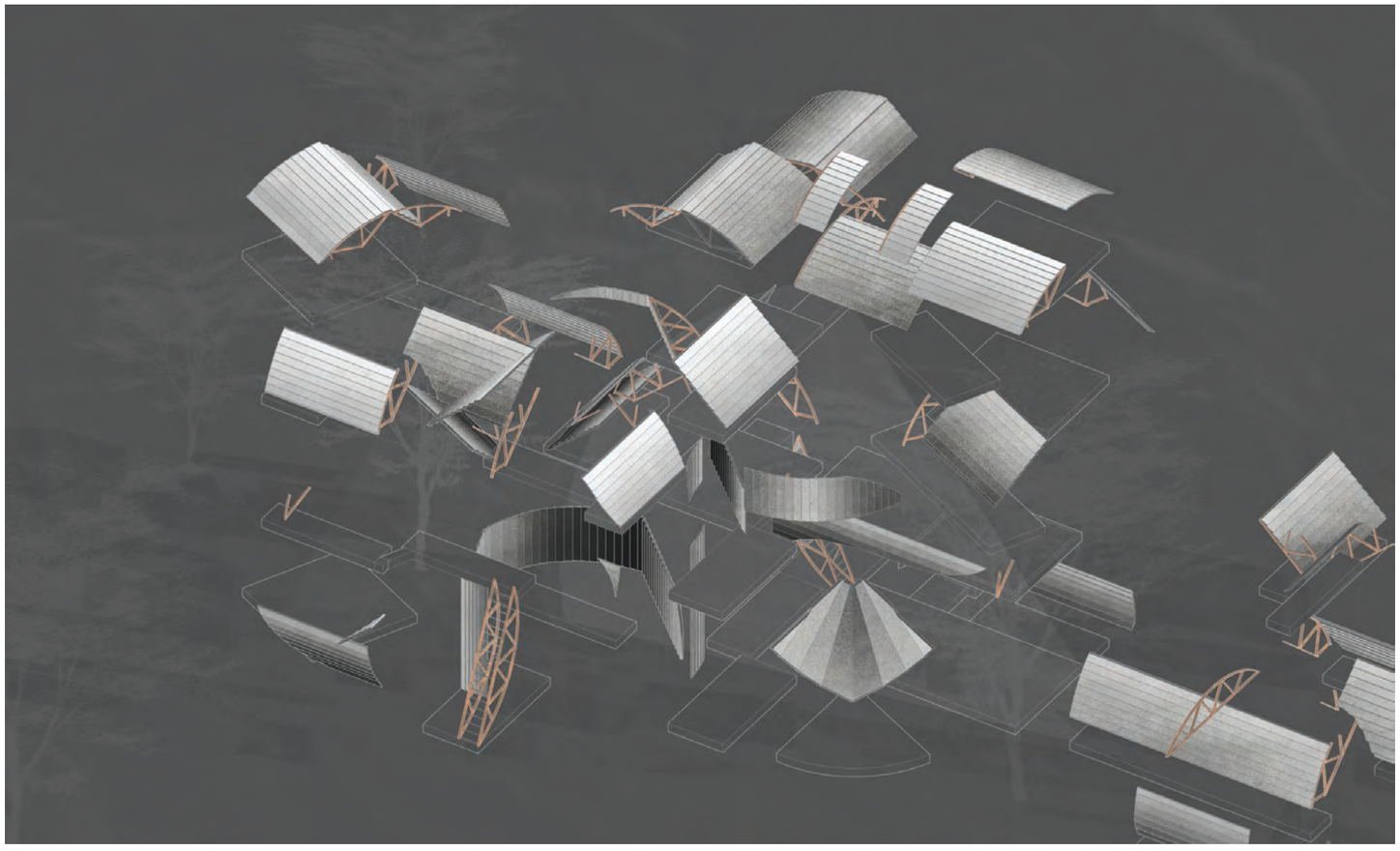
Using Grasshopper as a means of spatializing these relationships, each character and thus each masque becomes recursively related to its predecessor and its successor. Randomized over one thousand times, the narrative of this suburban-rural town changes depending on what happens prior. Above, one series of this town's daily "script" places each building in relation to a specific value of how each building relates to each other: for the school to open, it must be close to the farm but not necessarily close to the hotel. For the hotel to function, it must be placed nearby the grocery store. Proximity is key to understanding how the masque as transcript works.

ELECTROPHORESIS OF THE ATMOSPHERE

The Transvaal House as interpreted through the Hejduk masques script can be divided into its disparate architectural and construction components. Per the architect Stanley Saitowitz, the house was constructed with its masques in mind: the roof is tin merely because it was what he found laying around, the height of the ceiling was simply the same height of his childhood house, and the exterior painting was done because it was the Ndebele painting style nearby. In transcribing the disparate elements to create a new building typology, borrowing from the scientific basis of DNA transcription allows the Earth's atmosphere to enact a gel electrophoresis-like organization.







MATERIAL, SPACE, AND TIME

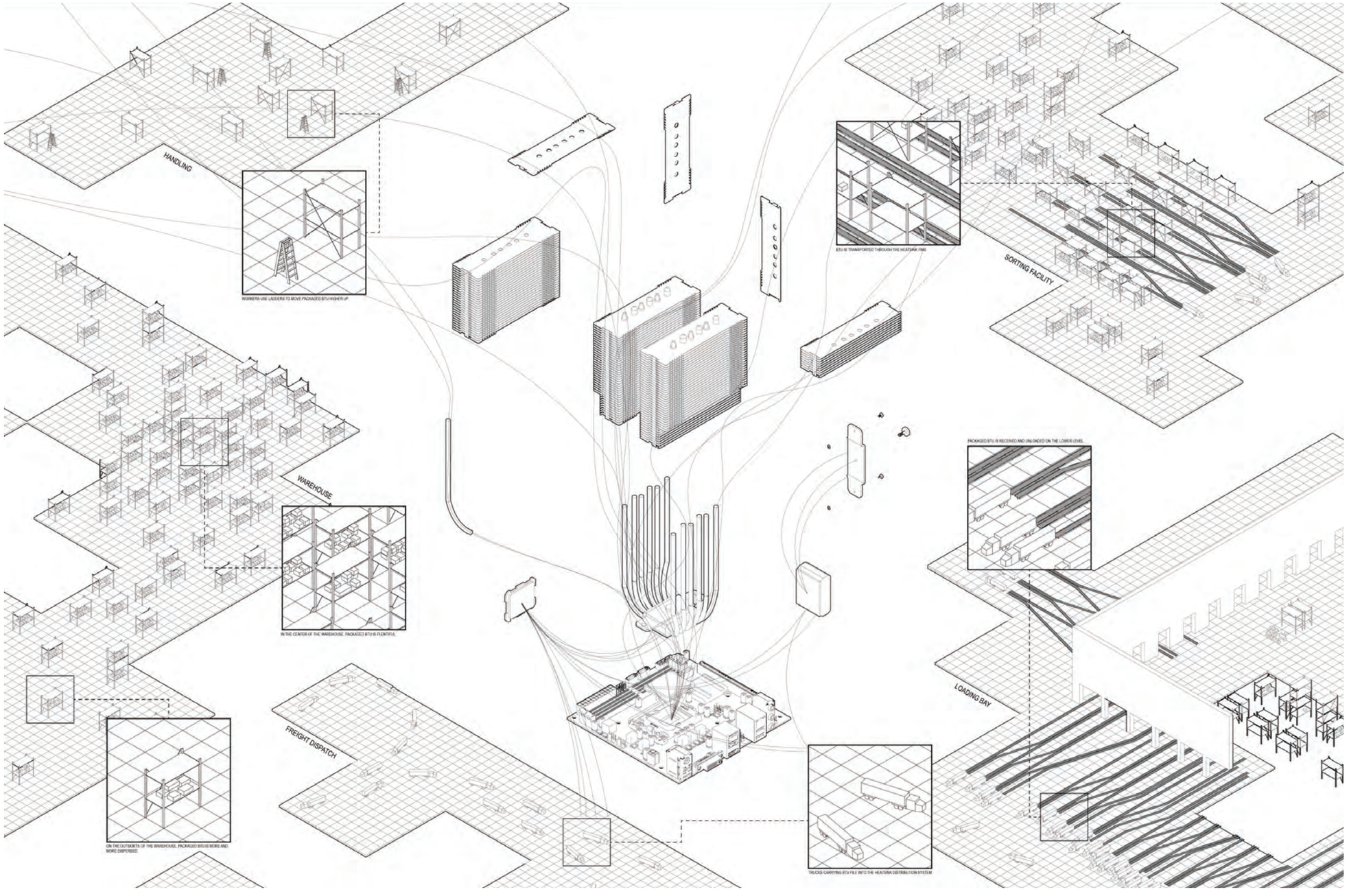
In architecture, (DNA) transcription as masques generates new means of extending existing typologies into spaces that provoke new human behaviors for its inhabitants. For the Transvaal House, the separation of these components established thousands of new possibilities to build and trascribe the “house” as a function of material, space, and time. Beyond tin roofs as platforms and trusses as ladders, proximity is determined by purpose instead of convenience.

06.
surplus biomes, or ecologies of information

Beyond the traditional ecosystem as interactions between living beings, the Surplus Biome captures the possibilities of a DNA-based data-centric future. With the growth of artificial intelligence and large language models, data centers and storage have reached a critical moment that require exploring possibilities outside of the traditional infrastructural expertise. By turning inward and looking at data centers as unique ecologies of information, data centers can be hacked and interpreted as biological organisms that must utilize their own inherent heat, water, waste, and photosynthetic properties for self-sustaining human and more-than-human futures.

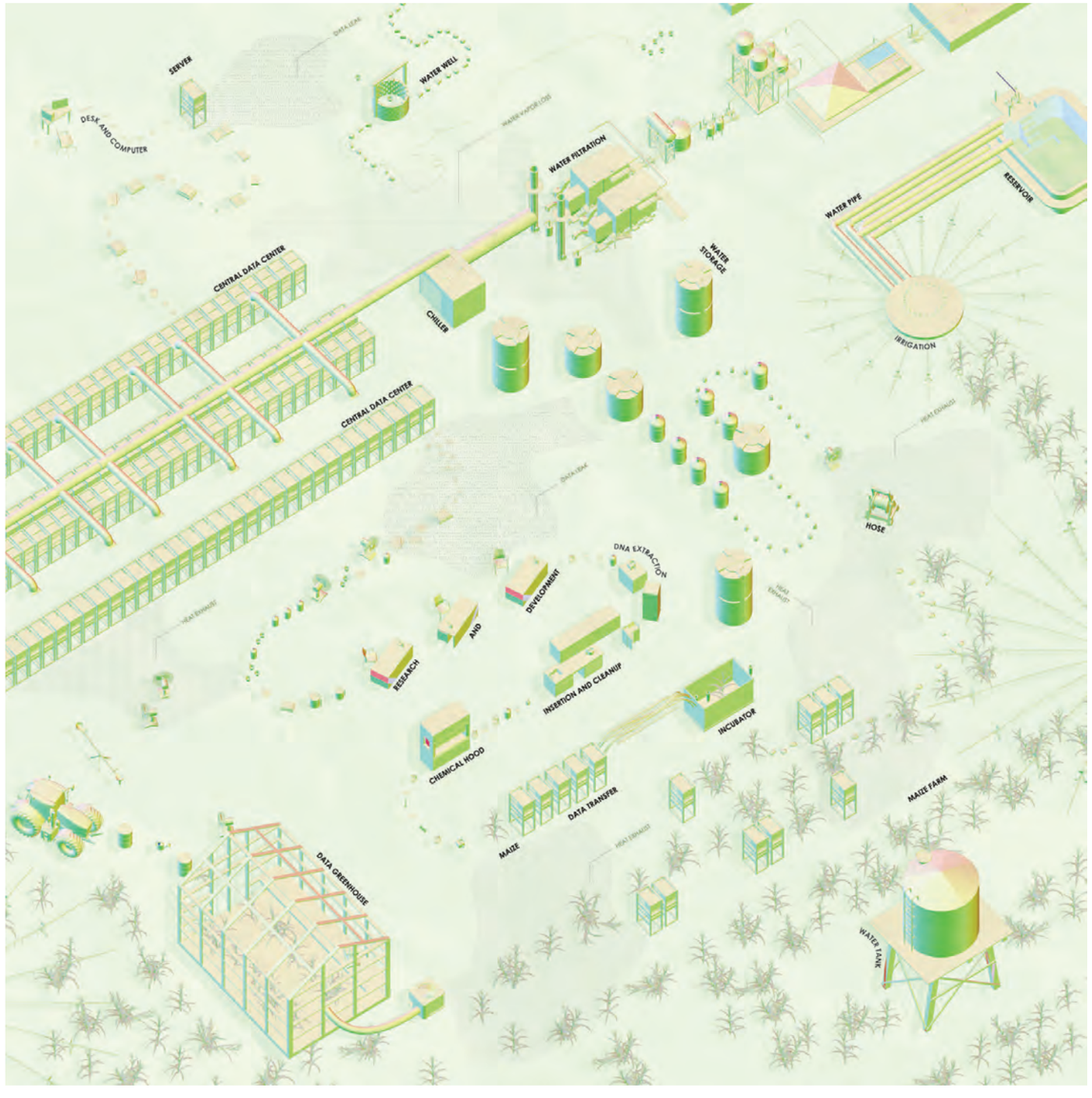
HEATSINK AS DISTRIBUTION SYSTEM

Optimized for the path of least resistance, heat as “packages” of BTU gets delivered and organized via the “sorting facility” before being moved vertically through the heat pipes to the “warehouse” picking floor for release back into the environment. Based on Jesse LeCavalier’s research on Wal-Mart and Amazon logistics and distribution networks.



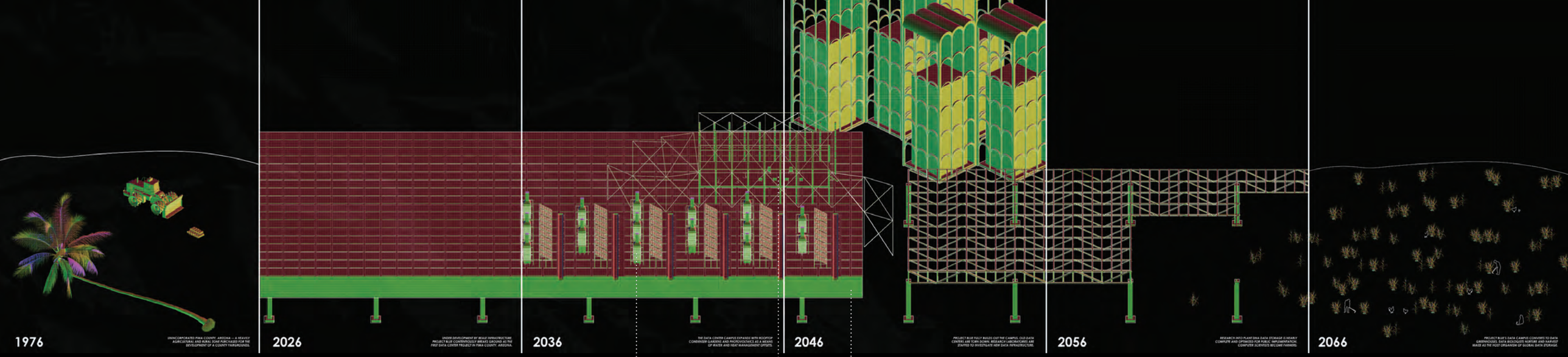
SURPLUS BIOMES
- top view of installation -

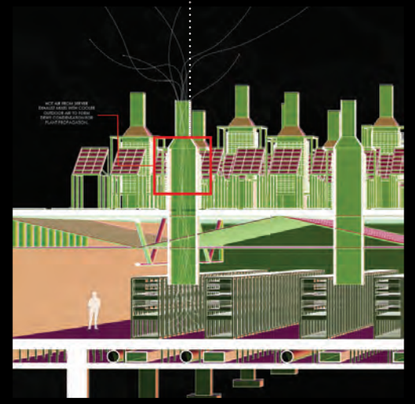
SURPLUS BIOMES
- heatsink as monument -



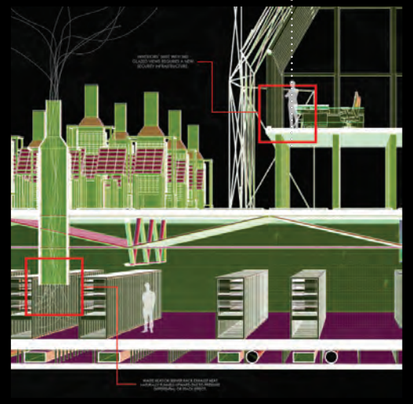
IDENTIFYING THE LEAKAGE

From the computer propped on a desk in a bedroom to the agricultural farmland of data-based corn, the systems of efficiencies permeate every aspect of data culture. Information is found in every crevice of everyday life. Transferring files from a phone to the computer exposes a risk of data leakage -- a means of harvesting and capturing personal information. Mass cooling and heat management systems in centralized data centers exhaust heat, water, and even excess copper wiring pushed to its limits of data transfer efficiencies. Where there's leakage, there is an opportunity to harvest the surplus and grow something new. In a future where data center campuses and planned obsolesence thrives, the post-data center landscape is a data greenhouse.

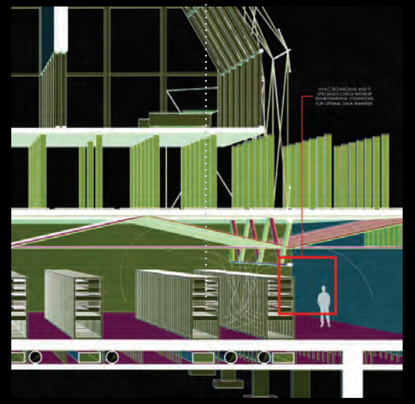




CONDENSER



WASTE HEAT



DATA LEAK

DNA-BASED DATA-CENTRIC FUTURES

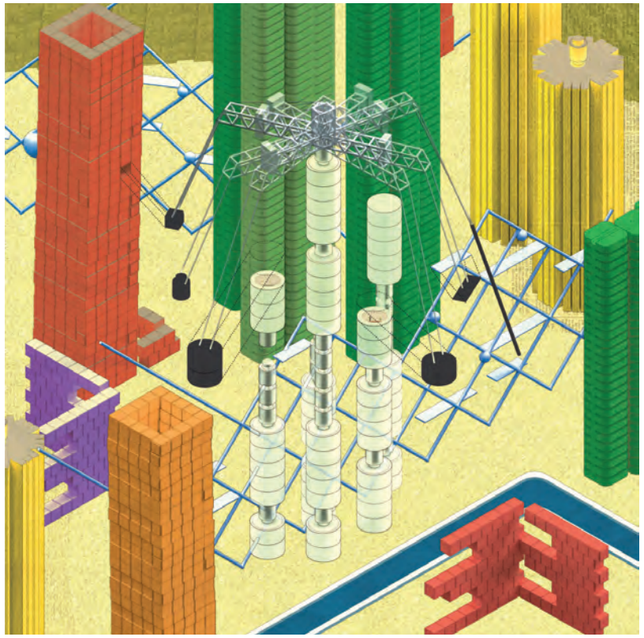
From the computer propped on a desk in a bedroom, the projected translation of data as transmitted via copper cabling and mediated through centralized data centers will no longer exist. Simultaneous with the current data center infrastructure, computer scientists are working alongside with neurobiologists to understand the rhizomatic networking required to implement a DNA-based data-centric future. Every piece of information is stored in binary code that gets encoded into the genetics of a corn kernel. Once planted, germinated, nurtured, and harvested, photos of dogs, Kinne trip travels, and Rhino model files will be stored in a vast data greenhouse landscape.

07.
plug-in city

ARCHITECTURE REPRESENTATION I / FALL 2023
CRITIC: GENEVIEVE MATEYKO

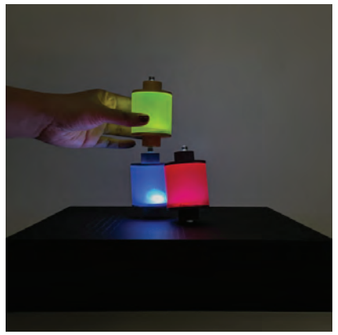
ARCHIGRAM'S "Plug In City" dreamt of modular transportation, commercial, residential, and industry as a guide for modern human life. However, what appears as picturesque and idealistic is not what it seems. Who rules who? Where can I complain if my neighbor's garage band pod is placed next to my virtual meeting room pod? In a world with highly meticulous governance and extreme efficiency, who dictates the efficiency and for whom? The plug-in city is not the utopia that it seems.

Through an analytical drawing of two conditions in the city, an exploded axonometric pinpoints who and where the dictatorship of efficiency and modularity stems from -- the all-seeing crane operator that becomes the figurehead of the all-seeing dictator. Inside of the modular pods is where residents can claim their own free will, stuffed with packing peanuts or a mock beach pod as there is no access to a real beach in this world. Where pods become a modular toy, a 3DS Max-based animation to sell the newfound conformity to modularity highlights the successes and dream-like nature of this dytopic future.

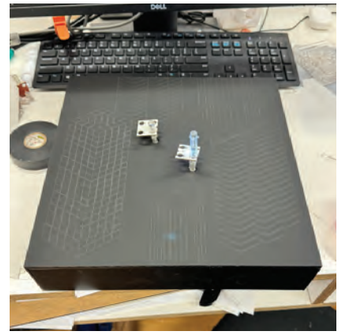


(DYS)TOPIA IN PLAIN SIGHT

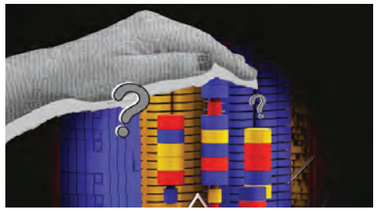
Using archival drawings and photographs, the three core pods of the plug-in city were reconstructed in Rhino 7, rendered in Vray, and collaged together in Photoshop and Illustrator. Housing, recreation, and work pods are each denoted with its own separate color coding for maximum efficiency. As outdoor access is not pod-able, beach pods and pub pods take the place of entertainment. To be determined pods are packed with packing peanuts, awaiting its next designated program from the all-seeing crane operator dictator covered in primary colors.

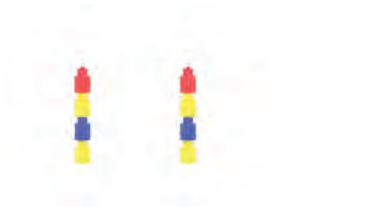


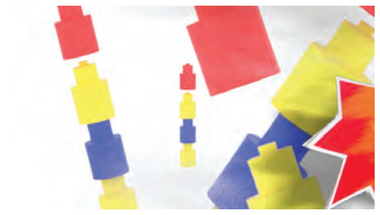
MODEL
COMPLETED

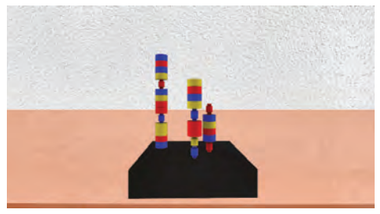


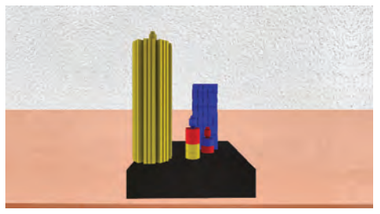
MODEL
IN PROGRESS











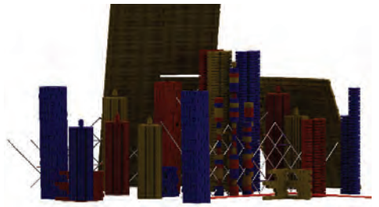
ANIMATION

Blending both physical and digital design tools such as Rhino, Vray, 3DS Max, Premiere Pro, Adobe Photoshop and Illustrator created a toy commercial lauding the plug-in city's modularity as a fun, quirky, and exciting toy despite the dystopian implications of a toy connected to a built environment designed to be ruled by one single entity. The original Archigram color scheme lives on with vibrant, primary colored graphics and funny taglines. This animation is supposed to be satirical yet humorous, funny but also a warnin. If the future is so dark, then why is everything designed so bright?

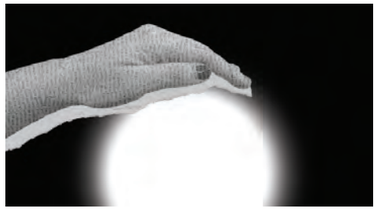
CREATING THE ANIMATION

To the right, work in progress photos demonstrate chromakey techniques, digital model rendering and post-production, and photography skills to capture the perfect tone for the animation video. Every tool introduced to the course was implemented, from InDesign storyboarding to Rhino modeling to 3DS Max and Premiere Pro. Handmade signs to be later chromakeyed into the video added a touch of whimsy and a brand new skill in the toolkit.

RHINO + VRAY + PHOTOSHOP



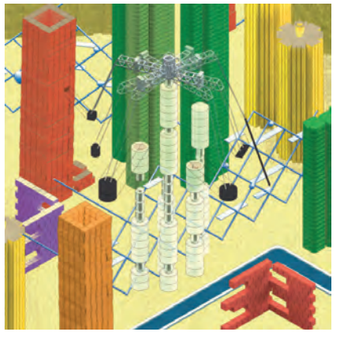
PHOTOGRAPHY + PHOTOSHOP



3DS MAX + PREMIERE PRO

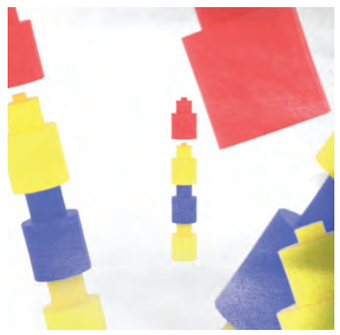
ILLUSTRATOR + PREMIERE PRO

ILLUSTRATOR + INDESIGN



DRAWING

MODEL



ANIMATION

08. *destroying dirty dishes*

Smashing dirty dishes is a means of extrapolating an analytical system from a daily task: washing the dirty dishes that your roommate always leaves in the sink, even after you've told them that you're sick of cleaning up after them. It's a culmination of emotions into data, a count of how many dishes left behind everyday and how many times it takes to break these dishes in the kitchen sink. This project tests how much and how far does it take to peacefully habilitate with roommates through an investigation into physical and digital modeling tools to identify covert and overt systems at play in dynamic social situations.

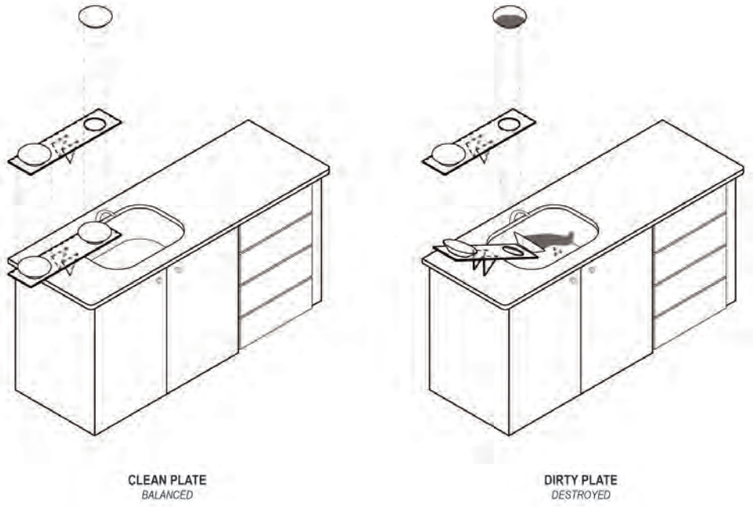
The physical drawing machine is a seesaw that balances a clean or dirty plate against a clean plate, resting against the kitchen sink. Once a dirty plate is deposited, the physical drawing machine tests how many ounces of food creates how many shattered pieces of the broken dish which results in beautiful ink splatter drawings. The digital drawing machine is a Grasshopper-based script of various plates that shatter in a Blender-simulated virtual dish-washing machine. Simulating the emotional and physical fracture of a roommate relationship, the dish is tumbled and destroyed.

REAL LIFE
DIRTY DISHES

Over the course of a week, I took a picture of how many dishes my roommate left in the sink. Before this experiment, I felt quite generous -- I would clean them for her, assuming that her work was very intense and she didn't have time to get to the most basic of house chores. Later, I realized I was enabling this behavior. I began brainstorming a means to destroy her dishes so that I never had to do them again.

PHYSICAL DRAWING MACHINE
THE INK BLOT

The dish breaking machine was fairly straight forward -- a board with cutouts, perfectly fitting two of my roommate's bowls, and a clean one was placed at one end with a dirty one placed at the other. If it was dirty, the plate would spill into the canvas-covered sink. An ink blot-esque shape would transcribe the spillage of the leftover food, the breakage of a plate, and the anger I felt doing someone else's chores. If this continued, I would perhaps need to design her a dishwashing machine.



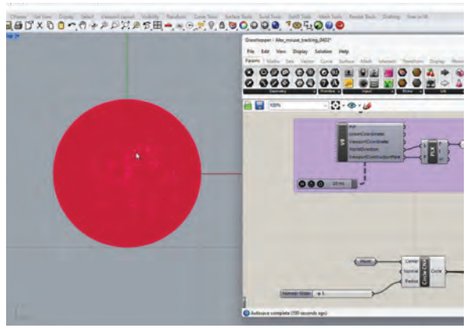
PHYSICAL MACHINE

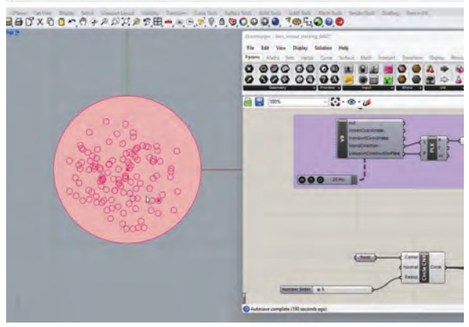
DIGITAL MACHINE

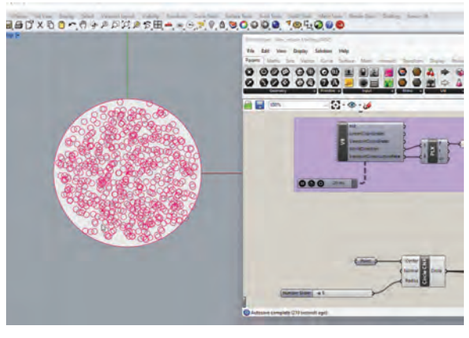
ATTEMPT #1

ATTEMPT #2

ATTEMPT #3





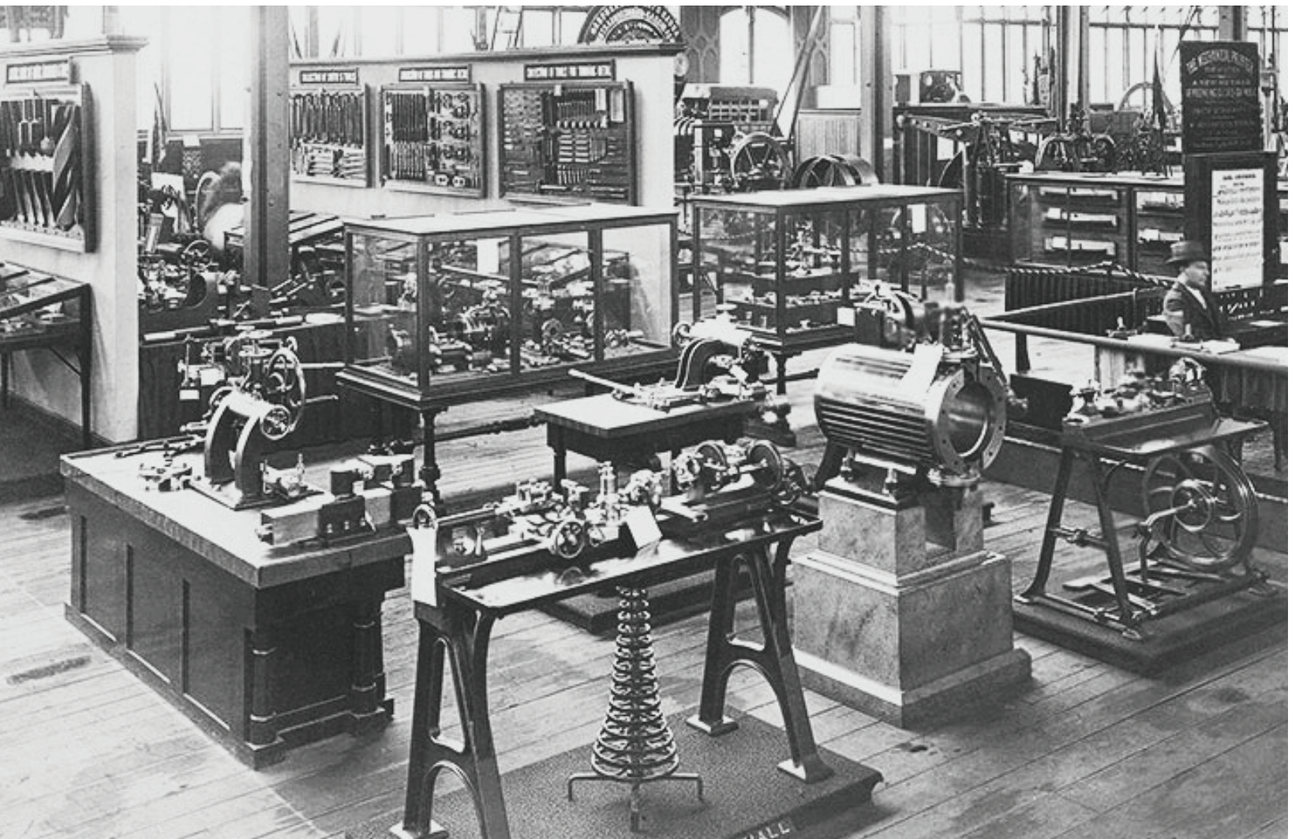


DIGITAL DRAWING MACHINE
THE DISHWASHER

Still, no improvement over the dirty dish habits. I decided to create a dishwashing machine for this assignment, certainly an aspiration to help my roommate keep the common areas tidy. This dishwashing machine was solely modeled in Rhino 7, including a spinning inner drum, stationary outer drum, and enclosed box with a secure shutting lid. Every surface was then taken into Blender where the lid was closed, the drum was set to spin, and the dishes were inserted and broken into thousands of pieces. This digital drawing machine imprinted the broken shards into the spinning drum interior as its own kind of drawing machine.

Coupled with a Grasshopper-based script, a simultaneous dishwashing machine was modeled into Rhino where a cursor can be waved over a virtual dish. In a scrubbing motion, the virtual dish turns a lighter and lighter color -- simulating cleaning a dirty dish back into its porcelain color. Side by side, both Blender-based and Grasshopper-based digital drawing machines “clean” a dish to varying degrees of completion.

09.
plans and soviets: the art and craft of shop-work and technical education



EXCERPT FROM FINAL ESSAY
INTRODUCTION

“

Post-war and post-conflict nation-building efforts emphasized the integration of the built environment with social structures, creating a demand for a workforce skilled in new, modern construction practices. This educational gap was addressed through the emergence of shop-work schools in the Russian Empire and technical schools in the United States. Specifically, the popularization of technical education via exhibitions at the World Fairs and/or World Expositions demonstrated that education is modernization and modernization is inherently political. For Russia, its modernity was already tied to its success as an empire but in contrast to Western industrialization and aesthetic reach, its placement as a “modern” or political power did not have the same draw until its participation in global exhibitions. Stemming from World’s Fairs, these exhibitions highlighted political powers where industrial strengths and pedagogical innovation became conflated with national identity and geopolitical success. This success was not so coincidentally tied to Russia’s prominence and widespread implementation of the technical school system. This paper investigates how the emergence of these new forms, means, and practices of education contributed to the rise of new political, infrastructural, and economic power via the architectural and planning practices in these countries.

On May 10th, 1876, the Russian Section opened at the International Exhibition of Arts, Manufactures, and Products of the Soil and Mine otherwise known as the Centennial International Exhibition held in Philadelphia, Pennsylvania. This was the first World’s Fair hosted in the United States and thus the Russian Empire’s first overseas presence at a major exhibition. This exhibition was also pivotal for the Empire due to its placement in Eurasia – from Siberia to Baku, the Russian Section scrutinized how a comprehensive national architecture could accurately distill a vast population spanning thousands of miles into a single booth in the Main Exhibition Hall. In proving that the Russian Empire was ready and modern enough to participate in a World’s Fair, as contentious as it appears, it was pivotal to highlight the political power that Russia’s unique condition between two significant continents could produce. In *Russia Under Western Eyes*, Martin Malia writes, “In the early nineteenth century, Westerners had viewed Russia as a ‘civilization’ apart and by and large decided that her lack of ‘culture’ excluded her from authentic Europe.”[1] The reputation of the Russian Empire at the turn of the 18th to 19th centuries was quite poor; it was perceived poorly partially due to its “lack of culture” or perhaps could be interpreted as a lack of broader aesthetic definition due to its multi-ethnic population. Because the Empire was so vast, the unintended ramifications of containing a variety of populations and ethnic groups was that it could be interpreted as an unfavorable contender for a type of political exhibition such as a World’s Fair. In *World Fairs and the Global Moulding of National Identities*, instead of being considered as a unique circumstance in both the West and the East, Anthony Swift emphasized how the Russian Empire was a “peripheral country in terms of industrialization and technological advance[ment]” in Europe, however it also had a “great power and a vast multi-ethnic and multi-religious empire” that was particularly motivated to show a “path of progress and economic modernization that the world fairs celebrated by the early twentieth century.”[2] Therefore, participating in an exhibition such as a World’s Fair could truly highlight the aesthetic unity and thus the modern political power of a nation continuously rebuilding its national identity. Furthermore, Swift writes that “[the Russian Empire] appeared not as an alien entity but as one national culture within a common European civilization” at its showing in the 1876 Centennial International Exhibition. One of the biggest highlights at the Russian Section in the 1876 Centennial International Exhibition ultimately became the portion dedicated to machinery and education innovation. Therefore, Russia’s path to growing influence in the West was quickly shaped by these displays. This was not without an extensive effort to highlight the Empire’s educational outputs – the arts, crafts, and architecture.

1 Martin Malia, “Russia as Europe Regained: 1855-1914,” in *Russia Under Western Eyes: From the Bronze Horseman to the Lenin Mausoleum* (Belknap Press, 1999).
2 Anthony Swift, “Chapter 4 Russian National Identity at World Fairs, 1851-1900,” in *Worlds Fairs and the Global Moulding of National Identities*, 1st ed., ed. Joep Leerssen and Eric Storm (Brill, 2021).

Looking at Chicago's IIT, students were already well equipped with the basic understanding of machining, logistics, production, drawing, electronics, and other technical skills. Their admission into their specialized programs required this preliminary knowledge, thus naturally establishing a condition where students anticipated a critical and conceptual component to their hands-on studies.[3] As Kropotkin writes, the students who already know the machine could be more than capable of improving it.[4] Students used their expertise in engineering principles, materials, and laboratory studies to open and conduct new experiments in the field of architecture. Innovating on the new, modern, and innovative means of education were highly encouraged. Research facilities such as the Minerals and Metal Research Building at IIT opened, quickly taking advantage of the substantial expertise on the campus to develop new strategies in utilizing minerals and metal for architectural interiors and facades. In Figure 9, an interior photo of the Minerals and Metal Research Building at IIT depicts a large, warehouse-like interior with students and faculty walking around. Some individuals are standing around equipment or congregating to discuss. Desks line a raised split-level platform on the left side of the photo while heavier machinery sits on the ground and up the walls on the right side. There are more individuals on the left side but some linger in the middle, leaning over tables and operating equipment. Large coiling doors in the background and on the left side of the photo contrast the light, airy, and bright windows with gridded mullions on the right side.[5] Despite the industrial interior with actual equipment, testing, and data collection on these new material applications, the building itself was designed with conceptual needs: light and openness for the habitation of its occupants. The individuals working and innovating in this building designed and refined steel architecture and construction techniques, working in labs alongside mills that tested the new products. They did this work in a steel and glass box – a result of the architectural innovation that would not have been possible without the material and labor technics developed by the technical school system.

In post-imperial Russia, the Soviet Union's interpretation of the shop-work technical school expertise manifested in similar ways to Chicago. In Figure 11, the photograph of the exterior of Moscow's Zuev Workers' Club demonstrates a new Modern aesthetic more closely aligned with the Chicago or International Style of transparent curtain walls, steel moment frames, and innovative concrete use. Three facades of the Zuev Workers' Club building show a combination of curtain wall or floor to ceiling windows peeking between thick panels of concrete while only one corner of the building shows a rounded glass curtain wall with gridded mullions. This architectural feature, characterized by the dramatic effect of a near perfectly glazed cylinder, reinforces the specialized technical training that prioritized the mastery of industrial and Modern materials like glass, steel, and concrete. Despite being nearly ten years younger than the IIT campus in Chicago, the Soviet Union's capacity for technical innovation through the most visible environmental component – buildings – symbolizes a shift. Whether this shift is fueled by politics, material invention, or architecture and aesthetics, this type of localized material innovation would only be possible through the integration of conceptual knowledge of glass as a material and new means of glass fabrication. Perhaps these innovations were possible by the ongoing shop-work technical education in St. Petersburg and Moscow, which had evolved from the Imperial technical schools praised by Runkle into the integrated shop-work technical schools of the Soviet Union. This shift in educational systems and material efficiency-forward thinking bridged the gap between raw industrial labor and Modernism's architectural materiality, allowing designers to treat new forms of the built environment not merely as a necessity of production but as geopolitical and technological progress.

3 Joanna Merwood-Salisbury, "American Modern: The Chicago School and the International Style at the Museum of Modern Art," in *Chicagoisms The City as Catalyst for Architectural Speculation* (University of Chicago Press, 2013).
4 Peter Kropotkin, "Brain Work and Manual Work," *The Nineteenth Century*, March 1890, 456–75.
5 Kenneth Hedrich, *Minerals and Metals Research Building at Illinois Institute of Technology*, 1943, Photograph, 8x10in.

Russian shop-work technical schools reflected the Empire's push to consider architecture, not the literal shape or structure of the buildings but rather the shape of the built environment, as the tangible depiction of standardization as modernization and modernization as power. Thus, labor and labor-based aesthetics became critical to defining Russia's place as a unified political power at the turn of the 19th to 20th centuries. These shop-work, labor, and technical education school systems as popularized through participation at a critical moment in World's Fairs exacerbated Russia's political, infrastructural, and architectural power across Russia, the subsequent Soviet Union, and the United States. By inspiring major technical institutions in the United States such as MIT and IIT, the Russian shop-work schools emphasized the pedagogical transition from industrial specialization to an integrated means of educating with industry and efficiencies in mind. As conceptual expertise and practical applications flourished in both countries, shop-work technical schools rapidly expanded beyond the built environment and into everyday realities as goods, architecture, and strengthened national identities.

”

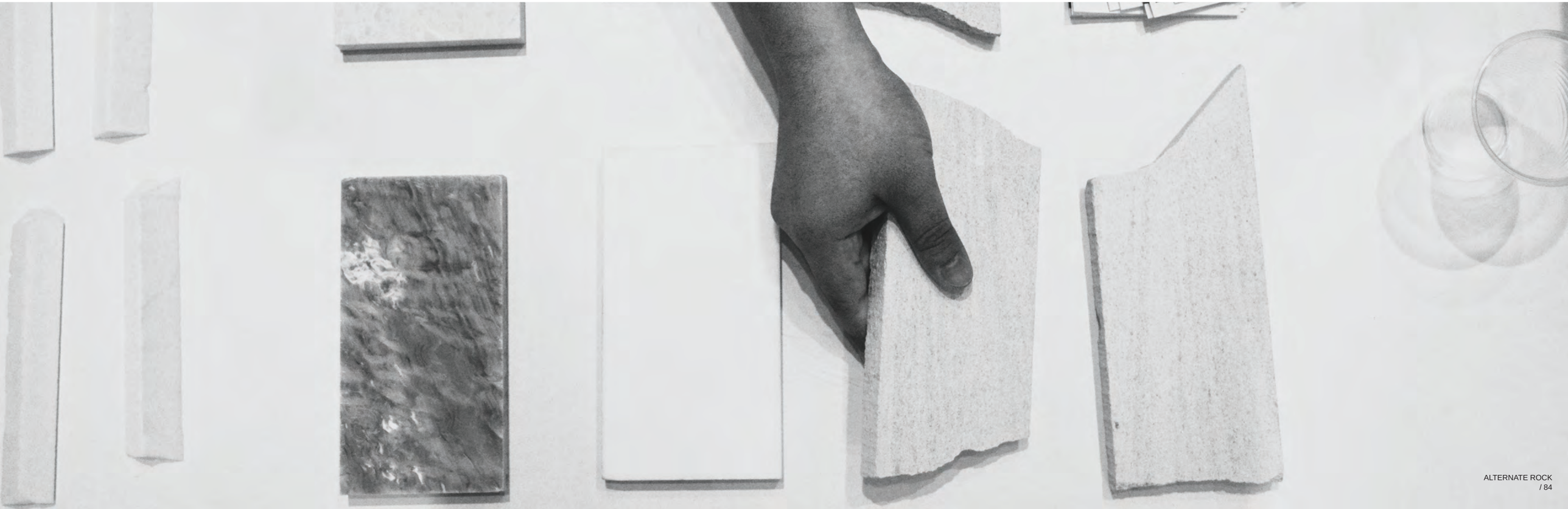
10.

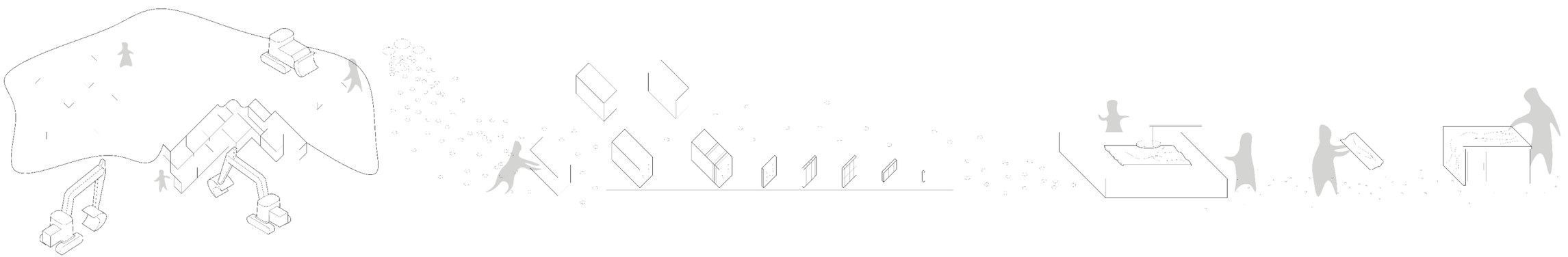
alternate rock, or four hours of stone polishing asmr no talking

WASTE/WORKS / SPRING 2025
CRITIC: AMELYN NG
COLLABORATOR: ISAAC MARTINEZ

Scratch, plop, drill, hum – the sounds of a stone yard preparing work for the day. From the time the slab of stone gets shipped from the quarry to a finished countertop in a residential kitchen, stone offcuts are an inherent part of the process. In “Performances of Spatial Labor”, Beth Weinstein writes how the “performance” of work “not only reveal hidden labor and laborers within processes of ‘making up’ and ‘making real’ works of architecture but also scrutinize disciplinary acts that are themselves fraught with multiple forms of invisibility” (230). Noise is a part of the process. Creating construction waste is an inherently auditory process. Therefore, this project aims to make visible the intensive steps of mining, extracting, and reinterpreting stone products through a socio-environmental design lens.

Alternate Rock AKA Four Hours of Stone Polishing ASMR No Talking is a dual screen visual and auditory project from Isaac Martinez and Alexandra Zhao capturing the sounds of a stone yard as workers scratch, polish, cut, and prepare for transport a finished piece of stonework. Underlying the perfectly manufactured end product, the project highlights the material and auditory “multiple forms of invisibility” activities that continuously and perpetually waste. What does it take to make something beautiful? What would you give up in the search for constructable “perfection”?



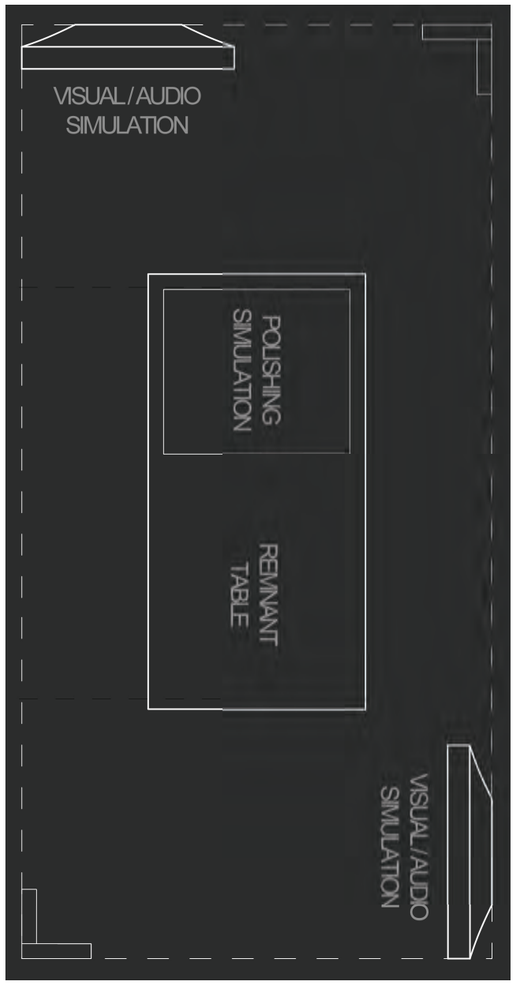


MINING DRAWING

To even get to polishing stone, the stone first appears in the earth. In enormous quarries, blocks of stone are blasted and trucked off to factories for refinement work. As the blocks get cut into halves, then halves again, then halves even more until they're approximately four inch slabs of beautiful stone, workers then cut them into project-specific uses. Counters, tiles, even decorative tissue boxes are all options.

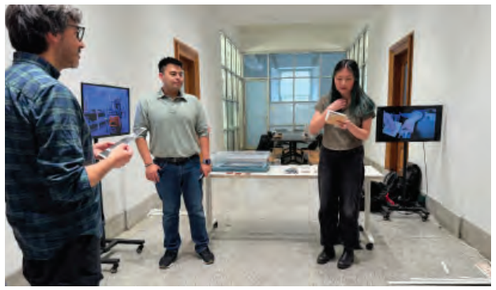
ASMR

FACTORY



EXHIBITION

Expressing parallels between labor and leisure, an auditory exhibition roughly the size of a real life slab of marble presented the duo's semester of research and experimentation. One screen played a video that was filmed with marble offcuts and sandpaper polishing, a recreation of the popular automous sensory meridian response or ASMR video format. As ASMR-tists rub hands, tap with long fingernails, or even brush materials attached to microphones in surround sound, some listeners find it relaxing and chilling to listen to. In contrast to the explosions, grinding, tearing, and beeping in a full scale stoneyard, the dichotomy of experiences exacerbate the inequity between the experience of stone in the built environment.



11.
edm:
electronic de/construction music

Sound, the joyful experience of objects making a vibration and the human ear's interpretation of this waveform, in comparison to the concept of noise or the uncomfortable interpretation of vibrations is indistinguishable when discussing construction. Construction is inherently a loud, noisy, and interruptive process, yet it is considered as a necessary component of contemporary life. On the MTA 1 line train, there is sound everywhere. The person sitting across from you with their phone in their hands, blasting at full volume the latest NFL game even though the woman next to them is clearly uncomfortable. The woman sitting next to you who has her headphones in, blissfully unaware of the unharmonious sounds coming from the sound within the train that is shielded by the sound of metal screeching and train cars bouncing and the construction workers in skipped over stops that nonchalantly scream over the sound of everything. In New York City, sound is abrasive and omnipresent, yet it is not necessarily discussed when observing the overall phenomena of a construction ecology.

CONSTRUCTION PHASING

This project utilizes a “construction” and “deconstruction” timeline that paces listeners to the distinct sounds of how a building may come up or come down. There are 12 different sound clips all recorded by myself, conducted through site visits to a friend’s stoneyard at Miller Druck Specialty Contracting in the Bronx, holding my phone out of my window when I heard a glimpse of construction sounds, or borrowing a Zoom H1 audio recorder from the audio-visual department and getting let into the Historic Preservation Lab to record stone tapping sounds. Each sound is distinguished by its frequency, pitch, and staccato effect.

AS SOUND

Most clips are layered with other sounds as it transitions to the next “scene” or timeline event, a visual component to denote a change in the noise versus sound experience. Despite the harsh grinding sounds of stone polishing or even pleasant scrapes of stone against sandpaper in a lab, each sound clip denotes a new material effect of the construction and deconstruction process. When listened altogether, the harsh noises tune out and mellow into a comprehensive song or brain-scratching ASMR experience that allows listeners to feel at peace or even bring more awareness to the intensive construction processes in our everyday lives.

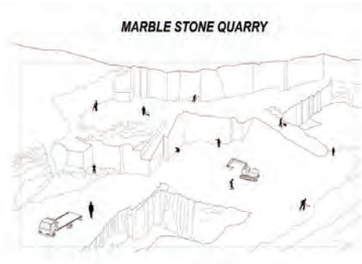
INSTALLING AND FINISHING

[HAMMERING AND DRILLING NOISE WITH SHOUTING IN DISTANCE]

PROCESSING AND CUTTING

[LOUD AND SHARP GRINDING AND SPRAYING NOISE]

MARBLE STONE QUARRY



[JACKHAMMERING AND EQUIPMENT NOISES]

MOVING AND PACKAGING

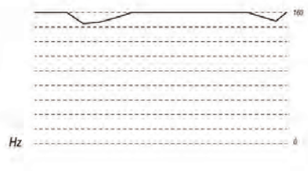
[GRINDING NOISE IN BACKGROUND. BEEPING AND SHOUTING NOISE]

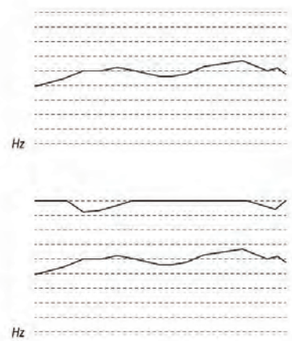
TRANSPORTING RAW MATERIAL

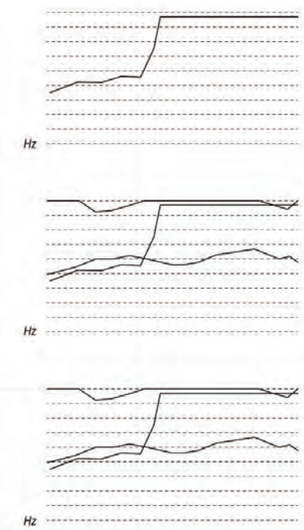
[CONSTRUCTION EQUIPMENT BEEPING AND LIGHT GRINDING NOISE]

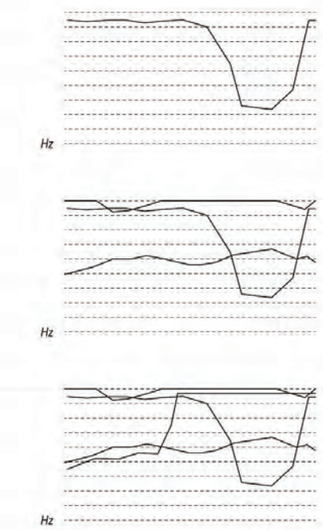
NOISE AS PLEASURE

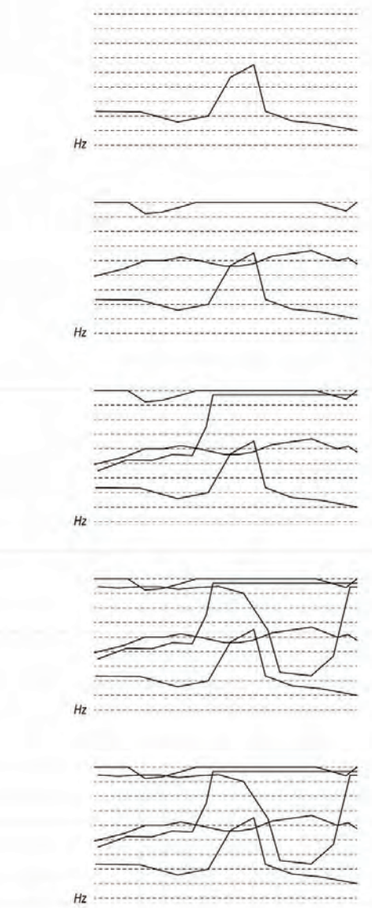
Construction noise versus sound is solely distinguished through recognition pleasure, aesthetics, and enjoyment of the waveform. Through the auditory experience of marble stone quarrying, production, transportation, and installation, the noise of (de) construction is distinct enough across the various stages. Harmful noise requiring the use of earplugs or other personal protective equipment (PPE) versus the head bopping, singing enjoyment of stone grinding and tires squealing unveils the environmental and sociological impacts of noise through a constructive and deconstructive lens.











12. *data rec center*

Beyond the palo verde trees, the creosote bush, saguaro cacti, and the roadrunner birds, a crumpled up metal roof nestles into the cracked concrete and the weathered grey asphalt. In 2026, it was the Project Blue data center. It was the proud home of the Amazon digital infrastructural grid, powering web services and two-day shipping while exhausting fumes of heat and hot water into the canyons and washes. In 2066, it's just Project Blue City. The data center is too omnipresent to live in one spot. They look like farmers and maybe, one day long ago, they would've been farmers tending to their agricultural product, but now they're engineers and the "corn" feeds off of the hot air exhaust. They don't grow corn here anyway; it looks like corn but it's data. The rhizomes feed back to the underground cabling system.

They give you a kernel – a one gigabyte sliver of information, raised and braised for optimal data transfer – and you realize it's encoded with the itinerary of your Kinne trip all those years ago. But a kernel of corn is a sliver of food and there's not much of that kind of resource that doesn't go to data these days. Does it feel weird to eat a gigabyte of data? I mean, everything is data anyway.

In 2066, the Data Rec Center -- the original location of the Project Blue data center -- is proposed to be celebrated as a new community center. Instead of dividing residents, it brings them together. Instead of scarcity, it gives. Instead of another 1 degree temperature rise every ten years, community pools, tubs, and dry gardens flourish. Scattered between the hot and cold aisles of a server room long gone, the pipes of the interconnected Project Blue City deposit its heated water into this lush adaptive reuse oasis. If everything is data anyway, we might as well have fun with it.

ANALYTIQUES

Using collage as a means of researching, collecting, and creating relationships between water, energy, land, history, and people these analytiques establish where the problem is and how a solution can be found via one question: is there a means of capturing the future of a data immersive, not storage, world?

EVERYTHING IS DATA ANYWAY

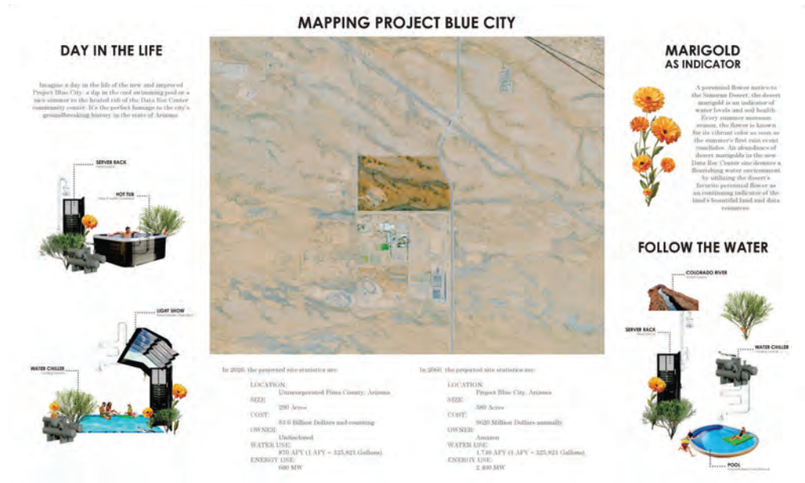
After the fall of data center campuses and toward a new data greenhouse paradigm, the adaptive reuse of abandoned data centers provide opportunities for new community centers in regions decimated by the data storage landscape of the early 2020s. Now, water, energy, and land's contentious presence in the Sonoran Desert is represented through positive experiences in the Data Recreation Center. Water from the Colorado River pours into these decentralized data center racks, utilized through new data technology, and becomes filtered hot air for suntanning and hot tubs for local leisure.

DAY IN THE LIFE

Imagine a day in the life of the new and improved Project Blue City: a dip in the cool swimming pool or a nice simmer in the heated tub of the Data Rec Center community center. It's the perfect homage to the city's groundbreaking history in the state of Arizona as the first data center project in the state in 2026 and the first adaptive reuse of the data center campus in 2066.

DATA AS LEISURE, NOT STORAGE

The final proposal culminates in a final pitch pamphlet for Pima County, Arizona to reconsider data center infrastructure or at the very least to maintain an increasingly sustainable infrastructural future for the county and surrounding areas. Beyond the data center as a digital storage facility, the data center has the possibility to be a unifying community space in an increasingly climate uncontrolled environment.

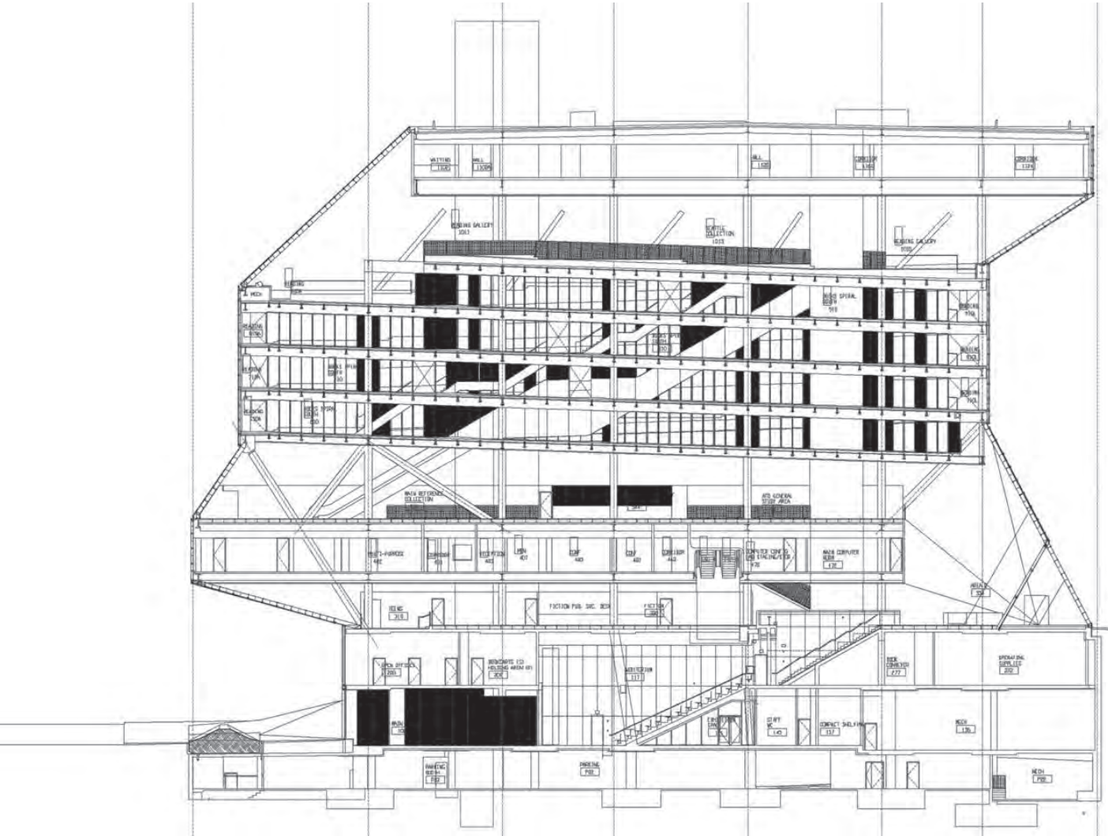


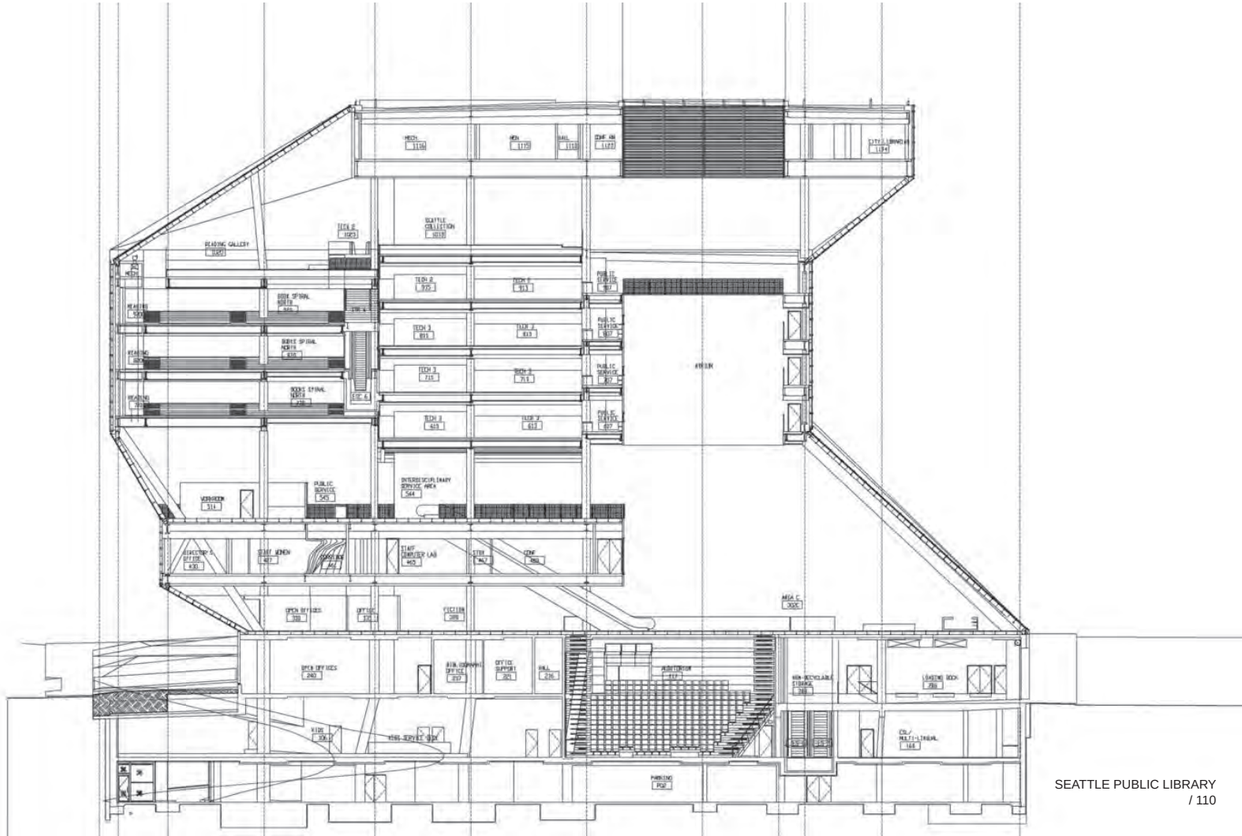
PAMPHLET

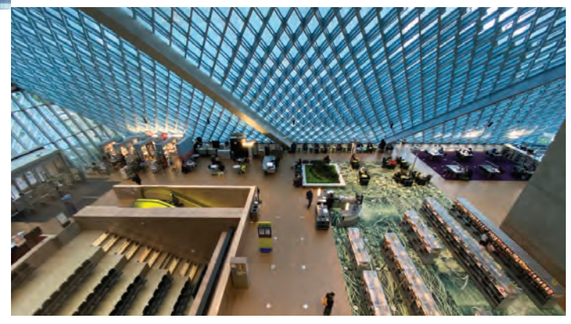
13.
seattle public library case study

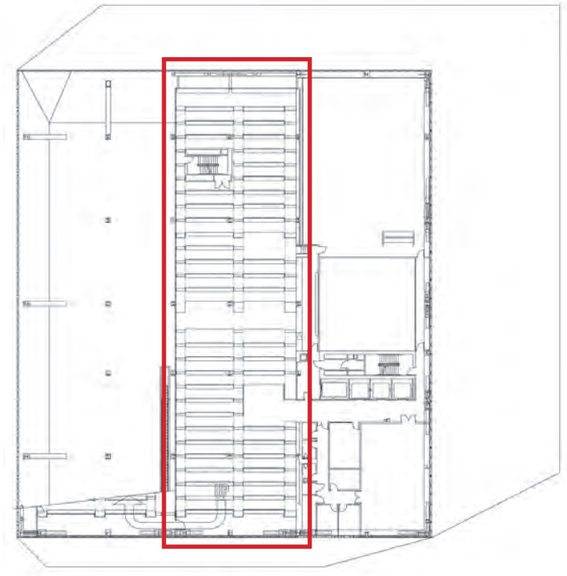
ARCHITECTURE TECHNOLOGY I / FALL 2023
CRITIC: RUFEI WANG
COLLABORATORS: LIBERTY CHAPMAN, VIVIAN LEE, ANGIE MENDOZA

In Tech I, our group (Liberty Chapman, Vivian Lee, Angie Mendoza, and Alexandra Zhao) looked at one of the most iconic buildings on the West Coast -- the Seattle Public Library -- and how it could be reconfigured to maximize sustainability potential. Through materiality, daylight and glare studies, facade studies, climate and sun path diagrams, psychrometric chart analysis, and investigating maximum potential for energy regeneration through photovoltaics, several propositions can minimize outward design choices that obscure the beauty of the initial design of the library but will harbor more attentive care to the carbon impact of Seattle's iconic library. Studies were conducted in ClimateStudio for Rhino 7. All photos credit to OMA and ArchDaily.



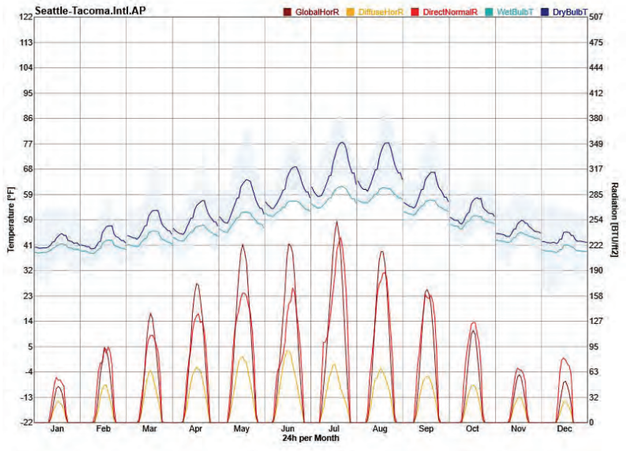


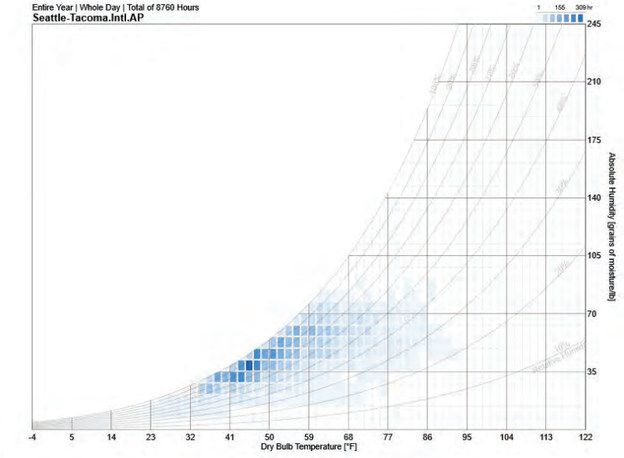




ANALYSIS OF A STACK

Where library books meet communal space, the Seattle Public Library staggers shelves in rows called “stacks” where incrementally gentle slopes make it feel like there’s barely any change in grade at all. This “stack” on the sixth floor perfectly encapsulates a typical shoebox of the program: bookshelves, conference room, and lots of breezy and bright light.





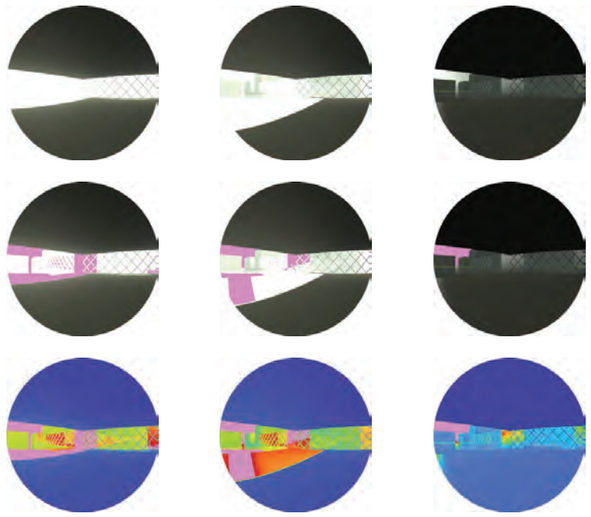
BASELINE CONDITIONS: CLIMATE

In ClimateStudio for Rhino 7, the group conducted a climate study through the psychrometric chart (above) and a range of radiation values, temperatures, and humidity to fully assess the climate and any concise rule of thumbs that are applicable. Seattle, Washington has a relatively cool and humid climate, nearly falling perfectly into the ideal temperature and humidity zone for human thermal comfort.

RADIANCE RENDERING

RADIANCE RENDERING W/ GLARE

FALSE COLOR

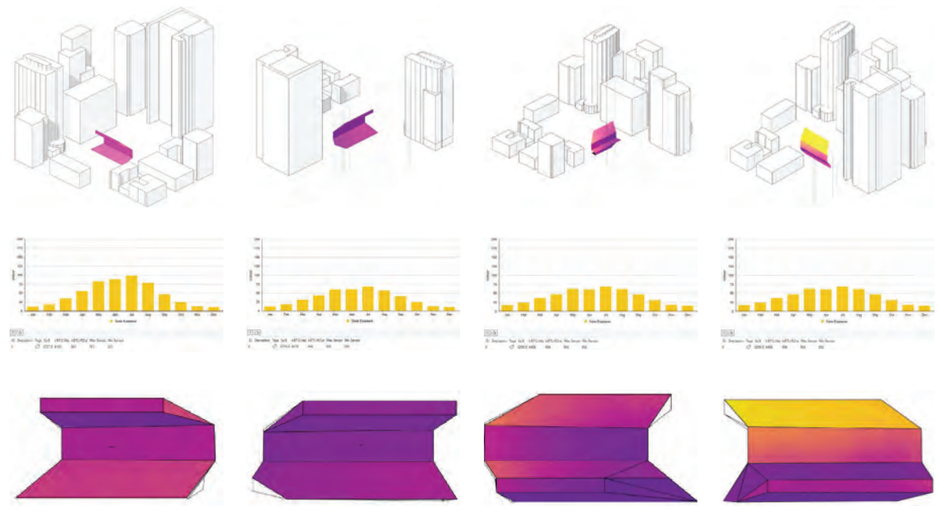


JUNE 21
3PM

SEPTEMBER 21
3PM

DECEMBER 21
3PM

BASELINE CONDITIONS: RADIATION



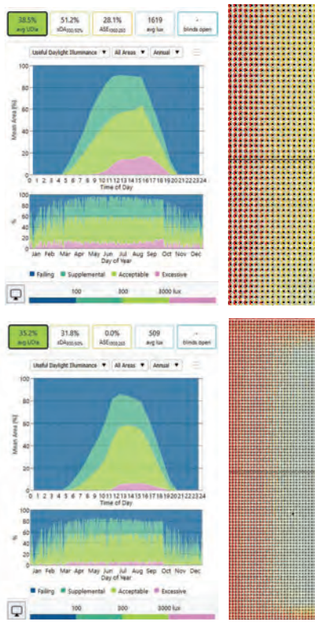
NORTH ELEVATION

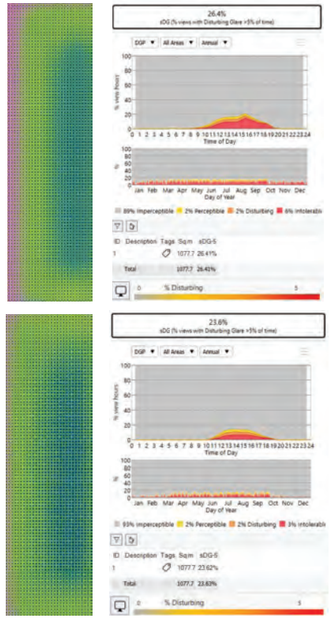
EAST ELEVATION

SOUTH ELEVATION

WEST ELEVATION

The group conducted a radiation study analyzing each elevation of the library and select interior perspectives. Where glare was most prominent were along glass facades on the West elevation due to the orientation of the building. As the library closes in the evenings -- where the West elevation will get the most radiation -- the preexisting orientation made sense for the program. Still, more strategies to maximize energy generation and facade covering will be investigated.





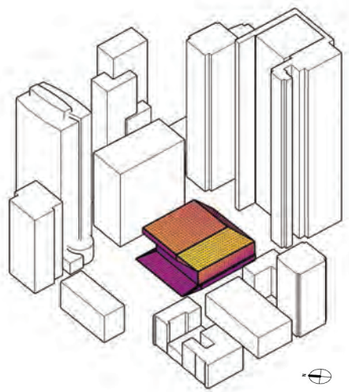
25% WINDOW-WALL RATIO

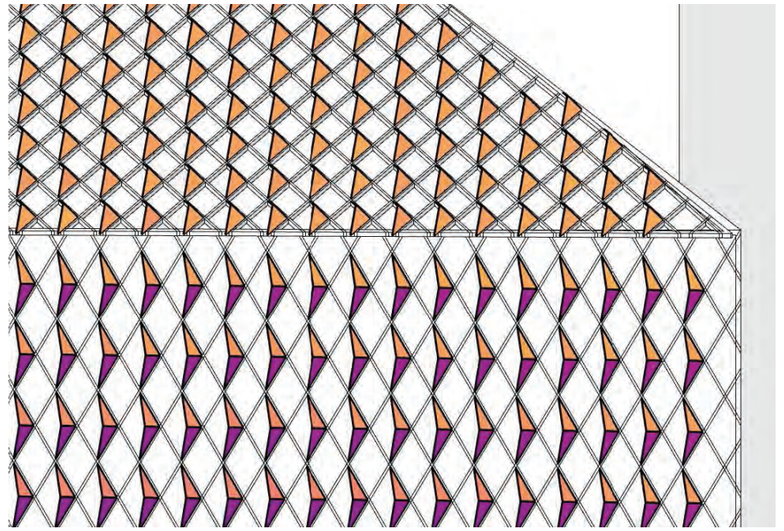
50% WINDOW-WALL RATIO

BASELINE

BASELINE CONDITIONS:
MATERIALITY

From visible transmittance to colored glass, the group tested a variety of glazing materials based off glare and useful daylight illuminance studies in the chosen shoebox model area. Altering the window-wall ratio (WWR) proved that the initial baseline condition was actually the best and with minimal impact to the longevity of the books as the stacks are placed more inward. With these results, a proposed solution centered around radiation and visual comfort will be the top priorities.

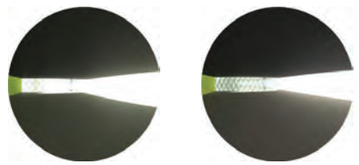




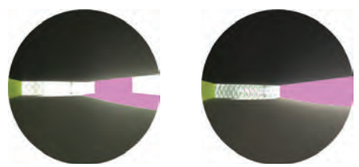
PROPOSED SOLUTIONS

Building integrated photovoltaic panels (BIPV) in the shape of a triangular fin, drawing inspiration from the regularized mullion pattern of the exterior facade, add another layer of energy regeneration while accenting the visual aesthetics of the library. This also takes advantage of the high radiation from the West elevation, addressing glare and visual comfort while still providing views to the beautiful Seattle cityscape.

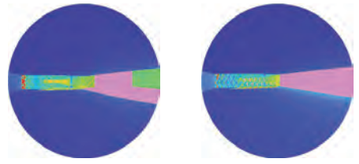
RADIANCE RENDERING



RADIANCE RENDERING W/ GLARE



FALSE COLOR



SEPTEMBER 21
3PM

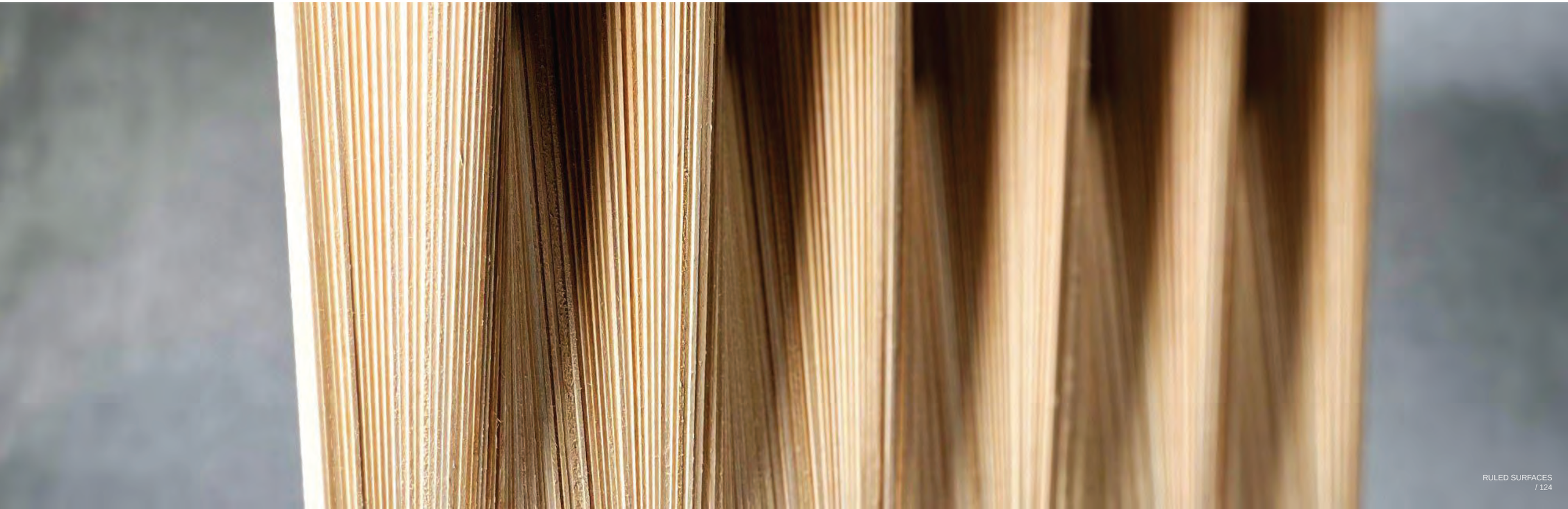
SEPTEMBER 21
3PM

BASELINE VS. PROPOSED

14.
ruled surfaces: cristo obrero

ARCHITECTURE TECHNOLOGY II / SPRING 2024
CRITIC: ZAK KOSTURA
COLLABORATORS: JAEWON KIM, BEN SPEARS, HAYDEN ST JOHN, BORIS STOYANOV

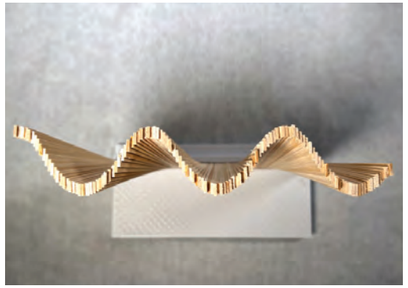
In Tech II, our group (Jaewon Kim, Ben Spears, Hayden St John, Boris Stoyanov, and Alexandra Zhao) analyzed Eladio Dieste's Iglesia de Cristo Obrero as a precedent study for a ruled surface structural system. The church was constructed entirely out of brick walls and a brick roof. Undulating curves, both as a marvel of religion and architectural construction, enhanced the structural stability through pure geometry. The brick wall in its geometry will not require any additional structural support as the tension and compression forces maintain static equilibrium. This is a marvel of architecture and building technologies. Through a series of structural analysis and physical construction exercises, the group discovered the ingenius ways that this ruled surface system held up over time with seamless ease and beauty.



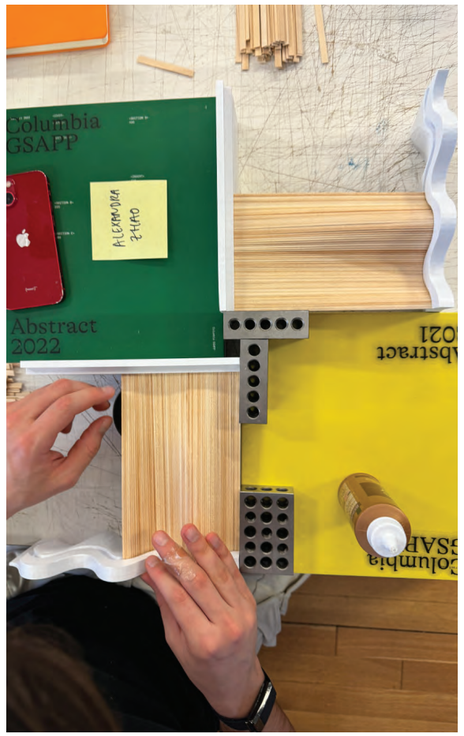
A WAVE FROM A STRAIGHT LINE

In capturing the architectural beauty of Dieste's masterpiece, the group collected archival images of the church before, during, and after construction. The method of laying bricks in a wavering pattern, held up purely by wood members that were later removed, inspired the group to pursue a wood-based materiality to highlight how every stick is actually a straight wooden member merely curved three dimensionally. Side by side archival images of Dieste's construction progress and the group's finished ruled surface model highlight the phenomenal simplicity and structural soundness.

MODEL

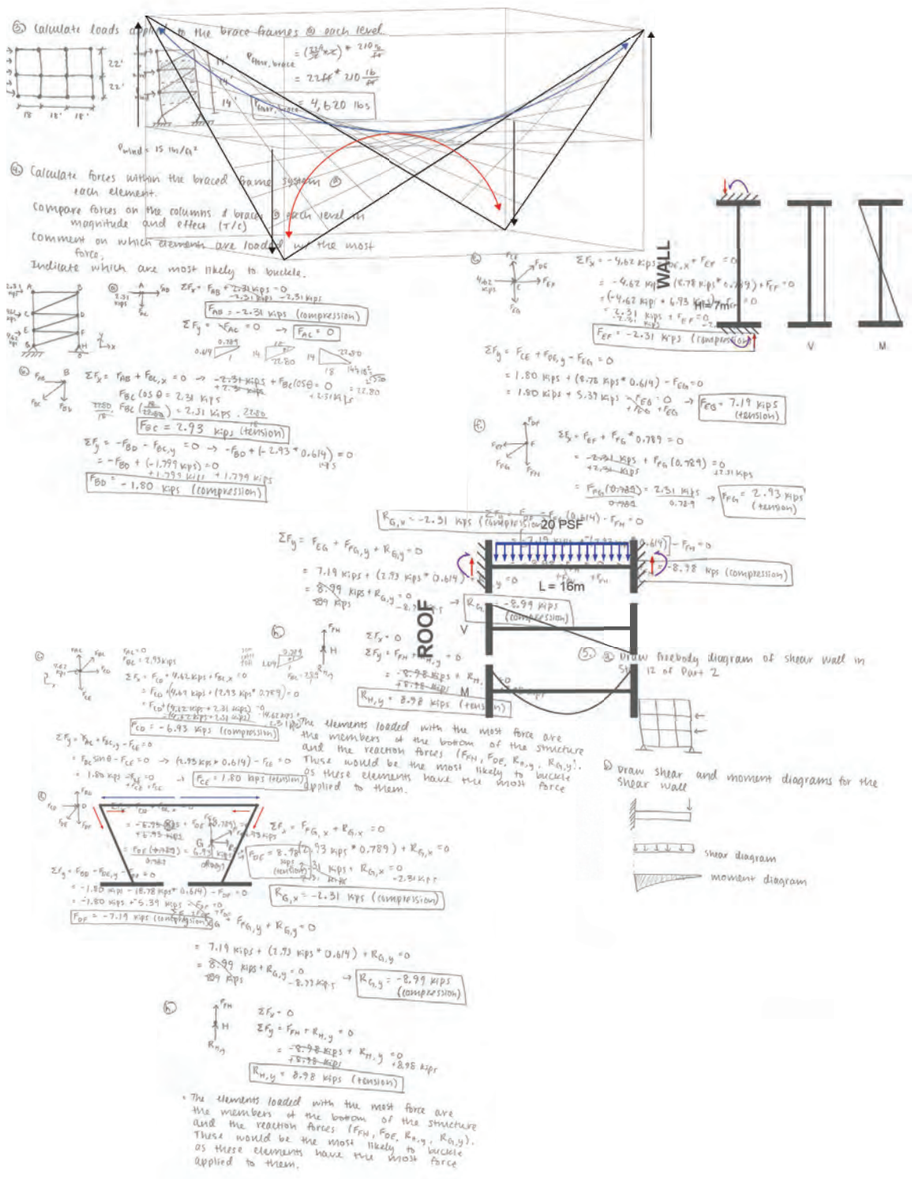


ORIGINAL



MODEL IN PROGRESS

MODEL AS COMPLETED



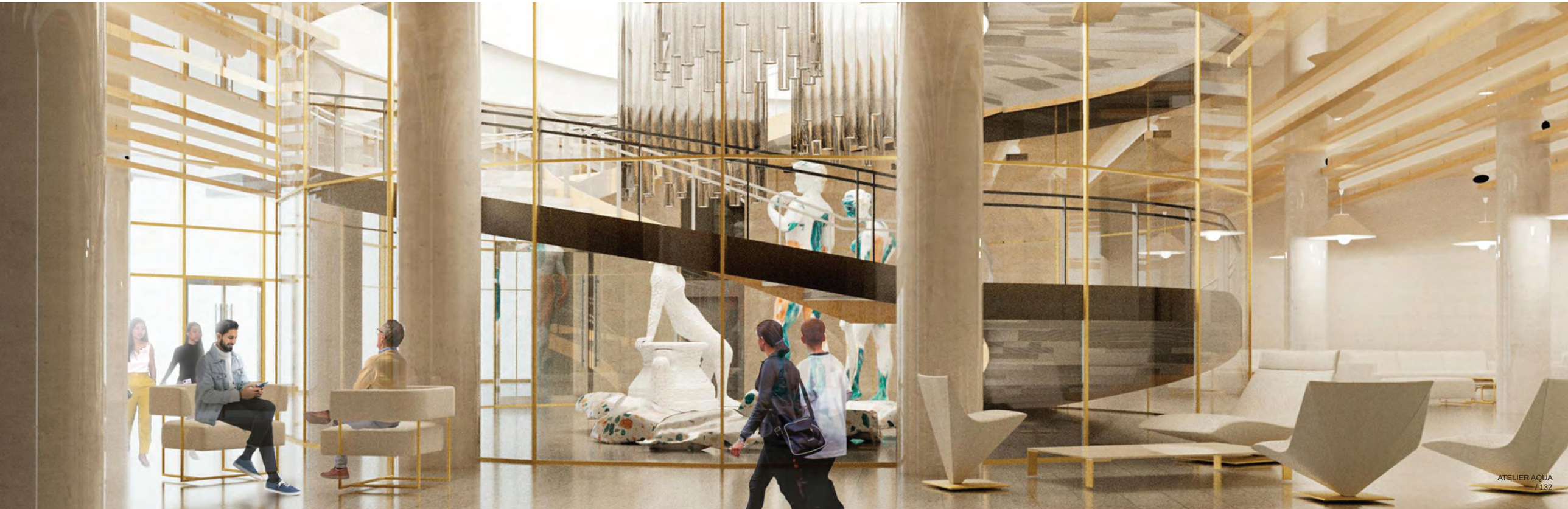
CALCULATIONS

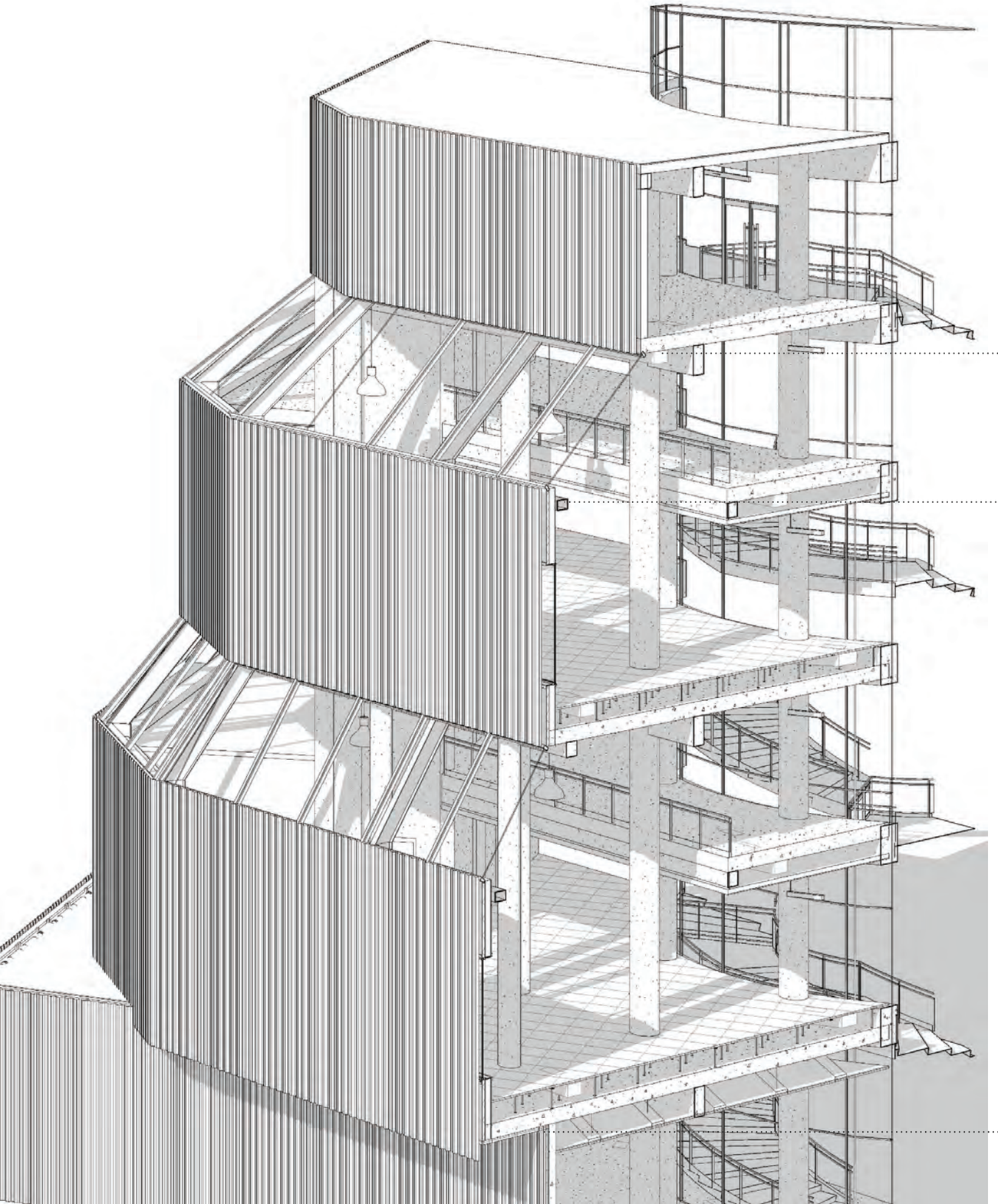
Calculations, free body diagrams, and even a brief plug and chug in Karambe for Rhino 7 demonstrated proficiency and familiarity in these industry-standard tools. Knowing how architecture can translate into constructable pieces of art, the precise goal of this technology course, assisted in iterating studio work into communicative design projects.

15. *atelier aqua*

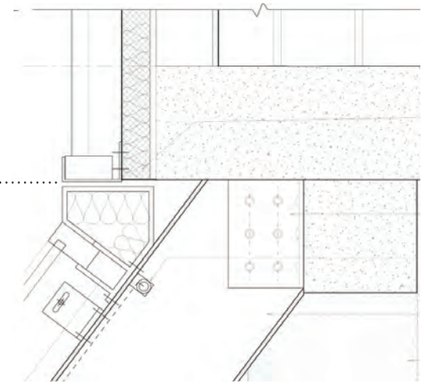
ARCHITECTURE TECHNOLOGY III + IV / FALL 2024
CRITIC: GABY BRAINARD, KAT CHAN, BERARDO MATALUCCI
COLLABORATORS: SWEZYA JOSHI, EUJIN KIM, TSZ TUNG KWONG, SANJANA PATEL

Exposing and reconfiguring the Los Angeles fashion district, a sustainable garment factory sits on the site where law enforcement rescued dozens of immigrants in an illegal sweatshop operation -- a studio project that will now be transformed into a coordinated design development or DD drawing set in Autodesk Revit. This “sustainable sweatshop” reimagines industrial work as a collaborative, creative, and rewarding endeavor for young artisans and designers. Studio space is made available for workshops and a large feature staircase showcases up and coming designs from local artists. The exterior metal panel facade replicates draped fabric with stitched openings that resemble textile patterns. Atelier Aqua is a collaborative academic project for Tech III+IV from Nashia Dillys, Swezya Joshi, Eujin Kim, Sanjana Patel, Tsz Tung Kwong, and Alexandra Zhao.

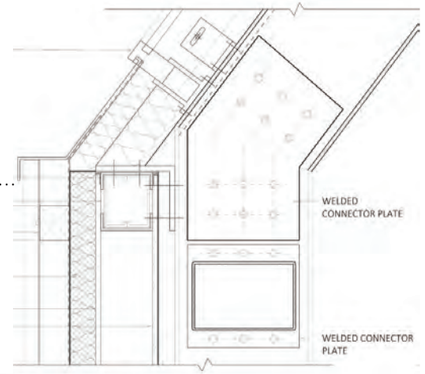




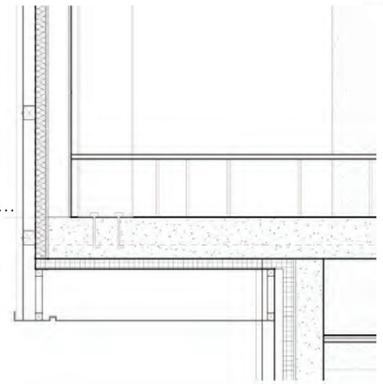
GLAZING HEADER DETAIL

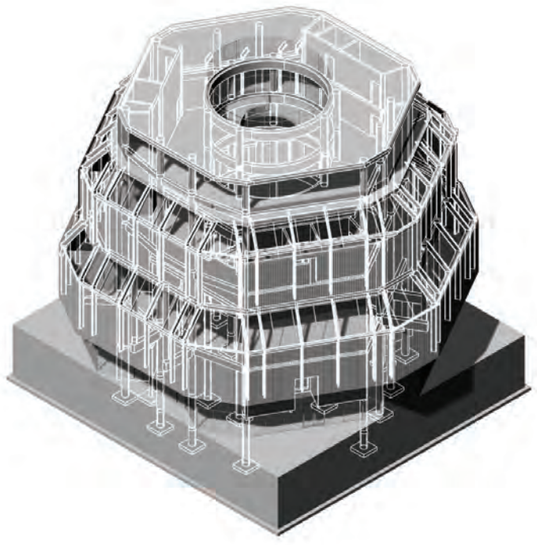


GLAZED TO PARTITION DETAIL

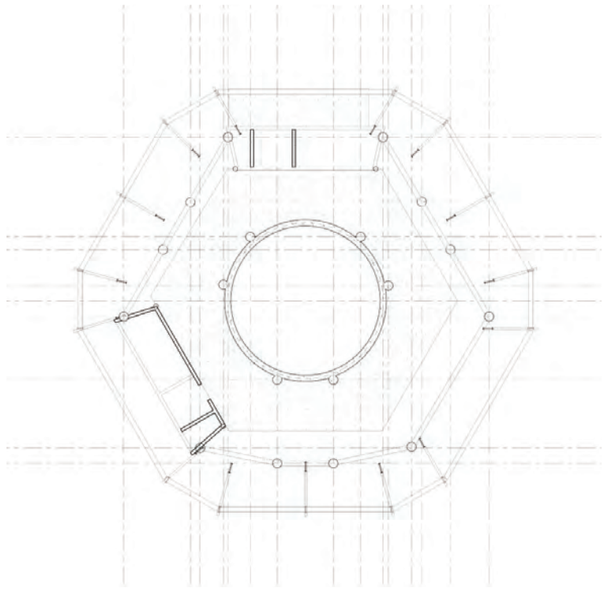


PARTITION TO SOFFIT DETAIL



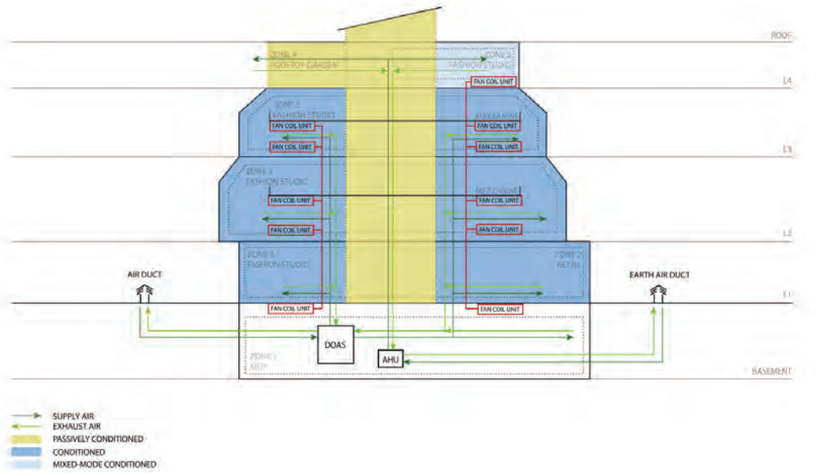


DESIGNING SYSTEMS:
STRUCTURAL

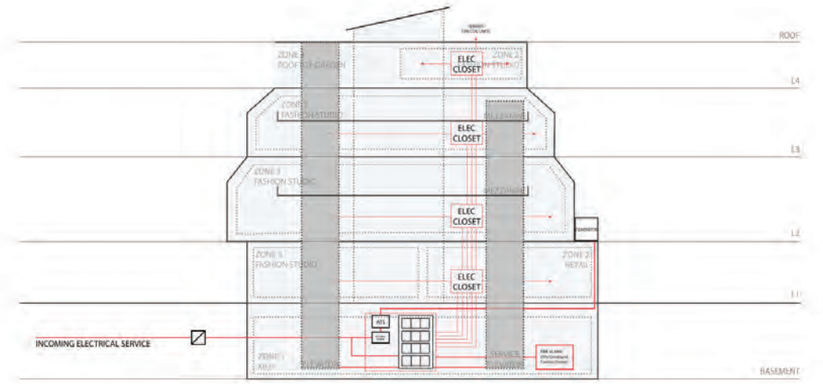


The unique shape of the clothing workshop required innovative solutions: a structural concrete ring beam ties in all the compressive and tensile forces as well as shear cross-bracing for the infamous Los Angeles earthquakes.

DESIGNING SYSTEMS: MECHANICAL

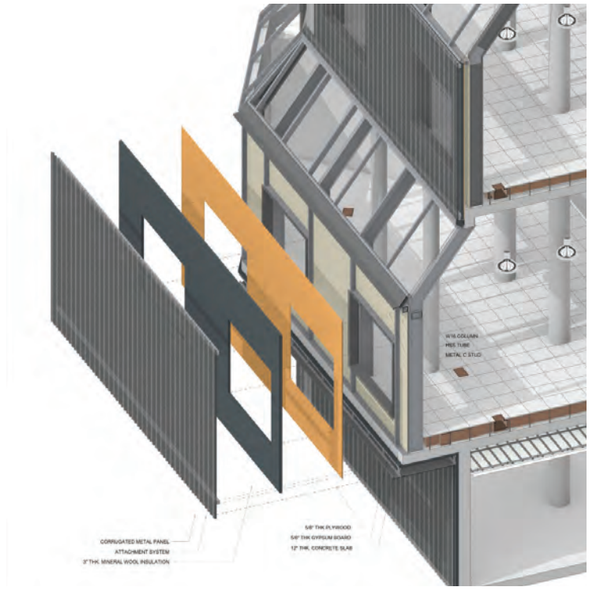


The moderate climate in California allows for a combination of unconditioned and conditioned space, flexible for working outdoors for human health and comfort in the rooftop terrace or within conditioned space as a raised floor hides HVAC equipment. A dedicated outdoor air system (DOAS) and air pump take advantage of earthen thermal mass to sustainably supply and return air.



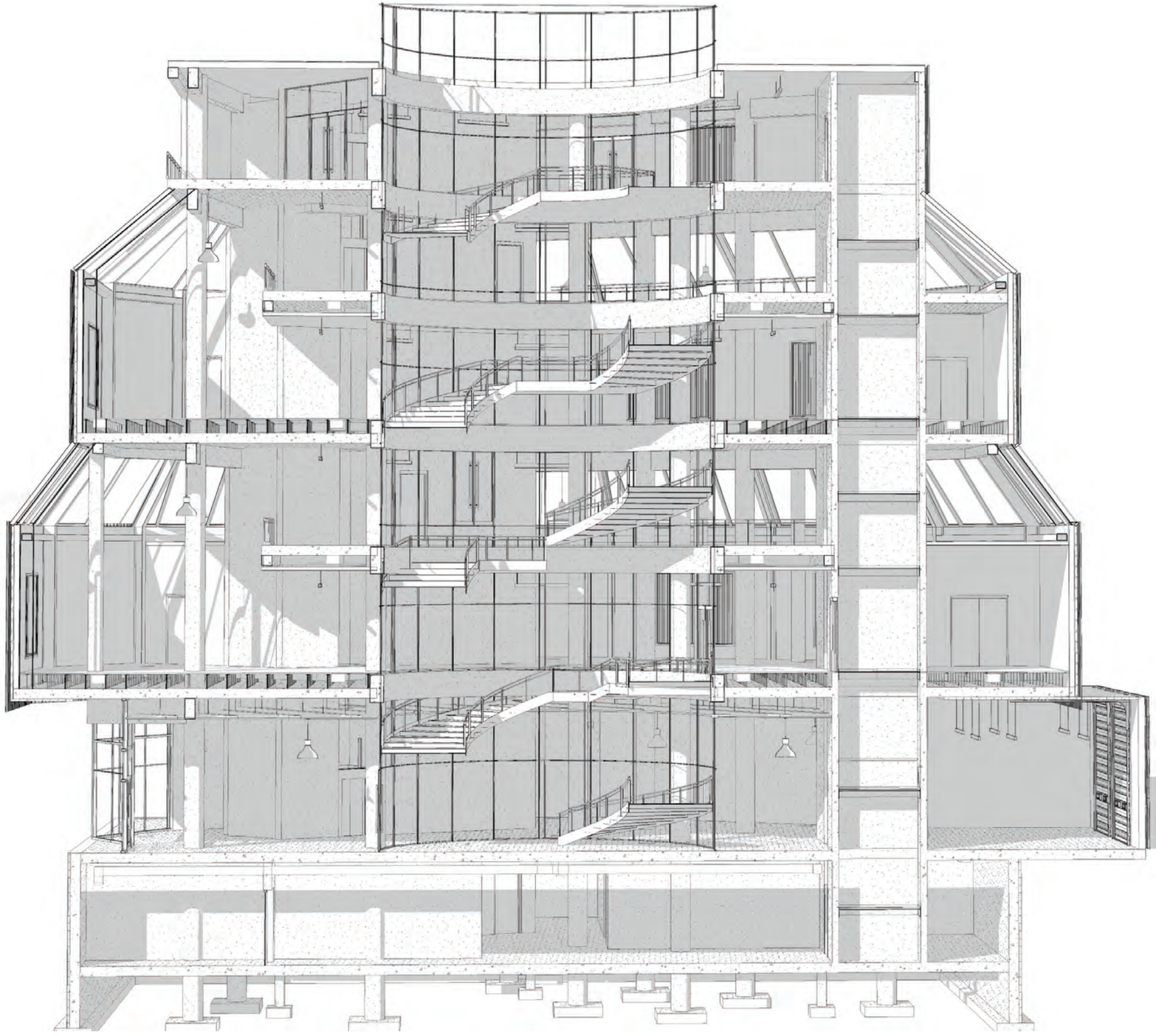
DESIGNING SYSTEMS: ELECTRICAL

Electrical and telecom closets on each floor of the building help draw power from Los Angeles Edison through to the fan coil units at the rooftop. Power is also coordinated with fire alarm, lighting, and telecommunication system requirements -- a cohesive one line diagram above ensures all powered areas are swiftly connected.



DESIGNING SYSTEMS: FACADE

Supported by a concrete main structure and wide flange steel supports, metal panel with a wavy hem drapes across the building's form. Peekaboo cutouts where glazing is artfully placed enhances the exterior with mindful peeks into fashion studio life.



SECTIONAL PERSPECTIVE

ALEXANDRA ZHAO
COLUMBIA GSAPP
MASTER OF ARCHITECTURE
CLASS OF 2026